Quick Start Guide

BESAFE

Dual Channel Gas Detector for Battery Energy Storage

October 2025

M07092/EN/ISSUE 1.9

Important Safety Notice

*BESafe is designed for use in non-hazardous (safe) areas only. It is not certified for use in hazardous areas (e.g., Zone 0/1/2 or Class I, Div 1/2). Do **not** install in locations where explosive gas atmospheres may be present.*

⚠ Warning

This Quick Start Guide is intended for trained personnel as a supplementary reference only. It does **not replace the Full Product Manual**, which must be read and followed before installation, commissioning, or use of this gas detector. Incorrect installation or calibration may result in failure to detect hazardous gases, leading to severe injury or death.

Scan the QR code to view the full product manual.

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1. OVERVIEW

1 Transmitter cover
2 Display panel (keys/OLED screen/indicators)
3 Transmitter cover M4 screws
4 Channel 1 sensor module
5 Channel 1 sensor module indicator light
6 Channel 1 sensor module gas path
7 Channel 1 sensor module test gas inlet
8 Channel 2 sensor module
9 Transmitter base enclosure
10 Remote cable
11 M20 cable entry
12 Label

Figure 1 BESafe Overview

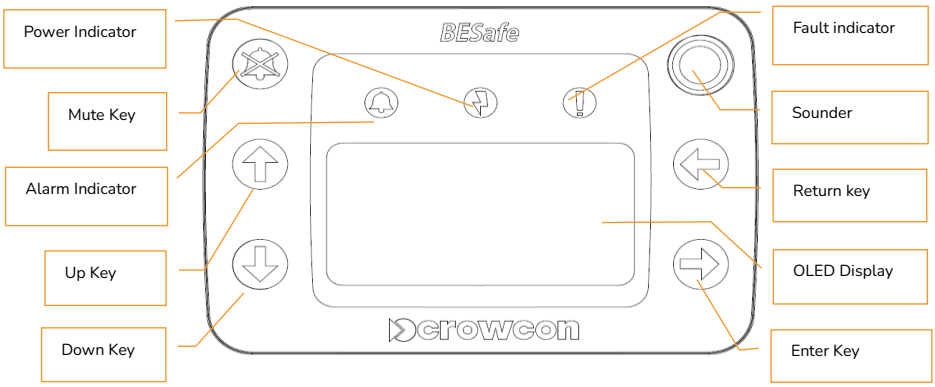

Figure 2 Display Panel

2. PRODUCT DIMENSIONS

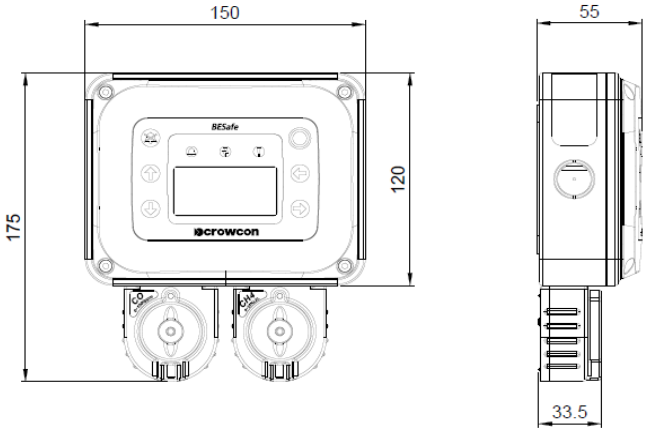

Figure 1 BESafe Dimensions (in mm)

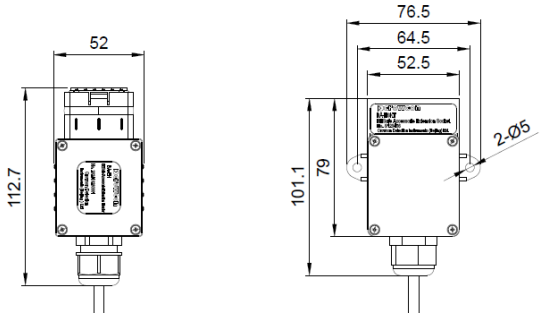

Figure 4 Remote Cable Adapter Dimensions (in mm)

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3. MOUNTING DIMENSIONS

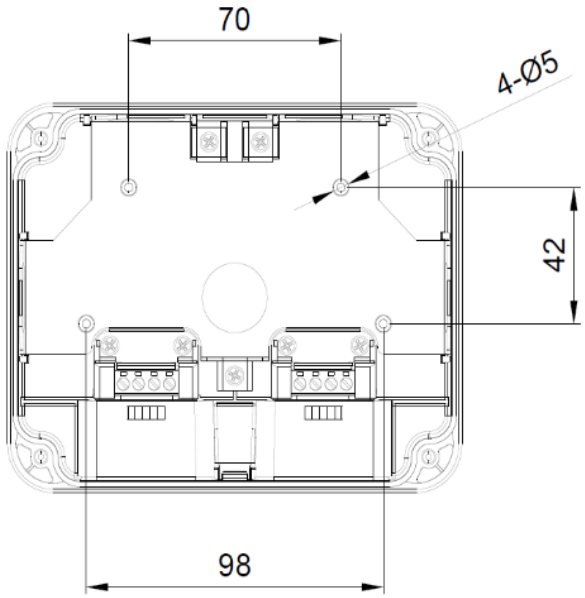

Figure 5 BESafe Mounting Dimensions (in mm)

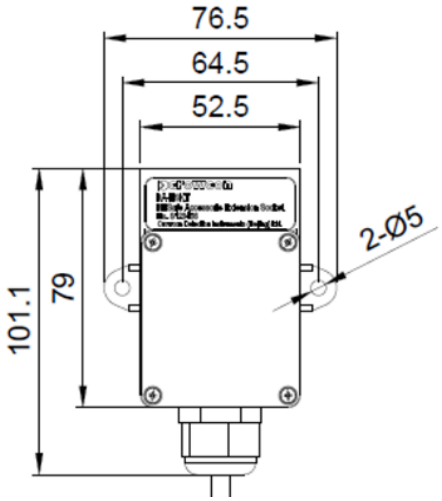

Figure 2 Cable Adapter Mounting Dimensions (in mm)

4. SPECIFICATIONS

Size	175 x 150 x 55 mm
Weight	Base: 550g Adapter: 169g Sensor Module: 65g each
Enclosure Material	Polycarbonate
Ingress Protection	IP65
Cable Entry	5x M20
Power	10 to 30V DC, 24V DC Nominal 150mA (3.6W @ 24V dc), 5W Max
Display	2.8” (128x64) OLED
Electrical Output	2 x 4-20mA RS-485 Modbus RTU
Relays Output	SPDT Relay (1A at 24 VDC) Alarm 1, Alarm 2, Fault
Audio Visual Output	Sounder: 85dB @ 3m LED: Power (Green), Fault (Yellow), Alarm (Red)
Operating Temperature	-20 to +50°C Note: Tested for operation over the range of -40 to +75 °C
Operating Humidity	0 to 99% RH (non-condensing)
Data Logging	3000 data logs
Approvals	EN 61010-1 EN 50270 UL 2075 (ETL)*

*Certification in progress and expected to be issued soon

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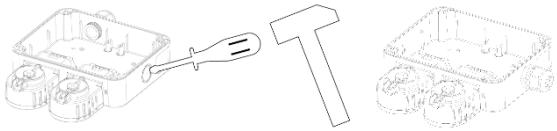
5. INSTALLATION

5.1 LOCATION GUIDELINES

Proper placement is key to accurate detection:

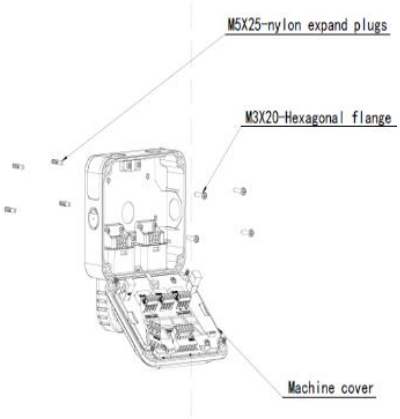
- Mount the sensor module high up to detect lighter-than-air gases like Hydrogen (H_2), Methane (CH_4), and Carbon Monoxide (CO).
- Mount the sensor module low for heavier gases.
- Consider temperature factors: hot gases rise, cold gases sink.
- Use a sunshade to avoid damage to the product from rain, or direct sunlight.
- Ensure access for maintenance and testing.
- Consult gas mapping experts for complex site installation.
- Officially record the agreement reached on sensor placement.

5.2 MOUNTING PROCEDURE



BESafe with plugged in Sensor Module:

1. Remove cable entry cover using screwdriver and hammer – follow groove carefully.
2. Fit the M20 waterproof cable gland into cable entry.
3. Drill four holes (refer to transmitter mounting dimensions) and insert wall plugs.
4. Mount the transmitter base to the wall using screws.
5. Route cables through gland and connect to terminals (refer to the wiring diagram).
6. Close and tighten transmitter cover with four hex screws.



BE**Safe with Remote Sensor Module:**

1. Mount transmitter (same as above)
2. For each remote sensor, drill two holes (refer to cable adapter mounting dimensions) and insert wall plugs.
3. Mount remote sensor to wall using screws.
4. Connect remote cable between transmitter and sensor. Plug the transmitter end to the sensor port and sensor end to the sensor module.
5. Remote cable lengths of 1-15m are supported.

5.3 CABLING REQUIREMENTS

- Use UL 2464-rated cable (e.g. 2464-18AWG/4C)
- Max length: 1 km
- Core size: 0.75–2 mm²
- Wires should be color-coded and clearly marked.

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5.4 WIRING

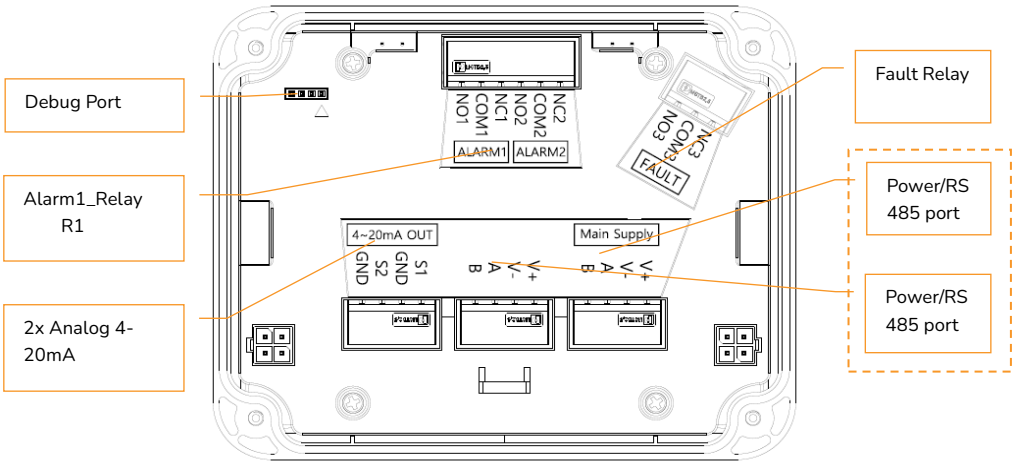

Figure 3 Terminal Ports

Function	Terminal	Description
Main Supply	V+	Positive terminal of power supply
	V-	Negative terminal of power supply
	A	485 communication A terminal
	B	485 communication B terminal
4-20mA Output	S1	Positive terminal of channel 1 output current
	GND	Negative terminal of channel 1 output current
	S2	Positive terminal of channel 2 output current
	GND	Negative terminal of channel 2 output current
Fault Relay(R3)	NO3	Normally open contact of the fault relay
	COM3	Common point of the fault relay
	NC3	Normally closed contact of the fault relay
Alarm 2 Relay (R2)	NO2	Normally open contact of the alarm 2 relay
	COM2	Common point of the alarm 2 relay
	NC2	Normally closed contact of the alarm 2 relay
Alarm 1 Relay (R1)	NO1	Normally open contact of the alarm 1 relay
	COM1	Common point of the alarm 1 relay
	NC1	Normally closed contact of the alarm 1 relay

Note: Use the two V+/V– terminals to either power multiple devices or connect them in an RS-485 daisy chain.

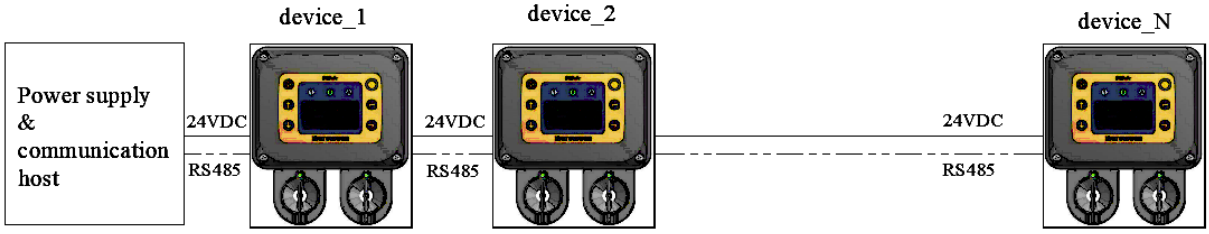

Figure 8 Power or RS-485 Daisy Chain

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The following wiring diagrams illustrate the many ways to wire BESafe:

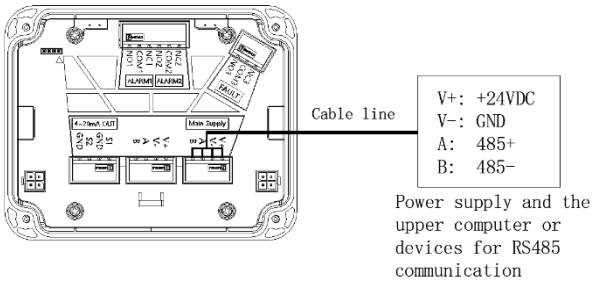

Figure 4 Power Supply and RS-485 Wiring for a Single unit

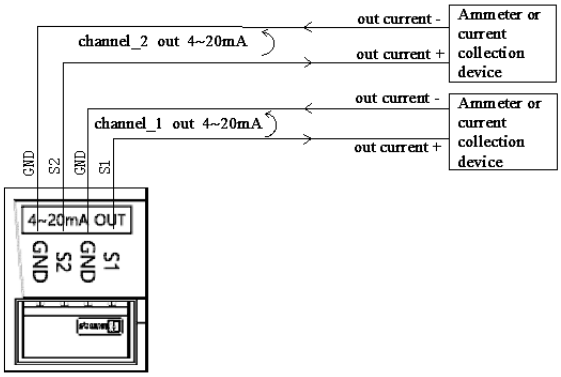

Figure 10 Wiring for Standalone Mode Operation

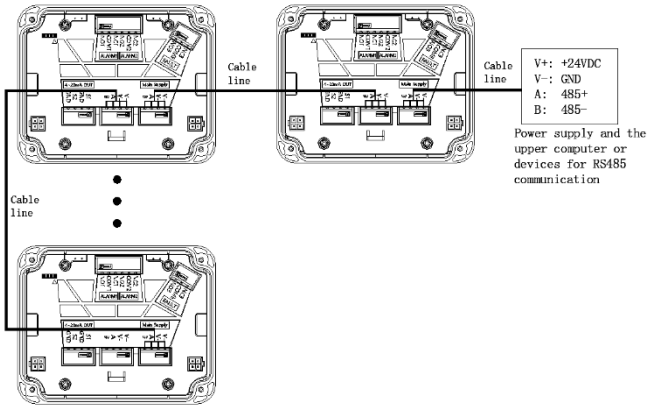

Figure 51 Power Supply and RS-485 Wiring for Multiple units in a Chain

Note: If the 4–20mA output is not connected to an external device (e.g. control panel), BESafe will register a fault. To avoid this, short the output loop terminals for any unused channel.

6. OPERATION

6.1 INITIAL POWER UP

- Ensure the sensor modules are plugged-in, and appropriate DC power supply is supplied.
- On power-up, LEDs flash, buzzer beeps once, and the screen shows the Crowcon logo, Channel configuration (gas type, sensor type, range) and System info (software/hardware versions, Modbus settings)
- A 5-minute warm-up countdown starts automatically. Hold ⇦ key to skip manually.
- After warm-up, the device enters monitoring mode.

6.2 MAIN MONITORING SCREEN

Once the start-up sequence is completed the main monitoring screen displays:

- Live gas concentration
- Alarm (!ALM1) or fault status (F)
- Sensor expiry warnings (e.g. “Exp 0.02d”)

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Note: In case of an alarm the sounder will beep, and LED will flash. Press the mute key to silence the alarm.

- **Once start-up is completed OLED display**: Shows real-time gas values, status, faults.
- Ensure the date and time (main menu) are set up correctly during start-up and after every time there is a power loss to make sure the time stamps in the logs are accurate.

6.3 NAVIGATION

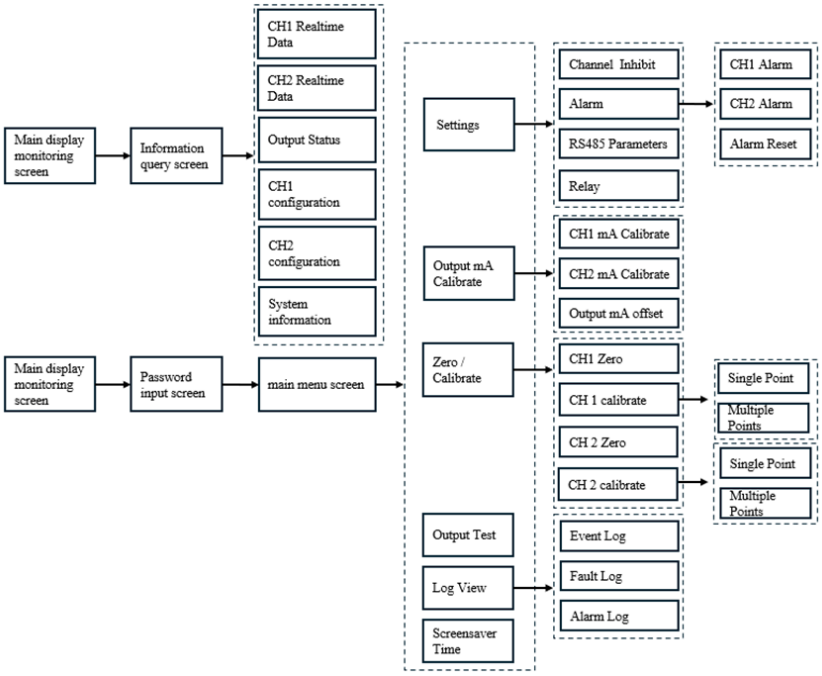

Figure 62 Menu Navigation Map

- Hold ⇨ key from the monitoring screen to enter main menu. Password to enter the main menu is 0002.
- Use ⇩/⇧ to navigate the menu.
- Press ⇨ to confirm selection.
- Press ⇦ to go back.
- Press to mute or reset alarm. Instead hold for a latched alarm. Password to reset latched alarm is 1111.
- When editing (cursor blinks), press ⇩ to scroll through different values, press ⇧ to move the cursor to the net digit, press ⇨ to confirm or hold to save, and press ⇦ to cancel and return the previous screen.

6.4 ALARMS & INDICATORS

The Transmitter has 3 LED indicators each indicating:

- Red: Alarm Mode (gas concentration exceeds threshold)
- Green: Device powered and operating
- Yellow: System or sensor fault detected

The sensor module has an LED indicator that changes in colour depending on the status:

- Green: Normal operation
- Purple: Warming up
- Red: Alarm (slow/fast blink = Level 1/2)
- Yellow: Fault
- Blue: In calibration or address change mode

Note: *Only the highest-priority condition is shown (Fault > Alarm > Normal).*

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6.5 OUTPUTS

6.5.1 4–20MA ANALOG:

Operating Condition	Current Output (mA)
Sensor Disconnected	1
Inhibit mode	2
Warm-up	3
Normal Gas Range	4-20
Overrange	>20 (max 21)

6.5.2 RELAY:

- Three configurable relays (R1: Alarm 1, R2: Alarm 2, R3: Fault)
- Each relay has NO/NC terminals and can be mapped to alarm or fault on either channel.
- Configurable via relay settings in the menu (Main Menu > Settings > Relay).

6.5.3 MODBUS RS-485:

- Protocol: Modbus RTU
- Address, baud rate, parity, and stop bit configurable via menu.
- Default settings are Address: 1, Baud: 115200, Parity: None, Stop bit: 1, Data bit: 8 (Not configurable)

6.6 CALIBRATION

6.6.1 ZERO CALIBRATION:

- Ensure sensor is in **clean air**.
- Menu > Calibration > Zero > Select Channel
- Start zero calibration.

6.6.2 SPAN CALIBRATION:

- Menu > Calibration > Span > Single/Multiple
- Enter target gas value and confirm.
- Apply test gas and wait for the reading to stabilise.
- Confirm and Save to complete span calibration.

7. MAINTENANCE

It is important to:

- Test regularly with gas to verify alarms, LEDs, and sounder are functioning as expected.
- Check for sensor expiry alerts on the display.
- Replace sensors before expiry or within 7 days of alert.
- Use only Crowcon-approved spare parts.
- Visually inspect for damage or loose wiring during routine checks

8. WARRANTY

This product is factory-tested and calibrated. It includes a 2-year warranty from the date of despatch, covering defects in materials or workmanship. To make a claim, visit www.crowcon.com/support/warranty. You will receive a warranty reference number to include with any returns.

Note: Warranty is void if the detector is tampered with, modified, or serviced using non-Crowcon parts or by unauthorised personnel. See the full product manual for complete warranty terms.

For warranty or technical support enquiries please contact us **+44 (0)1235 557711**, or email technicalsupport@crowcon.com or warranty@crowcon.com.

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