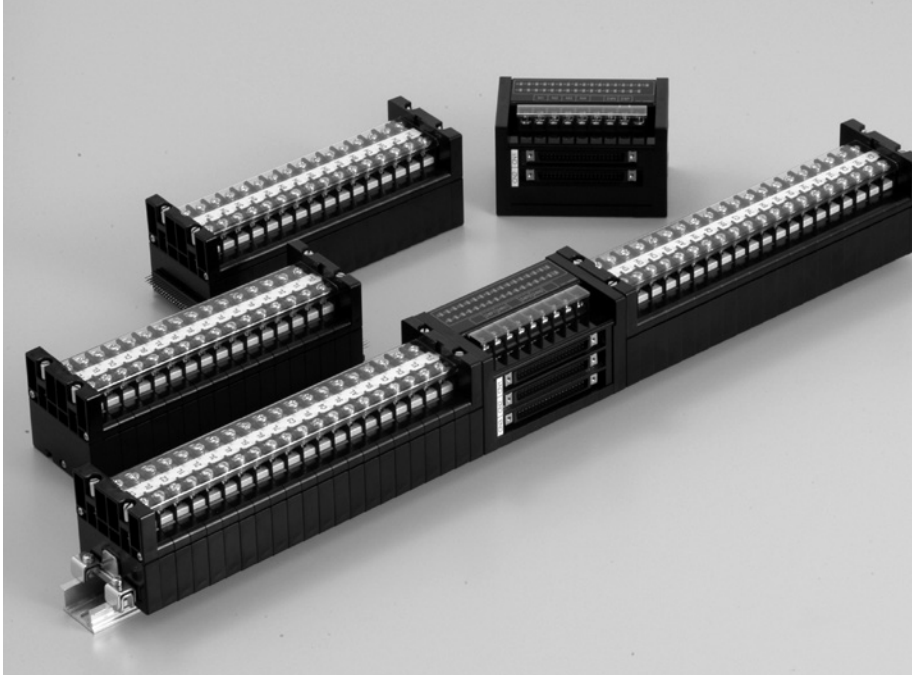**INTERFACE UNIT**

THT TYPE

FEATURES

THT-type interface units share the same DI/DO unit configuration. This gives both models a sleek appearance. Furthermore, the connector and operation display are laid out in the center of the unit, and DI/DO are placed 16 bits each on the left and right.

Terminal block sections located on both the left and right sides allow separation of the upper and lower sections, allowing the main unit to be replaced without removing the wiring.

TJ-5.5 type test connectors can be mounted on terminal blocks.

●Interface unit with built-in DI module

The photocoupler module is built into the external terminal block (screw size M4) and converts 110 VDC to 24 VDC simply by wiring to the terminal block.

The internal photocoupler module provides insulation to minimize external surges entering the panel (improved noise performance).

●Interface unit with built-in DO module.

A contact relay is built into the outside wire terminal block (screw size M4) to control a 110V DC circuit with a signal (24V DC) from a sequencer.

This eliminates the need for relay terminal blocks, which were previously required, and reduces the number of parts mounted in the panel and wiring man-hours significantly.

The number of mounted parts and wiring man-hours in the panel can be significantly reduced by eliminating the need for relay terminal blocks that were previously required.

FEATURES (DETAILS)

1 **Ensures long-term reliability.** **DI**
To ensure long-term reliability, the photocoupler drive (110 V system) is a constant-current drive.

2 **It prevents malfunction caused by neutral point grounding. (by setting operation range,)** **DI**
The setting is designed to prevent malfunctions by controlling the operating voltage (60V non-operation, 80V operation).

3 **Input current measures for DI (photocoupler) modules.** **DI**
The circuit is designed to flow several tens of mA excessively at the input and about 2 mA after cleaning the contact surfaces. This will improve the thermal conditions.

4 **Conformed to B-402 standards.** **DI** **DO**
THT has high noise withstand, voltage fluctuation and insulation performance.

5 **Up-screw type terminal block.** **DI** **DO**
The terminal screw is held in place by a spring, eliminating the risk of dropping or losing the screw. Screw size is M4 and maximum wire size is 5.5mm^2.

6 **Detachable terminals.** **DI** **DO**
Since both terminals can be removed respectively, they can be replaced without disconnecting the wiring in case of failure.

7 **Includes LED to indicate operating status.** **DI** **DO**
DC24V system operation and power supply availability indicated by LEDs.

8 **Separate the external wiring side and the wiring side inside the panel.** **DI** **DO**
One side can be used as the external wiring side and the other side as the wiring side in the board.

9 **It has connectorized the wiring of the DC24V system.** **DI** **DO**
I/O to the PLC is provided by connectors.

10 **Realizes impulse withstand voltage of 7000V.** **DI**
Protects equipment from high surge (lightning impulse).

11 **Dedicated sequence checker available.** **DI** **DO**
Test plug (TJ-5.5CH) can be attached. One-touch connection for easy withstand voltage and sequence testing. This method significantly reduces the number of man-hours required for inspections in the factory and contributes to improved work efficiency.

A SWITCH

B PILOT LAMP & INDICATOR

C CONNECTING DEVICES

D ELECTRONIC DEVICES
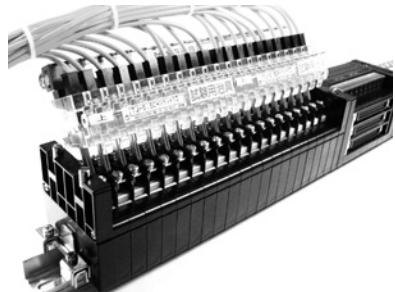
THT TYPE

HOW TO ORDER

THT -34X091 KD

①: **Basic type**

②: **Circuit code**

34×091
34×092

●**TKB (reinforced DIN rail)**

1,000

35

15

30
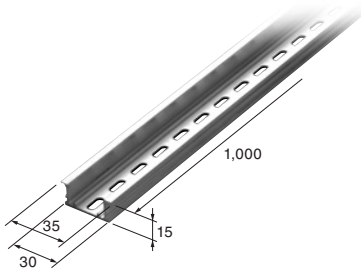
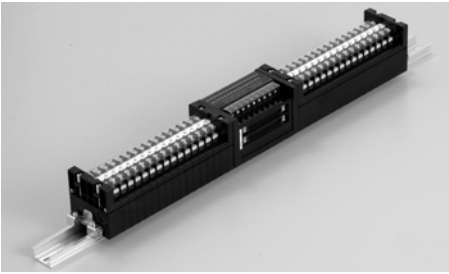## ■Applicable standard

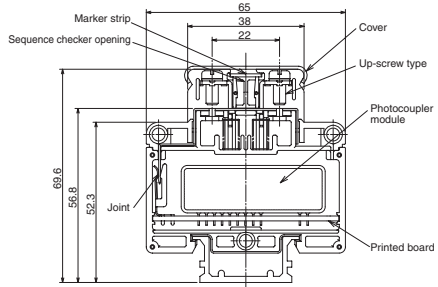|	
・JEC-2500(1987)	Protective relays for electric power systems
・B-402(1997)	Digital Protective Relays and Protective Equipment
・NECA C 2811(2012)	Terminal Blocks for Industrial and Similar Use
・JIS C 0704(1995)	Insulation test for control gear

＊This product is tested by the applicable items in the above standards.
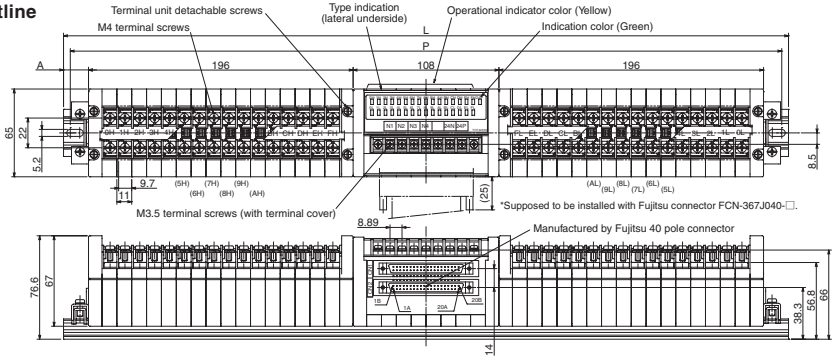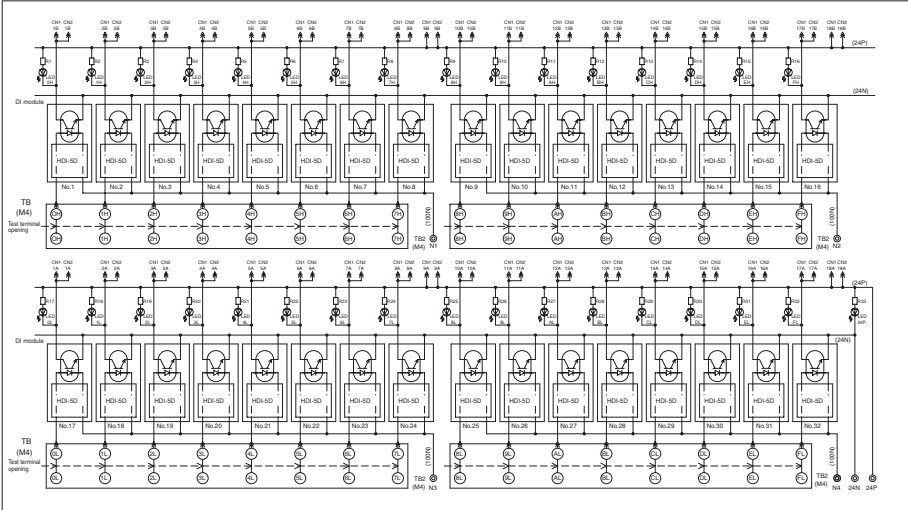
STANDARD PRODUCTS

THT-34X091 DI terminal block

■Internal structure

Marker strip
Sequence checker opening
Cover
Up-screw type
Photocoupler module
Joint
Printed board

65
38
22
69.6
56.8
52.3

■Outline

Terminal unit detachable screws
M4 terminal screws
Type indication (lateral underside)
Operational indicator color (Yellow)
Indication color (Green)

L
P
A
196
108
196
65
22
5.2
8.5
9.7 (5H) (7H) (9H)
11 (6H) (8H) (AH)
(AL) (BL) (6L)
(9L) (7L) (5L)
(25)

M3.5 terminal screws (with terminal cover)

*Supposed to be installed with Fujitsu connector FCN-367J040-□.

8.89
Manufactured by Fujitsu 40 pole connector
76.6
67
1B 1A 20A 20B
14
38.3 56.8 66

■Circuit diagram

THT TYPE

THT-34X091 [DI TERMINAL BLOCK]

■Normal service condition

No.	Item	Normal service condition	
1	Operating temperature	−10 to 55℃	no freeze / no condensation
2	Storing temperature	−20 to 60℃	
3	Relative humidity	20 to 80%	
4	Altitude	2,000m or less	

■Rating

| No.	Item		Rating
1	Input	Circuit voltage	100 / 110V DC (80 to 143V DC)
		Rated current-carrying capacity (Ith)	About 1.6mA (at 110V DC and when inrush, allowable voltage is about 20mA.)
		Input Impedance	About 68kΩ (110V DC)
		Operating characteristics	Non-operation under 60V DC, complete operation over 80V DC.
2	Output	Circuit voltage	24V DC (Max. allowablw voltage is 30V DC)
		Leakage current when circuit open	20μA or less
		Rated load current	5mA or less
		Set time	150μs or less
		Reset time	5ms or less

■Performance

No.	Item	Performance	
1	Insulated resistance	Between all circuit and ground	10MΩ or more (500V DC mega)
		Between I/O Circuit	5MΩ or more (500V DC mega)
2	Power frequency withstand voltage	Between input circuit and ground	2,000V AC (60MHz) 1/min
		Between output circuit and ground	500V AC (60MHz) 1/min
		Between I/O Circuit	2,000V AC (60MHz) 1/min
3	Impulse withstand voltage (Uimp)	Between input circuit and ground (includes output circuit)	±7kV (1.2×50 each 3 time μs)
4	Oscillatory surge voltage	Between input circuit and ground	First wave height: 2.5 to 3kV Vibration frequency: 1.0 to 1.5MHz 1/2 damping time: 6μs or more
		Between input circuit terminals	Repetition frequency: More than 50 times/s Output impedance of circuit: 150 to 200Ω or more for 2 sec.
5	Square wave impulse noise	Between input circuit and ground	Voltage (Vp): 1kV±10% Polarity: positive and negative Output: coaxial Dynamic output impedance: 50Ω Rise time (Tr): 1ns±30%
		Between input circuit terminals	Pulse width (Tw): 100ns±30% Repetitive frequency: More than 50/60Hz or more for 2 sec.
6	Electric wave noise	Radio irradiation of 150,400 and 900 MHz bands	
7	Electrostatic discharge noise	Contact discharge: 8kV Air discharge: 4kV Cathode only (10 times or more)	
8	Vibration resistance	Acceleration: 9.8m/s², Direction: Forward / backward, right / left, up / down, Vibration time: 1800s	
9	Shock resistance	294m/s² (6 directions, 3 times / each)	

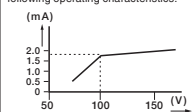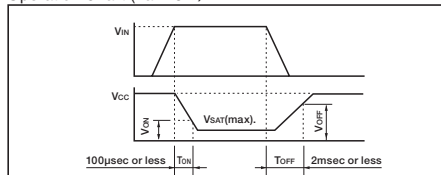### ■Internal DI module documentation

Circuit configuration

The module consists of a circuit designed for inrush current at voltage input, and its operating characteristics are as follows.

(mA) Inrush current
About 30mA (at 100V)
steady current about 1.7mA (at 100V)
(t)
Inrush current About 10msec
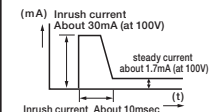
This module consists of a circuit designed for constant-current operation at rated voltage or higher and has the following operating characteristics.
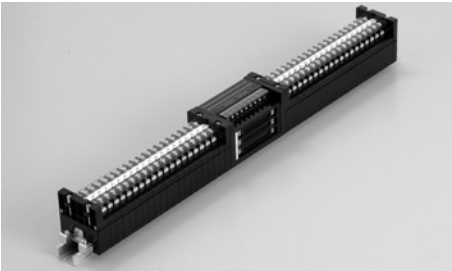

(mA)
2.0
1.5
1.0
0.5
0
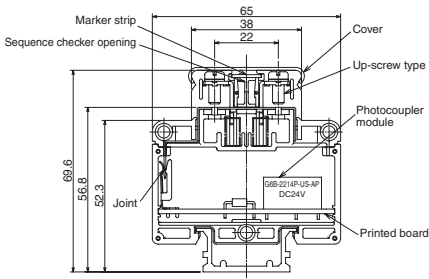50   100   150 (V)

Operation Chart (Ta=25℃)

VIN
VCC
VON
VSAT(max.)
VOFF
100μsec or less | TON | TOFF | 2msec or less

STANDARD PRODUCTS

THT-34X092 **DO terminal block**

■Internal structure

Marker strip
Sequence checker opening
Cover
Up-screw type
Photocoupler module
G6B-2214P-US-AP DC24V
Joint
Printed board

65
38
22
69.6
56.8
52.3

■Outline

Terminal unit detachable screws
Type indication (lateral underside)
Operational indicator color (Yellow)
M4 terminal screws
Indication color (Green)
637
627
108
240
240
65
22
5.2
9.7
11
(7L) (8L) (9L)
(C3) (C4) (AL)
M3.5 terminal screws (with terminal cover)
(25)
*Supposed to be installed with Fujitsu connector FCN-367J040-□.
(C7) (6H) (4H)
(7H) (5H) (3H)
8.89
Manufactured by Fujitsu 40 pole connector
76.6
67
38.3
56.8
66
1B 1A 20A 20B

■Circuit diagram

THT TYPE

THT-34X092 [DO TERMINAL BLOCK]

■Normal service condition

No.	Item	Normal service condition	
1	Operating temperature	−10 to 55℃	no freeze / no condensation
2	Storing temperature	−20 to 60℃	
3	Relative humidity	20 to 80%	
4	Altitude	2,000m or less	

■Rating

No.	Item		Rating
1	Coil	Coil voltage	24V DC±10%
		Current consumption	12.5mA (Rated input)
		Coil resistance	1920Ω
		Set time	10ms or less
		Reset time	10ms or less
2	Output	CN	Circuit voltage	DC24V
			Circuit current-carrying capacity	10mA (1Pin)
		Terminal	Circuit voltage	100/110V DC or 24V DC
			Circuit current-carrying capacity	Max. 5A

■Performance

No.	Item		Performance
1	Insulated resistance	Between all circuit and ground	10MΩ or more (500V DC mega)
		Between terminal side output contact and CN side output contact and coil circuit	5MΩ or more (500V DC mega)
2	Power frequency withstand voltage	Between all terminal side output contact and ground	2,000V AC (60MHz) 1/min
		Between output contact of CN side, coil circuit and ground	500V AC (60MHz) 1/min
		Between terminal side output contact and CN side output contact, coil circuit	2,000V AC (60MHz) 1/min
3	Impulse withstand voltage (Uimp) (includes CN side output contact and coil circuit)	Between terminal side output contact and ground	±7kV (1.2×50each 3 time μs)
4	Oscillatory surge voltage	Between terminal side output circuit and ground	First wave height: 2.5 to 3kV Vibration frequency: 1.0 to 1.5MHz 1/2 damping time: 6μs or more
		Between terminal side output circuit terminals	Repetition frequency: More than 50 times/s Output impedance of circuit: 150 to 200Ω or more for 2 sec.
5	Square wave impulse noise	Between terminal side output circuit and ground	Voltage (Vp): 1kV±10% Polarity: positive and negative Output: coaxial Dynamic output impedance : 50Ω
		Between terminal side output circuit terminals	Rise time (Tr): 1ns±30% Pulse width (Tw): 100ns±30% Repetitive frequency: More than 50/60Hz or more for 2 sec.
6	Electric wave noise	Radio irradiation of 150,400 and 900 MHz bands	
7	Electrostatic discharge noise	Contact discharge: 8kV Air discharge: 4kV Cathode only (10 times or more)	
8	Vibration resistance	Acceleration: 9.8m/s², Direction: Forward / backward, right / left, up / down, Vibration time: 1800s	
9	Shock resistance	294m/s² (6 directions, 3 times / each)	

### ■Internal relay contact data (G6B Manufactured by OMRON Co., Ltd)

No.	Item	Normal service condition
1	Rated load	Resistive load: 250V AC 5A / 30V DC 5A, Inductive load: 250V AC 1.5A (cosφ=0.4) / 30V DC 1.5A (L/R=7ms)
2	Rated current-carrying capacity (Ith)	5A
3	Max. contact voltage	AC380V, DC125V
4	Max. contact current	Resistive load: 5A AC / 5A DC, Inductive load: 5A AC (cosφ=0.4) / 5A DC (L/R=7ms)
5	Max. Making and breaking capacity	Resistive load: 1,250VA AC/ 150W DC, Inductive load: 375VA AC (cosφ=0.4) / 80W DC (L/R=7ms)
6	Failure rate (reference)	5V DC 10mA (P-level) (λ60=0.1×10-6/times)

ACCESSORIES

Marker strip (Order unit: 100)

● TUM-2-0.5t
  (TUM marker strip 10 0.5T)

900
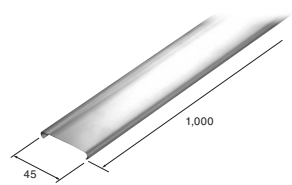
10

plate thickness: t=0.5mm
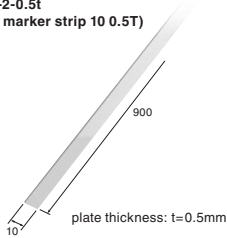
Cover

● THT connector cover

(Order unit: 5)

● TUC-3

(Order unit: 20)

1,000

45

Aluminum rail (Order unit: 20)

● TKB (reinforced DIN rail)

1,000

35
15
30
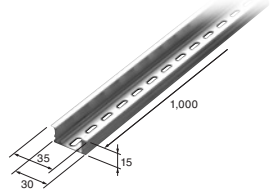
End clamp (Order unit: 50)

● TXL

M4×10

25

12.5

46
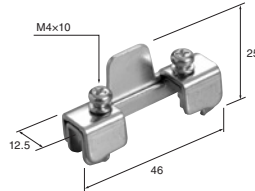
Jumper (Order unit: 10)

● SB11CB-□

L
11
φ4.5

22

A
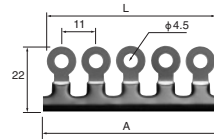
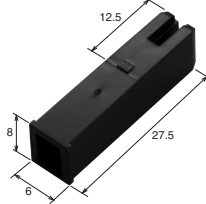| type	2 poles SB11CB-2	12 poles SB11CB-12
A	16	126
L	20.5	130.5

Testing connectors

■ TJ-5.5CH□PC (connection type)

(3～15 poles)
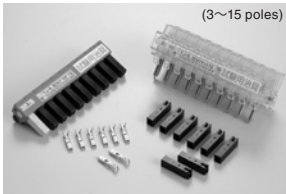
*Receptacle contactor for standard attachment
 AMP Inc. 172774-1

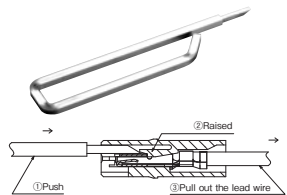## Plug (for 1 terminal)

● XC-P1-B (Order unit: 100)

12.5

8

27.5

6

Remover

● MIC-NQ
This tools is used to remove a receptacle
from the plug of the XC.

*See page C66 for instruction manual.
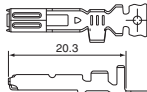
②Raised

①Push
③Pull out the lead wire

Receptacle contactor (Order unit: 100)

● AMP Inc. (MIC) mark Ⅱ
 ＊ For the instruction, refer to AMP Inc. manual, IS-259J (91592-1) and IS-260J (755400-1).

20.3

Applicable wire size (mm²)	Insulation diameter	Material and coating	Model of receptacle Chain	Model of receptacle Loose piece	Model of crimp tool
0.3 to 0.89	1.5 to 2.6	Brass / Tin plated	172775-1	172776-1	91592-1
		Brass / Partially gold plated	———	172776-2	
		Phosphor bronze / Tin plated	172775-4	———	
0.5 to 2.27	2.1 to 3.4	Brass / Tin plated	172773-1	* 172774-1	1804014-1
		Brass / Partially gold plated	172773-2	172774-2	
		Phosphor bronze / Tin plated	172773-4	* 172774-4	

* We handle the contactor.

INTERFACE UNIT

THT TYPE

REFERENCE PRODUCTS

[TCT TYPE DI module terminal block]

■FEATURES

1) One input provides two outputs (isolated)
   (with operation indication).
2) Modules can be replaced by 1 bit.
3) External wiring can be connected up to 5.5 mm².

■HOW TO ORDER (For reference)

TCT – 34X✱✱✱ □ – 1 KD-15
①   ②   ③   ④ ⑤

① Basic type
② Circuit code : It has several kinds of circuit code.
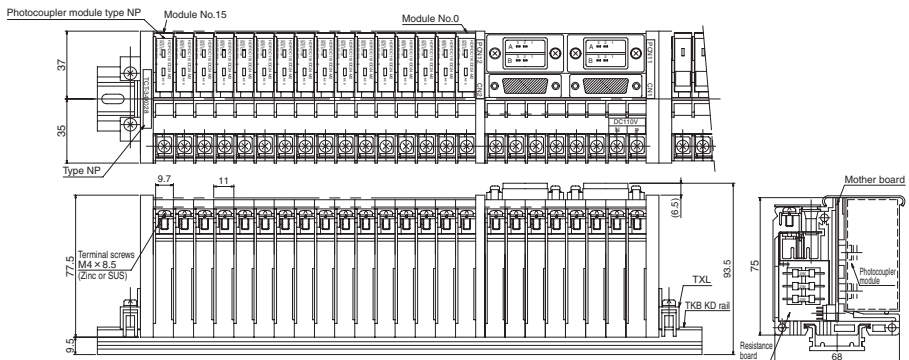③ Screw type : (blank): Zinc-plated screw / SUS: Stainless steel screw
④ No. of poles : No. of consecutive installations
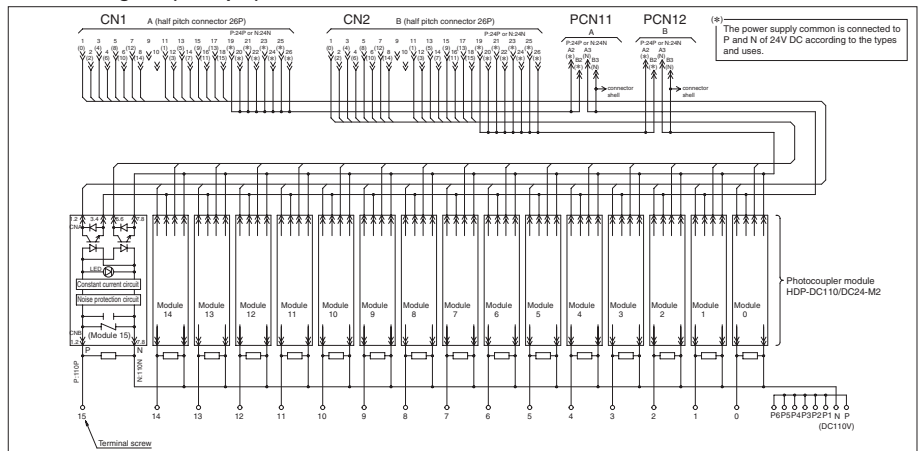⑤ Rail type   : (blank): No attached DIN rail / KD-15: For 1 set
                 *Anymore: Please ask us.

■Outline (example)

■Circuit diagram (example)

*Please contact us for more information about our product.

D9

[IOM TYPE Interface Module]

■FEATURES

1) Maximum 32 circuits built in in spite of compact design.
2) Connectors are placed on the top surface for sequencer connection.
3) The connector terminal block makes it easy to replace the main unit.
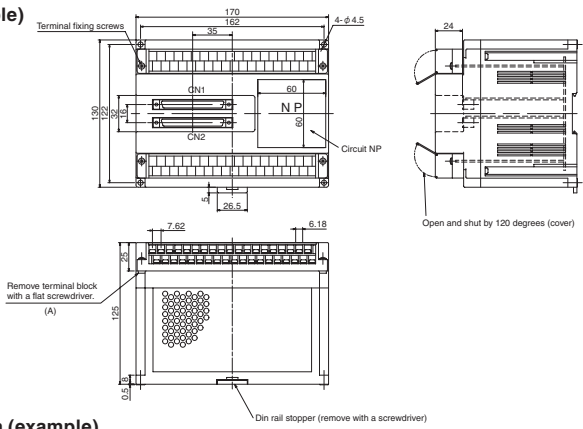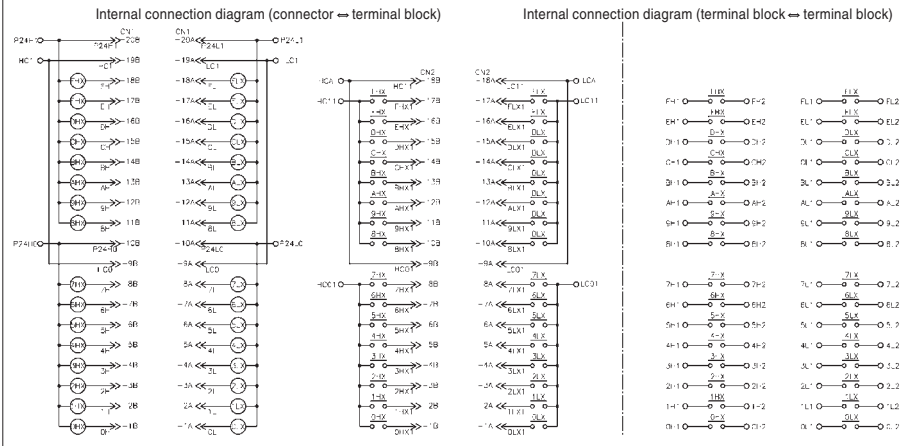
■HOW TO ORDER (For reference)

IOM − R32＊

① Basic type
② Circuit code : Built-in relay type or built-in photo-coupler type.

■Outline (example)

■Circuit diagram (example)

Internal connection diagram (connector ⇌ terminal block)   Internal connection diagram (terminal block ⇌ terminal block)

＊Please contact us for more information about our product.