Technical data sheet

Temperature Limit Switch

Identification

Type	LCON TLS FDT 806211-01
Part No.	817000

Product version

Hardware revision	1.2
Software version	1.8
Datasheet version	03

Use/Application/Properties

Description	The temperature limit switch LCON TLS is used to control temperature sensors (PT100, Thermocouples,...) and resistors. Via an USB adaptor the switching thresholds of the two solid state relay outputs can be parameterized by software (FDT/DTM).

Input

Measurement input	PT100, PT1000, potentiometer 1 kΩ–100 kΩ, Resistors 400 Ω–600 kΩ Thermal elements: Type B, C, E, J, K, N, R, S, T Customer-specific via support points, polynomial
Delay ON/OFF	TE: 6 ms–350 ms, PT: 5–350 ms (adjustable by means of filter stage 1–5, default: filter stage 4 = 80 ms)
Temperature range	PT, potentiometer, resistance: -220 … 850 °C depending on type Thermal elements: -210 … 2310 °C depending on type
Galvanic isolation I/O	2-way isolation
Step response (10–90%)	TE: 6 ms–350 ms, PT: 5–350 ms (adjustable by means of filter stage 1–5, default: filter stage 4 = 80 ms)
Input resistance	Thermocouples: 1 MΩ
Sensor current	PT, potentiometer, resistance: 0.2/0.6 mA depending on type
Circuit	PT - 2, 3, 4-wire, for 2-wire with offset correction, no external bridges necessary, autom. detection

Output

Contact type	K1, K2 semiconductor NO contact

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Max. switching voltage	DC 30 V
Max. switching current	DC 100 mA

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Rated voltage U_N	DC 24 V
Operation voltage range	16.8–30 V
Rated current	12 mA
Status indication LED	LED green, yellow (K1, K2), red (error)
Input/output protection	Overvoltage DC 30 V
Resolution	16-bit
Linearity error	±0.1 % FSR
Configuration	Software: FDT / DTM
Temperature compensation internally	Thermal elements: type ±1 K , max. ±2 K
Temperature error	<100 ppm/K
Data storage	Flash
Insulation voltage input / output	2.5 kV$_{eff}$
Connection type	Spring terminal: 0.14 – 2.5 mm² Stripping length: 10 mm Screwdriver: 3.5 × 0.6 mm
Operation temperature range	-40 °C … +70 °C
Storage temperature range	-40 °C … +85 °C

General

Dimensions (w × h × d)	6.2 mm × 90.0 mm × 115.5 mm
Weight/unit	0.05 kg
Housing material	PA
Mounting	DIN rail mountable TS35 (EN 60715)
Installation position	As desired
PU (units)	1

Environmental service conditions

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 -40 °C	137 fit
Failure rate at +40 °C	381 fit
Failure rate at +50 °C	564 fit
Failure rate at +70 °C	1249 fit
	1 fit equals one failure per 10^9 component hours
	The indicated temperature is the mean component ambient temperature.

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Comments	The results are valid under following conditions: Automotive environment or industrial areas without extreme dust levels and harmful substances.

Standards/Certifications

| Standards	**EN 50155:2007:** Railway applications – Rolling stock – Electronic equipment Withstand voltage test: routine test with 1 s test duration **EN 50121-3-2:2016:** Railway applications – Electromagnetic compatibility – Part 3-2: Rolling stock – Apparatus **EN 50124-1:2017:** Railway applications – Insulation coordination – Part 1: Basic requirements – Clearances and creepage distances for all electrical and electronic equipment **EN 61373:2010:** Railway applications – Rolling stock equipment – Shock and vibration tests **EN 45545-2:2013+A1:2015:** Railway applications – Fire protection on railway vehicles – Part 2: Requirements for fire behaviour of materials and components

Equipment/Spare parts

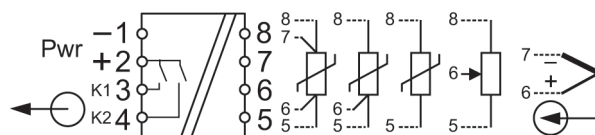| Accessories	Jumper comb 6 A (PU 10) 2-pole: 762802 (red), 762803 (white), 762804 (blue) 3-pole: 762805 (red), 762806 (white), 762807 (blue) 4-pole: 762812 (red), 762813 (white), 762814 (blue) 8-pole: 762822 (red), 762823 (white), 762824 (blue) 16-pole: 762832 (red), 762833 (white), 762834 (blue) Label holder 4×11mm white, part number 681313, PU100 Labels for laser print 4.23×11mm (sheet with 1056 labels), part number 681034, PU 1

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.
Comments	The calculated values apply under the following conditions: operation in vehicles or in industrial areas without extreme dust contamination and pollution.

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Dimensions
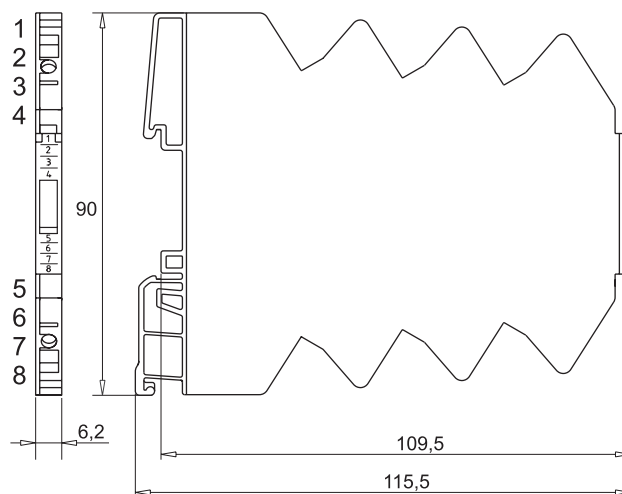
PIN assignment

PIN assignment

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