Rackmount 8-Serial / 64-I/O 4G/LoRa Server

Model: FCT-6700-G4

Either 4G Cat.4 or 5G RedCap · eSIM



Product Overview

- Aggregate serial instruments, digital and analog signals at pump stations and distribution rooms; transmit over Ethernet or cellular networks.
- Up to 64 DI/DO/current or voltage AI/AO channels, configured in groups of 2.
- 19-inch rack mounting, OpenWrt, dual power supply options and LoRa data forwarding.
- Choose 4G Cat.4 or 5G RedCap uplink. RedCap supports 5G SA and LTE Cat.4 fallback.

Key Features

- **Mixed I/O** Separate configurations for serial and I/O. Touchscreen or PLC can be connected locally.
- **Dual SIM** Two SIM card slots, allowing operator switching according to configuration. eSIM supported, requiring operator activation.
- **Link Failover** When Gigabit wired is used, the system can switch to cellular mode and automatically restore wired connection.
- **Acquisition** Supports Modbus, MQTT, and JSON messages for upper-level system acquisition.
- **Protection** Digital/serial surge: 6 kV common and differential modes.

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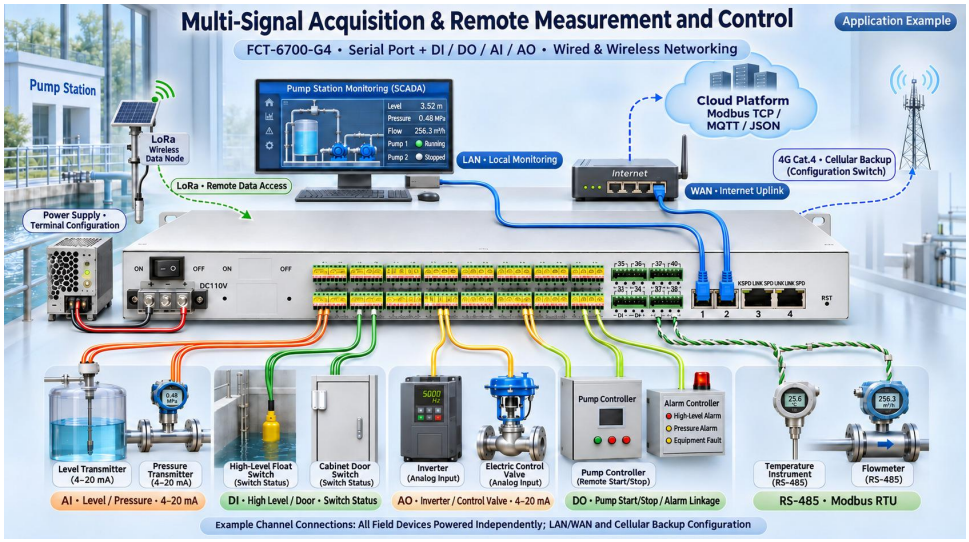
Typical Application

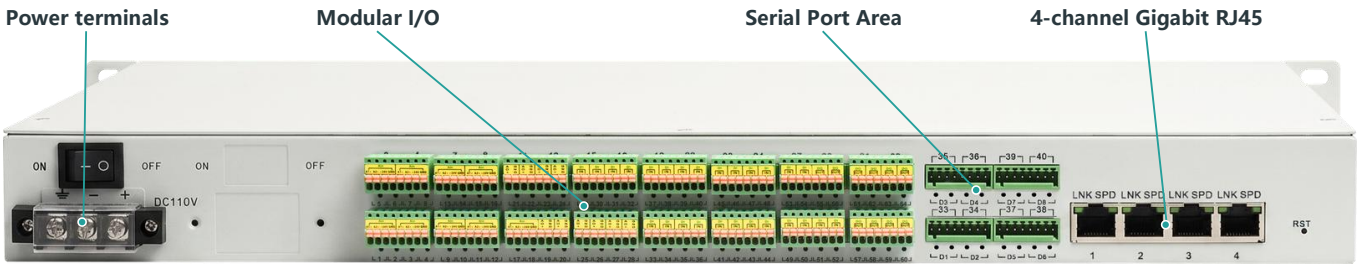


DI/DO/AI/AO and serial instruments can be connected according to configuration; LoRa data is transmitted to the remote end; Modbus TCP and Modbus RTU on the serial side can communicate with each other.

LAN for local monitoring, WAN for wired connection, 4G cellular as backup. Example channel allocation, terminal assignment, peripheral power supply, and link switching follow configuration.

Interfaces and Installation





The panel is exampleed for DC 110 V installation. Specific power supply and terminal functions shall be configured according to the order.

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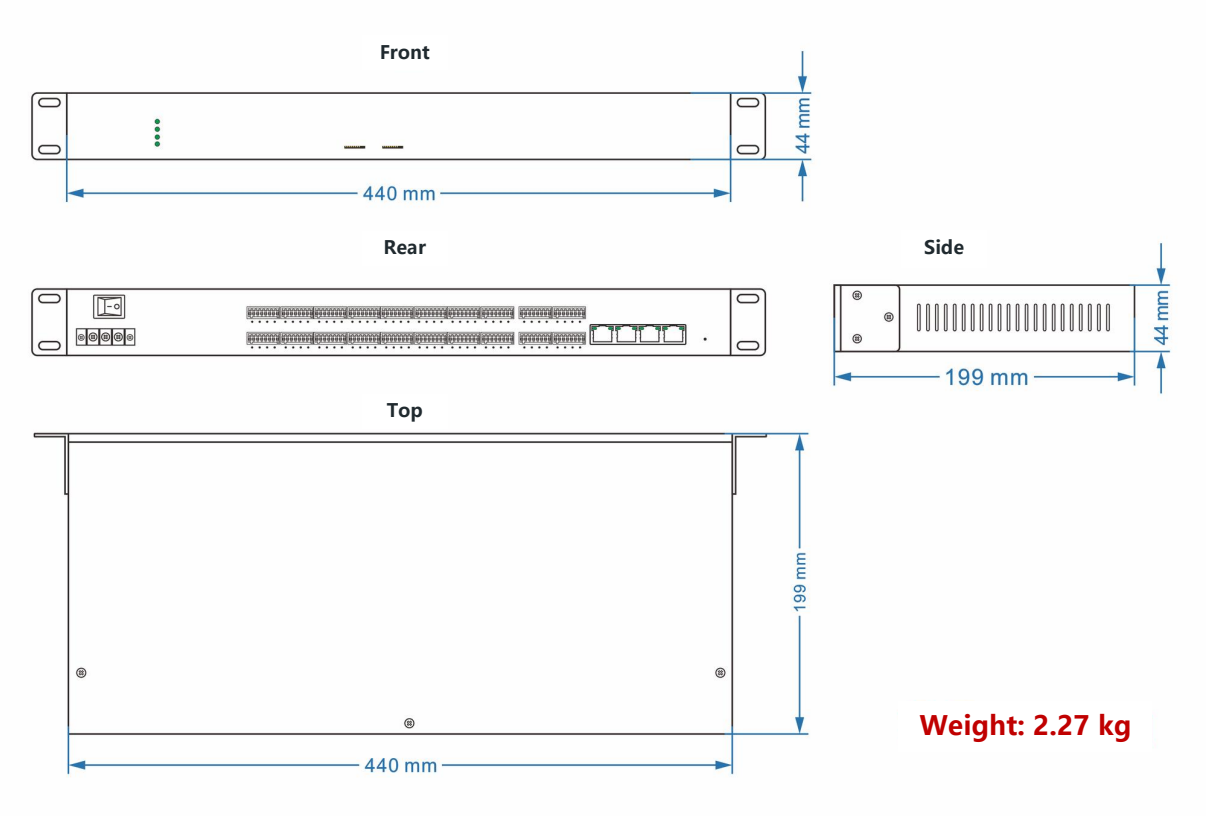
Dimensions and Mounting



Body size: 440 × 199 × 44 mm, approximately 2.27 kg. Including mounting ears, dimensions are approximately 485 × 200 × 45 mm (width × depth × height).

Power Supply Selection

Item	Specification
Input Power Supply	Optional: AC 220 V, DC −48 V, DC 24 V, or DC 110 V.
Dual power supply combination	Optional: AC+AC, AC+DC, or DC+DC.

Hardware and environment

Item	Specification
Processing platform	Industrial processor running OpenWrt.
Electrical Ethernet	4 × RJ45, 10/100/1000BASE-T auto-negotiation, full/half-duplex adaptation, supports Auto MDI/MDIX. The MAC address table can learn 4096 addresses.
Serial Port	1–8 channels configurable. Each channel supports RS-232/RS-422/RS-485; three-in-one interface type can be configured via Web.
I/O resources	Up to 64 DI/DO/AI/AO channels, configured in groups of 2. Serial ports and I/O can be configured simultaneously.
Installation and Heat Dissipation	19-inch rack mount, fanless. Physical dimensions: 440 × 199 × 44 mm, approximately 2.27 kg. With mounting ears, dimensions are approximately 485 × 200 × 45 mm (width × depth × height).
Environment	Operating and storage temperatures: −40–+85 °C; operating humidity: 0%–95% RH, no condensation. RedCap cellular module operates at −35–+75 °C; expansion range: −40–+85 °C; overall applicable range is confirmed on order.

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Item	Specification
Reliability	MTBF ＞100,000 hours, with watchdog and system monitoring protection.

Acquisition and Control

Item	Parameters	Technical Specifications
Channel configuration	Up to 64 channels, configured in groups of 2, can combine DI, DO, current-type or voltage-type AI/AO.	
Digital input DI	Supports dry contact, NPN/PNP transistor wet contact, or pulse input.	
Digital output DO	Dry contact · output form	Signal relay
	Dry contact · rated load	30 VDC/2 A
	Dry contact · maximum switching frequency	50 Hz
	dry contact · response time	＜1.2 ms
	dry contact · surge protection	none
	wet contact · output mode	optical MOS relay / pulse output
	wet contact · rated load	245 VDC/0.12 A
	wet contact · output level	0–VCC (VCC is the power supply voltage of the device)
	Wet contact · Response time	＜0.6 ms
	Wet contact · Surge protection	TVS + solid discharge tube
Current input/output	Range	0–20 mA (including 4–20 mA)
	Resolution	12 bits
	Sampling rate	20,000 times/s
	Delay	＜0.1 ms
	Normal temperature accuracy	0.2%
	Input resistance	125 Ω
	Output load capability	600 Ω
Voltage input/output	Range	0–10 V (including 0–5 V) or −5–+5 V
	Resolution	12 bits
	Sampling rate	20,000 times/s
	Delay	＜1 ms
	Normal temperature accuracy	0.2%

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Item	Parameters	Technical Specifications
	Input resistance	100 kΩ
	Output load capability	600 Ω

Communications and Management

Item	Specification
Basic protocol	TCP, UDP, ARP, ICMP, HTTP, DNS, DHCP, SNMP, Telnet, SSH. Supports cross-gateway/cross-routing and automatic connection recovery after network interruption.
Data access	Modbus TCP Server, standard TCP/IP Socket. TCP supports multiple connections; UDP supports single-machine or multi-machine communication.
Digital control management	Supports SNMP Get/Set, used for reading inputs, reading or setting output states. Supports via touch screen, PLC local control or display.
Serial Port Networking	Supports Modbus RTU to Modbus TCP, SSL serial data encryption, MQTT multi-topic publishing and subscription, and transparent transmission.
JSON and cloud integration	Supports Modbus to JSON, parsing of JSON sent by the server and scheduled reporting. Can connect to Huawei Cloud, Alibaba Cloud, and Mobile Cloud via MQTT.
Configuration and Upgrade	Windows configuration tool, SSH, Telnet, Web and SNMP management, supports access control, quick configuration, local and remote firmware upgrade.
Wired Connection	LAN supports ARP, Ethernet, STP. WAN supports static IP, DHCP, PPPoE, PPTP, L2TP.

Serial Pinout

Standard	Signal	Standards
RS-232	RXD、TXD、GND	EIA/TIA-232（ITU-T V.28）
RS-422	TxD+、TxD−、RxD+、RxD−	EIA/TIA-422（ITU-T V.11）
RS-485 four-wire	TxD+、TxD−、RxD+、RxD−	EIA/TIA-485
RS-485 two-wire	A（TX+）、B（TX−）、GND	EIA/TIA-485

Lightning protection and surge protection

Item	Specifications or technical requirements	Description
Digital interface	Differential mode 6 kV, common mode 6 kV	Reduce the impact of induced high voltage and switch operation surges on the signal circuit.
Serial interface	Differential mode 6 kV, common mode 6 kV	Used for surge protection of serial line transmission.
Ethernet interface (RJ45)	4 kV	Reduce the risk of transient overvoltage transmitted through network cables.
Digital and serial interface test basis: IEC 61000-4-5, open-circuit voltage waveform 10/700 μs, test source impedance 40 Ω.		

LoRa Communication

Item	Specification
Function	1 LoRa data access channel, forwarding received LoRa data to the network.
Radio Frequency	Available from 400–520 MHz, default is 490 MHz. Default transmission power is 20 dBm (100 mW).
Air interface	0.018–37.5 kbps, nominal reception sensitivity can reach −139 dBm.
Typical range	4–8 km, actual performance depends on terrain, antenna, site interference, and local regulations.

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Item	Specification
Antenna interface	SMA, internal pin with external thread.

Cellular access and regional frequency bands

Item	Specification
4G Cat.4	LTE FDD/TDD, 3GPP Rel-9, no carrier aggregation. Theoretical peak of the module: FDD downlink/uplink 150/50 Mbps, TDD 130/30 Mbps.
5G RedCap	3GPP Rel-17 RedCap, Sub-6 GHz, supports 5G NR SA and LTE Cat.4 fallback. Theoretical peak of the module: 5G SA downlink/uplink 226/120 Mbps; LTE downlink/uplink 150/50 Mbps, actual performance depends on network configuration.
Connection and Authentication	Supports APN and VPDN, compatible with IoT cards, regular mobile cards, and dedicated cards. Supports CHAP, PAP, MS-CHAP, MS-CHAPv2, or no authentication.
Dual SIM and Switching	2 SIM card slots, dual SIM single standby, supports eSIM (requires operator activation). Can switch operators according to configuration, using one cellular connection at a time. The front panel has 2 SMB antenna ports, with connections based on selected antenna configuration.
Link Failover	After the wired link fails, it can switch to cellular, with automatic detection of wired recovery. Switching and recovery time are affected by the on-site network and configuration.

4G Cat.4 Regional Band

Standard	-CN	-AU	-EU
Region	China / India	Latin America/Australia/New Zealand	EMEA / Southeast Asia
LTE-FDD	B1/3/5/8	B1/2/3/4/5/7/8/28/66	B1/3/5/7/8/20/28
LTE-TDD	B34/38/39/40/41	B40	B38/40/41
WCDMA	B1/5/8	B1/2/4/5/8	B1/5/8
GSM	EGSM900/DCS1800	GSM850/EGSM900/DCS1800/PCS1900	EGSM900/DCS1800

5G RedCap regional frequency band

Standard	-CN	-EU
Region	China	EMEA/Southeast Asia/Australia/New Zealand
5G NR SA	n1/3/5/8/28/40/41/78/79	n1/3/5/7/8/20/28/38/40/41/77/78
LTE-FDD	B1/3/5/8	B1/3/5/7/8/20/28
LTE-TDD	B34/38/39/40/41	B38/40/41/42/43

EMEA refers to Europe, the Middle East, and Africa. The frequency band, operator, and on-site coverage at the installation location must be verified before connection. The cellular antenna solution and RedCap expansion temperature conditions are confirmed according to the order.

Ordering Information

FCT-6700-G4 / Interface code + quantity / UF or UR / Region

NO	Name	Definition
01	FC / T	FC stands for Feichang; T stands for industrial gateway.
02	6700	19-inch rack series.
03	G4	4-channel Gigabit RJ45 copper Ethernet ports.
04	D/R/X/S	Represent RS-485, RS-232, RS-422, or selectable RS-232/422/485 serial port respectively. The configuration quantity shall not exceed 8.

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NO	Name	Definition
05	K/J	K stands for DI; J stands for DO. Configured in groups of 2 channels.
06	A/M/V/Y	A stands for current input; M stands for current output; V stands for voltage input; Y stands for voltage output. The total number of channels with DI/DO shall not exceed 64.
07	Cell and region	UF is 4G Cat.4 (-CN, -AU, -EU); UR is 5G RedCap (-CN, -EU); choose one. The region suffix is placed at the end.

Order example

Model	Configuration
FCT-6700-G4-CN	Official website: abbreviated version of 4G Cat.4 for China; serial ports, I/O, and other options shall be specified in the order.
FCT-6700-G4S8K16J16A16M16UF-CN	8-channel three-in-one serial port + 16 DI + 16 DO + 16 current AI + 16 current AO, 4G Cat.4 Chinese version.
FCT-6700-G4S8K16J16V16Y16UR-EU	8-channel three-in-one serial port + 16 DI + 16 DO + 16 voltage AI + 16 voltage AO, 5G RedCap European region configuration.

The order shall specify serial port format and channels, number of various I/O channels, range and input/output types, cell version and region, LoRa configuration, power input, and single/double power combinations.

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