

BLUETOOTH STRAIN TRANSMITTER



Type: EFMA

- BLUETOOTH LOW ENERGY
- UP TO ± 48 mV/V
- RANGE 30 ... 90 M
- IP67 · 2 × AA CELLS



IP67



Bluetooth



mV/V

KEY DATA

Radio	Bluetooth Low Energy, 2.4 GHz
Input	strain gauge full bridge, 4 wire, up to ± 48 mV/V
Resolution	up to 16.75 bit noise free
Power	2 × AA in the enclosure
Enclosure	IP67, 79.5 × 62 × 34 mm

The same electronics are available as an OEM board without enclosure: EFMB.



OVERVIEW

Measurement straight onto the phone: the transmitter reads a four-wire strain bridge and sends the value by Bluetooth Low Energy to any iOS or Android device – no base station, no gateway, no PC. In broadcast mode several devices read the same transmitter at once; in paired mode one device talks to one transmitter. Dashboards, calibration and PIN protection come with the free app. Two AA cells in the IP67 enclosure power it for up to ten months at one reading per second.

MEASUREMENT

- Ranges ± 6 , ± 12 , ± 24 , ± 48 mV/V
- 16.75 bit noise free at 8 samples
- 4-wire bridge from $85\ \Omega$, 3 V excitation
- tension and compression

BLUETOOTH AND POWER

- broadcast or paired connection
- several transmitters on one device
- 2 x AA, 10 months at 14.25 bit
- IP67 enclosure, chip antenna



TECHNICAL DATA

INPUT AND MEASUREMENT

Excitation system	4 wire
Bridge excitation	3 V DC nominal = battery voltage
Bridge resistance	85 ... 5000 Ω · up to four 350 Ω bridges in parallel
Sensitivity ranges	$\pm 6 \cdot \pm 12 \cdot \pm 24 \cdot \pm 48$ mV/V
Measuring direction	bidirectional, tension and compression
Data rate	10 per second ... 1 per 10 seconds

PRECISION

Internal resolution	24 bit
Noise free at 1 · 2 · 4 · 8 samples	14.25 · 15.25 · 16.00 · 16.75 bit
Resolution reference	2.5 mV/V
Offset drift	± 5 ppm/°C
Gain drift	max. 4 ppm/°C
Non-linearity before linearisation	6 ppm of range

ENVIRONMENT AND MECHANICS

Operating temperature	-40 ... +85 °C
Storage temperature	-40 ... +85 °C
Humidity	max. 95 % RH, non-condensing
Protection	IP67 with cable diameter 3.0 ... 6.5 mm
Dimensions	79.5 × 62 × 34 mm · cable gland extends 25 mm
Mounting	2 holes $\varnothing$ 4.8 mm, 66.5 mm apart · lid with 4 screws
Antenna	integrated chip antenna

FUNCTIONS

Resolution	selectable in the app, 14.25 ... 16.75 bit; higher resolution shortens the battery life
Calculated values	displayed values from several transmitters, functions and constants
Integration	advert format and services documented, for custom iOS and Android apps
Identification	four-digit data tag, configurable

OUTPUTS AND INTERFACES

Radio	Bluetooth Low Energy 4.1, 2.4 GHz
Modes	broadcast advertising (to several receivers) · paired point-to-point
Range	30 ... 90 m line of sight, depending on the receiving device
Receivers	phone or tablet with iOS or Android; several transmitters on one device

DISPLAY AND OPERATION

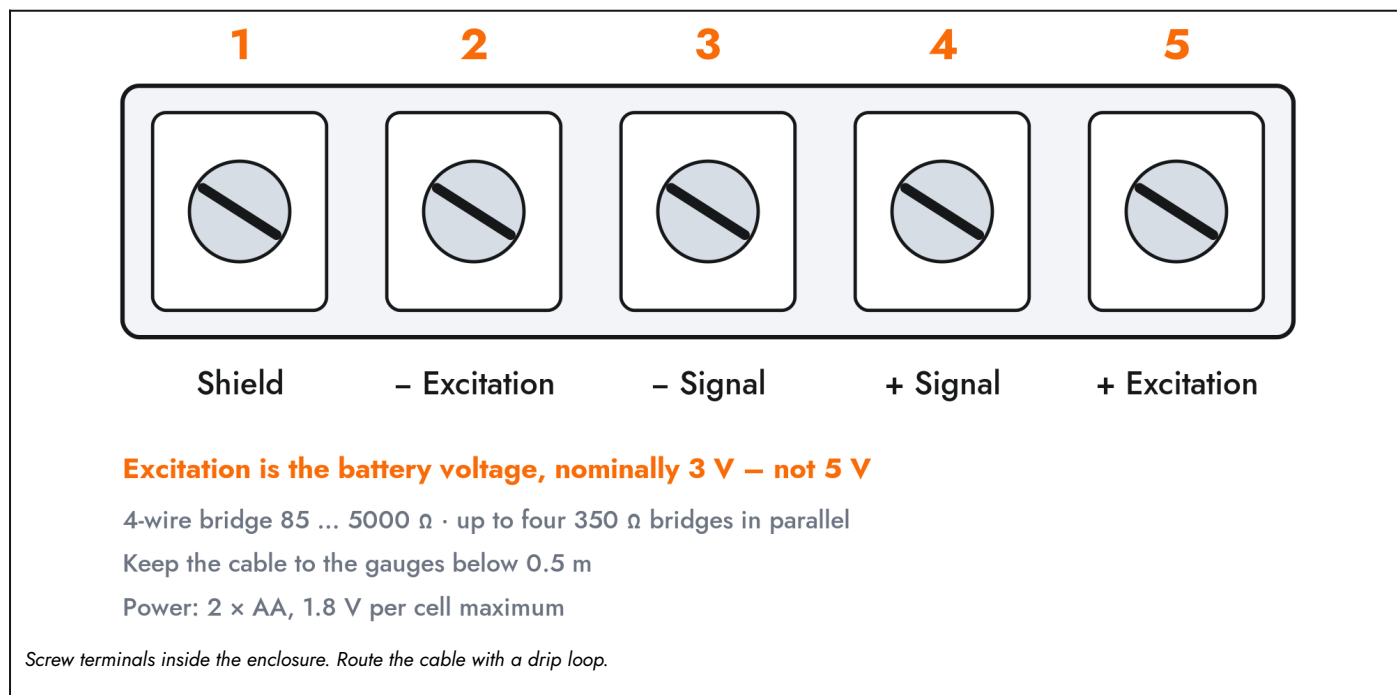
App	free of charge for iOS and Android · dashboards with digital display, gauge, tank and chart
Calibration	with known loads or via an mV/V table; reset to the factory calibration
Protection	configuration, view and calibration PIN

POWER SUPPLY

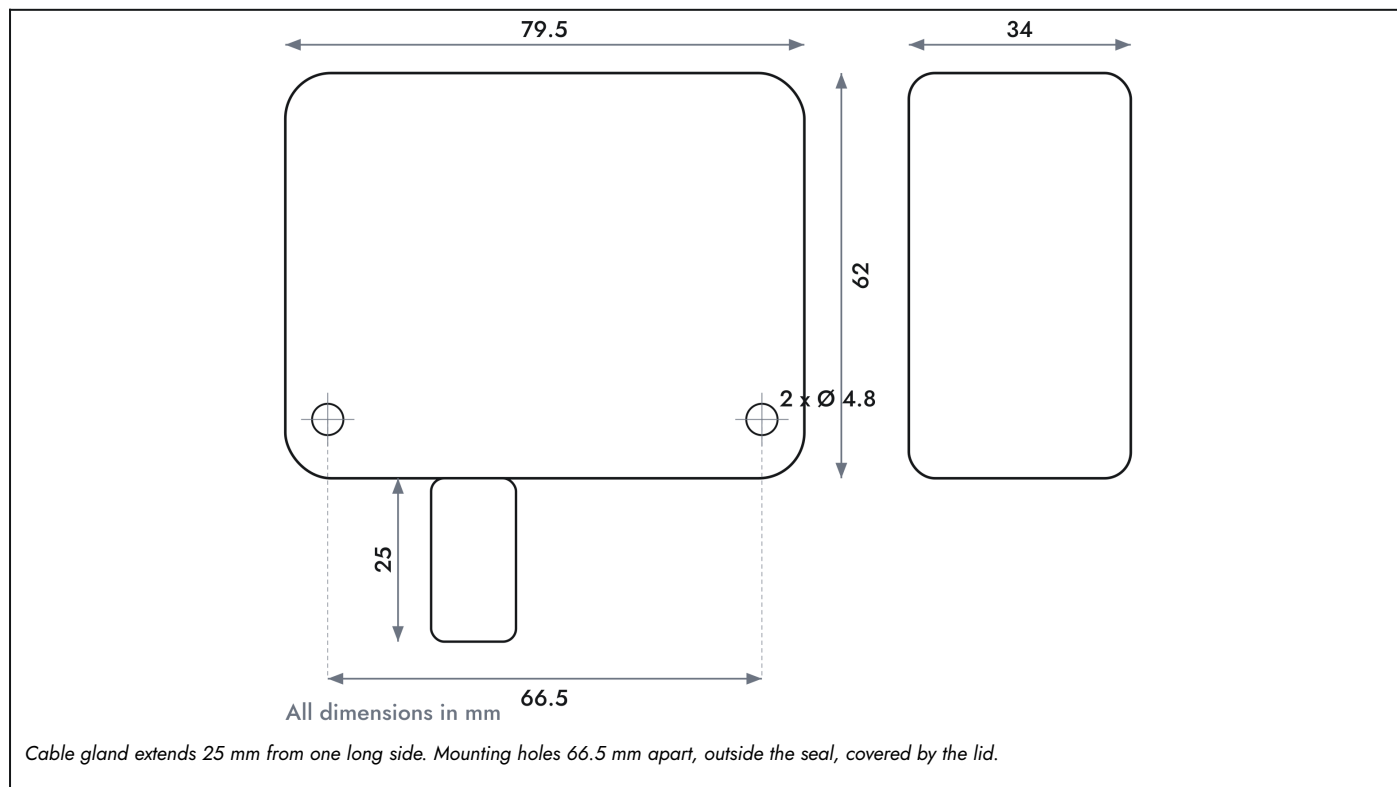
Batteries	2 × AA, max. 1.8 V per cell
Supply voltage	2.3 ... 3.6 V DC
Standby current	max. 10 μ A
Peak current (1 k Ω bridge)	max. 30 mA
Battery life at 1 reading/s	10 months (14.25 bit) · 3 months (16.75 bit)



ELECTRICAL CONNECTION



DIMENSIONS (mm)



COMPLIANCE AND CERTIFICATION



CE

Radio Equipment Directive 2014/53/EU, EMC Directive 2014/30/EU, RoHS Directive 2011/65/EU



RoHS

RoHS Directive 2011/65/EU



IP67

with cable diameter 3.0 ... 6.5 mm

Radio module: FCC ID S9NSPBTLEF (USA), IC 8976C-SPBTLEF (Canada), TELEC 006-000395 (Japan).

ACCESSORIES AND OPTIONS

OEM board

EFMB — the same electronics without enclosure

App

free of charge for iOS and Android

Manufacturer type: B24-SSBC-A.

