



## FR-2053/ FR-2053T/FR-2053S

16-channel Isolated Sink Digital Input  
Distributed I/O Module

### Introduction

The FR-2053/2053T/2053S has 16-channel isolated photo coupler input, while the FR-2057/2057T/2057S has 16-channel isolated photo-coupler output. The default signal connector of FR-2053 and FR-2057 is a 20-pin header. The "T" stands for screw terminal connector and the "S" stands for 3-pin shroud connector. Each 3-pin connector has one Vcc pin, one ground and one signal pin. According to different applications, the users can choose suitable modules. The FR-2000 I/O module has an FRnet interface. The users can daisy chain several FR-2000 modules together. Via FRnet, the FR-2000 modules can extend the remote I/O control of PC, PAC and PLC easily. Further information about the networking of FR-2053/2057; refer to literature related to I-7188EF, I-8172, FRB-100/200/200U.

### Features

- Built-in Wire-saving FRnet DI/DO control
- High-speed transmission reliability
- Simple synchronization mechanism
- No software overhead on protocol processing
- Supporting broadcasting (1:n data transmission)
- Duplicating output easily
- Fixed I/O scan-time and I/O synchronization
- DIN-Rail mountable

### Specifications

#### Digital Input

Input Channel	16
Input Type	Sink (NPN)
On Voltage Level	+20~24VDC
Off Voltage Level	+3VDC max
Input Impedance	4.7K Ohms
Turn-on delay time	less than 1.0ms
Turn-off delay time	less than 1.0ms
Isolation Voltage	1500Vrms

#### Interface

2-wire cabling	CPEV 0.9 (2P twisted-pair cable), When different cables are used, the transmission distance may change
Transfer distance	Max. 400m Max. 100m for "H" version
LED Indicators	Power, Communication Run, Communication Error, Terminal resistor, Digital output
Transfer speed	250Kbps 1Mbps for "H" version
Cyclic scan time	2.88ms 0.72ms for "H" version
Connection	20-pin header for FR-2053 series Removable 20-pin Terminal Block for FR-2053T series 3-pin shroud connector for FR-2053S series

#### Power

Input Voltage Range	+10 ~ +24VDC (Non-isolation)
Power consumption	2W Max
Protection	Power reverse polarity protection
Frame Ground for EMS Protection	Yes
Connection	5-Pin Removable Terminal Block

#### Mechanical

Case	Plastic
Flammability	UL 94V-0 materials
Dimensions	32.5mm x 110mm x 102mm (W x H x D)
Installation	DIN-Rail

## Environment

Operating Temperature	-25 °C~ +75°C
Storage Temperature	-30 ~ +85°C
Ambient Relative Humidity	10% to 90% non-condensing

## Ordering Information

<b>FR-2053</b>	16-channel isolated digital input with 20-pin header
<b>FR-2053T</b>	16-channel isolated digital input module with 20-pin screw terminal connector
<b>FR-2053S</b>	16-channel isolated digital input with 3-pin shroud connector

## Accessories

<b>DN-20</b> (Pitch:5.08mm)	DIN-rail mounting terminal board with two CA-2010 cable, 1m
<b>DN-20-381</b> (Pitch:3.81mm)	DIN-rail mounting terminal board with two CA-2010 cable, 1m