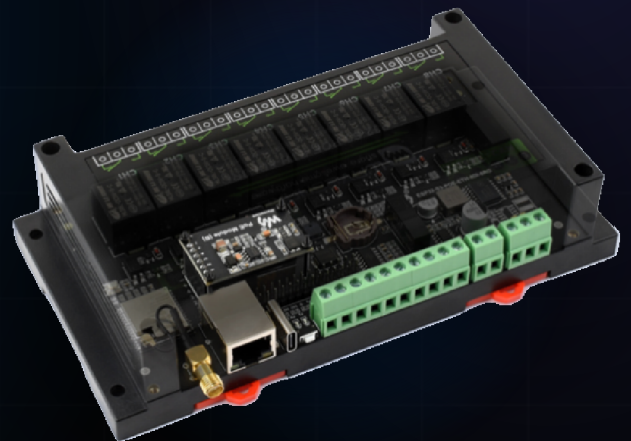


BLE READER · TRACKING POINT · MINING & TUNNELING

Tracking Point TP-1

A rugged BLE reader and industrial I/O controller in one. The Tracking Point anchors the 4MTracking network — scanning Personnel Tags and Asset Tags — while its isolated relay and digital I/O turn it into an **alarm module** and **traffic reader**. A dedicated firmware adds **traffic-light control**.



BLE READER

ESP32-S3

8× RELAY OUT

8× DIGITAL IN

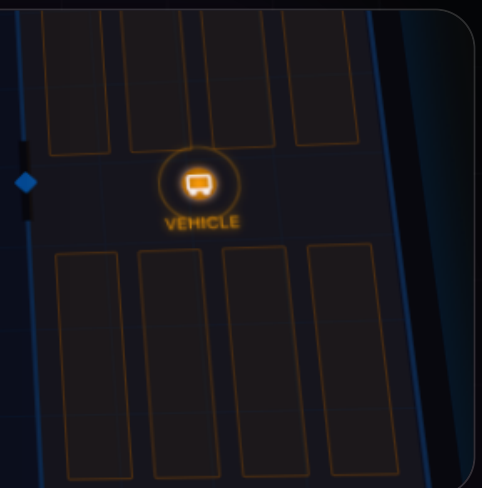
ETHERNET / POE

CAN · RS485

POWERED BY 4MTRACKING

The reader that anchors your network

Tracking Points scan BLE tags and feed real-time, last-known positions to the 4MTracking platform over Ethernet, Wi-Fi and MQTT — while driving alarms and traffic logic at the edge.



Technical Specifications

Hardware platform — model 4-M POE-ETH-8DI-8RO-C (ESP32-S3).

Specification	Value
PROCESSING	
Microcontroller	ESP32-S3, Xtensa® LX7 dual-core
Clock	Up to 240 MHz
WIRELESS (BLE READER)	
Bluetooth	Bluetooth 5.0 + BLE (tag scanning)
Wi-Fi	2.4 GHz 802.11 b/g/n
ETHERNET	
Controller	W5500, 10/100 Mbps (SPI)
PoE (optional)	IEEE 802.3af, built-in module
SERIAL / FIELDBUS	
CAN Bus	Isolated, auto direction control
RS485	Isolated (model dependent)
Protection	TVS surge · ESD · optional 120 Ω term.

Specification	Value
DIGITAL INPUTS	
Channels	8 × isolated
Input range	5 V – 36 V
Modes	Passive · Active NPN · Active PNP
Isolation	Bi-directional optocoupler
RELAY OUTPUTS	
Channels	8 × industrial relay
Contact rating	≤10 A @ 250 VAC · ≤10 A @ 30 VDC
Configuration	1 NO + 1 NC · DI linkage control
POWER · STORAGE · BUILD	
Power input	USB-C · 7–36 V DC (isolated) · PoE opt.
Timing / storage	RTC · MicroSD (TF) slot
Indicators	Programmable RGB LED · buzzer
Enclosure	DIN-rail ABS, compact

Functions & Firmware

One hardware platform — multiple roles for mining, tunneling and traffic.

STANDARD FIRMWARE — THREE ROLES COMBINED IN ONE DEVICE

• Tracking Point

BLE reader / fixed anchor: scans Personnel Tags, Asset Tags and other BLE tags and feeds real-time positions to the 4MTracking platform over Ethernet, Wi-Fi and MQTT.

• Alarm Module

8 relay outputs and 8 isolated inputs drive sirens, strobes and signals — triggered by SOS, zone breach or sensor events at the edge.

• Traffic Reader

Reads vehicle and access BLE tags for traffic monitoring and access control at gates, intersections and tunnel portals.

OPTIONAL FIRMWARE — SEPARATE IMAGE

• Traffic Light Control

A dedicated alternative firmware turns the relay outputs into a traffic-light controller for tunnel and mine traffic management — flashing as a separate firmware image onto the same hardware.

APPLICATIONS

• Underground Mining & Tunneling

BLE anchoring, worker alarms and tunnel traffic control on one device.

• Access & Traffic Management

Vehicle reading, gate control and signal lights at portals and intersections.