F-EFD200

Multifunction Residual Current Monitor

The F-EFD200 multifunction residual current monitor is designed as an independent smart detector, applied to the electrical fire monitoring system to achieve real-time monitoring, alarm and protection of three-phase voltage, three-phase current, residual current and temperature. Sound and light alarm and fire linkage can be carried out to eliminate the potential danger of electrical fire. It can also upload the data to the superior fire monitoring system through the RS485 network to comprehensive analysis and process the data. The product provides multi-channel signal monitoring, which can be combined with 3 phase voltage input, 3 phase current input, 1-channel residual current input and 4-channel temperature input to adapt to various field applications. The product is compact in size, easy to install, comprehensive in function and cost-effective, save a lot of investment and space for users.

The performance of F-EFD200 conforms to China national standards: GB14287.2 - 2014, electrical fire monitoring system part 2: residual electrical fire monitoring detector, and GB14287.3 - 2014, electrical fire monitoring system part 3: temperature measurement electrical fire monitoring detector.

This product has been widely used in power system, environmental monitoring, industrial automation, building automation, medium-low voltage power distribution automation and other areas.

Industrial-Grade Design

- Adopt high performance industrial wireless module
- Adopt high performance industrial 32-bit enhanced processor
- Adopt professional metrology chip
- Built-in real time clock (RTC)
- Adopt ABS flame retardant enclosure
- Wide power input

Powerful Functions

- Provide 3 phase voltage input, 3 phase current input, 3-channel residual current input, 1-channel temperature input, 1-channel CAN bus or RS485
- Support large capacity storage expansion function
- Interactive management: Remote management of platform

Stable & Reliable

- WDT watchdog design, guarantee the system stability
- Input power has over - current protection and over - voltage protection

Standard Interface & Easy to-Use

- Adopts industrial terminal interface, particularly suitable for industrial application
- With CAN bus and RS485 interface, can communicate directly with the corresponding monitor
- Support for LoRa and NB-IoT communications
- Support serial software upgrade and distance maintenance

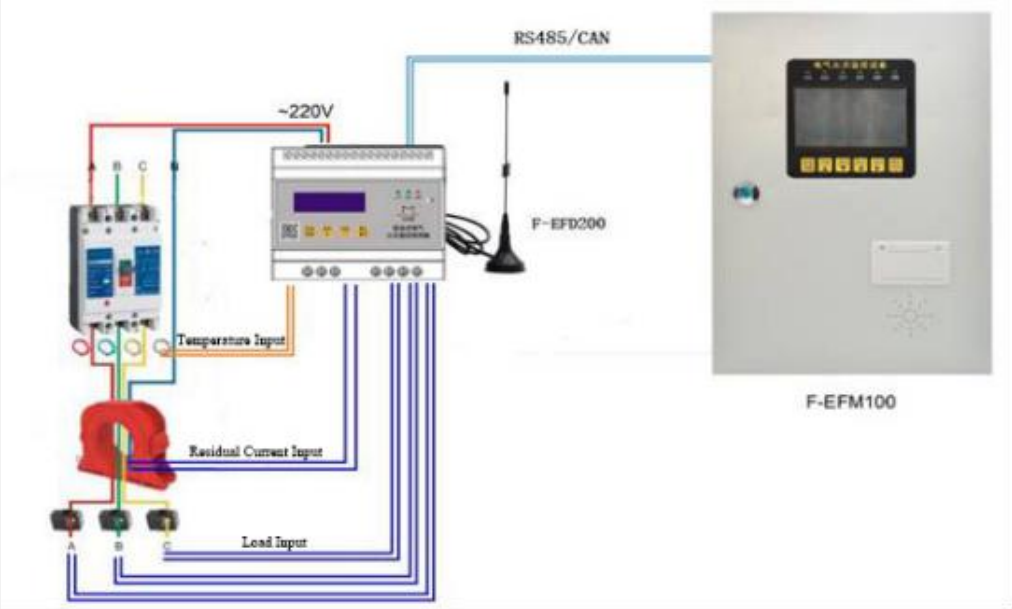
Standard Compliance

- **Electrostatic Discharge Immunity.** In accordance with GB/T 17626.2-2006 (IEC 61000-4-2:2001), the severity rating is 3.
- **Radiofrequency Electromagnetic Radiation Immunity.** In accordance with GB/T 17626.3-2016 (IEC 61000 -4-3:2006), the severity level is 3.
- **Electrical Fast Transient Pulse Group Immunity.** In accordance with GB/T 17626.4-2008 (IEC 61000-4-4:2004), the severity level is 3.
- **Surge Immunity.** According to GB/T 17626.5-2008 (IEC 61000-4-5:2005), the severity rating is 3.
- **Radio Frequency Transduction Immunity.** In accordance with GB/T 17626.6-2008 (IEC 61000-4-6:2006), the severity level is 3.
- **Power Frequency Magnetic Field Immunity.** In accordance with GB/T 17626.8-2006 (IEC 61000-4-8:2001), the severity rating is 4.
- **Voltage Sag and Short Supply Interruption and the Voltage Change Immunity.** According to GB/T 17626.11-2008 (IEC 61000 - 4-11:2004), category 3 standard.

Product Function

- **Real-time Monitoring, Power Monitoring.** The F-EFD200 residual electrical fire monitoring detector can simultaneously measure the three-phase voltage of one circuit, the three-phase current of one circuit, the residual current of one circuit and the temperature of four circuits, and display the current value in real time.
- **Alarm Protection Function.** When the residual current value of the electrical fire monitoring detector of F-EFD200 exceeds the limit, it will send an audible and visual alarm, which can cut off the loop power supply within the specified time to ensure the safety of electricity consumption.
- **Pre-alarm Function.** When the residual current in the controlled circuit reaches the preset warning value, the warning light signal is issued, which enables the operator to timely deal with the abnormal situation of the main power distribution circuit and avoid unnecessary faults.
- **Alerts.** When the voltage, current over limit, will issue overvoltage, undervoltage overcurrent alarm.
- **Communicating Function.** The detection detector has a variety of communication functions, and can communicate with the monitoring equipment host of the company for networking, realizing remote management, maintenance, control and system upgrade.

Typical Application



Specifications

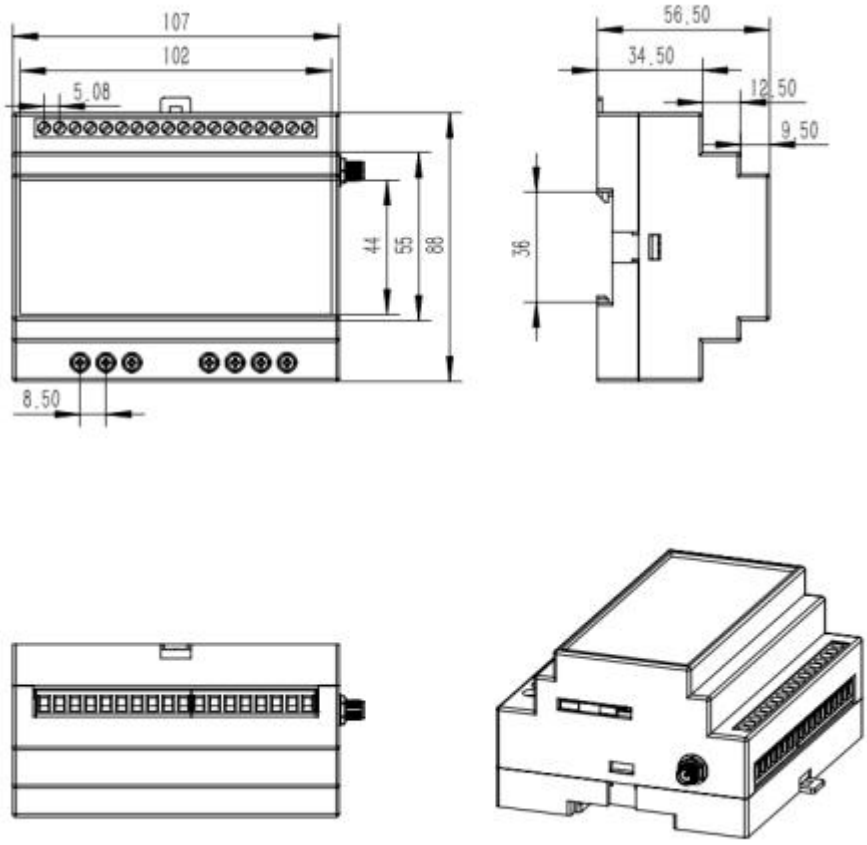
Characteristic		
F-EFD200-NB-BL		
Standard and Frequency Band		B1: 2100MHz B3: 1800MHz B5: 850MHz B8: 900MHz B20: 800MHz
Theoretical Bandwidth		100bps~100Kbps
Transmit Power		23dBm±2Db (Max)
Receive Sensitivity		-129dBm
F-EFD200-L		
Standard and Frequency Band		433MHz
Communication Bandwidth		Level 6 Adjustable (0.3, 0.6, 1.0, 1.8, 3.1, 5.5Kbps)
Communication Distance		Indoor/urban communication distance: 1km Outdoor/stadia communication distance: 3.5km
Transmit Power		20dBm(100mW)
Receive Sensitivity		-140dBm
Hardware System		
CPU		Industrial-grade 32-bit enhanced processor
FLASH		512 KB
EEPROM		8KB
SRAM		64KB
Interface Type		
Communication	RS485 (Optional CAN	1 RS485 interface with 15KV ESD protection built in. The serial port parameters are as follows:

	Bus)	Stop Bits: 1, 2 Check: no check, even check, odd check Serial Port Rate: 1200~38400 Bits/s, Default: 9600 Bits/s Serial Port Rate: 1200~38400bits/s, default: 9600bits/s
		This device has 1 CAN bus interface, CAN bus communication is stable and reliable, and can communicate with other external devices to achieve various networking needs
	NB-IoT	Support full network access frequency band
	LoRa	Support 433, 470 frequency band
Human Interface	LCD	Using 128*32 LCD screen, display content is rich
	Indicator Light	3 status indicators with "running", "communication" and "alarm"
	Buzzer	Fault alarm, detect abnormal alarm
	Button	4 Buttons, "self-check/set", "muffler /+", "switch, -", "confirm/reset"
Application Interface	Voltage	1 channel three-phase voltage, overvoltage (≥240V), undervoltage (≤190V), wrong phase
	Electric Current	1 channel three-wire current, the current alarm value can be set
	Residual Current	1 channel residual current transformer, alarm value setting range: 20 ~ 1000mA
	Temperature	4 road temperature probe, measuring range: 0 ℃ ~ 150 ℃, alarm value setting range: 45 ~ 140 ℃
	Power Interface	At the terminal interface, the overcurrent protection ≥120% and overvoltage protection, which can be recovered
Note: Different types of accessories and interfaces may be different, subject to the real object.		
Power Supply		
Reference Power Supply	AC 220V 50Hz	
Power Supply Range	AC85 - 264V	
Power Consumption		
Average Power Consumption	< 0.5W	
Maximum Dynamic Power Consumption	< 1.5W	
Physical Characteristics		
Housing	ABS flame retardant material, shell and system safety isolation, especially suitable for power field application	
Dimensions	107x88x56.5mm (excluding antenna and mounting parts)	
Weight	About 550g (including mounting parts and packing)	
Others Parameters		
Operating Temperature	-20~+70℃	
Storage Temperature	-30~+80℃	
Relative Humidity	5%~95% (Non-Condensing)	
Order Information		
F-EFD200	RS485(optional CAN bus)	
F-EFD200-L-LR	LoRa private protocol communications	
F-EFD200-L-LW	LoRaWan communication protocol	
F-EFD200-NB-BL	NB communication (Full Netcom)	

Appendix A

A.1 Construction

The shape and installation dimensions of the equipment are 35mm track-type installation, which is convenient for users to install quickly. Please refer to the following figure for the specific installation dimensions. (unit: mm)



A.2 Terminals (18PIN spacing 5.08mm,3PIN spacing 8.5mm, 4PIN spacing 8.5mm)

Specification of upper terminal: 18PIN spacing 5.08mm
down terminal specifications: 3PIN spacing 8.5mm, 4PIN spacing 8.5mm

NTC1	NTC2	COM	NTC2	NTC2	COM	GND	5V	A+/CANL	B-/CANH	IAP	IAN	IBP	IBN	ICP	ICN	INP	INN
18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

PG	N	L
1	2	3

VN	VC	VB	VA
1	2	3	4

Figure 3 Interface Diagram

Terminal Interface Signal Definition:

No	Interface Definition	Description
1	INN	Residual Current Input
2	INP	Residual Current Input
3	ICN	Phase C Current Negative input
4	ICP	Phase C Current Positive input
5	IBN	Phase B Current Negative input
6	IBP	Phase B Current Positive input
7	IAN	Phase A Current Negative input
8	IAP	Phase A Current Positive input
9	B-/ CANH	RS485: B - / CAN bus: H
10	A+/ CANL	RS485: A + / CAN bus: L
11	5V	RS485:5V
12	GND	RS485:GND
13	COM	Temperature sensor input 3,4 common terminals
14	NTC4	Temperature sensor input 4
15	NTC3	Temperature sensor input 3
16	COM	Temperature sensor input 1,2 common terminals
17	NTC2	Temperature sensor input 2
18	NTC1	Temperature sensor input 1

No	Interface Definition	Description
1	PG	Earth
2	N	AC220V Input zero
3	L	AC220V Input wire

No	Interface Definition	Description
1	VN	Neutral input
2	VC	Phase C Voltage input
3	VB	Phase C Voltage input
4	VA	Phase C Voltage input

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