

Coordinated Traffic Signal Controller



Feature

Control Working Mode

Traffic signal controller can operate a variety of different control modes, and can carry out intelligent switching between different control modes. When the signal controller has unrecoverable failure, it can also be degraded according to the priority level..

- Yellow Flashing Control
- Inductive Control
- Full Red Control
- Networking Control
- Manual Control
- Multi-period Control(Fixed-time Mode)
- Self-adaptive Control
- Cableless Coordinate Control
- Pedestrian Crossings Control
- Bus Preemption Control
- Emergency Priority Control

Overview

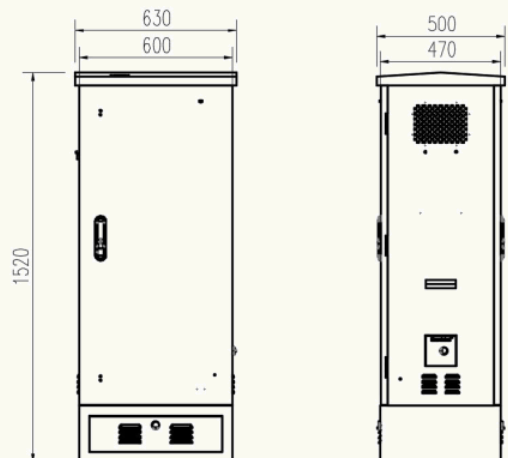
The Coordinated Traffic Signal Controller(FM5000 Series Traffic Signal Controller) is a new generation of coordinated traffic signal control systems developed by Fama to meet evolving market demands. Breaking through the limitations of traditional coordinated controllers, this system not only retains the mature functionalities of conventional systems—including inductive control, adaptive control, pedestrian crossing support, emergency priority, and multi-period schemes—but also integrates the advantages of modular design. By deeply embedding multiple core innovative technologies, the FM5000 achieves comprehensive improvements in functionality, performance, and operational reliability.



Parameter Indexes

The main performance parameters of the signal controller are as follows:

1. The signal output adopts a phase system (32 phases standard configuration);
2. The signal controller adopts a 32-bit Cortex-A7 processor, main frequency: 800MHz, memory: 256MB, Flash: 256MB, Embedded LINUX operating system, and does not require a cooling fan;
3. Configure 48 traffic signal outputs, the maximum driving current of each channel is 3A, each channel surge current $\geq 100A$, and the maximum load of the whole machine $\leq 2200W@220VAC$;
4. Supports up to 64 detection signal inputs, and comes standard with 32 DI digital switch signal inputs;
5. 2x10/100M adaptive Ethernet interfaces, which can be used for configuration and networking;
6. 1x RS232 interface, which can be used for configuration and debugging;
7. 3x RS485 signal outputs can be used for countdown data communication and expansion standby;
8. 3x USB2.0 interfaces, which can be used for parameter backup and upgrade;
9. It has a local manual control function, which can realize local stepping and full Red, yellow flash, next sub-intersection and other functions;
10. Calendar time is used, and the time error is less than 2s per day;
11. Provide no less than 8 pedestrian button input channels, and can be expanded to support 16 pedestrian button inputs;
12. There are multiple time priorities, with a total of 32 time base configurations;
13. Maximum supported configuration daily plans: 128, a single daily plan supports a maximum of 48 operating sub-periods, a single plan supports a maximum of 16 operating stages, and a maximum number of supported configuration plans is 128;
14. Optional traffic flow statistics Metering cycle, can store no less than 15 days of traffic data;
15. No less than 32 phase scheme configurations;
16. There is a manual operation log, which can store no less than 2000 manual operation records;
17. Voltage detection error $< 5V$, resolution 1V;
18. Temperature detection error < 3 degrees Celsius, resolution 1 degree Celsius;
19. Wide operating voltage: 85-264VAC, 47-63Hz;
20. Operating temperature: $-40^{\circ}C$ to $+80^{\circ}C$;
21. Relative humidity: $\leq 95\%$ RH;
22. Signal controller insulation resistance $\geq 100M \Omega$, no breakdown within one minute at 1500V50Hz;
23. The whole machine power consumption $< 50W$ (no external load, the heater cannot be started);
24. Cabinet Material: 1.5mm thickness galvanized sheet;
25. Overall Size: Lx W x H: 630x500x1520mm.



Length 630* width 500* height 1520mm

Technical Features

1. It can provide a maximum output of 96 traffic signals, and can be expanded to a maximum of 192 (64 phases) through core cascading;
2. Each channel output of the traffic signal controller can be arbitrarily configured by the host computer software to specify the phase;
3. Drive output detection: A dedicated electric energy metering chip is used to perform real-time detection of each output current, voltage, and power, and fault analysis of the drive output state, and the detection threshold of the load and voltage can be flexibly configured;
4. Provide manual control function: stepping, all red, yellow flash, off, next phase and next intersection can be directly controlled by buttons to switch to the corresponding state;
5. Support Zigbee wireless remote control (optional configuration), all manual control functions can be realized within a range of 200 meters;
6. Support GPS automatic time calibration and positioning (need to dock with the platform) information, and can realize cable-free coordination based on GPS timing;
7. The signal controller is standardly equipped with 8-channel pedestrian button DI dry contact signal input, supporting one Pedestrian crossing mode at intersections, the upper computer software can configure one-time and two-time crossing functions, pedestrian crossing on-demand mode at intersections, and the maximum pedestrian button input can be expanded to 16;
8. The signal machine is equipped with an electronic lock as standard, which can monitor the switch status of the box door in real time through the RS485 port of the backup board
9. Power management function: A dedicated power metering chip is used to detect the current, voltage and power of the whole machine in real time, with threshold settings for overvoltage and undervoltage protection points and overvoltage and undervoltage warning functions; it has grid surge impact (lightning strikes or overvoltage impacts of the grid) counting and warning functions; external lightning arrester failure detection; and can record and upload power parameter status information to achieve high-precision monitoring of the signal machine status;
10. The signal controller has a multi-period signal control function, which can set different time priorities, including holidays, Saturdays and Sundays. ;
11. The signal controller has an induction control function, which can adjust the traffic signal output through the vehicle signal input by the detector. It is divided into semi-induction (only the branch road is equipped with a detector) and full induction (all main road branches are equipped with detectors).
12. The dual power board automatic patrol and manual power switching design significantly improves the working reliability of the whole machine, and can effectively prevent the risk of both power supplies being damaged by the power grid at the same time or the risk of the backup power supply not working for a long time causing the device to fail. When the working power board is damaged, the other one will automatically take over the work seamlessly and report the fault to ensure the normal operation of the signal machine. It supports hot plugging and repairing

13. The signal machine is equipped with an OLED display screen as standard, which can display the current time, the local IP address, voltage status, temperature and humidity status, the current control mode and the current running scheme number, and supports automatic restart and factory default settings with hardware buttons;
14. The signal controller has an adaptive control function, which can adjust and optimize the green signal ratio according to a certain algorithm;
15. The signal controller can be configured with follow-up learning/pulse triggering/real-time communication countdown working mode, and the communication countdown follows GA/T 508-2014 national standard communication protocol;
16. The signal controller is equipped with dual network ports as standard, which can be expanded to add a HMI screen, support network remote control, and support 4G or 5G communication module (external industrial router) expansion;
17. The signal machine is equipped with a 3-layer equipment tray as standard, which can hold network switches, protocol converters, red light signal detectors, intersection terminals and other equipment;
18. The signal controller has the function of traffic flow detection and storage, and is equipped with 32 vehicle detection signal inputs as standard, which can be expanded to 64 vehicle detection inputs at most;
19. Data storage can select the traffic flow statistics period, and the traffic flow data storage can be 2000; manual operation logs can be 2000, and data storage and printing can be supported via USB;

Item	Technical Parameter
Product Model	XHJ-CW-GA-FM5001
Enclosure Dimensions	L × W × H: 630 × 500 × 1520 mm
Operating Voltage / Frequency	AC: 85-264V /47Hz -63Hz
Signal Output board	4 Signal Output board(Option 6 Output)
Signal Output	48 channels a standard configuration (Supports up to 96 signal channels)
Operating System	32-bit processor and embedded Linux operating system
National Standards	Compliant with standard GB/T 25280-2016
Communication Interface	2 × RJ45, 3 × RS232, 1 × RS485 ,1x USB2.0 Interface
Number of Signal Phases	Supports up to 32 control phases, with a default capacity of 16 phases
Time Zone Synchronization	Integrated GPS time synchronization for automatic time calibration
Signal Control Mode	•Fixed Cycle: A preset time is given to each movement every cycle, Multiple •Full-Actuated: Real-time optimization of green light timing based on traffic data •Self-Adaptive: For congested intersection scenarios, calculate and optimize the cycle
Protocol	NTP, GPS
Pedestrian Crossing	Input of up to 8 pedestrian pushbuttons
Machine Standby Power Consumption	≤50W
Drive Current per Channel	3A
Surge Impulse Current per Channel	160A
Insulation Resistance	≥20MΩ
Operating Temperature	-40°C to +80°C
Relative Humidity	≤ 95% RH
Protection Grade	IP55
Packaging Specifications	Dimensions (L × W × H): 70 × 59 × 160 cm, Weight: 123 ± 0.5 kg