Technical data sheet

Temperature/Analog/Limit Switch

Identification

Type	LCON TLSA FDT 1622521-01
Part No.	817023

Product version

Hardware revision	C
Software version	1.0
Datasheet version	08

Use/Application/Properties

Description	Dual-channel threshold switch for temperature signals (PT100, PT1000, thermal elements), resistors and potentiometer with additional analogue output for norm signals. The input and output configurations can be parameterized by software (FDT/DTM) independent of each other via a USB adapter.

Input

Measurement input	PT100, PT1000, 2/3/4-conductor technology Resistor / potentiometer, 2/3/4-wire Thermal elements: Type B, C, E, J, K, N, R, S, T Customer-specific via support points, polynomial
Measuring range	PT100, PT1000: -220 °C … +850 °C Resistor / potentiometer: 0–4,5 kΩ, 4,5–49 kΩ, 49–600 kΩ, automatic measuring range switching Thermal elements: -210 °C … +2310 °C (depending on the type)
Parameterisation	adjustable via software FDT/DTM
Accuracy	PT100, PT1000: ± (1 K + 0,1 K/K ambient) Resistor / potentiometer: ± (0,3 % + 100 ppm) from measuring range Thermal elements: ± (10 K + 0,25 K/K ambient)
Delay ON/OFF	adjustable
Step response (10–90%)	adjustable by means of filter stage
Zero /Span	freely adjustable

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Output

Type	**Analog output**
Output signal	0–10 V, 0–5 V, 1–5 V, 2–10 V, 0–20 mA, 4–20 mA, 2–10 mA
Parameterisation	adjustable via software FDT/DTM
Max. load impedance at I-output	500 Ω
Min. load impedance at U-output	2 kΩ
Limitation for exceeding measurement range	adjustable (default: max. output + 2,5 %)
Residual ripple	<2 mV_{eff} / <4 mA_{eff}
Type	**Threshold switch**
Contact type	2 × N-channel MOSFET not short-circuit proof
Max. switching voltage	DC 154 V
Max. switching current	DC 1.5 A
Status display output	2 × LED yellow
Operating mode	Limit value, timeframe, tendency+, tendency-, tendency+/-

General

Dimensions (w × h × d)	22.5 mm × 79.0 mm × 84.0 mm
Weight/unit	0.076 kg
Housing material	PC-ABS
Mounting	DIN rail mountable TS35 (EN 60715)
Installation postition	As desired

Electrical isolation

Potential groups	A: Supply (5, 6, 7, 8) B: Analog Input (1, 2, 3, 4) C: Analog Output (9, 10) D: SSR1 (13, 14) E: SSR2 (15, 16)
Capacitive coupling	approc. 2.4 nF between A and C
Isolating voltage	AC 2500 V between B and A, C, D, E (reinforced insulation) AC 1500 V between C and A, D, E (reinforced insulation) AC 1500 V between D and A, E (reinforced insulation) AC 1500 V between E and A (reinforced insulation)

Technical data

Rated voltage U_N	DC 24–110 V
Operation voltage range	16.8–137.5 V
Rated current	max. 60 mA @ DC 24 V / max. 15 mA @ DC 110 V
Status indication LED	LED green: ready for operation LED red: error (flash codes)

Connection type	Push-In single-wire 0.20 – 2.5 mm² AWG 20 – AWG 14 fine stranded 0.20 – 2.5 mm² AWG 20 – AWG 12 Stripping length: 8 mm Screwdriver: 3.5 × 0.6 mm
Electrical isolation	5-way separation Input <-> all others: 2,5 kV_{eff}, 50 Hz, 1 min. remaining partitions: 1,5 kV_{eff}, 50 Hz, 1 min.
Operation temperature range	-40 °C … +70 °C (+85 °C 10 min)
Storage temperature range	-40 °C … +85 °C

Environmental service conditions

Altitude	2000 m
Operating temperature class	OT4: -40 °C … +70 °C
Switch-on extended Operating temperature class	ST1: OTx + 15 °C
Temperature variation class	H1:no requirements
Shock/Vibration	Category 1, class B
Class of supply voltage interruption	S2: 10 ms
Supply change-over class	C1: 100 ms
Useful life class	L4: 20 years
Degree of pollution	PD2
Over voltage category	OV2
Socket and edge connector	K2: Sockets for ICs and/or edge connectors are not used
Protective coating class	PC2: lacquered on both sides
Degree of protection	IP20

Failure Rate Prediction (MTBF)

Standards	Electronic components – Reliability – Reference conditions for failure rates and stress models for conversion: EN/IEC 61709 Failure Rates of Components – Expected values: SN 29500
Failure rate at +45 °C	1386 fit
Failure rate at +45 °C	721408 h
	1 fit equals one failure per 10^9 component hours
	The indicated temperature is the mean component ambient temperature.
Comments	The results are valid under following conditions: Automotive environment or industrial areas without extreme dust levels and harmful substances Continuous operation 8760 h per year

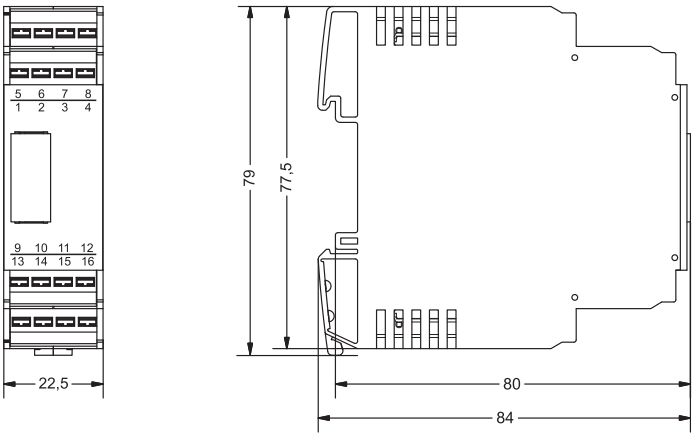
Standards/Certifications

Standards	**EN 50155:2017:** Railway applications – Rolling stock – Electronic equipment – only testing according to chapter 13.3 **EN 50155:2021:** Railway applications – Rolling stock – Electronic equipment – only testing according to chapter 13.3 **EN 50121-3-2:2016+A1:2019:** Railway applications – Electromagnetic compatibility – Part 3-2: Rolling stock – Apparatus *Minor deviations are possible during interference.* **EN 50124-1:2017:** Railway applications – Insulation coordination – Part 1: Basic requirements – Clearances and creepage distances for all electrical and electronic equipment **EN 61373:1999:** Railway applications – Rolling stock equipment – Shock and vibration tests **EN 61373:2010:** Railway applications – Rolling stock equipment – Shock and vibration tests **EN 61373/AC:2017:** Railway applications – Rolling stock equipment – Shock and vibration tests **Regulation No. EMC 06:** Technical Rules on Electromagnetic Compatibility - Verification of radio compatibility of rail vehicles with railroad radio services **EN 45545-2:2020:** Railway applications – Fire protection on railway vehicles – Part 2: Requirements for fire behaviour of materials and components

Notes and Comments

Note	For the parameterization you need the USB service cable, LCON ZB USB, part number 815900 and the software Lütze HART-DTM and PACTware. The current versions can be found in the download area of the respective product page on the LÜTZE website.

Dimensions



PIN assignment