

Product manual

Public Transport Switch PTS

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1 PRODUCT DESCRIPTION

- for use in public transportation applications
- Illumination - Viewing angle 180 degree
- low mounting depth with angled cable version
- high lifetime with 10 mill. actuations
- excellent tactile feeling
- variable color design of the bezel and the cover plate, customer specific laser lettering
- Assembly by screws with nuts
- Connection: 4-conductor cable, optional male tabs on housing
- Illumination housing material: PC, actuator material: PC / ABS, bezel material: PBT, cover plate material: aluminum

2 TECHNICAL DATA AND DIMENSIONAL DRAWINGS

2.1 Technical Data

<u>Electrical Data</u>		<u>NO / NC</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 ($V_{max.} = 137\text{ V}$, $I_{max.} = 250\text{ mA}$)	[W]	17
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

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<u>Mechanical Data</u>		
Actuating Force	[N]	8 ± 4 center 10 ± 5 edge
Actuating Travel typ.	[mm]	0,8 ± 0,5 center 1,0 ± 0,5 edge
End Stop Strength (1 min. static)	[N]	250
Vibration Resistance DIN EN 61373 / DIN EN 50155 broad band noise	[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

<u>Climatic Data</u>		
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

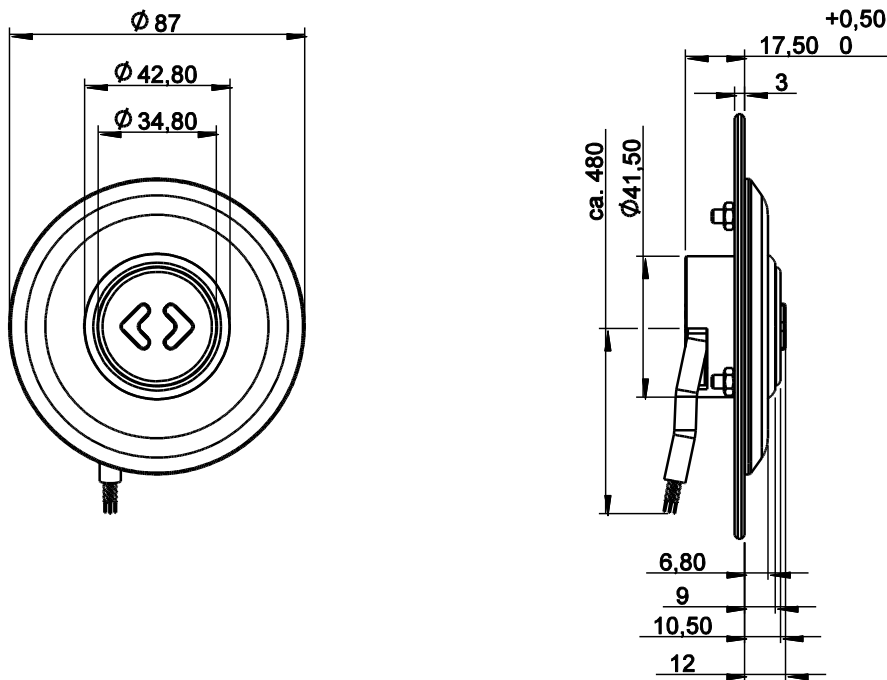
LED Data		
Operating Data LED red		typ. $I_B = 4 \text{ mA}$ (max. 6 mA) @ U_B
Operating Data LED green		typ. $I_B = 4 \text{ mA}$ (max. 6 mA) @ U_B
Operating Data LED yellow		typ. $I_B = 6 \text{ mA}$ (max. 8 mA) @ U_B

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
O - ring		NBR 70

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

2.2 Dimensions

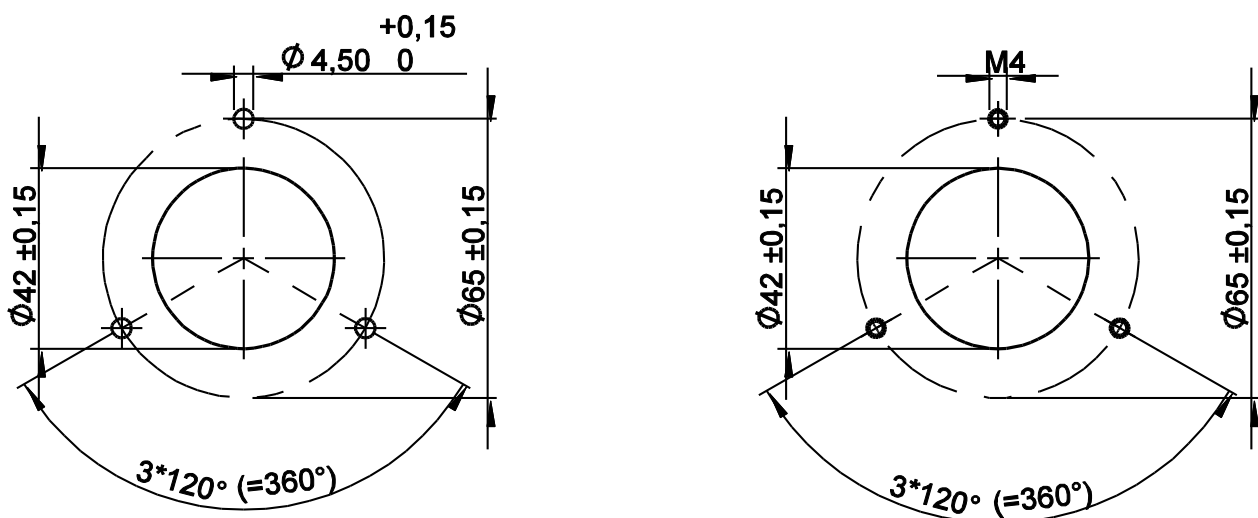
2.2.1 PTS version with angled cable



- other form of cable outlet on request

2.3 Drilling diagram

2.3.1 PTS version with angled cable

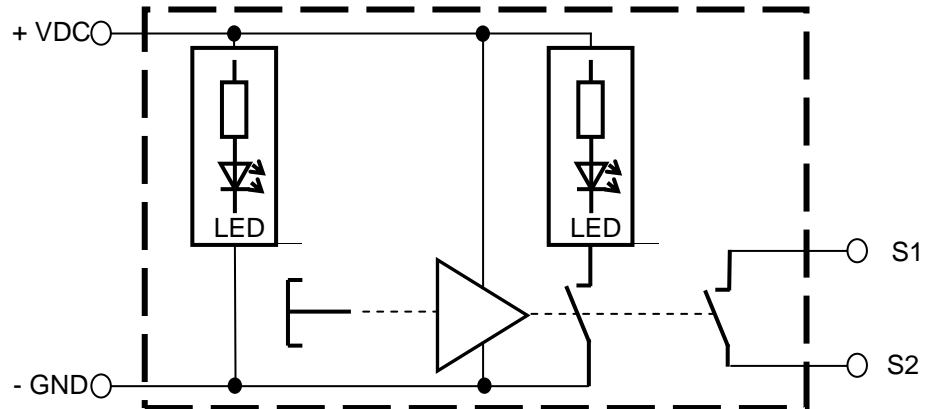


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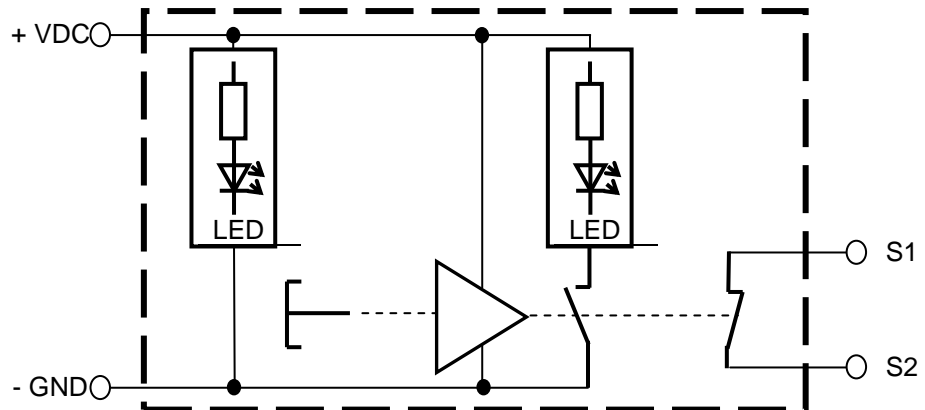
2.4 Switching Diagram

2.4.1 NO



connection	colour strands	type 1 24 [V]	type 2 110 [V]	connection	colour strands	voltage U [V]	current I [mA]
VDC	brown	-30%	-30%	S1	green	min. 5	min. 5
		+25%	+25%			max.137	max.250
GND	white	-30%	-30%	S2	yellow	min. 5	min. 5
		+25%	+25%			max.137	max.250

2.4.2 NC



connection	wire colour	type 1 24 [V]	type 2 110 [V]	connection	wire colour	voltage U [V]	current I [mA]
VDC	brown	-30%	-30%	S1	green	min. 5	min. 5
		+25%	+25%			max.137	max.200
GND	white	-30%	-30%	S2	yellow	min. 5	min. 5
		+25%	+25%			max.137	max.200

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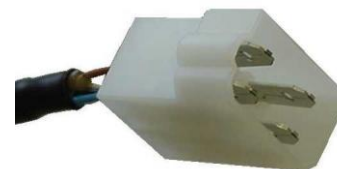
2.5 Accessories

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

type	symbol	24 V	110 V
LED yellow			
Actuator overlay nature; bezel round, yellow; angled cable	◄►	1241.7416.11801	1241.7417.11801
Actuator overlay nature; bezel round, yellow; angled cable	►◄	1241.7416.11802	1241.7417.11802
LED red/green			
Actuator overlay nature; bezel round, yellow; angled cable	◄►	1241.7413.11801	1241.7414.11801
Actuator overlay nature; bezel round, yellow; angled cable	►◄	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 ►◄

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

** Anodized colours according to manufacturer specific colour chart*

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.



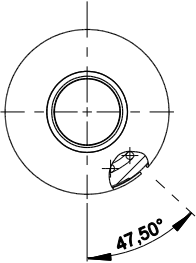
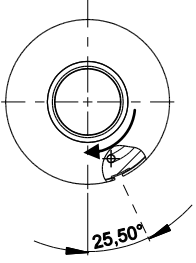
Customer specific packaging units on request

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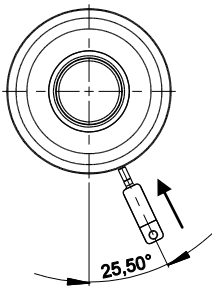
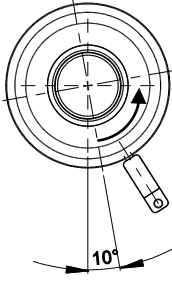
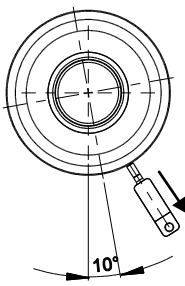
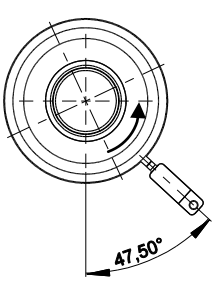
5 ASSEMBLY / DISASSEMBLY

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 Surge Impulse	EN 50121-3-2 (Rail-Norm)
EMC Test Interference Resistance- Electro Static Discharge	DIN EN 61000-4-2
EMC Test Interference Resistance – High Frequency fields on housing	DIN EN 61000-4-3
EMC Test Interference Resistance Burst Impulse	DIN EN 61000-4-4
EMC Test Interference Resistance Surge Impulse	DIN EN 61000-4-5
EMC Test Interference on lines	DIN EN 61000-4-6
Insulation Resistance	DIN VDE 0100, Part 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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