

Version	Level
V1.1.0	

## F2920D Multiple Connection Terminal Datasheet Version 1.1.0



### Description

F2920D Multiple Connection Terminal is a high-performance measuring and monitoring equipment, which integrates analog signal acquisition, switch input, relay output, RS485 communication, LoRa, WIFI, 433MHz, ZigBee, and cellular wireless communication. It can access different equipments and realize the monitoring and control function of the equipment through different communication modes.

F2920D adopts high-powered industrial 32 bits CPU and industrial wireless communication module, and embedded real-time operating system to support the software system. In order to achieve analog and digital signal acquisition, data storage and reporting, it supports RS232 and RS485 serial port in the mean time.

It has been widely used in the M2M fields, such as smart grid, intelligent transportation, smart home, finance, POS, supply chain automation, industrial automation, intelligent building, fire, public safety, environmental protection, weather, Digital medical, telemetry, military, space exploration, agriculture, forestry, water supply, coal, petrochemical, and so on.



### Product Features

## Designed for industrial application

- Adopt high-powered industrial module
- Adopt high-powered industrial 32 bits CPU
- Embedded Real Time Clock(RTC) circuit which can realize timing online/offline function
- Housing: iron, providing IP30 protection. The iron housing safely isolates the terminal from the system, which is especially suitable for the industrial application.
- Power Range: DC 5~36V

## Stability and Reliability

- WTD design ensures the stability of the system
- Auto recovery mechanism makes it always online
- RS232/RS485/RS422 port: 15KV ESD protection
- SIM/UIM port: 15KV ESD protection
- Power port: reverse-voltage and overvoltage protection
- Antenna port: lightning protection (optional)

## Standard and Convenience

- Adopt terminal block interface, convenient for industrial application
- Support standard RS232 and RS485 port that can connect to serial devices directly
- Support intellectual mode, enter into communication state when powered
- Provide management software for remote management (optional)
- User-friendly, flexible, and multiple operating modes
- Convenient configuration and maintenance interface
- Support serial software upgrading and remote maintenance

## High-Performance

- Support TCP server and TCP 4 clients connection (optional)
- Support 8 digital inputs, 2 analog inputs, 3 relay output channels and 1 10M/100M Ethernet interface
- Compatible 2G/3G/4G LTE full band and frequency

## Standards

- Functional and Technical Standard of Rural Intelligent Power Distribution Terminal: Q/GDW615-2011
- Communication Protocol of Electricity Data Acquisition and Management System: Q/GDW-11-143
- Functional Specifications of Power Distribution Automation Terminal (Sub-Station): Q/GDW514
- Implementing Rules of DL/T 634.5101-2001 Protocol
- Performance of insulation, vibration, and anti-interference meet the standard of Q-GDW615-2011
- Electrostatic Discharge: can withstand GB/T 17626.2-2006 of the IV level of electrostatic

discharge interference test

- Radiated susceptibility: can withstand the GB/T 17626.3 of the IV level RF electromagnetic field immunity
- EFT/B immunity test: can withstand the GB/T 17626.12 of the IV class fast pulse group interference test
- Surge immunity: can withstand the GB/T 17626.5 of the IV level surge (impact) interference test
- Damped oscillatory magnetic field immunity: Can withstand the GB/T 17626.10 of the IV level damping oscillation magnetic field immunity test

## Applications

- Monitoring and Protection of Transformer: collect data of the smart meters and switchgears on the incoming lines.
- User Electricity Data Monitoring: collect meter data of users.
- Distribution Meter Monitoring: collect meter data and monitor its operating conditions.
- Monitoring of Residual Current Operated Circuit Breaker: residual current value monitoring, residual current state monitoring, and remote control switch breaking/closing.
- Status Monitoring: 8 input and output channels of switchgear and the accuracy of remote communication is 100%.
- Power Quality Management: monitoring of smart capacitors for reactive compensation, three-phase unbalanced management and power quality data monitoring.

## Specifications

### ◆ Cellular

Item	Content
F2920D-G	
Standard and band	EGSM 900/GSM 1800MHz, GSM 850/900/1800/1900MHz(optional) Compliant to GSM phase 2/2+ GPRS class 10, class 12(optional)
Bandwidth	85.6Kbps
TX power	GSM850/900:<33dBm GSM1800/1900:<30dBm
RX sensitivity	<-107dBm
F2920D-C	
Standard and band	CDMA2000 1xRTT 800MHz, 800/1900MHz(optional), 450MHZ(optional)
Bandwidth	153.6Kbps
TX power	<30dBm
RX sensitivity	<-104dBm
F2920D-W	
Standard and band	UMTS/WCDMA/HSDPA/HSUPA/850/1900/2100MHz, 850/900/1900/2100MHz(optional)

	GSM 850/900/1800/1900MHz GPRS/EDGE CLASS 12
Bandwidth	HSUPA: Upload speed 5.76Mbps HSDPA: Download speed 7.2Mbps, UMTS: 384Kbps (Download&Upload Speed)
TX power	<24dBm
RX sensitivity	<-109dBm
<b>F2920D-V</b>	
Standard and band	CDMA2000 1X EVDO Rev A 800MHz, 800/1900MHz(optional), 450MHz(optional) IS-95 A/B, CDMA2000 1X RTT
Bandwidth	Download speed 3.1Mbps, Upload speed 1.8Mbps
TX power	<23dBm
RX sensitivity	<-107dBm
<b>F2920D-TL</b>	
Standard and band	LTE TDD 2600/1900/2300MHz(Band38/39/40), Optional: 800/1400/1800MHz(Band 27/61/62) TD-SCDMA 2010/1900MHz(A/F frequency band, Band 34/39) GSM /GPRS/EDGE 900/1800/1900MHz
Bandwidth	LTE TDD: Download speed 61Mbps, Upload speed 18Mbps TD-HSPA+: Download speed 4.2Mbps, Upload speed 2.2Mbps TD-HSPA: Download speed 2.8Mbps, Upload speed 2.2Mbps
TX power	<23dBm
RX sensitivity	<-97dBm
<b>F2920D-FL</b>	
Standard and band	LTE FDD 2600/2100/1800/900/800MHz, 700/1700/2100MHz(optional) DC-HSPA+/HSPA+/HSDPA/HSUPA/UMTS/850/900/2100MHz, 800/850/1900/2100MHz(optional) EDGE/GPRS/GSM 850/900/1800/1900MHz GPRS CLASS 10 GPRS CLASS 12
Bandwidth	LTE FDD: Download speed 100Mbps, Upload speed 50Mbps DC-HSPA+: Download speed 42Mbps, Upload speed 5.76Mbps HSPA+: Download speed 21Mbps, Upload speed 5.76Mbps HSDPA: Download speed 7.2Mbps, HSUPA: Upload speed 5.76Mbps UMTS: 384Kbps
TX power	<23dBm
RX sensitivity	<-97dBm
<b>F2920D-L</b>	
Standard and band	LTE FDD,LTE TDD,EVDO,WCDMA,TD-SCDMA,CDMA1X,GPRS/EDGE

Bandwidth	LTE FDD: Download speed 100Mbps, Upload speed 50Mbps LTE TDD: Download speed 61Mbps, Upload speed 18Mbps DC-HSPA+: Download speed 42Mbps, Upload speed 5.76Mbps TD-HSPA+: Download speed 4.2Mbps, Upload speed 2.2Mbps EVDO Rev. A: Download speed 3.1Mbps, Upload speed 1.8Mbps
TX power	<23dBm
RX sensitivity	<-97dBm

### ◆ LoRa

Item	Content
Standard and band	410MHz - 441MHz/1000KH; 433±5MHz(Suggestion); 433.0MHz(Default Value)
Indoor/Urban Communication Distance	1000m
Outdoor/Visual Communication Distance	3500m
TX Power	20dBm
Bandwidth	-140Bm
RX Sensitivity	6 levels selectable (0.3、0.6、1.0、1.8、3.1、5.5Kbps)
Channel	32

### ◆ 433MHZ

Item	Content
Standard and band	387 - 464MHz; 430-436MHz(Suggestion); ±5MHz(Deviation)
Outdoor/Visual Communication Distance	200m @1.2Kpbs
TX Power	10dBm
RX Sensitivity	-110dBm@2.4Kpbs
Modulation	FSK/GFSK/ASK (MSK is not supported)
Maximum Transfer Rate	500Kbps

### ◆ ZigBee

Item	Content
Standard and band	IEEE 802.15.4, 2.4-2.5GHZ
Indoor/Urban Communication Distance	90m
Outdoor/Visual Communication Distance	2000m
TX Power	20dBm
RX Sensitivity	-103dBm
Bandwidth	250Kbps
Number of Channel	11 to 26
Maximum Serial Memory	300 Bytes

### ◆ WIFI

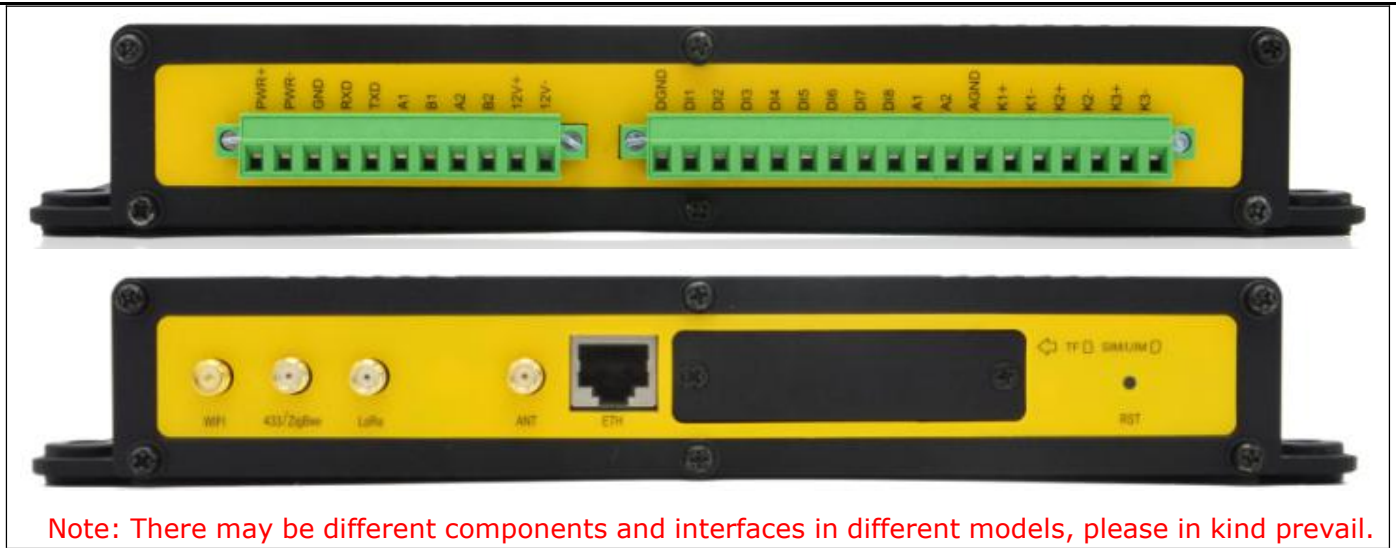
Item	Content
Standard and band	IEEE 802.11 b/g/n, 2.4-2.5GHZ
Bandwidth	IEEE802.11 b/g: 54Mbps(Maximum) IEEE802.11n: 150Mbps(Maximum)
Security	WEP/WPA/WPA2
TX Power	<18dBm
RX Sensitivity	<-75dBm

## ◆ Hardware

Item	Content
CPU	Industrial 32 bits CPU
FLASH	512KB
SRAM	256KB

## ◆ Interface

Item	Content
Serial	<ul style="list-style-type: none"> <li>• 1 RS232 port (Compatible RS485) and 1 RS485 port, 15KV ESD protection</li> <li>• Data bits: 5, 6, 7, 8</li> <li>• Stop bits: 1, 1.5, 2</li> <li>• Parity: none, even, odd, space, mark</li> <li>• Baud Rate: 110~230400 bits/s</li> </ul>
Indicator	"PWR", "SYS", "SIM", "ALM", "Online", "ETH", "WIFI", "433/ZigBee", "LoRa" and signal strength indicator
Antenna	<ul style="list-style-type: none"> <li>• Cellular: 1 Standard SMA female interface, 50 ohm lightning protection</li> <li>• WIFI: 1 Standard SMA female interface, 50 ohm lightning protection (optional)</li> <li>• 433/ZigBee: 1 Standard SMA female interface, 50 ohm lightning protection (optional)</li> <li>• LoRa: 1 Standard SMA female interface, 50 ohm lightning protection (optional)</li> </ul>
SIM/UIM	Standard 3V/1.8V user card interface, 15KV ESD protection
Application	8 input and output channels (optical isolation); Definition: 2ms Logic 0: Wet node 0-3VDC, or dry note conducting Logic 1: Wet node 5-30VDC, or dry note conducting
	3 relay output interfaces Maximum switching voltage: 250VAC/30VDC Maximum switching current: 5A
	2 analog signal input interfaces 4 ~ 20mA current signal input, 0~5V voltage signal input (optional), accuracy: 0.5%
	1 controlled output power supply The output voltage is the same as the device supply voltage, default value is 12V Output Current:1A; ESD protection
Power	Terminal block interface, reverse-voltage and overvoltage protection



Note: There may be different components and interfaces in different models, please in kind prevail.

## ◆ Power Input

Item	Content
Standard Power	DC 12V/1.5A
Power Range	DC 5~36V

## ◆ Power Consumption

Item	Content
Average consumption	250mA@12VDC
Maximum dynamic consumption	700mA@12VDC

## ◆ Physical Characteristics

Item	Content
Housing	Iron, providing IP30 protection. The iron housing safely isolates the terminal from the system, which is especially suitable for the industrial application.
Dimensions	91x58.5x22 mm (Antenna and mounting parts are not included)
Weight	About 800g

## ◆ Environmental Limits

Item	Content
Operating Temperature	-40 ~ +75°C (-40~ +167°F)
Storage Temperature	-40 ~ +85°C (-40 ~ +185°F)

Ambient Relative Humidity	95% (non-condensing)
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## ◆ Ordering Information

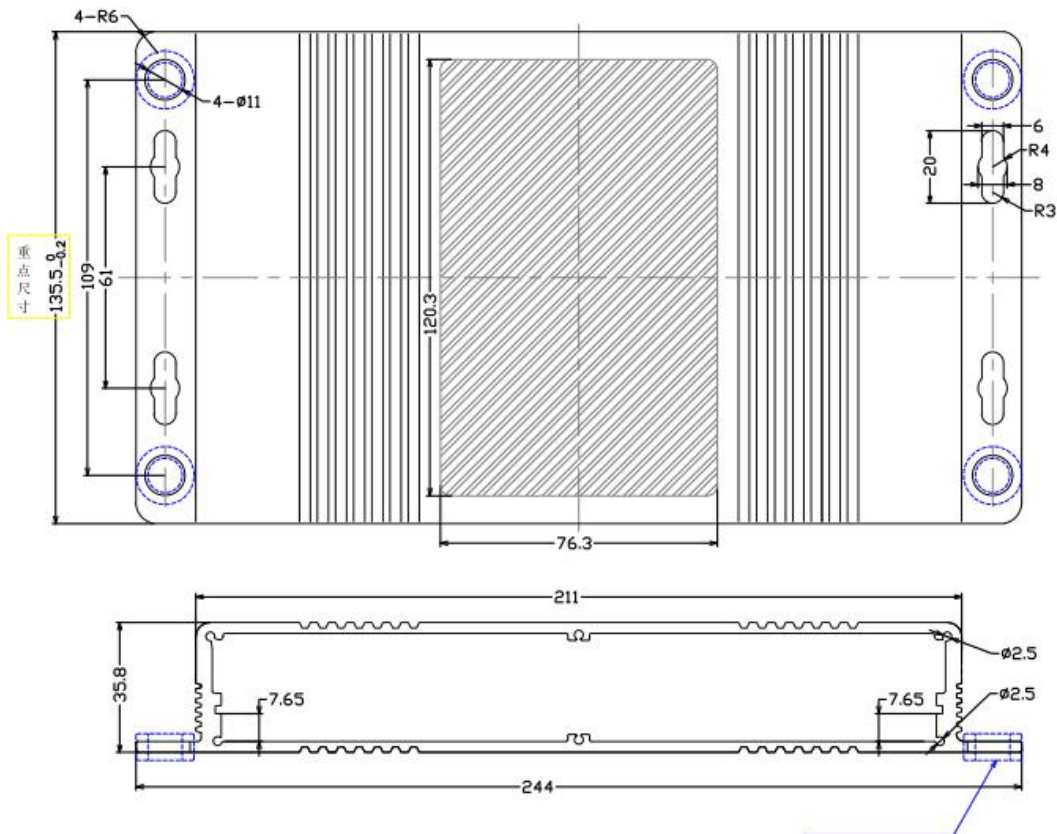
Model NO	Description
F2920D-G	GPRS+WIFI+LoRa+433/ZigBee
F2920D-C	CDMA+WIFI+LoRa+433/ZigBee
F2920D-W	WCDMA+WIFI+LoRa+433/ZigBee
F2920D-TL	TDD+WIFI+LoRa+433/ZigBee
F2920D-FL	FDD+WIFI+LoRa+433/ZigBee
F2920D-L	LTE+WIFI+LoRa+433/ZigBee

## Appendix A

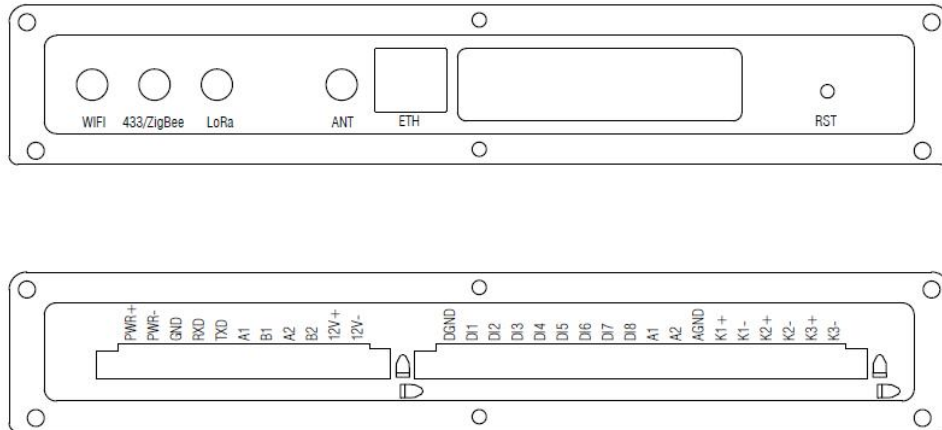
### A.1 Construction

#### A.1.1 Shape and dimensions

On both sides of the device, there are fixed holes. In order to be user-friendly, following is the specific size of the device. (Unit: mm)







## A.2 Terminal (Spacing:5.08mm)

JP1			JP2		
PIN	Interface Name	Explanation	PIN	Interface Name	Explanation
1	PWR+	Power Input: DC 12V	1	DGND	Data Ground
2	PWR-		2	DI1	Data Input 1
3	GND	Power Ground	3	DI2	Data Input 2
4	RXD	Receive Data	4	DI3	Data Input 3
5	TXD	Transmit Data	5	DI4	Data Input 4
6	A1	RS485-1 A Port	6	DI5	Data Input 5
7	B1	RS485-1 B Port	7	DI6	Data Input 6

8	A2	RS485-2 A Port	8	DI7	Data Input 7
9	B2	RS485-2 B Port	9	DI8	Data Input 8
10	12V+	Output: 12V/1A, Power Supply to Camera	10	A1	Analog Input 1
11	12V-		11	A2	Analog Input 2
Note: RXD and TXD can not be used with RS485-1 at the same time.			12	AGND	Analog Ground
			13	K1+	Relay Output 1
			14	K1-	
			15	K2+	Relay Output 2
			16	K2-	
			17	K3+	Relay Output 3
			18	K3-	

### A.3 Indicator Lights Introduction

The state of each indicator is as follows:

Indicator Light	State	Introduction
PWR	ON	F2920D Terminal is powered on
	OFF	F2920D Terminal is powered off
SYS	BLINK	The system is running normally
	OFF	There's something wrong with the system
SIM	ON	The device recognizes the SIM card
	OFF	No SIM card was identified
ALM	ON	Abnormal Situation Occurs
	OFF	Everything is normal
Online	ON	The device has logged on network and the platform
	BLINK	The device has logged on network but not the platform

	OFF	The device hasn't logged on the network
ETH	ON	Ethernet interface has connected
	OFF	Ethernet interface hasn't connected
WIFI	ON	Connected via WIFI
	OFF	Doesn't Connect via WIFI
433/ZigBee	ON	Connected via 433/ZigBee
	OFF	Doesn't Connect via 433/ZigBee
LoRa	ON	Connected via LoRa
	OFF	Doesn't Connect via LoRa
Signal Strength	ONE LIGHT ON	Weak Signal Strength
	TWO LIGHTS ON	Good Signal Strength
	THREE LIGHTS ON	Excellent Signal Strength