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| Document version | Confidential |
| V2.0.0 | |

F7916 Series IP MODEM TECHNICAL SPECIFICATION

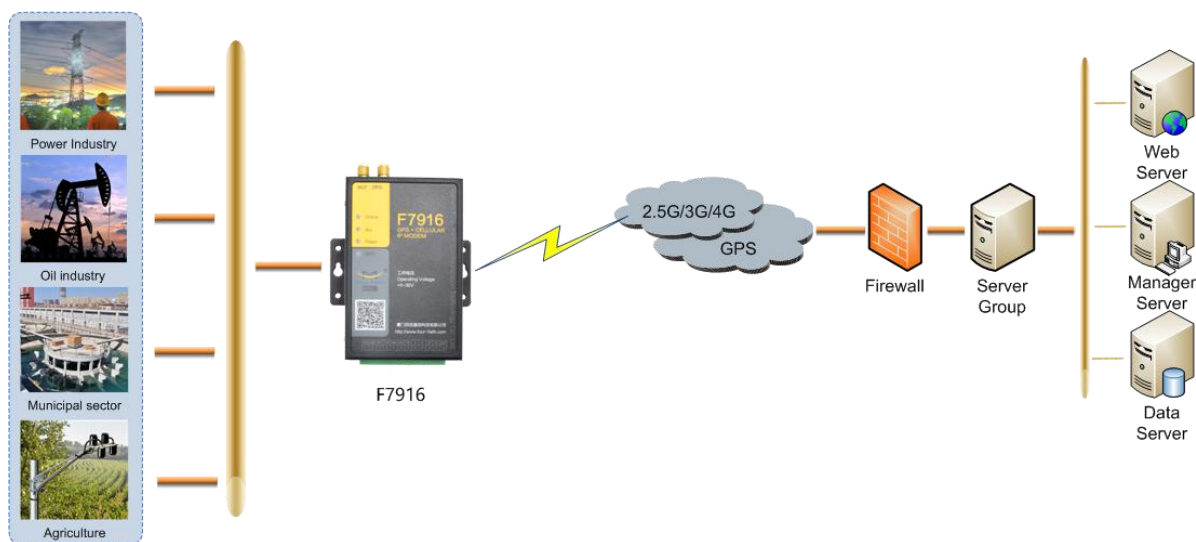


General

F7916 Series IP MODEM is a kind of cellular terminal device that provides data transfer function and GPS function by public cellular network.

It adopts high-powered industrial 32 bits CPU and embedded real time operating system. It supports RS232 and RS485 (or RS422) port that can conveniently and transparently connect one device to a cellular network, allowing you to connect to your existing serial devices with only basic configuration. It has low power consumption states in which the power consumption could be lower than 5mA@12VDC. It has compatible digital I/O channel, ADC, input pulse counter and pulse wave output function.

It has been widely used on M2M fields, such as intelligent transportation, smart grid, industrial automation, telemetry, finance, POS, water supply, environment protection, post, weather, and so on.



Product Feature

Design for Industrial Application

- ◆ High-powered industrial cellular module
- ◆ High-powered industrial 32 bits CPU
- ◆ High-powered industrial GPS module
- ◆ Low power consumption design, support multi-sleep and trigger modes to reduce the power dissipation farthest
- ◆ Housing: iron, providing IP30 protection
- ◆ Power range: DC 5~36V

Stability and Reliability

- ◆ Support hardware and software WDT
- ◆ Support auto recovery mechanism, including online detect, auto redial when offline to make it always online
- ◆ RS232/RS485/RS422 ports: 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 2 RS232 and 1 RS485 standard ports that can connect to serial devices directly
- ◆ TTL logic level RS232 interface can be customized

- ◆ Support intellectual mode, enter into communication state automatically when powered
- ◆ Provide management software for remote management
- ◆ Support several work modes
- ◆ Convenient configuration and maintenance interface

High-performance

- ◆ Support TCP server and support multi TCP client connection(optional)
- ◆ Support double data centers, one main and another backup
- ◆ Supply 2 I/O channels, compatible 2 pulse wave output channels, 2 analog inputs and 2 pulse input counters
- ◆ Support multi data centers and it can support 5 data centers at the same time
- ◆ Support multi online trigger ways, including SMS, ring and data. Support link disconnection when timeout
- ◆ Support dynamic domain name(DDNS) and IP access to data center
- ◆ Design with standard TCP/IP protocol stack
- ◆ Support APN/VPDN
- ◆ support data transmission function and GPS positioning function

Product Specification

Cellular Specification

| Item | Content |
|----------------------------------|--|
| F7916-G GPS+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 |

F7916 Series IP MODEM Technical Specification

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|--------------------------------------|--|
| RX sensitivity | <-107dBm |
| F7916-C GPS+CDMA IP MODEM | |
| Standard and Band | CDMA2000 1xRTT 800MHz, 450MHz(optional) |
| Bandwidth | 153.6Kbps |
| TX power | <30dBm |
| RX sensitivity | <-104dBm |
| F7916-W GPS+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 |
| F7916-V GPS+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 |
| F7916-TL GPS+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 |
| F7916-FL GPS+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 |

F7916 Series IP MODEM Technical Specification

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|---------------------------------|--|
| | HSDPA: Download speed 7.2Mbps, HSUPA: Upload speed 5.76Mbps UMTS: 384Kbps |
| TX power | <23dBm |
| RX sensitivity | <-93.3dBm |
| F7916-L GPS+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 |

GPS Specification

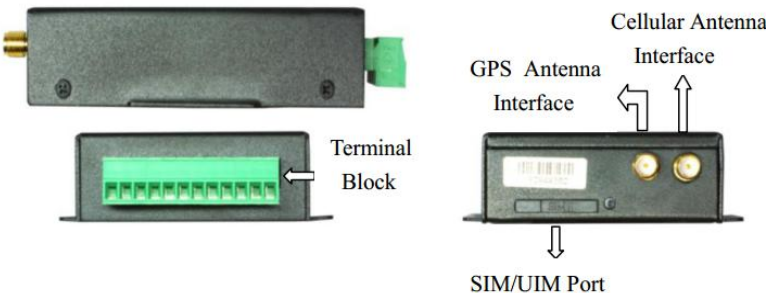
| Item | Content |
|--------------------------------|--|
| GPS Module | Industrial GPS Module |
| Receiver Type | 50-Channel GPS L1 (1575.42MHz) C/A Code SBAS: WAAS, EGNOS, MSAS, GAGAN Compatible: GALILEO |
| Maximum Navigation Update Rate | 4Hz |
| Horizontal position accuracy | Autonomous: 2.5m CPE SBAS: 2.0m CPE |
| Time-To-First -Fix | Cold Start(Autonomous): 29S Warm Start(Autonomous): 29S Aided Starts: <1S Hot Starts(Autonomous): <1S |
| Sensitivity | Tracking & Navigation: -160dBm Reacquisition: -160dBm Cold Start(Autonomous): -144dBm |
| Timing Accuracy | RMS: 30ns 99%: <60ns Granularity: 21ns |
| Time Pulse Frequency | Configurable 0.25Hz to 1000Hz |

Hardware System

| Item | Content |
|-------|------------------------|
| CPU | Industrial 32 bits CPU |
| FLASH | 512KB (Extendable) |
| SRAM | 256KB |

Interface Type

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| Item | Content |
|-----------|--|
| Serial | 2 RS232 port and 1 RS485(or RS422) 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", "GPS" |
| Antenna | Cellular: Standard SMA female interface, 50 ohm, lightning protection(optional) GPS: Standard SMA female interface, 50 ohm, lightning protection(optional) |
| SIM/UIM | Standard 3V/1.8V user card interface, 15KV ESD protection |
| Power | Terminal block interface, reverse-voltage and overvoltage protection |
| |  |

Power Input

| Item | Content |
|----------------|-------------|
| Standard Power | DC 12V/0.5A |
| Power Range | DC 5~36V |

Power Consumption

| Working States | Power Consumption | |
|----------------|-------------------|----------------|
| Communication | 80~100mA@12VDC | 170~220mA@5VDC |
| Standby | 45~55mA@12VDC | 105~125mA@5VDC |
| Sleep | 3mA@12VDC | 6mA@5VDC |

Physical Characteristics

| Item | Content |
|------------|---------------------------------|
| Housing | Iron, providing IP30 protection |
| Dimensions | 91x58.5x22 mm |
| Weight | 205g |

Environmental Limits

| Item | Content |
|-----------------------|------------------------|
| Operating Temperature | -35~+75°C (-22~+167°F) |
| Storage Temperature | -40~+85°C (-40~+185°F) |
| Operating Humidity | 95% (unfreezing) |

Ordering Information

| Model No. | Description |
|-----------|----------------------|
| F7916-G | GPS+GPRS IP MODEM |
| F7916-C | GPS+CDMA IP MODEM |
| F7916-W | GPS+WCDMA IP MODEM |
| F7916-V | GPS+EVDO IP MODEM |
| F7916-TL | GPS+TDD-LTE IP MODEM |
| F7916-FL | GPS+FDD-LTE IP MODEM |
| F7916-L | GPS+LTE IP MODEM |