ClairLup-V4F

4-Channel Flow Detection Inductive Loop Detector

Overview

The ClairLup-V4F 4-channel flow detection loop detector utilizes a system architecture that combines a high-performance processor with an FPGA (Field-Programmable Gate Array). The core detection algorithm is implemented using pure hardware technology. The flexibility of ARM, combined with the powerful processing capabilities of FPGA, results in a system known for its quick response, high accuracy, strong resistance to interference, and flexible scalability.

The ClairLup-V4F supports comprehensive traffic flow data detection, including flow, occupancy, speed, inter-vehicle spacing, headway time, and the percentage of following vehicles. This system is widely applicable in traffic-related systems, such as traffic flow monitoring, traffic enforcement, and security checkpoints, on urban roads, highways, bridges, tunnels, and various other road segments.

Key Features

- Single device supports 4-channel loop inputs.
- Features an innovative polling + parallel detection mode, balancing efficiency and interference resistance.
- A fast response time of less than 3ms ensures real-time detection and measurement accuracy.
- Rapidly and intelligently updates the background frequency, continuously tracking changes in environmental parameters.
- Supports advanced intelligent anti-lock algorithms, ensuring long-term maintenance-free operation.
- Provides real-time display of passing vehicle waveforms, allowing for a detailed understanding of all vehicle passage details through the loops. This greatly facilitates on-site issue analysis and troubleshooting, making installation and environmental problems instantly apparent.
- Offers real-time loop fault detection and automatically restores normal operation after the fault is resolved.
- Supports loop open and short circuit detection, distinguishing loop fault types through fault indicator lights.
- Flexible I/O output capabilities, with I/O output functions customizable according to user requirements.
- The core detection unit utilizes pure hardware detection technology, ensuring stable and reliable operation.

Specification

Model	ClairLup-V4F
Processor	32-bit high-performance ARM
Coprocessor	Highly powerful computational and processing-capable FPGA
Loop Connection	4-channel loop inputs
Loop Protection	Supports TVS and transformer isolation
I/O Output	8-channel solid-state relay outputs, configurable output modes
LED	Bicolor indicator light, indicating loop and vehicle presence status
Detection Mode	Polling mode, in cascade mode supports parallel detection mode
Device Cascading	Supports multiple devices cascading, supports one master and multiple slave mode
Parameter Configuration	Flexibly configure various operational parameters of the vehicle detector through dip switches
Fundamental Frequency Refresh	Automatically update the reference frequency and track real-time environmental changes
Capture Rate	≥99.9%
Vehicle Separation	Vehicle separation accuracy is ≥99% under normal driving conditions
Fault Recovery	Real-time detection, automatic recovery after fault clearance
Auto-Tuning	Supports automatic tuning function
Response Time	3ms
Oscillation Frequency	Supports automatic adjustment
Baud Rate	9600, 38400, 57600, 115200
Loop Inductance	10-2000μH
Fault Detection	Supports loop open circuit and short circuit detection
Sensitivity Adjustment	8-level adjustable (dip switch configuration)
Real-Time Clock	Onboard high-precision RTC, supports system time synchronization
Communication Interface	1 RS485 serial port
Traffic Flow Data	Vehicles per lane, range: 0 to 65535 Lane occupancy, range: 0% to 100% Average vehicle speed, range: 0 to 255 km/h Average inter-vehicle gap, range: 0 to 65535 meters Average headway time, range: 0 to 65535 seconds Percentage of following vehicles, range: 0% to 100%
Cascade Interface	Front panel reserved for a multifunctional interface, supports cascading.
Power Supply	12/24VDC, supports reverse polarity protection
Power Consumption	2W
Operating Temperature	-40 to 70°C (-40 to 158°F)
Operating Humidity	10-95%, (non-condensing)
Dimension	W*D*H: 118*148*28(mm), 4.65*5.83*1.10(inches)
Weight	516g

Ordering Information

ClairLup-V4F: 4-channel flow detection version inductive loop detector.