MITSUBISHI ELECTRIC

Mitsubishi Industrial Robot

Encoder Distribution Unit Manual

CR750/CR751 series controller
CRn-700 series controller

MELFA

BFP-A3300

⚠ Precautions

- Do not use the unit in excess of rated voltage or it could suffer damage.
- Wire the power supply correctly or it could suffer damage.
- Wire the cable in the shortest path in order to avoid noise.
- Do not short or ground the output signal, or it can be burst or damaged.
- Make sure the unit is turned off when wiring, inserting or pulling out of the connector, or it could suffer damage.
- Do not drop this unit.
- Place this unit on an even surface, free from vibration.

■Introduction

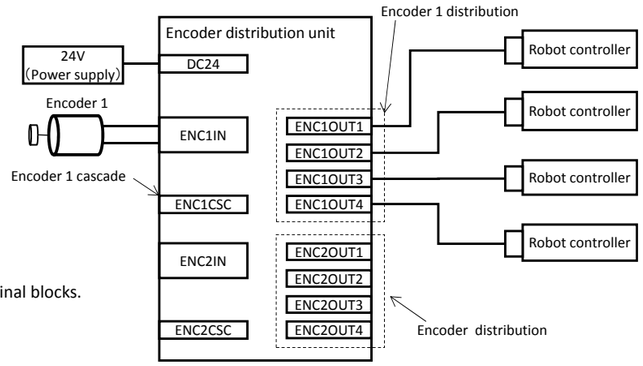
Encoder distribution unit 2F-YZ581 is used when one rotary encoder is connected to multiple robot controllers when the tracking function is used. The details of 2F-YZ581 are described in this sheet. For details of the tracking function, please refer to the “Tracking function manual” attached to the robot .

■Configuration diagram

The connection method differs according to the number of encoders and robot controllers. Connect instruments by referring to the following examples of configurations. Please have power supply and encoders ready.

Configuration example 1

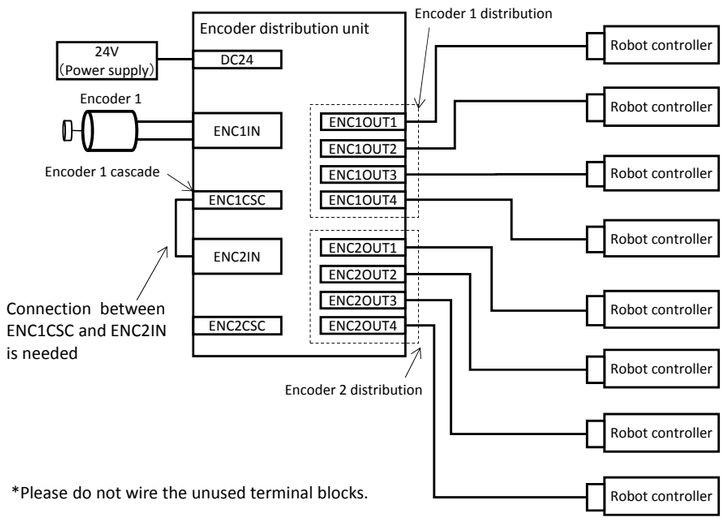
Encoder : 1 unit
Robot controller : 4 units
Encoder distribution unit : 1 unit



*Please do not wire the unused terminal blocks.

Configuration example 2

Encoder : 1 unit (Line driver output encoder only)
Robot controller : 8 units
Encoder distribution unit : 1 unit

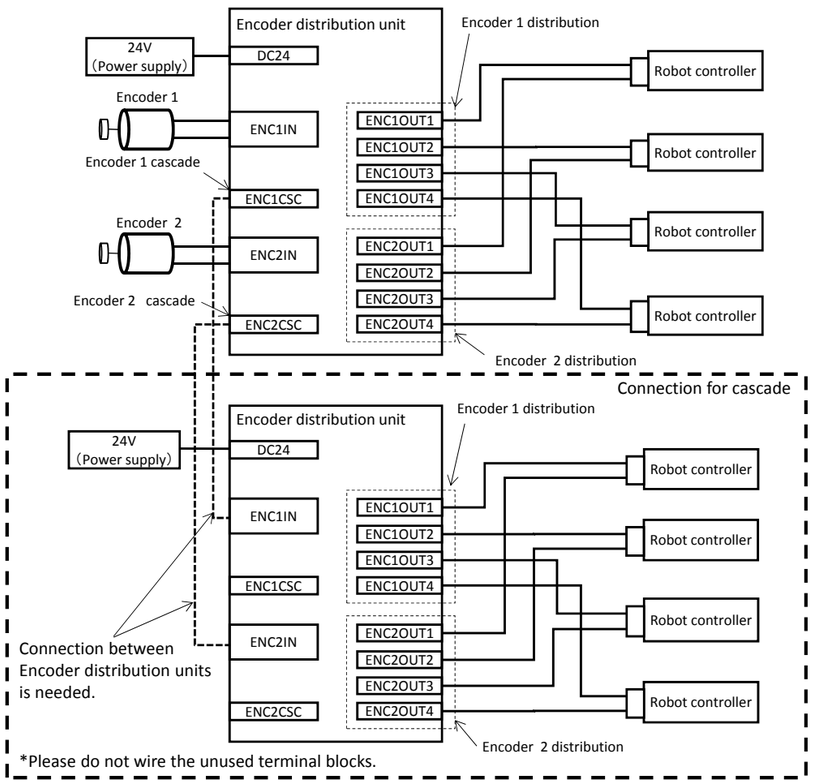


*Please do not wire the unused terminal blocks.

Configuration example 3

Encoder : 2 units
Robot controller : 4 units
Encoder distribution unit : 1 unit

Connection between Encoder distribution units is needed to connect the encoder to more than five robot controllers. Refer to the wiring diagram and the enclosed area below [ ] .



*Please do not wire the unused terminal blocks.

■Specifications

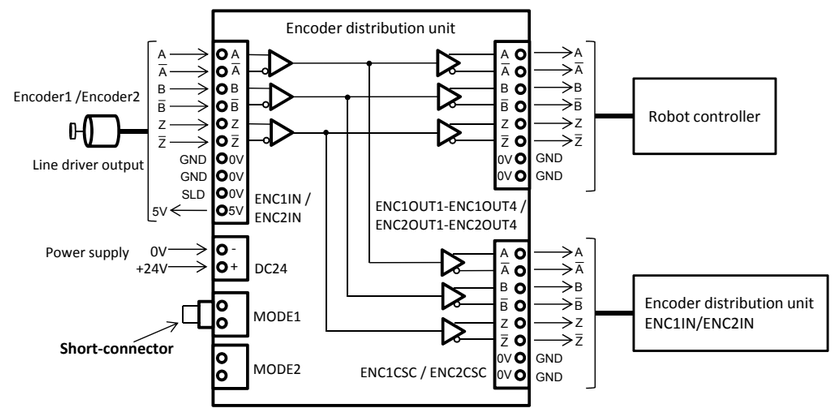
Item		Specification	Remarks
Model name		2F-YZ581	
Supported robot		RH-SDH series / RV-SD series, RH-SQH series / RV-SQ series RH-F-D series / RV-F-D series, RH-F-Q series / RV-F-Q series	CR750/CR751 series controller CRn-700 series controller
Encoder input		2 channel	Only 1 channel available
Supported encoder		Output type: Open collector output/Voltage output /Line driver output Resolution(pulse / rotation) : max 2000 (non-compliant 4000 , 8000) Operation checked encoder: E6B2-CWZ1X-2000 (omron)	Supported encoder could be changed with the shorting connector. Refer to wiring diagram for detail.
Cable		Type : Shielded twisted-pair cable Conductor size: : Refer to Wiring directions Cable length : Refer to Communication specifications	
Output channels	For robot controller	4 channels (in the case two encoders are connected) 8 channels (in the case one encoder is connected)	Enable to increase the number of output channel by cascade.
	For cascading	1 channel	
Output type		Line driver output	
Power supply	Input voltage	24Vdc（±10%）	
	Power consumption	500mA	Depends on the encoder type.
	Encoder supply	Voltage: 5Vdc, Current: 160mA, 2 channel	
Protection specification		IP20	
Ambient environment		General environment	Without inflammable gas or corrosive gas
Ambient air temperature		0℃～40℃	
Ambient humidity		45～85%	Without dew drops
Mass		Approx. 600 g	

■Wiring diagram

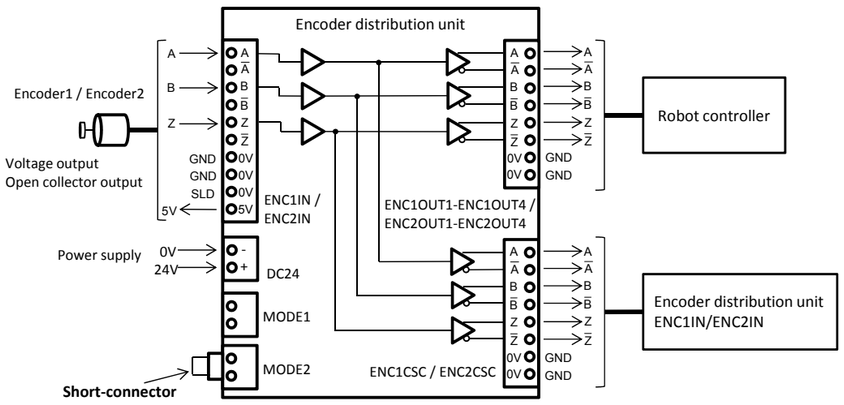
The short-connector has to be inserted into the correct point to change encoder type. Please insert the short-connector according to encoder type in reference to the following figures. Please refer to “Tracking Function Manual” for the details about wiring directions for the robot controller.

No.	Encoder type	Short-connector point
1	Line driver output	MODE1
2	Open collector output Voltage output	MODE2

Encoder type: Line driver output (MODE1)

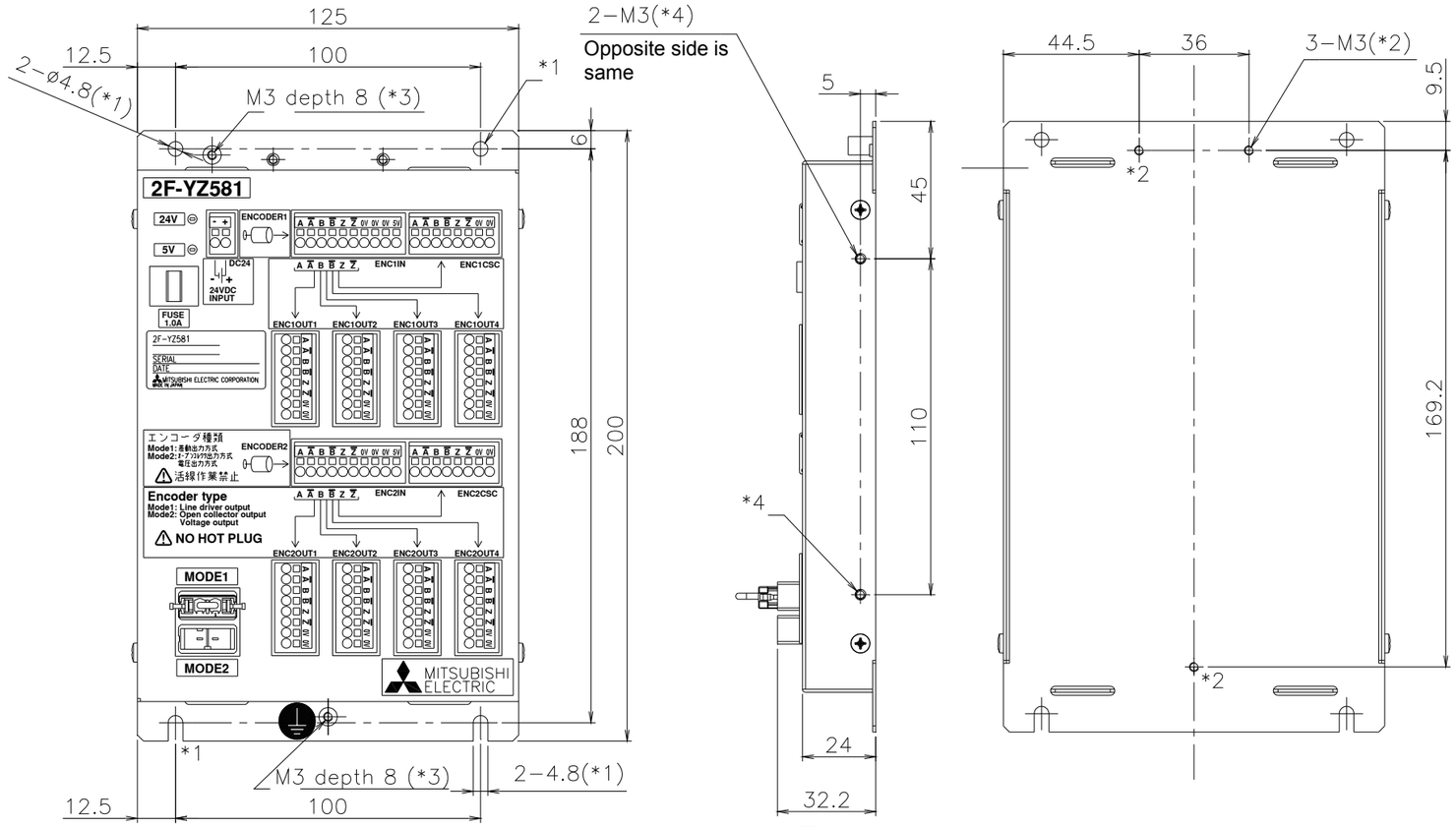


Encoder type: Open collector output / Voltage output (MODE2)



■Outline drawings

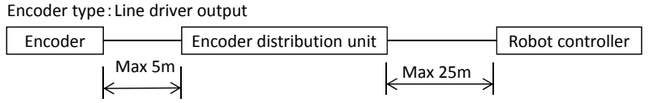
*1 Unit fixing　*2 Attaching Din rail adapter　*3 Earth connection　*4 Attaching cover against static electricity



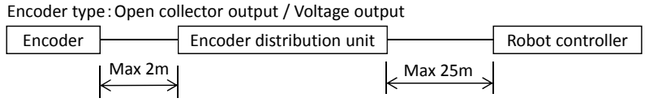
■Communication specifications

Item		Specification	Remarks
Encoder type (Input)	Line driver output	HIGH level : DC2.0V to 5.25V LOW level : Max DC0.8V Maximum distance　5m	Equivalent of 26L32
	Open collector output Voltage output	HIGH level: DC2.5V～5.25V LOW level: Max DC0.5V / Min 5mA Maximum distance　2m	—
Output	Line driver output	HIGH level: DC2.5V～5.25V LOW level: Max 0.8V Maximum distance　25m	Equivalent of 26L31

Encoder type : Line driver output



Encoder type : Open collector output / Voltage output



Note: Wire the cable in the shortest path in order to avoid noise.

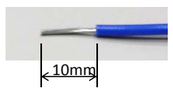
■Attaching

1. Attaching directly
   Fix the unit with M4 bolts (*1 screw holes in outline drawings). Bolts are not included.
2. DIN rail adapter
   Attach DIN rail adapter to the unit for DIN rail fixing. Din rail adapter is not included.
   - DIN rail adapter : UTA184(PHOENIX CONTACT)
   - Screw hole position : *2 holes in the outline drawing
   - Bolt type : M3
   - Bolt length : 8 mm
   - Tightening torque : 0.63 N・m

■Wiring directions

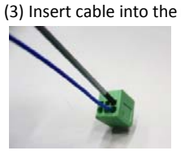
1. Tools required (not included)
   DIN standard flathead screwdriver (blade thickness:0.4mm　blade width:2.5mm)
   Recommended tool: SFZ 0-0.4x2.5(PHOENIX CONTACT)

2. Cable (not included)
   - Solid cable / stranded cable :0.2～1.5mm² （AWG24～16）
   - Stranded with ferrules without plastic sleeve :0.25～1.5 mm²
   - Stranded with ferrules with plastic sleeve :0.25～0.75 mm²
3. Wiring procedure
   (1) Stripe cable (length: 10mm)

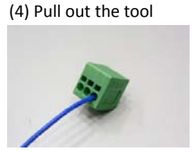


   (2) Insert the tool into the square hole

   (3) Insert cable into the round hole



   (4) Pull out the tool

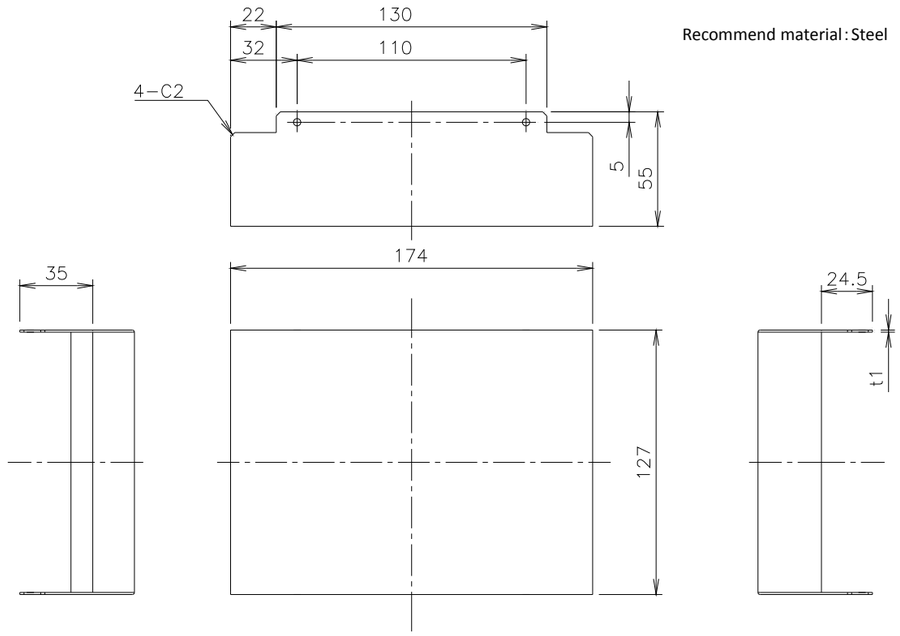


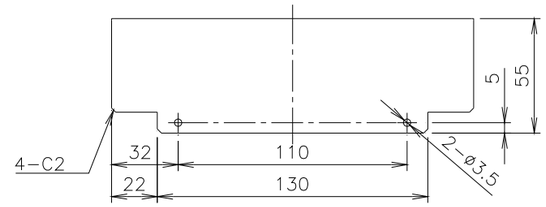
■Measures against noise / static electricity

Connect to ground to avoid problems due to noise and static electricity using *3 screw holes. Bolts and cables are not included.
- Bolt type : M3
- Bolt length : 6 mm
- Tightening torque : 0.63 N·m

Please attach cover if there is trouble with static electricity. Following drawing is an example of the cover. *4 holes in outline drawing are screw holes for the cover.
- Bolt type : M3
- Bolt length : 6 mm
- Tightening torque : 0.63 N·m

Recommend material : Steel





■Troubleshooting

LED status		Unit status	Trouble cause	Measure
24V (Blue)	5V (Green)			
ON	ON	Normal	N/A	N/A
ON	OFF	5V power supply trouble	Short of the 5V output line	Check wiring of the 5V output line
			Failure	Contact service provider.
OFF	ON	Abnormal (not occur normally)	Failure	Contact service provider.
OFF	OFF	24V Power supply trouble	24V Power supply trouble	Check power supply (overvoltage, reverse connection, etc.).
		Blowout of the fuse	Blowout by overvoltage	The fuse could be blown if in excess of rated voltage. Make sure the power supply voltage is 24V and replace the fuse. If the unit don't work after replacing the fuse, please contact service provider. The replacement fuse is included in this unit.
		Unit trouble	Failure	Contact service provider.