

# Temperature Limit Switch



<b>Identification</b>	Type Part-No.	LCON TLS FDT 806211-01 817000
<b>Product version</b>		
Datasheet version	01	
<b>Use/Application/Properties</b>		
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).	
<b>Input</b>		
Measurement input	PT100, PT1000, potentiometer 1 k $\Omega$ –100 k $\Omega$ , Resistors 400 $\Omega$ –600 k $\Omega$ Thermal elements: Type B, C, E, J, K, N, R, S, T Customer-specific via support points, polynomial	
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: 10 – 750 ms, PT: 5 – 750 ms (adjustable by means of filter stage 1–5, default: 200 ms – filter stage 4)	
Input resistance	Thermocouples: 1 M $\Omega$	
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	
<b>Output</b>		
Contact type	K1, K2 semiconductor NO contact	
Max. switching voltage	DC 30 V	
Max. switching current	DC 100 mA	
<b>General</b>		
Rated voltage $U_N$	DC 24 V	
Operation voltage range	16.8–30 V	

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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 <sub>eff</sub>
Connection type	Spring terminal: 0.14 – 2.5 mm <sup>2</sup> Stripping length: 10 mm Screwdriver: 3.5 × 0.6 mm
Protection class	IP20
Housing material	PA
Mounting	DIN rail mountable TS35 (EN 60715)
Installation position	As desired
Dimensions (w × h × d)	6.2 × 90.0 × 115.5 mm
Weight	0.05 kg/piece
Operation temperature range	-40 °C ... +70 °C
Storage temperature range	-40 °C ... +85 °C
PU	1 piece
Certifications	cULus Cl.1 Div2, Gr. A, B, C, D, T4

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## Standards

**EN 50155:2007-07:** Railway applications – Rolling stock – Electronic equipment  
**EN 50121-3-2:2016-12:** Railway applications – Electromagnetic compatibility – Part 3-2: Rolling stock – Apparatus  
**EN 50124-1:2017-03:** Railway applications – Insulation coordination – Part 1: Basic requirements – Clearances and creepage distances for all electrical and electronic equipment  
**EN 61373:2010-09:** 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  
**HN\_Isolationsprüfung:2012-12:** Company internal standard – Insulation test

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## 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 <sup>9</sup> 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

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## Miscellaneous

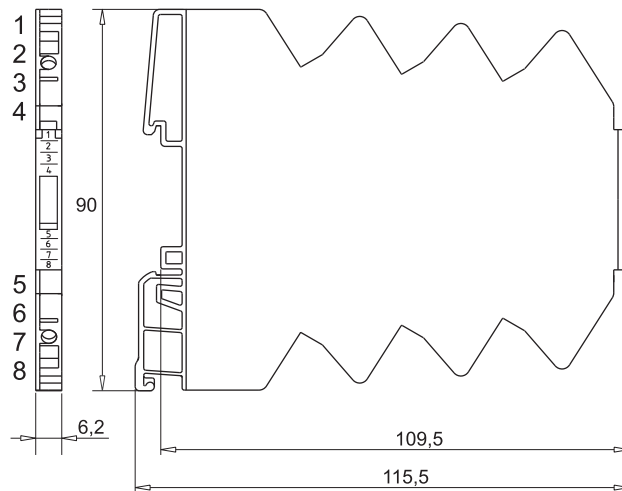
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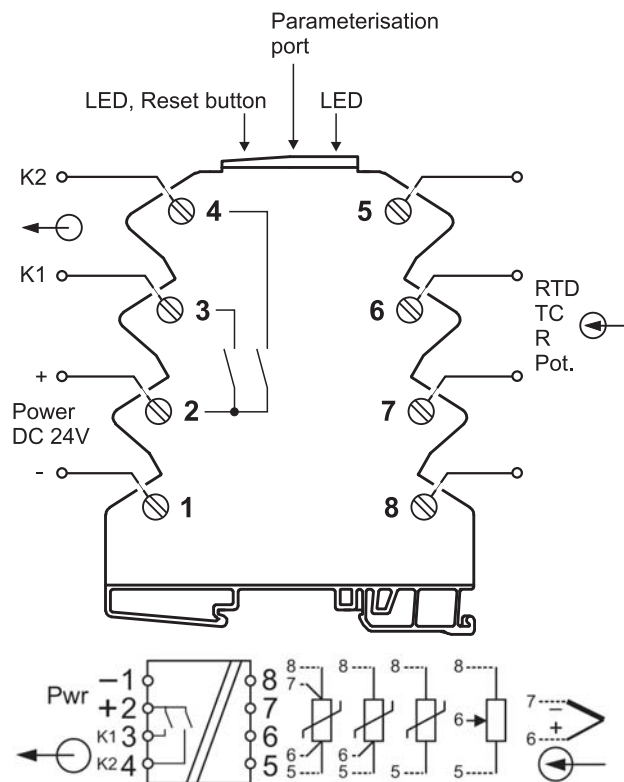
## Comments

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

## Dimensions



## PIN assignment



## 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)
- USB service cable, LCON ZB USB, part number 815900)
- 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
- Lütze HART-DTM version 1.00.1801 and PACTware version 5.0.4.12