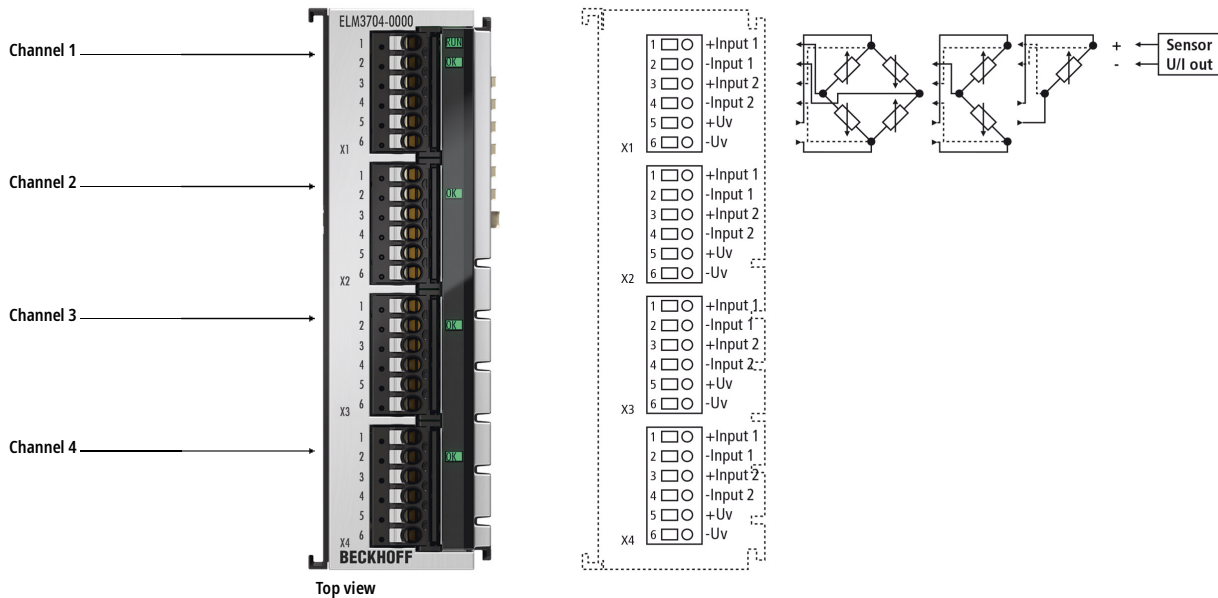
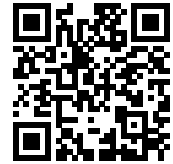


ELM3704-0000 | EtherCAT Terminal, 4-channel analog input, multi-function, 24 bit, 10 ksps



i **Product status:** Regular delivery

The EtherCAT Terminals from the ELM series were developed in order to enable the high-quality measurement of common electrical signals in the industrial environment. Flexibly usable measurement modules are especially useful in laboratory and testing technology environments. Therefore the ELM370x multi-function modules feature an input circuit that can be set to over 30 different types of electrical connection via EtherCAT: from voltages of ± 60 V to ± 20 mV, thus supporting thermocouples and IEPE, a current of ± 20 mA, a resistance measurement of 5 k Ω and thus also temperature RTDs (Pt100, etc.), measuring bridges and potentiometers, and all of this with a 2- to 6-wire connection, depending on the type. Thus, most electrical measuring tasks can be solved with just a single module. There is a choice of different connection types: The ELM3704-0001 with its high-quality LEMO connectors is mainly designed for laboratory use, where sensor configurations are changed on a daily basis, but a stable and reliable plug connection is nevertheless required. The 6-pin version with push-in (ELM3704-0000/ELM3702-0000) on the other hand is ideal for industrial use where a plug is unplugged less frequently for maintenance purposes and fast wiring is much more important.

The other ELM3x0x modules are price-optimized versions of the ELM370x universal module and thus ideal for use in machines with planned and foreseeable usage scenarios in which the measurement method of an analog input channel does not need to be changed at runtime. In return, they may have advanced features, like the ELM360x modules (IEPE evaluation), which offer a switchable feed.

Available as ELM3702-0020 (or ELM3704-0020) variant with factory calibration certificate, with ISO 17025/DAkkS certificate on request. Support by Beckhoff recalibration service [ZS9001](#) on request.

Extensive documentation is available from Beckhoff sales, support or measurement@beckhoff.com.

Product information

Technical data

System data	ELM370x
Strain gauge	quarter bridge (350 Ω + 120 Ω , $\pm 2/4/8/32$ mV/V), half bridge ($\pm 2/16$ mV/V), full bridge ($\pm 2/4/32$ mV/V), internal bridge completion and supply adjustable 0...5 V (2-/3-/4-/5-/6-wire connection)
Voltage measurement	$\pm 60/10/5/2.5/1.25$ V, $\pm 640/320/160/80/40/20$ mV, 0...5/10 V (2-wire connection)
Current measurement	± 20 mA, 0/4...20 mA, NAMUR NE43 (2-wire connection)
IEPE measurement	$\pm 2,5/5/10$ V, current feed 2 mA, acquisition of the modulated AC voltage, AC/DC coupling (parameterizable high-pass), (2-wire connection)
Potentiometer measurement	potentiometer ≥ 1 k Ω , supply integrated and adjustable 0...5 V (3-/5-wire connection)
Resistance measurement	0...50 Ω , 0...200 Ω , 0...500 Ω , 0...2 k Ω , 0...5 k Ω (2-/3-/4-wire connection)
Temperature measurement (RTD)	Pt100, Pt200, Pt500, Pt1000, Ni100, Ni120, Ni1000, diverse KT/KTY (types see documentation) (2-/3-/4-wire connection)
Temperature measurement (thermocouple)	type A1, A2, A3, B, C, D, E, G, J, K, L, N, P, R, S, T, U and others; internal/external cold junction measurement (2-wire connection)

Technical data	ELM3704-0000
Number of channels	4
Technology	multi-function
Signal type	differential
Connection technology	2-/3-/4-/5-/6-wire
Connection type	push-in, service plug 6-pin
Max. sampling rate	max. 100 μ s/10 ksps (per channel, simultaneously)
Oversampling factor	n = 1...100 selectable (max. 10 ksamples/s)
Internal resistance	> 500 k Ω (60 V); > 4 M Ω (others); 150 Ω (current)
Measuring error	typ. < ± 100 ppm/ ± 0.01 % in some measuring ranges, relative to the respective full scale value, see documentation
Temperature coefficient	up to typ. < 1 ppm/K in some measuring ranges, see documentation
Functional diagnostics	yes
Connection diagnostics	broken wire/short circuit
Distributed clocks	yes, accuracy $\ll 1$ μ s
Resolution	24 bit (incl. sign)
Electrical isolation channel/channel	no
Electrical isolation channel/bus	707 V DC (type test)
Electrical isolation channel/SGND	707 V DC (type test)
Current consumption power contacts	–
Current consumption E-bus	typ. 890 mA
Weight	approx. 350 g

Operating/storage temperature	0...+55 °C/-25...+85 °C
Thermal dissipation	typ. 3 W
Special features	ExtendedRange 107 %, free numeric filter, TrueRMS, integrator/differentiator, non-linear scaling, PeakHold
Approvals/markings	CE, UL

Housing data	ELM-30-xpin
Design form	metal housing with signal LEDs
Material	zinc die-cast
Dimensions (W x H x D)	30 mm x 100 mm x 95 mm
Installation	on 35 mm DIN rail, conforming to EN 60715 with lock
Side by side mounting by means of	double slot and key connection
Marking	-
Wiring	solid conductors (e): direct plug-in technique; fine-stranded conductors (f) and ferrule (a): spring actuation by screwdriver
Connection cross-section	s*: 0.2...1.5 mm ² , st*: 0.2...1.5 mm ² , f*: 0.25...0.75 mm ²
Connection cross-section AWG	s*: AWG 24...14, st*: AWG 24...14, f*: AWG 24...14
Stripping length	8...9 mm

*s: solid wire; st: stranded wire; f: with ferrule