SOMAT

Data sheet

1-ELNTB-2

ELNTB/EXRL-NTB

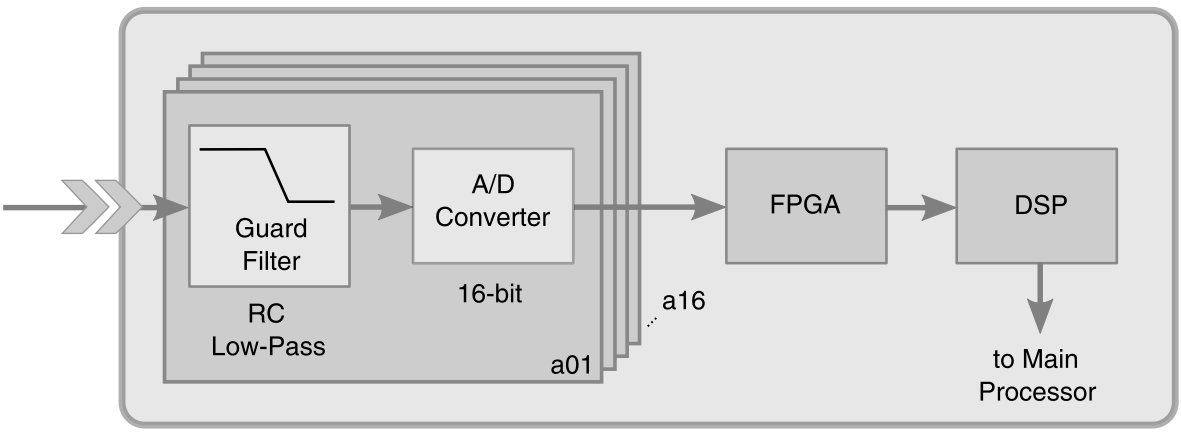
eDAQ-lite or eDAQXR-lite Non-Isolated Thermocouple Layer

1-EXRL-NTB-2

Special Features

- **16 channels of non-isolated thermocouple signal conditioning**
- **Independently configure channels for K-, J-, T- or E-type thermocouple**
- **Output sample rate up to 5 Hz**
- **Excellent channel-to-channel accuracy of 0.1 ° C with the cold junction box**

Block diagram



NOTE
A double-arrowhead symbol in the diagram represents male and female connectors only, not power polarity or input/output direction.

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Detailed Description

The Non-Isolated Thermocouple Layer measures temperatures on 16 channels of non-isolated thermocouple signal conditioning through a 37-pin high density D-sub connector. The layer is compatible with the four most common thermocouple calibration types: K, J, T and E. Each channel is independently software-selectable between these calibration types. Since the bank of 16 channels shares a common cold junction, the layer has excellent channel-to-channel accuracy. This is particularly useful when measuring thermal gradients. The layer requires a Somat Cold Junction Thermocouple Box (ECJTB) for thermocouple termination and an extension cable (1-CBL-0007-00-2).
The New-design ring (1-EXRL-NTB-2) and captive screws provide an improved seal with the eDAQXR-lite CPU. If legacy and New-design layer rings are in an eDAQXR-lite stack, the IP rating for the devices may be impacted. Always install standoffs when using legacy layers (1-ELNTB-2).

Ordering Options

Order No.	Description
1-ELNTB-2	Non-Isolated Thermocouple Layer Inputs: 16-channels, Software selectable J, K, T and E Thermocouple Calibrations. Requires: Cold Junction Thermocouple Box (not included). Includes: (1) 1-CBL-0007-00-2 cables and (4) standoffs.
1-EXRL-NTB-2	Non-Isolated Thermocouple Layer Inputs: 16-channels, Software selectable J, K, T and E Thermocouple Calibrations. Requires: Cold Junction Thermocouple Box (not included). Includes: (4) 1-SAC-TRAN-MP-2-2 Transducer Cables, (4) captive layer screws and (4) standoffs for legacy system compatibility. The New-design ring and captive screws provide an improved seal with the eDAQXR-lite CPU.

Cables and Accessories (Order Separately)

Order No.	Description	Order No.	Description
1-ECJTB-2	Cold Junction Thermocouple Box Compatible with J, K, T and E Calibrations	1-ECJTB-16-T-2	Cold Junction Thermocouple Box - Type T - 16
1-ECJTB-16-K-2	Cold Junction Thermocouple Box - Type K - 16	1-ECJTB-16-E-2	Cold Junction Thermocouple Box - Type E - 16
1-ECJTB-16-J-2	Cold Junction Thermocouple Box - Type J - 16	1-CBL-0007-00-2	Extension Cable - ELNTB Layer - 2 Meters Length

Specifications

Parameter	Unit	Value
Dimensions: width x length x height	mm	legacy 176 x 1117.6 x 17.6; new-design 152.25 x 107.5 x 18.6
Weight	kg	legacy 0.36; new-design 0.30
Temperature range	°C [°F]	-20 ... +65 [-4 ... +149]
Relative humidity range, non-condensing	%	0 ... 90
Overall accuracy(1	°C	0.5
Maximum thermo-equilibrium temperature change rate(1	° C/min	2
Channel-to-channel thermocouple accuracy(2	°C	0.1
Input temperature range	-	-
K-type thermocouple	°C [°F]	-100 ... +1350 [-148 ... +2462]
J-type thermocouple	°C [°F]	-100 ... +760 [-148 ... +1400]
T-type thermocouple	°C [°F]	-100 ... +400 [-148 ... +752]
E-type thermocouple	°C [°F]	-270 ... +1000 [-454 ... +1832]

Parameter	Unit	Value
Typical thermocouple response time constant 30 AWG 12 AWG 10 AWG	- seconds seconds seconds	- 0.3 6.0 9.0
Sample rate range	Hz	0.1 ... 5
Power consumption with thermocouples(3	W	0.66

(1 The overall accuracy specification is not valid if the maximum thermo-equilibrium temperature change rate is exceeded. Maximum accuracy is obtained when the ELNTB layer is calibrated at a steady-state operating temperature. Due to tolerance and temperature characteristics of the components, a change in temperature may cause an offset to the temperature measurement which may be eliminated by channel recalibration.

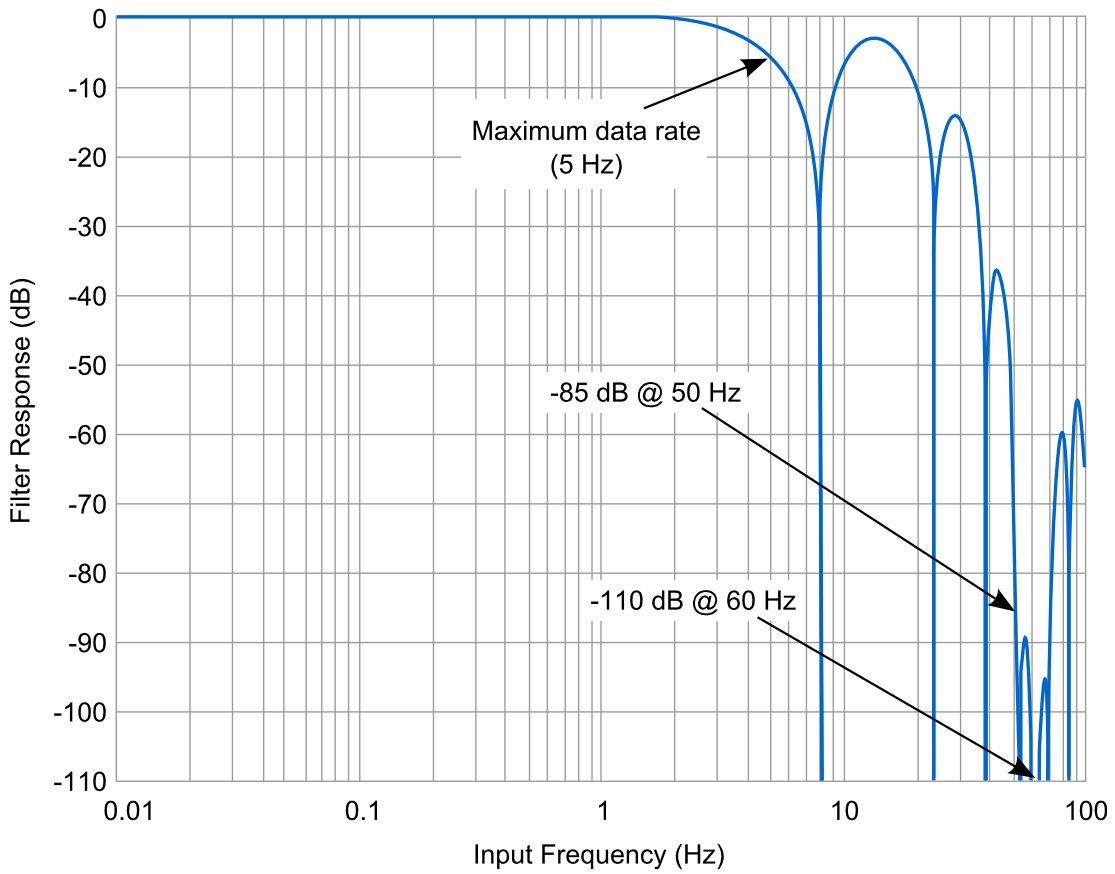
(2 Channel-to-channel thermocouple accuracy does not include inaccuracies in the thermocouples themselves.

(3 Power consumption measurements are taken with the stated load on all 16 channels and include the efficiency of the power supply.

Standards

Category	Standard	Description
Shock	MIL-STD-810F	Method 516.5, Section 2.2.2 Functional Shock - ground vehicle
Vibration	MIL-STD-202G	Method 204D, Test condition C (10 *g* swept sine tested from 5 Hz to 2000 Hz)
EMC requirements -	EN 61326-1:2006 EN 61326-1:2012	Before July 2018, CE conformity per EN 61326-1:2006 After June 2018, CE conformity per EN 61326-1:2012

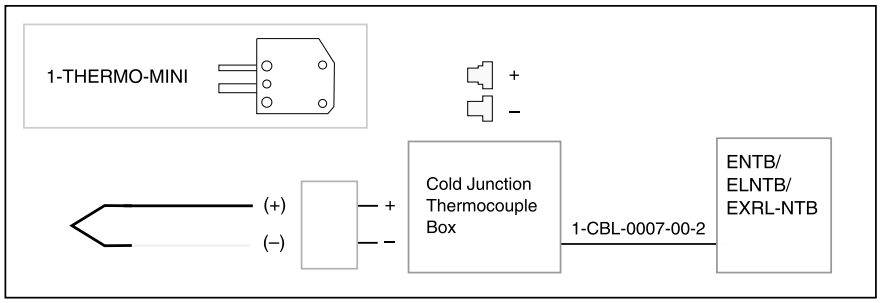
Input Filter Frequency Response



Wiring diagram

The ELNTB or EXRL-NTB requires an ECJTB cold junction thermocouple box for thermocouple termination.

Thermocouple



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