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## F7916 Series IP MODEM TECHNICAL SPECIFICATION

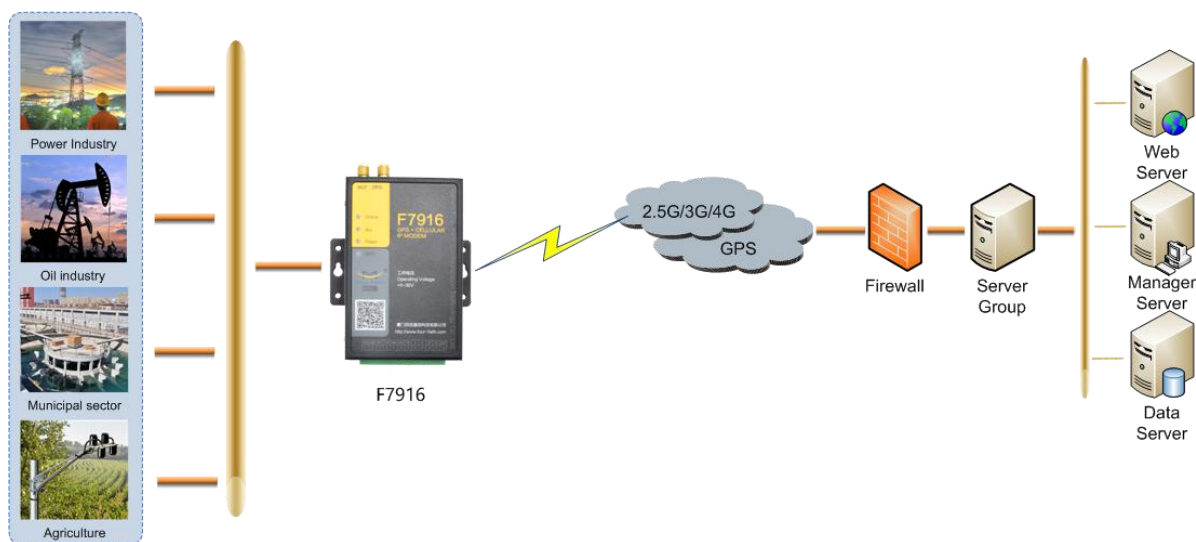


### General

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
<b>F7916-G GPS+GPRS IP MODEM</b>	
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

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

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	HSDPA: Download speed 7.2Mbps, HSUPA: Upload speed 5.76Mbps UMTS: 384Kbps
TX power	<23dBm
RX sensitivity	<-93.3dBm
<b>F7916-L GPS+LTE IP MODEM</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	<-93.3dBm

### GPS Specification

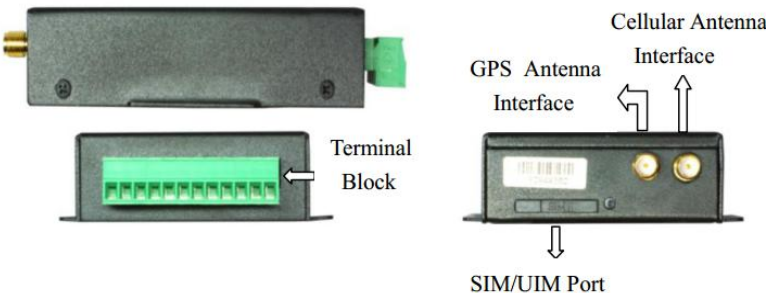
Item	Content
GPS Module	Industrial GPS Module
Receiver Type	50-Channel GPS L1 (1575.42MHz) C/A Code SBAS: WAAS, EGNOS, MSAS, GAGAN Compatible: GALILEO
Maximum Navigation Update Rate	4Hz
Horizontal position accuracy	Autonomous: 2.5m CPE      SBAS: 2.0m CPE
Time-To-First -Fix	Cold Start(Autonomous): 29S      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