

Product manual

Public Transport Switch PTS

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1 PRODUCT DESCRIPTION

Design and Ergonomics aspects play a mayor role in today's public transportation world. The so-called functionality is not the sole decision criteria. With this PTS switch we fulfill the technical standards and the requirements of the various designers. The series PTS is designed as a door pushbutton switch for usage in public transportation applications. The user-friendly PTS switches can be easily operated by elderly and handicapped people.



The switching status is visually indicated through an illumination ring. The illumination ring is lit with 8 green LED's, 4 additional red LED's give the passenger an actuation signal that the switch was pressed. An additional with regards to the LED colour is the illumination with 8 yellow LED's.

The fixation of these PTS switches is done with 3 screws, which are located behind the front bezel and invisible for the passengers. The standard front bezel comes in the RAL yellow with the code 1023.

An unique feature is the outstanding tactile feedback with an above average lifetime of 2 million cycles. An additional advantage in comparison to competitor products is the sideways illumination with integrated LED's. A long range identification of the switching stage is guaranteed. The standard versions come with 24 V and 110V supply voltage ratings.

You will find an overview of the standard versions on page 8 of this product manual. Custom specific solutions are always possible; the minimum order quantity is 500 pieces.

The PTS switch is compatible to all other on the market available competitor switches. Easy replacement of these competitor switches is therefore possible.

2 TECHNICAL DATA AND DIMENSIONAL DRAWINGS

2.1 Technical Data

<u>Electrical Data</u>		
Supply Voltage U_B	[V _{DC}]	24 / 110 (+25% / -30%)
Switching Voltage min.	[V _{DC}]	5
Switching Voltage max.	[V _{DC}]	137
Switching Current min. (ohmic load)	[mA _{DC}]	5
Switching Current max. (ohmic load)	[mA _{DC}]	250
Rated Breaking Capacity ($V_{max.} = 137 V, I_{max.} = 250 mA$)	[W]	17

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Electro Static Discharge (ESD)	[kV]	8 (air discharge) 6 (contact discharge)
Electro Static Discharge (VAC 1 min; DIN EN 50155)	[V _{AC}]	500
Surge Impulse DIN EN 50155	[W]	± 1.8 kV 1.2/50 µs
Burst Impulse DIN EN 50155	[W]	± 2 kV 5/50 µs
Insulation Resistance IEC 512-2	[kΩ]	> 100'000
Lifetime electrical	[mill.]	10

Mechanical Data		
Actuating Force	[N]	4 - 6 center 5 - 9 edge
Actuating Travel typ.	[mm]	1 center 1.6 edge
End Stop Strength (1 min. static)	[N]	250
Vibration Resistance DIN EN 61373 / DIN EN 50155- Breitbandrauschen	[h]	5 category 1 class B
Shock Resistance DIN 60068-2-27	[g/ms]	30 / 6
Shock Resistance DIN 61373	[g/ms]	3 vertical+horizontal / 5 lengthwise
Torque	[Nm]	0.8 – 1.0
Lifetime mechanical	[mill.]	10

Climatic Data		
Protection Class DIN EN 60529	[IP]	IP 67 Front side IP 65 Rear side
Operating Temperature	[°C]	-40 to +85
Storage Temperature	[°C]	-40 to +85

Ring Illumination		
Supply Voltage U _{LED}	[V _{DC}]	24 / 110

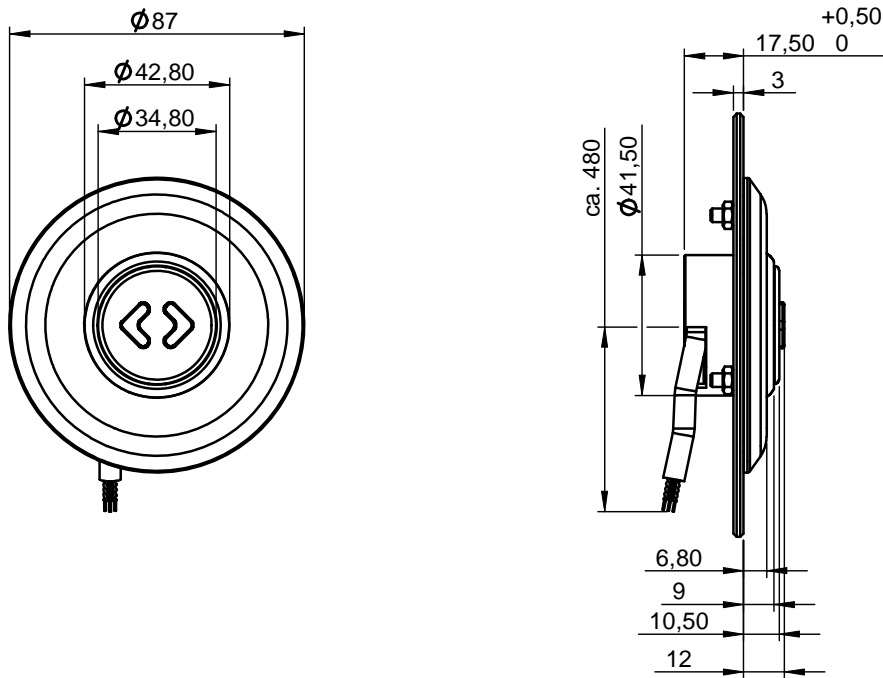
LED Data		
Operating Data LED red		typ. I _B = 4 mA (max. 6 mA) @ U _B
Operating Data LED green		typ. I _B = 4 mA (max. 6 mA) @ U _B
Operating Data LED yellow		typ. I _B = 6 mA (max. 8 mA) @ U _B

Material (Flammability Rating)		
Component		Substance
Illumination Housing (UL 94V0)		PC
Actuator (UL 94V0)		PC / ABS
Bezel (UL 94V0)		PBT
Symbols (UL 94V0)		PC / ABS
Cover of Actuator		Alu anodised

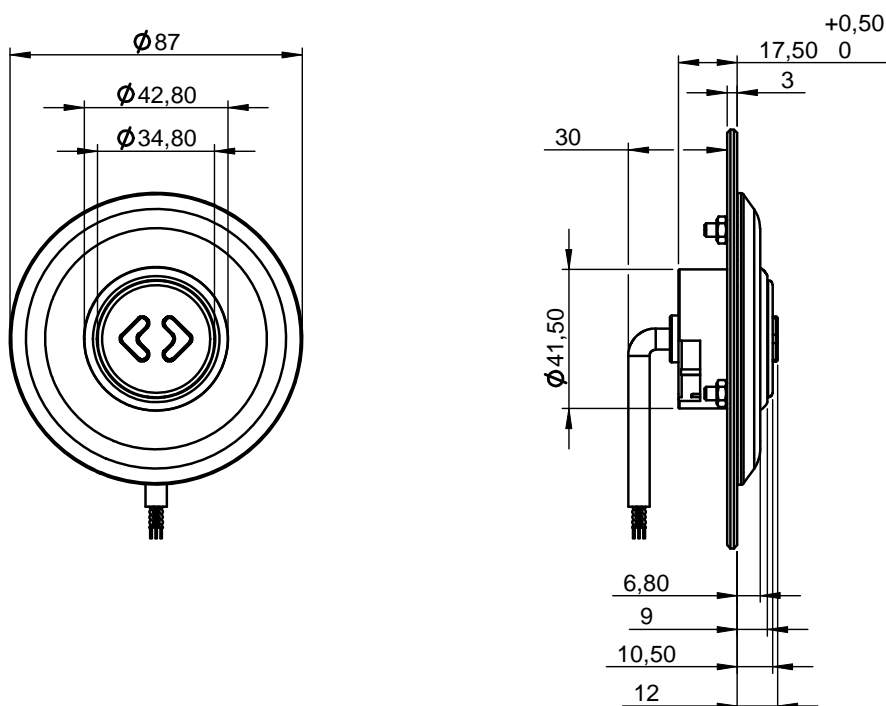
Other Data		
Fixing Screws		3*M4
Cable Length	[mm ²]	4*0,5
Weight	[g]	appr. 85

2.2 Dimensions

2.2.1 PTS version with angled cable



2.2.2 PTS version with middle cable

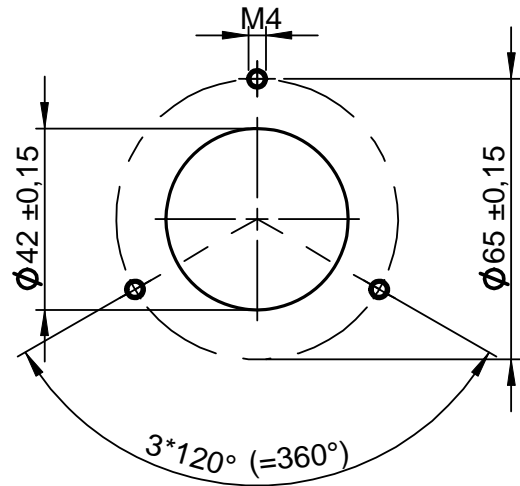
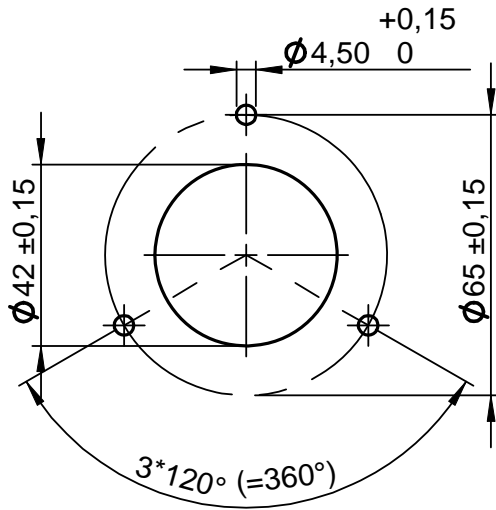


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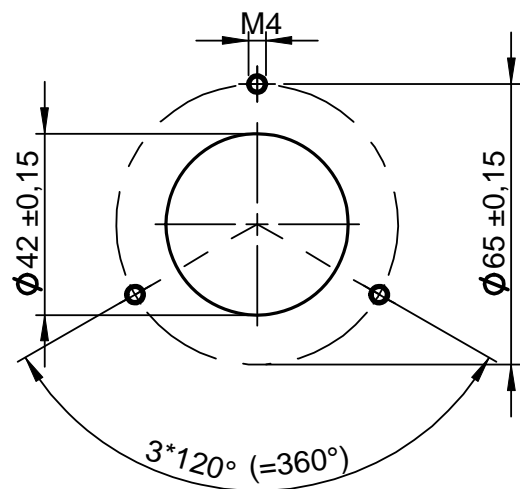
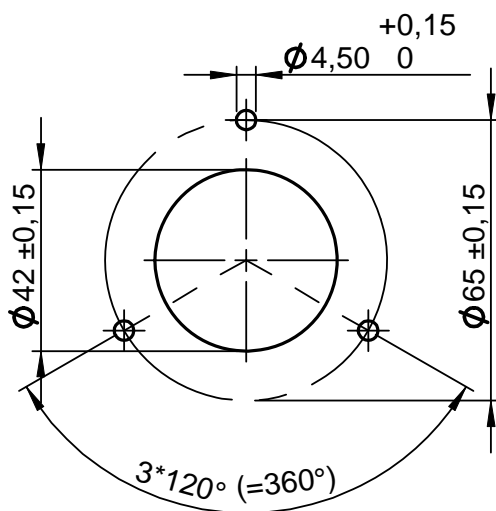
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2.3 Drilling diagram

2.3.1 PTS version with angled cable



2.3.2 PTS version with middle cable

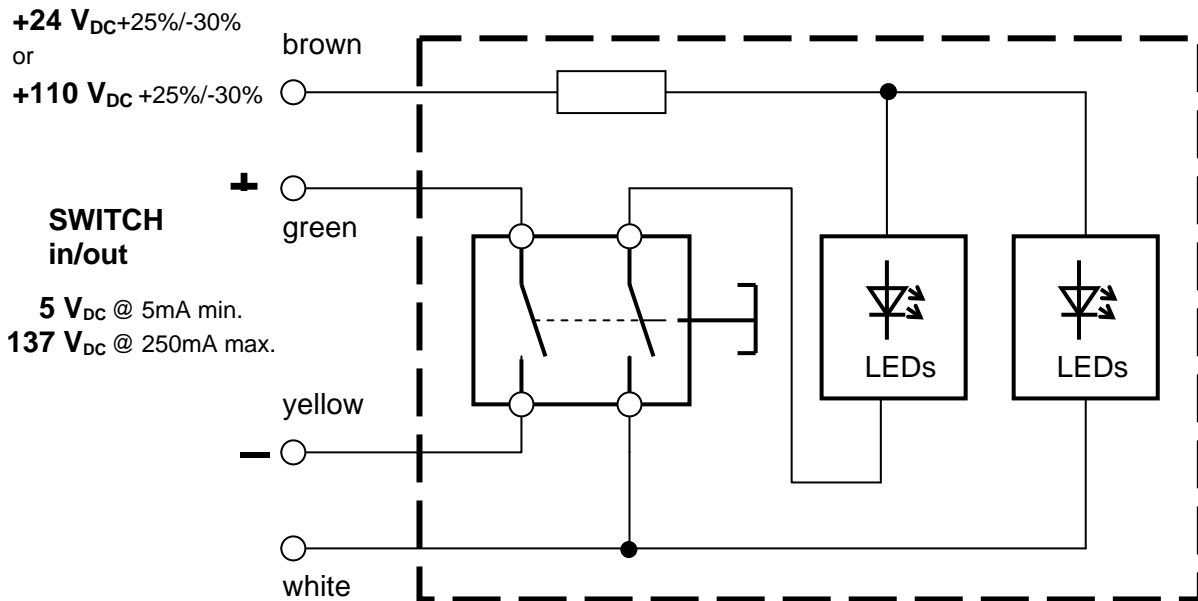


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2.4 Switching Diagram

LED supply



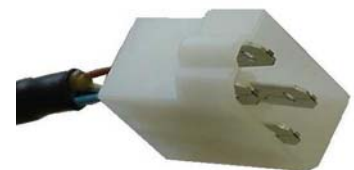
2.5 Accessories

Typ	Part number
Fixing screws with nuts (M4)	0098.9249
Disassembly Tool 	0859.9305

Available on request:

Faston 4 Way Tap Housing

(comparable with AMP no. 180901-0)



4 Male tabs on cable 6,3x0,8mm, wire size 0,5-1,0 mm²

(comparable with AMP no. 160859-2 with locking lance)

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3 PART NUMBERS

3.1 Part numbers PTS

Actuator overlay nature; bezel round, yellow; angled cable	symbol	24 V	110 V
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LED yellow			
	◄►	1241.7416.11801	1241.7417.11801
	►◄	1241.7416.11802	1241.7417.11802

LED red/green			
	◄►	1241.7413.11801	1241.7414.11801
	►◄	1241.7413.11802	1241.7414.11802

Please note:

All these numbers are standard articles and come without braille and legend lettering on the bezel.

The fixing screws and the disassembly tool are included.

The tab housing must be ordered separately.

3.2 Bezel variants

Bezel colour	yellow, similar to RAL 1023
Bezel form	round
Colours of actuator overlays	red, green and nature
Symbol for actuator:	◄► and ►◄

Custom specific versions on request, minimum order quantity 500 pieces.

4 PACKAGING

The switches are packed 5 pieces per box. The switches are individually, together with the bezel, fixing screws and disassembly tool, inserted in an air cushion bag.

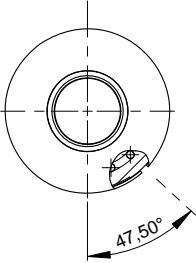
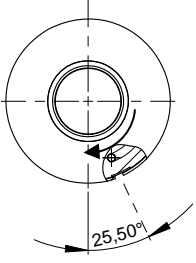


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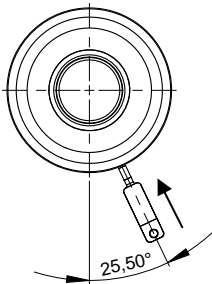
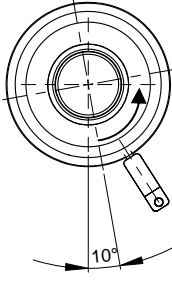
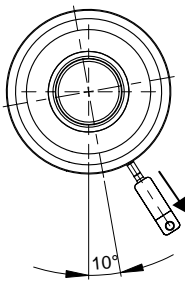
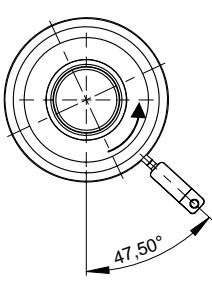
5 ASSEMBLY / DISASSEMBLY

Below the assembly and disassembly of the bezel is described:

Assembly:

	
<p>Insert bezel in open area</p>	<p>Turn the bezel in clockwise direction until it snaps</p>

Disassembly:

			
<p>Insert disassembly tool</p>	<p>Turn the bezel with disassembly tool 15° counterclockwise</p>	<p>Pull disassembly tool</p>	<p>Turn the bezel with disassembly tool again for 15° counterclockwise and remove the bezel</p>

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6 QUALIFICATION TESTS

Function Test	DIN EN 61373
Mechanical Shock	DIN EN 60068-2-27
Voltage resistance with climatic test	DIN EN 60068-2-30
Climatic Test	DIN EN 50155
EMC Test Interference Output on lines	DIN EN 55011/55022
EMC Test Interference Output on – Housing	DIN EN 55011/55022
EMC Test Interference Resistance – High Frequency fields on housing	DIN EN 61000-4-3
EMC Test Interference on lines	DIN EN 61000-4-6
EMC Test Interference Resistance Burst Impulse	DIN EN 61000-4-3
EMC Test Interference Resistance- Electro Static Discharge	EN 61000-4-2
EMC Test Interference Resistance Surge Impulse	EN 50121-3-2 (Rail-Norm)
Insulation Resistance	DIN VDE 0100, Teil 600
IP degree of protection	IEC/DINEN/ 60529
Patent	DE 199 53 629.5

7 RAMS

Fit *	< 3,7 failures 1Mio h
MTTF *	> 250 000 h
FMECA	MIL-STD 1629A IEC 60812

* on the basis of MIL-HDBK-217F

8 APPROVALS



9 ROHS COMPLIANT



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