(23) F3YD32-1H Transistor Output Module (for high speed output)

Item		Specifications
Output type		Transistor contact (sink type)
Number of points		32
Common line type		8 points/common
Isolation method		Photocoupler isolation
Withstanding voltage		1500 V AC for one minute between the group of terminals for external connection and the internal circuit
Rated load voltage (operating load voltage range)	DC	12-24 V DC (10.2-26.4 V DC)
	AC	—
Maximum load current		0.1 A/point, 0.5 A/common line
Response time	OFF→ON	0.1 ms max.
	ON→OFF	0.1 ms max.
ON voltage		0.5 V DC max.
Off-time leak current		0.1 mA max.

Item		Specifications
Service life	Mechanical	—
	Electrical	—
Protection circuitry	Short-circuit	Controlled short-circuit current
	Overheat	Output shutdown
Surge protector*1		Active clamp circuit
Fuse		None
Dissipating current		165 mA (5 V DC)
Output display*2		LED (Lit when output is on)
Output status when the program stops HOLD/RESET*3		When a sequence CPU module is used: Default: RESET Can be set globally on a module-by-module basis*4
		When a BASIC CPU module is used: No setting function The status is always HOLD
External power supply		12-24 V DC, 30 mA
External connection		One 40-pin connector
Weight		110 g

*1: If an inductive load, such as a relay, is to be connected, a surge protector is also required on the load side. Connect a surge protector or a diode across the load nearby so that the module output terminal voltage will not exceed the specified operating load voltage range. For details, see Subsection A3.6.5, “Connecting Output Devices.”

*2: The contact operation of the output block of the circuit and the LED display operate independently and thus may be inconsistent in the event of an error.

*3: For information on the module’s behavior during a CPU failure, see subsection A4.3.3, “Indicating Problem Severity and Status of Output Module.”

*4: When F3SP22, F3SP28, F3SP38, F3SP53, F3SP58, F3SP59, F3SP66, F3SP67, F3SP71 or F3SP76 module is used, this setting can be specified in 16-point units.

WARNING

Ensure that the polarity of the external power supply is correct. Otherwise, a short-circuit condition may damage an output element and cause smoldering and scattering of chips. Beware that wrongly connecting a connector wired for F3XD32 or F3XD64 to the module may disable the protectors and damage internal elements.

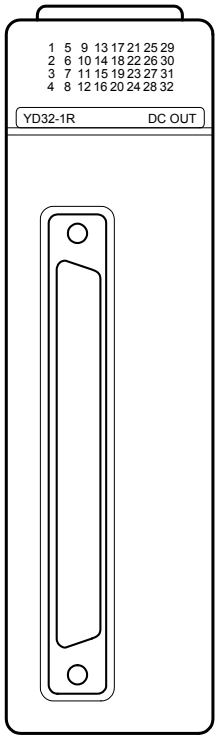
CAUTION

Operation of the protection circuitry:

- If short-circuit occurs, the ON voltage increases and the short-circuit current is limited within the range 1-3 A.
- If the short-circuit condition is removed, normal operation resumes.
- If the short-circuit condition persists, the short-circuit current may cause the temperature of the output element to reach approx. 160°C, triggering the overheat protector to shut down the output.
- If the temperature of the overheated output element then drops by about 10°C, normal operation resumes.
- The overheat protector will not be triggered if the module is operated normally within its specifications with no short-circuit condition.
- Both the short-circuit protector and overheat protector are designed to control outputs individually. Under some short-circuit conditions, however, the overheat protector may shut down not only its associated output but also other outputs.
- Short-circuit and overheat protectors are designed to protect the output element against short-term short-circuit. Never leave the module in prolonged short-circuit condition. Otherwise, the module enclosure may deteriorate or the PCB may be discolored.

● Front View

F3YD32-1R



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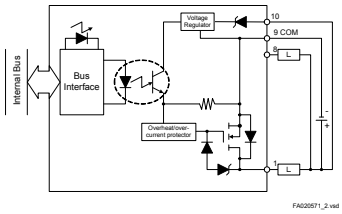
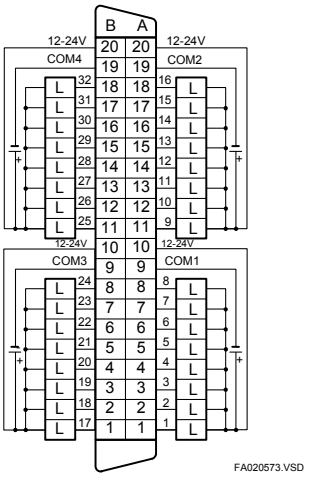
● Internal Circuit Configuration



● External Connection Diagram



Note: Viewed from the front side of the module.

(24) F3YD32-1P/F3YD64-1P Transistor Output Modules (with short-circuit protector)

Item		F3YD32-1P	F3YD64-1P
Output type		Transistor contact (sink type)	
Number of points		32	64
Common line type		8 points/common	
Isolation method		Photocoupler isolation	
Withstanding voltage		1500 V AC for one minute between the group of terminals for external connection and the internal circuit	
Rated load voltage (operating load voltage range)		12-24 V DC (10.2-26.4 V DC)	
Maximum load current		0.1 A/point, 0.5 A/common line	0.1 A/point, 0.4 A/common line
Response time	OFF→ON	1 ms max.	
	ON→OFF	1 ms max.	
ON voltage		0.5 V DC max.	
Off-time leak current		0.1 mA max.	
Service life	Mechanical	—	
	Electrical	—	

Item		F3YD32-1P	F3YD64-1P
Protection circuitry	Short-circuit	Controlled short-circuit current	
	Overheat	Output shutdown	
Surge protector*1		Active clamp circuit	
Fuse		None	
Dissipating current		160 mA (5 V DC)	275 mA (5 V DC)
Output display*2		LED (Lit when output is on)	LED (Lit when output is on for 32 outputs selectable by a switch)
Output status when the program stops HOLD/RESET*3		When a sequence CPU module is used: Default: RESET Can be set globally on a module-by-module basis*4	
		When a BASIC CPU module is used: No setting function The status is always HOLD	
External power supply		12-24 V DC, 55 mA	12-24 V DC, 95 mA
External connection		One 40-pin connector	Two 40-pin connectors
Weight		110 g	130 g

*1: If an inductive load, such as a relay, is to be connected, a surge protector is also required on the load side. Connect a surge protector or a diode across the load nearby so that the module output terminal voltage will not exceed the specified operating load voltage range. For details, see Subsection A3.6.5, “Connecting Output Devices.”

*2: The contact operation of the output block of the circuit and the LED display operate independently and thus may be inconsistent in the event of an error.

*3: For information on the module’s behavior during a CPU failure, see subsection A4.3.3, “Indicating Problem Severity and Status of Output Module.”

*4: When F3SP22, F3SP28, F3SP38, F3SP53, F3SP58, F3SP59, F3SP66, F3SP67, F3SP71 or F3SP76 module is used, this setting can be specified in 16-point units.

WARNING

Ensure that the polarity of the external power supply is correct. Otherwise, a short-circuit condition may damage an output element and cause smoldering and scattering of chips. Beware that wrongly connecting a connector wired for F3XD32 or F3XD64 to the module may disable the protectors and damage internal elements.

CAUTION

Operation of the protection circuitry:

- If short-circuit occurs, the ON voltage increases and the short-circuit current is limited within the range 1-3 A.
- If the short-circuit condition is removed, normal operation resumes.
- If the short-circuit condition persists, the short-circuit current may cause the temperature of the output element to reach approx. 160°C, triggering the overheat protector to shut down the output.
- If the temperature of the overheated output element then drops by about 10°C, normal operation resumes.
- The overheat protector will not be triggered if the module is operated normally within its specifications with no short-circuit condition.
- Both the short-circuit protector and overheat protector are designed to control outputs individually. Under some short-circuit conditions, however, the overheat protector may shut down not only its associated output but also other outputs.
- Short-circuit and overheat protectors are designed to protect the output element against short-term short-circuit. Never leave the module in prolonged short-circuit condition. Otherwise, the module enclosure may deteriorate or the PCB may be discolored.