PRODUCT DATASHEET

HBQ TECHNOLOGY

eNODE32

Industrial Edge IoT Node

Edge processing. Flexible connectivity. No firmware coding required.

Edge Alert Engine • 16 logical channels • Ethernet/Wi-Fi • Web/CSV

A field node for water systems, industrial machinery, and environmental monitoring

7–30 VDC	Input	Output	Monitor	2 years
Input voltage	4-20mA | DI | Modbus | Sensor	3 Relays	App | Cloud	Warranty

01 INTRODUCTION

Edge processing, right where data is generated

eNODE32 combines signal acquisition, alert logic, and IP connectivity in a single field node.

System integration illustration - eNODE32-G in a pump/water station (AI-generated; configuration shown for illustration only).

01 Edge Alert Engine

Rules run directly on the node: sensor or DI → threshold/hysteresis → relay. Local response does not depend on the cloud.

02 One configuration for multiple signals

Map up to 16 logical channels from 4-20mA, DI, I2C, and Modbus depending on the SKU; load profiles quickly by CSV.

03 Browser-based commissioning

The local Web UI supports live monitoring, calibration, polling, alerts, and relay control.

04 Flexible uplink

Ethernet or Wi-Fi sends telemetry to MQTT. OTA supports firmware updates in the field.

Core value Reduce intermediary devices and keep critical control actions inside the cabinet, while MQTT remains an optional uplink.

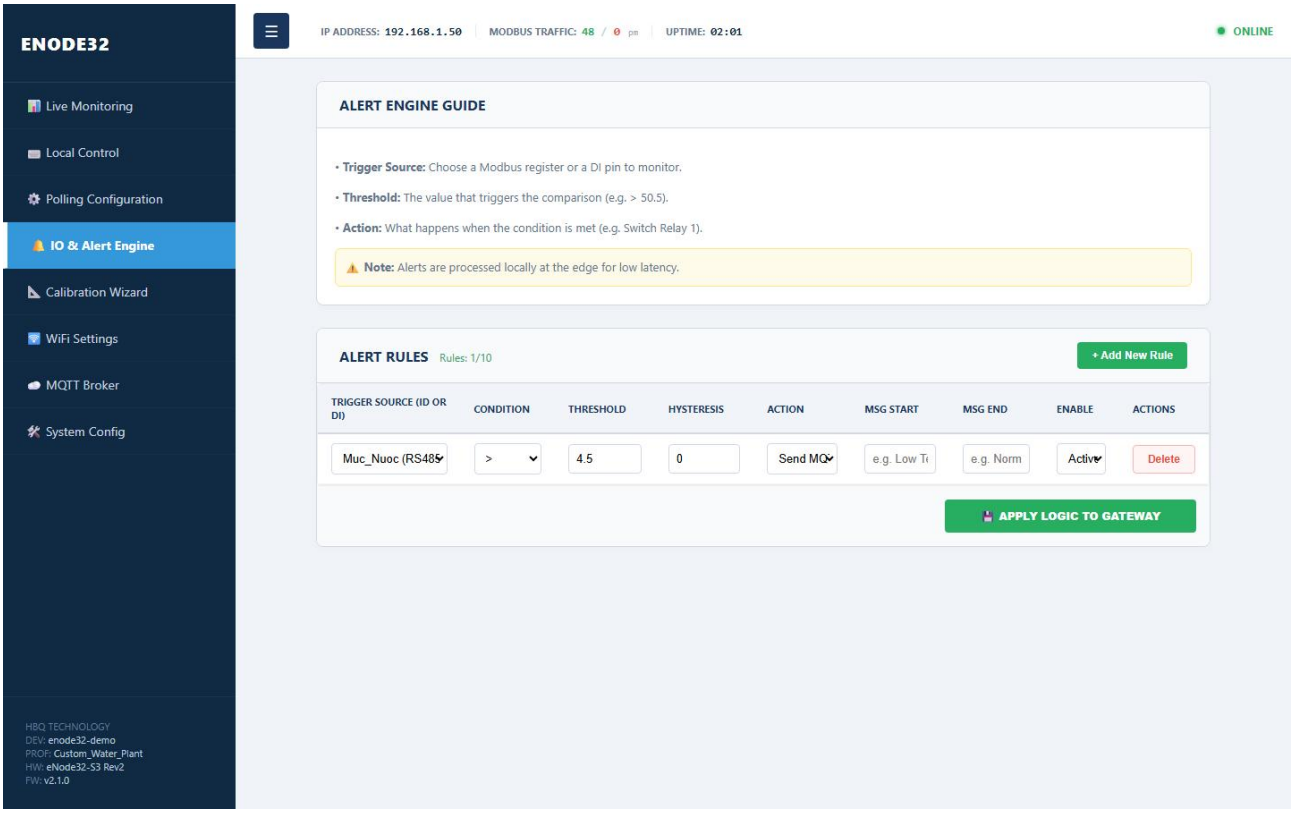
02 FEATURES

Capabilities designed for field operations

Designed for local response, fast configuration, and application-specific integration.

01 Edge Alert Engine Trigger from a sensor or DI, apply threshold and hysteresis conditions, then drive a relay action.	**02 16 logical channels** Mix physical interfaces in one profile; this does not mean 16 physical ports.
03 4-20mA analog input Two channels with 4/20mA scaling, LPF, and a three-point linear calibration wizard.	**04 Modbus RTU Master** eNODE32-G manages one slave, default 19200 8E1; reads FC03/04 and writes FC06/05.
05 DI and relay 1 opto-isolated DI up to 100 Hz; 2 relays rated 250 VAC / 2 A on G and A SKUs.	**06 Web, CSV, and OTA** Configure locally through the Web UI, import CSV V2.1 profiles, and update via OTA.

Alert Engine interface



Local Web UI: configure triggers, conditions, thresholds, hysteresis, and relay actions. The values shown are demo data.

03 VERSIONS & APPLICATIONS

Select the right SKU for the field interface

The front face uses the common eNODE32-S3 label; the SKU is identified on the rear label and in the ordering configuration.

SKU	Primary connection	Best-fit applications
eNODE32-G	9-pin	Default: 2 AI + DI + 2 relays + Modbus RTU D+/D−
eNODE32-A	7-pin	Analog + DI + relays, no RS485/remote I2C
eNODE32-TH	5-pin / SHT40	Temperature and humidity sensing point
eNODE32-CO2	5-pin / SCD40	CO_2, temperature, and humidity sensing point
eNODE32-AQ	5-pin / SPS30	Particulate/PM and air-quality sensing point

RS485 and remote I2C are available on different SKUs; no SKU uses both buses simultaneously.

Typical applications

- Pump stations, level, pressure, and flow
- Retrofit machinery with Modbus RTU
- Standalone analog stations
- Temperature/humidity monitoring
- CO_2 or particulate/PM sensing points

Illustration: one eNODE32-CO2 paired with one SCD40 sensor.

04 TECHNICAL SPECIFICATIONS

System & power

Item	Specification
Input voltage	7–30 VDC
External Sensor Power Supply	5 VDC or 12 VDC, factory-fixed ,Max 100 mA continuous

Field I/O

Item	Specification
Analog input	2× 4-20mA on eNODE32-G / eNODE32-A
Digital input	1× opto-isolated, ground-referenced, up to 100 Hz on G/A
Relay output	2× relays, 250 VAC / 2 A on G/A; use an external contactor for larger loads
RS485	1× on eNODE32-G; public marking D+ / D−
Remote I2C	5-pin: GND, SDA, 3.3 V, VSEN, SCL; depending on TH/CO2/AQ SKU
Power connector	3-pin: 1=VIN, 2=NC, 3=GND

Network & protocols

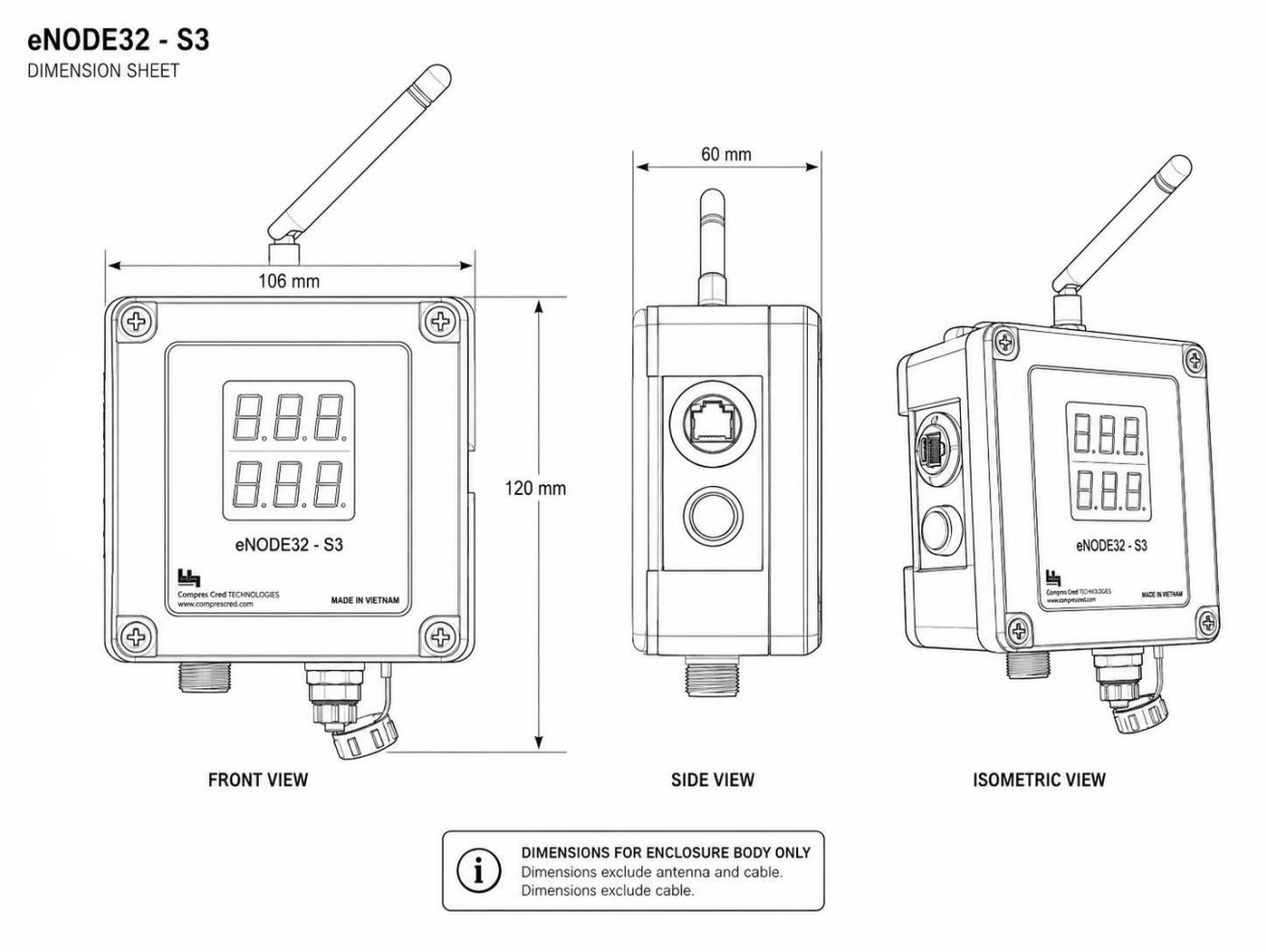
Item	Specification
Ethernet	1× RJ45 10/100
Wi-Fi	STA + SoftAP; (**default static IP address: 192.168.4.1**)
MQTT	Telemetry / attributes / LWT (**TLS is supported on request**)
Modbus RTU	Master; 1 slave; (**default 19200 8E1**)
Function codes	Read FC03/FC04; write single FC06/FC05

Software & operation

Configuration is performed through the Web UI and CSV; step-by-step instructions are maintained on the Wiki.

Item	Specification
Logical channels	16 logical channels, mixed across physical interfaces according to SKU
CSV mapping	V2.1: Iface 0=Modbus, 1=4-20mA, 2=I2C; plus DI
Alert Engine	Sensor or DI → threshold/hysteresis → relay, processed at the edge
Analog calibration	4/20mA scaling, LPF, and three-point linear calibration
Local UI	Web Control Panel: live monitoring, polling, alerts, and local control
OTA	Firmware updates supported

05 MECHANICAL



Enclosure dimensions: 106 × 120 × 60 mm, excluding antenna and cables.

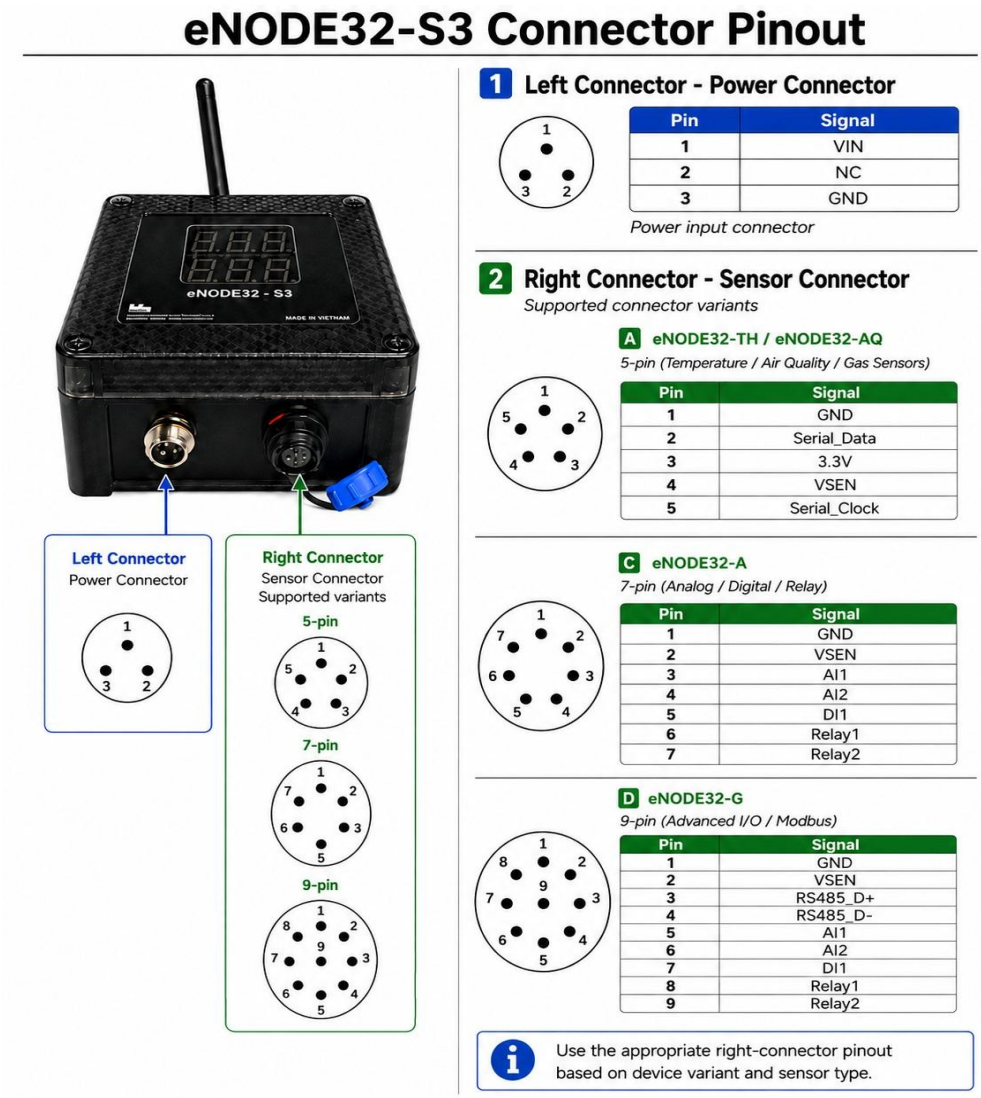
< 500 g	4 corners	106×120×60	IP65
Weight	Screw mounting	Enclosure, mm	Design target, factory-tested

Note: IP65 is a design target and has been factory-tested;

06 CONNECTORS

Pinout by version

Use the correct pinout for the SKU and check the rear label before wiring.



The pinout is approved by the Product Owner. Public RS485 labeling uses D+ / D−; do not use A/B notation.

Power	G / A	TH / CO2 / AQ
VIN 7–30 VDC · NC · GND	1 DI + 2 relays; G also includes D+/D−	5-pin remote I2C; no Modbus

07 MANUAL & ORDERING

The latest instructions are always available on the Wiki

This datasheet focuses on product capabilities; installation, configuration, and operation instructions are maintained online.

MANUAL ONLINE

eNODE32 Configuration Guide

Access Web UI, CSV, sensor profile, and commissioning instructions at:

wiki.hbqsolution.com/enode32.html

Ethernet/Wi-Fi and MQTT connections must comply with the project's network policy. MQTT TLS is not supported in this version.

WIKI ONLINE

Click the link to open the manual

Ordering information

Code	Configuration	VSEN
eNODE32-G	General: analog + DI + 2 relays + Modbus	5 V / 12 V
eNODE32-A	Analog + DI + 2 relays, no bus	5 V / 12 V
eNODE32-TH	SHT40 temperature/humidity	5 V
eNODE32-CO2	SCD40 CO_2	5 V
eNODE32-AQ	SPS30 particulate/PM	5 V

2 years	2 weeks	G / VSEN-12
Warranty	Lead time	Default quote configuration

HBQ Technology Co., Ltd.

contact@hbqsolution.com · +84 357 191 643 · web.hbqsolution.com