DATA SHEET

Front-End

FE01

Acquisition system for Temperature and Heat Flux

Each FE01 is a complete multi-channel acquisition system specifically designed for accurate measurements of surface temperatures and / or thermal fluxes. The device includes sensors for measurement, signal conditioning circuitry and circuitry to interface the radio modem.

A radio modem of RM01 family can be directly connected to the DB9 connector of FE01 and once connected both devices are powered by the internal battery. Just add a radio modem to a FE01 device and you get a complete measurement node able to communicate with DL01 or DL02 dataloggers.

All the configuration parameters, such as the sampling time Ts, are stored into the internal non-volatile memory. Every Ts seconds, FE01 converts the sensor signals into digital signals and sends them into a data packet to the datalogger.

Thanks to a low-power electronic circuitry, each measurement node is able to operate with very high autonomy; the battery life can vary from one day (Ts = 1 s) up to several months (Ts > 1 min). The battery, internal to the radio modem, is rechargeable and can be fully restored within a couple of hours.

Each FE01 is capable of handling from 1 to 4 independent measuring channels. There are various models of FE01 with different number and type of the sensors used.

The FE01 devices are pre-calibrated and interchangeable with each other. Since the datalogger is able to automatically detect the number of channels and the related physical quantities, it is not requested by the operator any further configuration.

OptiVelox

WWW.OPTIVELOX.COM

Ordering codes:

Codice	Sigla	Descrizione
8802300	FE01-1A	Front-End with 1 channel: - Temperature
8802310	FE01-1B	Front-End with 1 channel: - Heat Flux
8802320	FE01-1C	Front-End with 1 channel: - 4x Temperatures
8802330	FE01-2A	Front-End with 2 channels: - Temperature - Temperature
8802340	FE01-2B	Front-End with 2 channels: - Heat Flux - Heat Flux
8802350	FE01-2C	Front-End with 2 channels: - 4x Temperatures - 4x Temperatures
8802355	FE01-2D	Front-End with 2 channels: - Temperature (inside HF probe) - Heat Flux
8802360	FE01-3A	Front-End with 3 channels: - Temperature - Temperature - Heat Flux
8802365	FE01-3B	Front-End with 3 channels: - Temperature - Temperature (inside HF probe) - Heat Flux
8802366	FE01-3C	Front-End with 3 channels: - Temperature (removable) - Temperature (inside HF probe) - Heat Flux
8802370	FE01-4A	Front-End with 4 channels: - Temperature - Temperature - Heat Flux - Heat Flux

Notes:

- Each channel of a Front End is associated to a single physical quantity. For channels with more sensors, the measured quantity is equal to the average of the measurement of the individual sensors.

- The order code must be completed by the address of the device (1÷30), for example:

FE01-4A-02 (FE01 device with 4 channels and network address = 2)

Technical specifications

NUMBER OF CHANNELS
1...4

DATA RESOLUTION
16 bit

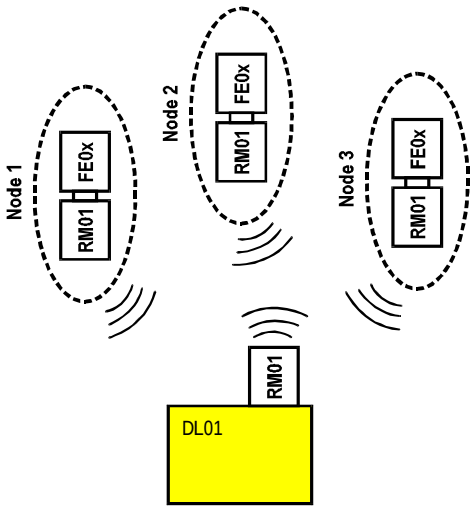
SAMPLING TIME
1...65535 s

POWER SUPPLY
3.3...5.1 Vdc
0.003...5 mA (depending on the sampling time)

TEMPERATURE RANGE
-20°...60°C working (RH max 85% at 25°C)
-30°...70°C storage

DIMENSIONS
40 mm x 40 mm x 20 mm (excluding connector and external probes)

WEIGHT
~45 g (excluding external probes)



Example of a wireless network composed by 3 measurement nodes

Models: -1A, -1C, -2A, -2C, -2D, -3A, -3B, -4A ⟶

TEMPERATURE

TYPE OF SENSOR
RTD Pt1000, Class 1/3 B (DIN/IEC751)

RESPONSE TIME
8 s

OPERATING RANGE
-50...125°C

RESOLUTION
0.01 °C

ACCURACY
± (0.10+0.017|t|) °C

MATCHING
± 0.05 °C (between two channels @T=20°C)

PROBE CABLE
High temperature twisted cable. L = 1.4 m

DIMENSIONS
Ø20 x 3 mm

WEIGHT
~1.5 g

Models: -1B, -2B, -2D, -3A, -3B, -4A ⟶

HEAT FLUX

RESPONSE TIME
4 min

OPERATING RANGE
-300÷300 W/m2

RESOLUTION
0.01 W/m2

ACCURACY
± 5% (@T=20°C)

TEMPERATURE RANGE
-20÷60°C with temperature dependence of 0.1%/°C (typ)

THERMAL RESISTANCE
< 0.006 m2K/W

DIMENSIONS
Ø80 x 5.5 mm

WEIGHT
~70 g