F2X16

Serial To Cellular IP Modem

For Power Distribution Automation

Intelligent Remote Monitoring and Control System

Datasheet

Version 1.0
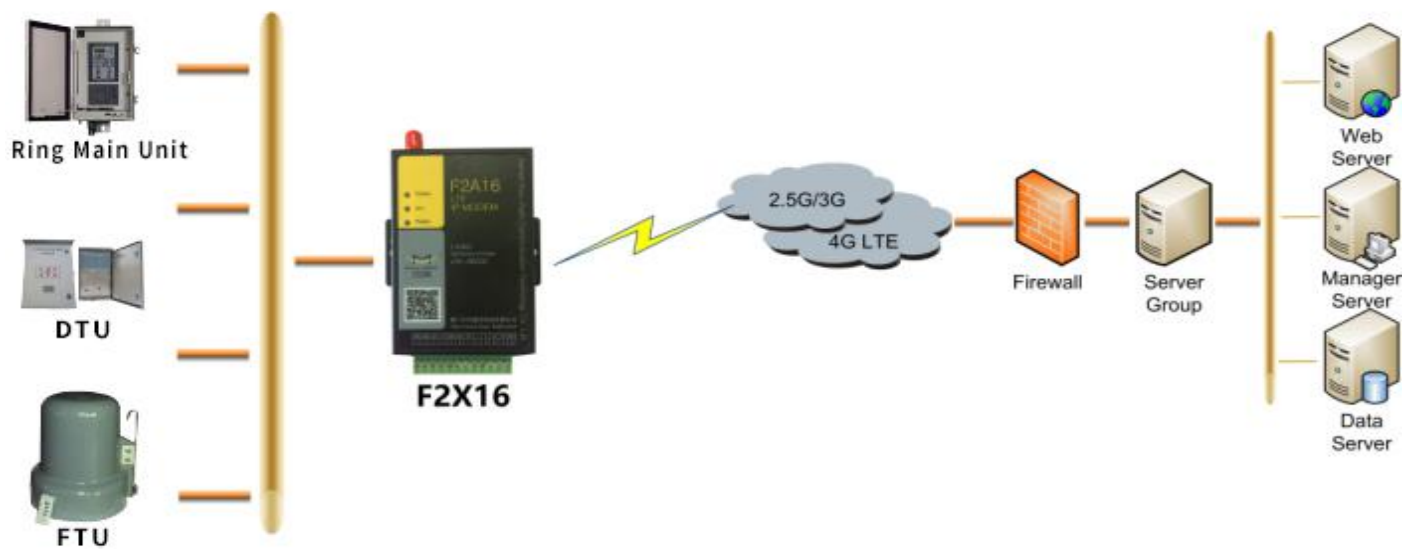
1. Description

F2X16 serial to cellular IP modem is widely used as data transmission terminal for power distribution remote monitoring and control system, such as Feeder Terminal Unit (FTU) Automation Solution, Distribution Terminal Unit (DTU) Automation, and Ring Main Unit Automation in the electric power distribution network.

F2X16 supports serial RS232 and RS485 (or RS422) port, can conveniently and transparently connect power secondary equipment (FTU, DTU, Ring Main Unit, etc.)with serial port to a public cellular network. With GSM/GPRS/3G/4G LTE full band support, the on site equipment could be guaranteed staying connected or recovered from any unexpected interference. With Four-faith's industrial design, higher EMS level are tested to ensure the highest reliability for any harsh environment.

2. System Diagram

In the power distribution network system, where serial-based devices need data communication to the remote control center, using Four-Faith F2X16 Modem which also with Serial port and embedded with GPRS/3G/4G LTE module, enable the Electric Power Devices, such as Ring Main Unit, DTU and FTU to connect to the Remote Control Center over the cellular network, thus achieve remotely wireless data communication and monitoring.

Simplify as below:

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2. Product Features

- Desktop or DIN-rail installation
- Compatible GSM/GPRS/3G/4G LTE full band & frequency.
- Low power consumption design, support multi-sleep and trigger modes to reduce the power consumption
- Selectable of configuration methods, including serial console and telnet etc.
- Provide software for remote management
- Support 2 RS232 and 1 RS485 standard ports that can connect to serial devices directly
- Supply 2 I/O channels, compatible 2 pulse wave output channels, 2 analog inputs and 2 pulse input counters
- Adopt terminal block interface, convenient for industrial application
- Support dynamic domain name(DDNS) and IP access to data center
- Support APN/VPDN
- Support multiple online trigger ways, including SMS, ring and data. Support link disconnection when timeout
- Support TCP server and support multiple TCP client connection
- Support double data centers, one main and another backup
- Design with standard TCP/IP protocol stack
- Compatible with all kinds of central monitoring software such as SCADA
- Embedded Real Time Clock(RTC) circuit which can realize timing online/offline function
- Support hardware and software WDT
- Support auto recovery mechanism, including online detect, auto redial when offline to make it always online

3. Specifications

● Cellular

F2116 GPRS IP MODEM

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

F2216 CDMA IP MODEM

Standard and band	● CDMA2000 1xRTT 800MHz, 450MHz(optional)
Bandwidth	● 153.6Kbps
TX power	● <30dBm
RX sensitivity	● <-104dBm

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F2416 WCDMA IP MODEM

Standard and band	• UMTS/WCDMA/HSDPA/HSUPA/HSPA+ 850/1900/2100MHz, 850/900/1900/2100MHz(optional) • GSM 850/900/1800/1900MHz • GPRS/EDGE CLASS 12
Bandwidth	• 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	• <24dBm
RX sensitivity	• <-109dBm

F2616 EVDO IP MODEM

Standard and band	• CDMA2000 1X EVDO Rev A 800MHz, 800/1900MHz(optional), 450MHz(optional) • CDMA2000 1X EVDO Rev B 800/1900MHz(optional) • CDMA2000 1X RTT, IS-95 A/B
Bandwidth	• EVDO Rev. A: Download speed 3.1Mbps, Upload speed 1.8Mbps • EVDO Rev. B: Download speed 14.7Mbps, Upload speed 5.4Mbps (optional)
TX power	• <23dBm
RX sensitivity	• <-104dBm

F2716 TDD-LTE IP MODEM

Standard and band	• LTE TDD 2600/1900/2300MHz(Band 38/39/40), 800/1400/1800MHz(Band 27/61/62)(optional) • 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 2.2Mbps, Upload speed 2.2Mbps
TX power	• <23dBm
RX sensitivity	• <-97dBm

F2816 FDD-LTE IP MODEM

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

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	• UMTS: 384Kbps
TX power	• <23dBm
RX sensitivity	• <-93.3dBm

F2A16 LTE IP MODEM

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	• <-93.3dBm

● Hardware

CPU	• Industrial 32 bits CPU
FLASH	• 512KB (Extendable)
SRAM	• 256KB

● Interface

Serial	• 2 RS232 port and 1 RS485(orRS422) port, 15KV ESD protection • Data bits: 5, 6 ,7, 8 • Stop bits: 1, 1.5, 2 • Parity: none, even, odd, space, mark • Baud rate: 1200~230400 bps (110~600 bps optional)
Indicator	• "Power", "ACT", "Online"
Antenna	• Standard SMA female interface, 50 ohm, lighting protection(optional)
SIM/UIM	• Standard 3V/1.8V user card interface, 15KV ESD protection
Power	• Terminal block interface, reverse-voltage and overvoltage protection

Antenna Interface

Terminal Block

SIM/UIM Port

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

● **Power Input**

Standard Power	● DC 12V/0.5A
Power Range	● DC 5~36V

● **Power Consumption**

Communication	● 75~95mA@12VDC ● 150~200mA@5VDC
Standby	● 40~50mA@12VDC ● 85~105mA@5VDC
Sleep	● 3mA@12VDC ● 6mA@5VDC

● **Physical Characteristics**

Housing	● Iron, providing IP30 protection
Dimensions	● 91x58.5x22 mm
Weight	● 205g

● **Environmental Limits**

Operating Temperature	● -35 to 75°C (-22 to 167°F)
Storage Temperature	● -40 to 85°C (-40 to 185°F)
Ambient Relative Humidity	● 5 to 95% (non-condensing)

5. Ordering Information

Model NO	Description
F2116	● GPRS IP MODEM
F2216	● CDMA IP MODEM
F2416	● WCDMA IP MODEM
F2616	● EVDO IP MODEM
F2716	● TDD-LTE IP MODEM
F2816	● FDD-LTE IP MODEM
F2A16	● LTE IP MODEM

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