SHARP®

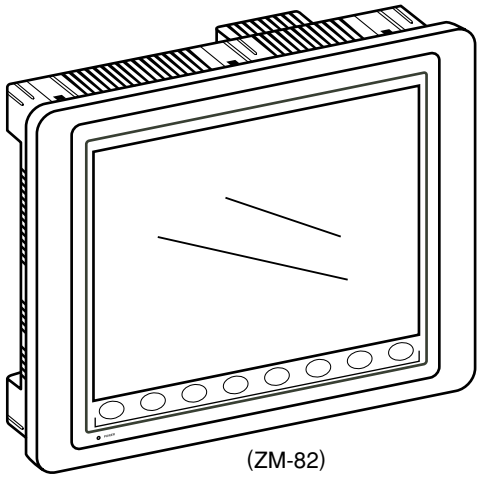
Version 2.0
Produced in May 2001

Control Terminal

Model name

ZM-42/43/52/72/82

User's Manual/Hardware version



(ZM-82)

Thank you for purchasing the Control Terminal ZM-42/43/52/72/82 series. Please read the instruction manual carefully, and operate the product with full understanding of its functions and operation methods. For the details of each Control Terminal functions or the panel editing methods, please refer to the instruction manual for the screen edit software.

- ZM-71SE — Instruction Manual
  User's Manualt(Tutorial)

Caution

- In this user's manual, ZM-42/43/52/72/82 series are referred as follows.

Expression in this manual	Series name
ZM-**	ZM-42/43/52/72/82

Note

- We have created this instruction manual carefully, but in case you have some doubts or comments on this manual, please contact the affiliated store where you bought this product or directly to our company.
- It is forbidden to copy the content materials of this book, neither partially nor fully.
- Please understand that the content of this manual may be altered for amelioration without any notifications.

Safety precautions

Read this manual and attached documents carefully before installation, operation, maintenance and checking in order to use the machine correctly. Understand all of the machine knowledge, safety information, and cautions before starting to use. In this instruction manual, safety precautions are ranked into "danger" and "caution" as follows.

Danger : Wrong handling may possibly lead to death or heavy injury.

Caution : Wrong handling may possibly lead to medium or light injury.

Even in the case of Caution, a serious result may be experienced depending on the circumstances. Anyway, important points are mentioned. Be sure to observe them strictly.

The picture signs of Prohibit and Compel are explained below.

: It means don'ts. For example, prohibition of disassembly is indicated as ( ).

: It means a must. For example, obligation of grounding is indicated as ( ).

1) Installation

Caution

- Use in the environments specified in the catalog, instruction manual, and user's manual.
  Electric shock, fire or malfunction may be caused when used in the environments of high temperature, high humidity, dusty or corrosive atmosphere, vibration or impact.
- Install according to the manual.
  Wrong installation may cause drop, trouble or malfunction.
- Never admit wire chips or foreign matter
  Or fire, trouble or malfunction may be caused.

2) Wiring

Compel

- Be sure to ground.
  Unless grounded, electric shock or malfunction may be caused.

Caution

- Connect the rated power source.
  Connection of a wrong power source may cause a fire.
- Wiring should be done by qualified electrician.
  Wrong wiring may lead to fire, trouble or electric shock.

3) Use

Danger

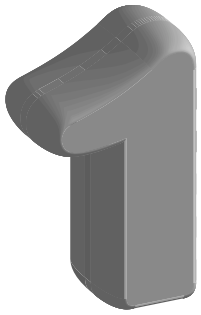
- Don’t touch the terminal while the power is being supplied or you may have on electric shock.
- Assemble the emergency stop circuit and interlock circuit outside of the ZM-42/43/52/72/82. Otherwise breakdown or accident damage of the machine may be caused by the trouble of the ZM-42/43/52/72/82.

4) Maintenance

Prohibit

- Don’t disassemble or modify the modules.
  Or fire, breakdown or malfunction may be caused.

Contents



Hardware Specifications

1 Special Features

The Control Terminal ZM-42/43/52/72/82 series are programmable indication equipment and support tool that use LCD display and touch panel functions.
They communicate by the programmable controller (thereafter PC) and programless, and you can display a variety of functions as well as inputting data by the touch panel to already programmed panel data.
You can select the size of panel such as 5.7 inch display, 7.7 inch display, 10.4 inch display and 12.1 inch display, according to your needs.
Some special features include: free position of the switch, 128-color display, new functions for better quality in representation and manipulation including a new debug function realized by the exclusive simulation software.
They also are subject to adapt to a variety of needs, and such special features are realized by putting support tool such as expansion I/O or the memory card reader.

1) 128-color Display
128-color display which makes colorful expression possible is realized. Not only drawings but also bitmap files are clearly displayed. (ZM-52/72/82)

2) Data Sheet Printing Function
It is possible to make the original data sheet screen by the panel editor (= the editing software).
Daily reports or monthly reports that the operator must fill out can be printed in an instant.

3) Sampling Function
It is possible to carry out battery back up of the history data by the expansion memory(ZM-43SM/80SM).

4) Macro Function
With this function, ZM-42/43/52/72/82 series can make programs which previously had to be produced by PC.

5) Multi Window Function
Up to three windows can be displayed simultaneously on a screen.
It is easy to move or delete the displayed windows.

6) Video Function
ZM-** series can be connected to a video or a CCD camera, and the image which is taken by a video or a camera can be displayed directly in a screen of ZM-** series

7) Correspondense to Ethernet, FL-net
It is connectable with Ethernet and FL-net if an Ethernt module ZM-80NU is mounted.(ZM-43/52/72/82)

- Ethernet
The high-speed response is realized by the N:N programless connection betwen ZM-43/52/72/82 and PC(*). The communication with a server and between ZM-43/52/72/82s is also possible without a server.Moreover, screen data transmission is also possible at easy and high speed through a server.
(*Connection is restricted to Ethernet correspondence PC.)

- FL-net
It connects with FL-net to which introduction is progressing as an open field network, and high-speed communication is possible in each controller and a masterless token system.

8) Expansion memory
Extension of screen data has ZM-4EM(for ZM-52/72/82) and ZM-43EM(for ZM-43), ZM-80SM(for ZM-52/72/82) and ZM-43EM(for ZM-43) for backup of an internal memory.

9) Ladder monitor ability is carried
A ladder figure display of one network is possible. It is utilizable for shortening of troubleshooting and a down time. (Refer to ZM-42/52/72/82 User's Manual Ladder Monitor version.)

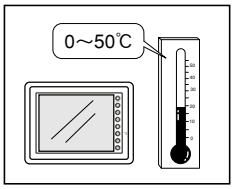
10) Character expression and a Gothic font
The Gothic font of 16 sizes can be chosen to 8 to 72 points. Moreover, since it can be used for numerical data, an unusual display, etc., power of expression can be improved.
- The combined use with a present 16/32 dot font is impossible. An expansion memory may be needed.
- The screen edit software ZM-71SE correspondence to the version V1.2.0.0.

- For the names of ZM-42/43/52/72/82 series, please refer to "3. System Composition" chapter.

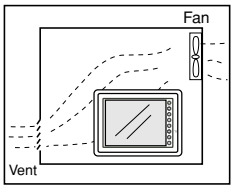
2 Notes on Usage

Environmental Limits

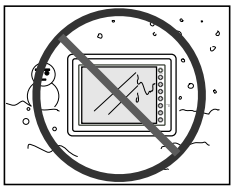
1. Use Control Terminal at an ambient temperature of 0 to 50°C, and a relative humidity of 35 to 85 %RH. (But, a ZM-72D/T STN multi-color display can be used at 0 to 40°C.)



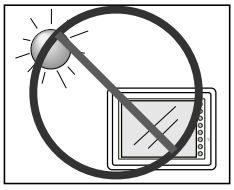
2. Install a forced fan or an air conditioner to maintain the ambient temperature when it is higher than the above mentioned range.



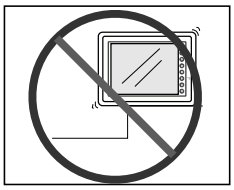
3. Avoid places where moisture may easily condense due to sudden temperature changes.



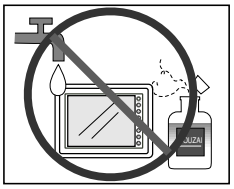
4. Avoid direct sunlight.



5. Never install Control Terminal in a place where impacts or vibrations may be transmitted.

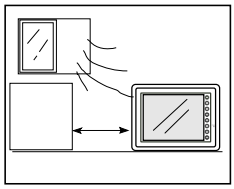


6. Avoid any place in which there is the possibility that water, corrosive gas, flammable gas, solvents or coolants, grinding oil can come in contact with the unit. Never install the unit in a place where dust, salt and metallic particles are present.



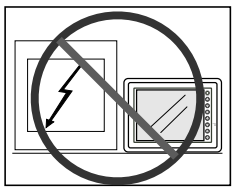
Locations

1. Secure sufficient space around Control Terminal for ventilation.



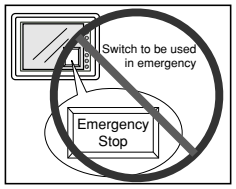
2. Never attach Control Terminal to the top of any apparatus generating high levels of heat (heater, transformer, large-capacity resistor, etc.).

3. Never install Control Terminal in the same compartment as high-voltage equipment. The unit should be at least 200 mm away from high-voltage lines or power cables.

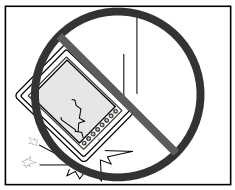


Usage

1. An emergency stop circuit must be composed of an external relay circuit with a start signal for Control Terminal built in. Do not create switches on Control Terminal to be used in case of emergency.



2. Control Terminal has a glass screen. Never drop or subject the unit to strong impacts.

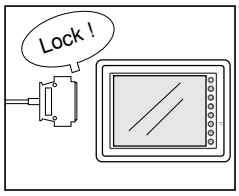


3. Tighten mounting screws with the following torques.

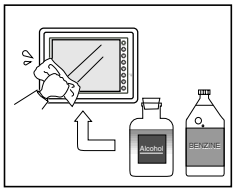
Type \ Screw	Screw Size	Torque (N • m)
ZM-42/43/52	M3	0.29~0.49
ZM-72/82	M4	0.49~0.69

Note :Never fasten these screws too tightly, otherwise the cover of Control Terminal may be deformed.

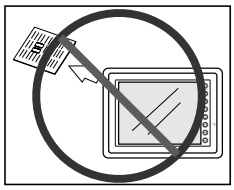
4. Securely fasten and lock every connector for each cable. Double-check this before turning the power on.



5. In a dry environment, Control Terminal may generate a large amount of static electricity. Therefore, before touching the unit, touch a grounded metallic section to discharge the static electricity.



6. Application of thinner may discolor Control Terminal. Use alcohol or benzine available commercially for cleaning.
7. Never remove any printed circuit board from Control Terminal. (This will harm the unit.)

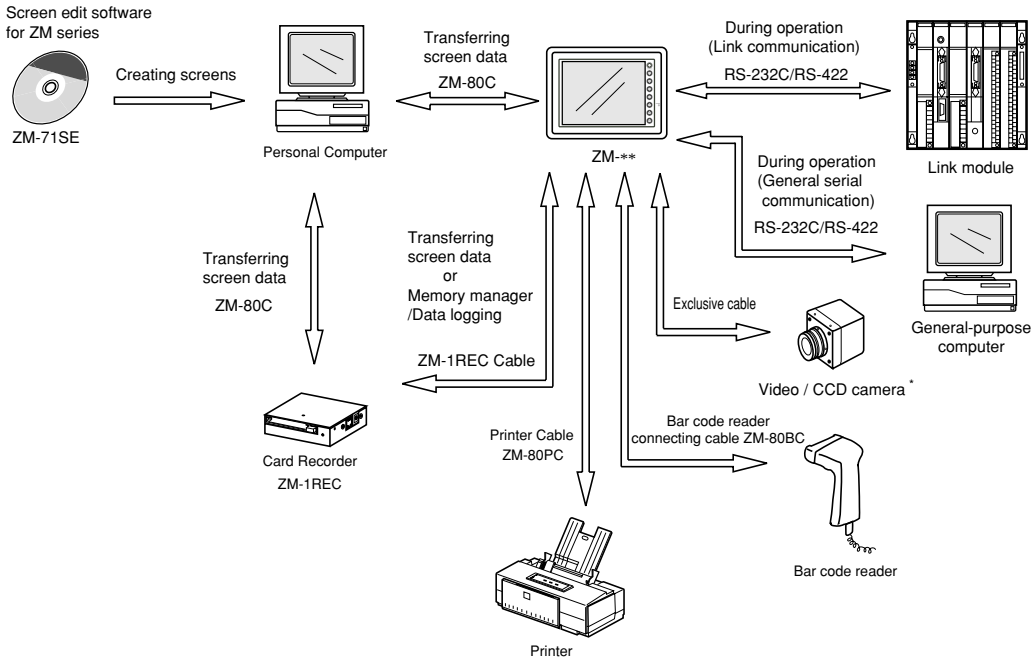


3 System Composition

System Composition / Model Indication / Peripheral Equipment

System Composition

The following illustration shows possible system configurations using ZM-**.



* The models that possess the video input interface function are ZM-72TV/TVC/TSV/TSVC and ZM-82TV/TVC.

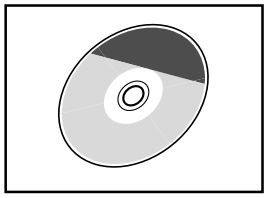
Control Terminal

Classification	Model Name	Specifications
ZM-42 series	ZM-42D	5.7 inches STN color, 320 × 240 dots
	ZM-42L	5.7 inches STN monochrome, 320 × 240 dots
ZM-43 series	ZM-43T	5.7 inches TFT monochrome, 320 × 240 dots
	ZM-43D	5.7 inches STN color, 320 × 240 dots
	ZM-43L	5.7 inches STN monochrome, 320 × 240 dots
ZM-52 series	ZM-52D	7.7 inches STN color, 640 × 480 dots
ZM-72 series	ZM-72T	10.4 inches TFT color, 640 × 480 dots
	ZM-72TC	10.4 inches TFT color, 640 × 480 dots, memory card I/F included
	ZM-72TV	10.4 inches TFT color, 640 × 480 dots, video Input included
	ZM-72TVC	10.4 inches TFT color, 640 × 480 dots, video Input + memory card I/F included
	ZM-72TS	10.4 inches TFT color, 800 × 600 dots
	ZM-72TSC	10.4 inches TFT color, 800 × 600 dots, memory card I/F included
	ZM-72TSV	10.4 inches TFT color, 800 × 600 dots, video input included
	ZM-72TSVC	10.4 inches TFT color, 800 × 600 dots, video input + memory card I/F included
	ZM-72D	10.4 inches STN color, 640 × 480 dots
	ZM-72DC	10.4 inches STN color, 640 × 480 dots, memory card I/F included
ZM-82 series	ZM-82T	12.1 inches TFT color, 800 × 600 dots
	ZM-82TC	12.1 inches TFT color, 800 × 600 dots, memory card I/F included
	ZM-82TV	12.1 inches TFT color, 800 × 600 dots, video input included
	ZM-82TVC	12.1 inches TFT color, 800 × 600 dots, video input + memory card I/F included
	ZM-82DC	12.1 inches STN color, 800 × 600 dots, memory card I/F included

Support tools

The following options are available for useing ZM-** series more effectively

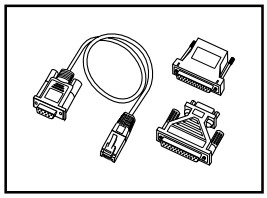
Item	Model	Specifications		Applicable models				
				ZM-82	ZM-72	ZM-52	ZM-43	ZM-42
Network module	ZW-80NU	UDP / IP protocol is supported in the module for connecting ZM-** to Ethernet. Moreover, as FL-net, it correspondences to FA link protocol and cyclic transmission and message transmission (Word read/ write) are supported.		○	○	○	○	—
Expansion memory	ZM-4EM	Extension print circuit board to extend the memory for display data back-up. The capacity is 4 bytes for FPROM.		○	○	○	—	—
	ZM-43EM	Memory capacity is 4 M bytes of flash memory, and is used for extension of a screen data storage capacity.		—	—	—	○	—
	ZM-43SM	Memory capacity is 512 K bytes of SRAM memory, and is used for sampling data and backup of an internal memory, and a calendar setup.		—	—	—	○	—
	ZM-80SM			○	○	○	—	—
Terminal converter	ZM-1TC	Used for connection between a ZM-** and a PC at the RS-422/485 terminal block.		○	○	○	○	○
Expansion I/O module	ZM-322M	Used as an external I/O module for PC. It has 16 inputs and 16 outputs.		○	○	—	—	—
Card recorder	ZM-1REC	Reads display data created by personal computer, on works as am external memory storage system for the memory manager and data logging functions.		○	○	○	○	○
Dual port interface	ZM-1MD2	Add-on connector with two ports, specifically designed for the connector on the MITSUBISHI's A/Q CPU programmer.		○	○	○	○	○
Data transfer cable	ZM-80C	Connects ZM-** to a personal computer, on a personal computer to ZM-1REC to a printer.		○	○	○	○	○
Printer cable	ZM-80PC	Connect ZM-** to a printer.		○	○	○	○	○
Barcode reader connection cable	ZM-80BC	Connect ZM-** to a barcode reader.		○	○	○	○	○
Cable for Multi-link2 master station	ZM-80MC	In case it connects multi-link 2, it is used for connecting between ZM-** master station and ZM-** slave station.		○	○	○	○	○
Protect sheet	ZM-42GS	It is the sheet which protects an operation panel side.		—	—	—	○	○
	ZM-52GS			—	—	○	—	—
	ZM-72GS			—	○	—	—	—
	ZM-82GS			○	—	—	—	—
Screen edit software	ZM-71S	Japanese	Application software for editing display data.	○	○	○	○	○
	ZM-71SE	English		○	○	○	○	○



ZM-71S, ZM-71SE

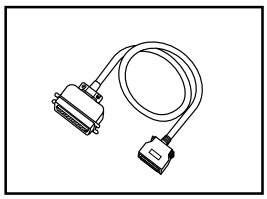
Application software for editing display data.

- ZM-71S : For Windows95/98/NT4.0 (Japanese)
- ZM-71SE : For Windows95/98/NT4.0 (English)



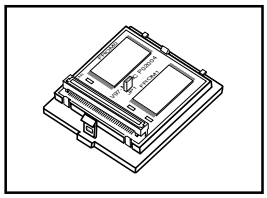
ZM-80C (Data Transfer Cable)

Connects ZM-** to a personal computer, or a personal computer to ZM-1REC.



ZM-80PC (Printer Cable)

Connects ZM-** to a printer.

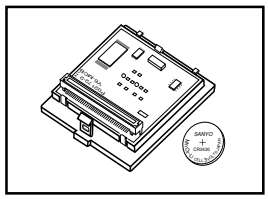


ZM-4EM, ZM-43EM (Expansion Memory)

· ZM-4EM : For ZM-52/72/82

· ZM-43EM : For ZM-43

Extension print circuit board to extend the memory for display data back-up. There is 4Mbyte type (ZM-4EM,ZM-43EM) for FPROM.

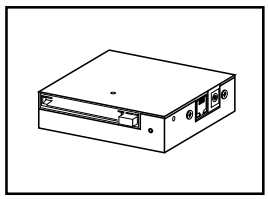


ZM-43SM, ZM-80SM (Expansion Memory)

· ZM-43SM : For ZM-43

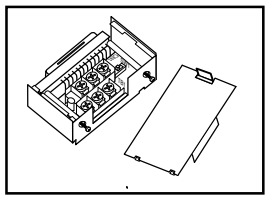
· ZM-80SM : For ZM-52/72/82

Extension print circuit board to back-up the memory for sampling data, ZM-** Internal Memory and Memo Pad. There is SRAM 512K byte type. It is also possible to set the calendar for displaying in ZM-** at this cassette.



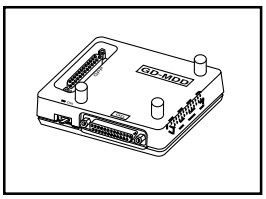
ZM-1REC (Card Recorder)

Reads display data created by personal computer, or works as an external memory storage system for the memory manager and data logging functions.



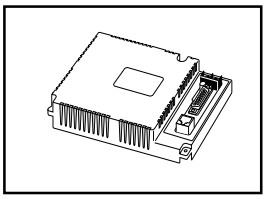
ZM-1TC (Terminal Converter)

Used for connection between a ZM-** and a PC at the RS-422/485 terminal block.



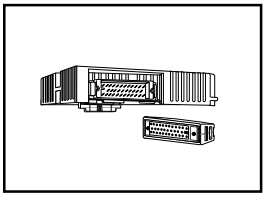
ZM-1MD2 (ACPU/QCPU Dual Port Interface)

Add-on connector with two ports, specifically designed for the connector on the MITSUBISHI's ACPU/QCPU programmer. This can improve operability of the ACPU/QCPU programmer that is directly connected.



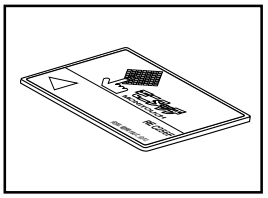
ZM-80NU (Network Module)

It is a module for making it correspondence to the network of Ethernet and FL-net. It is possible to connect more than one sets of ZM-**s to one set of PC. In the same network, other equipments can be connected and it contributes to a price down of the whole system greatly.



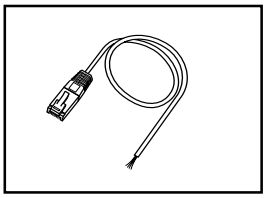
ZM-322M (Expansion I/O module)

Used as an external I/O module for PC. It has 16 inputs and 16 outputs.



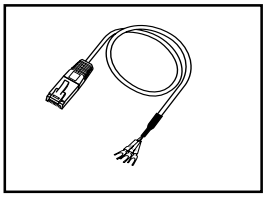
REC-MCARD (Memory Card)

Used as a recording medium for display data back-up and for the memory manager or data logging function.
SRAM / FLASH ROM
Card Type : JEIDA Ver.4.0 or later



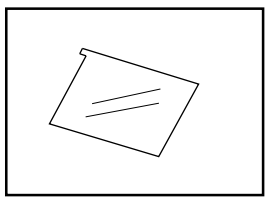
ZM-80BC (Cable for Bar Code Reader) 2m

Connects ZM-** to a bar code reader.



ZM-80MC (Cable for Multi-Link 2 master station) 3m

A cable which is used for connecting the ZM-** master station and the ZM-** slave station in the Multi-Link 2 connection.



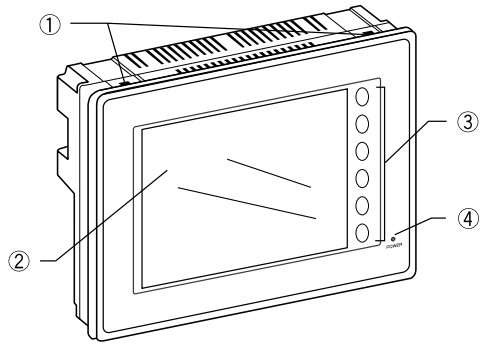
ZM-42GS/52GS/72GS/82G (Protection Sheet)

· ZM-42GS : For ZM-42/43
· ZM-52GS : For ZM-52
· ZM-72GS : For ZM-72
· ZM-82GS : For ZM-82

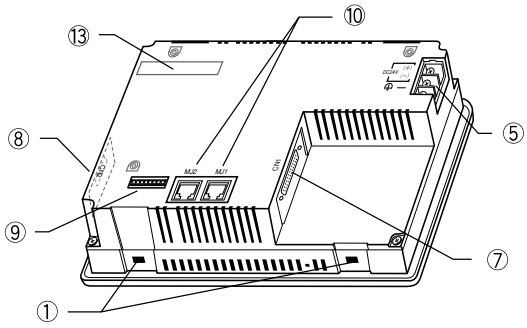
Protects the operation panel surface. Five sheets are included in one package.

4 Names of Components

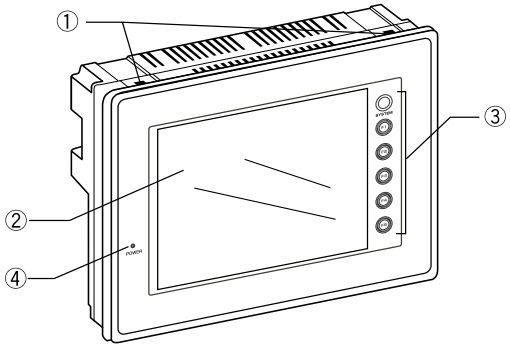
Front side of ZM-42 series



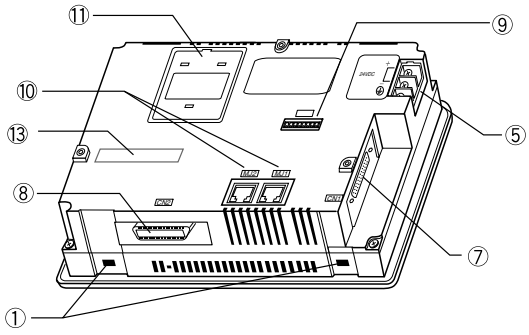
Rear side of ZM-42 series



Front side of ZM-43 series

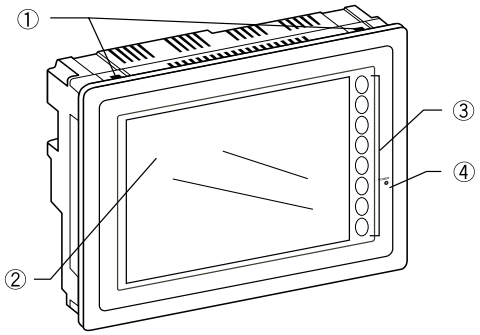


Rear side of ZM-43 series

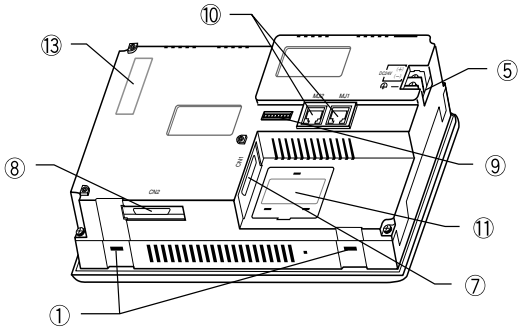


1. Mounting holes for fixtures
2. Display
3. Function keys (Refer to P1-51.)
4. Power lamp
5. DC power supply
7. CN1: for PC (RS-232C, RS-422)
8. CN2: for printer
9. Dip switches
10. MJ1, 2: for data transfer and for bar-code reader and for ZM-1REC (option)
11. for ZM-2EM/4EM (option)
13. for Communication interface module (option)

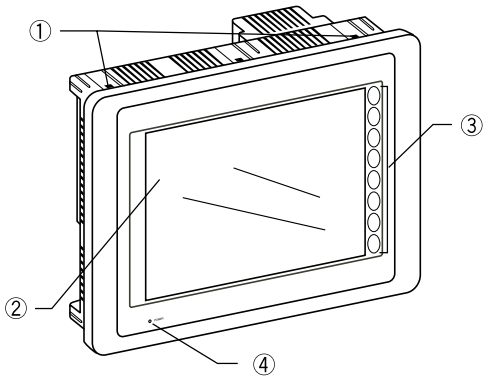
Front side of ZM-52 series



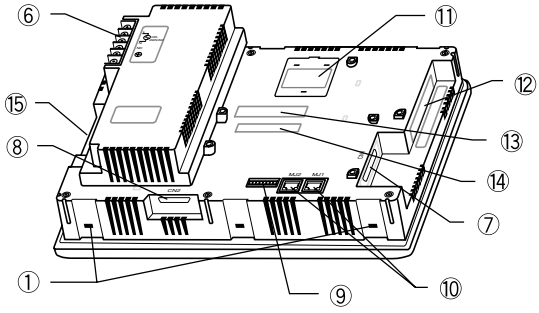
Rear side of ZM-52 series



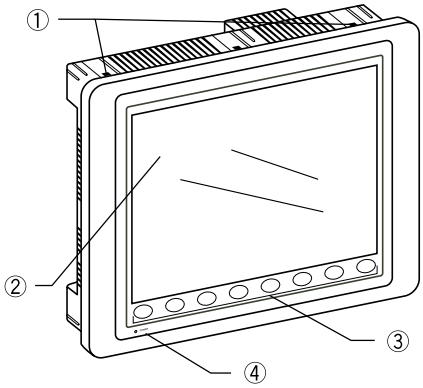
Front side of ZM-72 series



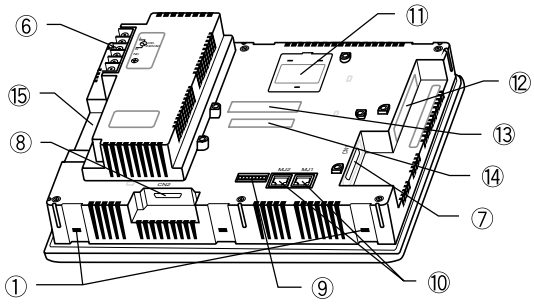
Rear side of ZM-72 series



Front side of ZM-82 series



Rear side of ZM-82 series



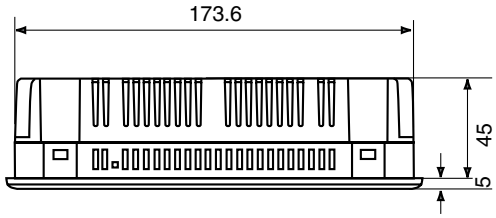
1. Mounting holes for fixtures
2. Display
3. Function keys (Refer to P1-51.)
4. Power lamp
5. DC power supply
6. AC power supply / DC power supply
7. CN1: for PC (RS-232C, RS-422)
8. CN2: for printer
9. Dip switches
10. MJ1, 2: for data transfer and for bar-code reader and for ZM-1REC (option)
11. for ZM-2EM/4EM (option)
12. for video (ZM-72TV/TVC/TSV/TSVC, ZM-82TV/TVC)
13. for Communication Interface module (option)
14. for ZM-322M (option)
15. Card interface (ZM-72TC/TVC/TSC/TSVC, ZM-82TC/TVC)

5 Dimensions and Panel Cut-out

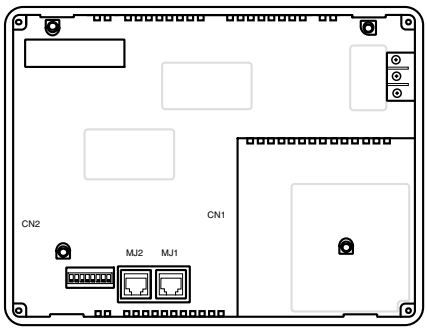
Dimensions of ZM-42 series

Unit : mm

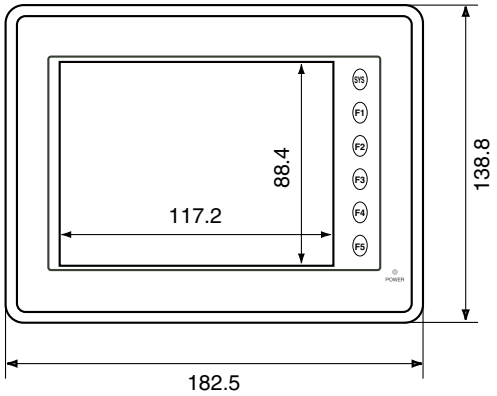
○ Top View



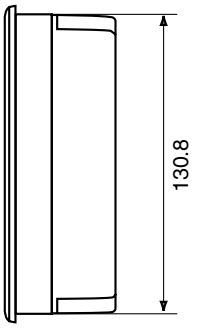
○ Rear View



○ Front View

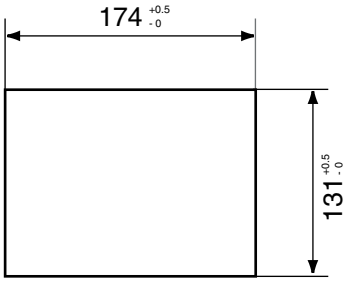


○ Side View



Panel cut-out of ZM-42 series

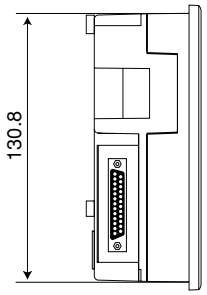
Unit : mm



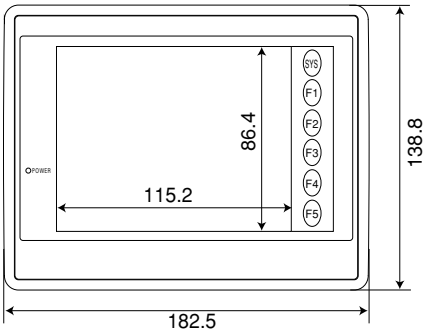
Dimensions of ZM-43 series

Unit：mm

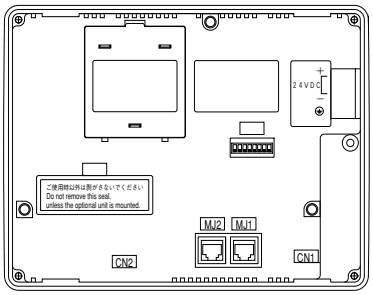
○Side view



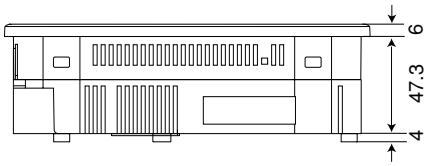
○Front view



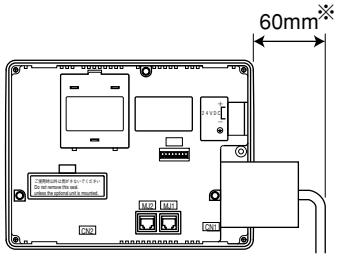
○Rear view



○Bottom view



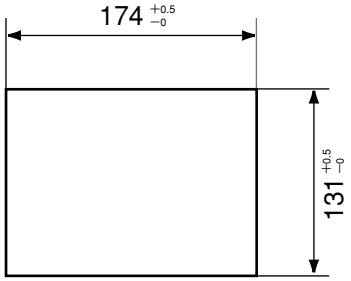
(Note) Since the connection positions of the serial connector CN1 differ when replaced and used from ZM-42 series, it is inconvenient with an attachment space. Be sure to perform a prior check of an attachment position.



*60mm is not a size with consideration to the attachment and detachment after attachment. Since it changes in the difference in a wiring system, the electric wire size which wires that check by real wiring

Panel Cut-out of ZM-43 series

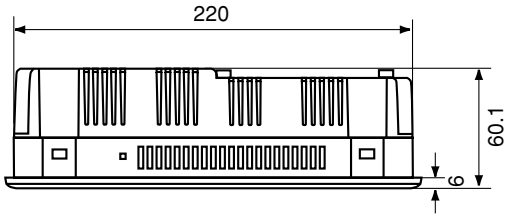
Unit : mm



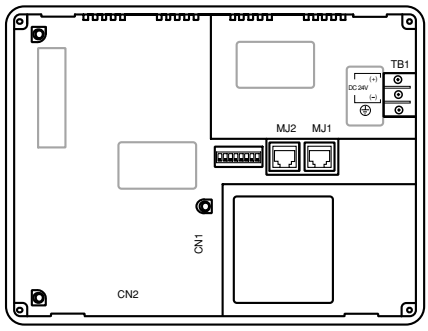
Dimensions of ZM-52D

Unit : mm

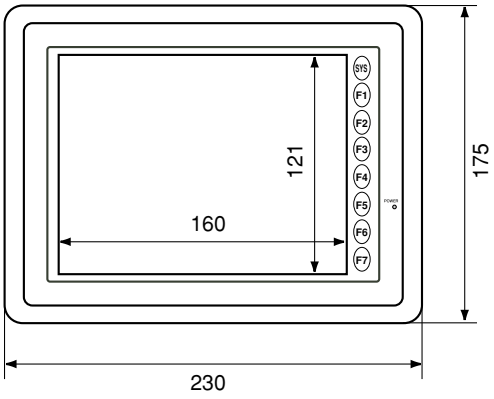
◯Top View



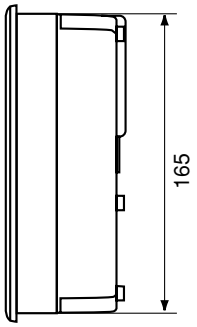
◯Rear View



◯Front View

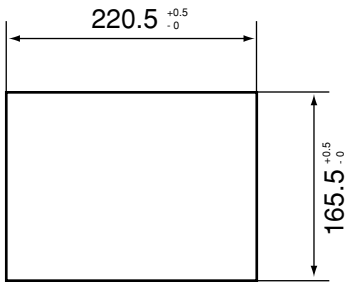


◯Side View



Panel Cut-out of ZM-52D

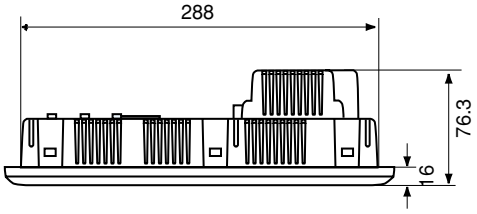
Unit : mm



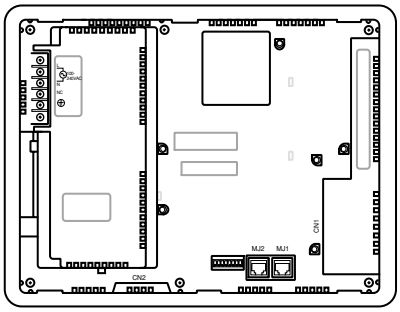
Dimensions of ZM-72 series

Unit : mm

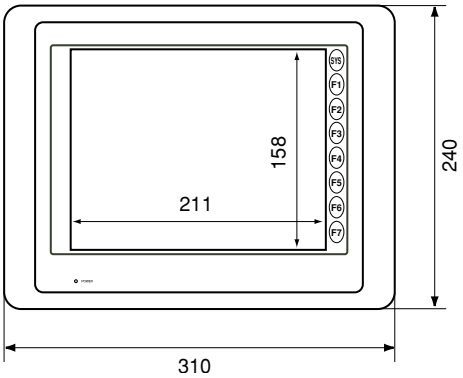
◯Top View



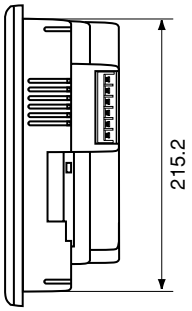
◯Rear View



◯Front View

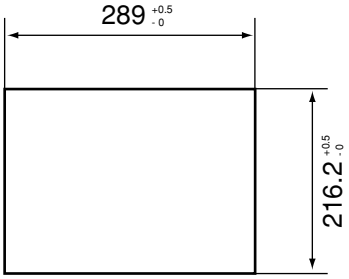


◯Side View



Panel Cut-out of ZM-72 series

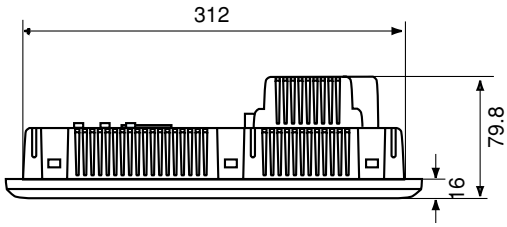
Unit : mm



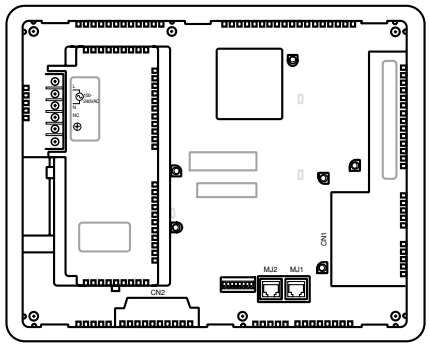
Dimensions of ZM-82 series

Unit : mm

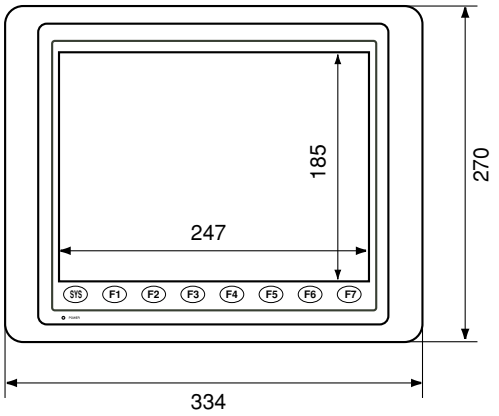
◯Top View



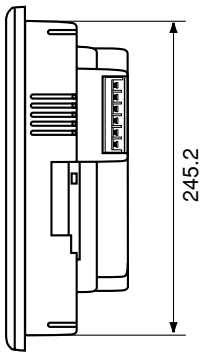
◯Rear View



◯Front View

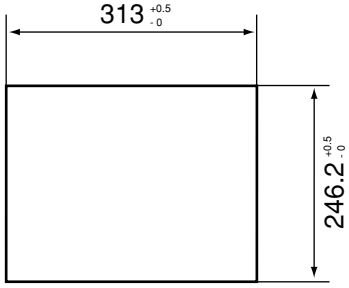


◯Side View



Panel Cut-out of ZM-82 series

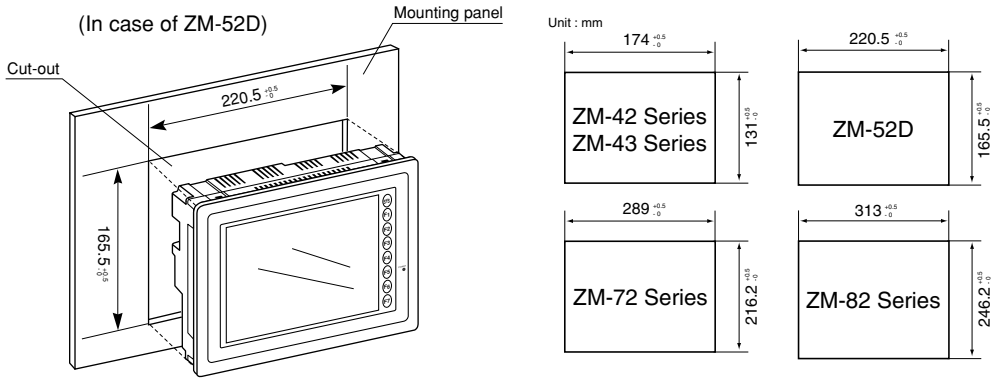
Unit : mm



6 Mounting Procedure

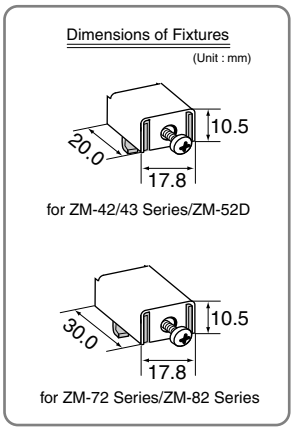
Mounting Procedure

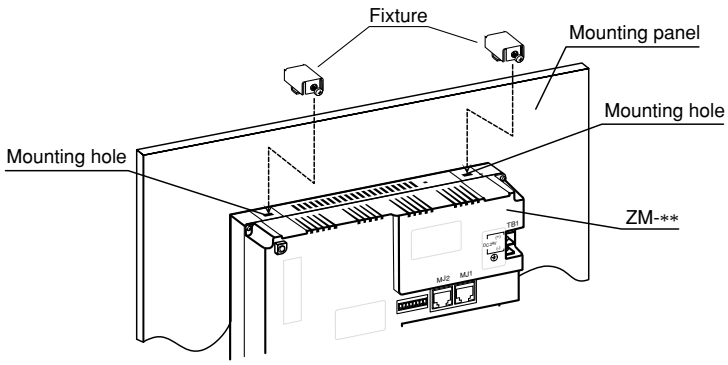
1. Cut out the mounting panel (Max. thick: 3.2 mm) to match the dimensions shown below.



(Note) Although a panel cut size is the same, the positions of the serial connector CN1 on the back face is not same. See page 1-12.

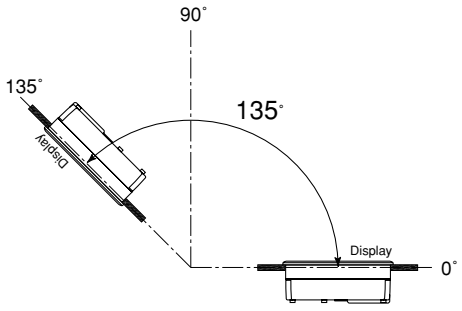
2. Insert the fixtures attached to ZM-** into the mounting holes on ZM-**. Tighten them with the locking screws. - Number of the fixtures: 4 pcs. -Torque : ZM-42/43/52 0.29~0.49N·m, ZM-72/82 0.49~0.686N·m





Mounting Angle

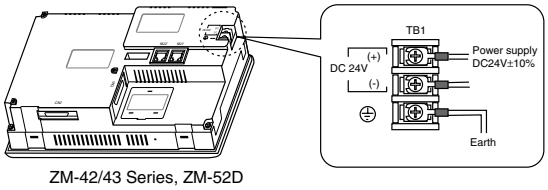
The module (ZM-**) shall be installed within the angle of 0 to 135 degrees as shown below.



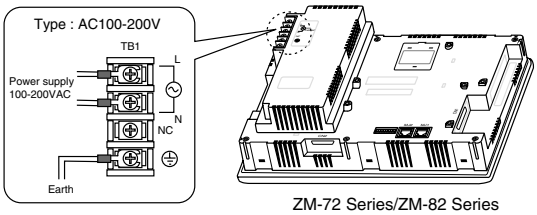
7 Wiring

Electrical Wiring

○Connects the cable for power supply to TB1 on the rear side of ZM-**.



ZM-42/43 Series, ZM-52D



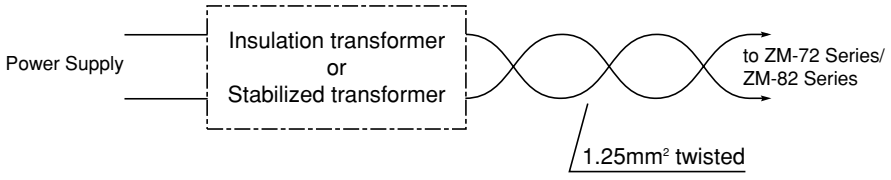
ZM-72 Series/ZM-82 Series

Type \ Screw	Screw Size	Torque (N • m)	Clamp Terminal (Unit : mm)
ZM-42/43 Series, ZM-52D	M3.5	0.49	7.0MAX 7.0MAX
ZM-72 Series/ZM-82 Series	M3.5	0.49	8.0MAX 8.0MAX

○When TB1 is used for wiring, refer to the value as described above table.
○The power source used must be within the allowable voltage fluctuation.
○Use a power source with low noise between the cables or ground and the cable.
○Use as thick a power cable as possible to minimize any drop in voltage.
○Keep cables of 100V AC and 24V DC sufficiently away from high-voltage, large-current cables.

Notes on Usage of ZM-72 series/ZM-82 series (100 to 240 VAC specifications)

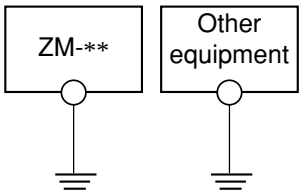
○Generally, an isolating transformer improves noise resistance. However, if the display unit is far away from the secondary port of the transformer and noise gets mixed in, an isolating transformer becomes unnecessary.
○If any power voltage fluctuation caused by noise is expected, it is recommended that a voltage stabilizer be used.



Grounding

This equipment must be earthed.

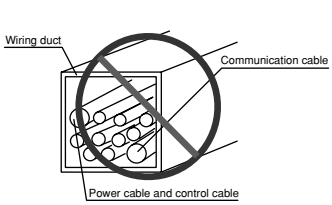
- An independent earth pole shall be used for Control Terminal. (Earth construction is the class-3 grounding. The level of grounding resistance should be less than 100 Ω.)
- Use a cable which has a nominal cross section of more than 2mm^2 for grounding.
- Grounding point shall be near the Control Terminal to shorten the distance of grounding wires.
- When the unit is grounded along with other machines, or is grounded to a part of a building, it can be adversely affected.
- If any input-output errors occur due to the grounding, detach the FG terminal from the ground.

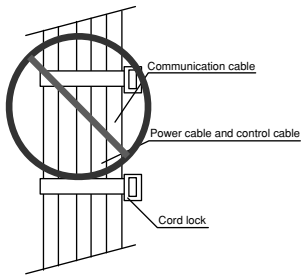


Class-3 grounding

Wiring for communication

- Never place the communication cable with electric circuits.
- Never bundle these cables together with other wires in ducts or electric boxes using cord locks. Although it is tempting to bundle all the cables neatly together, this does not necessarily lead to a noise-resistant configuration.
- It is recommended that the communication cable be independently wired.





8 Specifications

General Specifications

Item \ Type		ZM-42 series	ZM-43 series	ZM-52D
Power Supply	Rated Voltage	24V DC		
	Permissible Range of Voltage	24VDC±10%		
	Permissible Momentary Power Failure	10ms or less		
	Demand	10W or less		20W or less
	Rushed Electric Current	17A 1ms		5A 1.5ms
	With-stand voltage			
	Insulation Resistance	500V DC, 10MΩ or more		
Physical Environment	Ambient Temperature	0˚C~+50˚C		
	Storage Ambient Temperature	-10˚C~+60˚C		
	Ambient Humidity	85% RH or less (without dew condensation)		
	Dust	No conductive dust		
	Solvent Resistance	No cutting oil or no organic solvent to cling to the unit		
	Corrosive Gas	No corrosive gas		
Mechanical Working Conditions	Vibration Resistance	Vibration frequency: 10~150Hz, Acceleration: 9.8m/s^2(1.0G) 3 directions of X, Y and Z: one hour		
	Shock Resistance	Pulse shape: Sine half wave, Peak acceleration: 147m/s^2(15G), 3 directions of X, Y and Z: six times		
Electrical Working Conditions	Noise Resistance	Noise voltage: 1500Vp-p, noise width: 1 s		
	Static Electricity Discharge Resistance	Front panel: 6kV		
Mounting Conditions	Grounding	Class-3 grounding		
	Structure	Protection structure: front panel complies with IP65 (when using gasket) rear panel complies with IP20 Form: in a body Mounting procedure: inserted in a mounting panel		
	Cooling System	Cooling naturally		
	Weight	Approx. 0.8kg	Approx. 0.8kg	Approx. 1.1kg
	Dimensions W X H X D (mm)	182.5 X 138.8 X 50	182.5 X138.8 X 57.3*2	230 X 175 X 66.1
	Panel Cut-out (mm)	$174^{+0.5}_{-0}$ X $131^{+0.5}_{-0}$	$174^{+0.5}_{-0}$ X $131^{+0.5}_{-0}$	$220.5^{+0.5}_{-0}$ X $165.5^{+0.5}_{-0}$
	Case Color	GREY	BLACK*3	GREY
	Material	PC/ABS	PC/PS	PC/ABS

*1 For only the specifications of AC power supply
*2 including 4mm, the size of boss for communication module

Item \ Type		ZM-72 series	ZM-82 series
Power Supply	Rated Voltage	100 to 240V AC	100 to 240V AC
	Permissible Range of Voltage	85 to 265 VAC (47 to 440 Hz)	85 to 265 VAC (47 to 440 Hz)
	Permissible Momentary Power Failure	20ms or less	20ms or less
	Demand	45 VA or less	50 VA or less
	Rushed Electric Current	20A: 100 VAC 30A: 200 VAC	20A: 100 VAC 30A: 200 VAC
	With-stand voltage	Between AC external terminals and FG: 1500V AC per min.	
	Insulation Resistance	500V DC, 10MΩor more	
Physical Environment	Ambient Temperature	0℃ ~+50℃ (ZM-72D/DC: 0℃ ~+40℃)	
	Storage Ambient Temperature	-10℃~+60℃	
	Ambient Humidity	85% RH or less (without dew condensation)	
	Dust	No conductive dust	
	Solvent Resistance	No cutting oil or no organic solvent to cling to the unit	
	Corrosive Gas	No corrosive gas	
Mechanical Working Conditions	Vibration Resistance	Vibration frequency: 10~150Hz, Acceleration: 9.8m/s^2(1.0G) 3 directions of X, Y and Z: one hour	
	Shock Resistance	Pulse shape: Sine half wave, Peak acceleration: 147m/s^2 (15G), 3 directions of X, Y and Z: six times	
Electrical Working Conditions	Noise Resistance	Noise voltage: 1500Vp-p, noise width: 1 s	
	Static Electricity Discharge Resistance	Front panel: 6kV	
Mounting Conditions	Grounding	Class-3 grounding	
	Structure	Protection structure: front panel complies with IP65 (when using gasket) rear panel complies with IP20 Form: in a body Mounting procedure: inserted in a mounting panel	
	Cooling System	Cooling naturally	
	Weight	Approx. 2.5kg	Approx. 3.0kg
	Dimensions W X H X D (mm)	310 X 240 X 92.3	334 X 270 X 95.8
	Panel Cut-out (mm)	289 $^{+0.5}_{-0}$ X 216.2 $^{+0.5}_{-0}$	313$^{+0.5}_{-0}$ X 246.2 $^{+0.5}_{-0}$
	Case Color	GREY	
	Material	PC/ABS	

Display Specifications

Item \ Type	ZM-42L	ZM-42D	ZM-43L	ZM-43D	ZM-43T	ZM-52D
Display Device	STN monochrome LCD	STN color LCD	STN monochrome LCD	STN color LCD	TFT color LCD	STN color LCD
Resolution W × H (dots)	320 × 240					640 × 480
Dot Pitch W × H (mm)	0.36 × 0.36	0.12 × 0.36	0.36 × 0.36	0.12 × 0.36	0.36 × 0.36	0.082 × 0.246
Effective Display Area W × H (mm)	115.2 × 86.4 (5.7 inches)					157.4 × 118.1 (7.7 inches)
Color	Monochrome 8 gradation + blinking	16 colors + blinking	Monochrome 8 gradation + blinking	16 colors + blinking		128 colors + blinking 16 colors
Back-light	Cold cathode rectifier					
Contrast Adjustment	By function switches (only in case of STN color type)					
Back-light Average Life *	Approx. 25,000H		Approx. 50,000H			Approx. 25,000H
Power Lamp	The lamp is lit when the power is supplied.					

Item \ Type	ZM-72D series	ZM-72T series	ZM-72TS series	ZM-82T series
Display Device	STN color LCD	TFT color LCD		TFT color LCD
Resolution W × H (dots)	640 × 480		800 × 600	
Dot Pitch W × H (mm)	0.11 × 0.33	0.33 × 0.33	0.264 × 0.264	0.3075 × 0.3075
Effective Display Area W × H (mm)	211.2 × 158.4 (10.4 inches)			246.0 × 184.5 (12.1 inches)
Color	128 colors + blinking 16 colors			
Back-light	Cold cathode rectifier			
Contrast Adjustment	By function switches (only in case of STN color type)			
Back-light Average Life *	Approx. 10,000H	Approx. 25,000H		
Power Lamp	The lamp is lit when the power is supplied.			

* When the normal temperature is 25˚C, and the surface illuminance of the display is 50% of the default.

Display Function Specifications

<table>
<tr><th colspan="2">Item</th><th colspan="6">Specifications</th></tr>
<tr><td colspan="2">Display Language</td><td>Japanese</td><td>Eng./W. Europe</td><td>Chinese</td><td>Chinese (simplified)</td><td colspan="2">Korean</td></tr>
<tr><td rowspan="3">Characters</td><td>1/4-size, 1-byte</td><td>ANK code</td><td>ASCII code</td><td>ASCII code</td><td>ASCII code</td><td colspan="2">ASCII code</td></tr>
<tr><td>2-byte (16-dot)</td><td>JIS 1st and 2nd</td><td>ASCII code</td><td>Chinese</td><td>Chinese (simplified)</td><td colspan="2">Hangul (without Kanji)</td></tr>
<tr><td>2-byte (32-dot)</td><td>JIS 1st</td><td>ASCII code</td><td>———</td><td>———</td><td colspan="2">———</td></tr>
<tr><td colspan="2">Size of Characters</td><td colspan="6">1/4-size : 8 ¥ 8 dots
1-byte : 8 ¥ 16 dots
2-byte : 16 ¥ 16 dots or 32 ¥ 32 dots
Enlarge : W, 1 to 8 H, 1 to 8</td></tr>
<tr><td colspan="2" rowspan="2">Number of Characters</td><td>Resolution</td><td colspan="2">320 ¥ 240</td><td colspan="2">640 ¥ 480</td><td>800 ¥ 600</td></tr>
<tr><td>1/4-size
1-byte
2-byte</td><td colspan="2">40 columns ¥ 30 lines
40 columns ¥ 15 lines
20 columns ¥ 15 lines</td><td colspan="2">80 columns ¥ 60 lines
80 columns ¥ 30 lines
40 columns ¥ 30 lines</td><td>100 columns ¥ 75 lines
100 columns ¥ 37 lines
50 columns ¥ 37 lines</td></tr>
<tr><td colspan="2">Property of Characters</td><td colspan="6">Display property : normal, reverse, blinking, bold, shadow
Color : 128 colors + blinking 16 colors /16 colors+ blinking /monochrome 8 graduation+blinking</td></tr>
<tr><td colspan="2">Foreign characters registration</td><td colspan="6">Only the Japanese characters are possible to set
Full size 16 ¥ 16 dot, 63
when the use of 32 dot font is possible: Full size 32 ¥ 32 dot, 63</td></tr>
<tr><td colspan="2">Kind of Drawing</td><td colspan="6">Lines : line, continuous lines, box, parallelogram, polygon
Circles : circle, arc, sector, ellipse, elliptical arc, elliptical sector
Others : tile patterns</td></tr>
<tr><td colspan="2">Property of Drawing</td><td colspan="6">Type of lines : 6 types (fine, thick, dot, chain, broken, two-dot chain)
Tile patterns : 16 types (incl. user-definable 8 types)
Display property : normal, reverse, blinking
Color : 128 colors + blinking 16 colors /16 colors+ blinking /monochrome 8 graduation+blinking
Color specification : foreground, background, boundaries (line)</td></tr>
</table>

Function Performance Specifications (All the ZM-** series)

Item		Specifications
Screens		Max. 1024
Screen Memory		FP-ROM (flash ROM), Appox. 2,816K bytes*1(different from the language)
Switches		768 per screen (192 per screen for ZM-42/43 Series)
Switch operation mode		Set, reset, momentary, alternate, to light (possible to press a function switch and a display switch at the same time) [Matrix type : 2 switches on the display can be pressed at the same time]
Lamps		Reverse, blinking, exchange of graphics 768 per screen (192 per screen for ZM-42/43 Series)
Graphs		Pie, bar, panel meter and closed area graph can be displayed without limit. Total capacity per screen: within 128KB Statics and trend graphs: Max. 256 per layer*2
Data Setting	Numerical Data Display	No limits, total capacity per screen: within 128 KB
	Character Display	No limits, total capacity per screen: within 128 KB
	Message Display	Resolution : 320 × 240, Max. 40 characters 640 × 480, Max. 80 characters 800 × 600, Max. 100 characters No limits, total capacity per screen: within 128 KB
Messages		6144 lines
Sampling		Sampling display of buffer data (constant sample, bit synchronize, bit sample, relay sample, alarm function)
Multi-Overlaps		Max. 1024
Data Blocks		Max. 1024
Graphic Libraries		Max. 2560
Patterns		Max. 256
Macro Blocks		Max. 1024
Page Blocks		Max. 1024
Direct Blocks		Max. 1024
Screen Blocks		Max. 1024
Temperature Control Network Table		Max. 32
Calendar		Provided
Hard-Copy		Provided
Buzzer		Provided, 2 types (intermittent short and long sounds)
Self-diagnostic Function		Self-test function of switches Check function of communication parameter setting Check function of communication

*1 If the hardware version is the following version, or ZM42/43 is used, the screen memory is approx. 760K bytes.
ZM82T Series : A~E, ZM-72TS Series : A~E, ZM-72T Series : A~F, ZM-72D Series : A~E, ZM-52D Series : A~C

*2 Layer : 4 per screen (base + 3 overlaps)

Touch Panel Specifications

Item	Specifications
Switch Resolution	Analog, 1024(W) ¥ 1024(H)
Form	Resistance film form
Life of Touch Panel	Use of one million times or more

Function Switch Specifications

Item	Specifications
Number of Switches	8 (6 for ZM-42/43)
Type of Switch	Pressure sensitive switches
Life of Switch	Use of one million times or more

Interface Specifications

Item	Specifications
Serial Interface for connecting PC (D-sub 25 pins, female)	RS-232C, RS-422/485 Asynchronous type Data length: 7, 8 bits Parity: even, odd, none Stop bit: 1, 2 bits Baud rate: 2400, 4800, 9600, 19200, 38400, 57600, 115200bps (115200bps is invalid for ZM-42/43)
Serial Interface 1 and 2 for transferring data /connecting bar-code reader /connecting card recorder * (modular jack, 8 pins)	RS-232C, RS-422/485 * In case of connecting card recorder (option) : 1 slot SRAM/FROM: Max. 16M byte which complies with JEIDA Ver. 4.0 (with some limits)
Printer Interface	Complies with centronics, half pitch 36 pins (for PC98) NEC: PR201, EPSON: compatibles with ESC/P-J84, ESC/P super function, ESC/P24-J84 CBM292/293 printer (The screen copy cannot be printed out.)

Drawing Environment

Item	Specifications
Drawing Method	Exclusive drawing software
Drawing Tool	Name of exclusive drawing software : ZM-71S (Japanese), ZM-71SE (English) Personal computer : with i486 or more (Pentium or more is recommended) OS : Microsoft Windows 95/98 or NT version 4.0 Memory : minimum 40MB of memory to operate Display : resolution of 640 · 480 or more (800 · 600 is recommended)

Compatible PC for connection

Maker	PC Model
Sharp	J-board, JW10, JW20/20H, JW30H W70H/100H, JW50/70/100, JW50H/70H/100H
MITSUBISHI	A Series/Q Series link module/CPU port, FX1/2 Series
OMRON	C Series, COM Series, CV Series
HITACHI	HIDEC H300/700/2000, S10α
Matsushita	FP Series
YOKOGAWA	FA500, FA-M3
YASUKAWA	GL40/60/70
TOYOPUC	PC2/2J, L2
FUJI	F70/80H/120H, NS/NJ, FLEX-PC CPU/COM
Koyo	SU-5/6, SG-8
Allen-Bradley	PLC-5, SLC500
GE Fanuc	Series 90-30
TOSHIBA	EX100/2000, T Series
SIEMENS	S5, T1500/505
Shinko	SELMART Series
SAMSUNG	SPC Series
KEYENCE	KZ Series
LG	K10/60/200, K500/K1000
FANUC	Power Mate-Model H/D

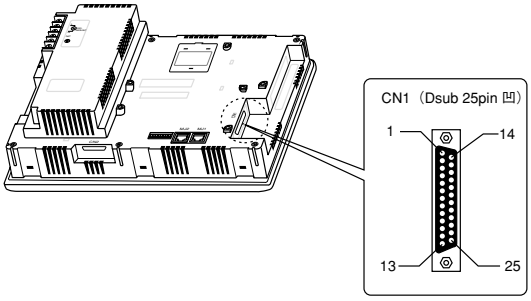
*1 They match to the protocol of the PC described above, but it does not necessary mean the guarantee of the operation of each PC such as the noise level.

9 Serial Connector (CN1)

CN1 is used for communicating between a PC and a ZM-** (RS-232C, RS-422/485).

Serial Connector (CN1)

The pin arrangement of serial connector is as follows:



Pin No.	Signal	Contents
1	FG	Frame ground
2	SD	RS-232C send data
3	RD	RS-232C receive data
4	RTS	RS-232C RTS request to send
5	CTS	RS-232C CTS clear to send
6		Not used
7	SG	Signal ground
8		Not used
9	+5V	Not used
10	0V	Not used
11		Not used
12	+SD	RS-422 send data (+)
13	-SD	RS-422 send data (-)
14	+RTS	RS-422 RTS send data (+)
15		Not used
16		Not used
17	-RTS	RS-422 RTS send data (-)
18	-CTS	RS-422 CTS receive data (-)
19	+CTS	RS-422 CTS receive data (+)
20		Not used
21		Not used
22		Not used
23		Not used
24	+RD	RS-422 receive data (+)
25	-RD	RS-422 receive data (-)

Communication cable of RS-232C/RS-422

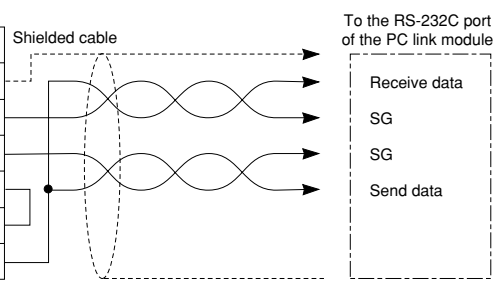
RS-232C

○In case of RS-232C, SD and SG, and RD and SG form a pair.

○Connect the shielded cable to pin No. 1 or the connector case cover.

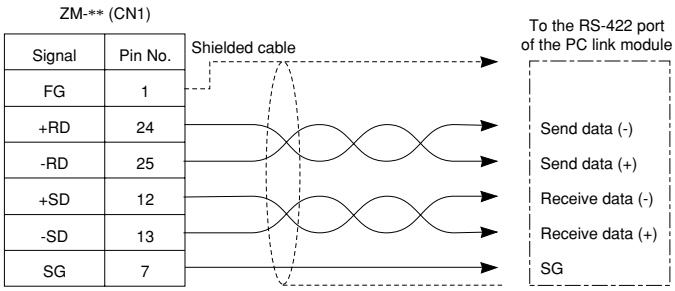
ZM-** (CN1)

Signal	Pin No.
FG	1
SD	2
RD	3
RS	4
CS	5
SG	7



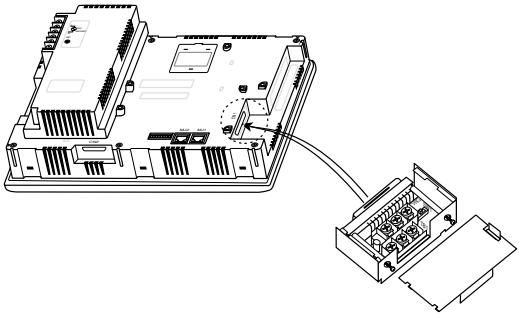
RS-422

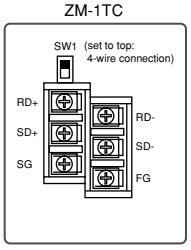
- In case of RS-422, +SD and -SD, and +RD and -RD form a pair.
- Use SG if possible.
- Connect the shielded cable to pin No. 1 or the connector case cover.
- Use Terminal converter ZM-1TC which is the optional equipment in case of using terminal blocks in RS-422/485 connection.
- Specify terminal resistance by the dip switches on ZM-**. (Refer to the next page.)



Terminal Blocks of RS-422/485

- When connecting at the terminal block, mount the terminal converter ZM-1TC (sold separately) to the serial connector (CN1).
- The RS-422 signal wiring of ZM-1TC is connected to the serial connector (CN1).





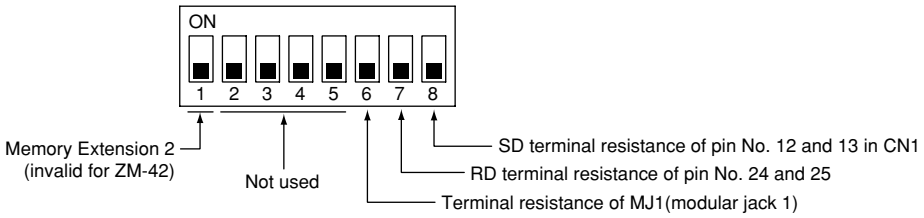
CN1

Signal	Pin No.
FG	1
SG	7
+SD	12
-SD	13
+RD	24
-RD	25

- Specify 4-wire connection or 2-wire connection by the dip switch on ZM-1TC (SW1). (set to top: 4-wire connection)

10 Setting of Dip Switches

Setting of Dip Switches (DIPSW)



○Setting of Terminal Resistance

- Set DIPSW 7 and 8 ON in case of connecting ZM-** to PC by 4-wire connection of RS-422/485.
- Set DIPSW 7 ON in case of connecting ZM-** to PC by 2-wire connection of RS-422/485.
- Set DIPSW 6 ON in case of connecting a card recorder (option) to Modular jack 1.
- The terminal resistance of Modular jack 2 is always ON.

○Setting of Memory Extension 2 (This dip switch is invalid for ZM-42. Keep DIPSW 1 OFF.)

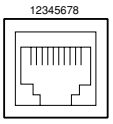
- Set DIPSW 1 ON in case of selecting “Memory Extension 2.”
  (Refer to page 1-61, 1-62)

○Keep DIPSW 2, 3, 4 and 5 (not used) OFF.

11 Modular Jack 1 & 2

Modular Jack 1 & 2 (MJ1/2)

The right diagram is the pin arrangement and the signal name of modular jack 1 & 2.



MJ1/2	Pin No.	Signal
	1	+SD/RD
	2	-SD/RD
	3	+5V
	4	+5V
	5	0V
	6	0V
	7	RXD
	8	TXD

External power supply
+5V
Max. 150mA

Setting of Modular Jack 1 & 2 (MJ1/MJ2)

○Specify the use of MJ1/MJ2 by the screen edit software ZM-71SE.

○Select [System Setting] from [Item], and click [Others]. The [Others] dialog is displayed. The setting items of [Modular Jack 1] and [Modular Jack 2] in the [P2] menu are as follows.

Modular Jack 1	**Modular Jack 2**
[Editor port]	[Not used]
[Memory Card]	[Memory Card]
[Barcode]	[Barcode]
[V-I/O]	[V-I/O]
[Multi-Link]*1 *2	[Multi-Link]*1 *2
[Temp. CTRL Net]*2	[Temp. CTRL Net]*2
[ZM-Link]*2	[ZM-Link]*2
[Touch Switch]*3	[Touch Switch]*3

It is impossible to select both [Multi-Link] and [Temp. CTRL Net] in each setting of modular jack.

*1 It is possible to select this item when [Multi-Link 2] is selected for [Connection] and [Local Port] is set to [1] in the [Comm. Parameter] dialog.

*2 [Multi Link 2 (master)] and [Temperature Control Network] and [ZM-Link] are available in the following hardware version or later of ZM-**. As for ZM-42/43 series, any version can be used.
· Analog type : ZM-82T: D ZM-72TS : D ZM-72T : D ZM-72D : C ZM-52D : F
· Matrix type : All version

*3 As for [Touch Switch], refer to the “Analog RGB Input” manual.

Screen edit software transferring

○Use modular jack 1 (MJ1) in case of editor transferring.

○When [Editor port] is selected for [Modular Jack 1] in the [P2] menu, it is also possible to transfer the data while running, because the auto change of the local mode and the run mode is valid.
When [Editor port] is selected, on-line editing and the simulation mode are also available.

○When the item other than [Editor port] is selected for [Modular Jack 1] in the [P2] menu, be sure to transfer the data by the software in the local mode. On-line editing and the simulation mode are not available.

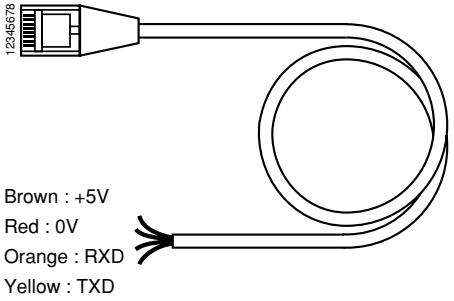
○When the data is transferred by software, use the cable for data transferring which is the optional equipment made by Sharp Corporation. (ZM-80C: option) to connect ZM-** to a personal computer.

12 Bar Code Reader Interface

○ It is possible to receive the signal from a bar code reader by connecting a bar code reader to ZM-** via the modular jack (MJ1/MJ2) of ZM-** series.

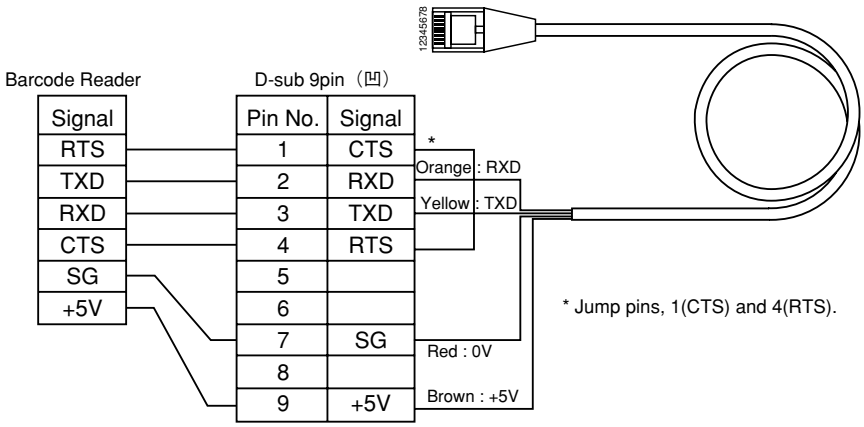
○ To connect a bar code reader to ZM-** via MJ1/MJ2, use the cable use the Bar Code Connecting Cable ZM-80BC which is the optional equipment made only by demand.

Length : 2m
Accessory : Modular Plug



○ Notes on Connection
- In case of using the bar code reader which uses the CTS and RTS control, the bar code reader may not work normally without jumping RTS and CTS.
- The output power supply (+5V) is max. 150mA. (Refer to the preview page.)

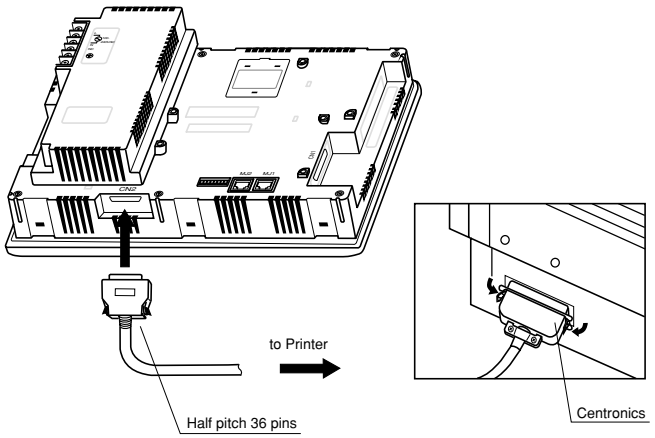
○ When the bar code reader connected to ZM-41/70 Series is used, connect it to ZM-** by the following cable.

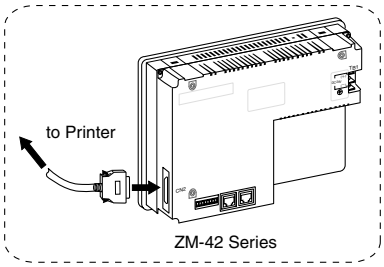


13 Printer Interface (CN2)

○ When a printer is connected to ZM-** via the connector (CN2), it is possible to hard-copy the screen display of ZM-**, the data sheet, or the sampling data.

○ For the connection of the printer and ZM-**, apply the printer cable ZM-80PC (sold separately) which matches the 36-pin parallel interface.





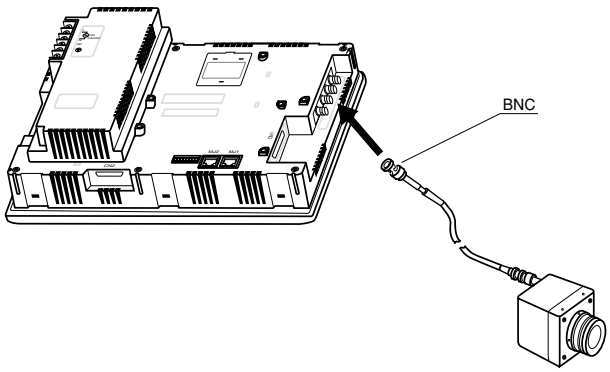
○ Compatible Printer Models

NEC	PC-PR201 series
EPSON	Compatibles with ESC/P24-J84, ESC/P-J84, ESC/P super function
HP(HEWLETT PACKARD)	PCL Level 3

14 Video Interface

○ When a video or a CCD camera is connected to the optional ZM-** which has a video interface, the image which is taken by a video or a camera is displayed directly in a screen of ZM-** series (only in case of ZM-72TV/TVC, ZM-72TSV/TSVC, ZM-82TV/TVC).

○ Video Interface of ZM-** : BNC



○ Video Display Specifications

Display Color	: 262,143 colors
Input Channel	: 4 Channels
Signal Form	: NTSC type, PAL type
Display Size	: 640 × 480, 320 × 240, 160 × 120 dots (possible to change the size)
Color Adjustment	: contrast (256 steps), brightness (256 steps), color gain (256 steps)

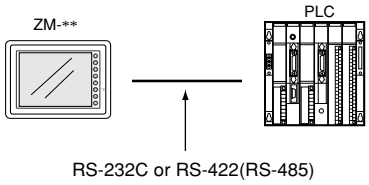
* If you set the display size in 640 × 480 by ZM-72TV/TVC, you may not be able to use other switches such as the one on the panel. (please apply 320 × 240 or 160 × 120 dot)

15 Connection

15-1 Connection with Sharp PLC

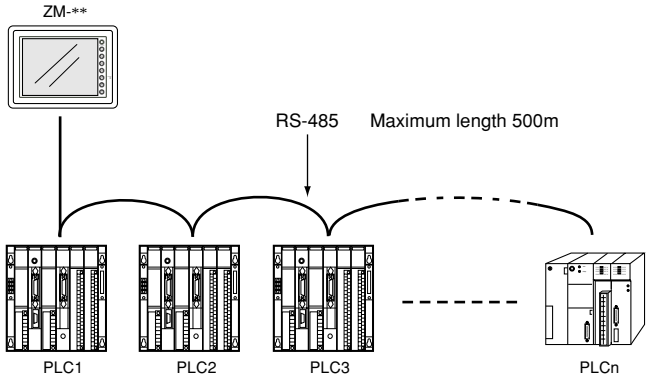
[1] 1 : 1 Link Communication

One ZM-** and one PLC are connected.



[2] 1 : n Link Communication (Multi-drop)

○ One ZM-*2 and multiple PLCs are connected. (n = 1 to 32)

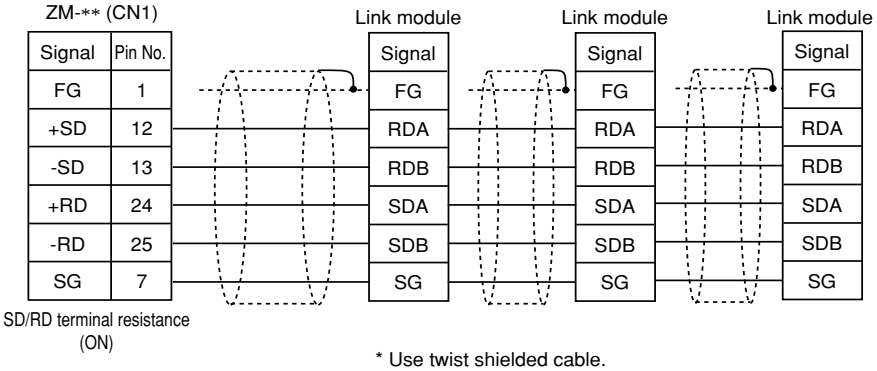


○ Available PLC for multi-link communication

Manufacturer	Models
SHARP	JW series, JW70/100 COM port, JW20/30 COM port
MITSUBISHI	An/A/N/U series, QnA series, Net10, FX series (A protocol)
OMRON	SYSMAC C series, CV series, CQM1 series, CS1
HITACHI	HIDIC-H
MATSUSHITA	MEWNET
YOKOGAWA	FA500, FA-M3
YASKAWA	Memobus
TOYOPUC	TOYOPUC
FUJI	MICREX-F, FLEX-PC, NJ computer link
Koyo	SU/SG, SR-T
Allen-Bradley	PLC-5, SLC500, Micro Logix 1000
GE Fanuc	90 series
TOSHIBA	T series
SEIMENS	S7-200 PPI
Kamigo	SELMART
SAMSUNG	SPC series, N plus, SECNET
KEYENCE	KZ series, KV series
LG	MASTER-K500 / K1000
FATEK	FACON FB series
IDEC	MICRO 3
TAIAN	TP02
	General purpose serial

○ Multi-drop Communication (RS-485)
Refer to the PLC manual of each manufacturer for connection.

<E.g.>
The following example describes how one ZM-** is connected to three PLCs made by MITSUBISHI.
See MITSUBISHI's manual for further details.



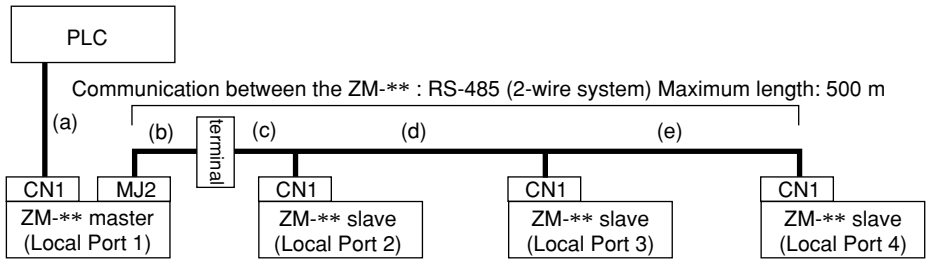
* Use twist shielded cable.

[3] n : 1 Link Communication (Multi-link 2)

(1) Multi-link 2

Up to 4 units can be connected to one PLC.

* Between a PLC and the ZM-** master station is the same as those for 1:1 communication.



○ Available PLCs for multi-link 2.
As of January 2001, the PLCs supported are as follows. All the PLCs which are usable for 1:1 communication will be supported.

For the I/F driver, the Multi-Link 2 is supported by the version of 1.100 or later and as for a ZM-** master station, make sure the hardware version of the unit is as follows.
As for ZM-42/43 series, any version can be used.

· ZM-82T series: D, ZM-82D series: C, ZM-72TS series:D, ZM-72T series: D, ZM-72D series: C, ZM-52D series: F

***** The Multi-Link 2 cannot be used with a Network module ZM-80NU.

<Type>	<Calendar>	<Type>	<Calendar>
MITSUBISHI : AnA/N/U series	Provided	KOYO : SU/SG	Depends on the model
MITSUBISHI : QnA series	Provided	KOYO : SR-T	Provided
MITSUBISHI : ACPU Port	Provided	KOYO : SR-T(K prt)	Not provided
MITSUBISHI : FX series	Depends on the model	A.B : PLC-5	Not provided
MITSUBISHI : QnACPU Port	Provided	A.B : SLC500	Provided
MITSUBISHI : QnHCPU Port (A)	Provided	A.B : Micro Logix 1000	Not provided
MITSUBISHI : QnHCPU Port (Q)	Provided	GE Fanuc : 90 series	Not provided
MITSUBISHI : FX series(A prt)	Provided	GE Fanuc : 90 series(SNP-X)	Not provided
MITSUBISHI : FX2N series	Depends on the model	TOSHIBA : T series	Provided
MITSUBISHI : FX1S series	Provided	SIEMENS : S5/S7	Not provided
OMRON : SYSMAC C	Depends on the model	SIEMENS : S5/S7 ZM70	Not provided
OMRON : SYSMAC CV	Provided	SIEMENS : TI500/505	Provided
OMRON : SYSMAC CS1	Provided	SIEMENS : S5 PG port	Not provided
SHARP : JW series	Provided	SAMSUNG : SPC series	Not provided
SHARP : JW100/70H COM Port	Provided	SAMSUNG : SECNET	Depends on the model
SHARP : JW20 COM Port	Provided	KEYENCE : KZ series	Not provided
HITACHI : HIDIC-H	Provided	KEYENCE : KZ-A500 CPU Port	Provided
HITACHI : HIDIC-S10/2 alpha	Not provided	KEYENCE : KV series	Not provided
HITACHI : HIDIC-S10/ABS	Not provided	KEYENCE : KZ24/300 series CPU	Not provided
MATSUSHITA : MEWNET	Depends on the model	KEYENCE : KV10/24 series CPU	Not provided
YOKOGAWA : FA500	Provided	LG : MASTER-K10/60/200	Not provided
YOKOGAWA : FA-M3	Provided	LG : MASTER-K500/1000	Not provided
YOKOGAWA : FA-M3R	Provided	LG : LGMKX00S	Not provided
YASKAWA : Memobus	Depends on the model	FANUC : Power Mate	Not provided
YASKAWA : CP9200SH/MP900	Not provided	FATEK AUTOMATION: FACON FB series	Provided
TOYOPUC	Provided	IDEC : MICRO3	Provided
FUJI : MICREX-F series	Provided	MODICON : Modbus RTU	Depends on the model
FUJI : MICREX-F series ZM70	Provided	YAMATAKE : MX series	Provided
FUJI : FLEX-PC series	Provided	TAIAN : TP02	Provided
FUJI : FLEX-PC CPU	Provided		
FUJI : FLEX-PC COM	Provided		
FUJI : FLEX-PC(T)	Provided		
FUJI : FLEX-PC CPU(T)	Provided		
FUJI : MICREX-F T link ZM70	Provided		

Example for wiring between ZM-**

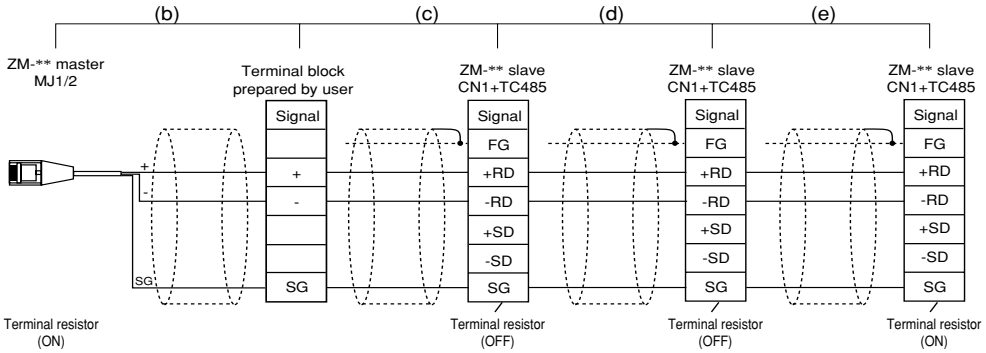
Use the terminal converter (ZM-1TC), the optional equipment made by Sharp Corporation.

See Multi-link 2 instruction manual for further details.

* Wire the shielded FG only at the one of both sides so that they are not connected.

• When the ZM-1TC terminal converter is used.

Set the dip switch (SW1) of ZM-1TC as 2-wire connection.

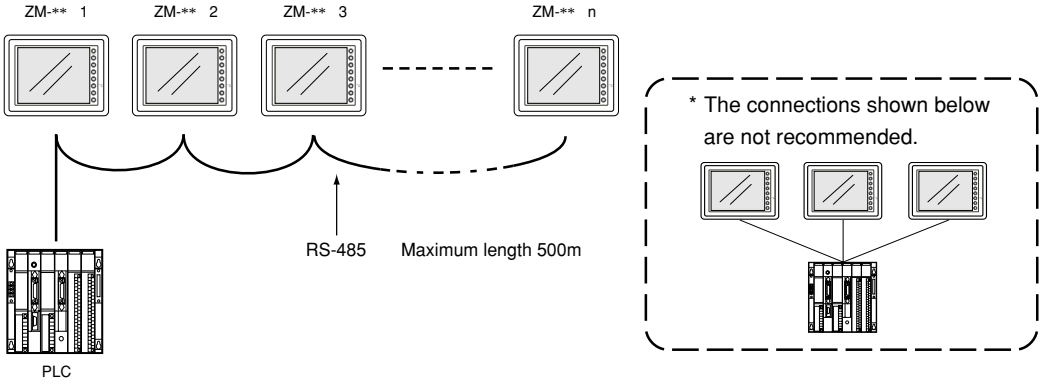


• When the ZM-1TC terminal converter is not used.

Short-circuit between +RD and +SD, and -RD and -SD.

(2) Multi-link 2

Multiple ZM-** and a PLC are connected. (n=1 to 32)



○ Available PLCs for multi-link

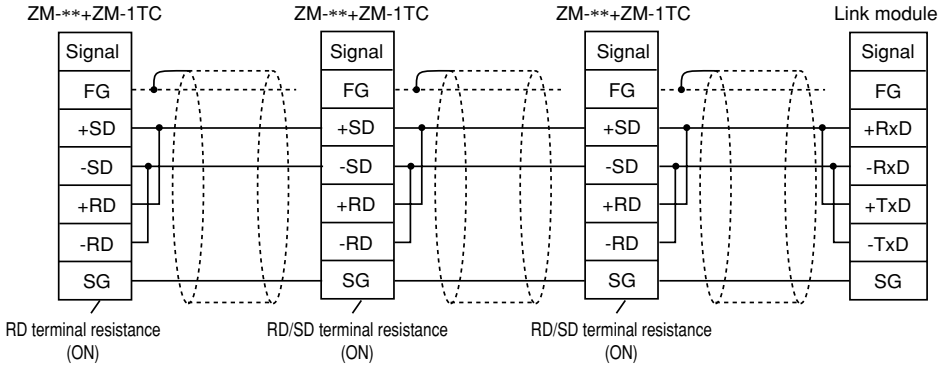
○ When multiple ZM-** are connected to a link module of PLC

Manufacturer	Models
SHARP	JW series(JW-10CM, JW-21CM, Z-331J/332J, ZW-10CM)
MITSUBISHI	AnN, AnA, AnU series, Net10, FX series (A prt)
MITSUBISHI	QnA CPU port (with ZM-1MD2)
OMRON	SYSMAC C series, CV series
HITACHI	HIDIC-H
MATSUSHITA	MEWNET
YOKOGAWA	FA-M3
YASKAWA	Memobus
TOYOPUC	TOYOPUC
FUJI	MICREX-F, NJ computer link
TOSHIBA	T series
SIEMENS	S7-200 PPI
SHINKO	SELMART
SAMSUNG	SPC series, N pius, SECNET
LG	MASTER-K500 / K1000

In case of Sharp Corporation, only the link module correspondences to multi-link connection.
(The communication port etc. does not correspond.)

Use the terminal converter (ZM-1TC), the optional equipment made by Sharp Corporation for RS-485 connection.

• When the ZM-1TC terminal converter is used.
Set the dip switch (SW1) of ZM-1TC as 2-wire connection.

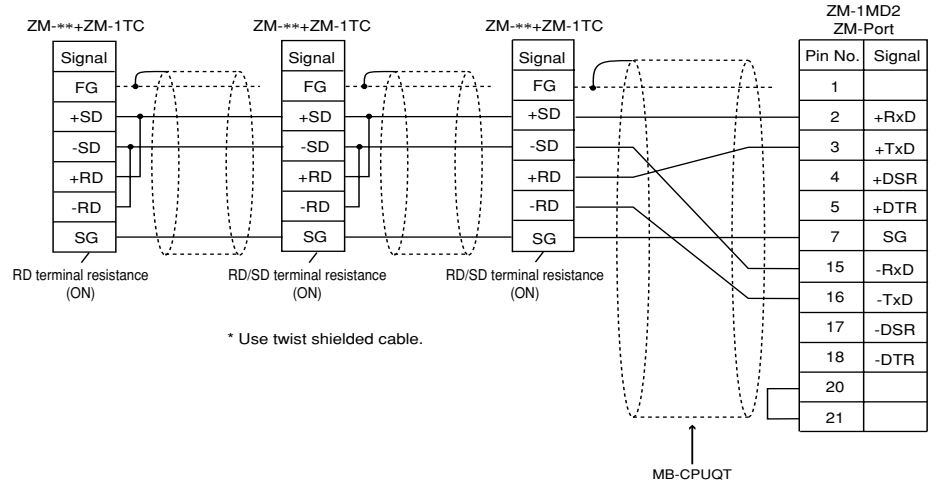


* Use twist shielded cable.

• When the ZM-1TC terminal converter is not used.
Short-circuit between +RD and +SD, and -RD and -SD.

○ When multiple ZM-** are connected directly to MITSUBISHI's QCPU port
The optional equipment, ZM-1MD2 is required. Also, the use of the optional cable, MB-CPUQT which is to connect ZM-1TC on ZM-** side to ZM-1MD2 on QCPU port side, is recommended.

• When the ZM-1TC terminal converter is used.
Set the dip switch (SW1) of ZM-1TC as 2-wire connection.



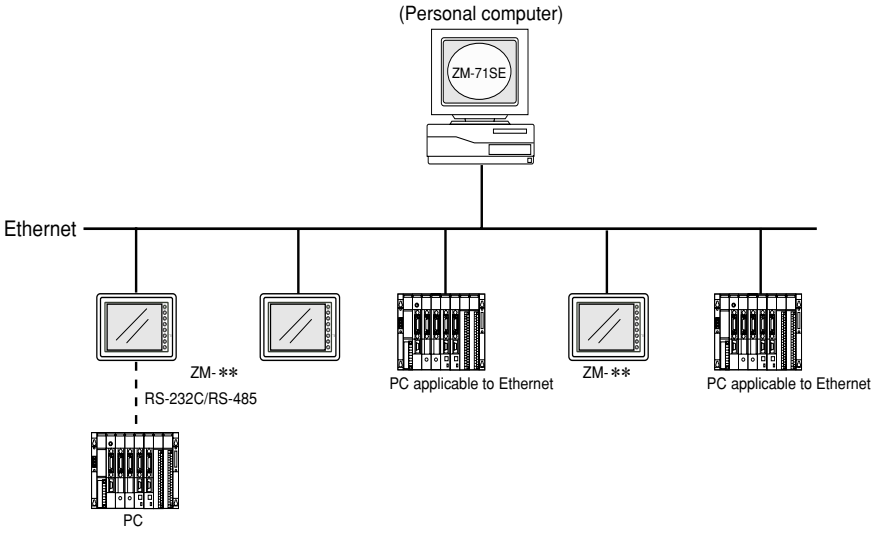
* Use twist shielded cable.

• When the ZM-1TC terminal converter is not used.
Short-circuit between +RD and +SD, and -RD and -SD.

15-2 Connection to Ethernet/FL-net

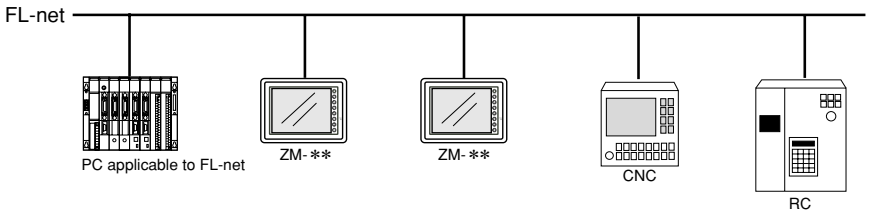
When a network module ZM-80NU is mounted in ZM-43/52/72/82 series, it is connectable with Ethernet/FL-net (ZM-42 series is not connectable.)
In addition, in the program version 1.2.0.0 or later of ZM-43/52/72/82 series, the version 1.2.0.0 or later of ZM-71SE corresponds to Ethernet/FL-net.

[1] In case of the Ethernet



○ PC corresponds to Ethernet
- Sharp : JW20H/30H [Ethernet module JW-255CM (10BASE5)]
  JW50H/70H/100H [Ethernet module JW-51CM (10BASE5/10BASE-T)]
- Mitsubishi : QnA series/Q series
- Yokogawa : FA-M3

[2] In case of the FL-net



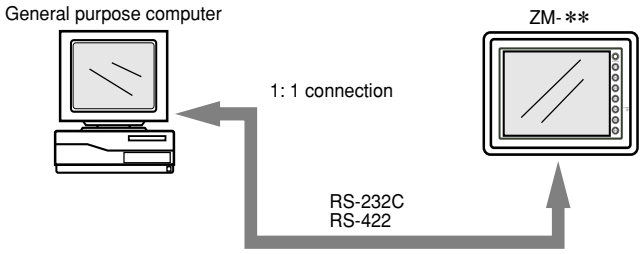
○ PC corresponds to Ethernet
- Sharp : JW20H/30H [FL-net module JW-20FL5 (10BASE5)/JW-20FLT (10BASE-T)]
  JW50H/70H/100H [FL-net module JW-50FL (10BASE5/10BASE-T)]
  J-board [FL-net board Z-336J (10BASE5/10BASE-T)
- FL-net correspondence model in each company

15-3 Connection by general purpose serial communication

The ZM-** can connected with a general purpose computer using the user program (exclusive command use). Refer to ZM (general purpose serial) user's manual in detail.

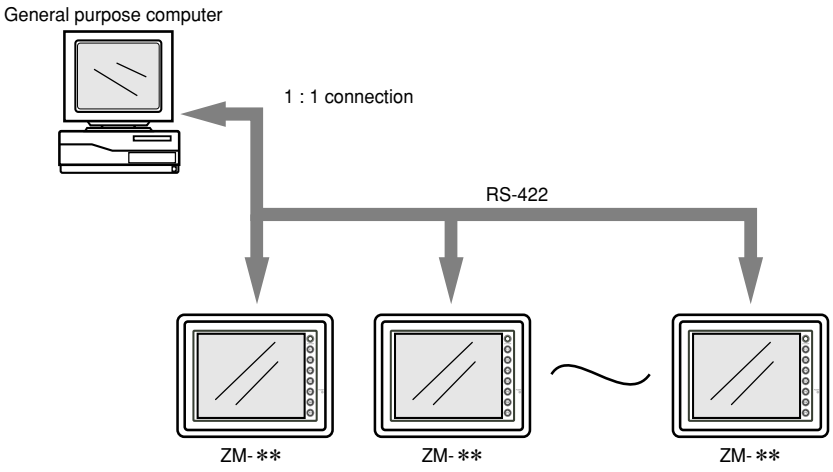
[1] When a computer and ZM-** are 1 : 1

- RS-232C can use it by less than 15m, and RS-422 (485) can use transmision distance by less than 500m.
- Interruption processing can be used. (Switch ON/OFF, the write-in key of a ten-key, screen change)



[2] When a computer and ZM-** are 1 : n (Up to ZM-** 32 sets are connectable.)

- The command point needs to be station number specified.
- Interruption processing cannot be used.(Switch ON/OFF, the write-in key of a ten-key, screen change)

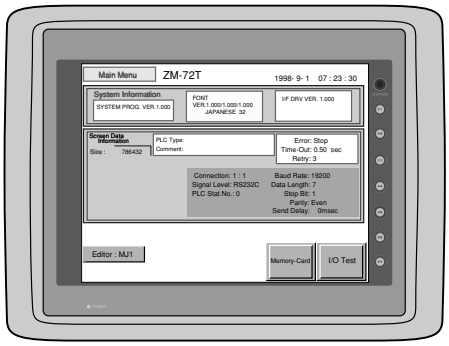


16 Operation of ZM-** Main Menu

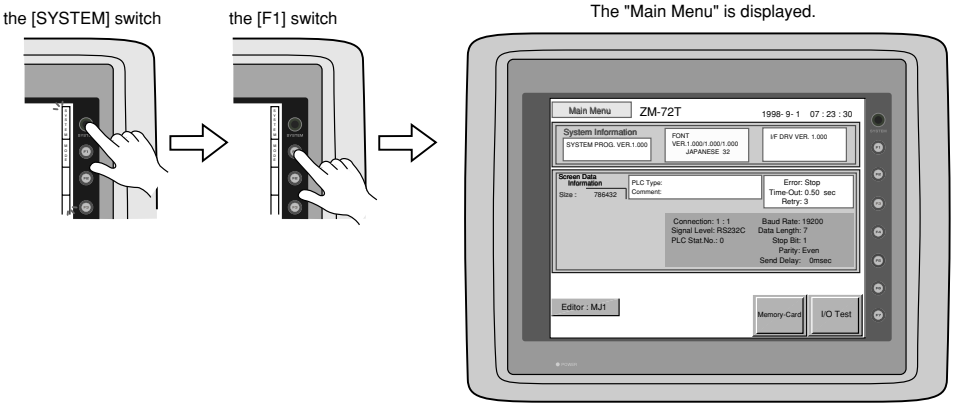
When the power of ZM-** is turned ON for the first time, the screen on the below left is displayed. After transferring the screen data to ZM-**, the following "Main Menu" is displayed.

When power is turned ON for the first time:

"Main Menu" after trasferring data

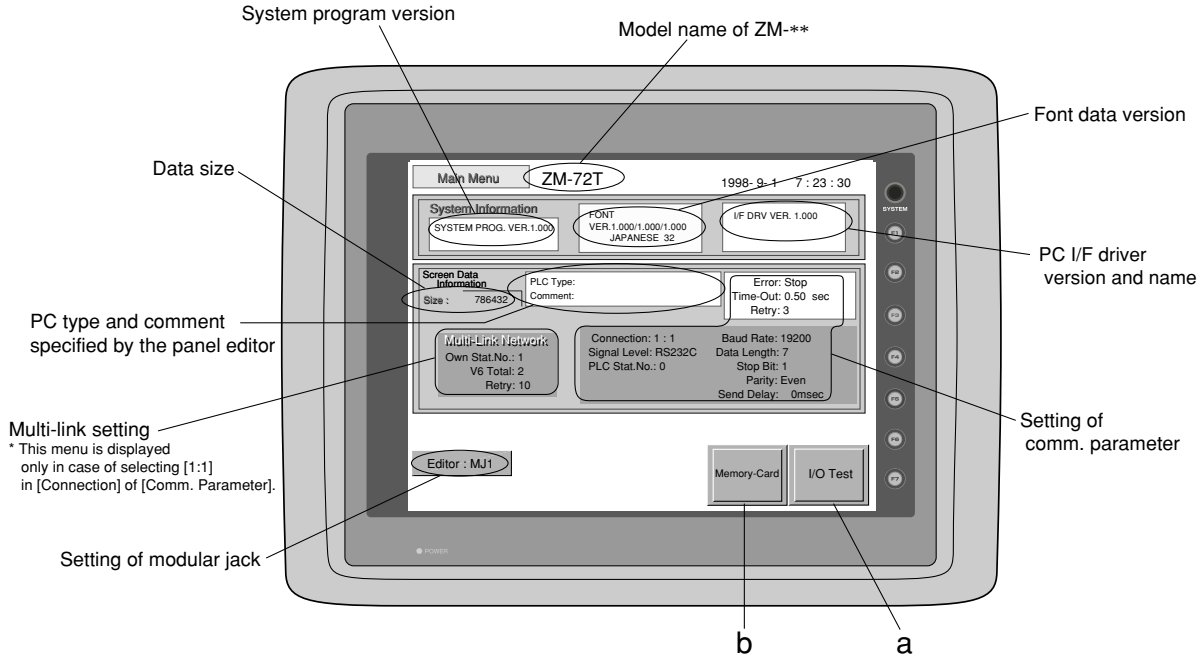


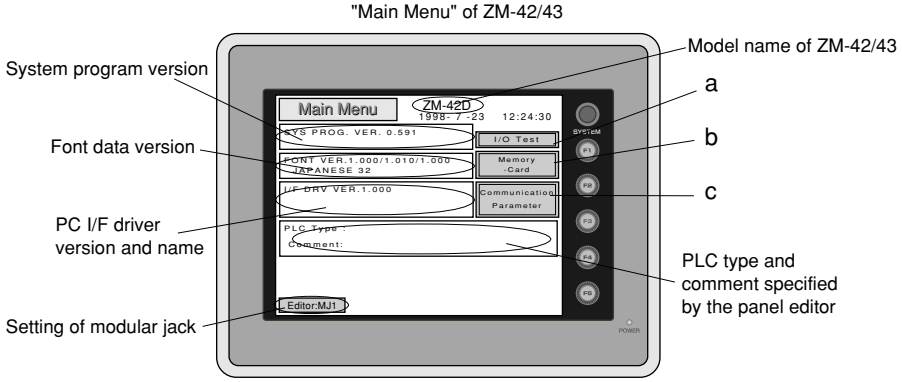
If the screen data has been already transferred to ZM-**, press the [SYSTEM] switch, then press the [F1] switch. The [Main Menu] is displayed.



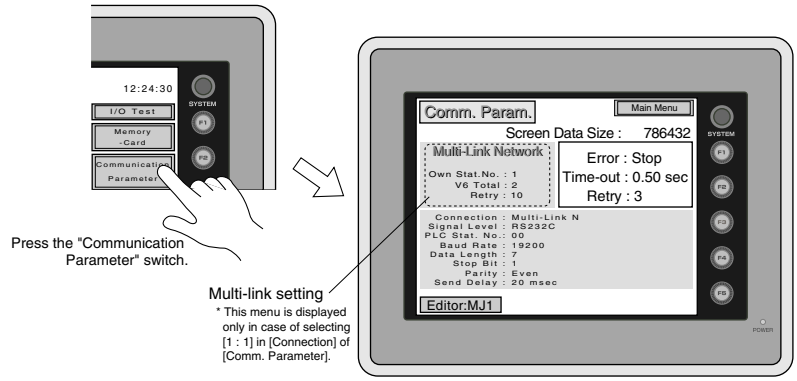
Main Menu

The "Main Menu" is the system menu for transferring the data between a personal computer and ZM-**.
When the screen data is transferred from a personal computer to ZM-**, the "Main Menu" must be displayed. (If [Editor port] is selected for [Modular Jack 1] in the [P2] menu of the editing software or the on-line editing is executed, it is not necessary to display the "Main Menu".



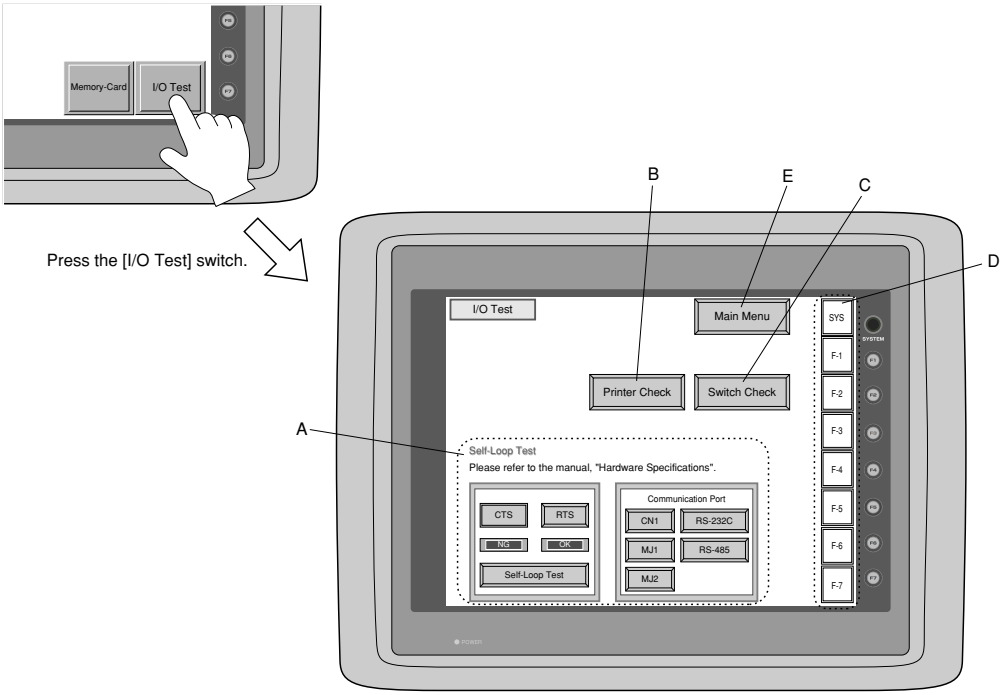


* In case of ZM-42/43, when the “Communication Parameter” switch on the “Main Menu” is pressed, the following “Comm. Param.” is displayed.

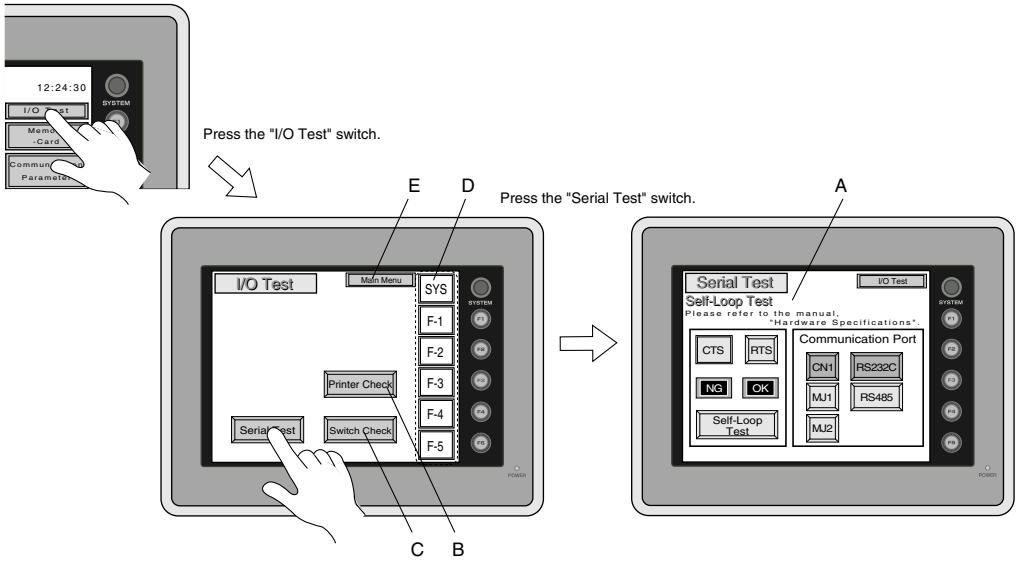


I/O Test

When the switch 'A' on the "Main Menu" is pressed, the following "I/O Test" is displayed.
This is the test menu to check only ZM-** hardware.



* In case of ZM-42/43, when the switch “A” on the “Main Menu” is pressed, the following “I/O Test” is displayed.
Then, the “Serial Test” switch on the “I/O Test” is pressed. The following “Serial Test” is displayed.
The self-loop test can be executed on this screen.

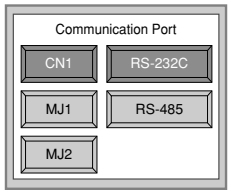


A. Self-loop Test

This is the test menu to check the signals necessary for ZM-** to communicate with PC or a personal computer by using only ZM-**.

○Signal Test of RS-232C in CN1

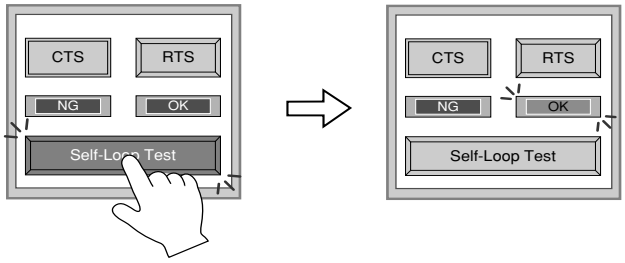
Select [CN1] and [RS-232C] in [Communication Port] by pressing each switch.



• Loop-back Test

Check the signals, [SD] and [RD].

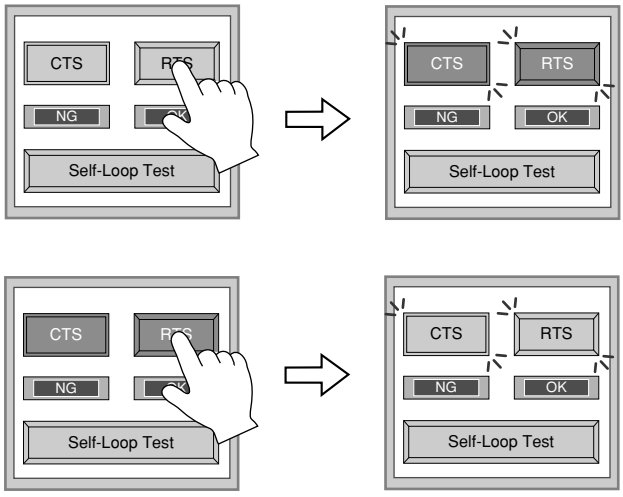
1. Jump pins, 2 and 3 of CN1.
2. The test is OK, if the [OK] lamp turns ON when the [Self-Loop Test] switch is pressed.



• Test of CTS/RTS

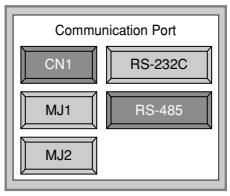
Check the signals, [CTS] and [RTS].

1. Jump pins, 4(RTS) and 5(CTS) of CN1.
2. The test is OK if the [CTS] lamp and the [RTS] lamp turn ON at the same time that the [RTS] switch is pressed. Similarly, the test is OK if the [CTS] turns OFF at the same time that the [RTS] is turned OFF.



○Signal Test of RS-485 in CN1

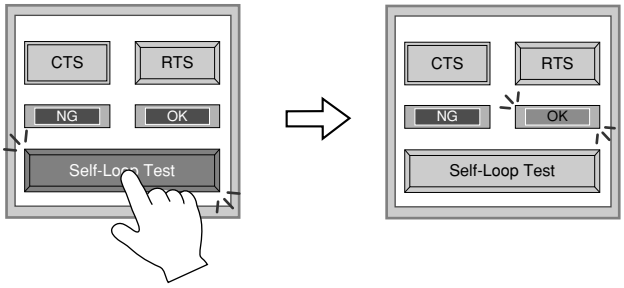
Select [CN1] and [RS-485] in [Communication Port] by pressing each switch.



• Loop-back Test

Check the signals, [SD] and [RD].

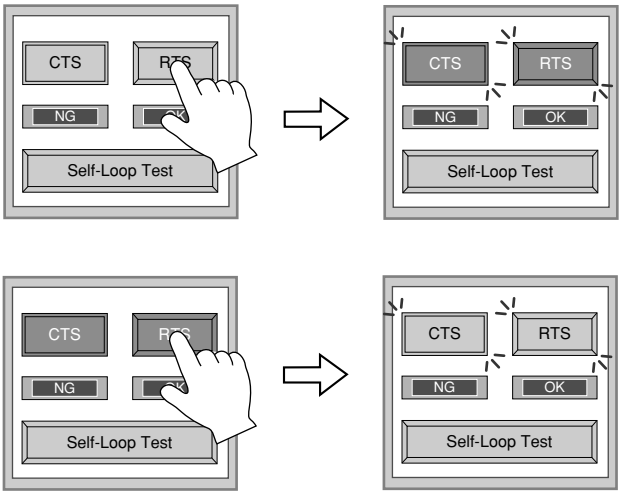
1. Jump each pin, 12 and 24, 13 and 25 of CN1.
2. The test is OK, if the [OK] lamp turns on when the [Self-Loop Test] switch is pressed.



• Test of CTS/RTS

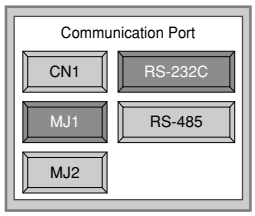
Check the signals, [CTS] and [RTS].

1. Jump each pin, 14(+RTS) and 19(+CTS), 17(-RTS) and 18(-CTS) of CN1.
2. The test is OK if the [CTS] lamp and the [RTS] lamp turn ON at the same time that the [RTS] switch is pressed. Similarly, the test is OK if the [CTS] turns OFF at the same time that the [RTS] is turned OFF.



○Signal Test of RS-232C in MJ1 and MJ2

Select [MJ1] (or [MJ2]) and [RS-232C] in [Communication Port] by pressing each switch.

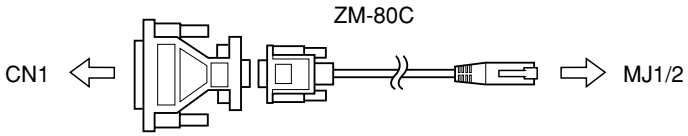


• Loop-back Test

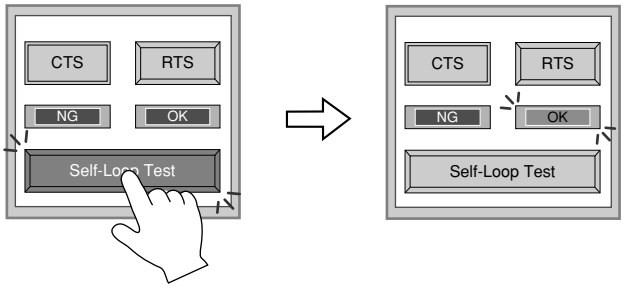
Check the signals, [SD] and [RD].

Execute the test by connecting the data transfer cable (ZM-80C) to CN1.

1. Set the adaptor, ADP25-9, which is attached to ZM-80C, to ZM-80C. And connect the modular jack side of ZM-80C to MJ1 (or MJ2), ADP25-9 side of ZM-80C to CN1.



2. The test is OK, if the [OK] lamp turns on when the [Self-Loop Test] switch is pressed.

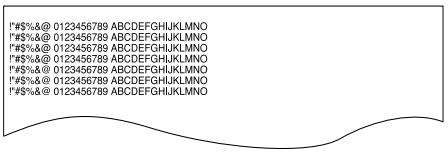


B. Printer Check

Check the signal for a printer.

The test is OK if the test printout is executed satisfactorily when connecting ZM-** to a printer and pressing this [Printer Check] switch.

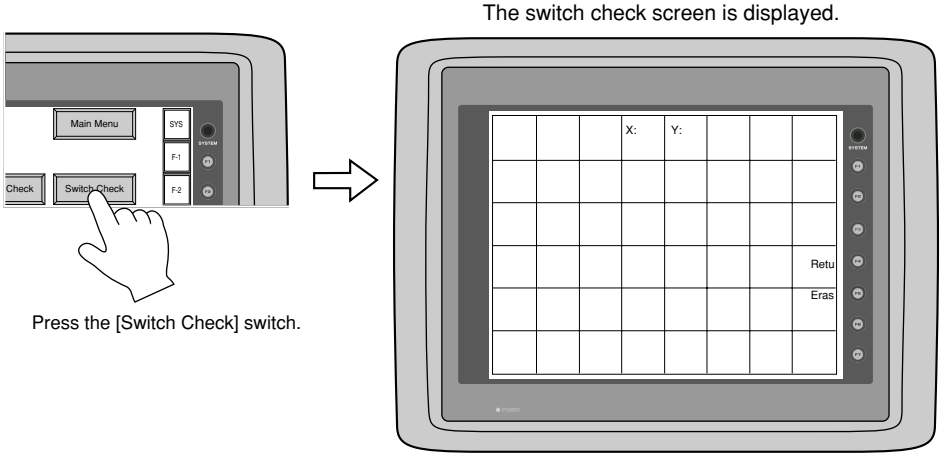
[Example]



C. Switch Check

Check the reaction of the touch switches on the ZM-** panel.

When the [Switch Check] switch is pressed, the following screen is displayed.

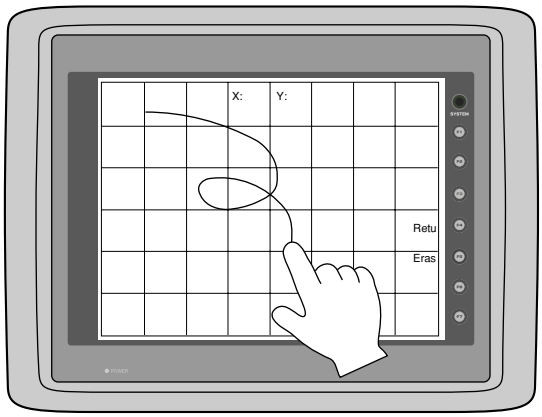


Confirm that the color of the pressed area changes into white.

The white color means that the switch reacts to the touch normally.

Pressing the [F4] switch leads to the previous [I/O Test] screen.

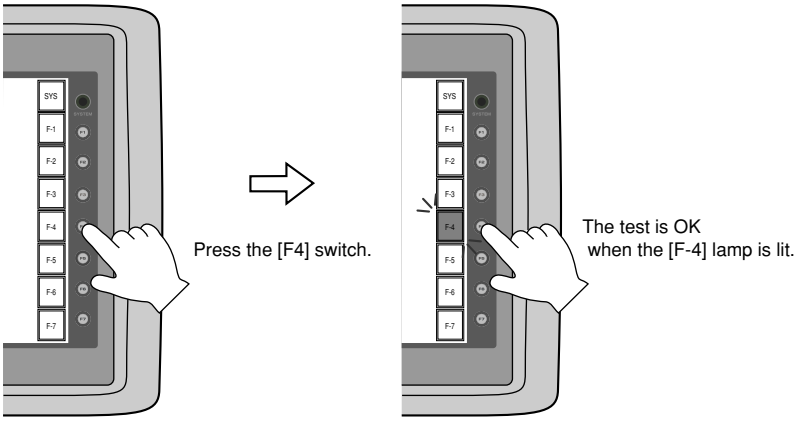
Pressing the [F5] switch deletes all the white dots.



D. Test of SYSTEM & Function Switches

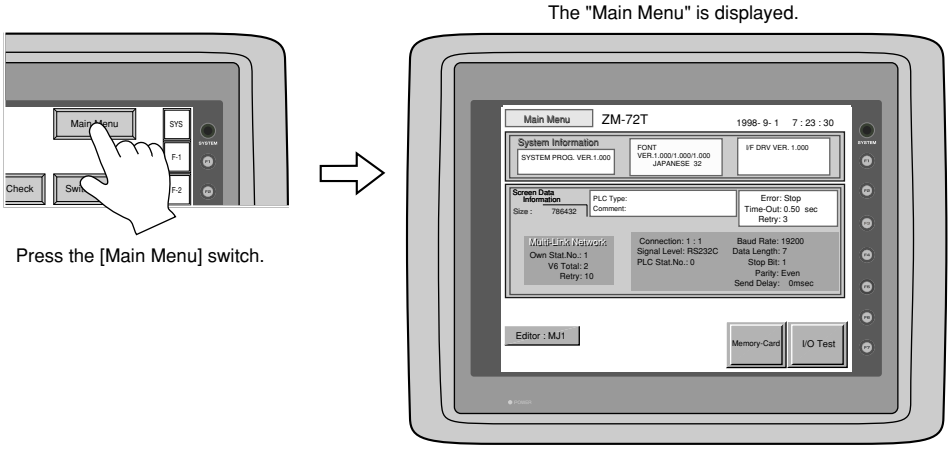
Check the eight switches (six switches for ZM-42/43) placed vertically on the right side of the ZM-** panel.

The test is OK if the lamps on the screen turn ON when each switch is pressed.



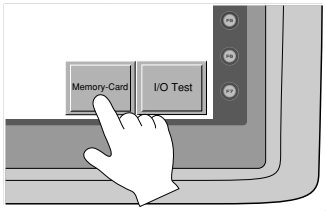
E. Main Menu

Pressing this [Main Menu] switch leads to the previous [Main Menu].



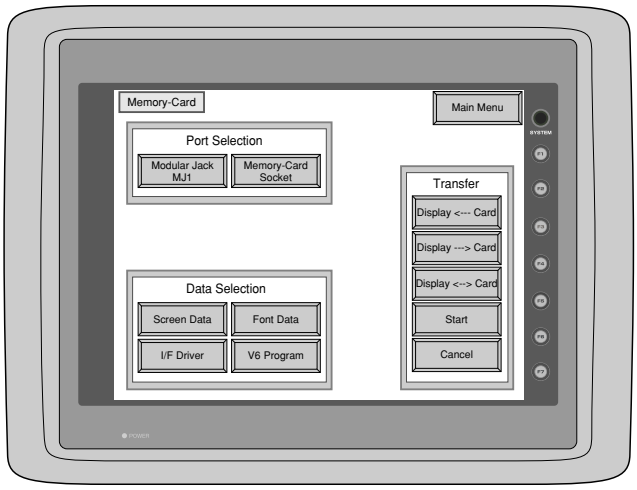
Memory-Card

When the [Memory-Card] switch on the "Main Menu" is pressed, the following "Memory-Card" is displayed. This screen is to transfer the screen data between ZM-** and a memory-card.

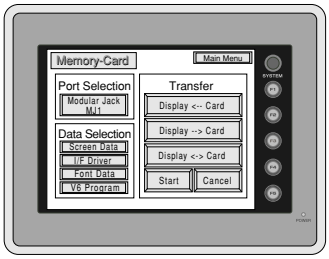


Press the [Memory-Card] switch.

The "Memory-Card" screen is displayed.



"Memory-Card" of ZM-42/43



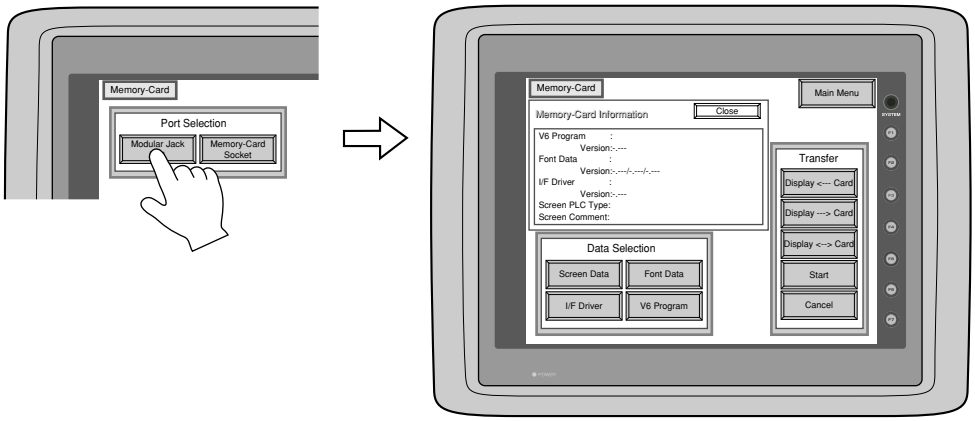
○ Procedure of Data Transferring

1) Port Selection

Select the [Modular Jack MJ1] switch (or [Modular Jack MJ2]) in case of using a modular jack.

Select the [Memory-Card Socket] switch in case of using a memory-card interface. When each switch is pressed, the “Memory-Card Information” window is displayed.

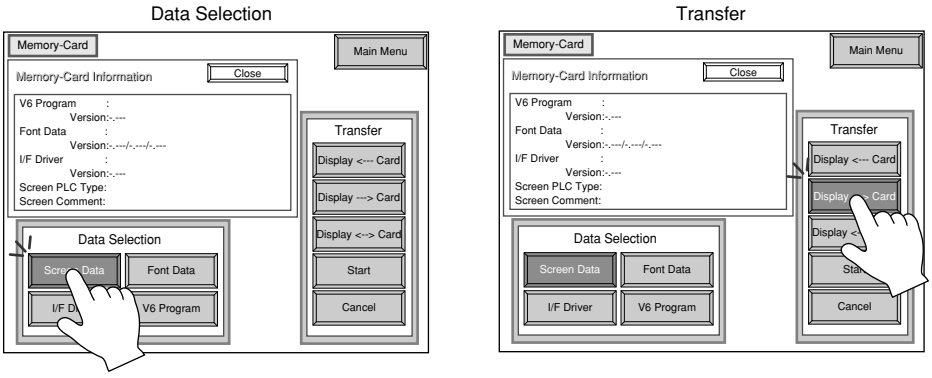
In case of ZM-42/43, pressing the “Close” switch leads to the original screen after checking the memory card information.



In case of selecting [Memory Card] from [Modular Jack 2] in the [Others] dialog of ZM-71SE, it is possible to select the [Modular Jack 2] switch in the [Port Selection] menu of the [Memory-Card] screen on ZM-**.

2) Data Selection, Transfer

Pressing each switch leads to selection of the target for data transferring. (Possible to select multiple items.)

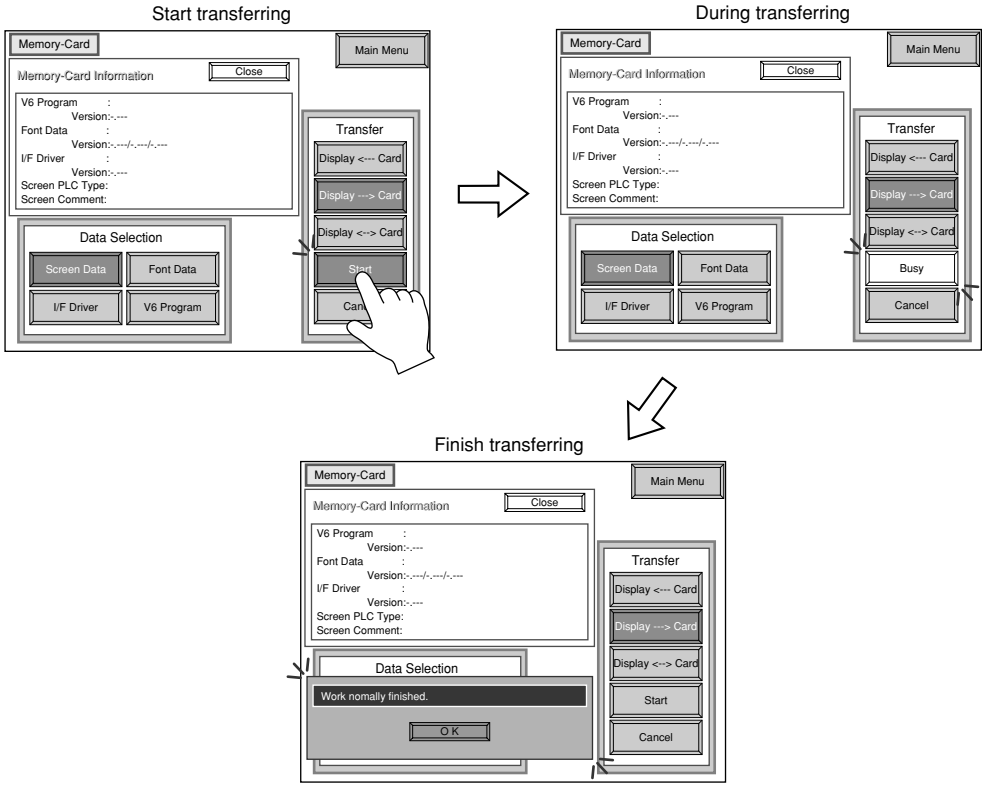


3) Start

When the [Start] switch is pressed, the data transferring starts. During data transfer, the character, 'Start', on the switch changes into the character, 'Busy', and the switch starts blinking.

After transferring data, the following message is displayed. Press the [OK] switch.

In the case of ZM-42/43, the "start" switch will be blinking as the data transfer starts.



* When transfer the data from ZM-** to memorycard via the card interface(= [Memory-Card Socket]) of ZM-**, use SRAM type memory card. FROM type memory card is not used.

○ Message Display in Data Transferring

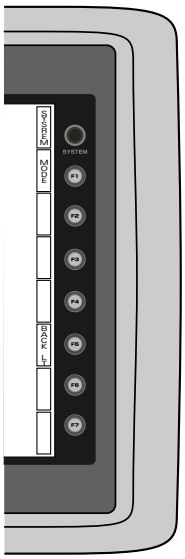
If an error occurs during transferring data, the message display window shown on the right is displayed. The kinds and the contents of the messages are as shown below.

Message	Contents
Work normally finished.	The specified operation has been concluded normally.
ZM-1REC not connecting	ZM-1REC is not connecting when selecting a modular jack.
ZM-1REC Communication Error	A communication error occurred between ZM-** and ZM-1REC when selecting a modular jack.
Memory-Card not setting	A memory card is not inserted. (Or in case of trying to write data into a memory card when inserting FROM type memory card)
Memory-Card Capacity over	Cannot write the data into a memory card because the data size in ZM-** is larger than the capacity of a memory card.
Write Protect : ON	Cannot write data into a memory card because the write protect switch in a memory card is ON.
Writing Error occurred.	The error occurred while writing data into a memory card.
Selected data does not exist.	The data in the reading target does not exist.
ZM-** type is different.	The specified type of the data in ZM-** is different from the type of the memory card data.
Selected data can not be read.	The data in a memory card cannot be read.
Reading Error occurred.	The error occurred during writing data into a flash ROM of ZM-**.
Data discrepant	There is some discrepancy in data, when comparing data between a memory card and ZM-**.
Screen data on ZM-** will be broken.	This message appears to inform the user that the data in ZM-** will be broken by transferring the font data (the size which is larger than the present data) from a memory card to ZM-**. (The [OK] switch continues the transferring. The [Cancel] switch stops transferring.)
Undefined Error occurred.	The error occurred due to some cause other than the above mentioned.

17 Function Switches

Type

[SYS], [F1], [F2], [F3], [F4], [F5], [F6], [F7]
(ZM-42/43 : [SYS], [F1] to [F5])



The [SYS] switch

By pressing this switch, the functions of the switches [F1] to [F7] are defined.
The type of the [SYS] switch is alternate. When this switch is pressed once, the switch menu is displayed by the side of the function switches [F1] to [F5], and each function switch corresponds to an item on the displayed switch menu.
When the [SYS] switch is pressed again, the switch menu which is displayed on the screen will disappear, and the functions of switches [F1] to [F7] are defined for the purpose of the user. The data of these function switches is allocated to the memory area of PC.

Function of [F1] to [F5] when the switch menu is displayed

○ [F1] : Mode
This switch changes the operation mode.
Main Menu Mode --> RUN Mode
Run Mode --> Main Menu Mode (possible to specify the changing time)

○ [F2] : Contrast Adjustment (dark) ------- invalid in case of the TFT color type
This switch adjusts the contrast of LCD. When the [F2] switch is pressed once, the LCD color becomes dark. If this switch is held down for 1 second, the LCD color changes rapidly into darkness.

○ [F3] : Contrast Adjustment (intermediate) ------- invalid in case of the TFT color type
This switch also adjusts the contrast of LCD. When the [F3] switch is pressed once, the LCD color becomes intermediate.

○ [F4] : Contrast Adjustment (light) ------- invalid in case of the TFT color type
This switch adjusts the contrast of LCD. When the [F4] switch is pressed once, the LCD color becomes light. If this switch is held down for 1 second, the LCD color changes rapidly into lightness.

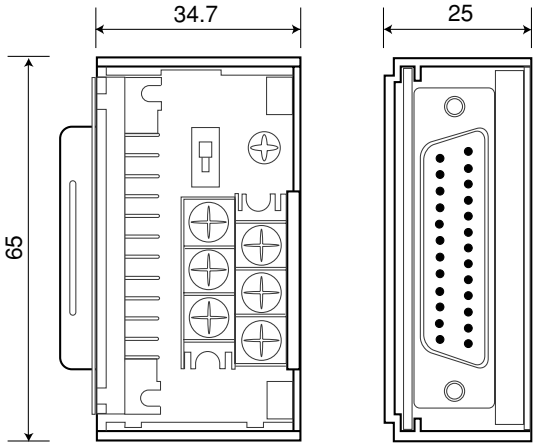
○ [F5] : Backlight
This switch turns the backlight of ZM-** ON or OFF.
If you want to use this function, you have to set [Backlight] of the [Others] dialog in [System Setting].
The following list shows the backlight function specified in the editing software.

Backlight	Function Switch (F5)
ON	Ignored.
Auto 1 Auto 2	The following actions are added to the regular functions of these items : Even if the time does not reach the setting time, the backlight will turn off if the [F5] switch is pressed (provided that bit 11(Backlight) of Read Area n+1 is OFF level). (Refer Instruction Manual)
Manual	If you select [Manual], the backlight will turn ON or OFF only when this switch is pressed. Also, you can specify the item, [Backlight Power ON Time Control]. When you turn the power supply of ZM-** on ... [ON] : the backlight is lit. [OFF] : the backlight is off.

18 Terminal Converter (ZM-1TC)

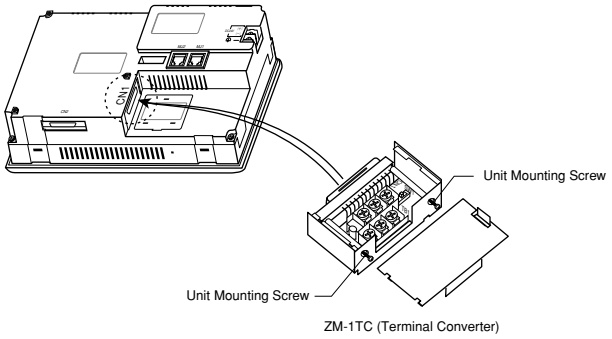
Use the terminal converter ZM-1TC when connecting the ZM-42/43/52/72/82 series and PC by the RS-422/485 terminal block.

Size



Installation

1. Make sure that the power of ZM-42/43/52/72/82 series is OFF.
2. Install the ZM-1TC to the serial connector (CN1) of the ZM-42/43/52/72/82 series.
3. Settle the ZM-1TC by the module mounting screw.



Tighten terminal screw, module mounting screw

Tighten mounting screws with the following torque.

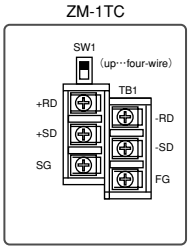
Position of screws	Screw size	Tighten torque (N • m)	Pressure connection terminal (Unit : mm)
I/O, I/F terminal screw	M3	0.49	5.9MAX 5.9MAX
Module mounting screw	M2.6	0.1～0.2	——

• Never fasten these screws too tightly, otherwise the cover of Control Terminal may be deformed.

Connection

○ Connecting the RS-422 communicating cable

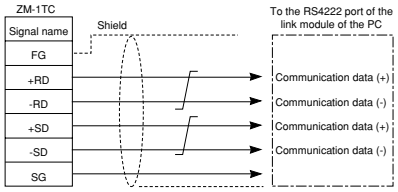
- Choose 4-line or 2-line system by the ZM-1TC DIP switch (SW1)
- Connect the cable if SG exists.
- Connect the shield line to FG.
- End resistance is set by the dip switch located on the back side of ZM-∗∗ body.
- Be sure to put the attached cover to ZM-1TC when the connection is terminated.



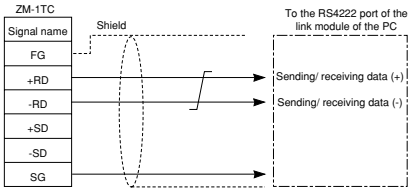
SW1 (Above: 4-line system
Below: 2-line system)

In the case of communicating one to the other

○ 4-line system

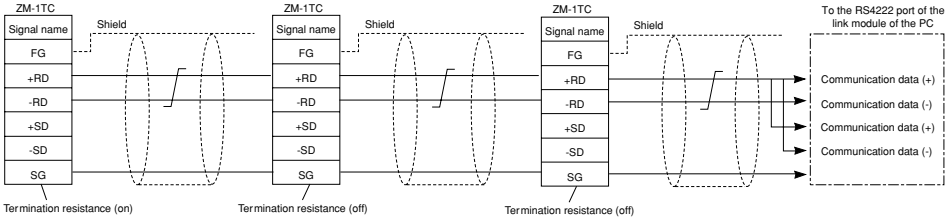


○ 2-line system

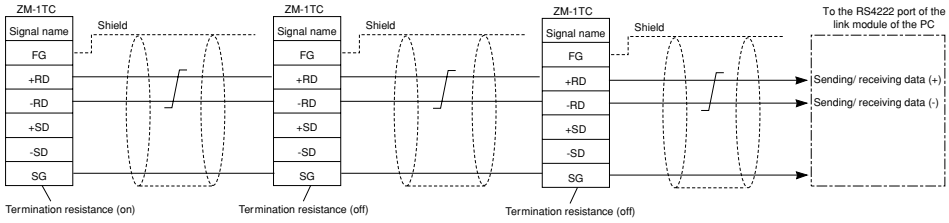


In case of multi-link

○ 2-line system (in the case it has to jump on PC side)



○ 2-line system (in the case it doesn't have to jump on PC side)



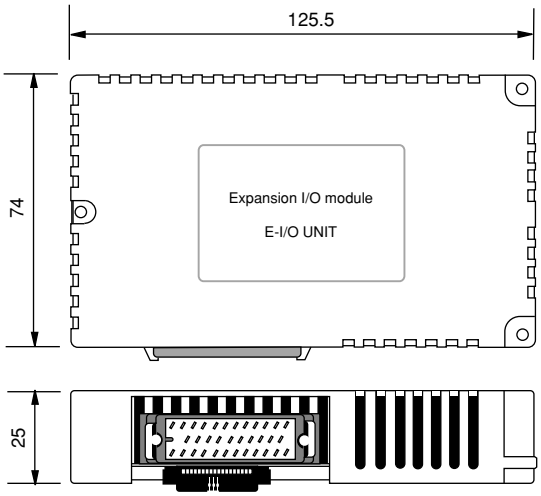
19 Expansion I/O module (ZM-322M)

The expansion I/O module ZM-322M is used on the ZM-72/82 series as the external I/O of the PC.
(Input 16 points, output 16 points)

Attached unit

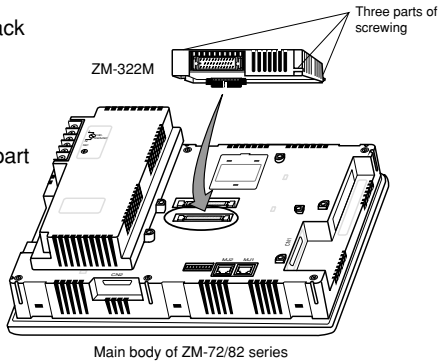
- DI/DO connector
  Used by connecting to the connector pin, and mounting it to the connection part of the expansion I/O module.

Size



Installation

- Take off the sticker to avoid the dust which is pasted on the back side of the ZM-72/82 body, as described in the drawing. Then, install ZM-322M by mounting three parts of the unit by the screws.
- Install the DI/DO (attached unit) connector on the connection part of ZM-322M, by mounting two parts of the unit by the screws.



○ Tighten screw of the module
Refer to the chart below for the use.

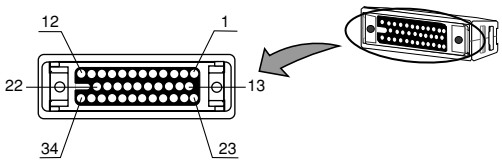
Screw position	Screw size	Tightening torque (N • m)
Module mounting screw	M3	0.29～0.49

How to use

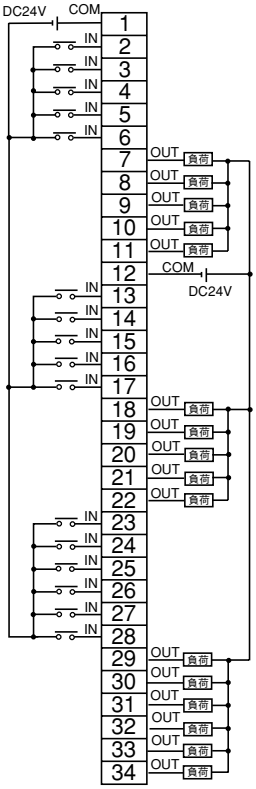
To use the ZM-322M, refer to the {[P2] menu} in [Chapter 2 System Setting] of the ZM-71SE instruction manual.

Position of the DI/DO connector pin

The positioning of the DI/DO connector pin is as follows.
Connect it by referring the drawing.



DI/DO connector (attached connector)



Input

In No.	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Pin No.	23	13	2	24	14	3	25	15	4	26	16	5	27	17	6	28

Output

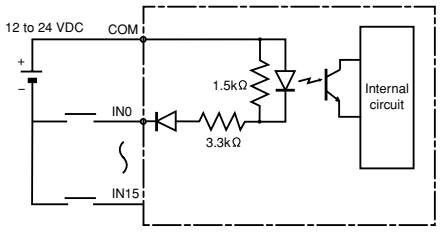
OUT NO.	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Pin No.	18	29	7	19	30	8	20	31	9	21	32	10	22	33	11	34

Input/output circuit

The circuit drawing of the input/output is as follows.

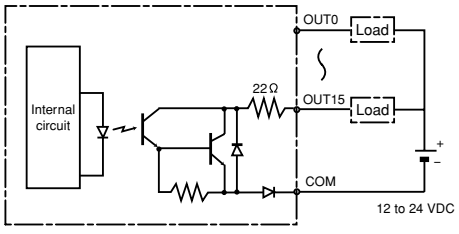
○ Input circuit

Input voltage	Voltageless connection NPN type 12 to 24 VDC
Input Impedance	3.3KΩ
Input electric current	3 to 7mA



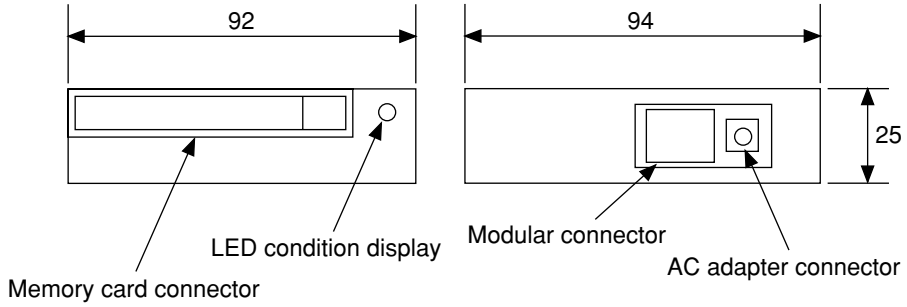
○ Output Circuit

Maximum Drive	50mA (12 to 24 VDC)
Remaining voltage	1.7V



20 Card Recorder (ZM-1REC)

Used for the backup of the panel data or recording the memory manager function and the data longing function.



Memory Card connector

SRAM and flash memory card are used as described in the chart below.
(JEIDA Ver4.0 Maker: ITT Canon)

SRAM card	256K, 512K, 1M, 2M, 4M Bytes
Flash memory card	256K, 512K, 1M, 2M, 4M, 16M Bytes

LED condition display

Display the battery voltage of the SRAM card.

Green: battery voltage normal

Red: battery voltage abnormal

Modular Connector

Connect with the ZM-42/43/52/72/82 series by the attached cable.

AC Adapter Connector

When using the external electricity, connect it to the AC adapter.

21 Cable for transporting the panel (ZM-80C)

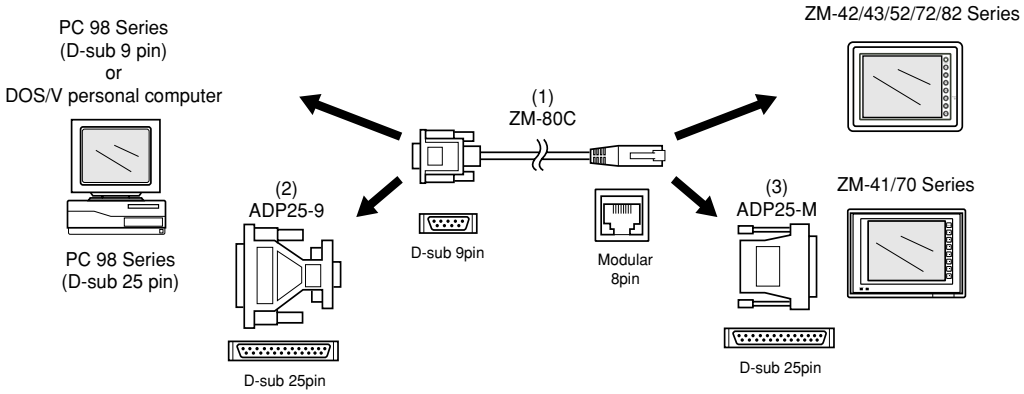
ZM-80C is the cable that transports panel data between ZM-42/43/52/72/82 series as well as ZM-41/70 series and the personal computers.
When using, you need to have a Windows screen edit software ZM-71SE.
The convertible adapter ADP25-9 and ADP25-M are attached to ZM-80C.

Examples of the using cable and convertible adapter.

Types of Computer	Serial Connector Type	Control Terminal	
		ZM-42/43/52/72/82 Series	ZM-41/70
DOS/V	D-sub 9pin	Use the drawing (1)	Use the drawing (1) and (3)
PC98	D-sub 9pin	Use the drawing (1)	Use the drawing (1) and (3)
PC98	D-sub 25pin	Use the drawing (1) and (2)	Use the drawing (1), (2) and (3)

(Reference) When constructing by using drawing (1) , (2) and (3), the functions are the same as our product ZM-60C.

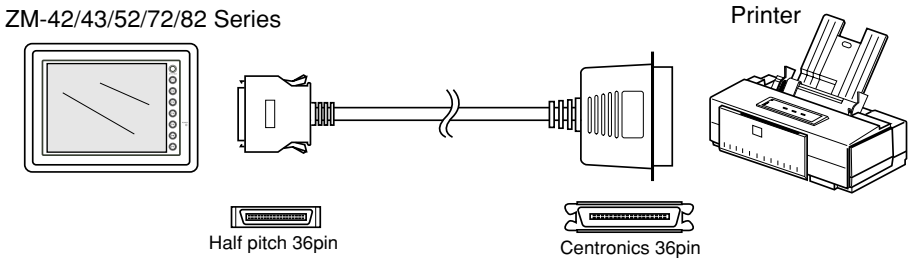
System Composition



• The length of the ZM-80C cable is three meters.

22 Printer Cable (ZM-80PC)

ZM-80PC is the cable that connects ZM-42/43/52/72/82 series to the printer.
You can hard copy the panel of ZM-42/43/52/72/82 as well as registered list/ sampling data.

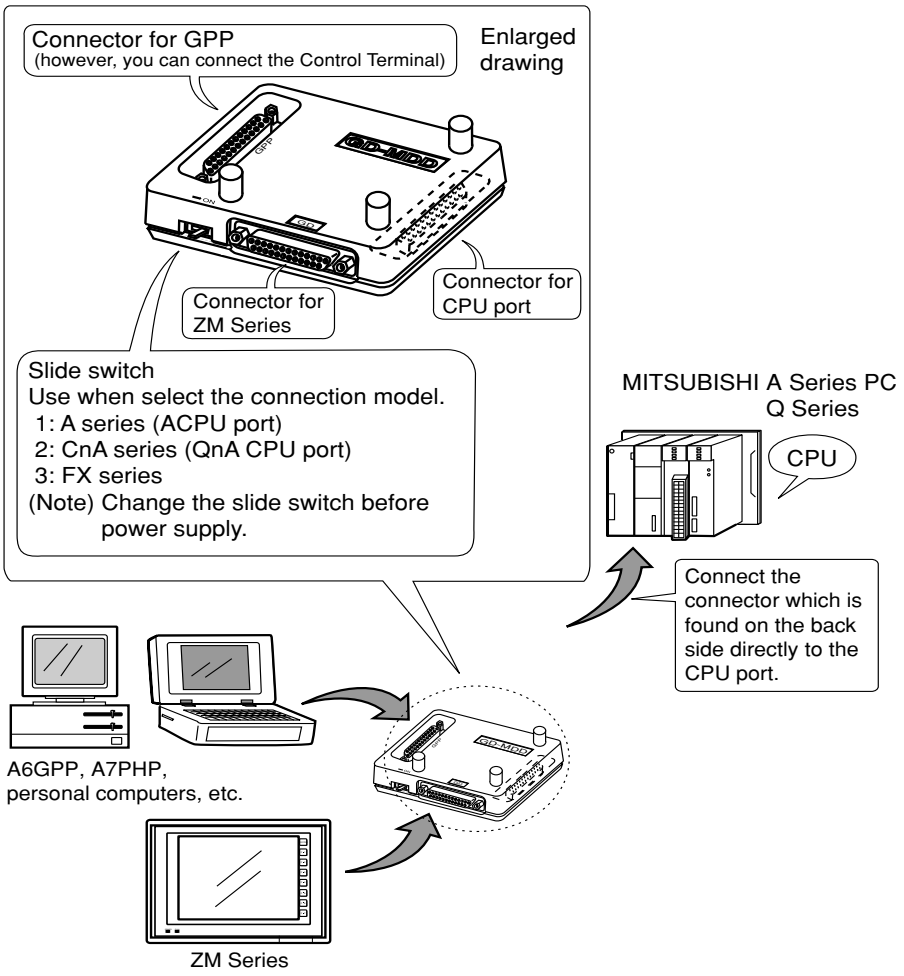


• The length of the ZM-80PC cable is 2.5 meters.

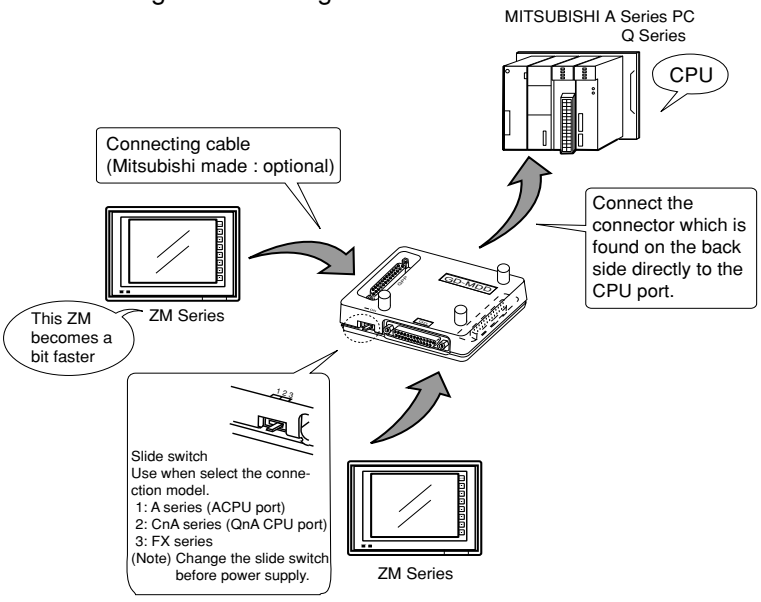
23 2 Port Adapter (ZM-1MD2)

By mounting to the GPP port of Mitsubishi PC, ZM-1MD2 acts as an module that connects and communicates between GPP (programming tool) and ZM-42/43/52/72/82 series.
Since it is possible to connect without the link module of the Mitsubishi PC calculator, the cost saving of the hardware machines became possible.

Connection



When connecting 2 units together



Caution

① Since the power supply of ZM-1MD2 is supplied from CPU, pay attention to capacity of 5V power supply of CPU.

② For wiring, it is fully careful to a noise.

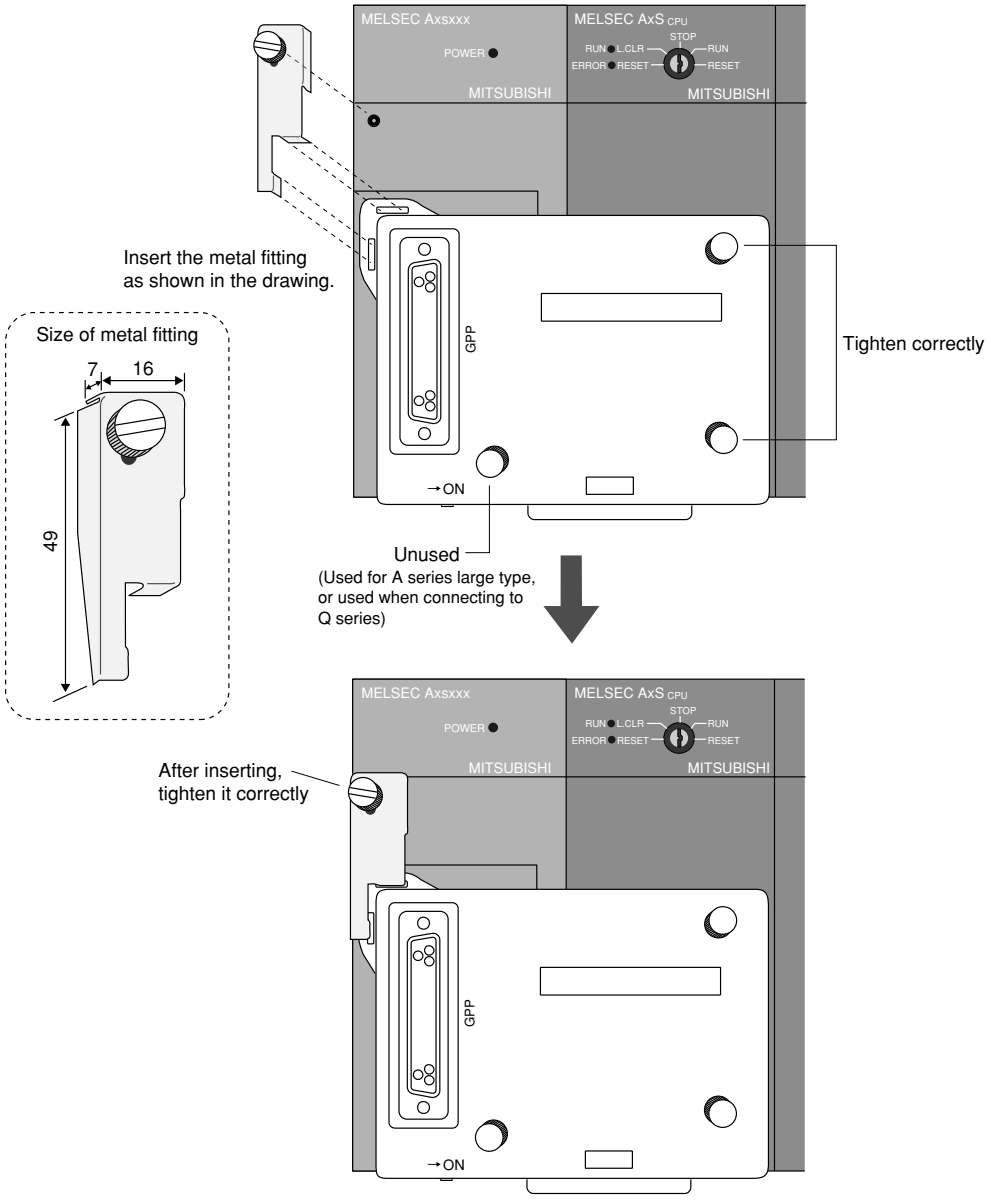
③ There is the following restriction when ZM-1MD2 is used for QnA series CPU port.

1. When using it in ZM40/61 series, re-try time is 3 seconds.
   The communication time out is 20 seconds between GPP and CPU.When any communication error occurs between GPP and CPU, ZM-1MD2 maintains 20 seconds as communication time between GPP and CPU.
   After passing 20 seconds, although a communication port is changed to ZM between CPUs, since it is 3 seconds, the re-try time of ZM-40/60 series serves as a time-out, and a communication error occurs. Perform re-execution 20 seconds after.
2. When you use it in ZM-41/70/80 series, choose from the two following methods.
   - With the [Detail Setting] menu of the [Communication Parameter] of a [System Setup], [Communication error processing] is set as "Continuation."
   - [Time-out time]x [re-try time] may become more than 20 seconds.
3. Write in running
   When the write-in operation in running is performed from GPP side and the time required is larger than 20 seconds, ZM-1MD2 cannot be used. In this case, written in STOP state for PC.
   In addition, although the number of steps of the program which can perform writing among RUN in less than 20 seconds has a difference according to the contents of a program, it is computable in the following formula as a standard.
   Time = (Number of steps ÷ 60) × scan time (msec)
   A standard is asked in this formula. In addition, in the case of constant scan, this formula cannot apply.
4. When a power supply is switched on where a console is connected to the ZM-1MD2, a console will become a communication time-out before completing initialization of the ZM-1MD2.
   When it connects again or reset operation of a console is performed once it, removes the cable of a console, it will return to a normal state. (Normal operation of this machine is carried out after 15 seconds progress from the time of a power supply injection.)

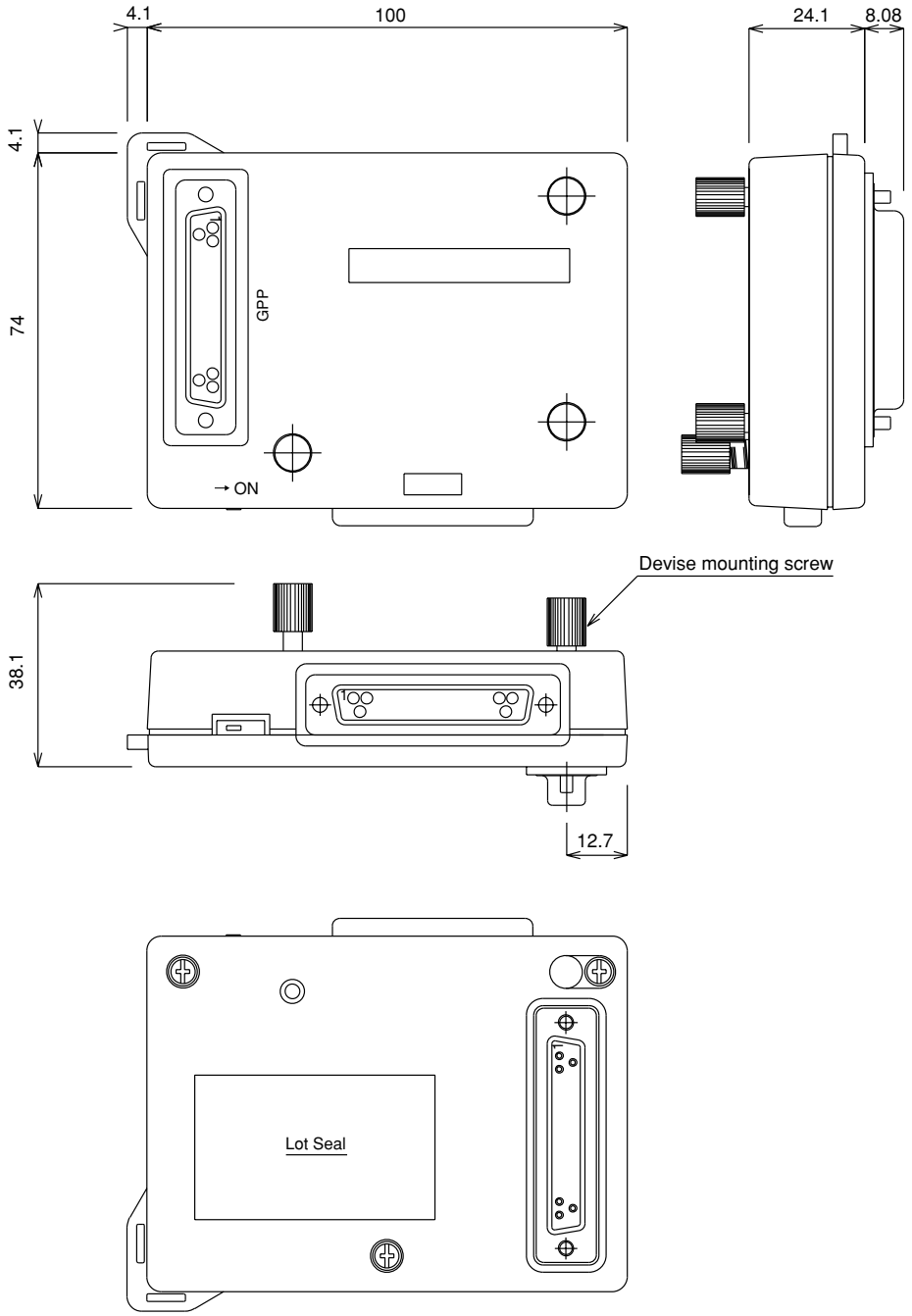
④ When you use ZM-1MD2 for A series/FX series CPU, set time-out time as 1.5 seconds or more by commu -nication parameter setup of ZM41/70/80.

Attached metal fittings of ZM-1MD2

When connecting ZM-1MD2 to the small type (A1S, A2US, etc.) of A series PC made by Mitsubishi, use the unit by mounting the attached metal fittings.



Size drawing of ZM-1MD2



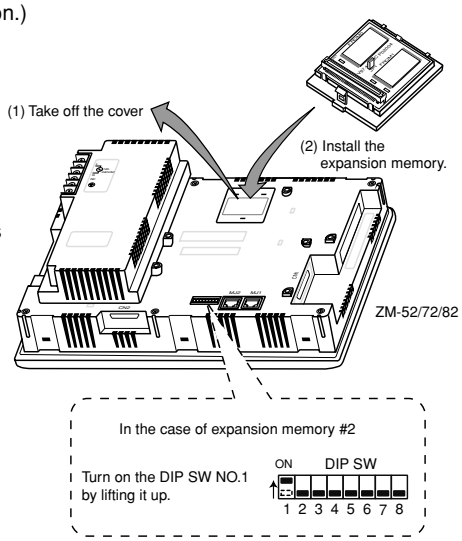
24 Expansion Memory (ZM-4EM)

About 900K bytes (1.2 M byte if 32 dot font is not in use) inside the flash memory that has been installed in the main body of ZM-52/72/82 series are used as the panel data memory.
If you install ZM-2EM/4EM to the main body of ZM-52/72/82 series, an additional 2M/4M bytes are installed to the panel data memory.(ZM-2EM is discontinued production.)

Installation

1. Turn OFF the power.
2. Take off the cover as described in the drawing, and install the additional memory.
3. Turn ON the power.

* When installing the memory, press hard on both ends of the cassette case.



How to use

There are two ways of installing the additional memory.

1) In the case of additional memory #1
The memory volume increases consequently as the volume of the memory cassette increases, as in the chart described below.

2) In the case of additional memory #2
Turn on the DIP SW NO.1 which locates on the back side of ZM-52/72/82 series.
Read the data (font, interface driver, panel data) other than the program already installed, to the additional memory itself. The volumes of panel data are in the chart described below. (*2)

* When turning on the DIPSW NO.1, make sure that you also recharge the power of ZM-52/72/82 series.

ZM-52/72/82 / Font	Standard	*1 Additional memory 1 + 2M	*1 Additional memory 1 + 4M	*2 Additional memory 2 2M	*2 Additional memory 2 4M
Japanese	1,179,648	3,260,416	5,357,568	1,703,936	3,801,088
Japanese 32 *3	786,432	2,867,200	4,964,352	1,179,648	3,276,800
English (Western)	1,441,792	3,522,560	5,619,712	1,835,008	3,932,160
Chinese (Mandarin)	1,310,720	3,391,488	5,488,640	1,703,936	3,801,088
Chinese (Simplified)	1,179,648	3,260,416	5,357,568	1,703,936	3,801,088
Korean	1,310,720	3,391,488	5,488,640	1,835,008	3,932,160

*1 This is the volume of the panel data when adding the memory while turning off the DIP SW NO.1.
*2 This is the volume of the panel data when adding the memory while turning on the DIP SW NO.1.
*3 Japanese 32 matches to the 32 dot font. In the case of multiplying the size of the character, the character becomes softened as the base is the 32 dot font.

Setting

On the screen edit software ZM-71SE, set [additional memory] to [2M(additional memory 1)] , [4M(additional memory 1)] or [2M(additional memory 2)] , [4M(additional memory 2)] by using [other setting (O)/P1] of the [system setting (A)].

25 Expansion Memory (ZM-43EM)

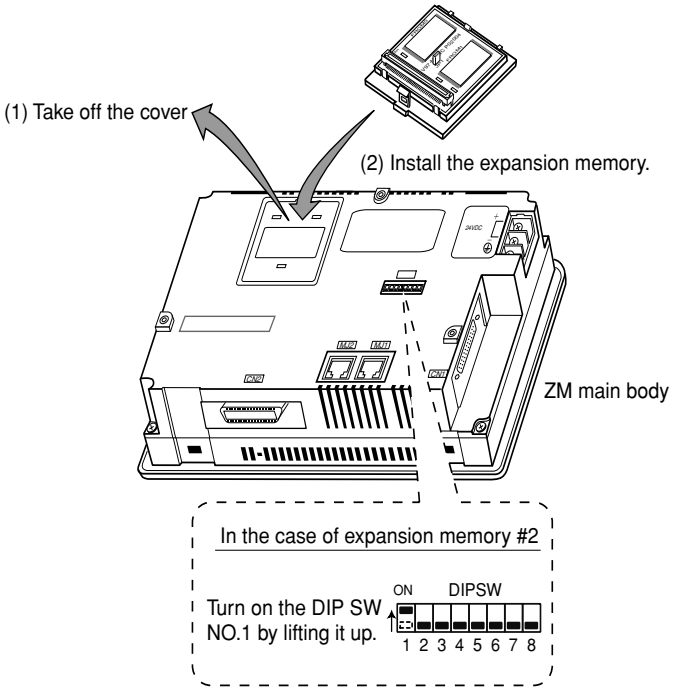
An expansion memory ZM-43EM is the extension board used for which increases the screen data memory of ZM-43T/43D/43L. When ZM-43T/43D/43L is mounted, 4 M bytes of screen data memory can be extended.

Correspondense models	Software version
ZM-43 series (ZM-43T/43D/43L)	- Use the version 1.2.0.0 or later for program version (SYSTEM PROG. VER.) of the ZM-43T/43D/43L. - Use the verison 1.2.0.0 or later for ZM-71SE.

Installation

Please install the ZM-43EM in ZM-43T/43D/43L (the following is ZM main body) in the following procedure.

1. Turn OFF the power.
2. Take off the cover of the cassette part for connect with expansion memory , and install the ZM-43EM. When installing the memory, press hard on both ends of the ZM-43EM.
3. The DIP switch of the ZM main body side is set up according to the purpose of use. Refer to the next page “Kinds of memory expansion”.
4. The power supply of ZM main body is turned ON.



Kinds of memory expansion

In the ZM-43EM, there are two kinds of extension methods (additional memory 1 and 2) according to setup the DIP switch of ZM-main body.

1. Additional memory 1

   Set OFF the DIPSW “1” of ZM main body.

   - As shown in the following table (*1), the amount of memories increases by the capacity of ZM-43EM.

2. Additional memory 2

   Set ON the DIPSW “1” of ZM main body.

   - Data (font, I/F driver, screen data) other than the program of ZM main body is written in ZM-43EM.
   - The capacity of screen data is as shown in the following table (*2).

Font	Standard	*1 Additional memory 1	*2 Additional memory 2
Japanese	1216	5248	3712
Japanese 32 *3	768	4800	3264
English (Western)	1408	5440	3904
Chinese (Mandarin)	1280	5312	3776
Chinese (Simplified)	1216	5248	3712
Korean	1344	5376	3840

(Unit : K bytes)

*1 This is the volume of the panel data when adding the memory while turning off the DIP SW "1".
*2 This is the volume of the panel data when adding the memory while turning on the DIP SW "1".
*3 Japanese 32 matches to the 32 dot font. In the case of multiplying the size of the character, the character becomes softened as the base is the 32 dot font.

(Note) When turning ON or OFF the DIPSW “1”, make sure that you also recharge the power of ZM main body.

Setting of ZM main body

On the screen edit software ZM-71SE, set [additional memory] to [4M(additional memory 1)] or [4M(additional memory 2)] by using [other setting (O)/P1] of the [system setting (A)].

26 Expansion Memory (ZM-43SM, ZM-80SM)

An expansion memory ZM-43SM/80SM is a memory for extension in which the calendar and SRAM backup memory of ZM-43/52/72/82 were carried.

Model name	Correspondense model
ZM-43SM	ZM-43 series
ZM-80SM	ZM-52/72/82 series

- This expansion memory cannot be used for ZM-42 series.

The component of ZM-43SM/80SM is as follows.

	ZM-43SM	ZM-80SM
Accessories	・Coin type lithium primary battery (type : CR2430): 1 ・Caution seal: 1	

Safety precautions

Since the lithium battery used by ZM-43SM/80SM contains inflammable substances, such as lithium and organic solvent, if handling is mistaken, by generation-of-heat / burst ignition etc., it is injured or it has a possibility of resulting in a fire.

⚠ Caution

- Perform exchange of a battery after discharging static electricity collected on the human body.
- Use the battery of appointed "form" and a "model name" at the time of exchange of a battery. If other batteries are used, it will become the cause of a fire or explosion.
- If it works hard with the battery single article currently used for this equipment, it will become the cause of causing a fire and chemical combustion.
- Do not put in a battery into fire, or do not heat and decompose.
- For a terminal, please twist a tape, insulate and dispose of a used battery correctly.
- Keep a battery to the place which does not reach an infantile hand. (If you should understand, please consult with a doctor immediately.)
- Do not make a battery short-circuit.
- Do not charge a battery by any means.
- Do not carry out direct soldering to a battery.
- Make + and - of a battery reverse and do not use them.
- Since there is a possibility of igniting in escaped electrolysis liquid when a battery leak or there is a nasty smell, please keep away from fire immediately.

Handling precautions

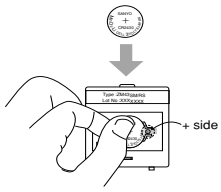
Be sure to attach a battery when you are used ZM-43SM/80SM. Since the data of ZM-43SM/80SM is not held unless a power supply is supplied to ZM-43SM/80SM.

Use as for the version 1.1.0.2 or later for ZM-71SE, version1.200 or later, as for the program version of ZM-43/52/72/82, version1.100/1.090/1.000 or later, as for font data version.

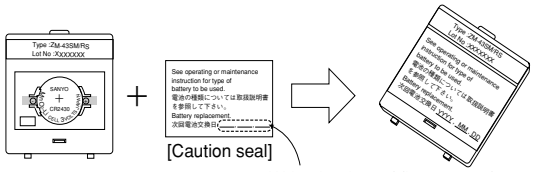
Installation

Please attach ZM-43SM/80SM in ZM-43/52/72/82 in the following procedure.

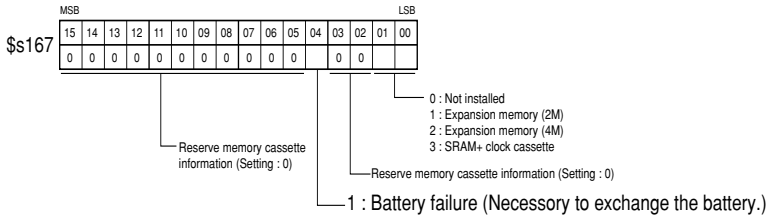
1. The battery (CR2430) of an attached article is turned to the socket of ZM-43SM/80SM, "+" side is turned upwards, and it sets. In case it sets, as a battery is pushed in a plug and the direction of "+" side, "-" side also inserts it in "+" side.



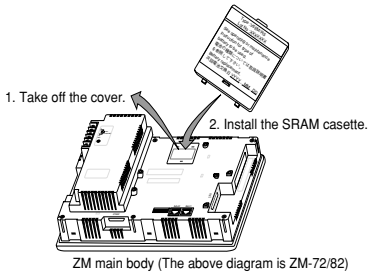
2. The date of five years after is entered in the "next battery exchange day" column of the cautions seal of an attached article, and as shown in the following figure, it sticks on it.



- The term of validity of the battery of ZM-43SM/80SM is about five years at 25 degrees. Even if it was less than five years, when the voltage of a battery falls, the 4th bit of the internal memory (address #s167) of ZM-43/52/72/82 turns ON, and it warns of battery exchange. Please exchange batteries quickly.



3. The power supply of ZM-43/52/72/82 is turned OFF.
4. The cover of an expansion memory cassette part is removed and ZM-43SM/80SM is attached.



Setting of ZM main body

In screen edit software ZM-71SE, [SRAM cassette setup (W)] of a [System setup(A)] is chosen, and [SRAM cassette setting] dialog is set up. When you change a setup, please be sure to format.

The following procedure performs adjustment and a format of the date of ZM-43SM/80SM, and time.

1. The [local main] screen of ZM-43 main part is displayed.
2. The "cassette adjustment" switch of a [local main] screen is pushed.
3. A [cassette adjustment] screen is displayed. Adjustment and a format of a date and time are performed here.

The exchange method of a battery

You should prepare the following battery for exchange, and it exchanges for it in the following procedure.

Model type	Specifications
CR2430	・Coin type lithium primary battery (recommend : made by SANYO)

① In case battery exchange is carried out, ZM-71SE are used (cable : ZM-80C) and backup of the data stored in ZM-43SM/80SM is taken.

1. ZM-71SE is started.
2. [Transmission] icon is clicked. [Transmission] dialog is displayed.
3. A [transmission device:main part] and [transmission data:SRAM data] are chosen. When taking backup by from ZM-71SE to Ethernet on a server, IP address] of transmission / SRAM wearing ZM main body is chosen by [Ethernet. The item [which uses a simulator] and [which takes in a comment at the time of reception] is left as it is.
4. [PC] button of the [transmission method] is clicked.
5. The read data is saved at [*.RAM] file.

② If the power supply of ZM main body is turned OFF and the cautions seal of ZM-43SM/80SM is removed, the battery mounted in the socket will appear. A battery is removed from a socket and exchanged for a new battery. (Refer to previous page “Installation”.)

③ The power supply of ZM main body is turned ON and RAM file saved by 1 is transmitted to ZM-43SM/80SM.

Specifications

● General specifications

Item \ Model	ZM-43SM	ZM-80SM
Power	3.3 VDC (Power supply from ZM-43/52/72/82)	
Operation temperature	0℃ to +50℃	
Circumference temperature	-10℃ to +60℃	
Relative humidity	85% RH max. (non condensation)	
Dust	Not dust	
Corrosive gas	Without corrosive gas	
Outside dimensions W×H(mm)	50 × 57.5	
Case color	Black	Gray
Material	PC/ABS resin	

● Memory specifications

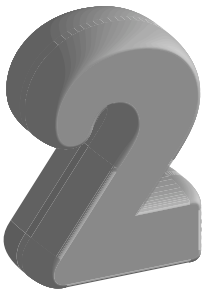
Item	Specifications
Kinds of memory	SRAM
Memory capacity	512 Kbytes

● Backup specifications

Item	Specifications
Battery speicifications	Coin type lithium primary battery
	Battery type : CR2430 (recommend: Sanyo)
Backup term	About five years (Circumference temperature : 25℃)
Exchange propriety	Available (install in socket for battery)
Battery voltage sag detection function	Provided (Internal memory allocation)
Calender accuracy	Monthly difference ±60 seconds (Circumference temperature : 25℃)

(Note)

When ZM-43/52/72/82 series and a printer are always connected and ZM-43SM/80SM is being used at the time of use, in case you turn off the power supply of ZM main body, please be sure to turn off the power supply of a printer.If the power supply of a printer is changed into ON state, in response to a surroundings lump and its influence, the consumption current of the backup battery of ZM-43SM/80SM will increase the voltage from the signal line of a printer, and a backup battery will be exhausted in 2 to 3 months.



Connection to Link Module

1 Sharp PC

Link module

The following are the link module and communication port that are possibly connected.

ZM-71SE Model Setting	PC		Link module
JW Series	W70H, W100H JW50, JW70, JW100 JW50H, JW70H, JW100H		ZW-10CM JW-10CM
	JW20, JW20H JW30H		JW-21CM
	JW10 (JW-1324K/1342K JW-1424K/1442K JW-1624K/1642K)		MMI Port Communication Port
	J-board		Z-331J/332J
JW70H COM	JW70(JW-70CU) JW100(JW-100CU) JW70H(JW-70CUH) JW100H(JW-100CUH)		Communication Port
JW20 COM	JW20(JW-22CU) JW20H(JW-22CU)		
	JW30H (JW-32CUH/H1 JW-33CUH/H1/H2/H3)		PG/COMM1 Port PG/COMM2 Port
	J-board	(Z-311J Z-312J)	Upper Communication Port CN3 Upper Communication Port TC1
		(Z-511J)	Upper Communication Port CN8 Upper Communication Port TC12
		(Z-512J)	PG/COMM1 Port PG/COMM2 Port

The setting items are described in the chart below.

Item Baud Rate	Content of settings Same as the main unit (normal 19200bps)
Data Length	7 bit
Parity	Even
Stop Bit	2 bit
Error Check	Sumcheck
RS-422	4-wire system
Transmission Control	Command mode
Port	[01] fix

Switch Setting of Link module

(1) Switch setting of ZW-10CM, JW-10CM and JW-21CM

Switch	Setting	Contents
SW0	4	Comand mode
SW1	1	Station address (lower half)
SW2	0	Station address (upper half)
SW3-1	OFF	Not used
SW3-2	ON	4-wire system
SW3-3	OFF	Not used
SW3-4	ON	Even parity
SW4	0	Baud rate:19200 bps
SW7	ON	Temination resistance provided

(2) Switch setting of Z-331J/332J

Switch	Setting	Contents
SW0	4	Computer link
SW1	1	Station address (lower half)
SW2	0	Station address (upper half)
SW3-1	OFF	Not used
SW3-2	OFF	Used only for 2-line system
SW3-3	OFF	Not used
SW3-4	ON	Even parity
SW4	0	Baud rate:19200 bps
SW7	ON	Temination resistance provided

PC System Memory Setting [in case of a communication port]

(1) System memory setting of JW-70CU/100CU, JW-70CUH/100CUH and Z-311/312J

System memory	Setting	Contents
#236	30 (H)	Stop bit : 2 bit, Parity : Even Baud rate:19200 bps
#237	01 (H)	Station address

(2) System memory setting of JW-32CUH/H1/M1, JW-33CUH/H1/H2/H3, Z-51J/512J

• Communication port 1 (PG/COMM 1 port)

System memory	Setting	Contents
#234	30 (H)	Stop bit : 2 bit, Parity : Even Baud rate:19200 bps
#235	01 (H)	Station address

• Communication port 2 (PG/COMM 2 port)

System memory	Setting	Contents
#236	30 (H)	Stop bit : 2 bit, Parity : Even Baud rate:19200 bps
#237	01 (H)	Station address

(3) System memory setting of JW-1324K/1342K, JW-1424K/1442K and JW-1624K/1642K

• Communication port

System memory	Setting	Contents
#234	00 (H)	Computer link
#236	30 (H)	Stop bit : 2 bit, Parity : Even Baud rate:19200 bps Data Length : 7 bit
#237	01 (H)	Station address

• MMI port

System memory	Setting	Contents
#226	30 (H)	Stop bit : 2 bit, Parity : Even Baud rate:19200 bps Data Length : 7 bit
#227	01 (H)	Station address

Available Memory

Available: ◯ Unavailable: ×

Memory	Bit Write	TYPE	Remarks
X9XXX (Register)	×	0	
XXXXX (Relay)	◯	1	ㅋ as word device
EXXXX (Register [Self-diagnosis])	×	2	
bXXXX (Timer/Counter [current value)	×	3	
F1 (File Register)	×	4	
F2 (File Register)	×	5	
F3 (File Register)	×	6	

[Caution]
Pay attention to the following cautions when applying the indirect address-assign of the macro command by the register x9xxx(memory type :0)
(Refer to P14-23 of the ZM-71SE instruction manual)

1) When applying the ZM-70/41
   At least before V1.10 or after V1.15 of the system ROM version (You can not use V1.11~ V1.14 versions) The memory-assign method between the register 09000 to 19000 is done by the 512-word unit.
2) When applying the ZM-82/72/52/43/42, ZM-71T
   The memory-assign method between the register 09000 to 19000 is done by the 256-word unit regardless of versions.

The relation between the register address and the memory No.(in the case of indirect address- assign)
(the memory no. is shown by the word unit.)

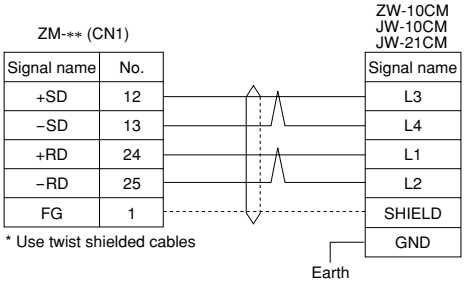
Model ROM Version	ZM-70/41 before V1.10 and after V1.15	ZM-82/72/52/43/42 ZM-71T all versions
Register address	Memory No (DEC)	Memory No (DEC)
09000~09776	0~255	0~255
19000~19776	512~767	256~511
29000~29776	1024~1279	512~767
39000~39776	1536~1791	768~1023
49000~49776	2048~2303	1024~1279
59000~59776	2560~2815	1280~1535
69000~69776	3072~3327	1536~1791
79000~79776	3584~3839	1792~2047
89000~89776	4096~4351	2048~2303
99000~99776	4608~4863	2304~2559

Wiring

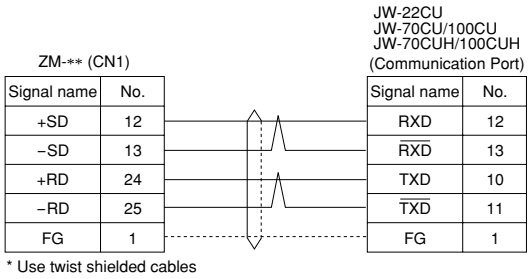
Indicate the connection of ZM-** and each module. CN1 is used alternately with RS-422.

RS-422

• Connection with ZW-10CM, JW-10CM and JW-21CM

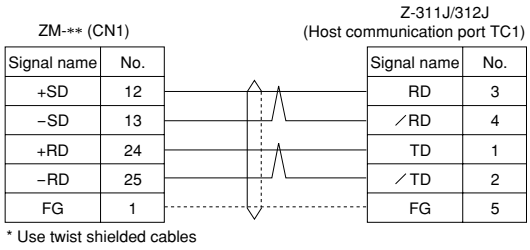


• Connection with JW-70CU/100CU, JW-70CUH/100CUH, JW-22CU

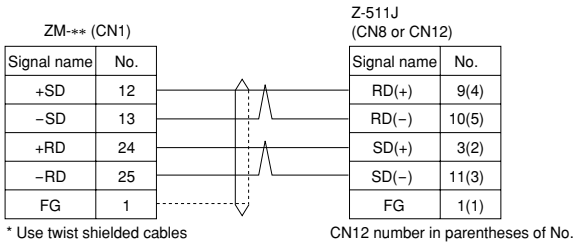


(Attention : In the case of JW-70CUH/100CUH, connect the end resistance.)
(Connect the pin No.6 of the communication port with the pin No.13.)

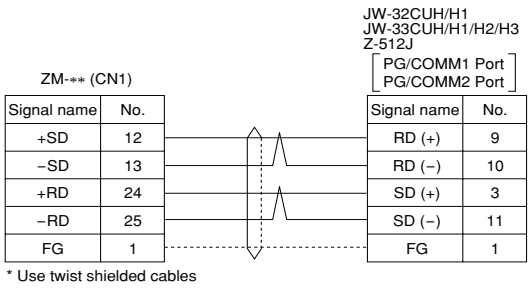
• Connection with Z-311J/312J



• Connection with Z-511J

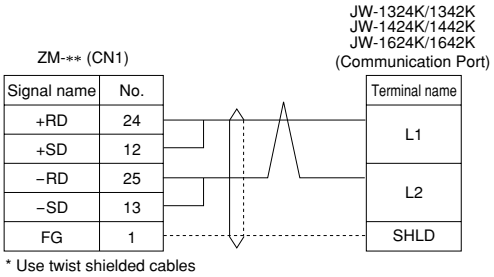


• Connection with JW-32CUH/H1, JW-33CUH/H1/H2/H3, Z-512J



* Use twist shielded cables

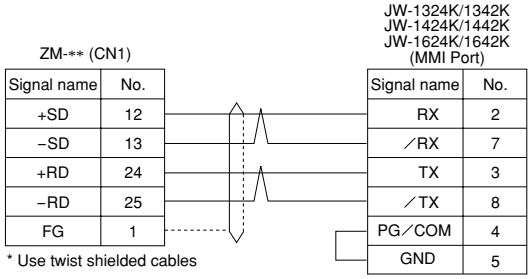
• Connection with JW-1324K/1342K, JW-1424K/1442K, JW-1624K/1642K
[In case of connecting to the communication port]



* Use twist shielded cables

(Attention : set the termination resistance switch naught (off) at the termination resistance)

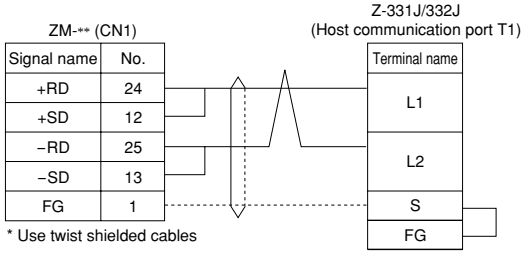
[When connecting to MM1 port]



* Use twist shielded cables

(Attention: set the termination resistance switch naught (off) at the termination resistance)

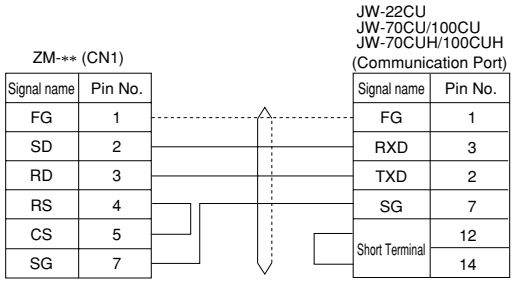
• Connection with Z-331J/332J



* Use twist shielded cables

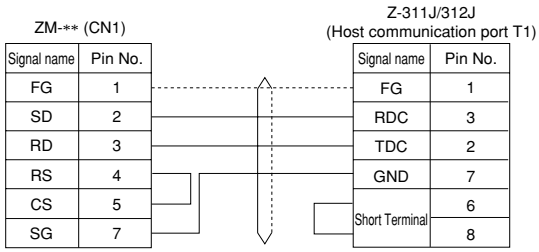
RS-232C

• Connection with JW-70CU/100CU, JW-70CUH, JW-22CU



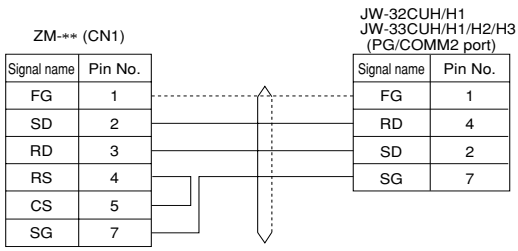
* Used shielded cables

• Connection with Z-311J/312J



* Used shielded cables

• Connection with JW-32CUH/H1, JW-33CUH/H1/H2/H3



* Use twist shielded cables

2 MITSUBISHI PC • 1

(A/Q series link unit)

Available PC

ZM-71SE Model Setting	PC	Link Unit	Wiring Diagram (refer to P2-12, 13)
AnA/N/U series	A2A, A3A	AJ71C24-S6 AJ71C24-S8 AJ71UC24	RS-232C [Wiring Diagram 2] RS-422 [Wiring Diagram 3]
	A2U, A3U, A4U	AJ71UC24	
	A1, A2, A3 A1N, A2N, A3N A3H, A3M, A73	AJ71C24 AJ71C24-S3 AJ71C24-S6 AJ71C24-S8 AJ71UC24	
	A0J2, A0J2H	A0J2C214-S1	
	A2US	A1SJ71UC24-R2	RS-232C [Wiring Diagram 1]
		A1SJ71UC24-R4	RS-422 [Wiring Diagram 3]
		A1SJ71UC24-PRF	RS-232C [Wiring Diagram 1]
	A1S, A1SJ, A2S	A1SJ71C24-R2	RS-232C [Wiring Diagram 1]
		A1SJ71C24-R4	RS-422 [Wiring Diagram 3]
		A1SJ71C24-PRF	RS-232C [Wiring Diagram 1]
	A2CCPUC24	CPU built-in port	RS-232C [Wiring Diagram 1]
	QnH(A mode)	A1SJ71UC24-R2 A1SJ71UC24-R4	RS-232C [Wiring Diagram 1] RS-422 [Wiring Diagram 3]
QnA series	Q2A, Q3A, Q4A Q2ASx	AJ71QC24N	RS-232C [Wiring Diagram 2] RS-422 [Wiring Diagram 3]
		AJ71QC24	RS-232C [Wiring Diagram 2] RS-422 [Wiring Diagram 3]
		A1SJ71QC24	RS-232C [Wiring Diagram 1] RS-422 [Wiring Diagram 3]
		AJ71QC24-R4(CH1)	RS-422 [Wiring Diagram 4]
		AJ71QC24-R4(CH2)	RS-422 [Wiring Diagram 3]
	QnH(Q mode)	QJ71C24	RS-232C [Wiring Diagram 1] RS-422 [Wiring Diagram 3]

Communication Setting

The recommended communication parameter setting of both PC and ZM-** is as follows:

♦A series link unit

Item		Setting of PC	Comm. Parameter of ZM-**
Baud Rate		19200bps	19200bps
Port		0 for both STATION × 10 and ×1	0
Parity		Even	Even
Transmission Control Mode *1	RS-232C	MODE1	Trans. Mode 1
	RS-422	MODE5	Trans. Mode 1
Transmission Code	Data Length	7 (ASCII)	7
	Stop Bit	1	1
Sumcheck		Provided	———
Write while running		Available	———
Terminal Resistor at Sender		Provided	———
Terminal Resistor at Receiver		Provided	———

*1 If [Trans. Mode 4] is selected from [Trans. Mode] in [Comm. Parameter] of the panel editor, specify [MODE4] in case of RS-232C, or select [MODE8] in case of RS-422.

♦Q series link unit

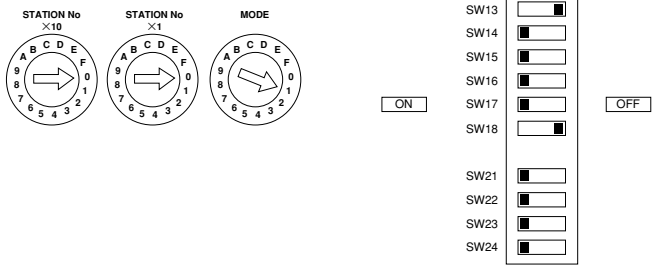
Item		Setting of PC	Comm. Parameter of ZM-**
Baud Rate		19200bps	19200bps
Port		0 for both STATION × 10 and ×1	0
Parity		Even	Even
Transmission Control Mode	RS-232C	MODE5 (Binary Mode)	———
	RS-422		
Transmission Code	Data Length	8	———
	Stop Bit	1	1
Sumcheck		Provided	———
Write while running		Available	———

Switch Setting

The following is an example to show the settings for both rotary dip switches and dip switches on PC.

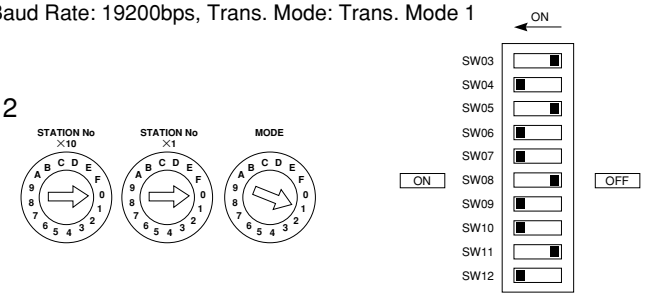
<E.g.> Signal Level: RS-232C, Baud Rate: 19200bps, Trans. Mode: Trans. Mode 1

AJ71UC24



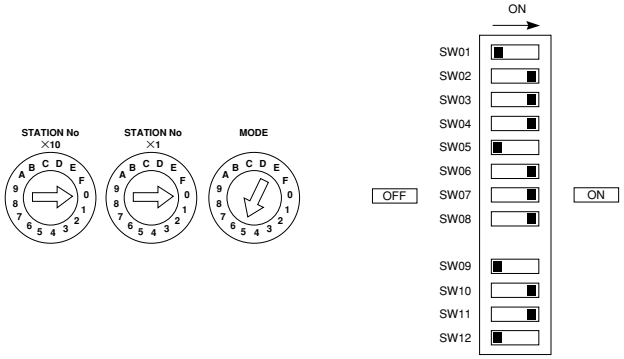
<E.g. 2> Signal Level: RS-232C, Baud Rate: 19200bps, Trans. Mode: Trans. Mode 1

A1SJ71C24-R2
A1SJ71UC24-R2



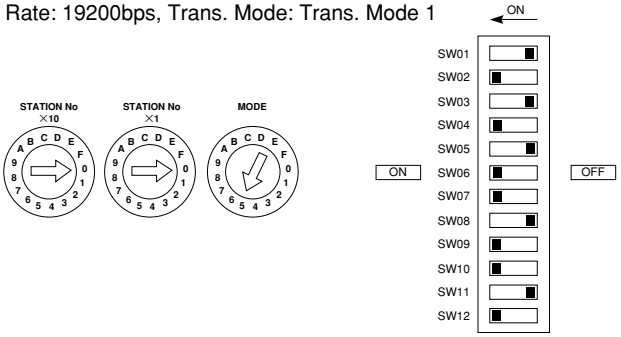
<E.g. 3> Baud Rate: 19200bps

AJ71QC24
A1SJ71QC24
AJ71QC24N



<E.g. 4> Signal Level: RS-422, Baud Rate: 19200bps, Trans. Mode: Trans. Mode 1

A1SJ71UC24-R4
A1SJ71C24-R4



Available Memory

Available: ○ Unavailable: ×

Memory	Bit Write	TYPE	Remarks
D (data register)	×	0	
W (link register)	×	1	
R (file register)	×	2	
TN (timer/current value)	×	3	
CN (counter/current value)	×	4	
SPU (special unit)	×	5	Slot No. *1
M (internal relay)	○	6	
L (latch relay)	○	7	
B (link relay)	○	8	
X (input relay)	○	9	
Y (output relay)	○	10	
TS (timer/contact)	○	11	
TC (timer/coil)	○	12	
CS (counter/contact)	○	13	
CC (counter/coil)	○	14	
H (link buffer)	×	15	
SD (special register)	×	16	Only in QnA
SM (special relay)	○	17	Only in QnA
SB (special link relay)	○	18	Only in QnA
SW (special link register)	×	19	Only in QnA
ZR (file register [continuous access])	×	20	Only in QnA

*1 The slot number is required in addition to the memory type and the address.
Convert a byte address into a word address to enter the data if the memory device of link unit is byte address.

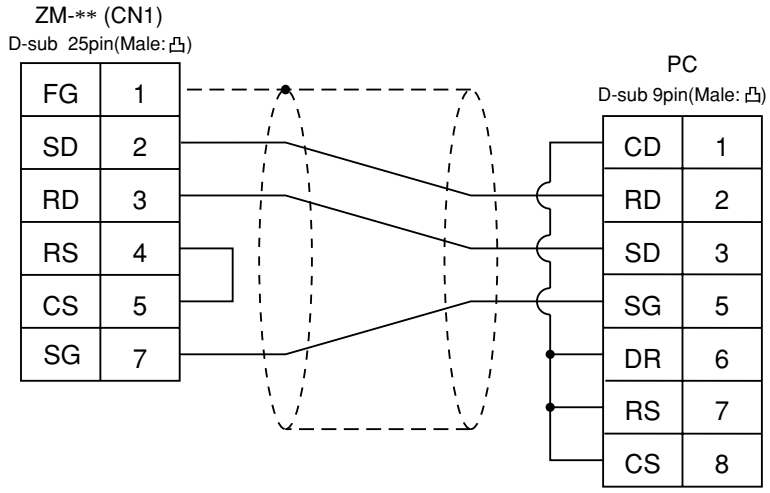
Set the memory to the extent of the memory range of each PC model. In case of using the [Bit Write] × memory as the bit device of the [Output Action] is [Momentary W], the other bits will be cleared when the bit memory is output, because the [Bit Write] will be output by one word (refer to P5-10, reference 14-7 of ZM-71SE Instruction Manual). Use [TYPE] number to assign indirect memory for macro programs.

Wiring

The following is a diagram to show the wiring of the cable which connects ZM-** to PC.

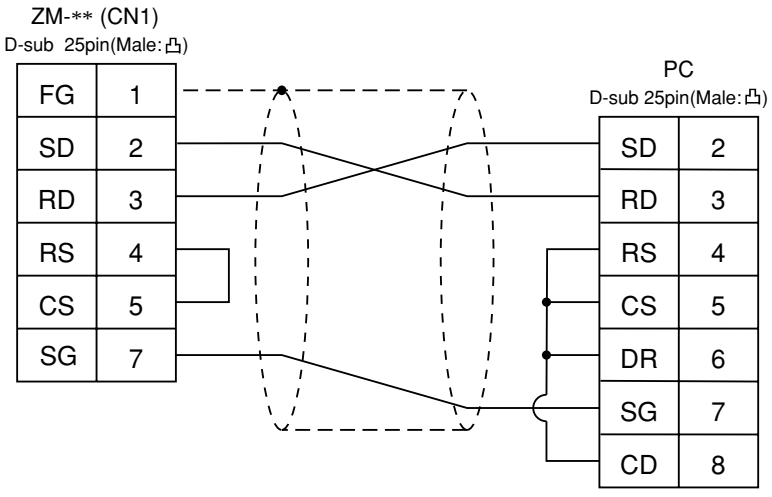
RS-232C

Wiring Diagram 1



* Use twist shielded cables.

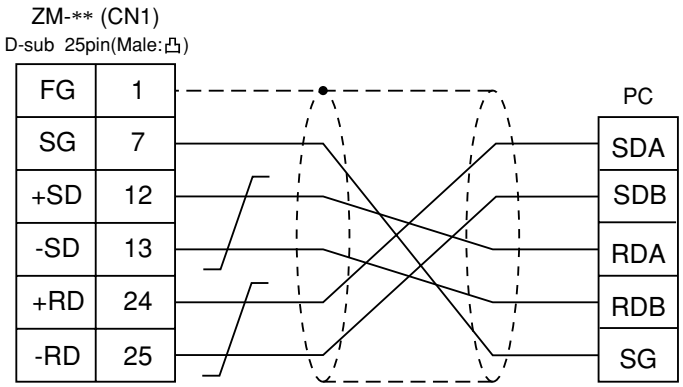
Wiring Diagram 2



* Use twist shielded cables.

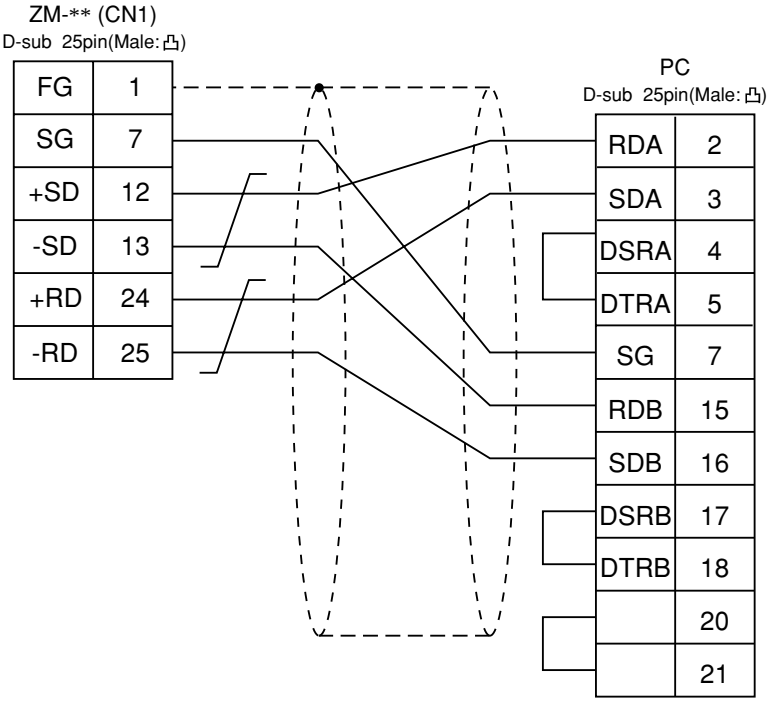
RS-422

Wiring Diagram 3



* Use twist shielded cables.

Wiring Diagram 4



* Use twist shielded cables.

3 MITSUBISHI PC • 2

(A/QnA series CPU port)

Connection

Connect to the A/QnA series CPU port. The communication parameter setting of ZM-** is done automatically.

Available PC

ZM-71SE Model Setting	PC	Wiring Diagram (refer to P2-17)
A CPU port	A2A, A3A A2U, A3U, A4U A2US(H) A1N, A2N, A3N A3V, A73 A3H, A3M A0J2H A1S, A1SJ(H), A2S(H) A2CCPUC24 A1FX	RS-422 [Wiring Diagram 1]
Q CPU port	Q2A, Q3A, Q4A Q2AS(H)	

When the CPU is updated, or the specifications are changed, there is some possibility that ZM-** cannot be connected to the PC.

Available Memory

Available: ○ Unavailable: ×

Memory	Bit Write	TYPE	Remarks
D (data register)	×	0	
W (link register)	×	1	
R (file register)	×	2	
TN (timer/current value)	×	3	
CN (counter/current value)	×	4	
SPU (special unit)	×	5	Slot No. *1
M (internal relay)	○	6	
L (latch relay)	○	7	
B (link relay)	○	8	
X (input relay)	○	9	
Y (output relay)	○	10	
TS (timer/contact)	○	11	
TC (timer/coil)	○	12	
CS (counter/contact)	○	13	
CC (counter/coil)	○	14	
SD (special register)	×	16	Only in QnA
SM (special relay)	○	17	Only in QnA
SB (special link relay)	○	18	Only in QnA
SW (special link register)	×	19	Only in QnA
ZR (file register [continuous access])	×	20	Only in QnA

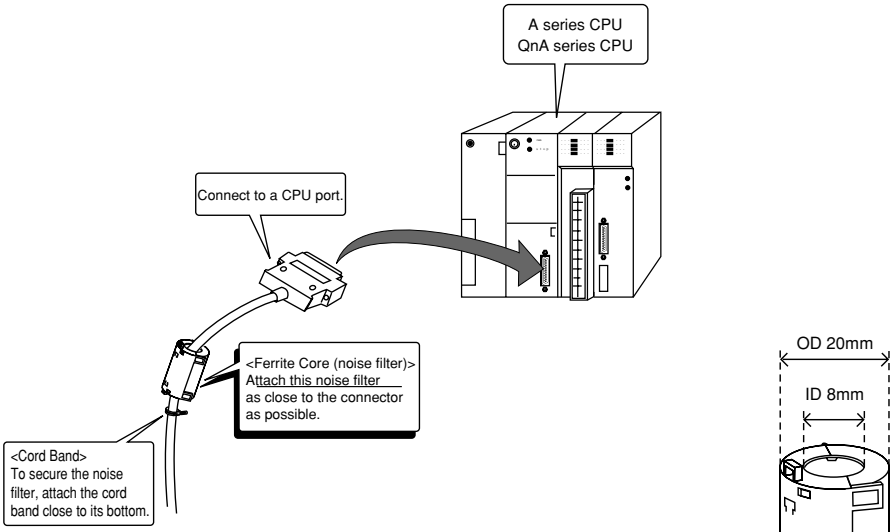
*1 The slot No. is required in addition to the memory type and the address.
Convert a byte address into a word address to enter the data if the memory device of link unit is byte address.

Set the memory to the extent of the memory range of each PC model. In case of using the [Bit Write] × memory as the bit device of the [Output Action] is [Momentary W], the other bits will be cleared when the bit memory is output, because the [Bit Write] will be output by one word (refer to P5-10, reference 14-7 of ZM-71SE Instruction Manual). Use [TYPE] number to assign indirect memory for macro programs.

Notes on direct connection with the CPU port of A/Q series CPU

Note According to our noise tests, the attachment of a ferrite core improves noise voltage by 650 to 900V and aids in preventing communication errors. For safer operation, be sure to attach the ferrite core to the cable.

- ○ Take appropriate measures to eliminate any noise from entering the communication cable between the ZM-** and MITSUBISHI A/QnA series CPU.
- ○ Noise should be considered when wiring in an electric box or in a machine. Be sure to keep the ZM-** wiring sufficiently away from power cables.
- ○ The longer the communication cable is, the more likely noise is to be an influence; therefore, the cable length should be minimized as much as possible.
- ○ File register(R) cannot be used in case of ROM operation of A series CPU.
- ○ A noise filter(ferrite core) is sold as an optional accessory.

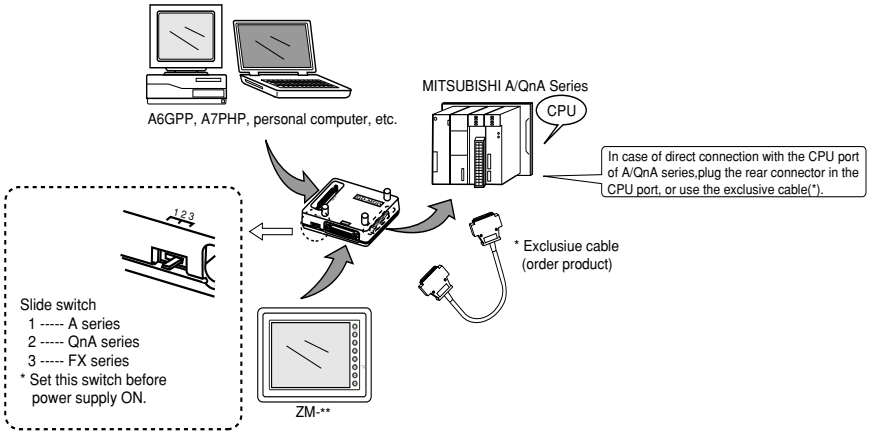


Ferrite core

In consideration of such noise problems, it is recommended that the standard type link module be used.

Notes on using ZM-1MD2 (Dual Port Interface) (See page 1-60)

- ○ As the ZM-1MD2 is powered by a CPU, check that the electric capacity of the CPU is at 5V (power consumption: max. 350mA).
- ○ The distance between the CPU and the ZM-1MD2 should be as short as possible (max. 1~1.5m).
- ○ For wiring, take appropriate measures to eliminate noise.

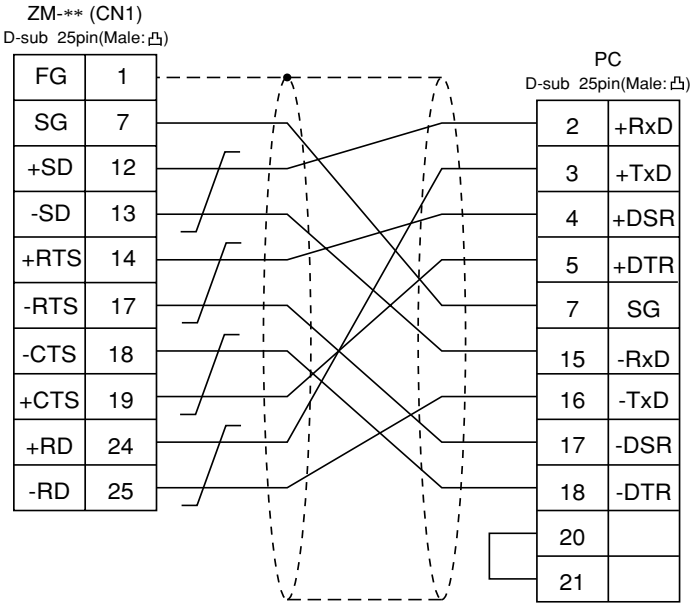


Wiring

The following is a diagram to show the wiring of the cable which connects ZM-** to PC.

RS-422

Wiring Diagram 1



* Use twist shielded cables.

4 MITSUBISHI PC • 3

(QnH series CPU port)

Connection

Connect to the QnH series CPU port.

The communication parameter setting of ZM-** is done automatically.

Available PC

ZM-71SE Model Setting	CPU	Wiring Diagram (refer to P2-19)
QnHCPU port(A)	Q06H-A	RS-232C exclusive cable (order product)
QnHCPU port(Q)	Q02 Q02H Q06H	

When the CPU is updated, or the specifications are changed, there is some possibility that ZM-** cannot be connected to the PLC.

Available Memory

Available: ○ Unavailable: ×

Memory	Bit Write	TYPE	Remarks
D (data register)	×	0	
W (link register)	×	1	
R (file register)	×	2	
TN (timer/current value)	×	3	
CN (counter/current value)	×	4	
SPU (special unit)	×	5	Unit No. *1
M (internal relay)	○	6	
L (latch relay)	○	7	
B (link relay)	○	8	
X (input relay)	○	9	
Y (output relay)	○	10	
TS (timer/contact)	○	11	
TC (timer/coil)	○	12	
CS (counter/contact)	○	13	
CC (counter/coil)	○	14	
SD (special register)	×	16	only in Q mode
SM (special relay)	○	17	only in Q mode
SB (special link relay)	○	18	only in Q mode
SW (special link register)	×	19	only in Q mode
ZR (file register [continuous access])	×	20	only in Q mode

*1 The unit number is required in addition to the memory type and the address.
Convert a byte address into a word address to enter the data if the memory device of link unit is byte address.

Set the memory to the extent of the memory range of each PC model. In case of using the [Bit Write] × memory as the bit device of the [Output Action] is [Momentary W], the other bits will be cleared when the bit memory is output, because the [Bit Write] will be output by one word (refer to P5-10, reference 14-7 of ZM-71SE Instruction Manual). Use [TYPE] number to assign indirect memory for macro programs.

Wiring

RS-232C

Use the cable, [QCPU2](2, 3, 5, 10, 15m), made by Sharp Corporation.

5 MITSUBISHI PC • 4

(FX1/2 series)

Connection

Connect to the FX series CPU port. The communication parameter setting of ZM-** is done automatically.

Available PC

ZM-71SE Model Setting	CPU	Wiring Diagram (refer to P2-22)
FX series	FX1/2 series	RS-232C exclusive cable (order product) RS-422 exclusive cable (order product) or [Wiring Diagram 1]
	FX0N(tool port)	RS-422 exclusive cable (order product)

When the CPU is updated, or the specifications are changed, there is some possibility that ZM-** cannot be connected to the PC.

Available Memory

Available: ○ Unavailable: ×

Memory	Bit Write	TYPE	Remarks
D (data register)	×	0	
TN (timer/current value)	×	1	
CN (counter/current value)	×	2	
32CN (counter 32bits)	×	3	* 1
M (internal relay)	○	4	
S (state)	○	5	
X (input relay)	○	6	Read only
Y (output relay)	○	7	
TS (timer/contact)	○	8	
CS (counter/contact)	○	9	
DX (data register)	×	10	* 2

*1 In case of the items which can display double word data (e.g. data display, graph, sampling), the data is managed as double word data.
Both bit data and word data are managed as lower-half 16 bits data.
Input : 16 upper-half bits are ignored.
Output : "0" is written in the 16 upper-half bits.

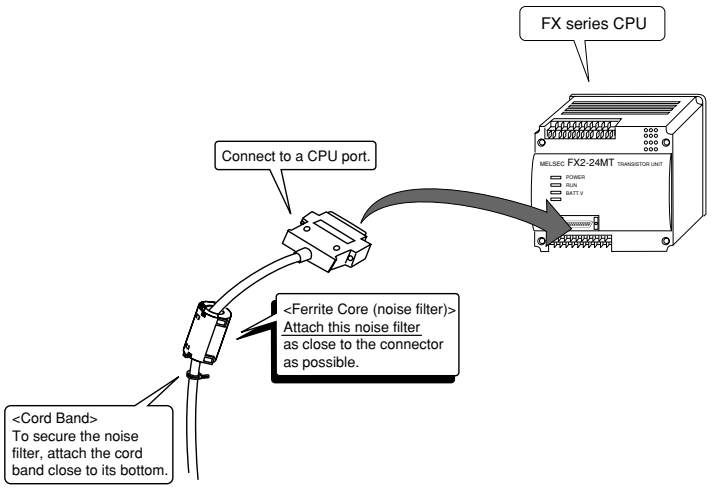
*2 When use D1000 ~ 2999, select DX.

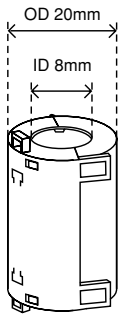
Set the memory to the extent of the memory range of each PC model. In case of using the [Bit Write] × memory as the bit device of the [Output Action] is [Momentary W], the other bits will be cleared when the bit memory is output, because the [Bit Write] will be output by one word (refer to P5-10, reference 14-7 of ZM-71SE Instruction Manual). Use [TYPE] number to assign indirect memory for macro programs.

Notes on the direct connection with the CPU port of FX series CPU

Note According to our noise tests, the attachment of a ferrite core improves noise voltage by 650 to 900V and aids in preventing communication errors. For safer operation, be sure to attach the ferrite core to the cable.

- ○ Take appropriate measures to eliminate any noise from entering the communication cable between the ZM-** and MITSUBISHI FX series CPU.
- ○ Noise should be considered when wiring in an electric box or in a machine. Be sure to keep the ZM-** wiring sufficiently away from power cables.
- ○ The longer the communication cable is, the more likely noise is to be an influence; therefore, the cable length should be minimized as much as possible.
- ○ A noise filter(ferrite core) is sold as an optional accessory.

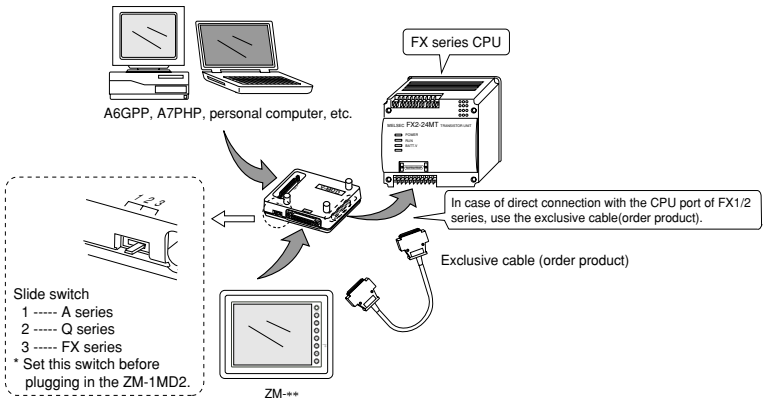




Ferrite core

Notes on using ZM-1MD2 (Dual Port Interface)

- ○ As the ZM-1MD2 is powered by a CPU, check that the electric capacity of the CPU is at 5V (power consumption: max. 350mA).
- ○ The distance between the CPU and the ZM-1MD2 should be as short as possible (max. 1 to 1.5m).
- ○ For wiring, take appropriate measures to eliminate noise.
- ○ Specify the value more than 150 (=1.5 sec) in [Time-out Time] of [Comm. Parameter] in case of connecting ZM-** to a ZM-1MD2.



Wiring

The following is a diagram to show the wiring of the cable which connects ZM-** to PC.

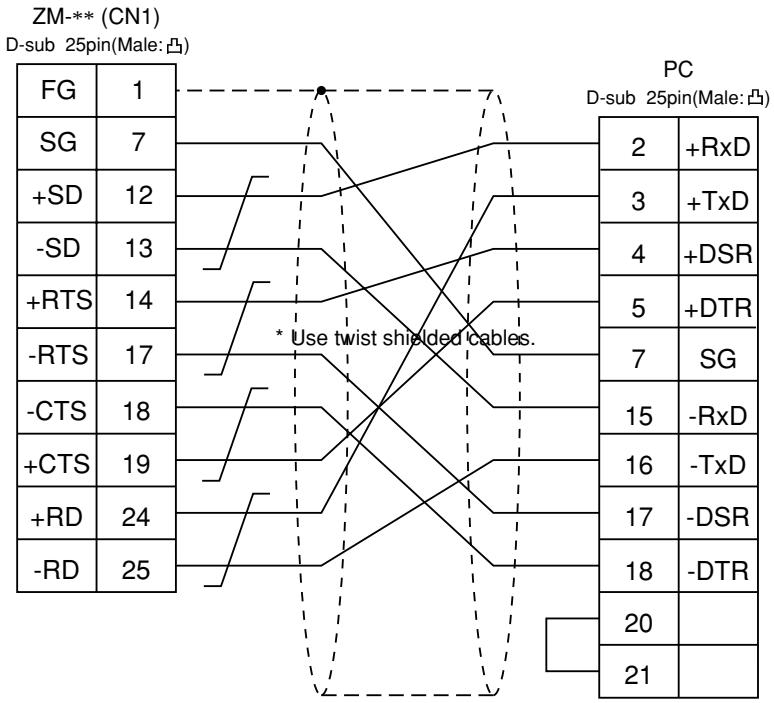
RS-232C

In case of connecting, with RS-232C, you may use our exclusive cable (order product : 3m).

RS-422

In case of connecting, with RS-422, you may use our exclusive cable (order product : 2, 3, 5, 10, 15 m).

Wiring Diagram 1



6 MITSUBISHI PC • 5

(FX2N/0N A protocol)

Available PC

ZM-71SE Model Setting	PC	Link Unit	Wiring Diagram(refer to P2-25)
FX series (A protocol)	FX2N	FX2N-232-BD	RS-232C [Wiring Diagram 1]
		FX2N-485-BD	RS-485 [Wiring Diagram 3]
		FX2N-422-BD	RS-422 exclusive cable (order product)
	FX0N	FX0N-232ADP	RS-232C [Wiring Diagram 2]
		FX0N-485ADP	RS-485 [Wiring Diagram 3]

Communication Setting

The recommended communication parameter setting of both PC and ZM-** is as follows:

Item		Setting of PC	Comm. Parameter of ZM-**
Baud Rate		19200bps	19200bps
Parity		Even	Even
Transmission Code	Data Length	7	7
	Stop Bit	1	1
Function		Exclusive Protocol Communication	———
H/W Type *1		Normally RS-232C	———
Sumcheck		Provided	———
Transmission Control Mode		MODE 1	Transmission system 1

*1 When the link unit, FX2N-485-BD, FX2N-422-BD, or FX2N-485-ADP is used, select [RS-485] in [Signal Level].

At the [Detail Setting] menu of the [Comm. Parameter] dialog of ZM-**, setting the value more than [1] in [Send Delay Time] is recommended.

Available Memory

Available: ○ Unavailable: ×

Memory	Bit Write	TYPE	Remarks
D (data register)	×	0	
TN (timer/current value)	×	1	
CN (counter/current value)	×	2	
32CN (counter 32bits)	×	3	* 1
M (internal relay)	○	4	* 2
S (state)	○	5	
X (input relay)	○	6	Read only
Y (output relay)	○	7	
TS (timer/contact)	○	8	
CS (counter/contact)	○	9	

*1 The meaning of CN200~CN255 is the same as the meaning of 32CN(counter 32bits).

*2 In case of the items which can display double word data (e.g. data display, graph, sampling), the data is managed as double word data.
Both bit data and a word data are managed as lower-half 16 bits data.
Input : 16 upper-half bits are ignored.
Output : "0" is written in the 16 upper-half bits.

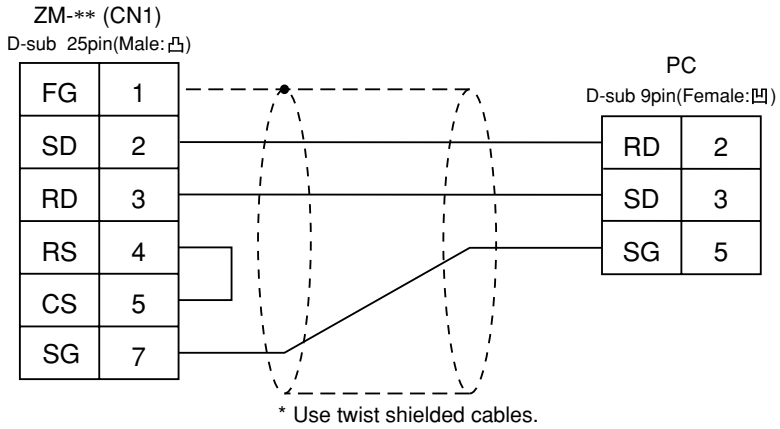
Set the memory to the extent of the memory range of each PC model. In case of using the [Bit Write] × memory as the bit device of the [Output Action] is [Momentary W], the other bits will be cleared when the bit memory is output, because the [Bit Write] will be output by one word (refer to P5-10, reference 14-7 of ZM-71SE Instruction Manual). Use [TYPE] number to assign indirect memory for macro programs.

Wiring

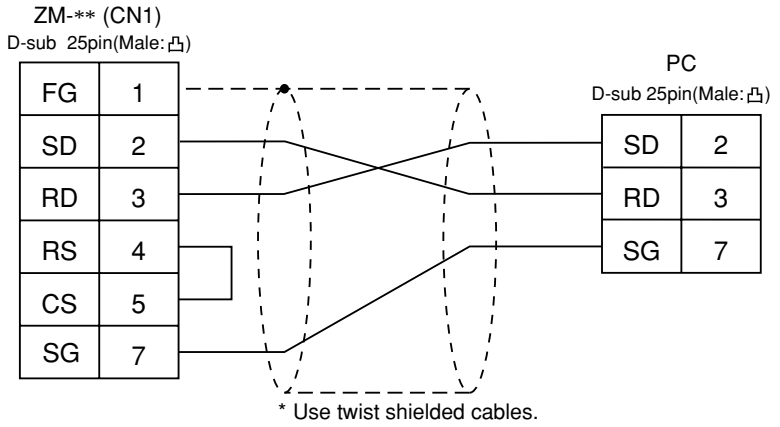
The following is a diagram to show the wiring of the cable which connects ZM-** to PC.

RS-232C

Wiring Diagram 1

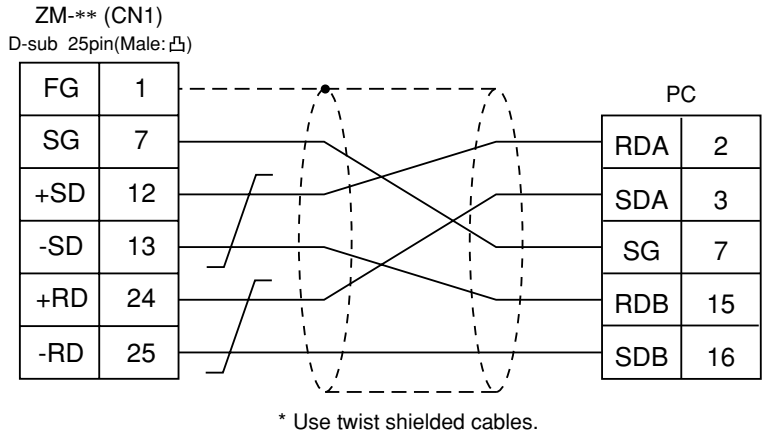


Wiring Diagram 2



RS-485

Wiring Diagram 3



7 MITSUBISHI PC • 6

(FX2N series)

Connection

Connect to the FX series CPU port. The communication parameter setting of ZM-** is done automatically.

Available PC

ZM-71SE Model Setting	CPC	Wiring Diagram
FX2N series	FX2N	RS-422 exclusive cable (order product)

When the CPU is updated, or the specifications are changed, there is some possibility that ZM-** cannot be connected to the PC.

Available Memory

Available: ○ Unavailable: ×

Memory	Bit Write	TYPE	Remarks
D (data register)	×	0	
TN (timer/current value)	×	1	
CN (counter/current value)	×	2	
32CN (counter 32bits)	×	3	* 1
M (internal relay)	○	4	
S (state)	○	5	
X (input relay)	○	6	Read only
Y (output relay)	○	7	
TS (timer/contact)	○	8	
CS (counter/contact)	○	9	

*1 In case of the items which can display double word data (e.g. data display, graph, sampling), the data is managed as double word data.
Both bit data and word data are managed as lower-half 16 bits data.
Input : 16 upper-half bits are ignored.
Output : "0" is written in the 16 upper-half bits.

Set the memory to the extent of the memory range of each PC model. In case of using the [Bit Write] × memory as the bit device of the [Output Action] is [Momentary W], the other bits will be cleared when the bit memory is output, because the [Bit Write] will be output by one word (refer to P5-10, reference 14-7 of ZM-71SE Instruction Manual). Use [TYPE] number to assign indirect memory for macro programs.

Wiring

RS-422

In case of connecting, with RS-422, you may use our exclusive cable (order product : 2, 3, 5, 10, 15 m).

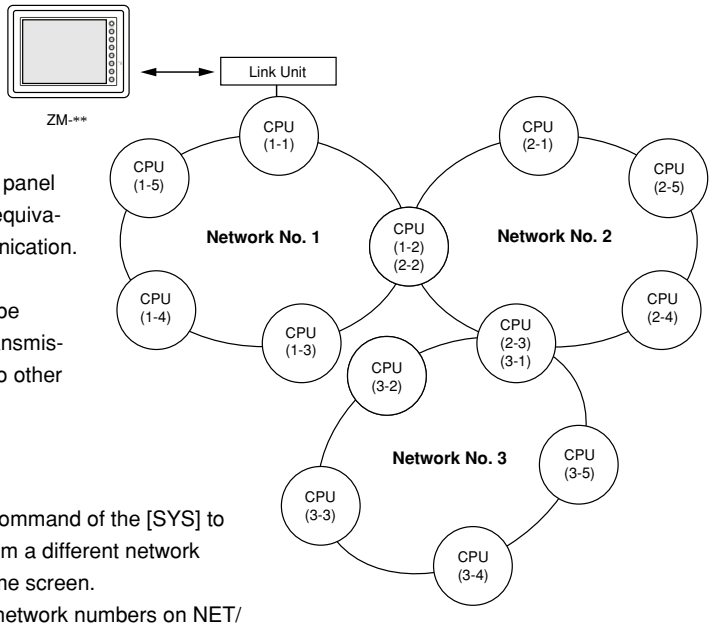
8 MITSUBISHI PC • 7

(Net 10)

○ ZM-** can access other CPUs on the NET II(/B) or NET/10 when ZM-** is connected to one of the link units that the data link system or network system consists of.
Select “Net10” as PC setting when configuring the screen data on the panel editor.

○ To access other CPU on the NET II (/B) or NET/10 from ZM-**.
- In case of NET II(/B), only the network which has the CPU with the link unit connected to the ZM-** (e.g. No. 1) can be accessed.
  (Available CPU No.: 0~30)
- In case of NET/10, other networks (No. 2, No. 3) can be accessed in addition to the network No. 1.
  (Available CPU No.: 1~30)

○ To read/write the memories of the CPU(e.g. 1-1 of CPU) which has the link unit to be connected to the ZM-**:



Set the CPU No. to “31” on the panel editor. Response time will be equivalent to the case of 1 : 1 communication.

Please note that response will be delayed due to the transient transmission when the CPU No. is set to other than “31”.

○ In this case, use [OUT_ENQ] command of the [SYS] to program the macro. A CPU from a different network cannot be accessed on the same screen.
When accessing PCs of other network numbers on NET/10, specify the network number to be connected with the screens Open Macro in Panel Editor.

○ Macro type to specify network • [OUT_ENQ] command of [SYS]

F1 Memory

n+0	0 (fixed)
n+1	Specify network: 2 (fixed)
n+2	System code
n+3	Network No.

The addresses n+0 and n+1 are fixed for 0 and 2.
Specify n+2 [System code] to 1: NET/10 2: NET II(/B)
Enter "0" to n+3 [Network No.] when n+2 [System code] indicates "2", and "the number to be accessed" to n+3 [Network No.] when n+2 [System code] indicates "1".

No macros can include this command except Open Macro. Communication error will occur due to the execution of the netware change when this command is used in other kinds of macros.

Refer to the "ZM-71SE Instruction Manual" for further information on Macro.
Also refer to MITSUBISHI's manual for network registration.

○ See MITSUBISHI's manual for details on the NET II(/B) data link system and the NET/10 network system.

Available Memory

See P2-9, "A/Q series link units" and P2-15, "A/QnA series CPU port" for available memory of the PC to be accessed.
Note that CPU No. should be set on the screen edit software ZM-71SE.

Wiring

See the wiring diagrams on P2-12, 2-13, "2 MITSUBISHI PC • 1."

9 OMRON PC • 1

Available PC

ZM-71SE Model Setting	PC	Link Unit	Wiring Diagram (refer to P2-28, 29)
SYSMAC C	C20H, C28H, C40H	CPU unit with a built-in RS-232C port (host link port)	RS-232C [Wiring Diagram 1]
	C120, C120F C200H C500, C500F C1000H C2000, C2000H	C120-LK201-V1 C120-LK202-V1	RS-232C [Wiring Diagram 3] RS-422 [Wiring Diagram 4]
	C200H C200HS-CPU01,03 C200HS-CPU21,23 C200HS-CPU31,33	C200H-LK201 C200H-LK201-V1 C200H-LK202 C200H-LK202-V1	RS-232C [Wiring Diagram 3] RS-422 [Wiring Diagram 4]
	C200HS-CPU21,23 C200HS-CPU31,33 CQM1-CPU21 CQM1-CPU41, 42, 43, 44	CPU unit with a built-in RS-232C port (host link port)	RS-232C [Wiring Diagram 2]
	C500, C500F C1000H C2000, C2000H	C500-LK203	RS-232C [Wiring Diagram 3] RS-422 [Wiring Diagram 4]
	C200HX C200HG C200HE	CPU unit with a built-in RS-232C port (host link port)	RS-232C [Wiring Diagram 2]
		Communication board (C200HW-COM02~06)	RS-232C [Wiring Diagram 2] RS-422 [Wiring Diagram 5] *1
	SRM1-C02	RS-232C interface	RS-232C [Wiring Diagram 2]
	CPM1A	CPU unit (peripheral port)	Cable made by OMRON [CQM1-CIF01]*2
SYSMAC CV	CV500, CV1000 CV2000 CVM1	CPU unit with a built-in RS-232C port (host link port)	RS-232C [Wiring Diagram 2] RS-422 [Wiring Diagram 6]
		CV500-LK201	RS-232C PORT1 [Wiring Diagram 3] PORT2 [Wiring Diagram 2] RS-422 PORT2 [Wiring Diagram 5]
SYSMAC CS1	CS1	CPU unit with a built-in RS-232C port (host link port)	RS-232C [Wiring Diagram 2]
		CS1W-SCU21	RS-232C [Wiring Diagram 2]
		Communication board (CS1W-SCU41)	RS-232C [Wiring Diagram 2] RS-422 [Wiring Diagram 7]*1

*1 Cannot be connected to ZM-** by multi-link connection.

*2 Exchange the shell, the side of D-sub25. (recommendation : 17J-25 made by DDK)

Communication Setting

The recommended communication parameter setting of both PC and ZM-** is as follows:

Item		Setting of PC	Comm. Parameter of ZM-**
Baud Rate		19200bps	19200bps
Port		0	0
Parity		Even	Even
Transmission Code	Data Length	7 (ASCII)	7
	Stop Bit	2	2
Command Level		3	————
1 :1/1 : n Protocol		1 : n	————
Synchronizing Switch		Internal Synchronization	————
CTS Switch		0V (normally ON)	————
5V Supply Switch		OFF	————
Terminal Resistor		ON for RS-422	————

· If [SYSMAC C] is selected at the [Select PLC Type] dialog, set the [Trans. Mode] for [Detail] in the [Comm. Parameter] in ZM-71SE.

*1 When using EMn (extensional data memory), specify the bank number 0 to 7.
The assigned memory is indicated while editing the screen as illustrated:

Trans. Mode	Contents
Trans. Mode 1	w/o sign BCD
Trans. Mode 2	w/+/- sign BCD *1

*1 w/+/- sign BCD

It is possible to display the data for PLC data with signs + and -.

When higher 4 bits of the memory are [F or A], treat the data as the minus data.
[F] : regards higher 4 bits of the memory as [-0]
[A] : regards higher 4 bits of the memory as [-1]

· range 1 word : -1999 ~ +9999
2 words : -19999999 ~ +99999999

<Ex.>

PLC memory	Display of ZM-**
0000 ~ 9999	0 ~ 9999
F001 ~ F999	-1 ~ -999
A000 ~ A999	-1000 ~ -1999
00000000 ~ 99999999	0 ~ 99999999
F0000001 ~ F9999999	-1 ~ -9999999
A0000000 ~ A9999999	-10000000 ~ -19999999

· How to set : Num. Display
[Input Type] BCD
[Display Type] DEC(w/ -sign, w/ +sign)

Available Memory

○ C

Available: ◯ Unavailable: ╳

Memory	Bit Write	TYPE	Remarks
DM (data memory)	×	0	
CH (input/output relay)	×	1	
HR (holding relay)	×	2	
LR (latch relay)	×	3	
AR (alarm relay)	×	4	
T (timer/current value)	×	5	
C (counter/current value)	×	6	
TU (timer [contact])	×	9	Read only
CU (counter [contact])	×	10	Read only

○ CV

Available: ◯ Unavailable: ╳

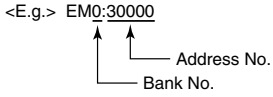
Memory	Bit Write	TYPE	Remarks
DM (data memory)	×	0	
CH (input/output relay)	×	1	
AR (alarm relay)	×	4	
T (timer/current value)	×	5	
C (counter/current value)	×	6	
EMn (extensional data memory)	×	7	* 1
TU (timer [contact])	×	9	Read only
CU (counter [contact])	×	10	Read only

○ CS1

Available: ◯ Unavailable: ╳

Memory	Bit Write	TYPE	Remarks
DM (data memory)	×	0	
CH (input/output relay)	×	1	
AR (alarm relay)	×	4	
T (timer/current value)	×	5	
C (counter/current value)	×	6	
EMn (extensional data memory)	×	7	* 1
W (internal relay)	×	8	
TU (timer/contact)	×	9	Read only
CU (counter/contact)	×	10	Read only

*1 When using EMn (extensional data memory), specify the bank number (CV:0 ~ 7, CS1:0 ~ C).
The assigned memory is indicated while editing the screen as illustrated:



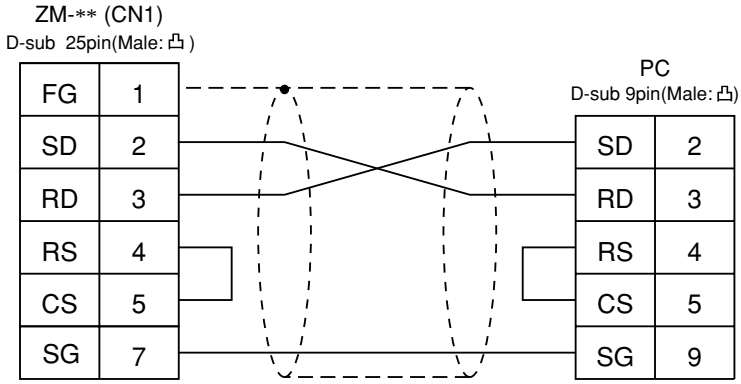
Set the memory to the extent of the memory range of each PC model.
In case of using the [Bit Write] × memory as the bit device of the [Output Action] is [Momentary W], the other bits will be cleared when the bit memory is output, because the [Bit Write] will be output by one word (refer to P5-10, reference 14-7 of ZM-71SE Instruction Manual). Use [TYPE] number to assign indirect memory for macro programs.

Wiring

The following is a diagram to show the wiring of the cable which connects ZM-** to PC.

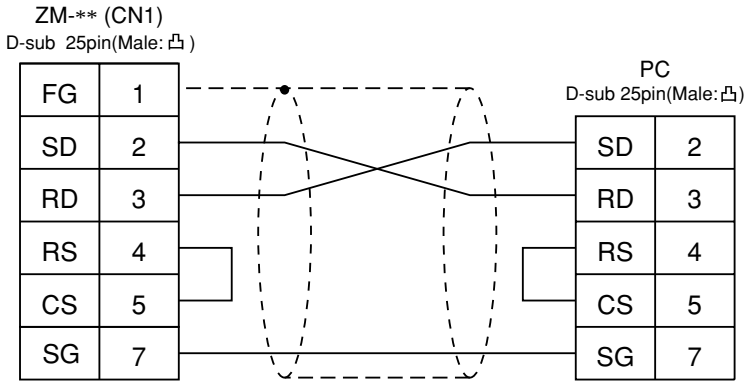
RS-232C

Wiring Diagram 1



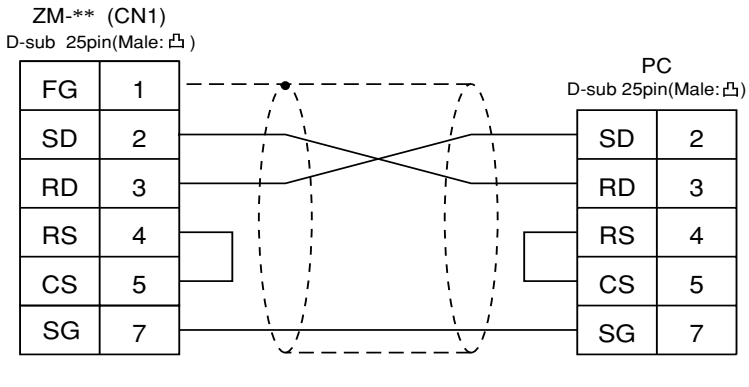
* Use twist shielded cables.

Wiring Diagram 2



* Use twist shielded cables.

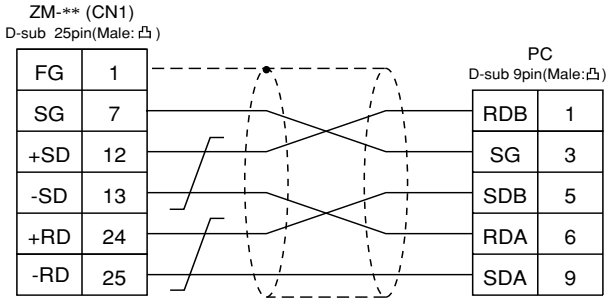
Wiring Diagram 3



* Use twist shielded cables.

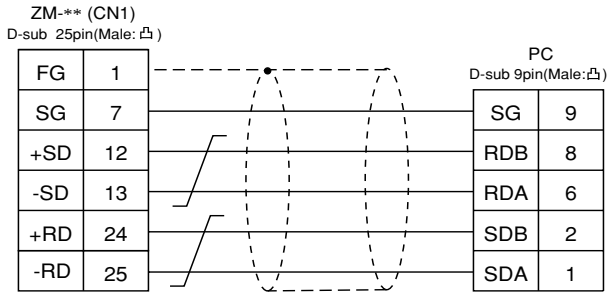
RS-422

Wiring Diagram 4



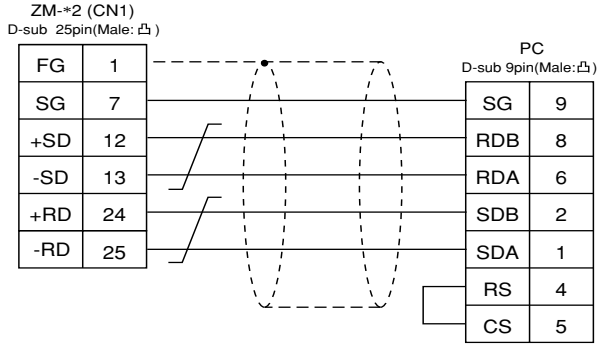
* Use twist shielded cables.

Wiring Diagram 5



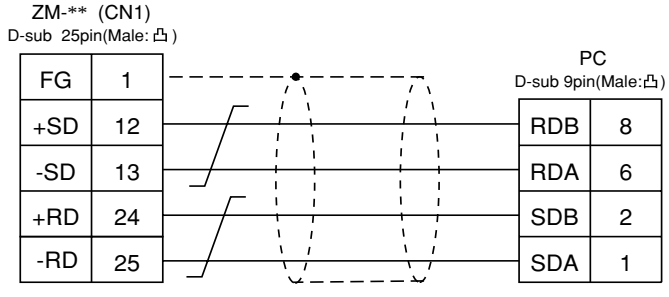
* Use twist shielded cables.

Wiring Diagram 6



* Use twist shielded cables.

Wiring Diagram 7

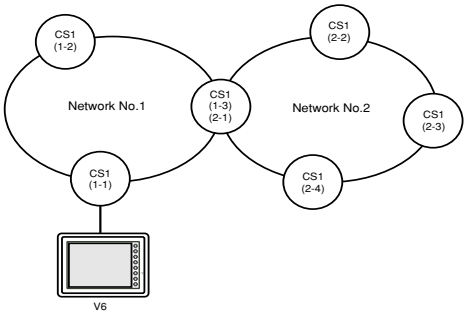


* Use twist shielded cables.

10 OMRON PC • 2

(OMRON-CS1 DNA)

When connect the ZM-** to CS1 on a network, the ZM-** can also access the other CS1 on a network.



Available PC

ZM-71SE Model Setting	PC	Link Unit	Wiring Diagram (refer to P2-32,33)
SYSMAC CS1 DNA	CS1	CPU unit with a built-in RS-232C port (host link port)	RS-232C [Wiring Diagram 2]
		CS1W-SCU21	RS-232C [Wiring Diagram 2]
		Communication board (CS1W-SCB41)	RS-232C [Wiring Diagram 2] RS-422 [Wiring Diagram 7] *1

*1 Cannot be connected to ZM-** by multi-link connection.

AvailableMemory

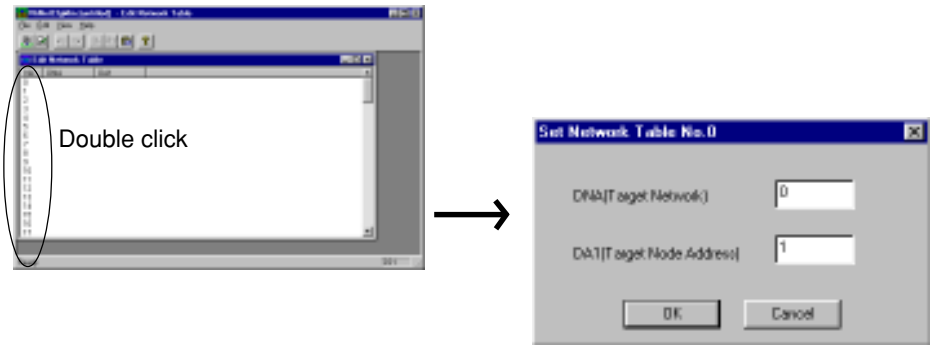
See [Available Memory] of CS1 in [7 OMRON PLC • 1].

Wiring

See [Wiring] in [7 OMRON PLC • 1].

ZM-71SE Setting

- Select [System Setting] from [Item], and click [Comm. Parameter]. The [Comm. Parameter] dialog is displayed. Set [Connection] to [1:n] in the [Detail] tab window.
- Select [System Setting] from [Item], and click [Network Table]. [Edit Network Table] is displayed. Double click the [No.]. The dialog is displayed. Register the CS1 on the network.



11 HITACHI PC • 1

(HIDIC H series)

Available PC

ZM-71SE Model Setting	PC	Link Unit	Wiring Diagram(refer to P2-37)
HIDIC-H	HIDIC H series CPU	COMM-2H	RS-232C [Wiring Diagram 1] RS-422 [Wiring Diagram 2]
		PERIPHERAL port on a CPU module	RS-232C [Wiring Diagram 1]
		EH150	* [EH-RS05] cable made by HITACHI + RS-232C [Wiring Diagram 1]
		H-252C on a CPU module	PERIPHERAL 1 RS-232C [Wiring Diagram 1] PERIPHERAL 2 * [CNCOM-05] cable made by HITACHI + RS-232C [Wiring Diagram 1]

* When using [EH-RS05] cable made by HITACHI, connect the cable of [Wiring Diagram 1] to the D-sub 15 pins side of [EH-RS05] to communicate with ZM-**.
When using [CNCOM-05] cable made by HITACHI, connect the cable of [Wiring Diagram 1] to the D-sub 15 pins side of [CNCOM-05] to communicate with ZM-**.

Communication Setting

The recommended communication parameter setting of both PC and ZM-** is as follows:

♦COMM-2H

Item		Setting of PC	Comm. Parameter of ZM-**
Baud Rate		19200bps	19200bps
Port		0 for both STATION × 10 and × 1	0
Parity		Even	Even
Transmission Control Mode *1	RS-232C	MODE7	Protocol 2 w/ Port
	RS-422	MODE9	Protocol 2 w/ Port
Transmission Code	Data Length	7 (ASCII)	7
	Stop Bit	1	1
Sumcheck		Provided	———

If "Transmission control mode" is any other type except the above, specify "Transmission control code" as below.

		Setting of PC	Comm. Parameter of ZM-**
Transmission Control Mode	RS-232C	MODE1 MODE2 MODE9	Protocol 1 w/o Port Protocol 1 w/ Port Protocol 2 w/o Port
	RS-422	MODE2	Protocol 1 w/ Port *1

*1 Cannot be connected to ZM-** by multi-link connection.

♦CPU module

Peripheral port is only available with "pattern 1."

Switch Setting

Baud rate : 19200bps
MODE switch : To connect to both RS-232C and RS-422, set MODE switch to 9.
RS-232C(pattern 2, w/o) RS-422(pattern 2, with port)
ST No. switch : Choose "0" for both X10 and X1.

Dip Switch

Switch	Setting	Contents
1	OFF	Bit length
2	OFF	Same as ZM-** (normally 19200bps)
3	ON	
4	ON	
5	ON	Parity provided
6	ON	Even
7	OFF	Stop bit 1
8	ON	Sumcheck provided

Available Memory

Available: ○ Unavailable: ×

Memory	Bit Write	TYPE	Remarks
WR (internal word output)	×	0	
X (external bit input)	○	1	WX as word device
Y (external bit output)	○	2	WY as word device
L (bit CPU link area)	○	3	WL as word device
M (bit data area)	○	4	WM as word device
TC (timer counter/elapsed time)	×	5	
R (relay)	○	6	
TD (timer/counter [contact])	○	7	
WN (network input/output)	×	8	

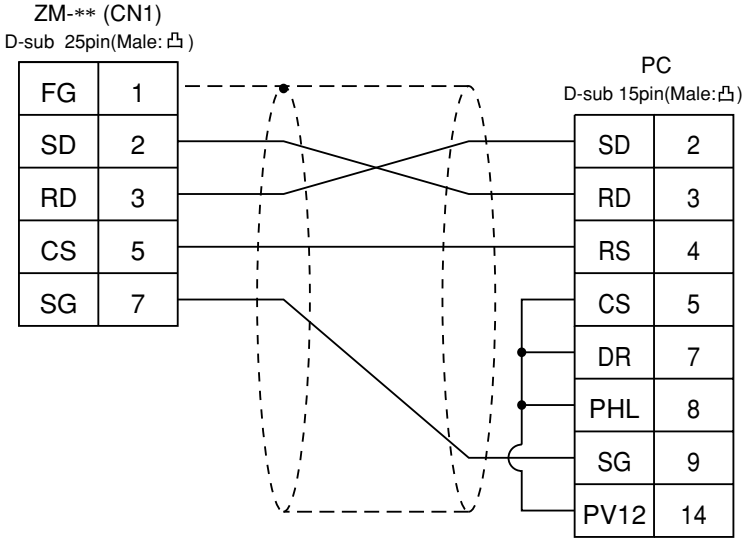
Set the memory to the extent of the memory range of each PC model. In case of using the [Bit Write] × memory as the bit device of the [Output Action] is [Momentary W], the other bits will be cleared when the bit memory is output, because the [Bit Write] will be output by one word (refer to P5-10, reference 14-7 of ZM-71SE Instruction Manual). Use [TYPE] number to assign indirect memory for macro programs.

Wiring

The following is a diagram to show the wiring of the cable which connects ZM-** to PC.

RS-232C

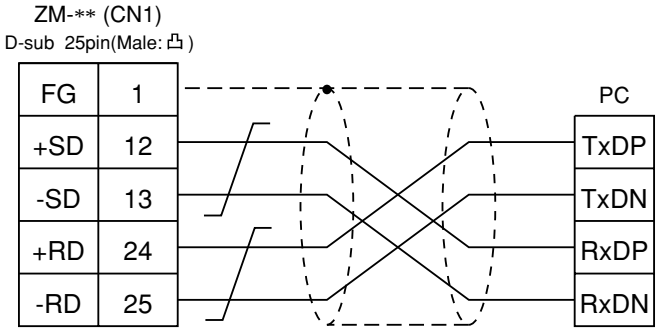
Wiring Diagram 1



* Use twist shielded cables.

RS-422

Wiring Diagram 2



* Use twist shielded cables.

12 HITACHI PC • 2

(HIDIC-S10 α)

Available PC

Host Link H-7338

ZM-71SE Model Setting	PC	Link Unit	Wiring Diagram (refer to P2-39,40)
HIDIC-S10/2alpha	S10 2alpha	Port on a CPU unit	RS-422 [Wiring Diagram 3]
	S10 min		RS-232C [Wiring Diagram 1]
			RS-232C [Wiring Diagram 2]
HIDIC-S10/ABS	ABS*1	———	RS-422 [Wiring Diagram 3]

*1 Specify the memory by absolute addresses. For further information, refer to the relevant PC manual.

Communication Setting

The recommended communication parameter setting of both PC and ZM-** is as follows:

Item	Setting of PC	Comm. Parameter of ZM-**
Baud Rate	7	19200bps

Available Memory

○ HIDIC-S10 2α

Available: ◯ Unavailable: ×

Memory	Bit Write	TYPE	Remarks
FW (work register)	×	0	
X (input relay)	×	1	XW as word device
Y (output relay)	×	2	YW as word device
R (internal relay)	×	3	RW as word device
G (global link)	×	4	GW as word device
K (keep relay)	×	5	KW as word device
T (on-delay timer contact)	×	6	TW as word device
U (one shot timer contact)	×	7	UW as word device
C (up/down counter contact)	×	8	CW as word device
TS (on-delay timer set value)	×	9	
TC (on-delay timer elapsed value)	×	10	
US (one shot timer set value)	×	11	
UC (one shot timer elapsed value)	×	12	

Memory	Bit Write	TYPE	Remarks
CS (up/down counter set value)	×	13	
CC (up/down counter elapsed value)	×	14	
DW (data register)	×	15	
E (internal relay)	×	16	EW as word device
S (global link)	×	17	SW as word device
J (keep relay)	×	18	JW as word device
Q (on-delay timer contact)	×	19	QW as word device
M (one shot timer contact)	×	20	MW as word device

○ HIDIC ABS

Available: ◯ Unavailable: ×

Memory	Bit Write	TYPE	Remarks
0E	×	0	
06	×	1	
18	×	2	
19	×	3	
1A	×	4	
1B	×	5	
1C	×	6	
1D	×	7	

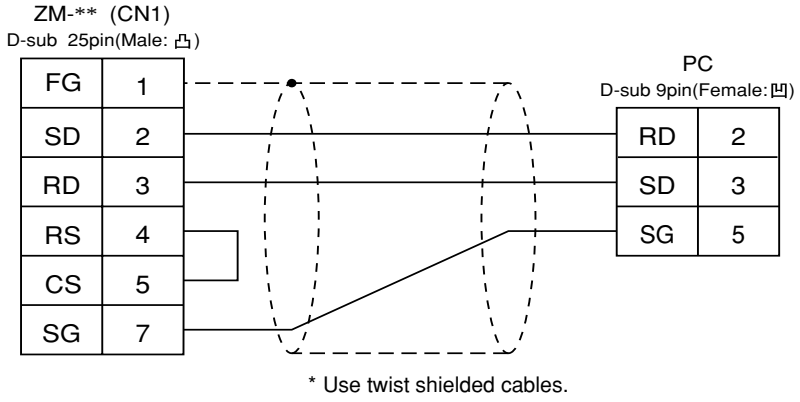
Set the memory to the extent of the memory range of each PC model. In case of using the [Bit Write] × memory as the bit device of the [Output Action] is [Momentary W], the other bits will be cleared when the bit memory is output, because the [Bit Write] will be output by one word (refer to P5-10, reference 14-7 of ZM-71SE Instruction Manual). Use [TYPE] number to assign indirect memory for macro programs.

Wiring

The following is a diagram to show the wiring of the cable which connects ZM-** to PC.

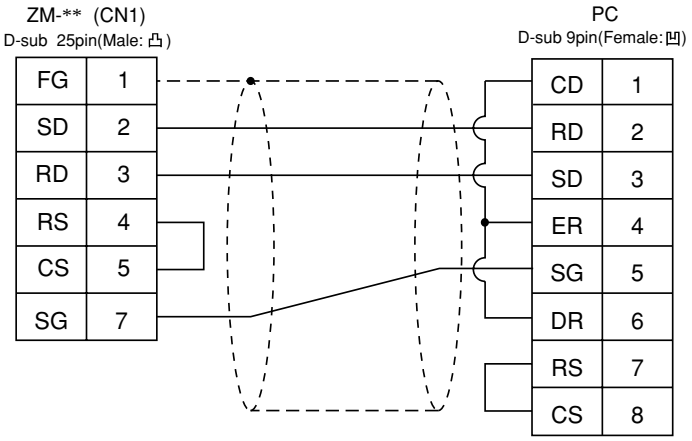
RS-232C

Wiring Diagram 1



* Use twist shielded cables.

Wiring Diagram 2

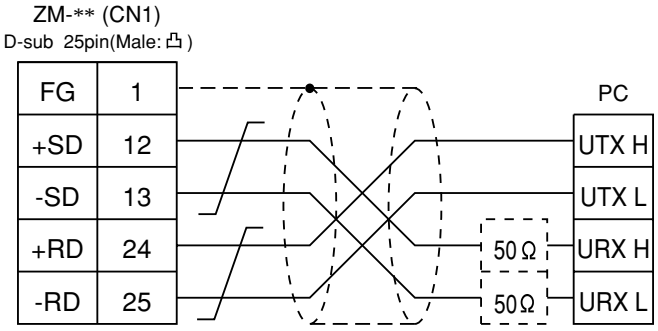


* Use twist shielded cables.

RS-422

Wiring Diagram 3

For connection to the S10 $\times\alpha$ series, use a 50 Ω(1/2W) resistance as shown below.



* Use twist shielded cables.

13 Matsushita PC

Available PC

ZM-71SE Mode Setting	PC	Link Unit	Wiring Diagram (refer to P2-43)
MEWNET	FP1	RS-232C port on a CPU unit	RS-232C [Wiring Diagram 1]
	FP3	AFP3462	RS-232C [Wiring Diagram 1]
		AFP3463	RS-422 [Wiring Diagram 4]
	FP5	AFP5462	RS-232C [Wiring Diagram 1]
	FP10	RS-232C port on a CPU unit	RS-232C [Wiring Diagram 1]
		AFP5462	RS-232C [Wiring Diagram 1]
	FP10S	RS-232C port on a CPU unit	RS-232C [Wiring Diagram 1]
		AFP3462	RS-232C [Wiring Diagram 1]
		AFP3463	RS-422 [Wiring Diagram 4]
	FP0	RS-232C tool port on a CPU unit	RS-232C cable made by Matsushita AFC8513
		RS-232C port on a CPU unit	RS-232C [Wiring Diagram 3]
	FP2	RS-232C tool port on a CPU unit	RS-232C cable made by Matsushita AFC8513
		RS-232C port on a CPU unit	RS-232C [Wiring Diagram 2]

Communication Setting

The recommended communication parameter setting of both PC and ZM-** is as follows:

Item		Setting of PC	Comm. Parameter of ZM-**
Baud Rate		19200bps	19200bps
Port		0 for both STATION x10 and x1	0
Parity		Even	Even
Transmission Code	Data Bit	7 (ASCII)	7
	Stop Bit	1	1
Transmission Control		Computer link system	———
Control Signal		Invalid	———

* If a tool port (the ladder port for RS-232C) of FP0 is used, the range of PC parameter setting is limited as below. Adjust PC parameter setting to comm. parameter setting of ZM-**.

Baud rate : 9600, 19200bps
Parity : Odd (fixed)
Data bit : 8 (7 can be selected. Normally 8.)
Stop bit : 1 (fixed)

Switch Setting of Link Unit

No	Setting	Contents
1	ON	Same as ZM-** (normally 19200bps)
2	OFF	
3	OFF	
4	OFF	Data length 7
5	ON	Parity provided
6	ON	Even
7	OFF	Stop bit 1
8	OFF	CS, CD invalid

Available Memory

Available: ○ Unavailable: ×

Memory	Bit Write	TYPE	Remarks
DT (data register)	×	0	
X (external input relay)	×	1	WX as word device, read only
Y (external output relay)	○	2	WY as word device
R (internal relay)	○	3	WR as word device, special relay included
L (link relay)	○	4	WL as word device
LD (link register)	×	5	
FL (file register)	×	6	
SV (timer/counter set value)	×	7	
EV (timer/counter elapsed value)	×	8	
T (counter/contact)	×	9	Read only
C (counter/contact)	×	10	Read only

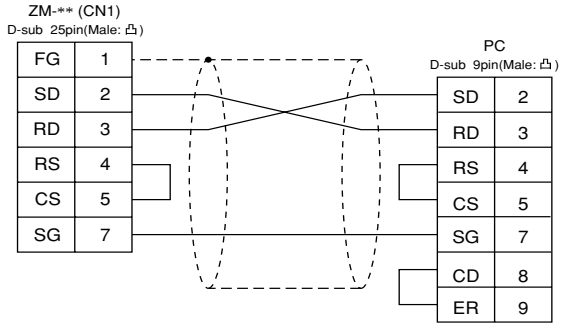
Set the memory to the extent of the memory range of each PC model. In case of using the [Bit Write] × memory as the bit device of the [Output Action] is [Momentary W], the other bits will be cleared when the bit memory is output, because the [Bit Write] will be output by one word (refer to P5-10, reference 14-7 of ZM-71SE Instruction Manual). Use [TYPE] number to assign indirect memory for macro programs.

Wiring

The following is a diagram to show the wiring of the cable which connects ZM-** to PC.

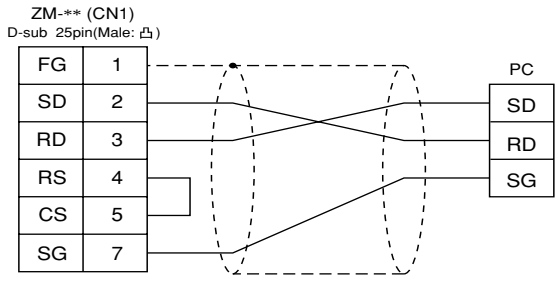
RS-232C

Wiring Diagram 1



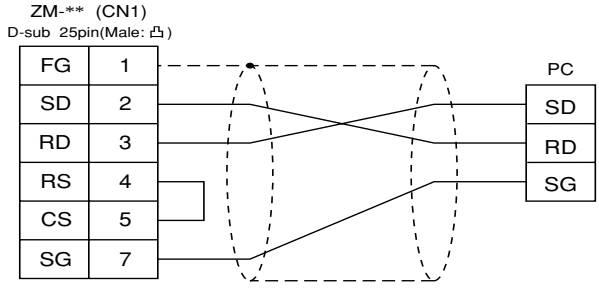
* Use twist shielded cables.

Wiring Diagram 2



* Use twist shielded cables.

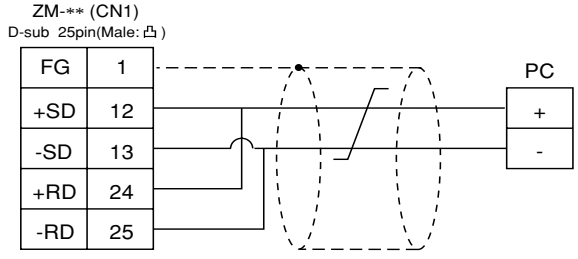
Wiring Diagram 3



* Use twist shielded cables.

RS-422

Wiring Diagram 4



* Use twist shielded cables.

14 YOKOGAWA PC • 1

(FA-500)

Available PC

Panel Editing software models for setting	PC	Link Unit	Wiring Diagram (refer to P2-39)
FA500	FA500	LC01-0N	RS-232C [Wiring Diagram 1]
		LC02-0N	RS-232C [Wiring Diagram 1] RS-422 [Wiring Diagram 2]

Communication Setting

The recommended communication parameter setting of both PC and ZM-** is as follows:

Item		Setting of PC	Comm. Parameter of ZM-**
Baud Rate		19200bps	19200bps
Port		1	1
Parity		Even	Even
Transmission Code	Data Length	7	7
	Stop Bit	1	1
Sumcheck		Provided	———
Terminal Character		None (fixed)	———
Protection Function		None(fixed)	———

Available Memory

Available: ○ Unavailable: ×

Memory	Bit Write	TYPE	Remarks
D (data register)	×	0	
B (common register)	×	1	
TP (timer/current value)	×	2	
TS (timer/set value)	×	3	
CP (counter/current value)	×	4	
CS (counter/set value)	×	5	
X (input relay)	○	6	
Y (output relay)	○	7	
I (internal relay)	○	8	
E (external relay)	○	9	

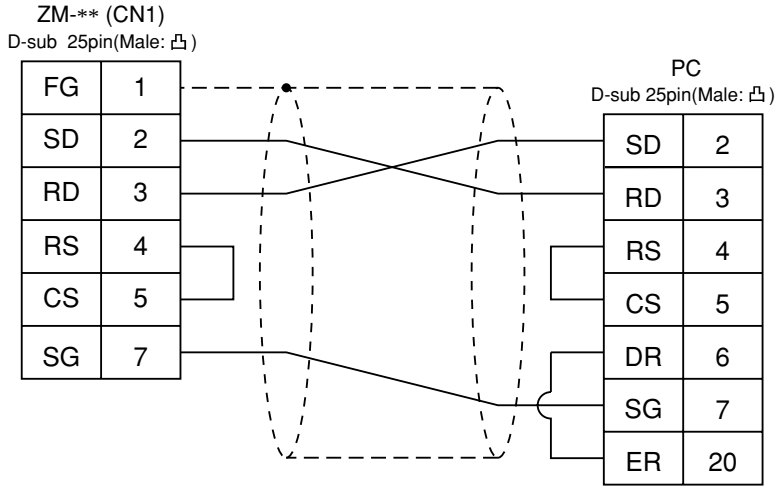
Set the memory to the extent of the memory range of each PC model. In case of using the [Bit Write] × memory as the bit device of the [Output Action] is [Momentary W], the other bits will be cleared when the bit memory is output, because the [Bit Write] will be output by one word (refer to P5-10, reference 14-7 of ZM-71SE Instruction Manual). Use [TYPE] number to assign indirect memory for macro programs.

Wiring

The following is a diagram to show the wiring of the cable which connects ZM-** to PC.

RS-232C

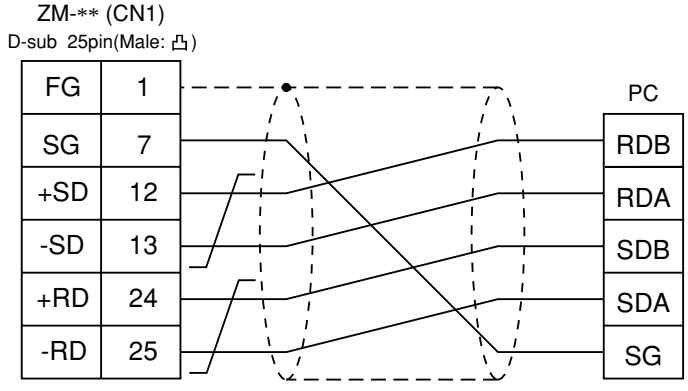
Wiring Diagram 1



* Use twist shielded cables.

RS-422

Wiring Diagram 2



* Use twist shielded cables.

15 YOKOGAWA PC • 2

(FA-M3)

Available PC

ZM-71SE Model Setting	PC	Link Unit	Wiring Diagram (refer to P2-48)
FA-M3	FA-M3	Programming tool port *1 on a CPU module	Cable made by YOKOGAWA [KM11-2N]
		F3LC01-1N*2	RS-232C [Wiring Diagram 1]
		F3LC11-1N	RS-232C [Wiring Diagram 1]
		F3LC11-2N	RS-422 [Wiring Diagram 2]
FA-M3R	FA-M3 R	Programming tool port on a CPU module	Cable made by YOKOGAWA [KM11-2N]

*1 CPU types which can be connected directly to programming tool port on a CPU module are "F3SP21-0N," "F3SP25-2N" and "F3SP35-5N."

*2 When the link unit, F3LC01-1N, is used, the communication setting and available memory are the same as the contents of "14 YOKOGAWA PC • 1(FA-500)," provided that B(common register) cannot be used.

Communication Setting

The recommended communication parameter setting of both PC and ZM-** is as follows:

Item		Setting of PC	Comm. Parameter of ZM-**
Baud Rate		19200bps	19200bps
Parity		Even	Even
Transmission Code	Data Length	7	7
	Stop Bit	1	1
Sumcheck		Provided	———
Terminal Character		None (Fixed)	———
Protection Function		None (Fixed)	———

* When using programming tool port on a CPU module for direct connection to ZM-**, set [Data Length] as [8-bit] in the [comm. Parameter] dialog of ZM-** because data length “8” is fixed. Also, specify the "CPU Communication Port" setting of "Configuration" in the ladder making tool as follows.

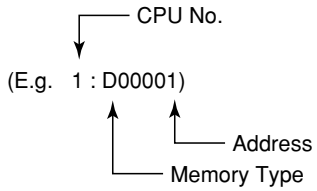
Personal computer link function : Use

Available Memory

Available: ○ Unavailable: ×

Memory		Bit Write	TYPE	Remarks
D	(data register)	×	0	
R	(common register)	×	1	
V	(index register)	×	2	
W	(link register)	×	3	
Z	(special register)	×	4	
TP	(down timer current value)	×	5	
TS	(timer set value)	×	6	Read only
CP	(down counter current value)	×	7	
CS	(down counter set value)	×	8	
X	(input relay)	○	9	
Y	(output relay)	○	10	
I	(internal relay)	○	11	
E	(common relay)	○	12	
L	(link relay)	○	13	
M	(special relay)	○	14	
B	(file register)	×	15	

* The CPU No. is required in addition to the memory type/address. The assigned memory is indicated while editing the screen as illustrated:



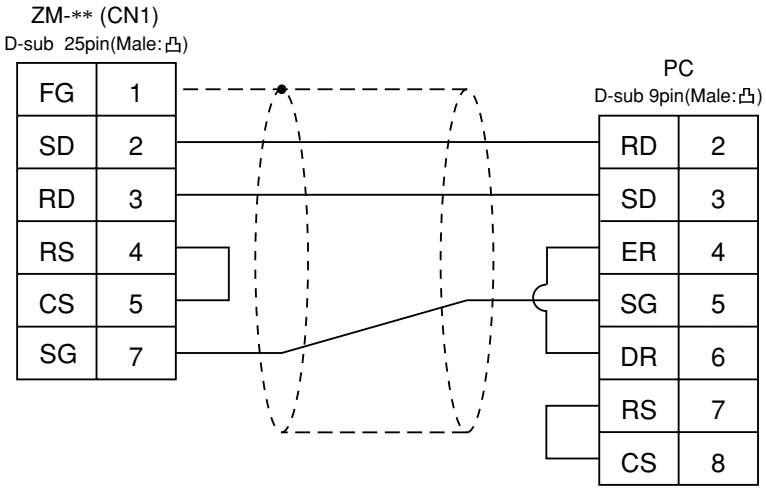
Set the memory to the extent of the memory range of each PC model. In case of using the [Bit Write] × memory as the bit device of the [Output Action] is [Momentary W], the other bits will be cleared when the bit memory is output, because the [Bit Write] will be output by one word (refer to P5-10, reference 14-7 of ZM-71SE Instruction Manual). Use [TYPE] number to assign indirect memory for macro programs.

Wiring

The following is a diagram to show the wiring of the cable which connects ZM-** to PC.

RS-232C

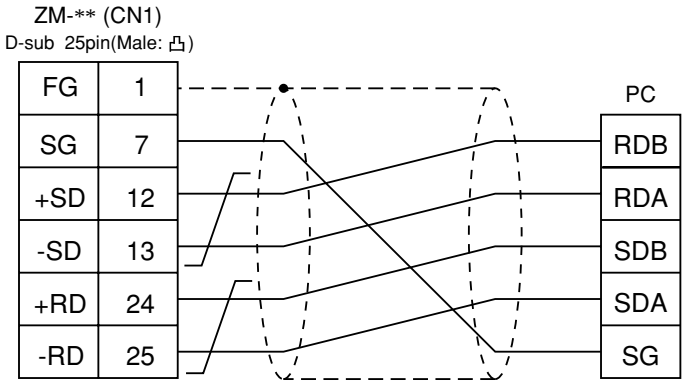
Wiring Diagram 1



* Use twist shielded cables.

RS-422

Wiring Diagram 2



* Use twist shielded cables.

16 YASKAWA PC• 1

Available PC

ZM-71SE Model Setting	PC	Link Unit	Wiring Diagram (refer to P2-50, 51)
Memobus	GL60 series	JAMSC-IF60 JAMSC-IF61 JAMSC-IF611	RS-232C [Wiring Diagram 1]
		JAMSC-IF612 JAMSC-IF613	RS-422 [Wiring Diagram 3]
	GL120, GL130 series	Memobus port on a CPU module	RS-232C [Wiring Diagram 1]
		JAMSC -120NOM27100	RS-422 [Wiring Diagram 4]
	PROGIC-8	PORT2 on a CPU unit	RS-232C [Wiring Diagram 2]

* Other kinds of MEMOBUS unit can be connected.

Communication Setting

The recommended communication parameter setting of both PC and ZM-** is as follows:

Item		Setting of PC	Comm. Parameter of ZM-**
Baud Rate		19200bps	19200bps
Port		1	1
Parity		Even	Even
Transmission Code	Data Length	8 bit RTU	———
	Stop Bit	1	1
Error Check		CRC (fixed)	———
Port Delay Timer		0 (fixed)	———

Select [TYPE 1] or [TYPE 2] from [Trans. Mode] in [Comm. Parameter] of the ZM-71SE.

PC Type	Setting of ZM-**	Contents
GL60 series, PROGIC-8	Type 1	Same as before
GL120/130 series	Type 2	Standard binary mode

Available Memory

Available: ○ Unavailable: ×

Memory	Bit Write	TYPE	Remarks
4 (word device)	×	0	
3 (input register)	×	1	Constant register included
R (link register)	×	2	
A (extension register)	×	3	
0 (coil)	○	4	
D (link coil)	○	5	
1 (input register)	×	6	
7 (constant register)	×	7	

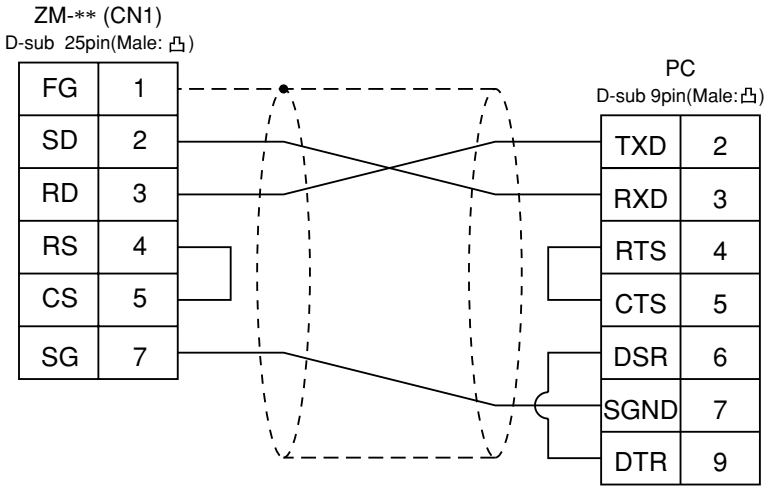
Set the memory to the extent of the memory range of each PC model. In case of using the [Bit Write] × memory as the bit device of the [Output Action] is [Momentary W], the other bits will be cleared when the bit memory is output, because the [Bit Write] will be output by one word (refer to P5-10, reference 14-7 of ZM-71SE Instruction Manual). Use [TYPE] number to assign indirect memory for macro programs.

Wiring

The following is a diagram to show the wiring of the cable which connects ZM-** to PC.

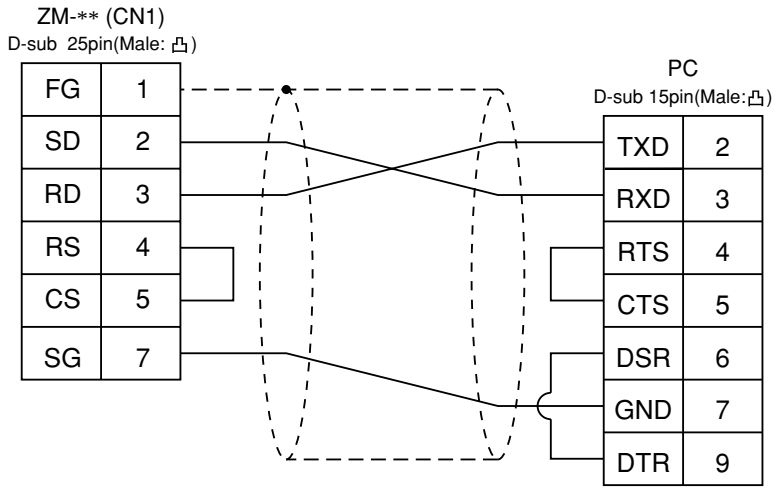
RS-232C

Wiring Diagram 1



* Use twist shielded cables.

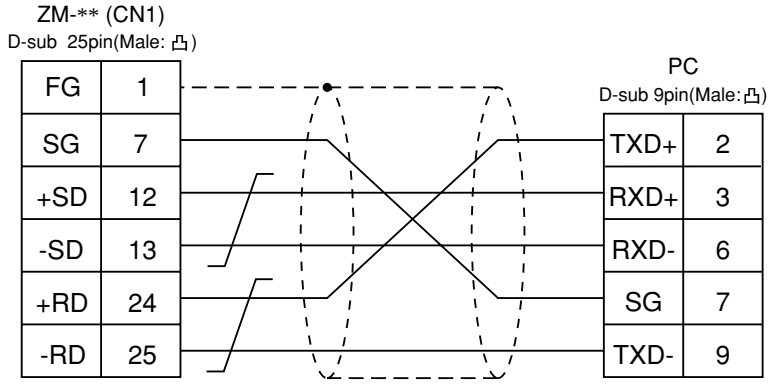
Wiring Diagram 2



* Use twist shielded cables.

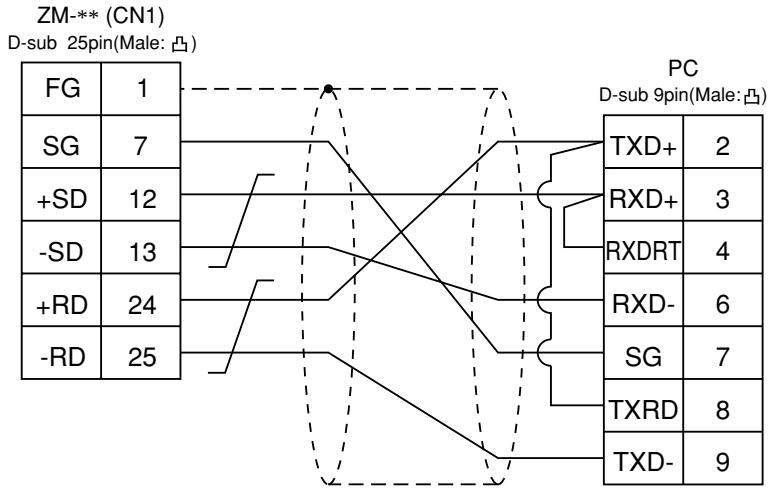
RS-422

Wiring Diagram 3



* Use twist shielded cables.

Wiring Diagram 4



* Use twist shielded cables.

17 YASKAWA PC• 2

Available PLC

ZM-71SE Model Setting	PLC	Link Unit	Wiring Diagram (refer to P2-53)
CP9200SH /MP900	CP9200SH	CP217IF	RS-232C [Wiring Diagram 1] [Wiring Diagram 2] RS-422 [Wiring Diagram 3]
	MP920 MP930	Memobus port on a CPU module	RS-232C [Wiring Diagram 1]
		217IF	RS-232C [Wiring Diagram 1] RS-422 [Wiring Diagram 4]

Communication Setting

The recommended communication parameter setting of both PLC and ZM-** is as follows:

Item		Setting of PLC	Comm. Parameter of ZM-**
Baud Rate		19200bps	19200bps
Port		1	1
Parity		Even	Even
Transmission Code	Data Length	8	8
	Stop Bit	1	1
Error Check		CRC (fixed)	———
Port Delay Timer		0 (fixed)	———

Available Memory

Available: ○ Unavailable: ×

Memory	Bit Write	TYPE	Remarks
MW (holding register)	×	0	
IW (input register)	×	1	
MB (coil)	○	4	
IB (input relay)	○	6	

When setting the MB/IB memories, set the bit No. by HEX.

MBxxxxx □
DEC
Bit No. : HEX

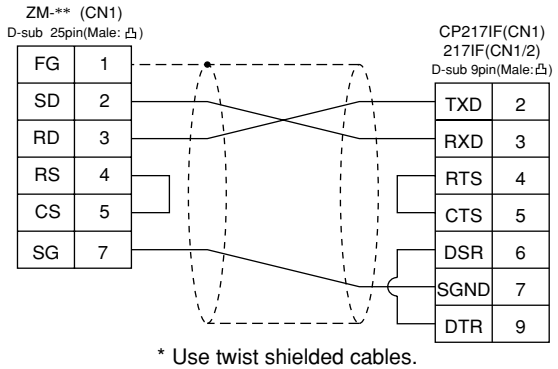
Set the memory to the extent of the memory range of each PC model. In case of using the [Bit Write] × memory as the bit device of the [Output Action] is [Momentary W], the other bits will be cleared when the bit memory is output, because the [Bit Write] will be output by one word (refer to P5-10, reference 14-7 of ZM-71SE Instruction Manual). Use [TYPE] number to assign indirect memory for macro programs.

Wiring

The following is a diagram to show the wiring of the cable which connects ZM-** to PC.

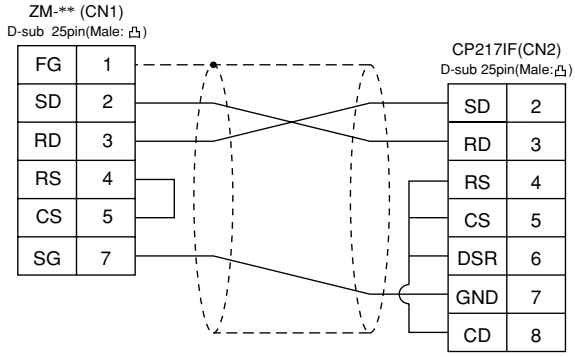
RS-232C

Wiring Diagram 1



* Use twist shielded cables.

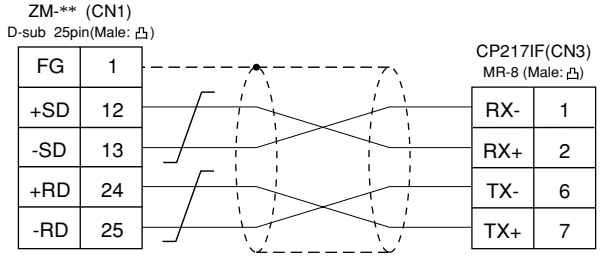
Wiring Diagram 2



* Use twist shielded cables.

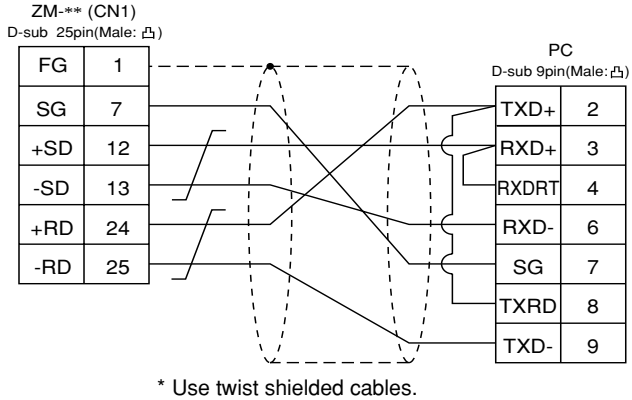
RS-422

Wiring Diagram 3



* Use twist shielded cables.

Wiring Diagram 4



* Use twist shielded cables.

18 TOYOPUC PC

Available PC

ZM-71SE Model Setting	PC	Link Unit	Wiring Diagram (refer to P2-56)
TOYOPUC	TOYOPUC-L2/PC2 etc.	CMP-LINK	RS-422 [Wiring Diagram 1]

Communication Setting

The recommended communication parameter setting of both PC and ZM-** is as follows:

Item		Setting of PC	Comm. Parameter of ZM-**
Baud Rate		19200bps	19200bps
Port		0	0
Parity		Even	Even
Transmission Code	Data Length	7 (ASC Ⅱ)	7
	Stop Bit	2	2

Set the [Trans. Mode] for [Detail] in the [Comm. Parameter]of the ZM-71SE.

· PC3J : Select [Single Data Area] or [Split Data Area].

· L2/PC2 series : Select [Single Data Area].

Trans. Mode	Contents
Single Data Area	Data area is common.
Split Data Area	Divide each PLC device into a program file.

Switch Setting

Baud rate: 19200bps

Switch	Setting	Contents
SW1	0	Station address (lower half)
SW2	0	Station address (upper half)
SW3	1	Baud rate 1 : 19200 2 : 9600 3 : 4800 4 : 2400 5 : 1200 6 : 600

Switch	Short bar	Contents
SET2	Provided	Data bit 7
SET3	Provided	Stop bit 2

Available Memory

Available: ○ Unavailable: ×

Memory	Bit Write	TYPE	Remarks
D (data register)	×	0	
R (link register)	×	1	
B (file register)	×	2	
N (current value register)	×	3	
X (input relay)	○	4	WX as word device
Y (output relay)	○	5	WY as word device
M (internal relay)	○	6	WM as word device
K (keep relay)	○	7	WK as word device
L (link relay)	○	8	WL as word device
T (counter/contact)	○	9	WT as word device
C (counter/contact)	○	10	WC as word device
U (expansion data register)	×	11	
H (expansion set value register)	×	12	
EN (expansion current value)	×	13	
EX (expansion input)	○	14	WEX as word device
EY (expansion output)	○	15	WEY as word device
EM (expanion internal relay)	○	16	WEM as word device
EK (expansion latched relay)	○	17	WEK as word device
EL (expansion link relay)	○	18	WEC as word device
ET (expansion timer [contact])	○	19	WET as word device
EC (expansion counter [contact])	○	20	WEC as word device
V (special register)	○	19	WV as word device

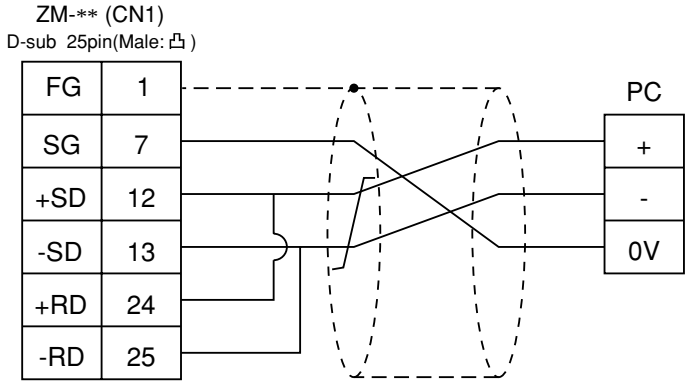
Set the memory to the extent of the memory range of each PC model. In case of using the [Bit Write] × memory as the bit device of the [Output Action] is [Momentary W], the other bits will be cleared when the bit memory is output, because the [Bit Write] will be output by one word (refer to P5-10, reference 14-7 of ZM-71SE Instruction Manual). Use [TYPE] number to assign indirect memory for macro programs.

Wiring

The following is a diagram to show the wiring of the cable which connects ZM-** to PC.

RS-422

Wiring Diagram 1

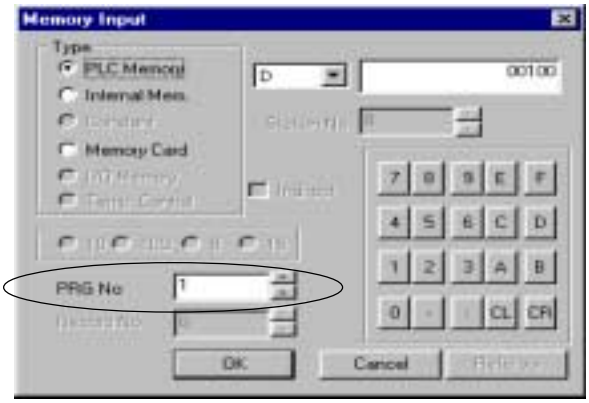


* Use twist shielded cables.

Screen Editing (Memory Input)

If [Split Data Area] is selected at the [Trans. Mode], the [PRG No] setting is available at the [Memory Input] dialog.

· [PRG No] range : 1~3



19 FUJI PC • 1

(MICREX-F series)

Available PC

ZM-71SE Model Setting	PC	Link Unit	Wiring Diagram (refer to P2-59)
MICREX-F Series (MICREX-F series ZM70)	F55	NV1L-RS2	RS-232C [Wiring Diagram 1]
	F70, F70S	NC1L-RS2	RS-232C [Wiring Diagram 1]
		NC1L-RS4	RS-485 [Wiring Diagram 2]
	F80H, F120H, F120S F140S, F15□S	FFU120B FFK120A	RS-232C [Wiring Diagram 1] RS-485 [Wiring Diagram 2]

Communication Setting

The recommended communication parameter setting of both PC and ZM-** is as follows:

Item		Setting of PC	Comm. Parameter of ZM-**
Baud Rate		19200bps	19200bps
Port		0	0
Parity		Even	Even
Transmission Control Mode	RS-232C	1 (Asynchronous non-protocol by command)(fixed)	———
	RS-422	3 (Asynchronous non-protocol by command)(fixed)	———
Transmission Code	Data Length	7 (ASCII)	7
	Stop Bit	1	1
Termination resistance at Receiver		Provided	———

Switch Setting

MODE Switch: RS-232C: 1 RS-485: 3

RS-485 Port Setting SW: "0" for both x10, x1

RS-485 Termination resistance: ON

Character Switches

No	Setting	Contents
8	ON	Switch setting
7	ON	Parity provided
6	ON	Even
5	ON	7 bit
4	ON	1 bit
3	ON	Same as ZM-** (normally 19200bps)
2	ON	
1	OFF	

Available Memory

Available: ○ Unavailable: ×

Memory	Bit Write	TYPE	Remarks
M (auxiliary relay)	×	0	WM as word device
K (keep relay)	×	1	WK as word device
B (input/output relay)	×	2	WB as word device
L (link relay)	×	9	WL as word device
WF (special relay)	×	10	
TS (timer/set value)	×	11	* 1
TR (timer/current value)	×	12	* 1
W9 (timer/current value 0.1)	×	13	* 1
CS (counter/set value)	×	14	* 1
CR (counter/current value)	×	15	* 1
BD (data memory)	×	16	* 1
WS (step control relay)	×	17	* 2
Wn (file memory)	×	18	* 3

*1 In case of the items which can display double word data (e.g. data display, graph, sampling), the data is managed as double word data.
Both bit data and word data are managed as lower-half 16 bits data.
Input: 16 upper-half bits are ignored. Output: "0" is written in the 16 upper-half bits.

*2 Byte device such as step relay is managed as follows;
Input: Write "0" in the 8 upper-half bits. Output: Write the data in the 8 lower-half bits.

*3 To set up Wn (file memory), input [File No.] + [: (colon)] + [address] on the ZM-71SE.

<E.g.> W30 : 00002
Address
Colon
File No.

Set the memory to the extent of the memory range of each PC model. In case of using the [Bit Write] × memory as the bit device of the [Output Action] is [Momentary W], the other bits will be cleared when the bit memory is output, because the [Bit Write] will be output by one word (refer to P5-10, reference 14-7 of ZM-71SE Instruction Manual). Use [TYPE] number to assign indirect memory for macro programs.

* Notes on converting the data file of ZM-70 (or ZM-30) into the ZM-** data file
When converting the data file of ZM-70 (or ZM-30) into the ZM-** data file, the PLC type is automatically selected as "MICREX-F series ZM-70."
The order of bit significance in memory is reversed. Check carefully when specifying switch or lamp data.

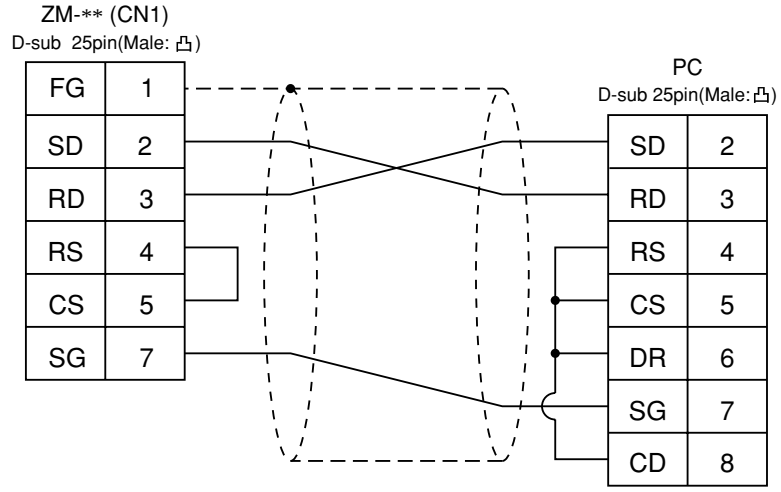
ZM-**	15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00
FUJI	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F

Wiring

The following is a diagram to show the wiring of the cable which connects ZM-** to PC.

RS-232C

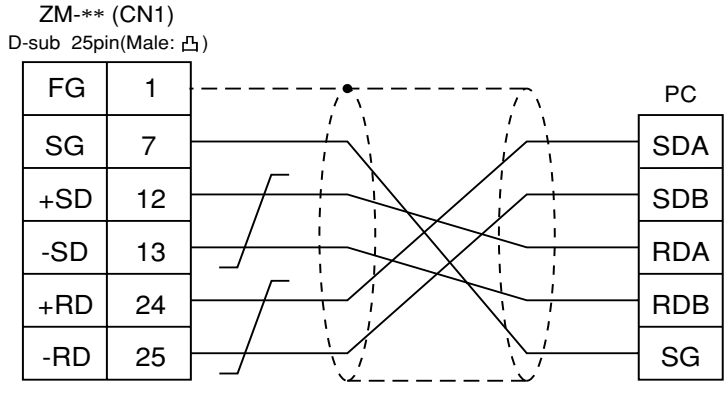
Wiring Diagram 1



* Use twist shielded cables.

RS-485

Wiring Diagram 2



* Use twist shielded cables.

20 FUJI PC • 2

(FLEX-PCseries)

Available PC

ZM-71SE Panel Setting	PC	Link Unit	Wiring Diagram (refer to P2-62)
FLEX-PC Series *1	NS-T	NJRS-1	RS-232C [Wiring Diagram 1]
	NJ-T	NJRS-2	RS-232C [Wiring Diagram 1]
		NJRS-4	RS-485 [Wiring Diagram 2]

*1 When FLEX-PC TOYOTA version is used, select "FLEX-PC(T)" in [PC Type].

Communication Setting

The recommended communication parameter setting of both PC and ZM-** is as follows:

Item		Setting of PC	Comm. Parameter of ZM-**
Baud Rate		19200bps	19200bps
Port		0	0
Parity		Even	Even
Transmission Control Mode	RS-232C	1 (Asynchronous non-protocol by command)(fixed)	————
	RS-422	3 (Asynchronous non-protocol by command)(fixed)	————
Transmission Code	Data Length	7 (ASCII)	7
	Stop Bit	1	1
Termination resistance at Receiver		Provided	————

Switch Setting

MODE Switch: RS-232C: 1 RS-485: 3
RS-485 Port Setting SW: "0" for both × 10, × 1
RS-485 Termination resistance: ON
Character Switches

No	Setting	Contents
8	ON	Switch setting
7	ON	Parity provided
6	ON	Even
5	ON	7 bit
4	ON	1 bit
3	ON	Same as ZM-** (normally 19200bps)
2	ON	
1	OFF	

Available Memory

Available: ○ Unavailable: ×

Standard Memory		TOYOTA Ver.	Bit Write	TYPE	Remarks
D	(data register)	D	×	0	
W	(link register)	R	×	1	
M	(internal relay)	M	○	2	WM as word device
L	(latch relay)	K	○	3	WL(WK) as word device
X	(input relay)	X	○	4	WX as word device
Y	(output relay)	Y	○	5	WY as word device
R	(file register)	W	×	6	
TN	(timer/current value)	TN	×	7	
CN	(counter/current value)	CN	×	8	
T	(timer/contact)	T	○	9	
C	(counter/contact)	C	○	10	
WS	(step relay)	-	×	11	

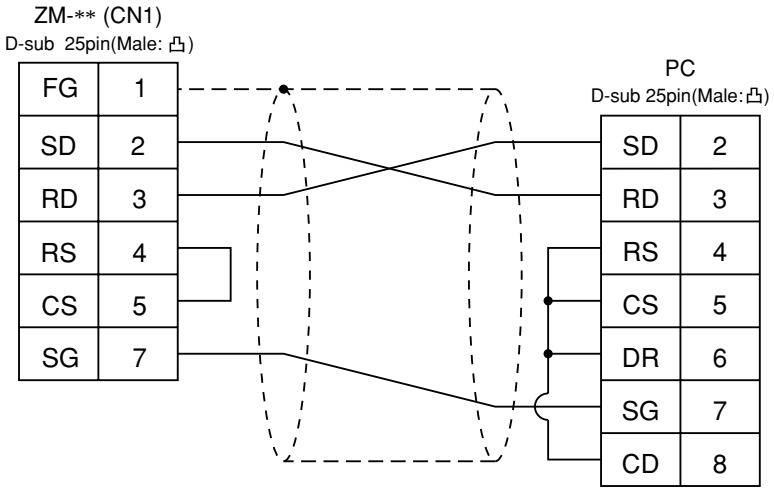
Set the memory to the extent of the memory range of each PC model. In case of using the [Bit Write] × memory as the bit device of the [Output Action] is [Momentary W], the other bits will be cleared when the bit memory is output, because the [Bit Write] will be output by one word (refer to P5-10, reference 14-7 of ZM-71SE Instruction Manual). Use [TYPE] number to assign indirect memory for macro programs.

Wiring

The following is a diagram to show the wiring of the cable which connects ZM-** to PC.

RS-232C

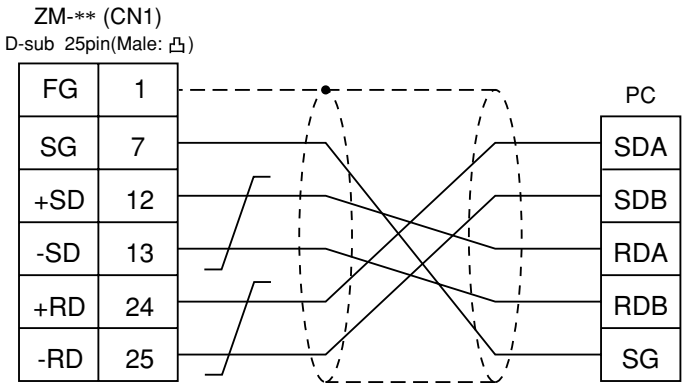
Wiring Diagram 1



* Use twist shielded cables.

RS-485

Wiring Diagram 2



* Use twist shielded cables.

21 FUJI PC • 3

(FLEX-PC CPU port)

Available PC

ZM-71SE Panel Setting	PC	Wiring Diagram (refer to P2-64)
FLEX-PC CPU *1	FLEX-PC CPU	RS-485 [FU-CPUNS] made by Sharp
	NJ-B16 CPU	RS-232C [Wiring Diagram 1]

*1 When FLEX-PC CPU TOYOTA version is used, select "FLEX-PC CPU(T)" in [PC Type].

Communication Setting

Connect to the CPU port. The communication parameter setting of ZM-** is done automatically.

Available Memory

Available: ○ Unavailable: ×

Standard Memory	TOYOTA Ver.	Bit Write	TYPE	Remarks
D (data register)	D	×	0	
W (link register)	R	×	1	
M (internal relay)	M	○	2	WM as word device
L (latch relay)	K	○	3	WL(WK) as word device
X (input relay)	X	○	4	WX as word device
Y (output relay)	Y	○	5	WY as word device
R (file register)	W	×	6	
TN (timer/current value)	TN	×	7	
CN (counter/current value)	CN	×	8	
T (timer/contact)	T	○	9	
C (counter/contact)	C	○	10	
WS (step relay)	-	×	11	

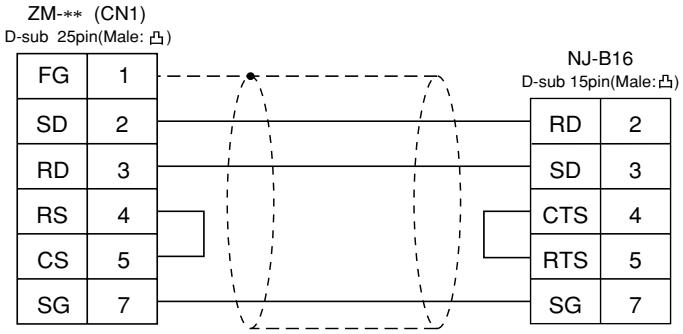
Set the memory to the extent of the memory range of each PC model. In case of using the [Bit Write] × memory as the bit device of the [Output Action] is [Momentary W], the other bits will be cleared when the bit memory is output, because the [Bit Write] will be output by one word (refer to P5-10, reference 14-7 of ZM-71SE Instruction Manual). Use [TYPE] number to assign indirect memory for macro programs.

Wiring

The following is a diagram to show the wiring of the cable which connects ZM-** to PC.

RS-232C

Wiring Diagram 1



* Use twist shielded cables.

RS-485

Use the exclusive cable (order product) for RS-485 communications.

22 FUJI PC • 4

(TOYOTA version NJ Computer Link)

Available PC

ZM-71SE Model Setting	PC	Wiring Diagram (refer to P2-66)
FLEX-PC COM	Computer link of FLEX-PC NJ-JM	RS-422 [Wiring Diagram 1]

Connect to the terminal block of the FLEX-PC NJ-JM computer link.
For further information, refer to the FUJI's PC manual.

Communication Setting

The recommended communication parameter setting of both PC and ZM-** is as follows:

Item		Setting of PC	Comm. Parameter of ZM-**
Baud Rate		19200bps	19200bps
Port		0	0
Parity		Even	Even
Transmission Code	Data Length	7	7
	Stop Bit	2	2

Available Memory

Available: ○ Unavailable: ×

Memory	Bit Write	TYPE	Remarks
D (data register)	×	0	
R (link register)	×	1	
M (internal relay)	○	2	WM as word device
K (latch relay)	○	3	WK as word device
X (input relay)	○	4	WX as word device
Y (output relay)	○	5	WY as word device
W (file register)	×	6	
TN (timer/current value)	×	7	Read only
CN (counter/current value)	×	8	Read only
T (timer/contact)	○	9	
C (counter/contact)	○	10	
ZV (special register)	○	12	
V (special relay)	×	13	WV as word device

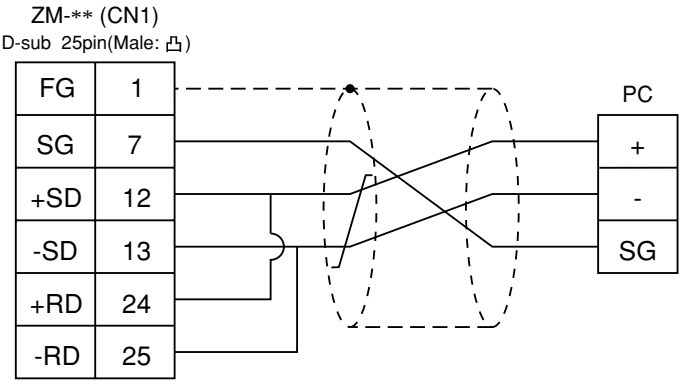
Set the memory to the extent of the memory range of each PC model. In case of using the [Bit Write] × memory as the bit device of the [Output Action] is [Momentary W], the other bits will be cleared when the bit memory is output, because the [Bit Write] will be output by one word (refer to P5-10, reference 14-7 of ZM-71SE Instruction Manual). Use [TYPE] number to assign indirect memory for macro programs.

Wiring

The following is a diagram to show the wiring of the cable which connects ZM-** to PC.

RS-422

Wiring Diagram 1



* Use twist shielded cables.

23 Koyo PC

Available PC

ZM-71SE Mode Setting	PC	Link Unit	Wiring Diagram (refer to P2-70, 71)
SU/SG	SU-5	U01-DM	RS-232C [Wiring Diagram 1]
	SU-6B	Port on a CPU unit	RS-232C [Wiring Diagram 1] RS-422 [Wiring Diagram 3]
	SG-8	G01-DM	RS-232C [Wiring Diagram 1] RS-422 [Wiring Diagram 4]
		Port on a CPU unit	RS-232C [Wiring Diagram 1] RS-422 [Wiring Diagram 4]
	SZ-4 SZ-4M	Port 2 on a CPU unit	RS-232C program transfer cable made by Koyo [S-15JP] + Convert connector cable made by Koyo [S-15CNJ]
	PZ3	General purpose communication on a CPU unit	RS-232C [Wiring Diagram 2] RS-422 [Wiring Diagram 6]
SR-T	SR-6T (TOYOTA version)	U01-DM	RS-232C [Wiring Diagram 1] RS-422 [Wiring Diagram 3]
		G01-DM	RS-232C [Wiring Diagram 1] RS-422 [Wiring Diagram 4]
SR-T (K prt)	SR-1T (TOYOTA version)	Terminal blocks on a CPU unit	RS-422 [Wiring Diagram 5]

Communication Setting

The recommended communication parameter setting of both PC and ZM-** is as follows:

Item		Setting of PC	Comm. Parameter of ZM-**
Baud Rate		19200bps	19200bps
Port		"0" for × 10, "1" for × 1	0
Parity		Odd	Odd
Transmission Code	Data Length	8	8
	Stop Bit	1	1
Function		Host link system (fixed)	———
Response Delay Time		0 (fixed)	———
Time-out		None (fixed)	———
ASCII/HEX		HEX (fixed)	———

Available Memory

○ SU/SG

Available: ◯ Unavailable: ×

Memory	Bit Write	TYPE	Remarks
R (data register)	×	0	
I (input relay)	×	1	
Q (output relay)	×	2	
M (internal relay)	×	3	
S (stage)	×	4	
GI (global inputs)	×	5	
GQ (global outputs)	×	6	
T (timer/contact)	×	7	
C (counter/contact)	×	8	

○ SR-1T/6T (TOYOTA version)

Available: ◯ Unavailable: ×

Memory	Bit Write	TYPE	Remarks
D (data register)	×	0	
X (input relay)	×	1	X/Y common use
Y (output relay)	×	2	X/Y common use
M (internal relay)	×	3	
S (stage)	×	4	
K (keep relay)	×	5	
L (link relay)	×	6	
T (timer/contact)	×	7	
C (counter/contact)	×	8	

Set the memory to the extent of the memory range of each PC model. In case of using the [Bit Write] × memory as the bit device of the [Output Action] is [Momentary W], the other bits will be cleared when the bit memory is output, because the [Bit Write] will be output by one word (refer to P5-10, reference 14-7 of ZM-71SE Instruction Manual). Use [TYPE] number to assign indirect memory for macro programs.

Switch Setting

○ U-01DM

On-line/off-line switch: on-line

UNIT ADR switch: “0” for x10, “1” for x1

SW4 Dip Switch:

No	Setting	Contents
1	ON	Same as ZM-** (normally 19200bps)
2	ON	
3	ON	
4	ON	Parity provided
5	OFF	Self-diagnosis
6	OFF	Response delay time 0msec
7	OFF	
8	OFF	

SW5 Dip Switch:

No	Setting	Contents
1	OFF	Master/slave control
2	OFF	Slave
3	OFF	Communication time-out
4	OFF	HEX mode

○ G-01DM

On-line/off-line switch: on-line

Short plug 1: open

Short plug 2 RS-232C: ENABLE

RS-422: DISENABLE

SW1 Dip Switch:

No	Setting	Contents
1	ON	Unit No. 01
2	OFF	
3	OFF	
4	OFF	
5	OFF	
6	OFF	
7	OFF	
8	OFF	1 : N
9	OFF	Slave

SW2 Dip Switch:

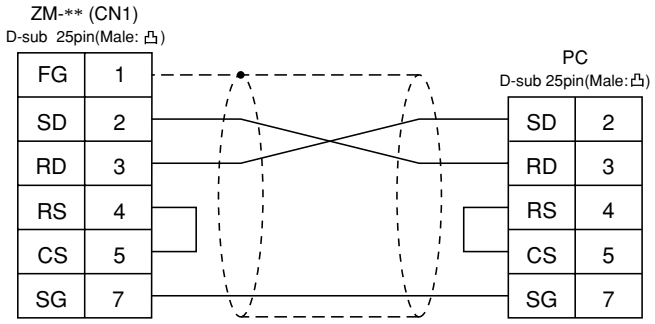
No	Setting	Contents
1	ON	Same as ZM-** (normally 19200bps)
2	ON	
3	ON	
4	ON	Parity provided
5	OFF	Self-diagnosis
6	OFF	Turn-around delay
7	OFF	Response delay time 0msec
8	OFF	
9	OFF	HEX mode

Wiring

The following is a diagram to show the wiring of the cable which connects ZM-∗2 to PC.

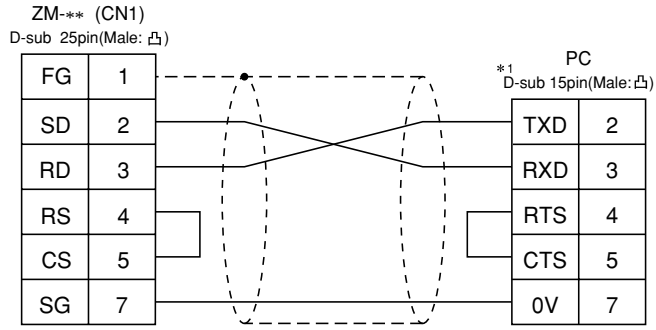
RS-232C

Wiring Diagram 1



* Use twist shielded cables.

Wiring Diagram 2

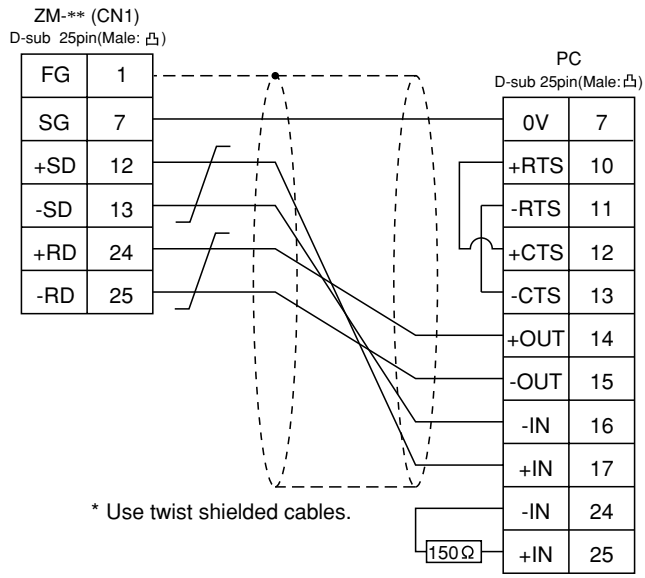


* Use twist shielded cables.

*1 High density D-sub 15 pin

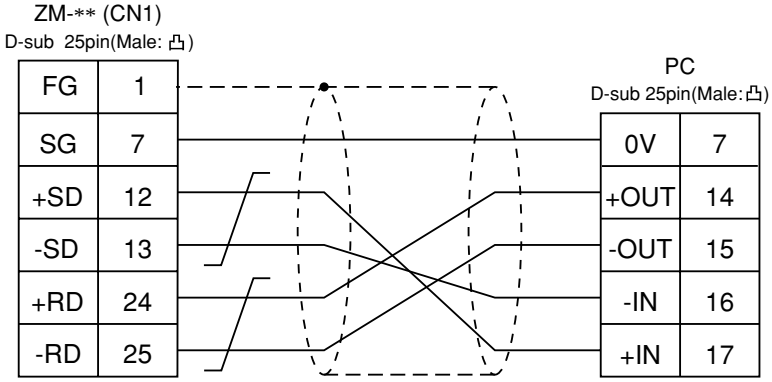
RS-422

Wiring Diagram 3



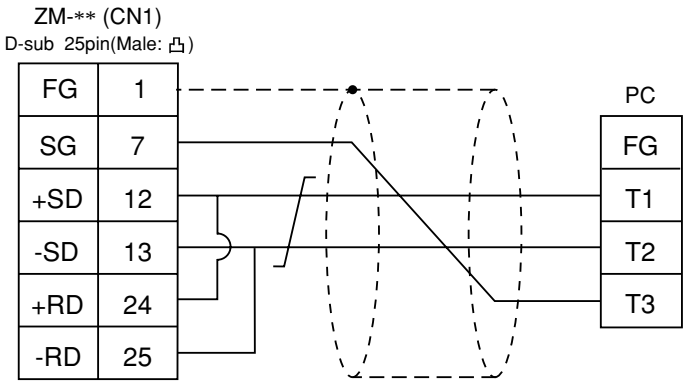
* Use twist shielded cables.

Wiring Diagram 4



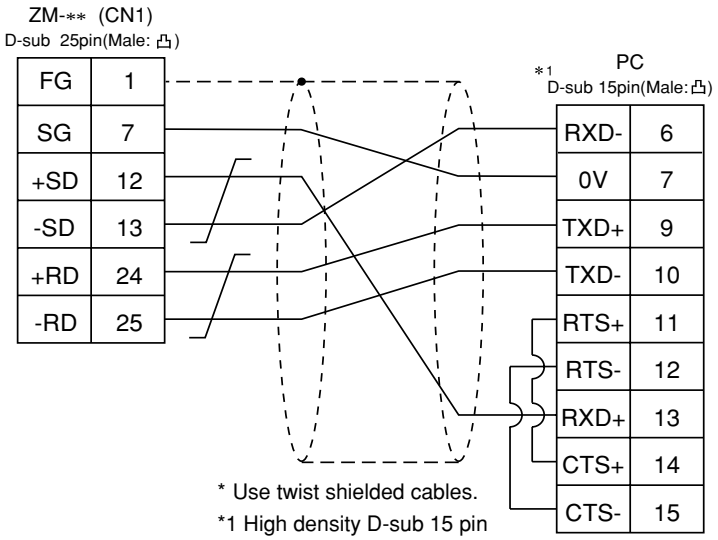
* Use twist shielded cables.

Wiring Diagram 5



* Use twist shielded cables.

Wiring Diagram 6



* Use twist shielded cables.
*1 High density D-sub 15 pin

24 Allen-Bradley PC • 1

(PLC-5 series)

Available PC

ZM-71SE Model Setting	PC	Link Unit	Wiring Diagram (refer to P2-76)
PLC-5	PLC-5	1785-KE	RS-232C [Wiring Diagram 1]
		1770-KF2	RS-232C [Wiring Diagram 2] RS-422 [Wiring Diagram 3]

Communication Setting

The recommended communication parameter setting of both PC and ZM-** is as follows:

Item		Setting of PC	Comm. Parameter of ZM-**
Baud Rate		19200bps	19200bps
Port		0	0
Parity		Even	Even
Transmission Control Mode	RS-232C	———	———
	RS-422	Not available with 1785-KE	———
Transmission Code	Data Length	8	8
	Stop Bit	1	1
Protocol		Full duplex (fixed)	———
Error Check		BCC (fixed)	———
Response		NO (fixed)	———

Available Memory

Available: ◯ Unavailable: ×

Memory	Bit Write	TYPE	Remarks
N (integer)	×	0	
B (bit)	×	1	
T.ACC (timer [current value])	×	2	
T.PRE (timer [setting value])	×	3	
C.ACC (counter [current value])	×	4	
C.PRE (counter [setting value])	×	5	
I (input)	×	6	
O (output)	×	7	
S (status)	×	8	
T (timer [contol])	×	9	
C (counter [control])	×	10	
R (control [control])	×	11	
R.LEN (control [data length])	×	12	
R.POS (control [data position])	×	13	
D (BCD)	×	14	
A (ASCII)	×	15	

Set the memory to the extent of the memory range of each PC model. In case of using the [Bit Write] × memory as the bit device of the [Output Action] is [Momentary W], the other bits will be cleared when the bit memory is output, because the [Bit Write] will be output by one word (refer to P5-10, reference 14-7 of ZM-71SE Instruction Manual). Use [TYPE] number to assign indirect memory for macro programs.

SwitchSetting

○ U-01DM

SW1 (protocol)

No	Setting	Contents
1	ON	BCC, Even, no
2	OFF	
3	OFF	
4	ON	Duplicate message unacceptable
5	OFF	Handshaking signal ignored
6	ON	Diagnosis execution

SW2 (port)

Specify the port for 1785-KE. (This port should not be duplicated in the network.)

No	Setting	Contents
1	ON	1st digit (octal)
2	ON	
3	ON／OFF	2nd digit (octal)
4	ON／OFF	
5	ON／OFF	
6	ON／OFF	3rd digit (octal)
7	ON／OFF	
8	ON／OFF	

SW3 (network link transmission speed)

Adjust the setting according to the network you are using.

No	Setting	Contents
1	ON	Data highway (57.6k bps)
2	ON	
3	ON	Link transmission speed (19.2k bps)
4	ON	
5	ON	
6	ON	Local/remote selection

SW4 (spare)

No	Setting	Contents
1	OFF	Normally OFF (for expansion)
2	OFF	
3	OFF	
4	OFF	

○ 1770-KF2

SW1 (protocol)

No	Setting	Contents
1	ON	Protocol
2	OFF	Protocol
3	ON	Duplicated message unacceptable
4	OFF	Handshaking signal ignored
5	OFF	Protocol

SW2, SW3, SW4 (port)
Specify the port for 1770-KF2. (This port should not be duplicated in the network.)

SW3 (network link transmission speed)
Adjust the setting according to the network you are using.

SW6 (asynchronous link transmission speed)
Set the same speed as ZM-**.

No	Setting	Contents
1	OFF	9600bps
2	ON	
3	ON	
4	ON	Diagnosis execution

SW7 (network link selection)

Switch Setting		Contents
1	2	
ON	OFF	Peer transmission link

SW8 (RS-232C/RS-422 selection)

Switch Setting		Contents
1	2	
OFF	ON	RS232C
ON	OFF	RS422

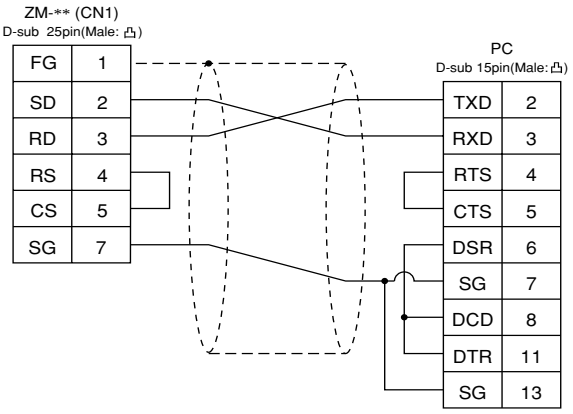
Switch Setting		Contents
1	2	
ON	ON	57.6k bps

Wiring

The following is a diagram to show the wiring of the cable which connects ZM-** to PC.

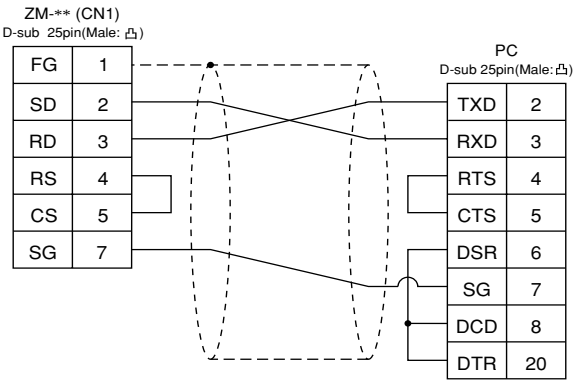
RS-232C

Wiring Diagram 1



* Use twist shielded cables.

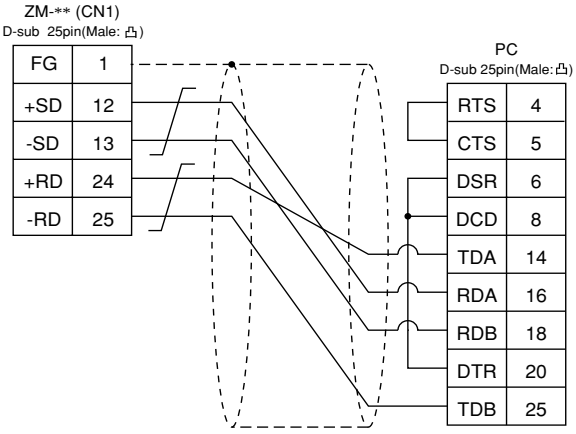
Wiring Diagram 2



* Use twist shielded cables.

RS-422

Wiring Diagram 3



* Use twist shielded cables.

25 Allen-Bradley PC • 2

(SLC500 series/ Micro Logix 1000)

Available PC

ZM-71SE Model Setting	PC	Link Unit	Wiring Diagram (refer to P2-79,80)
SLC500	SLC 5/03 or later models	CPU (Processor module) RS-232C channel	RS-232C [Wiring Diagram 1]
		1747-KE	RS-232C [Wiring Diagram 2] RS-422 [Wiring Diagram 4]
Micro Logix 1000	Micro Logix 1000	Port on a CPU unit	*RS-232C program transfer cable made by A-B +RS-232C [Wiring Diagram 3]

* When using RS-232C program transfer cable made by Allen-Bradley, connect the cable of [Wiring Diagram 3] to the D-sub 9 pins side of the program transfer cable to communicate with ZM-**.

Communication Setting

The recommended communication parameter setting of both PC and ZM-** is as follows:

♦SLC500 series

Item		Setting of PC	Comm. Parameter of ZM-**
Baud Rate		19200bps	19200bps
Port		0	0
Parity		Even	Even
Transmission Control Mode	RS-232C	———	———
	RS-422	not supported on Channel 0	———
Transmission Code	Data Length	8	8
	Stop Bit	1	1
Protocol		Full duplex (fixed)	———
Error Check		BCC (fiexed)	———
Response		NO (fixed)	———

♦Micro Logix 1000

Item		Setting of PC	Comm. Parameter of ZM-**
Baud Rate		9600bps	9600bps
Port		0	0
Parity		none (fixed)	none
Transmission Code	Data Length	8 (fixed)	8
	Stop Bit	1 (fixed)	1
Error Check		CRC (fixed)	———

Available Memory

Available: ○ Unavailable: ×

Memory	Bit Write	TYPE	Remarks
N (integer)	×	0	
B (bit)	×	1	
T.ACC (timer [current value])	×	2	
T.PRE (timer [setting value])	×	3	
C.ACC (counter [current value])	×	4	
C.PRE (counter [setting value])	×	5	
I (input)	×	6	
O (output)	×	7	
S (status)	×	8	
T (timer [control])	×	9	
C (counter [control])	×	10	
R (control [control])	×	11	
R.LEN (control [data length])	×	12	
R.POS (control [data position])	×	13	
D (BCD)	×	14	
A (ASCII)	×	15	

Set the memory to the extent of the memory range of each PC model. In case of using the [Bit Write] × memory as the bit device of the [Output Action] is [Momentary W], the other bits will be cleared when the bit memory is output, because the [Bit Write] will be output by one word (refer to P5-10, reference 14-7 of ZM-71SE Instruction Manual). Use [TYPE] number to assign indirect memory for macro programs.

Transmission Parameter Setting

○ CPU Port Channel 0

Set up the parameters for CPU port channel 0, using the software specifically designed for this purpose.

Baud Rate : 19200
Duplicate Detect : ON
ACK Timeout(× 20 ms) : 20
Control Line : NO HANDSHAKING
Parity : EVEN
Error Detect : BCC
NAK Retries : 3
ENQ Retries : 3
Embedded Responses : AUTO-DETECT

○ 1747-KE

Set up the parameters for 1747-KE, using the software specifically designed for this purpose.

DF1 Port Setup Menu

Baudrate	: 19200
Bits Per Character	: 8
Parity	: Even
Stop Bits	: 1

DF1 Full-Duplex Setup Parameters

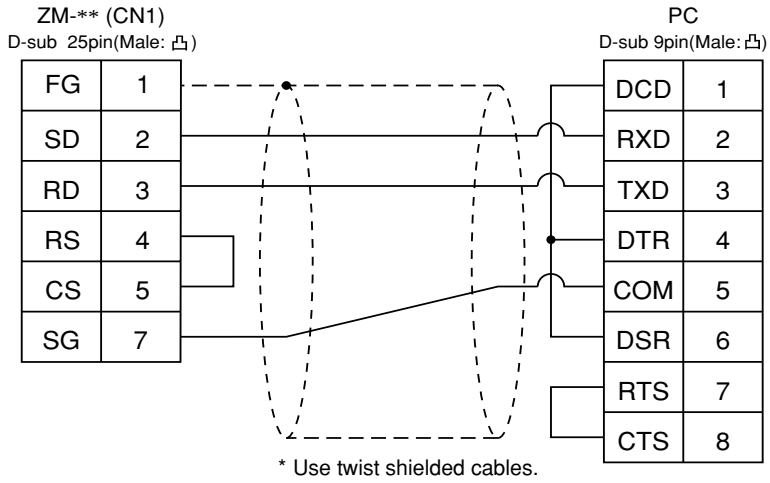
Duplicate Packet Detection	: Enabled
Checksum	: BCC
Constant Carrier Detect	: Disabled
Message Timeout	: 400
Hardware Handshaking	: Disabled
Embedded Response Detect	: Auto Detect
ACK Timeout(× 5ms)	: 90
ENQuiry Retries	: 3
NAK Received Retries	: 3

Wiring

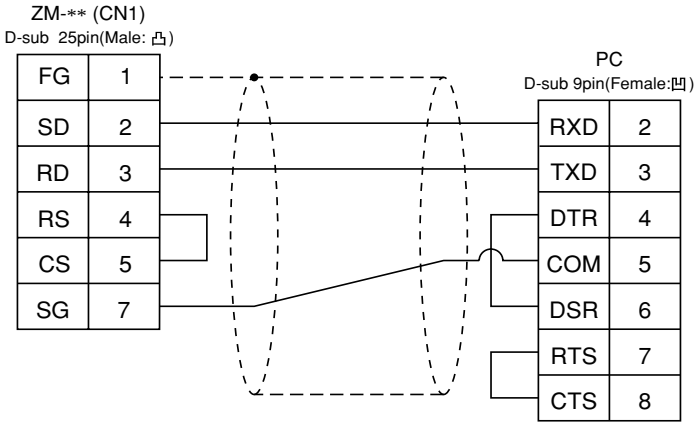
The following is a diagram to show the wiring of the cable which connects ZM-** to PC.

RS-232C

Wiring Diagram 1

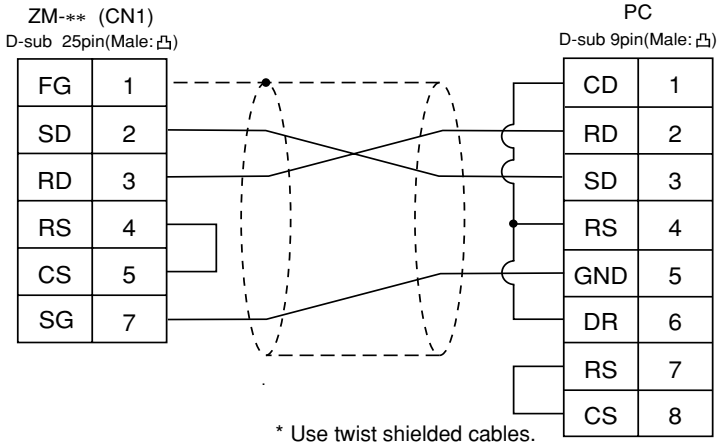


Wiring Diagram 2



* Use twist shielded cables.

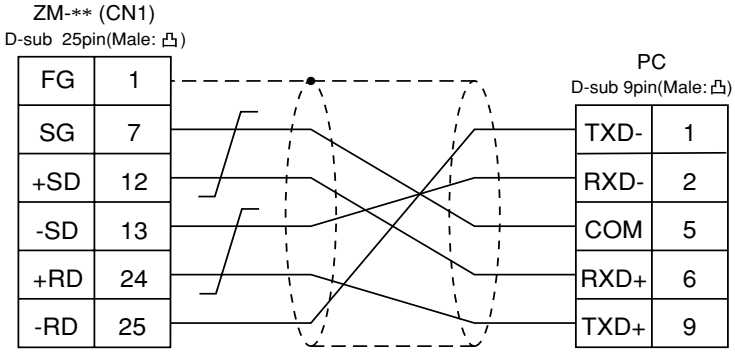
Wiring Diagram 3



* Use twist shielded cables.

RS-422

Wiring Diagram 4



* Use twist shielded cables.

26 GE Fanuc PC • 1

(90 series)

Available PC

ZM-71SE Model Setting	PC	Link Unit	Wiring Diagram (refer to P2-82)
90 Series	Series 90-30	Programmable co-processor (PCM)	RS-485 [Wiring Diagram 1]

Communication Setting

The recommended communication parameter setting of both PC and ZM-** is as follows:

Item		Setting of PC	Comm. Parameter of ZM-**
Baud Rate		19200bps	19200bps
Port		01 ("0" for × 10, "1" for × 1)	1
Parity		Odd	Odd
Transmission Code	Data Length	8	8
	Stop Bit	1	1
Function		Host link system (fixed)	———
Response Delay Time		0 (fixed)	———
Time-out		None (fixed)	———
ASCII/HEX		HEX (fixed)	———

Available Memory

Available: ○ Unavailable: ×

Memory	Bit Write	TYPE	Remarks
R (data register)	×	0	
I (input)	×	1	
Q (output)	×	2	

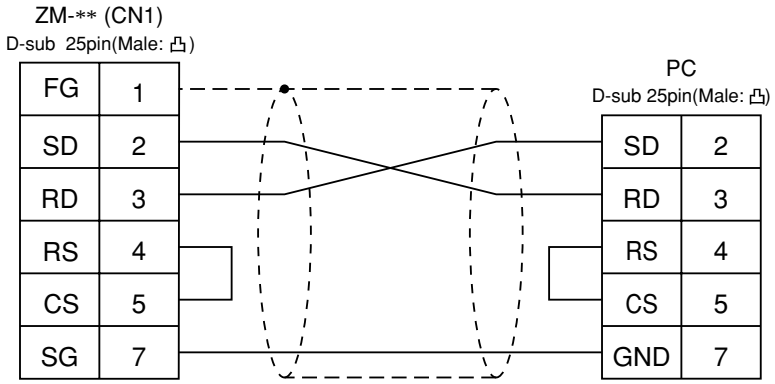
Set the memory to the extent of the memory range of each PC model. In case of using the [Bit Write] × memory as the bit device of the [Output Action] is [Momentary W], the other bits will be cleared when the bit memory is output, because the [Bit Write] will be output by one word (refer to P5-10, reference 14-7 of ZM-71SE Instruction Manual). Use [TYPE] number to assign indirect memory for macro programs.

Wiring

The following is a diagram to show the wiring of the cable which connects ZM-** to PC.

RS-232C

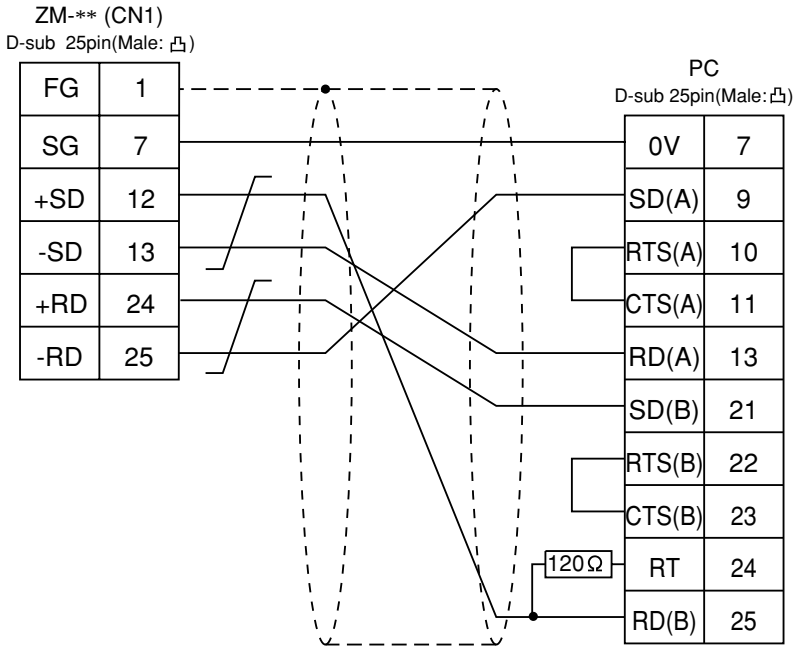
Wiring Diagram 1



* Use twist shielded cables.

RS-422

Wiring Diagram 2



* Use twist shielded cables.

27 GE Fanuc PC • 2

(90 series SNP-X)

Available PC

ZM-71SE Model Setting	PC	Wiring Diagram (refer to P2-84)
90 Series (SNP-X)	Series 90 micro (CPU port) Series 90-30 (CPU port)	RS-485 [Wiring Diagram 1]

Communication Setting

The recommended communication parameter setting of both PC and ZM-** is as follows:

Item		Setting of PC	Comm. Parameter of ZM-**
Baud Rate		19200bps	19200bps
Parity		Odd	Odd
Transmission Code	Data Length	8	8
	Stop Bit	1	1
Function		SNP-X (fixed)	———

Available Memory

Available: ○ Unavailable: ×

Memory		Bit Write	TYPE	Remarks
R	(data register)	×	0	
I	(input)	×	1	
Q	(output)	×	2	
M	(internal relay)	×	3	
G	(global relay)	×	4	
AI	(analog input)	×	5	
AQ	(analog output)	×	6	
T	(temporary memory relay)	×	7	
S	(system status)	×	8	Read only
SA	(system status)	×	9	
SB	(system status)	×	10	
SC	(system status)	×	11	

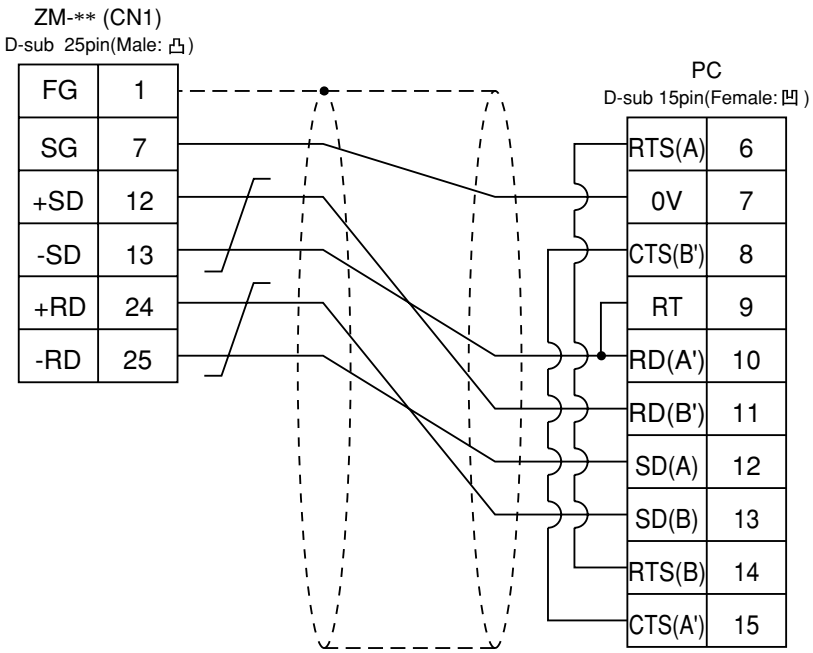
Set the memory to the extent of the memory range of each PC model. In case of using the [Bit Write] × memory as the bit device of the [Output Action] is [Momentary W], the other bits will be cleared when the bit memory is output, because the [Bit Write] will be output by one word (refer to P5-10, reference 14-7 of ZM-71SE Instruction Manual). Use [TYPE] number to assign indirect memory for macro programs.

Wiring

The following is a diagram to show the wiring of the cable which connects ZM-** to PC.

RS-485

Wiring Diagram 1



* Use twist shielded cables.

28 TOSHIBA PC

(T series)

Available PC

ZM-71SE Model Setting	PC	Wiring Diagram (refer to P2-86)
T Series	T series	RS-422 [Wiring Diagram 1]

Communication Setting

The recommended communication parameter setting of both PC and ZM-** is as follows.
For further information, refer to the TOSHIBA's PC manual.

Item		Setting of PC	Comm. Parameter of ZM-**
Baud Rate		19200bps	19200bps
Port		01	1
Parity		Odd	Odd
Trasmission Code	Data Length	8	8
	Stop Bit	1	1

PC Transmission Parameter Setting

For specifying parameters in the T series PC, use a T-series programmer and enter the following data in the system information "7. COMPUTER LINK".

Station No. 1
Baud rate 19200 BPS
Parity Odd
Data bit 8 bit
Stop bit 1 bit

Available Memory

Available: ○ Unavailable: ×

Memory	Bit Write	TYPE	Remarks
D (data register)	×	0	
X (input register)	○	1	XW as word device
Y (output register)	○	2	YW as word device
R (auxiliary relay)	○	5	RW as word device
L (link relay)	○	6	LW as word device
W (link register)	×	7	
F (file register)	×	8	
TN (timer/current value)	×	9	Read only
CN (counter/current value)	×	10	Read only
TS (timer/contact)	×	11	Read only
CS (counter/contact)	×	12	Read only

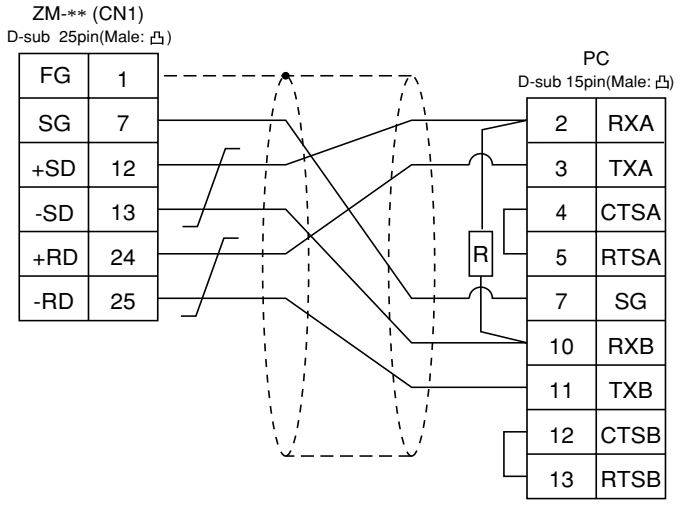
Set the memory to the extent of the memory range of each PC model. In case of using the [Bit Write] × memory as the bit device of the [Output Action] is [Momentary W], the other bits will be cleared when the bit memory is output, because the [Bit Write] will be output by one word (refer to P5-10, reference 14-7 of ZM-71SE Instruction Manual). Use [TYPE] number to assign indirect memory for macro programs.

Wiring

The following is a diagram to show the wiring of the cable which connects ZM-** to PC.

RS-422

Wiring Diagram 1



*R : 120Ω 1/2W

* Use twist shielded cables.

29 TOSHIBA MACHINE PC

(TC200)

Available PC

ZM-71SE Model Setting	PC	Link Unit	Wiring Diagram (refer to P2-88)
TC200	TC200	Port on a CPU unit	RS-232C [Wiring Diagram 1]
		TCCMW TCCMO	

Communication Setting

The recommended communication parameter setting of both PC and ZM-** is as follows.

Item	Setting of PC	Comm. Parameter of ZM-**
Baud Rate	9600bps	9600bps
Port	1	1

Available Memory

Available: ○ Unavailable: ×

Memory	Bit Write	TYPE	Remarks
D (register 1)	×	0	
B (register 2)	×	1	
X (input relay)	○	2	XW as word device
Y (output relay)	○	5	YW as word device
R (temporary storage)	○	6	RW as word device
G (extension temporary storage 1)	○	7	GW as word device
H (extension temporary storage 2)	○	8	HW as word device
L (latch)	○	9	LW as word device
S (shift register)	○	10	SW as word device
E (edge relay)	○	11	EW as word device
P (timer counter current value)	×	12	
V (timer counter set value)	×	13	
T (timer)	○	14	TW as word device
C (counter)	○	15	CW as word device
A (special auxiliary relay)	○	16	AW as word device

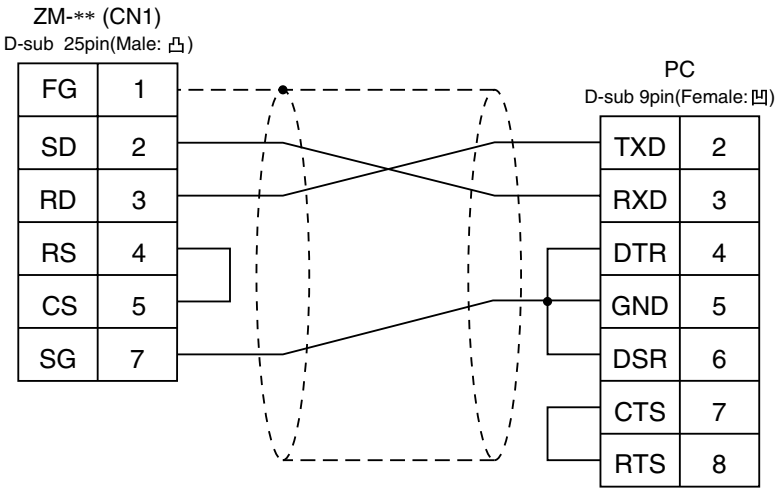
Set the memory to the extent of the memory range of each PC model. In case of using the [Bit Write] × memory as the bit device of the [Output Action] is [Momentary W], the other bits will be cleared when the bit memory is output, because the [Bit Write] will be output by one word (refer to P5-10, reference 14-7 of ZM-71SE Instruction Manual). Use [TYPE] number to assign indirect memory for macro programs.

Wiring

The following is a diagram to show the wiring of the cable which connects ZM-** to PC.

RS-232C

Wiring Diagram 1



* Use twist shielded cables.

30 SIEMENS PC • 1

(S5-90, S5-95U, S5-100U)

Available PC

A similar program as RK512 is required.

ZM-71SE Model Setting	PC	Link Unit	Wiring Diagram (refer to P2-90)
S5/S7	S5-90U S5-95U S5-100U	CP-512SI (3964R Transmission Protocol)	RS-232C [Wiring Diagram 1]
	S5-95U	Second serial interface (3964R Transmission Protocol)	RS-232C [Wiring Diagram 2] *1

*1 With the S5-95U second interface, the SIEMENS's converter 6ES5 734-1BD20 must be used. Another cable connecting ZM-** and the SIEMENS's converter is required, because this converter to ZM-** cannot be directly connected.

Communication Setting

The recommended communication parameter setting of both PC and ZM-** is as follows:

Item		Setting of PC	Comm. Parameter of ZM-**
Baud Rate		9600bps	9600bps
Parity		Even parity	Even
Transmission Code	Data Length	8	8
	Stop Bit	1	1
Busy Signal		NO	———
Hand Shake		OFF (fixed)	———

Available Memory

Available: ○ Unavailable: ×

Memory	Bit Write	TYPE	Remarks
DB (data register)	×	0	Use memories more than DB3.
I (input relay)	×	1	IW as word device Read only
Q (output relay)	×	2	QW as word device Read only
F (internal relay)	×	3	FW as word device Read only
T (timer/current value)	×	4	Read only
C (counter/current value)	×	5	Read only
AS (absolute address)	×	6	Can not be used in S7 series.

The assigned memory is indicated while editing the screen as illustrated:

<E.g.> DB003000

Address No.

Block No.

Declare more than 1 word of DB3 (data register) in PLC side previously. If not so, ZM-** cannot communicate with this PLC. Also, it is necessary to declare DB to be used in the software previously.

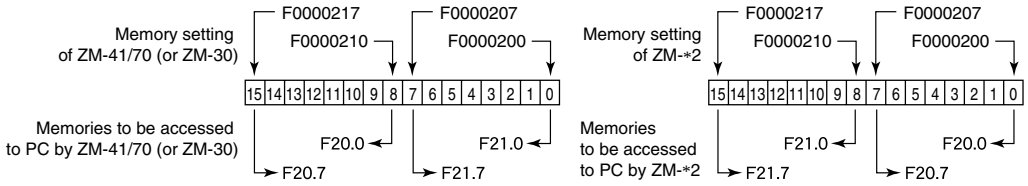
Set the memory to the extent of the memory range of each PC model.

In case of using the [Bit Write] × memory as the bit device of the [Output Action] is [Momentary W], the other bits will be cleared when the bit memory is output, because the [Bit Write] will be output by one word (refer to P5-10, reference 14-7 of ZM-71SE Instruction Manual). Use [TYPE] number to assign indirect memory for macro programs.

Notes on converting the data file of ZM-41/70 (or ZM-30) into the ZM-** data file

When converting the data file of ZM-41/70 (or ZM-30) into the V6 data file, the PLC type is automatically selected as "SIEMENS S5 ZM70."

In ZM-41/70 (or ZM-30), the order of bytes in I (input relay), Q (output relay) and F (internal relay) is reversed.

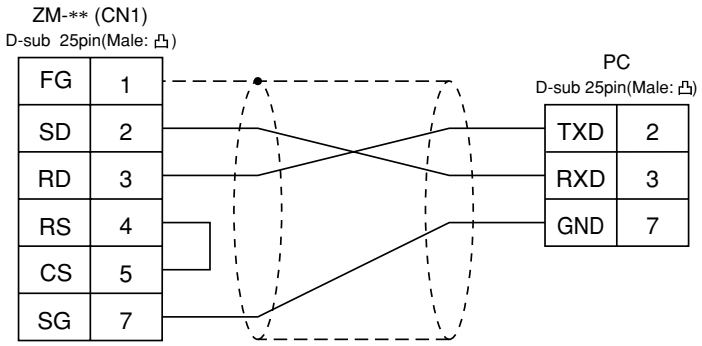


Wiring

The following is a diagram to show the wiring of the cable which connects ZM-** to PC.

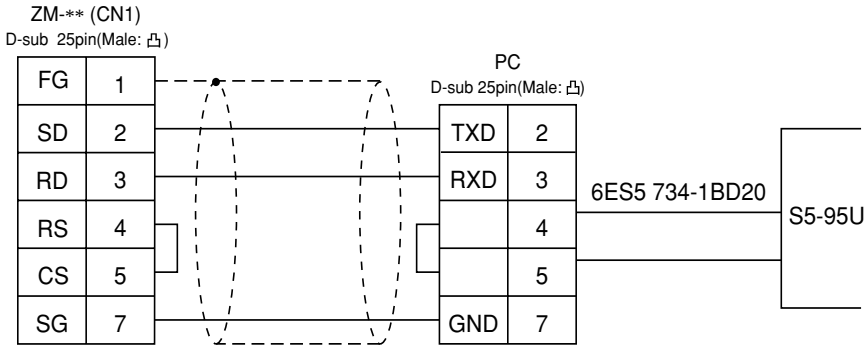
RS-232C

Wiring Diagram 1



* Use twist shielded cables.

Wiring Diagram 2



* Use twist shielded cables.

31 SIEMENS PC • 2

(S5-115U, S5-135U, S5-155U)

Available PC

ZM-71SE Model Setting	PC	Link Unit	Wiring Diagram (refer to P2-92)
S5/S7	S5-115U S5-135U S5-155U	CP-524(3964R/RK512) CP-544(3964R/RK512)	RS-232C [Wiring Diagram 1] RS-422 [Wiring Diagram 2]
	S7-300	CP-341(3964R/RK512)	
	S7-400	CP-441(3964R/RK512)	

Communication Setting

The recommended communication parameter setting of both PC and ZM-** is as follows:

Item		Setting of PC	Comm. Parameter of ZM-**
Baud Rate		9600bps	9600bps
Parity		———	Even (fixed)
Transmission Code	Data Length	———	8 (fixed)
	Stop Bit	———	1(fixed)

Available Memory

Available: ○ Unavailable: ×

Memory	Bit Write	TYPE	Remarks
DB (data register)	×	0	Use memories more than DB3.
I (input relay)	×	1	IW as word device Read only
Q (output relay)	×	2	QW as word device Read only
F (internal relay)	×	3	FW as word device Read only
T (timer/current value)	×	4	Read only
C (counter/current value)	×	5	Read only
AS (absolute address)	×	6	Can not be used in S7 series.

The assigned memory is indicated while editing the screen as illustrated:

<E.g.> DB003000

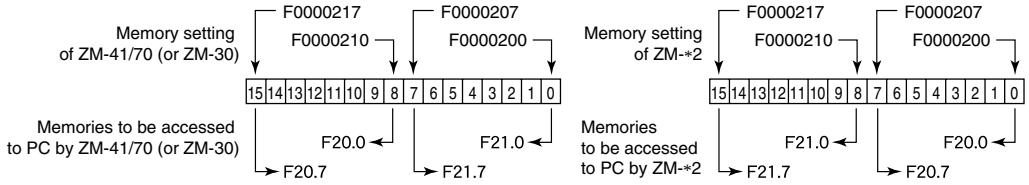
Address No.

Block No.

Declare more than 1 word of DB3 (data register) in PLC side previously. If not so, ZM-** cannot communicate with this PLC. Also, it is necessary to declare DB to be used in the software previously.

Set the memory to the extent of the memory range of each PC model. In case of using the [Bit Write] × memory as the bit device of the [Output Action] is [Momentary W], the other bits will be cleared when the bit memory is output, because the [Bit Write] will be output by one word (refer to P5-10, reference 14-7 of ZM-71SE Instruction Manual). Use [TYPE] number to assign indirect memory for macro programs.

* Notes on converting the data file of ZM-41/70 (or ZM-30) into the ZM-** data file.
  When converting the data file of ZM-41/70 (or ZM-30) into the ZM-** data file, the PLC type is automatically selected as "SIEMENS S5 ZM-70."
  In ZM-41/70 (or ZM-30), the order of bytes in I (input relay), Q (output relay) and F (internal relay) is reversed.

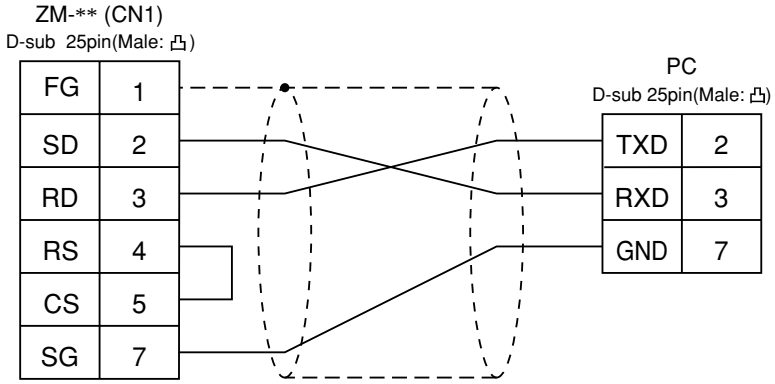


Wiring

The following is a diagram to show the wiring of the cable which connects ZM-** to PC.

RS-232C

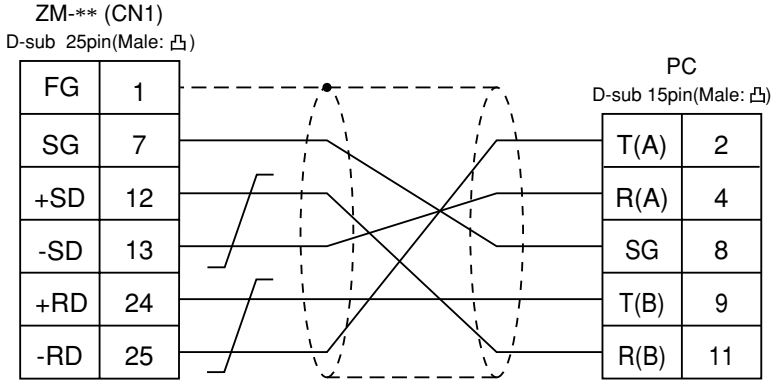
Wiring Diagram 1



* Use twist shielded cables.

RS-422

Wiring Diagram 2



* Use twist shielded cables.

32 SIEMENS PC • 3

(S5 PG port)

Connection

Connect to the S5 series PG port.

The communication parameter setting of ZM-** is done automatically.

Available PC

ZM-71SE Model Setting	PC	Link Unit	Wiring Diagram (refer to P2-94)
S5 PG port	S5 series	Programing port on a CPU unit	*[6ES5 734-1BD20] cable made by SIEMENS + RS-232C [Wiring Diagram 1]

* When using [6ES5 734-1BD20] cable made by SIEMENS, connect the cable of [Wiring Diagram 1] to the D-sub 25 pins side of [6ES5 734-1BD20] to communicate with V6.

Available Memory

Available: ○ Unavailable: ×

Memory	Bit Write	TYPE	Remarks
DB (data register)	×	0	Use memories more than DB3.
I (input relay)	×	1	IW as word device
Q (output relay)	×	2	QW as word device
F (internal relay)	×	3	FW as word device
T (timer/current value)	×	4	
C (counter/current value)	×	5	
AS (absolute address)	×	6	

The assigned memory is indicated while editing the screen as illustrated:

<E.g.> DB003000

Address No.

Block No.

Declare more than 1 word of DB3 (data register) in PLC side previously. If not so, ZM-** cannot communicate with this PLC. Also, it is necessary to declare DB to be used in the software previously.

Set the memory to the extent of the memory range of each PC model. In case of using the [Bit Write] × memory as the bit device of the [Output Action] is [Momentary W], the other bits will be cleared when the bit memory is output, because the [Bit Write] will be output by one word (refer to P5-10, reference 14-7 of ZM-71SE Instruction Manual).

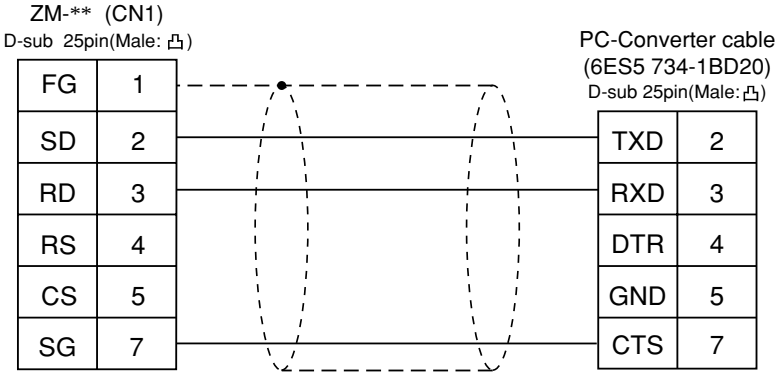
Use [TYPE] number to assign indirect memory for macro programs.

Wiring

The following is a diagram to show the wiring of the cable which connects ZM-** to PC.

RS-232C

Wiring Diagram 1



* Use twist shielded cables.

33 SIEMENS PC • 4

(S7-200 PPI)

Available PLC

ZM-71SE Model Setting	PC	Wiring Diagram (refer to P2-96)
S7-200 PPI	S7-200 series	RS-422 [Wiring Diagram 1]

Communication Setting

The recommended communication parameter setting of both PLC and ZM-** is as follows:

Item	Setting of PC	Comm. Parameter of ZM-**
Baud Rate	9600bps	9600bps
Port	2	2
Parity	Even (fixed)	———

Available Memory

Available: ○ Unavailable: ×

Memory	Bit Write	TYPE	Remarks
V (data memory)	○	0	VW as word device
I (input)	○	1	IW as word device Possible to write only to the area which is not used
Q (output)	○	2	
M (bit memory)	○	3	
T (timer/current value)	×	4	
C (counter/current value)	×	5	
TB (timer/contact)	×	6	Read only
CD (counter/contact)	×	7	Read only
HC (high speed counter/contact)	×	8	Possible to use double words
AIW (analog input)	×	9	
AQW (analog output)	×	10	
SM (special memory/special relay)	×	11	SMW as word device
S (stage)	×	12	SW as word device

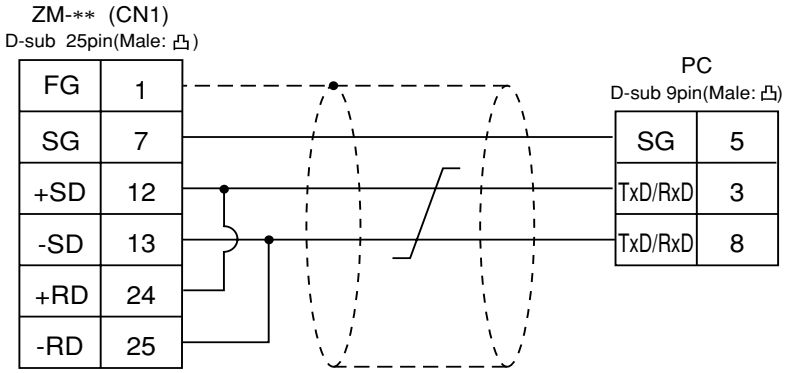
Set the memory to the extent of the memory range of each PC model. In case of using the [Bit Write] × memory as the bit device of the [Output Action] is [Momentary W], the other bits will be cleared when the bit memory is output, because the [Bit Write] will be output by one word (refer to P5-10, reference 14-7 of ZM-71SE Instruction Manual). Use [TYPE] number to assign indirect memory for macro programs.

Wiring

The following is a diagram to show the wiring of the cable which connects ZM-** to PC.

RS-422

Wiring Diagram 1



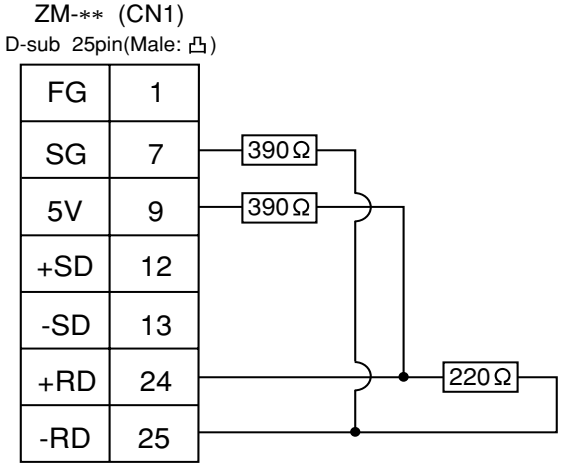
* Use twist shielded cables.

Setting of Terminal Resistance

Set the dip switch S1 of ZM-** series to OFF.

Connect terminal registance to the ZM-** serial connector (CN1) as follows.

If terminal registance is not connected, the communication error may occur.



34 SIEMENS PC • 5

(TI545, 555)

Available PC

ZM-71SE Model Setting	PC	Wiring Diagram (refer to P2-98)
TI500/505	TI545/555 CPU port (built-in)	RS-232C [Wiring Diagram 1]

Communication Setting

Connect the cable to the CPU port (RS-232C built-in port) for TI545/555.
The recommended communication parameter setting of both PC and ZM-** is as follows:

Item		Setting of PC	Comm. Parameter of ZM-**
Baud Rate		19200bps	19200bps
Parity		———	None
Transmission Code	Data Length	———	8
	Stop Bit	———	1

Available Memory

Available: ○ Unavailable: ×

Memory	Bit Write	TYPE	Remarks
V (variable memory)	×	0	
WX (word input)	×	1	
WY (word output)	×	2	
X (discrete input)	○	3	
Y (discrete output)	○	4	
CR (control relay)	×	5	
TCP (timer counter/set value)	×	6	
TCC (timer counter/current value)	×	7	
DCP (drum count/set value)	×	8	*1
DCC (drum count/current value)	×	9	Read only
DSP (drum step/set value)	×	10	
DSC (drum step/current value)	×	11	
K (fixed memory)	×	12	
STW (system state)	×	13	

*1 In case of using DCP (drum count/set value), set the drum step No.1 to 16.
The assigned memory is indicated while editing the screen as illustrated:

<E.g.> DCP30000 : 1
Drum step No.
Colon
Address No.

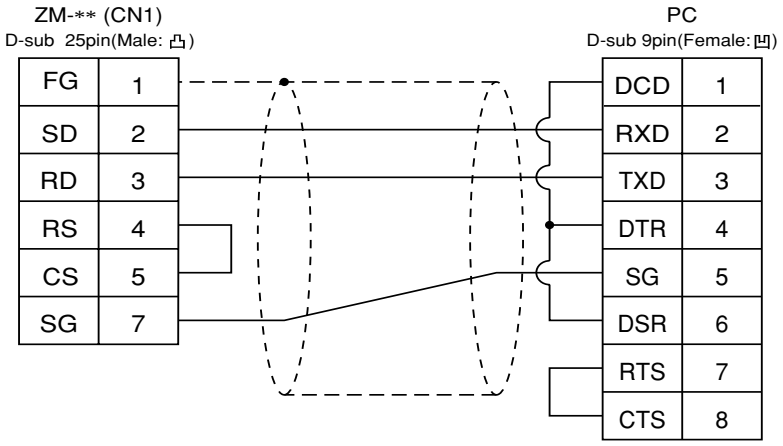
Set the memory to the extent of the memory range of each PC model. In case of using the [Bit Write] × memory as the bit device of the [Output Action] is [Momentary W], the other bits will be cleared when the bit memory is output, because the [Bit Write] will be output by one word (refer to P5-10, reference 14-7 of ZM-71SE Instruction Manual). Use [TYPE] number to assign indirect memory for macro programs.

Wiring

The following is a diagram to show the wiring of the cable which connects ZM-** to PC.

RS-232C

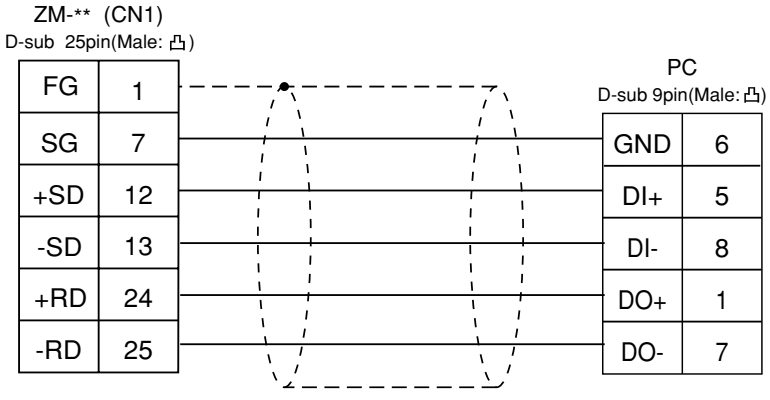
Wiring Diagram 1



* Use twist shielded cables.

RS-422

Wiring Diagram 2



* Use twist shielded cables.

35 Shinko PC

Available PC

ZM-71SE Model Setting	PC	Link Unit	Wiring Diagram (refer to P2-100)
SELMART	SELMART-100 or later series	Version O1M2-UCI-6X	RS-232C [Wiring Diagram 1]

Communication Setting

The recommended communication parameter setting of both PC and ZM-** is as follows:

Item		Setting of PC	Comm. Parameter of ZM-**
Baud Rate		19200bps	19200bps
Parity		Even	Even
Transmission Code	Data Length	7 (ASCII)	7
	Stop Bit	1	1
Sum Check		Provided	———

Available Memory

Available: ○ Unavailable: ×

Memory	Bit Write	TYPE	Remarks
D (data register)	×	0	

Only D register is available for this PC model.
No other devices can be used although they are available to be set in the panel editor.

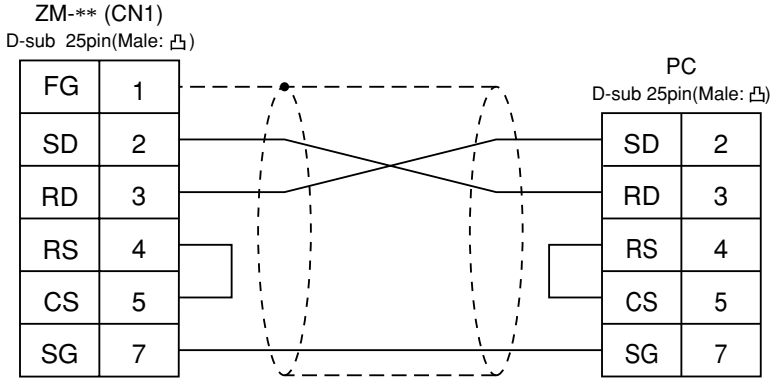
Set the memory to the extent of the memory range of each PC model. In case of using the [Bit Write] × memory as the bit device of the [Output Action] is [Momentary W], the other bits will be cleared when the bit memory is output, because the [Bit Write] will be output by one word (refer to P5-10, reference 14-7 of ZM-71SE Instruction Manual). Use [TYPE] number to assign indirect memory for macro programs.

Wiring

The following is a diagram to show the wiring of the cable which connects ZM-** to PC.

RS-232C

Wiring Diagram 1



* Use twist shielded cables.

36 SAMSUNG PC

(SPC series)

Available PC

ZM-71SE Model Setting	PC	Wiring Diagram (refer to P2-102)
SPC Series	SPC series	RS-232C [Wiring Diagram 1] RS-422/485 [Wiring Diagram 2]

Communication Setting

The recommended communication parameter setting of both PC and ZM-** is as follows:

Item	Setting of PC	Comm. Parameter of ZM-**
Baud Rate	9600bps	9600bps
Parity	None	None
Stop Bit	1	1
Terminal Resistor	ON for RS-485	———

Available Memory

Available: ○ Unavailable: ×

Memory	Bit Write	TYPE	Remarks
R (input/output)	○	0	
L (link relay)	○	1	
M (internal relay)	○	2	
K (keep relay)	○	3	
F (special relay)	○	4	
W (data register)	×	5	

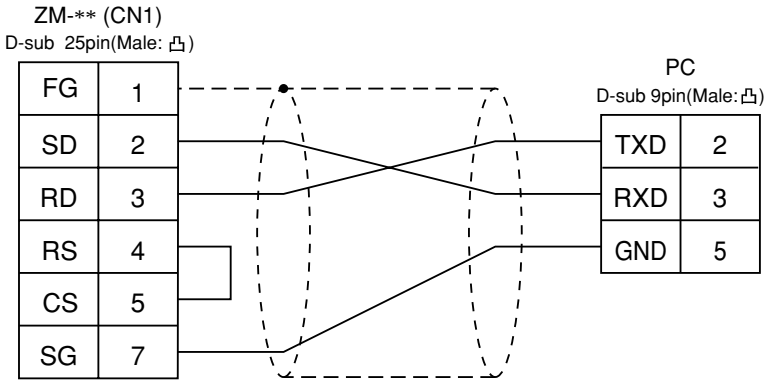
Set the memory to the extent of the memory range of each PC model. In case of using the [Bit Write] × memory as the bit device of the [Output Action] is [Momentary W], the other bits will be cleared when the bit memory is output, because the [Bit Write] will be output by one word (refer to P5-10, reference 14-7 of ZM-71SE Instruction Manual). Use [TYPE] number to assign indirect memory for macro programs.

Wiring

The following is a diagram to show the wiring of the cable which connects ZM-** to PC.

RS-232C

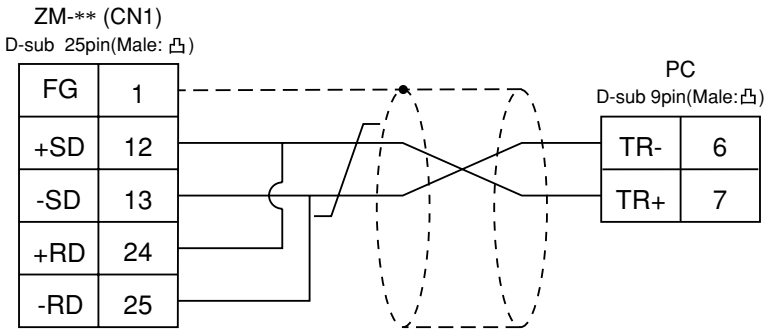
Wiring Diagram 1



* Use twist shielded cables.

RS-422

Wiring Diagram 2



* Use twist shielded cables.

37 KEYENCE PC • 1

(KZ series)

Available PC

ZM-71SE Model Setting	PC	Link Unit	Wiring Diagram (refer to P2-104)
KZ Series	KZ300	KZ-L2	Port 1 RS-232C [Wiring Diagram 1] Port 2 RS-232C [Wiring Diagram 2] RS-422 [Wiring Diagram 3]

Communication Setting

The recommended communication parameter setting of both PC and ZM-** is as follows:
For further information, refer to the communication specifications of KEYENCE link unit.

Item		Setting of PC	Comm. Parameter of ZM-**
Port		0	0
Baud Rate		19200bps	19200bps
Parity		Even	Even
Transmission Code	Data Length	7 (ASCII)	7
	Stop Bit	2	2
Terminal Resistor		ON for RS-422	———

Set the port with the port setting switch, the termination resistance with terminator, and the baud rate/data bit/parity/stop bit with SET B dip switches.

Available Memory

Available: ○ Unavailable: ×

Memory	Bit Write	TYPE	Remarks
DM (data memory)	×	0	
CH (input/output relay)	×	1	

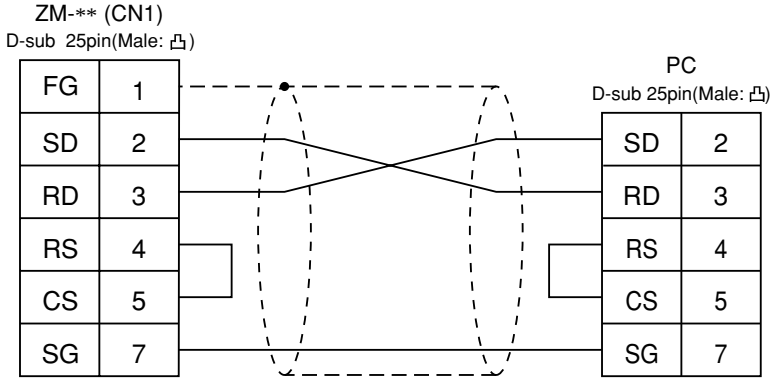
Set the memory to the extent of the memory range of each PC model. In case of using the [Bit Write] × memory as the bit device of the [Output Action] is [Momentary W], the other bits will be cleared when the bit memory is output, because the [Bit Write] will be output by one word (refer to P5-10, reference 14-7 of ZM-71SE Instruction Manual). Use [TYPE] number to assign indirect memory for macro programs.

Wiring

The following is a diagram to show the wiring of the cable which connects ZM-** to PC.

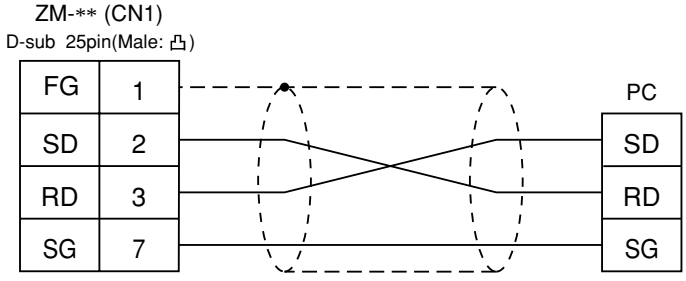
RS-232C

Wiring Diagram 1



* Use twist shielded cables.

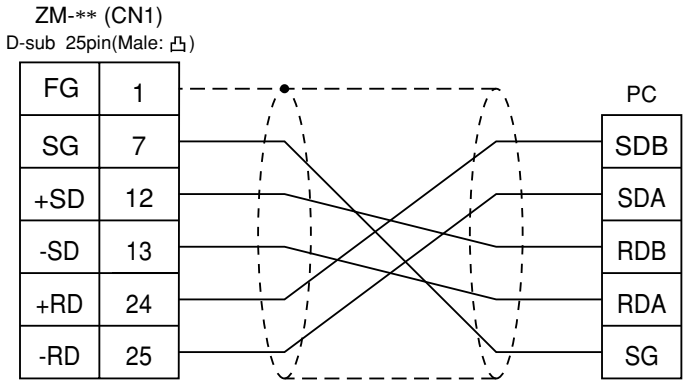
Wiring Diagram 2



* Use twist shielded cables.

RS-422

Wiring Diagram 3



* Use twist shielded cables.

38 KEYENCE PC • 2

(KZ-A500)

Available PLC

ZM-71SE Model Setting	PLC	Link Unit	Wiring Diagram (refer to P2-106,107)
KZ-A500 CPU Port	KZ-A500	CPU Modular Port	RS-232C [Wiring Diagram 1] RS-422 Cable made by KEYENCE [KZ-C20] + Cable made by Hakko [MB-CPUQ]
MITSUBISHI AnA/N/U series		KZ-L10	Port 1 RS-232C [Wiring Diagram 2] Port 2 RS-232C [Wiring Diagram 3] RS-422 [Wiring Diagram 4]

Communication Setting

The recommended communication parameter setting of both PC and ZM-** is as follows:

♦CPU modular port of KZ-A500

Item		Setting of PLC	Comm. Parameter of ZM-**
Port		0	0
Baud Rate		9600bps	9600bps *1
Parity		Odd	Odd
Transmission Code	Data Length	8	8
	Stop Bit	1	1
Terminal Resistor		ON for RS-422	———

*1 In case of RS-422, the baud rate is fixed at 9600bps.

♦Link Unit KZ-L10

Item		Setting of PLC	Comm. Parameter of ZM-**
Port		0	0
Baud Rate		19200bps	19200bps
Parity		Even	Even
Transmission Code	Data Length	7	7
	Stop Bit	1	1
Terminal Resistor		ON for RS-422	———

Set the port with the port setting switch, the terminating resistance with terminator, and the baud rate/data bit/parity/stop bit with SET B dip switches.

For further information, refer to the communication specifications of KZ-L10.

Available Memory

Available: ○ Unavailable: ×

Memory	Bit Write	TYPE	Remarks
D (data register)	×	0	
W (link register)	×	1	
R (file register)	×	2	
TN (timer/current value)	×	3	
CN (counter/current value)	×	4	
M (internal relay)	○	6	
L (latch relay)	○	7	
B (link relay)	○	8	
X (input relay)	○	9	
Y (output relay)	○	10	
TS (timer/contact)	○	11	
TC (timer/coil)	○	12	
CS (counter/contact)	○	13	
CC (counter/coil)	○	14	

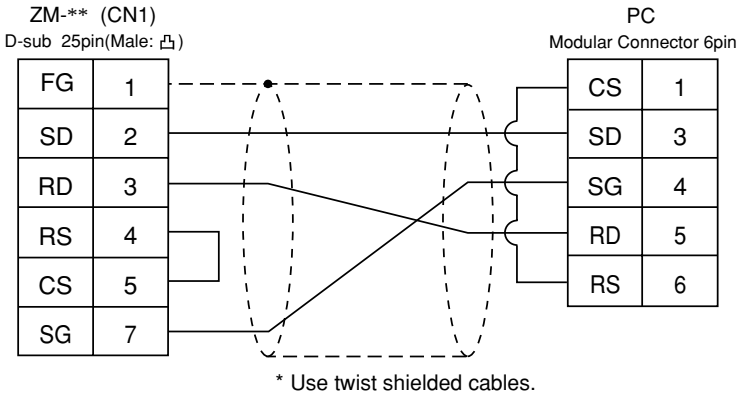
Set the memory to the extent of the memory range of each PC model. In case of using the [Bit Write] × memory as the bit device of the [Output Action] is [Momentary W], the other bits will be cleared when the bit memory is output, because the [Bit Write] will be output by one word (refer to P5-10, reference 14-7 of ZM-71SE Instruction Manual). Use [TYPE] number to assign indirect memory for macro programs.

Wiring

The following is a diagram to show the wiring of the cable which connects ZM-** to PC.

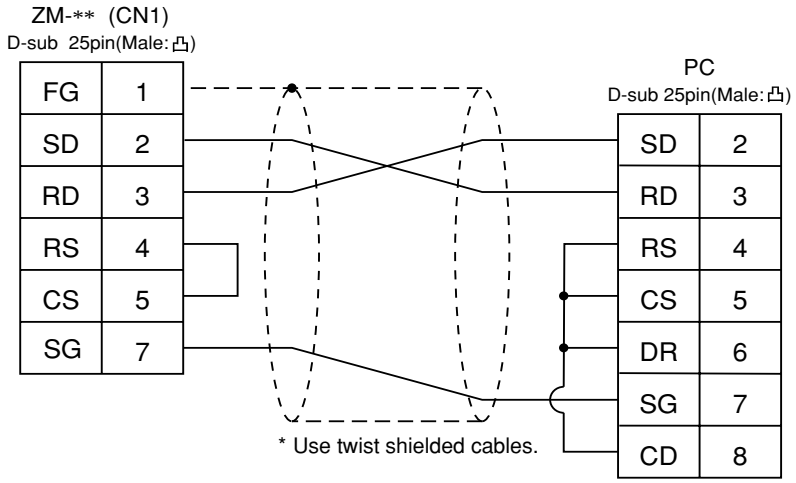
RS-232C

Wiring Diagram 1

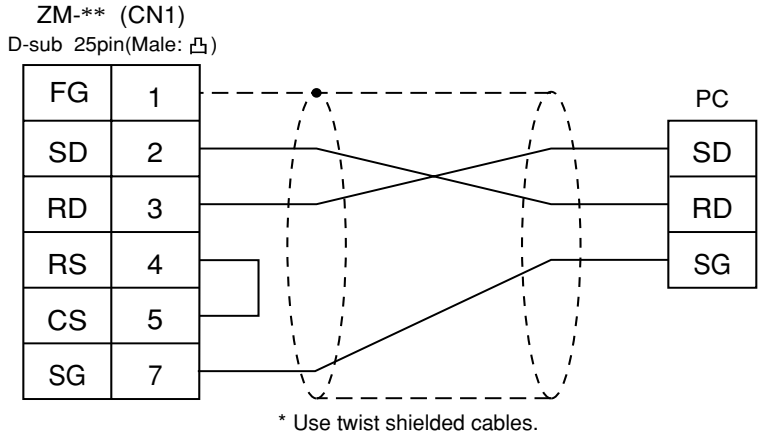


* Use twist shielded cables.

Wiring Diagram 2

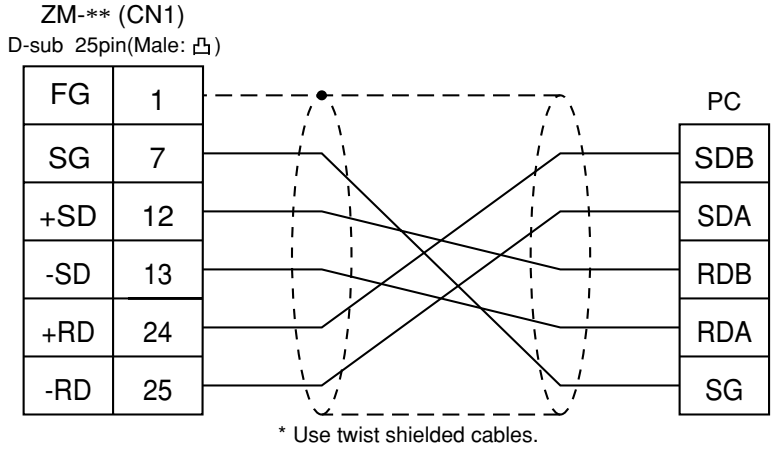


Wiring Diagram 3



RS-422

Wiring Diagram 4



39 KEYENCE PC • 3

(KV series)

Available PLC

ZM-71SE Model Setting	PC	Wiring Diagram (refer to P2-109)
KV Series	KZ-10,16,24,40,80,300,350 (Program port direct connection) KV series (Program port direct connection)	RS-232C [Wiring diagram 1] or Cable made by KEYENCE [OP-26487] + connecter [OP26485] RS-422 Cable made by KEYENCE [KZ-C20] + Cable made by Hakko [MB-CPUQ]
KZ 24/300 Series CPU	KZ-24,300 (Program port direct connection)	RS-232C [Wiring diagram 1] or Cable made by KEYENCE [OP-26487] + connecter [OP26485]
KV 10/24 Series CPU	KZ-V10,24 (Program port direct connection)	

* When using RS-232C cable made by KEYENCE [OP-26487], attach the D-sub 25 pins connecter [OP-26485] to the modular jack on the ZM-** side to communicate.

Communication Setting

○ KV series

The communication parameter setting of ZM-** is done automatically.

○ KZ24/300 Series CPU

Item		Setting of PC	Comm. Parameter of ZM-**
Port		0	0
Baud Rate		57600bps	57600bps*1
Parity		Even	———
Transmission Code	Data Length	8	———
	Stop Bit	1	———
Terminal Resistor		———	———

*1 The maximum baud rate is 57600bps. If 115000bps is selected, the ZM-** communicates with a PC forcibly at 9600bps.

○ KV10/24 Series CPU

Item		Setting of PLC	Comm. Parameter of ZM-**
Port		0	0
Baud Rate		38400bps	38400bps*1
Parity		Even	———
Transmission Code	Data Length	8	———
	Stop Bit	1	———
Terminal Resistor		———	———

*1 The maximum baud rate is 38400bps. If 57600bps or 115000bps is selected, the ZM-** communicates with a PC forcibly at 9600bps.

Available Memory

Available: ○ Unavailable: ×

Memory	Bit Write	TYPE	Remarks
DM (data memory)	×	0	
CH (input/output relay)	×	1	
T (timer/current value)	×	2	
C (counter/current value)	×	3	
TS (timer/set value)	×	4	
CS (counter/set value)	×	5	
TU (timer/contact)	×	6	Read only
CU (counter/contact)	×	7	Read only
TM (temporary data memory)	×	8	

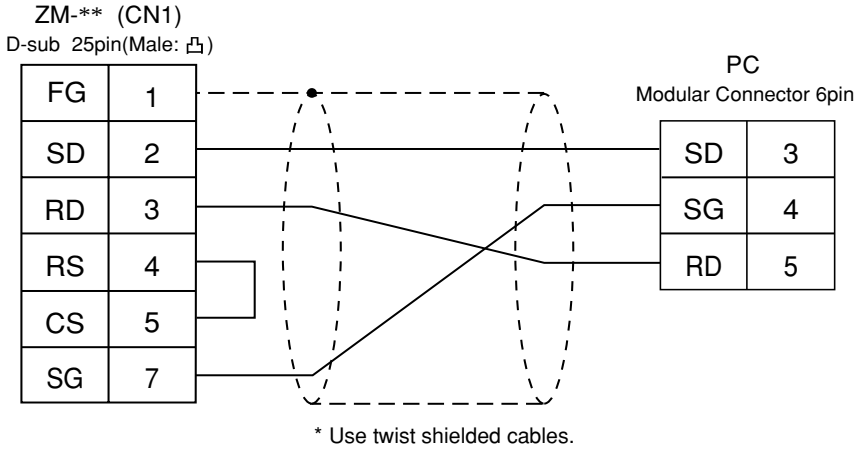
Set the memory to the extent of the memory range of each PC model. In case of using the [Bit Write] × memory as the bit device of the [Output Action] is [Momentary W], the other bits will be cleared when the bit memory is output, because the [Bit Write] will be output by one word (refer to P5-10, reference 14-7 of ZM-71SE Instruction Manual). Use [TYPE] number to assign indirect memory for macro programs.

Wiring

The following is a diagram to show the wiring of the cable which connects ZM-** to PC.

RS-232C

Wiring Diagram 1



* Use twist shielded cables.

40 LG PC

Available PC

ZM-71SE Model Setting	PC	Wiring Diagram (refer to P2-112)
MASTER-K10/60/200	K10/60/200	RS-232C [Wiring Diagram 1]
MASTER-K500/1000	K500/1000	RS-232C [Wiring Diagram 2] RS-422 [Wiring Diagram 4]
LG MKX00S	K200S/K300S/K1000S CPU port	RS-232C [Wiring Diagram 3]

Communication Setting

The recommended communication parameter setting of both PC and ZM-** is as follows:

Item		Setting of K10/60/200	Comm. Parameter of ZM-**
Baud Rate		9600bps (fixed)	———
Parity		None (fixed)	———
Transmission Code	Data Length	8 (fixed)	———
	Stop Bit	1 (fixed)	———

Item		Setting of K500/1000	Comm. Parameter of ZM-**
Baud Rate		19200bps *1	19200bps
Parity		None (fixed)	———
Transmission Code	Data Length	8 (fixed)	———
	Stop Bit	1 (fixed)	———

*1 In case of RS-422, the baud rate is fixed at 9600bps.

Item		Setting of K200S/K300S/K1000S	Comm. Parameter of ZM-**
Baud Rate		38400bps	38400bps
Parity		None (fixed)	———
Transmission Code	Data Length	8 (fixed)	———
	Stop Bit	1 (fixed)	———

Available Memory

○ K10/60/200

Available: ◯ Unavailable: ×

Memory		Bit Write	TYPE	Remarks
D	(data register)	×	0	
M	(auxiliary relay)	×	1	
P	(input/output relay)	×	2	Input : Read only
K	(keep relay)	×	3	
TC	(timer/current value)	×	4	
CC	(counter/current value)	×	5	
TS	(timer/set value)	×	6	
CS	(counter/set value)	×	7	

○ K500/1000

Available: ◯ Unavailable: ×

Memory		Bit Write	TYPE	Remarks
P	(input/output)	○	0	Input : read only
M	(relay)	○	1	
L	(link relay)	○	2	
K	(keep relay)	○	3	
F	(special relay)	×	4	Read only
T	(timer/current value)	×	5	
C	(counter/set value)	×	6	
D	(data register)	×	7	

○ K200S/300S/1000S

Available: ◯ Unavailable: ×

Memory		Bit Write	TYPE	Remarks
P	(input/output)	○	0	Input : read only
M	(relay)	○	1	
L	(link relay)	○	2	
K	(keep relay)	○	3	
F	(special relay)	×	4	Read only
T	(timer/current value)	×	5	
C	(counter/set value)	×	6	
D	(data register)	×	7	

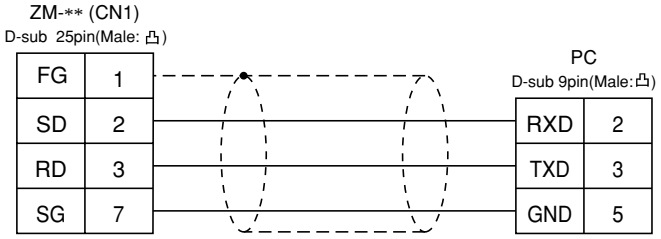
Set the memory to the extent of the memory range of each PC model. In case of using the [Bit Write] × memory as the bit device of the [Output Action] is [Momentary W], the other bits will be cleared when the bit memory is output, because the [Bit Write] will be output by one word (refer to P5-10, reference 14-7 of ZM-71SE Instruction Manual). Use [TYPE] number to assign indirect memory for macro programs.

Wiring

The recommended communication parameter setting of both PC and ZM-** is as follows:

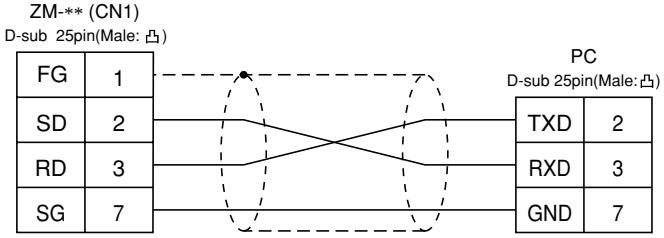
RS-232C

Wiring Diagram 1



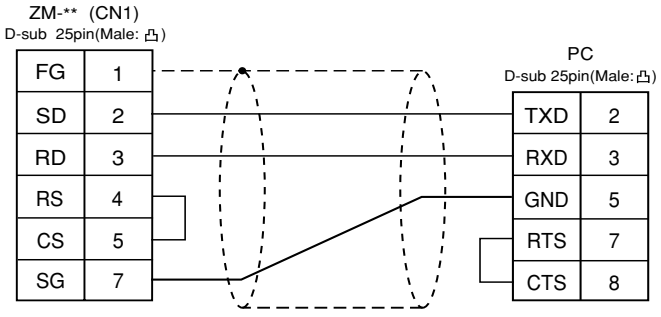
* Use twist shielded cables.

Wiring Diagram 2



* Use twist shielded cables.

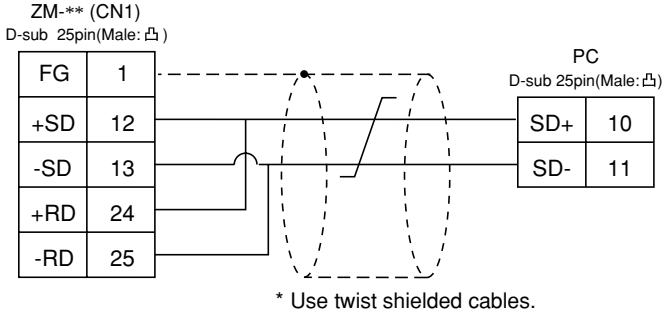
Wiring Diagram 3



* Use twist shielded cables.

RS-422

Wiring Diagram 4



* Use twist shielded cables.

41 FANUC PC

Available PC

ZM-71SE Mode Setting	PC	Wiring Diagram (refer to P2-114)
Power Mate	Port of CPU unit (JD14) of Power Mate-Model H/D	RS-422 [Wiring Diagram 1]

Communication Setting

The following is a diagram to show the wiring of the cable which connects ZM-** to PC.

Item		Setting of PC	Comm. Parameter of ZM-**
Baud Rate		19200bps (fixed)	———
Signal		RS-422 (fixed)	———
Port		0 (fixed)	———
Parity		Even (fixed)	———
Transmission Code	Data Length	8 (fixed)	———
	Stop Bit	1 (fixed)	———

Available Memory

Available: ○ Unavailable: ×

Memory	Bit Write	TYPE	Remarks
D (data register)	○	0	
X (input relay)	○	1	WX as word data
Y (output relay)	○	2	WY as word data
R (internal relay)	○	3	WR as word data
K (keep relay)	○	4	WK as word data
T (timer)	×	5	
C (counter)	×	6	

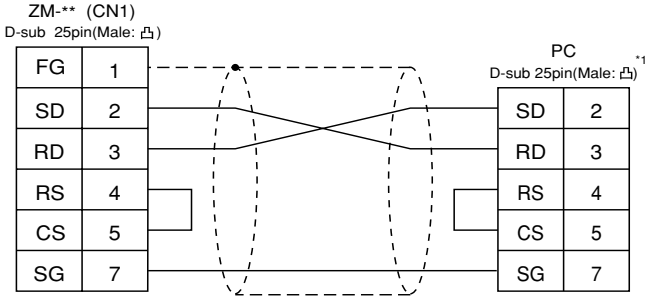
Set the memory to the extent of the memory range of each PC model. In case of using the [Bit Write] × memory as the bit device of the [Output Action] is [Momentary W], the other bits will be cleared when the bit memory is output, because the [Bit Write] will be output by one word (refer to P5-10, reference 14-7 of ZM-71SE Instruction Manual). Use [TYPE] number to assign indirect memory for macro programs.

Wiring

The following is a diagram to show the wiring of the cable which connects ZM-** to PC.

RS-232C

Wiring Diagram 1

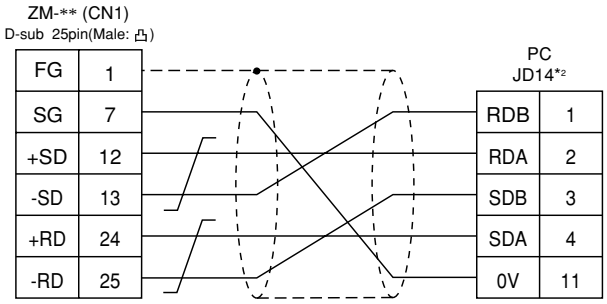


* Use twist shielded cables.

*1 Channel 2 of

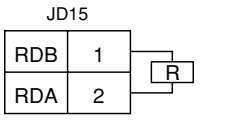
RS-422

Wiring Diagram 2



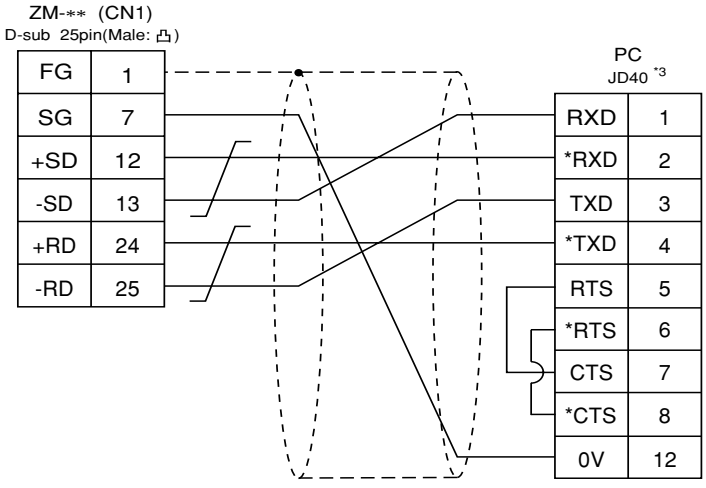
* Use twist shielded cables.

*2 Half pitch 20 pins.



＊R：120Ω 1/2W

Wiring Diagram 3



* Use twist shielded cables.

*3 Half pitch 20 pins.

42 FATEK AUTMATION PC

Available PC

ZM-71SE Model Setting	PC	Link Unit	Wiring Diagram (refer to P2-116)
FACON FB series	FACON FB series	FB-DTBR	RS-232C [Wiring Diagram 1] [Wiring Diagram 2] RS-422 [Wiring Diagram 3]

CommunicationSetting

The recommended communication parameter setting of both PC and ZM-** is as follows:

Item		Setting of PC	Comm. Parameter of ZM-**
Baud Rate		9600bps	9600bps
Signal		RS232C	RS232C
Parity		Even (fixed)	———
Transmission code	Data Length	7 (fixed)	———
	Stop Bit	1 (fixed)	———

AvailableMemory

Available: ◯ Unavailable: ╳

Memory	Bit Write	TYPE	Remarks
HR (data register)	X	0	
DR (data register)	X	1	
X (input relay)	O	2	
Y (output relay)	O	3	
M (internal relay)	O	4	
S (step relay)	O	5	
T (timer contact)	O	6	Read only
C (counter contact)	O	7	Read only
RT (timer/current value)	X	8	
RC (counter/current value)	X	9	
DRC (32-bit counter/current value)	X	10	

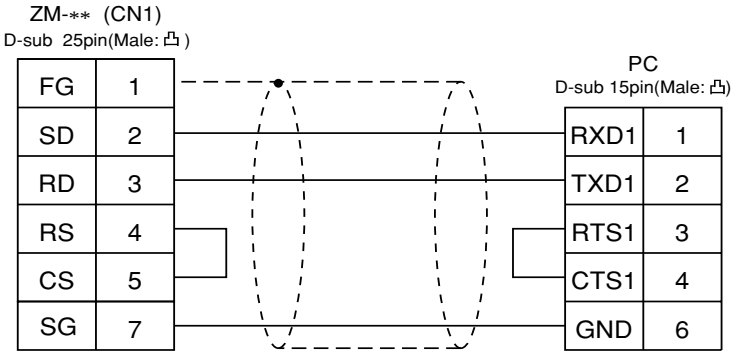
Set the memory to the extent of the memory range of each PC model. In case of using the [Bit Write] ╳ memory as the bit device of the [Output Action] is [Momentary W], the other bits will be cleared when the bit memory is output, because the [Bit Write] will be output by one word (refer to P5-10, reference 14-7 of ZM-71SE Instruction Manual). Use [TYPE] number to assign indirect memory for macro programs.

Wiring

The following is a diagram to show the wiring of the cable which connects ZM-** to PC.

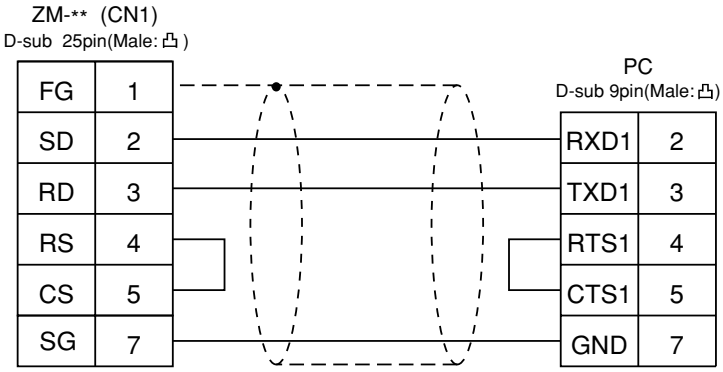
RS-232C

Wiring Diagram 1



* Use twist shielded cables.

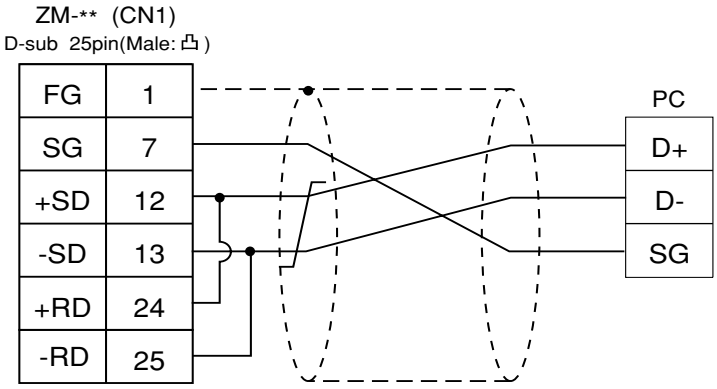
Wiring Diagram 2



* Use twist shielded cables.

RS-422

Wiring Diagram 3



* Use twist shielded cables.

43 IDEC PC

Available PC

ZM-71SE Model Setting	PC	Wiring Diagram (refer to P2-118)
MICRO3	MICRO3	RS-232C Cable made by IDEC [FC2A-KC1] or * Cable made by IDEC [FC2A-KC2] +RS-232C [Wiring Diagram 1]

* When using RS-232C cable made by IDEC [FC2A-KC2], connect the cable of [Wiring Diagram 1] to the D-sub 9 pins side of [FC2A-KC2] to communicate with ZM-**.

Communication Setting

The recommended communication parameter setting of both PC and ZM-** is as follows:

Item		Setting of PC	Comm. Parameter of ZM-**
Baud Rate		9600bps	9600bps
Port		1	1
Parity		Even	Even
Transmission code	Data Length	7	7
	Stop Bit	1	1

Available Memory

Available: O Unavailable:X

Memory		Bit Write	TYPE	Remarks
D	(data register)	X	0	
I	(input)	O	1	
Q	(output)	O	2	
M	(internal relay)	O	3	
R	(shift register)	O	4	
TS	(timer/set value)	X	5	
TN	(timer/contact)	X	6	
T	(timer/contact)	X	7	Read only
CS	(counter/set value)	X	8	
CN	(counter/current value)	X	9	
C	(counter/contact)	X	10	Read only

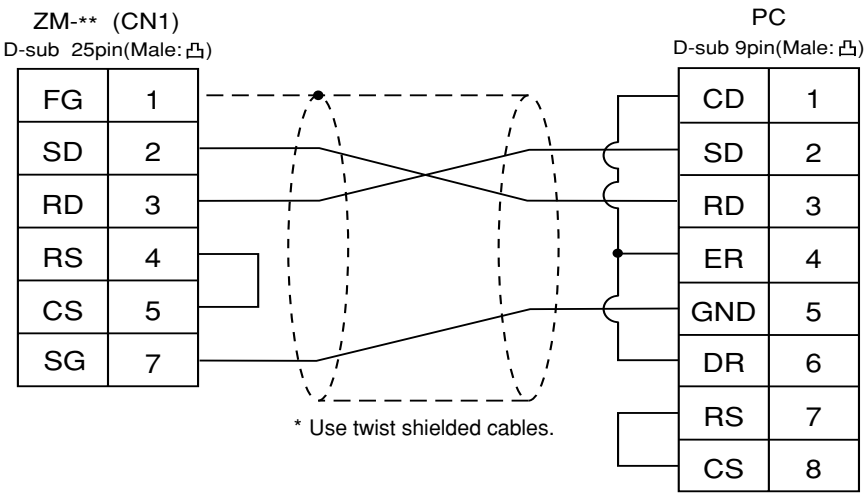
Set the memory to the extent of the memory range of each PC model. In case of using the [Bit Write] × memory as the bit device of the [Output Action] is [Momentary W], the other bits will be cleared when the bit memory is output, because the [Bit Write] will be output by one word (refer to P5-10, reference 14-7 of ZM-71SE Instruction Manual). Use [TYPE] number to assign indirect memory for macro programs.

Wiring

The following is a diagram to show the wiring of the cable which connects ZM-** to PC.

RS-232C

Wiring Diagram 1



44 MODICON PC

Available PC

ZM-71SE Model Setting	PC	Wiring Diagram (refer to P2-120)
Modbus RTU	Modbus RTU	RS-232C [Wiring Diagram 1]

Communication Setting

The recommended communication parameter setting of both PC and ZM-** is as follows:

Item		Setting of PC	Comm. Parameter of ZM-**
Baud Rate		9600bps	9600bps
Port		1	1
Parity		Even	Even
Transmission code	Data Length	8	8
	Stop Bit	1	1

Available Memory

Available: ○ Unavailable: ×

Memory		Bit Write	TYPE	Remarks
4	(holding register)	×	0	
3	(input register)	×	1	
0	(output coil)	×	4	
1	(input relay)	×	6	Read only

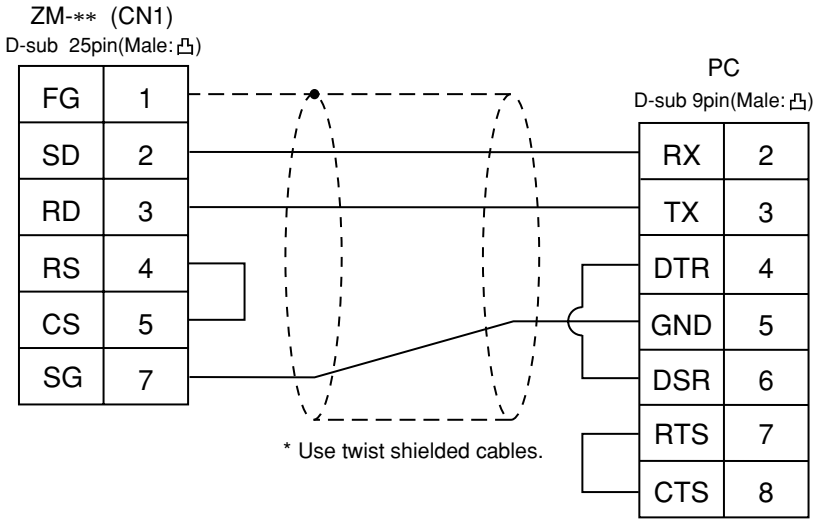
Set the memory to the extent of the memory range of each PC model. In case of using the [Bit Write] × memory as the bit device of the [Output Action] is [Momentary W], the other bits will be cleared when the bit memory is output, because the [Bit Write] will be output by one word (refer to P5-10, reference 14-7 of ZM-71SE Instruction Manual). Use [TYPE] number to assign indirect memory for macro programs.

Wiring

The following is a diagram to show the wiring of the cable which connects ZM-** to PC.

RS-232C

Wiring Diagram 1



45 YAMATAKE PC

Available PC

ZM-71SE Model Setting	PC	Wiring Diagram (refer to P2-122)
MX series	MX200/MX50	RS-232C [Wiring Diagram 1]

Communication Setting

The recommended communication parameter setting of both PC and ZM-** is as follows:

Item		Setting of PC	Comm. Parameter of ZM-**
Baud Rate		9600bps	9600bps
Port		1	1
Parity		Even	Even
Transmission code	Data Length	8	8
	Stop Bit	1	1

Available Memory

Available: O Unavailable:X

Memory		Bit Write	TYPE	Remarks
R	(data register)	X	0	
M	(auxiliary relay)	X	1	
L	(latch relay)	X	2	
X	(input relay)	X	3	
Y	(output relay)	X	4	
TP	(timer-current value)	X	5	
TS	(timer/set value)	X	6	
CP	(counter-current value)	X	7	
CS	(counter/set value)	X	8	
T	(timer/contact)	X	9	
C	(counter/contact)	X	10	
P	(link register)	X	11	

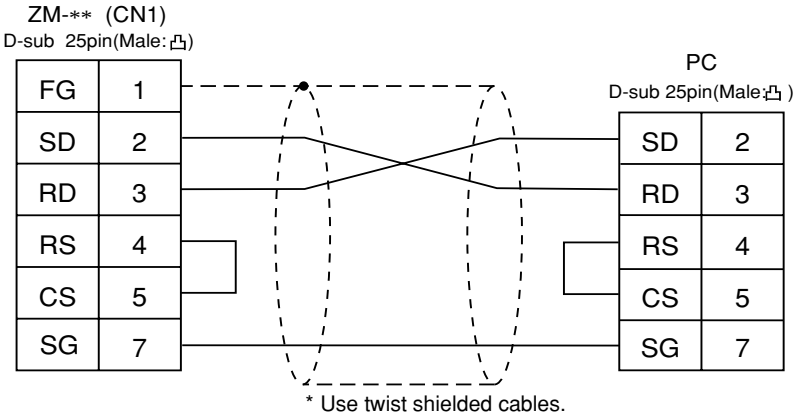
Set the memory to the extent of the memory range of each PC model. In case of using the [Bit Write] × memory as the bit device of the [Output Action] is [Momentary W], the other bits will be cleared when the bit memory is output, because the [Bit Write] will be output by one word (refer to P5-10, reference 14-7 of ZM-71SE Instruction Manual). Use [TYPE] number to assign indirect memory for macro programs.

Wiring

The following is a diagram to show the wiring of the cable which connects ZM-** to PC.

RS-232C

Wiring Diagram 1



46 TAIAN PC

Available PC

ZM-71SE Model Setting	PC	Port	Wiring Diagram (refer to P2-124)
TP02	TP02	Communication Port (T/R+, T/R-) MMI Port (9pin) (4-5 Short Computer Link Mode)	RS-232C [Wiring Diagram 1] RS-422 [Wiring Diagram 2]

Communication Setting

The recommended communication parameter setting of both PC and ZM-** is as follows:

Item		Setting of PC	Comm. Parameter of ZM-**
Baud Rate		19200bps	19200bps
Port		1	1
Parity		None	None
Transmission code	Data Length	7	7
	Stop Bit	1	1

Available Memory

Available: O Unavailable:X

Memory	Bit Write	TYPE	Remarks
D (data register timer counter/contact)	X	0	
V (timer counter/contact)	X	1	
WS (system register)	X	2	
WC (constant register)	X	3	
X (input relay)	○	4	
Y (output relay)	○	5	
C (internal relay)	○	6	
SC (special register)	○	7	

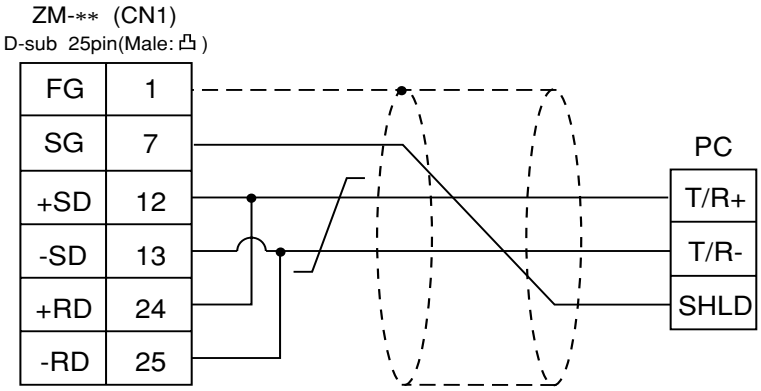
Set the memory to the extent of the memory range of each PC model. In case of using the [Bit Write] × memory as the bit device of the [Output Action] is [Momentary W], the other bits will be cleared when the bit memory is output, because the [Bit Write] will be output by one word (refer to P5-10, reference 14-7 of ZM-71SE Instruction Manual). Use [TYPE] number to assign indirect memory for macro programs.

Wiring

The following is a diagram to show the wiring of the cable which connects ZM-** to PC.

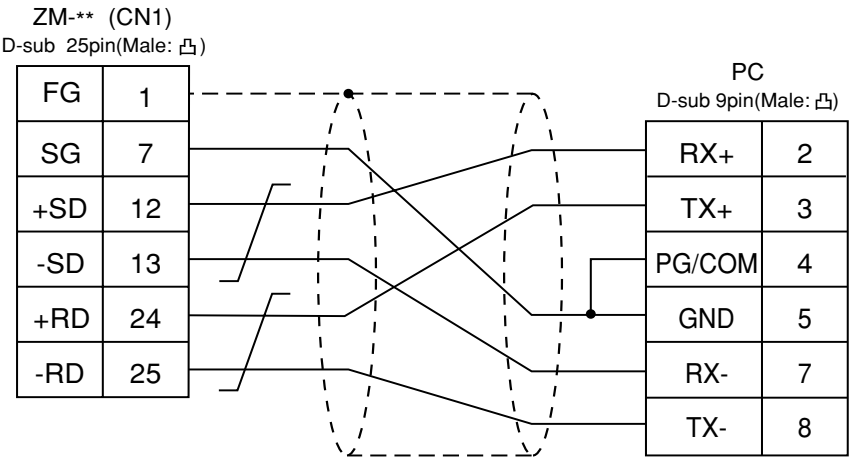
RS-422

Wiring Diagram 1



* Use twist shielded cables.

Wiring Diagram 2



* Use twist shielded cables.

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