2-Master Buffered RS-485 DIN-Rail Hub

Model: FCC-1210-D1D2M

Two distribution ports + one hub port

Up to 10K bytes of cache · Dual mode switching

DC 9–50 V/AC 7–36 V · 3 kV isolation per port



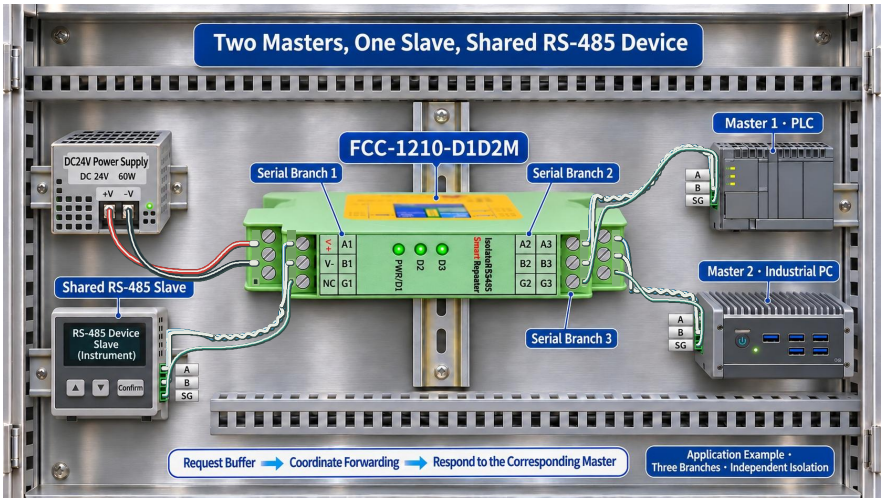
Product Overview

- Two RS-485 masters, such as PLCs or industrial PCs, share one slave. Connect masters to distribution ports 2/3 and the slave to hub port 1.
- Up to 10K bytes of buffering and intelligent frame recognition coordinate requests/responses for faster communications and error handling. Switchable to one-master/two-slave mode.
- Each RS-485 port has a separate shield/reference ground. The three serial grounds and power ground have mutual 3 kV isolation, reducing ground-potential interference and fault propagation.

Key Features

- **Buffering** Two masters share slave data, coordinating requests and responses.
- **Dual Mode** Two masters and one slave/one master and two slaves, with software switching.
- **Port Setup** Rates and frame formats for each port can be set separately.
- **Filtering** Common-mode inductors and differential filtering to suppress line glitches.
- **Port Protection** Serial Port and power supply with 6 kV surge protection.
- **Isolation** Three independent grounds, 3 kV optocoupler and DC-DC for each port.

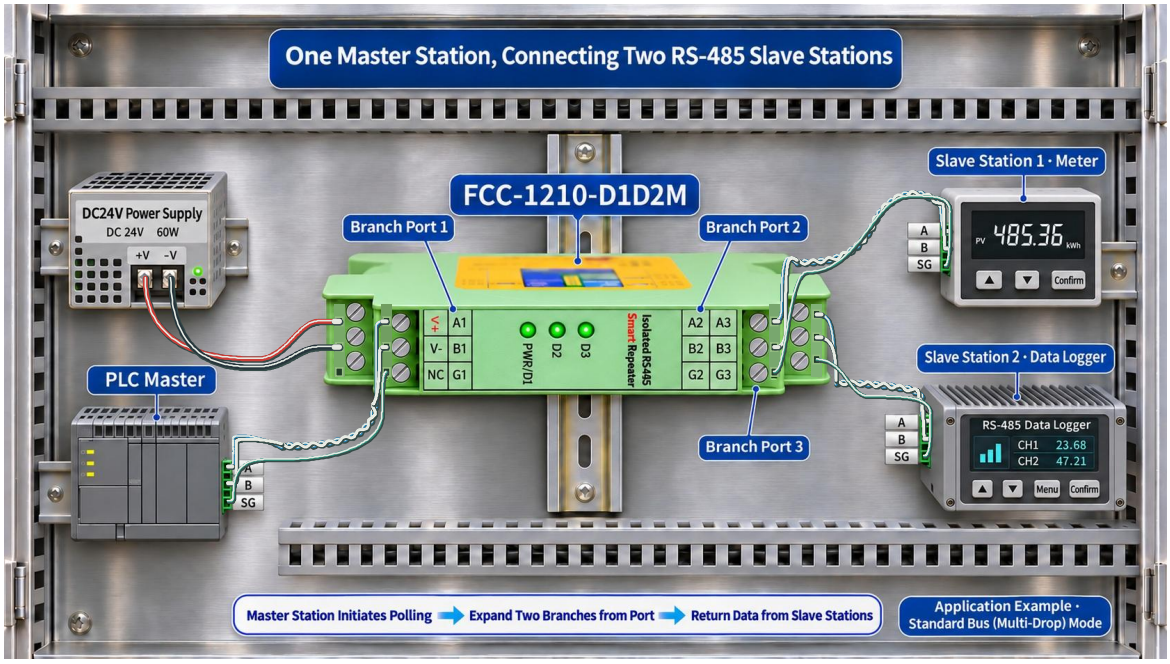
Typical application: two masters and one slave cache coordination.



Application diagram: Master stations 1 and 2 connect to distribution ports 2 and 3, sharing RS-485 slave stations connected to hub port 1; DC 24 V is used as power supply example.

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Typical application: one master and two slaves branch access.



The software switches to the normal hub mode: the PLC master station connects to port 1, and ports 2 and 3 are connected to the RS-485 slave stations respectively.

Dual-color twisted pair indicates A/B; the thin green line represents independent signal ground for each port; supports slave station uplink data, and polling and responses are arranged according to the field protocol.

Communication Mode and Configuration

Item	Technical specifications and operating instructions
Interface and Standards	Three RS-485 lines: one hub port + two isolated distribution ports; EIA/TIA-485; two-wire A (+), B (−), with independent SG signal ground for each port.
Caching and response	Up to 10K bytes of cache, coordinating multiple communications; intelligent data frame recognition, accelerating communication responses and error responses.
Two masters and one slave	Default mode. Two master stations connect to ports 2 and 3 respectively, and slave stations connect to port 1; coordinated caching allows access to the same slave station.
One master, two slaves	The configuration software can be used to switch to ordinary hub mode. The master station connects to port 1, and two distribution ports connect to their respective bus segments, enabling the expansion of RS-485 branches and slave stations.
Rate and Frame Format	Each port configurable at 1200–115200 bps; default: 9600 bps, no checksum, 8 data bits, 1 stop bit.
Configuration Method	Software configured for matching can set communication modes and parameters for each RS-485 port; each port is configured separately.
Status Indicators	PWR/D1, D2, D3 indicators are located on the front for easy observation of power supply and port communication status; see the marked diagram on the interface.

Port roles for both modes

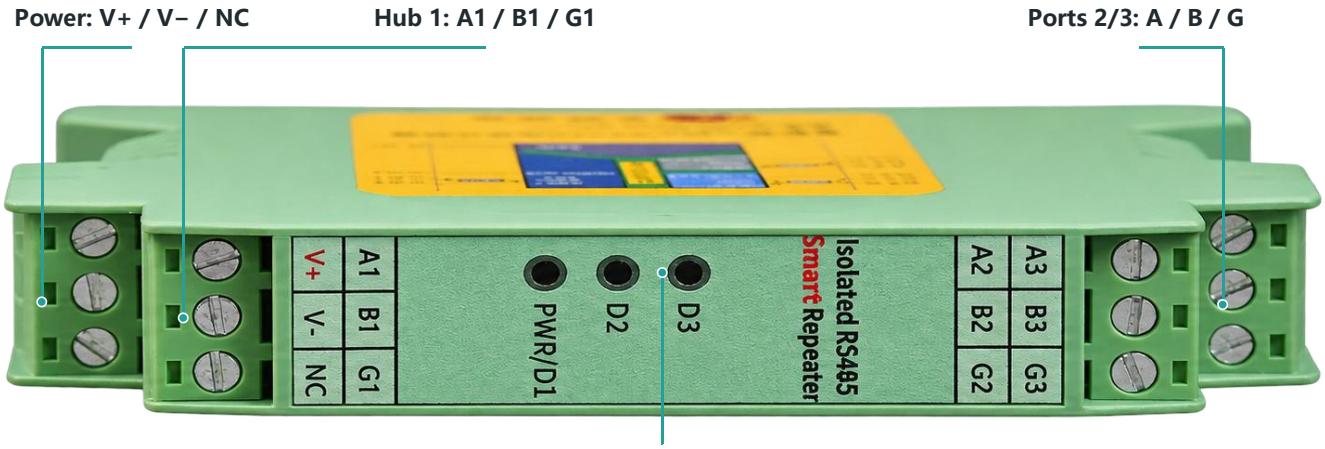
Mode	Hub port 1	Port 2/3
Two masters and one slave	Connect to shared RS-485 slave station	Connected to Master Station 1 and Master Station 2 respectively.
One master, two slaves	Connect to RS-485 master station	Connected to Slave Station 1 and Slave Station 2 respectively.

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Bus, filtering and matching

Item	Technical specifications and operating instructions
Filtering	Built-in common mode inductor differential filtering to eliminate line burrs and reduce the impact of on-site line interference on communication.
Node capacity	Each RS-485 port supports up to 128 nodes, configured according to the respective bus segment.
Transmission Distance	Maximum distance per segment: 2200 m (9600 bps); actual distance depends on cable, speed, and on-site wiring conditions.
Terminal Matching	Built-in 120 Ω termination matching resistor, used according to bus topology and accompanying wiring instructions.

Interfaces and Installation

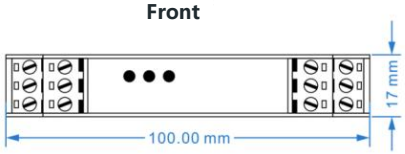


The interface is verified according to the actual silk printing. An/Bn represents the A/B differential signal, and Gn is the independent shielded line ground/signal ground for this port; positive connections are between A, B and SG.

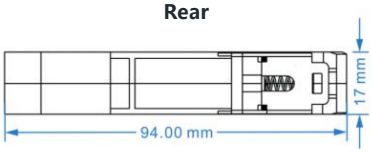
Terminal group	Definition and Connection
Hub port 1	Inner row A1/B1/G1 on the left side; connect to shared slave or PLC master station according to operating mode.
Port 2, 3	The right side has internal rows: A2/B2/G2, and external rows: A3/B3/G3. Each G is a separate signal ground, and G1/G2/G3 are isolated from the power ground.
Power and NC	Left external row V+/V− for power supply; DC 9–50 V connected according to polarity, AC 7–36 V used according to the matching wiring definition. NC is no connection.

Complete physical and mounting dimensions

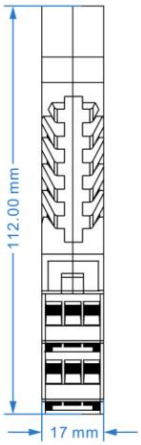
Front



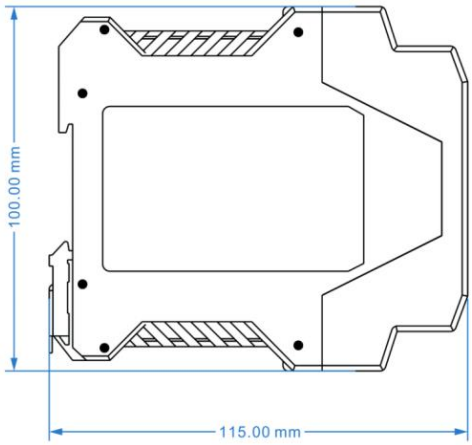
Rear



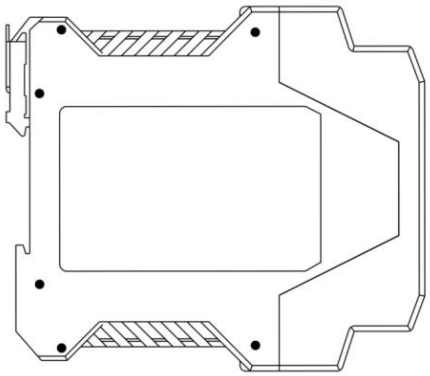
Top



Left



Right



Bottom



Unit: mm. Six views and all local dimensions are retained as in the original drawing; side view: 115 × 100 mm, front thickness: 17 mm.

Supports 35 mm DIN rail installation, with a weight of approximately 0.15 kg/unit; terminal wiring space is reserved during installation.

Individual isolation and surge protection

Item	Specifications/Conditions	Protection and application instructions
RS-485 surge protection	6 kV per channel, three-level surge protection	Individual protection for each serial port, preventing lightning-induced high voltage and switching surge from entering through the communication lines.
Signal Isolation	High-speed optocoupler isolation per channel at 3 kV	The three-channel communication signals are isolated by high-speed optocouplers to reduce signal interference.
Power isolation	3 kV isolation DC-DC power supply per channel	Each port uses isolated power supply; the power ground is isolated from grounds of ports 1, 2, and 3.
Independent shielded line ground	G1/G2/G3 are independent of each other, 3 kV between grounds	Each channel has a separate shielded ground/signal ground interface; the three serial ports and power ground are isolated from each other, reducing ground potential difference interference and limiting cross-channel failure propagation.
Power supply surge protection	6 kV	Power interface provides surge protection and overcurrent protection, as well as DC reverse-polarity protection.
AC Misconnection Protection	AC 220 V/AC 380 V misconnection fault	If one RS-485 port is accidentally connected to the AC voltage specified above, isolation protects other serial devices on the isolated side. This is fault protection, not a normal operating input voltage; it does not guarantee that the misconnected port is undamaged or can still communicate.
Serial port surge test criteria: GB/T 17626.5 (IEC 61000-4-5); 10/700 μs open-circuit voltage waveform; open-circuit peak voltage 6 kV; test source impedance 40 Ω.		

AC connection faults and surge test conditions are not considered normal operating input voltages, and do not indicate that the faulty port is undamaged or still communicable.

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Power, structure, and environment

Item	Technical Specifications
Power Supply and Power Consumption	DC 9–50 V/AC 7–36 V; total power consumption <1 W; 3-pin, 5.08 mm pitch power terminals; supports overload and DC reverse protection.
Structure and Installation	Modular rail housing, 35 mm DIN rail mounting; fanless high-efficiency cooling, easy to install and maintain; approx. 0.15 kg/unit.
Temperature and humidity	Operating and storage temperatures: −40–+85 °C; operating humidity: 0–95% RH, no condensation.
Reliability and Compatibility	MTBF >200,000 hours; 100% burn-in tested; meets Industrial Level 4 EMC requirements.

Back side rail mounting structure



Diagram of rail clip on back side. Fixed to 35 mm DIN rail via clips; ensure clips are locked during installation.

Model Composition and Order Definition

FCC-	1210-	D1	D2M
Product prefix.	Modular rail-based series	One RS-485 hub port	Two RS-485 allocation ports; M is a cache type.

NO	Name	Definition / Ordering instructions
1	FCC	Feichang product prefix; order by full official model.
2	1210	This modular DIN-rail isolated hub series code.
3	D1	One RS-485 hub port, corresponding to the A1/B1/G1 terminal group.
4	D2M	Two RS-485 allocation ports, corresponding to A2/B2/G2 and A3/B3/G3. M indicates a cache type.
5	Communication Configuration	Caching two master one slave, supports software switch from one master to two slaves; please indicate the operating mode and communication parameters for each port when ordering.
6	Matching requirements	Power supply: DC 9–50 V / AC 7–36 V; requirements for power supply, RS-485 cable, and installation accessories must be specified during ordering.

Full Model Code	Configuration
FCC-1210-D1D2M	Isolated RS-485 for three channels, up to 10K bytes of cache; DC 9–50 V / AC 7–36 V; two master-one slave / one master-two slaves mode; 35 mm rail mounting.

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