Run LED

OK/Error LED

+Input 1

-Input 1

+Input 2

-Input 2

+Uv

-Uv

Shield (FE)

Shield (FE)

Top view

Contact assembly

EL3751-0020 | 1-channel multi-functional input for analog measurement technology, 24 bit, 10 ksps, with calibration certificate

The EL3751-0020 analog input terminal is part of the new generation of analog EtherCAT measurement terminals. The nominal measuring range of the input channel can be comprehensively parameterised, both electrically and on the software side:

– voltage measurement: ±5 mV to ±30 V (incl. ±10 V), 0…10 V, 0…5 V
– current measurement: ±20 mA, 4…20 mA, 0…20 mA, NAMUR NE43
– resistance measurement: 0…5 kΩ
– electrical resistance R in 2-/3-/4-wire connection
– RTD measurement in 2-/3-/4-wire connection
– strain gauge/load cell: ¼ bridge (350 Ω + 120 Ω), ½ bridge (±16 mV/V) and full bridge (±32 mV/V) with integrated supply in 2-/3-/4-/5-/6-wire connection
– potentiometer: min. 1 kΩ

The measuring ranges generally reach accuracy class 0.01 %. For further information please refer to the documentation. Through the feature "ExtendedRange" the user has the full technical measuring range available, up to 107 % of the specified nominal measuring range, depending on the measuring range. This feature can be disabled, in order to ensure compatibility with the "LegacyRange" of the EL30xx/EL31xx series.

To suppress aliasing effects, the input channel features two configurable numeric software filters up to 39th order FIR/6th order IIR. The filters can be preselected or freely described, so that a band stop or a band pass can be realised. The measurement at the differential input channel is digitised with a resolution of 24 bit and 10 ksps and is transmitted to the higher-level automation device electrically isolated and optionally with oversampling. The data rate can be internally reduced, in which case the filters have to be adjusted accordingly. Non-linear characteristic sensor curves can be corrected flexibly through an integrated sampling points table. Simple mathematical operations are also possible.

The integrated supply and the switchable auxiliary resistors enable direct connection of a resistor bridge (strain gauge) or a load cell, a fixed ohmic resistor, a PTC or a potentiometer. The signal state of the EtherCAT Terminal is indicated by light emitting diodes. Each terminal has a unique ID number.

The calibration certificate for the respective serial number can be downloaded from www.beckhoff.com/certificates. The calibration certificate covers all measurement ranges.

Technical data	EL3751-0020
Number of inputs	1
Power supply	via the E-bus
Technology	differential input, 2-/3-/4-/5-/6-wire connection
Oversampling factor	n = 1…64
Distributed clocks	yes
Distributed clock precision	<< 1 µs
Internal resistance	> 500 kΩ (30 V);> 4 MΩ (others); 150 Ω (current)
Input filter limit frequency	3 kHz
Resolution	24 bit (incl. sign)
Conversion time	100 µs/10 ksps
Measuring error	typ. ±0.01 % relative to the respective full scale value @ 23 °C in some measuring ranges, see documentation
Electrical isolation	500 V (E-bus/signal voltage)
Current consumption power contacts	–
Current consumption E-bus	typ. 260 mA
Dielectric strength	max. 36 V
Configuration	no address or configuration setting
Special features	integr. power supply for strain gauge 0.5…5 V, parameterisable, ExtendedRange 107 %, free numeric filter, TrueRMS, integrator/differentiator, non-linear scaling, PeakHold, with calibration certificate
Weight	approx. 65 g
Operating/storage temperature	0…+55 °C/-25…+85 °C
Relative humidity	95 %, no condensation
Vibration/shock resistance	conforms to EN 60068-2-6/EN 60068-2-27
EMC immunity/emission	conforms to EN 61000-6-2/EN 61000-6-4
Protect. class/installation pos.	IP 20/variable
Approvals	CE, UL

Related products	
EL3751	1-channel analog input, high-precision, parameterisable, 24 bit, 10 kSps, differential, oversampling
ELM3702-0000	2-channel multi-functional input, 24 bit, 10 ksps, push-in, service plug, 6-pin
ELM3704-0000	4-channel multi-functional input, 24 bit, 10 ksps, push-in, service plug, 6-pin
ELM3704-0001	4-channel multi-functional input, 24 bit, 10 ksps, LEMO 1B, 8-pin

Services and further information	
ZS9001-EL3751-0020	recalibration service for EL3751-0020: check, compensation, recalibration
ZS9001	recalibration of I/O components with calibration certificate, includes check, compensation, recalibration, package price depending on terminal series
ELxxxx-0020	EtherCAT Terminals with calibration certificate