

# **FR-2156T**

## **8CH Discrete Output Module for FRnet System**

# Introduction

The FR-2156T has 8-channel isolated photo-coupler output and the transfer speed is fixed at 1M bps. The default signal connector of FR-2156T is a 12-pin 0.15" screw terminal connector.

According to different applications, the users can choose suitable modules. The FR-2100 I/O module has an FRNet interface. The users can daisy chain several FR-2100 modules together. Via FRNet, the FR-2100 modules can extend the discrete I/O control of PC and PAC easily. For further information about the networking of FR-2100 series; please refer to literature related to I-7188EF, I-8122, FRB-100/200.

## Specifications

- 6P4C RJ-11 modular connector with Cat.3 cable (2 Pair twisted-pair) for easy wiring (when different cables are used, the transmission distance may change).
- Power consumption: 2.0 W (Max.)
- Power requirement: 12-24V DC
- Operating temperature: -20°C to +75°C
- Operating humidity: 10% ~ 90% RH, non-condensing
- Storage humidity: 5% ~ 95% RH, non-condensing
- Storage temperature: -30°C to +85°C
- Weight: approximately 120g
- Dimensions: 99 mm x 32 mm x 83 mm
- Din-Rail mounting: Yes
- Output Isolation: 1KVdc
- Output type: Open-Drain Current Sinking
- Output points: 8 channels
- Sink Current: 300 mA per channel max.
- Response Time:

- Turn-on delay time: less than 0.05ms
- Turn-off delay time: less than 0.15ms
- Output Protection:
  - Thermal shutdown with auto restart
  - Overload protection
  - Short circuit protection
  - Over-voltage protection
  - Current limitation:

- Transmission:

	FR2156T
Transfer speed	1 M bps
Cyclic scan time	0.72ms
Transfer distance	Max. 100m

## The 16 bits data send from host to FR-2156T RAn

The digital output channels of FR-2156T are defined by the 16 bits value. FR-2156T provides 8 DO channels. The bits and their corresponding channels are assigned as below.

Attribute : Write only

Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
Channel	X	x	x	x	x	x	x	x	Ch7	Ch6	Ch5	Ch4	Ch3	Ch2	Ch1	Ch0

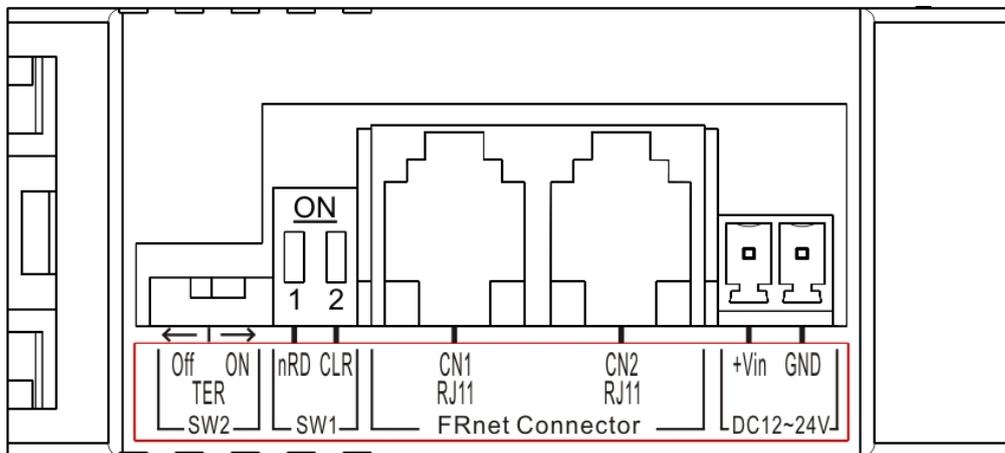
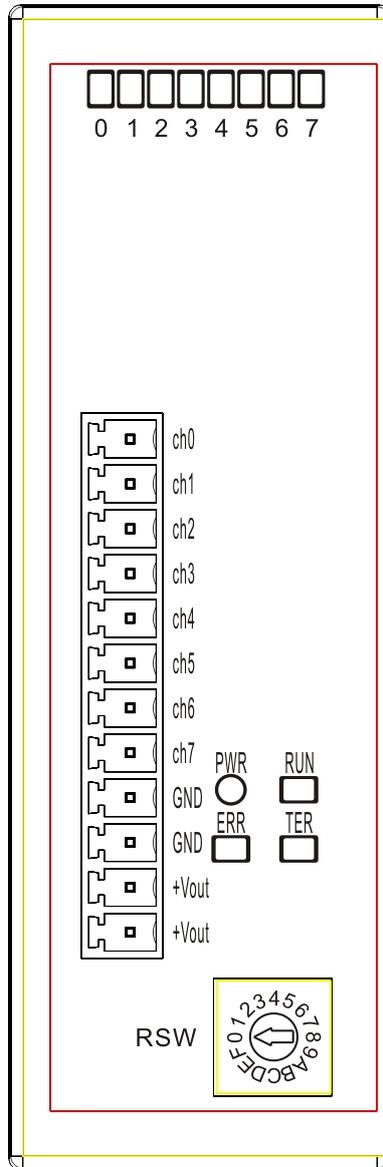
## The 16 bits data send to host from FR-2156T SAn

This 16 bits data value indicates the read back value of the digital output channels on FR-2156T. If user enables the read back function of SW1, it will be valid. FR-2156T provides 8 DO channels. The bits and their corresponding channels are assigned as below.

Attribute : Read only

Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
Channel	x	x	x	x	x	x	x	x	Ch7	Ch6	Ch5	Ch4	Ch3	Ch2	Ch1	Ch0

# Module Outline

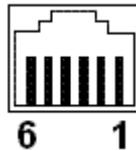


# Pin Definition

## 1. External Power Input

Pin Name	Description
GND	External power ground
+Vin	12 to 24V <sub>DC</sub> External power input

## 2. FRnet Communication Signal (RJ-11)



Pin No.	Description
Pin 1	NC
Pin 2	FRnet_A (+)
Pin 3	NC
Pin 4	NC
Pin 5	FRnet_B (-)
Pin 6	NC

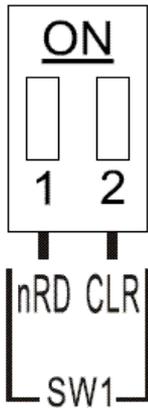
## 3. I/O Connector

Pin No.	Pin Name	Description
1	Ch0	Output Channel # 0
2	Ch1	Output Channel # 1
3	Ch2	Output Channel # 2
4	Ch3	Output Channel # 3
5	Ch4	Output Channel # 4
6	Ch5	Output Channel # 5
7	Ch6	Output Channel # 6
8	Ch7	Output Channel # 7
9	GND	External power ground
10	GND	External power ground
11	+Vout	12 to 24V <sub>DC</sub> External power output
12	+Vout	12 to 24V <sub>DC</sub> External power output

Note: +Vin  +Vout

# Switch Setting

## 1. DO Status Switch (SW1)



Bit 1 (nRD):

Off: Enable DO status read back (one sender address (SA) will be occupied)

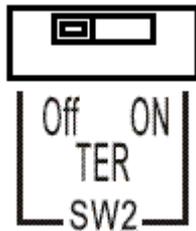
On: Disable DO read back (default)

Bit 2 (CLR):

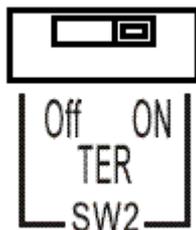
Off: Hold DO when communication error occur

On: Clear DO when communication error occur (default)

## 2. Termination Switch (SW2)

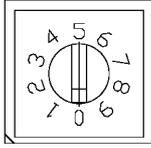


Disable termination resistor (default)



Enable termination resistor

### 3. Module Address Switch (RSW)



The receiver address (RA) of this module (only 0~7 is available).

Note: If read back function is enabled (bit 1 of SW1 (nRD) is set as off), the sender address (SA) of this module will be RA+8.

## LED Indicator

### 1. Power LED (PWR, Yellow)

Turned on when power is applied.

### 2. Communication Status LED (RUN, Green)

LED	Status
Blinking (about 1 Hz)	Normal Communication
Turned on	Power on, waiting for token
Turned off	Power off

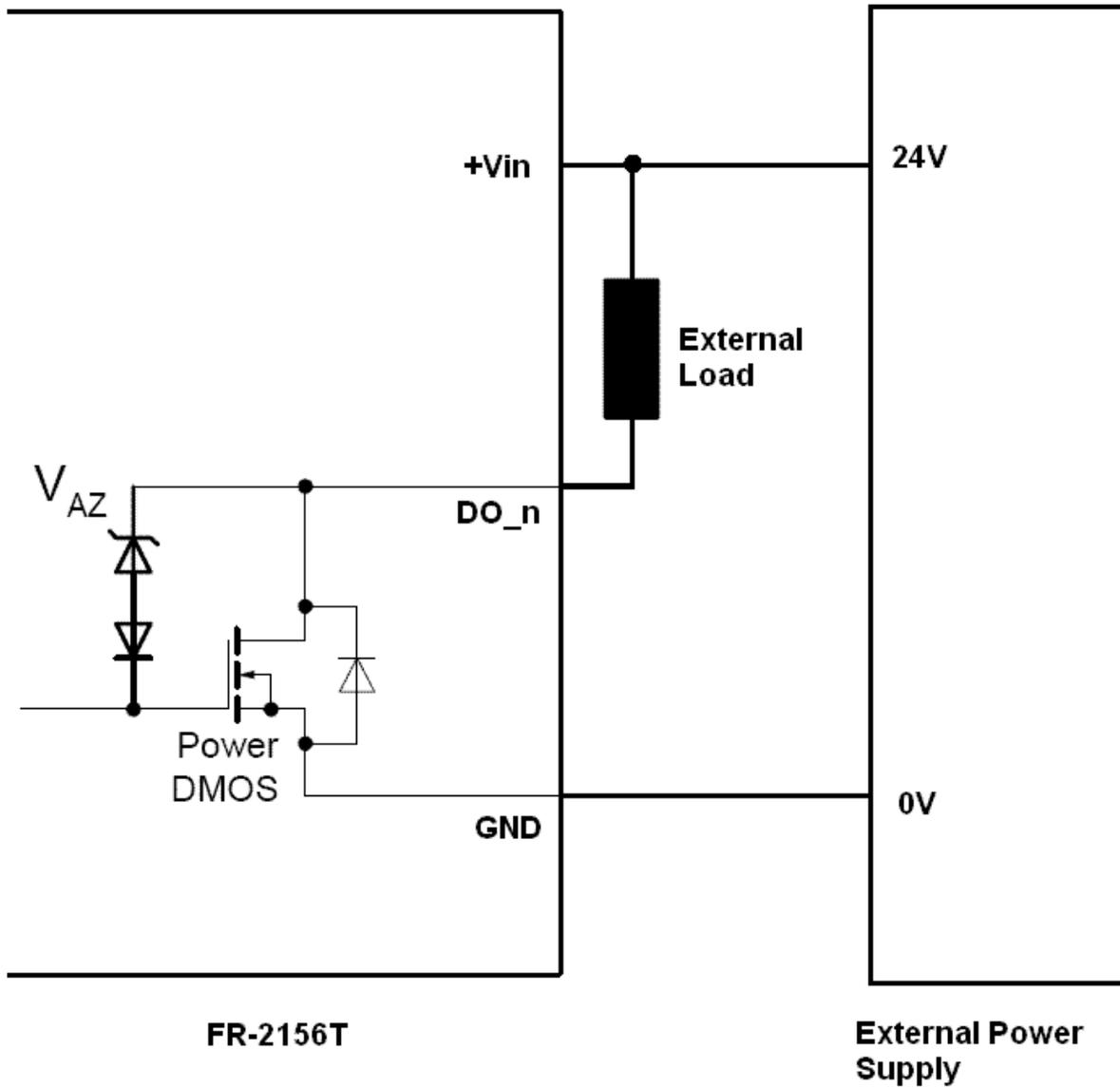
### 3. Error LED (ERR, Red)

Turned on when communication error occur.

### 4. Termination LED (TER, Yellow)

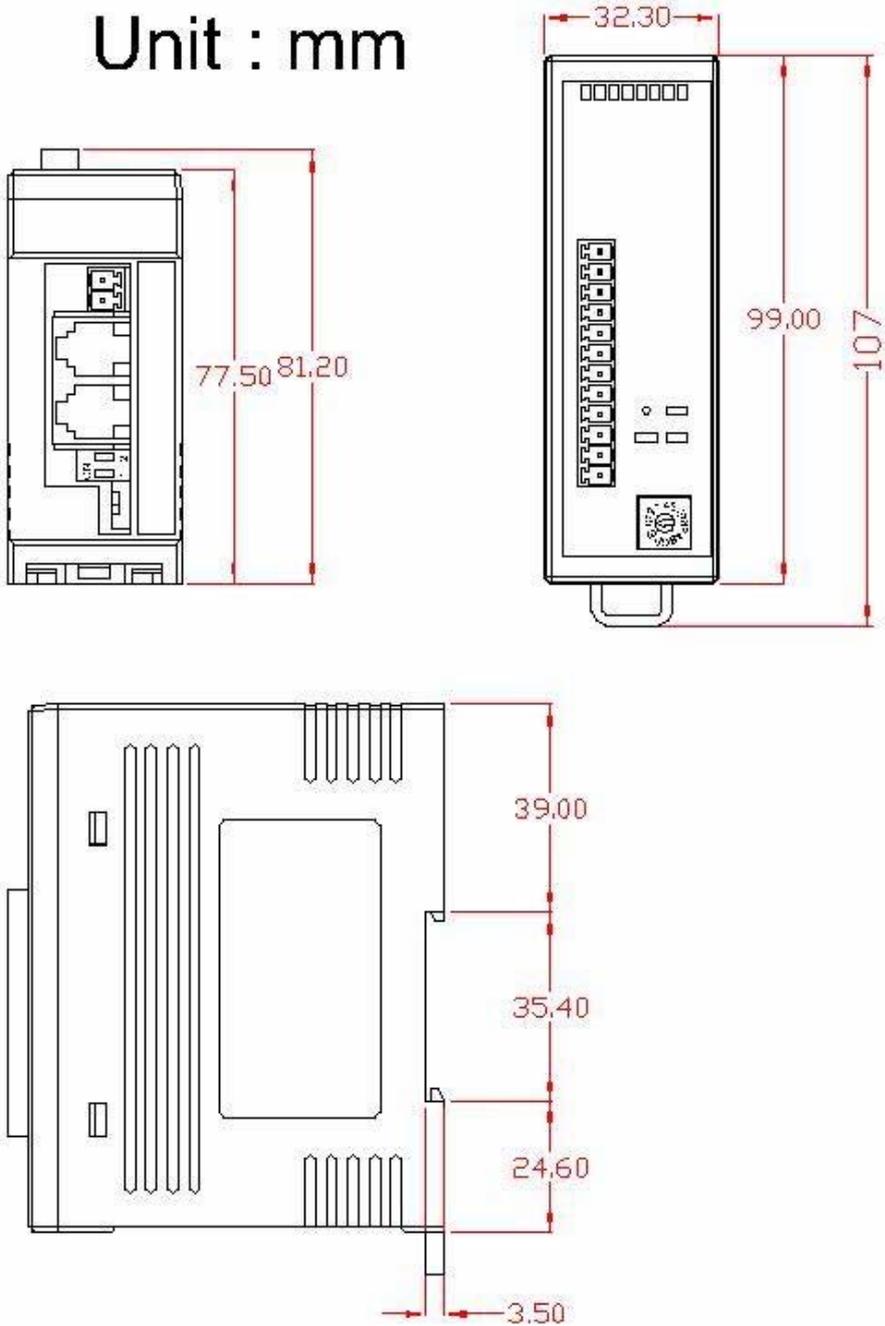
Turned on when termination resistor is enabled.

# Wiring description



# Dimension

Unit : mm



**FR-2156T Dimension**

# Ordering Information

**FR-2156T:** 8-channel isolated digital output module with 12-pin screw terminal connector with NPN-type DO module