



Catalogue 2000/2001

## Digital gear for fluorescent lamps

### Comprehensive range of literature available:

Magnetic control gear for fluorescent lamps

Control gear for high pressure discharge lamps

Transformers for low voltage lamps

**TRIDONIC**

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# Electronic ballasts for fluorescent lamps

## Enhanced quality of light

Electronic ballasts, like wound chokes, are current limiting devices. The use of electronics allows more sophisticated control and enhanced quality of light, additional features that would not be possible with wound chokes.

Electronic ballasts run fluorescent lamps at high frequency (40 – 100 kHz) which ensures the lamp current is virtually constant, unlike wound chokes where the lamp current is interrupted 100 times a second at 50 Hz. This obviously gives greater visual comfort and 'cathode flicker' is eliminated, even at low temperatures.

In addition the dangerous stroboscopic effect associated with rotating machinery is eliminated. At start up there is no annoying flicker or noise and, if a lamp is defective, it will be shut down automatically without causing any further disturbance.

## Energy savings

High frequency operation permits more energy to be converted into light and between 7 and 11 % less power is required for the same light output.

Electronic ballasts are much more efficient than wound chokes and, therefore, run cooler not only reducing losses but lowering the temperature in the luminaire. The lamp is allowed to run nearer its optimum operating temperature of 25 °C.

The total savings are dependent on the individual lamp but wound chokes use 30 % more energy than the equivalent electronic ballast.

## Increased lamp life

Because the lamp is run under exactly the right conditions and a softstart is used, practical experience has shown increased lamp life.

## Technical features and advantages:

- improved light quality
- suitable for DC operation
- increased energy savings
- minimum weight
- excellent RFI and electromagnetic compatibility (EMC) performance
- low heat output
- automatic switch off of defective lamps
- low installation cost
- automatic switch on after lamp replacement
- conform to international norms

## Service life

Tridonic electronic ballasts have a designed mean service life of 50,000 hours at a maximum ambient temperature of 60°C and this is achieved by using only the highest quality components and by conducting a rigorous testing programme.

## Quality assurance

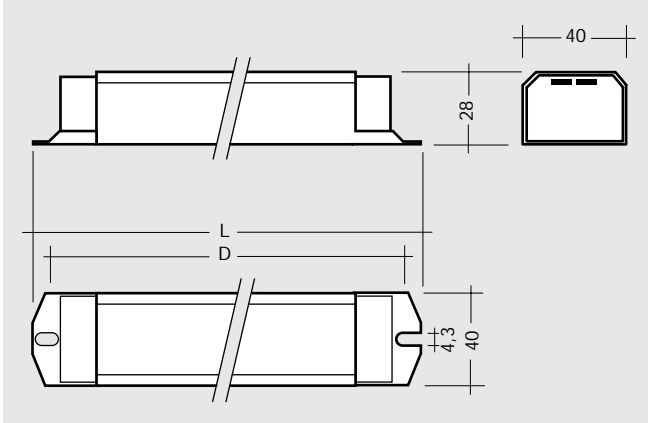
To maintain the reputation the PC range of electronic ballasts has earned, 100 % of production has a multistage testing programme including a thermal function testing programme.

Table showing an overview of the Energy Classification System for ballasts from CELMA

<b>Linear lamps</b>		<b>EEI-Class</b>						
<b>lamp type</b>	<b>lamp wattage</b>	<b>A1</b>	<b>A2</b>	<b>A3</b>	<b>B1</b>	<b>B2</b>	<b>C</b>	<b>D</b>
<b>50 Hz</b>								
T	15W	18/9W	≤ 16W	≤ 18W	≤ 21W	≤ 23W	≤ 25W	> 25W
T	18W	21/11W	≤ 19W	≤ 21W	≤ 24W	≤ 26W	≤ 28W	> 28W
T	30W	30/15W	≤ 28W	≤ 30W	≤ 36W	≤ 38W	≤ 40W	> 40W
T	36W	38/19W	≤ 36W	≤ 38W	≤ 41W	≤ 43W	≤ 45W	> 45W
T	38W	38/19W	≤ 36W	≤ 38W	≤ 43W	≤ 45W	≤ 47W	> 47W
T	58W	59/30W	≤ 55W	≤ 59W	≤ 64W	≤ 67W	≤ 70W	> 70W
T	70W	72/36W	≤ 66W	≤ 70W	≤ 77W	≤ 80W	≤ 83W	> 83W
<b>TC-L lamps</b>		<b>EEI-Class</b>						
<b>lamp type</b>	<b>lamp wattage</b>	<b>A1</b>	<b>A2</b>	<b>A3</b>	<b>B1</b>	<b>B2</b>	<b>C</b>	<b>D</b>
<b>50 Hz</b>								
TC-L	18W	21/11W	≤ 19W	≤ 21W	≤ 24W	≤ 26W	≤ 28W	> 28W
TC-L	24W	27/14W	≤ 25W	≤ 27W	≤ 30W	≤ 32W	≤ 34W	> 34W
TC-L	36W	38/19W	≤ 36W	≤ 38W	≤ 41W	≤ 43W	≤ 45W	> 45W
TC-L	40W	46/24W	≤ 44W	≤ 46W				
TC-L	55W	63/32W	≤ 59W	≤ 63W				
<b>TC-F lamps</b>		<b>EEI-Class</b>						
<b>lamp type</b>	<b>lamp wattage</b>	<b>A1</b>	<b>A2</b>	<b>A3</b>	<b>B1</b>	<b>B2</b>	<b>C</b>	<b>D</b>
<b>50 Hz</b>								
TC-F	18W	21/11W	≤ 19W	≤ 21W	≤ 24W	≤ 26W	≤ 28W	> 28W
TC-F	24W	27/14W	≤ 25W	≤ 27W	≤ 30W	≤ 32W	≤ 34W	> 34W
TC-F	36W	38/19W	≤ 36W	≤ 38W	≤ 41W	≤ 43W	≤ 45W	> 45W
<b>TC-D lamps</b>		<b>EEI-Class</b>						
<b>lamp type</b>	<b>lamp wattage</b>	<b>A1</b>	<b>A2</b>	<b>A3</b>	<b>B1</b>	<b>B2</b>	<b>C</b>	<b>D</b>
<b>50 Hz</b>								
TC-D, TC-DE	10W	13/7W	≤ 12W	≤ 13W	≤ 14W	≤ 16W	≤ 18W	> 18W
TC-D, TC-DE	13W	16/8W	≤ 15W	≤ 16W	≤ 17W	≤ 19W	≤ 21W	> 21W
TC-D, TC-DE	18W	21/11W	≤ 19W	≤ 21W	≤ 24W	≤ 26W	≤ 28W	> 28W
TC-D, TC-DE	26W	29/15W	≤ 27W	≤ 29W	≤ 32W	≤ 34W	≤ 36W	> 36W
<b>TC-T lamps</b>		<b>EEI-Class</b>						
<b>lamp type</b>	<b>lamp wattage</b>	<b>A1</b>	<b>A2</b>	<b>A3</b>	<b>B1</b>	<b>B2</b>	<b>C</b>	<b>D</b>
<b>50 Hz</b>								
TC-T, TC-TE	18W	21/11W	≤ 19W	≤ 21W	≤ 24W	≤ 26W	≤ 28W	> 28W
TC-T, TC-TE	26W	29/15W	≤ 27W	≤ 29W	≤ 32W	≤ 34W	≤ 36W	> 36W
TC-T, TC-TE	32W	39/20W	≤ 36W	≤ 39W				
TC-T, TC-TE	42W	49/25W	≤ 46W	≤ 49W				
<b>2 D compact lamps</b>		<b>EEI-Class</b>						
<b>lamp type</b>	<b>lamp wattage</b>	<b>A1</b>	<b>A2</b>	<b>A3</b>	<b>B1</b>	<b>B2</b>	<b>C</b>	<b>D</b>
<b>50 Hz</b>								
TC-DD, TC-DDE	10W	13/7W	≤ 12W	≤ 13W	≤ 14W	≤ 16W	≤ 18W	> 18W
TC-DD, TC-DDE	16W	20/10W	≤ 18W	≤ 20W	≤ 21W	≤ 23W	≤ 25W	> 25W
TC-DD, TC-DDE	21W	24/12W	≤ 22W	≤ 24W	≤ 27W	≤ 29W	≤ 31W	> 31W
TC-DD, TC-DDE	28W	30/15W	≤ 28W	≤ 30W	≤ 34W	≤ 36W	≤ 38W	> 38W
TC-DD, TC-DDE	38W	39/20W	≤ 37W	≤ 39W	≤ 43W	≤ 45W	≤ 47W	> 47W

**Electronic ballasts**  
**Linear lamps**

**PC-E 011 18-70 W 220-240 V 50/60/0 Hz, non dimmable**



- fully electronic ballast, with minimum weight and size
- exact control of lamp power, independent of fluctuations in mains voltage (198 – 254 V)
- optimised HF lamp operation, lamp friendly warm start in 0,95 sec.
- wide temperature range  $t_a = -25^{\circ}\text{C}$  to  $+60^{\circ}\text{C}$  ( $+50^{\circ}\text{C}$  with 2x58 W and 1x70 W)
- operation with DC and suitable for use in emergency lighting installations
- safe switch off of defective lamps
- automatic re-start after lamp change
- operating frequency  $\geq 42$  kHz

Lamp		Ballast											
watt- age W	length mm	type	article number	length L mm	fixing centres D mm	weight kg	circuit power W	lamp power W	current at 230V/50Hz A	$\lambda$ at 230V/50Hz	tc point $^{\circ}\text{C}$	temperature range $^{\circ}\text{C}$	
18	590	PC 18 E011	220/240V 50/60/0Hz	20827168	234	220	0,28	20,3	16,5	0,09	0,98	75	-25 → +60
2x18	590	PC 2x18 E011	220/240V 50/60/0Hz	20827133	234	220	0,28	38,3	2x16,5	0,17	0,98	75	-25 → +60
3x18	590	PC 3x18 E011	220/240V 50/60/0Hz	22083012	234	220	0,28	56,8	3x16	0,26	0,95	90	-25 → +60
4x18	590	PC 4x18 E011	220/240V 50/60/0Hz	22083034	354	340	0,36	72,1	4x16	0,33	0,95	85	-25 → +60
36	1200	PC 36 E011	220/240V 50/60/0Hz	20827155	234	220	0,28	36,1	32	0,16	0,98	75	-25 → +60
2x36	1200	PC 2x36 E011	220/240V 50/60/0Hz	20827127	234	220	0,28	72,1	2x32	0,32	0,98	85	-25 → +60
3x36	1200	PC 3x36 E011	220/240V 50/60/0Hz	22083028	354	340	0,36	104,9	3x32	0,48	0,95	85	-25 → +60
58	1500	PC 58 E011	220/240V 50/60/0Hz	20827149	234	220	0,28	56,4	50,5	0,25	0,98	85	-25 → +60
2x58	1500	PC 2x58 E011	220/240V 50/60/0Hz	20827111	234	220	0,28	107,1	2x50	0,49	0,95	80	-25 → +50
70	1800	PC 70 E011	220/240V 50/60/0Hz	22082052	234	220	0,28	72,1	61,0	0,32	0,98	75	-25 → +50

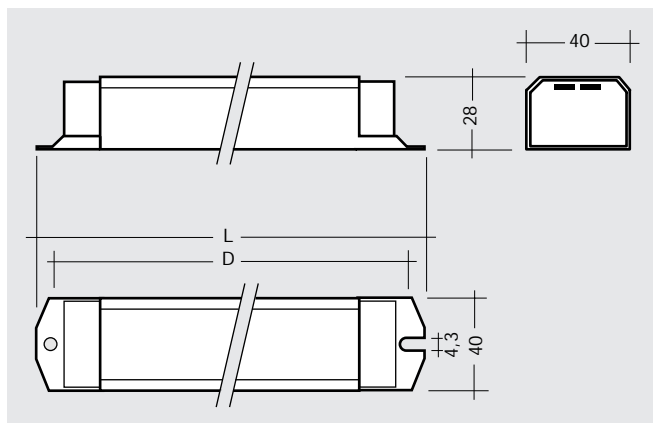
With a DC supply L and N terminals are interchangeable.

Ballasts with standard terminals are gradually being replaced by versions with automatic and manual wiring IDC terminals. Availability on request.



Electronic ballasts  
Linear lamps

**PC-E 011 IDC 18-70 W 220-240 V 50/60/0 Hz, non dimmable**



- fully electronic ballast, with minimum weight and size
- exact control of lamp power, independent of fluctuations in mains voltage (198 – 254 V)
- optimised HF lamp operation, lamp friendly warm start in 0,95 sec.
- wide temperature range  $t_a = -25^{\circ}\text{C}$  to  $+60^{\circ}\text{C}$  ( $+50^{\circ}\text{C}$  with 2x58 W and 1x70 W)
- operation with DC and suitable for use in emergency lighting installations
- safe switch off of defective lamps
- automatic re-start after lamp change
- automatic and manual wiring push-in terminal (IDC)
- operating frequency  $\geq 42$  kHz



Lamp		Ballast											
watt- age W	Length mm	type	article number	length L mm	fixing centres D mm	weight kg	circuit power W	lamp power W	current at 230V/50Hz A	$\lambda$ at 230V/50Hz	tc point $^{\circ}\text{C}$	temperature range $^{\circ}\text{C}$	
18	590	PC 1x18 E011 IDC 220/240V 50/60/0Hz	22085113	234	220	0,28	20,3	16,5	0,09	0,98	75	-25 → +60	
2x18	590	PC 2x18 E011 IDC 220/240V 50/60/0Hz	22085129	234	220	0,28	38,3	2x16,5	0,17	0,98	75	-25 → +60	
3x18	590	PC 3x18 E011 IDC 220/240V 50/60/0Hz	22084399	234	220	0,28	56,8	3x16	0,26	0,95	90	-25 → +60	
4x18	590	PC 4x18 E011 IDC 220/240V 50/60/0Hz	22084402	360	340-350	0,36	72,1	4x16	0,33	0,95	80	-25 → +60	
36	1200	PC 1x36 E011 IDC 220/240V 50/60/0Hz	22083149	234	220	0,28	36,1	32	0,16	0,98	75	-25 → +60	
2x36	1200	PC 2x36 E011 IDC 220/240V 50/60/0Hz	22083155	234	220	0,28	72,1	2x32	0,32	0,98	85	-25 → +60	
3x36	1200	PC 3x36 E011 IDC 220/240V 50/60/0Hz	22084480	360	340-350	0,36	104,9	3x32	0,48	0,95	85	-25 → +60	
58	1500	PC 1x58 E011 IDC 220/240V 50/60/0Hz	22083168	234	220	0,28	56,4	50,5	0,25	0,98	85	-25 → +60	
2x58	1500	PC 2x58 E011 IDC 220/240V 50/60/0Hz	22083174	234	220	0,28	107,1	2x50	0,49	0,95	80	-25 → +50	
70	1800	PC 1x70 E011 IDC 220/240V 50/60/0Hz	22084503	234	220	0,28	72,1	61,0	0,32	0,98	75	-25 → +50	
2x70	1800	PC 2x70 E011 IDC 220/240V 50/60/0Hz	22084512	360	340-350	0,36	135,5	2x61,0	0,62	0,95	85	-25 → +50	

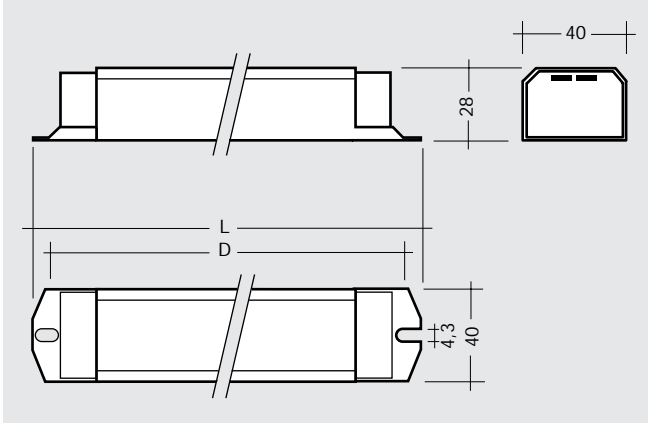
With a DC supply L and N terminals are interchangeable.

Ballasts with standard terminals are gradually being replaced by versions with automatic and manual wiring IDC terminals. Availability on request.



**Electronic coldstart ballasts  
T8 Linear lamps**

**PC INST 36-58 W 220-240 V 50/60/0 Hz, non dimmable**



Electronic ballasts for the operation of T8 26 mm fluorescent lamps.

- safe lamp start to -25°C; max. permissible temperature range  $t_a = -25^{\circ}\text{C}$  to  $+60^{\circ}\text{C}$  (twin lamps to  $+50^{\circ}\text{C}$ )
- proof against overvoltage of up to 320 V for a minimum of 1 hour
- suitable for DC supply and installation in emergency luminaires according to VDE 0108
- safe switch off defective lamps with automatic restart after lamp change approved to:
  - EN 60928 (General and safety requirements)
  - EN 60929 (Performance requirements AC)
  - EN 60924 (DC operation general and safety requirements)
  - EN 60925 (DC operation performance requirements)
- EN 61547 (Immunity), RFI protection according to EN 55015 and EN 55022
- compact, unique dimensions 40x28x234 mm (BxHxL)
- non-resettable temperature protection according to EN 60928
- operating frequency  $\geq 42$  kHz

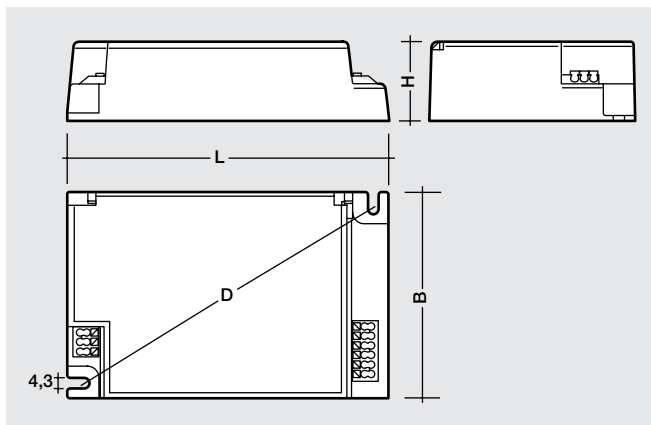
Lamp		Ballast										
watt- age W	length mm	type	article number	length L mm	fixing centres D mm	weight kg	circuit power W	lamp power W	current at 230V/50Hz A	$\lambda$ at 230V/50Hz	tc point $^{\circ}\text{C}$	temperature range $^{\circ}\text{C}$
36	1200	PC INST 36 FD a001 220/240V 50/60/0Hz	24032214	234	220	0,28	35,5	32	0,17	> 0,95	80	-25 → +60
2x36	1200	PC INST 2x36 FD a001 220/240V 50/60/0Hz	24032220	234	220	0,28	70	2x32	0,31	> 0,95	90	-25 → +60
58	1500	PC INST 58 FD a001 220/240V 50/60/0Hz	24032236	234	220	0,28	54	50	0,25	> 0,95	90	-25 → +60
2x58	1500	PC INST 2x58 FD a101 220/240V 50/60/0Hz	22083441	234	220	0,28	109	2x50	0,48	> 0,95	75	-25 → +50



EEL = A2

Electronic compact ballasts  
Compact lamps

**PC-PRO TC-L 18-24 W 220-240 V 50/60/0 Hz**



Electronic ballasts for the operation of compact lamps.

- suitable for DC supply and installation in emergency luminaires according to VDE 0108
- safe switch off defective lamps with automatic restart after lamp change
- lamp friendly warmstart within 1,5 sec.
- operating frequency  $\geq 42$  kHz

approved to:

- EN 60924 (DC operation general and safety requirements)
- EN 60925 (DC operation performance requirements)
- EN 60928 (General and safety requirements)
- EN 60929 (Performance requirements AC)

- EN 61000 3-2 (Harmonics suppression)
- EN 61547 (Immunity)
- EN 55015 and 55022 (RFI)

Lamp		Ballast											
watt-age W	type	type	article number	LxBxH mm	fixing centres D mm	weight kg	circuit power W	lamp power W	current at 230V/50Hz A	$\lambda$ at 230V/50Hz	tc point $^{\circ}\text{C}$	temperature range $^{\circ}\text{C}$	
18	TC-L	PC PRO 18/24 FSD b101	220-240V 50/60/0Hz	22083278	103x67x30	110	0,14	20	16	0,10	0,94	85	-25 $\rightarrow$ +60
2x18	TC-L	PC PRO 2x18 FSD b101	220-240V 50/60/0Hz	22083284	123x79x30	129,5	0,17	40,5	2x18	0,19	0,96	80	-25 $\rightarrow$ +60
24	TC-L	PC PRO 18/24 FSD b101	220-240V 50/60/0Hz	22083278	103x67x30	110	0,14	29	25	0,13	0,96	85	-25 $\rightarrow$ +60
2x24	TC-L	PC PRO 2x24 FSD b101	220-240V 50/60/0Hz	22083290	123x79x30	129,5	0,17	57	2x25	0,25	0,96	85	-25 $\rightarrow$ +60

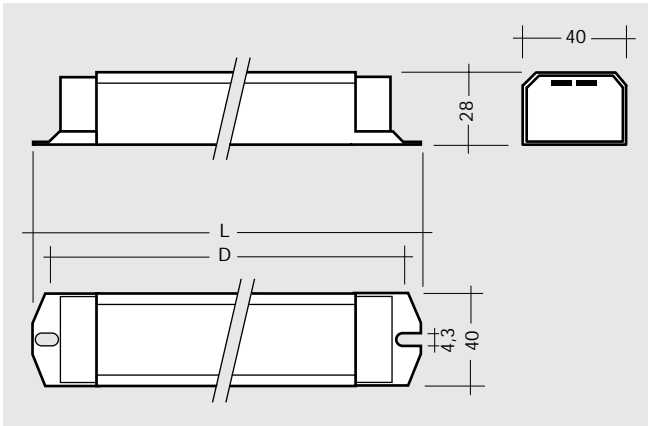
With a DC supply L and N terminals are interchangeable.





Electronic ballasts  
Compact lamps

**PC-PRO TC-L 36-55 W 220-240 V 50/60/0 Hz**



Electronic ballasts for the operation of compact lamps.

- suitable for DC supply and installation in emergency luminaires according to VDE 0108
- safe switch off defective lamps with automatic restart after lamp change
- lamp friendly warmstart within 1,5 sec.
- operating frequency  $\geq 42$  kHz

approved to:

- EN 60924 (DC operation general and safety requirements)
- EN 60925 (DC operation performance requirements)
- EN 60928 (General and safety requirements)
- EN 60929 (Performance requirements AC)

- EN 61000 3-2 (Harmonics suppression)
- EN 61547 (Immunity)
- EN 55015 and 55022 (RFI)

Lamp		Ballast										
watt- age W	type	type	article number	length L mm	fixing centres D mm	weight kg	circuit power W	lamp power W	current at 230V/50Hz A	$\lambda$ at 230V/50Hz	tc point $^{\circ}\text{C}$	temperature range $^{\circ}\text{C}$
36	TC-L	PC PRO 1x36 FSD a101 220-240V 50/60/0Hz	22081697	234	220	0,28	38	32	0,17	0,94	85	-25 $\rightarrow$ +60
2x36	TC-L	PC PRO 2x36 FSD a101 220-240V 50/60/0Hz	22081704	234	220	0,28	76	2x32	0,34	0,98	90	-25 $\rightarrow$ +60
40	TC-L	PC PRO 1x40 FSD a101 220-240V 50/60/0Hz	22081713	234	220	0,28	45	40	0,20	0,91	85	-25 $\rightarrow$ +60
2x40	TC-L	PC PRO 2x40 FSD a101 220-240V 50/60/0Hz	22081725	234	220	0,28	88	2x40	0,39	0,98	90	-25 $\rightarrow$ +60
55	TC-L	PC PRO 1x55 FSD a101 220-240V 50/60/0Hz	22081735	234	220	0,28	63	55	0,28	0,94	90	-25 $\rightarrow$ +60
2x55	TC-L	PC PRO 2x55 FSD a101 220-240V 50/60/0Hz	22081741	354	340	0,36	118	2x55	0,54	0,98	90	-25 $\rightarrow$ +50

With a DC supply L and N terminals are interchangeable.

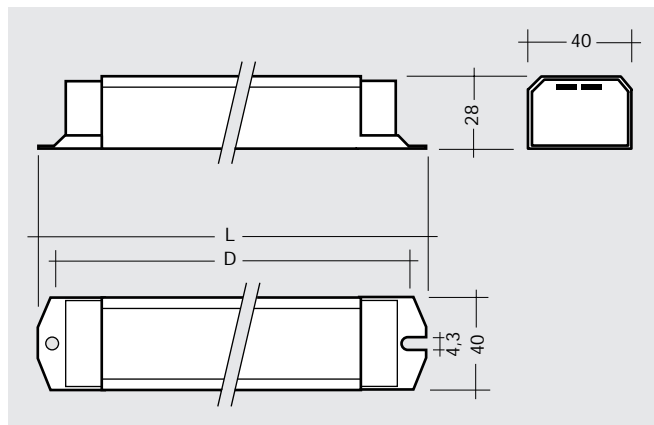
Ballasts with standard terminals are gradually being replaced by versions with automatic and manual wiring IDC terminals. Availability on request.



EEL = A3

Electronic ballasts  
Compact lamps

**PC-PRO TC-L IDC 18-55 W 220-240 V 50/60/0 Hz**



Electronic ballasts for the operation of compact lamps.

- suitable for DC supply and installation in emergency luminaires according to VDE 0108
- safe switch off defective lamps with automatic restart after lamp change
- lamp friendly warmstart within 1,5 sec.
- operating frequency  $\geq 42$  kHz

approved to:

- EN 60924 (DC operation general and safety requirements)
- EN 60925 (DC operation performance requirements)
- EN 60928 (General and safety requirements)
- EN 60929 (Performance requirements AC)

- EN 61000 3-2 (Harmonics suppression)
- EN 61547 (Immunity)
- EN 55015 and 55022 (RFI)



Lamp		Ballast										
watt-age W	type	type	article number	length L mm	fixing centres D mm	weight kg	circuit power W	lamp power W	current at 230V/50Hz A	$\lambda$ at 230V/50Hz	tc point °C	temperature range °C
18/24	TC-L	PC PRO 18/24 FSD a101 IDC 220-240V 50/60/0Hz	22084617	234	220	0,28	20/27	16/22	0,09/0,124	0,95	u.c.*	-25 → +60
2x18	TC-L	PC PRO 2x18 FSD a101 IDC 220-240V 50/60/0Hz	22084623	234	220	0,28	40	2x16	0,185	0,95	u.c.*	-25 → +60
2x24	TC-L	PC PRO 2x24 FSD a101 IDC 220-240V 50/60/0Hz	22084639	234	220	0,28	57	2x22	0,26	0,95	u.c.*	-25 → +60
36	TC-L	PC PRO 36 FSD a101 IDC 220-240V 50/60/0Hz	22085061	234	220	0,28	37,5	32,0	0,17	0,95	85	-25 → +60
2x36	TC-L	PC PRO 2x36 FSD a101 IDC 220-240V 50/60/0Hz	22085077	234	220	0,28	76	2x32	0,345	0,95	90	-25 → +60
40	TC-L	PC PRO 40 FSD a101 IDC 220-240V 50/60/0Hz	22085083	234	220	0,28	44	40,0	0,2	0,95	85	-25 → +60
2x40	TC-L	PC PRO 2x40 FSD a101 IDC 220-240V 50/60/0Hz	22085099	234	220	0,28	87	2x40	0,385	0,95	90	-25 → +60
55	TC-L	PC PRO 55 FSD a101 IDC 220-240V 50/60/0Hz	22085104	234	220	0,28	60	55,0	0,275	0,95	90	-25 → +60
2x55	TC-L	PC PRO 2x55 FSD a101 IDC 220-240V 50/60/0Hz	22084496	354	340	0,36	120	2x55	0,535	0,95	80	-25 → +60

\* u.c. = under consideration

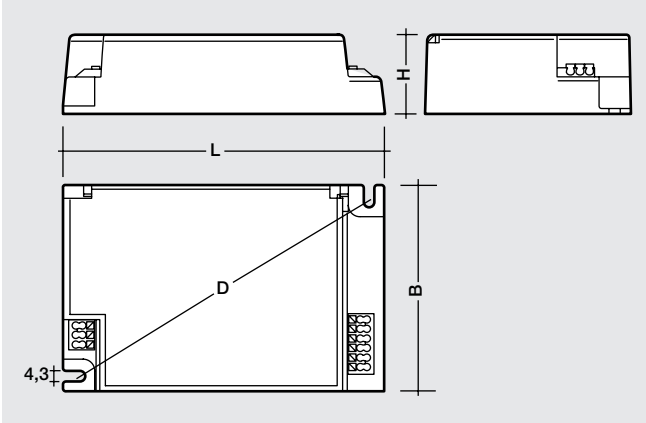
With a DC supply L and N terminals are interchangeable.

Ballasts with standard terminals are gradually being replaced by versions with automatic and manual wiring IDC terminals. Availability on request.



Electronic compact ballasts  
Compact lamps

**PC-PRO 5-42 W 220-240 V 50/60/0 Hz**



Electronic ballasts for the operation of compact lamps.

- suitable for DC supply and installation in emergency luminaires according to VDE 0108
- safe switch off of defective lamps with automatic restart after lamp change
- lamp friendly warmstart within 1 sec.

approved to:

- EN 60924 (DC operation general and safety requirements)
- EN 60925 (DC operation performance requirements)
- EN 60928 (General and safety requirements)
- EN 60929 (Performance requirements AC)

- EN 61000 3-2 (Harmonics suppression)
- EN 61547 (Immunity)
- EN 55015 and 55022 (RFI).

Lamp		Ballast										
watt-age W	type	type	article number	LxBxH mm	D mm	weight kg	circuit power W	lamp power W	current at 230V/50Hz A	$\lambda$ at 230V/50Hz	tc-point °C	temperature range °C
5	TC-S/E	PC PRO 5/7 FSD b101	220-240V 50/60/0Hz	22083215	103x67x30	110	0,14	7,5	5	0,03-0,04	0,96	70 -25 → +60
7	TC-S/E	PC PRO 5/7 FSD b101	220-240V 50/60/0Hz	22083215	103x67x30	110	0,14	9	7	0,04-0,05	0,96	70 -25 → +60
2x5	TC-S/E	PC PRO 2x5/7 FSD b101	220-240V 50/60/0Hz	22083221	123x79x30	129,5	0,17	13	2x5	0,06-0,07	0,96	70 -25 → +60
2x7	TC-S/E	PC PRO 2x5/7 FSD b101	220-240V 50/60/0Hz	22083221	123x79x30	129,5	0,17	18	2x7,5	0,08-0,09	0,96	70 -25 → +60
9	TC-D/E; TC-S/E	PC PRO 9/11 FSD b101	220-240V 50/60/0Hz	22082999	103x67x30	110	0,14	11	8,5	0,05-0,06	0,96	70 -25 → +60
10	TC-D/E	PC PRO 10/13 FSQ b101	220-240V 50/60/0Hz	22083237	103x67x30	110	0,14	12	9	0,05-0,06	0,96	75 -25 → +60
11	TC-D/E; TC-S/E	PC PRO 9/11 FSD b101	220-240V 50/60/0Hz	22082999	103x67x30	110	0,14	15,5	13	0,07-0,08	0,96	80 -25 → +60
13	TC-D/E	PC PRO 10/13 FSQ b101	220-240V 50/60/0Hz	22083237	103x67x30	110	0,14	16	13	0,07-0,08	0,96	75 -25 → +60
2x9	TC-D/E; TC-S/E	PC PRO 2x9/11 FSD b101	220-240V 50/60/0Hz	22083003	123x79x30	129,5	0,17	20	2x8,5	0,09-0,10	0,96	80 -25 → +60
2x10	TC-D/E	PC PRO 2x10/13 FSQ b101	220-240V 50/60/0Hz	22083243	123x79x30	129,5	0,17	23	2x10	0,10-0,11	0,96	75 -25 → +60
2x11	TC-D/E; TC-S/E	PC PRO 2x9/11 FSD b101	220-240V 50/60/0Hz	22083003	123x79x30	129,5	0,17	30	2x13	0,13-0,15	0,96	80 -25 → +60
2x13	TC-D/E	PC PRO 2x10/13 FSQ b101	220-240V 50/60/0Hz	22083243	123x79x30	129,5	0,17	34	2x15	0,15-0,16	0,96	75 -25 → +60
18	TC-D/E; TC-T/E	PC PRO 18 FSQ b101	220-240V 50/60/0Hz	22082606	103x67x30	110	0,14	20,5	18	0,09-0,10	0,96	80 -25 → +60
2x18	TC-D/E; TC-T/E	PC PRO 2x18 FSQ b101	220-240V 50/60/0Hz	22082589	123x79x30	129,5	0,17	40	2x18	0,17-0,19	0,96	80 -25 → +60
26	TC-D/E; TC-T/E	PC PRO 26/32/42 FSM b101	220-240V 50/60/0Hz	22082595	103x67x30	110	0,14	28,5	25	0,12-0,14	0,96	85 -25 → +60
2x26	TC-D/E; TC-T/E	PC PRO 2x26 FSQ b101	220-240V 50/60/0Hz	22082573	123x79x30	129,5	0,17	56	2x25,7	0,24-0,26	0,96	85 -25 → +60
32	TC-T/E	PC PRO 26/32/42 FSM b101	220-240V 50/60/0Hz	22082595	103x67x30	110	0,14	35	31,5	0,15-0,17	0,96	85 -25 → +60
42	TC-T/E	PC PRO 26/32/42 FSM b101	220-240V 50/60/0Hz	22082595	103x67x30	110	0,14	46	42,5	0,20-0,22	0,96	85 -25 → +60
2x32	TC-T/E	PC PRO 2x32/42 FSM b101	220-240V 50/60/0Hz	22082567	123x102x30	142,5	0,21	71	2x33	0,30-0,34	0,96	100 -25 → +60
2x42	TC-T/E	PC PRO 2x32/42 FSM b101	220-240V 50/60/0Hz	22082567	123x102x30	142,5	0,21	100	2x46	0,41-0,46	0,96	100 -25 → +60

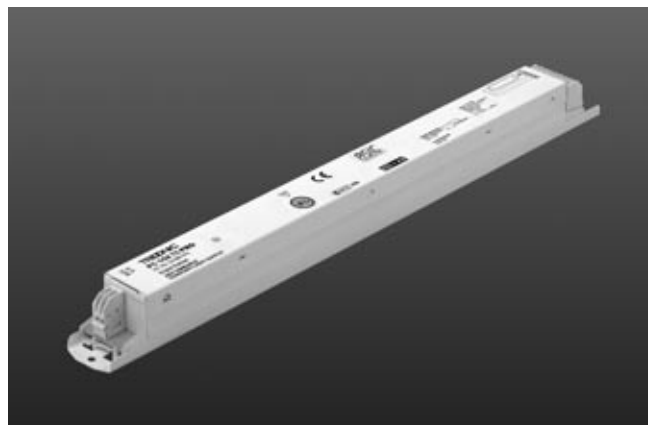
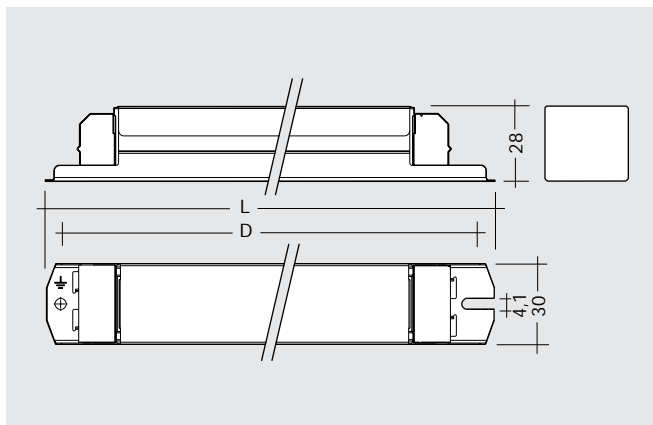
Output voltage at 2x42 W: U<sub>out</sub> = 300 V



EEI = A3

**Electronic ballasts**  
**Linear lamps T5, 16 mm**

**PC PRO T5 14-80 W 220-240 V 50/60/0 Hz**



Digital ballasts for the operation of T5 16 mm high efficiency/high output fluorescent lamps.

- exact control of lamp power, independent of fluctuations in mains voltage (198-254 V)
- optimised HF lamp operation
- lamp friendly warm start within 0,5 sec.
- cut-off of filament heating (cut off-technology)
- DC operation and use in emergency lighting possible
- safe switch off defective lamps with automatic restart after lamp change
- extended shut off features for T5 16 mm lamps (end of lamp life shut off)
- compact dimensions (slim line)
- operating frequency  $\geq 42$  kHz

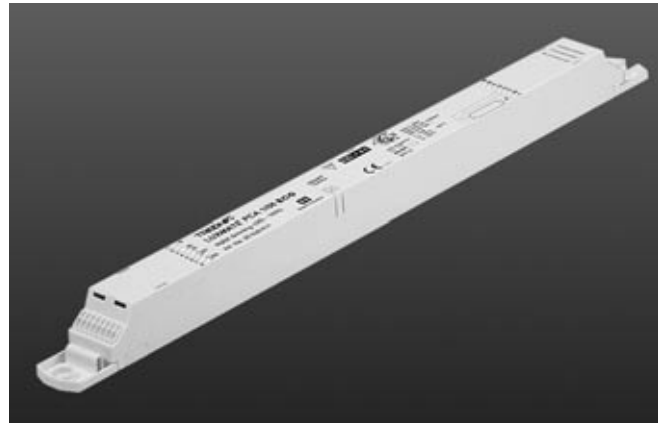
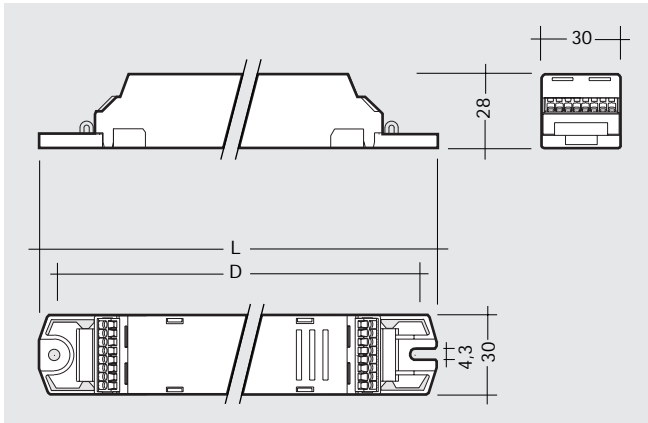


Lamp		Ballast										
wattage W	length mm	type	article number	length L mm	fixing centres D mm	weight kg	circuit power W	lamp power W	current at 230V/50Hz A	$\lambda$ at 230V/50Hz	tc point °C	temperature range °C
14	549	PC 1/14 T5 PRO 220-240V 50/60/0Hz	22083839	360	350	0,29	16,6	13,7	0,08	0,95	70	-25 → +60
2x14	549	PC 2/14 T5 PRO 220-240V 50/60/0Hz	22083845	360	350	0,29	32,4	27,4	0,15	0,95	75	-25 → +60
21	849	PC 1/21 T5 PRO 220-240V 50/60/0Hz	22085135	360	350	0,29	under consideration					
2x21	849	PC 2/21 T5 PRO 220-240V 50/60/0Hz	22085141	360	350	0,36	under consideration					
28	1149	PC 1/28 T5 PRO 220-240V 50/60/0Hz	22085157	360	350	0,29	under consideration					
2x28	1149	PC 2/28 T5 PRO 220-240V 50/60/0Hz	22085160	360	350	0,36	under consideration					
35	1449	PC 1/35 T5 PRO 220-240V 50/60/0Hz	22083851	360	350	0,29	38,7	34,7	0,17	0,96	75	-25 → +60
2x35	1449	PC 2/35 T5 PRO 220-240V 50/60/0Hz	22083864	360	350	0,36	77,5	69,4	0,35	0,97	80	-25 → +60
24	549	PC 1/24 T5 PRO 220-240V 50/60/0Hz	22085176	360	350	0,29	under consideration					
2x24	549	PC 2/24 T5 PRO 220-240V 50/60/0Hz	22085182	360	350	0,36	under consideration					
39	849	PC 1/39 T5 PRO 220-240V 50/60/0Hz	22085198	360	350	0,29	under consideration					
2x39	849	PC 2/39 T5 PRO 220-240V 50/60/0Hz	22085208	360	350	0,36	under consideration					
49	1449	PC 1/49 T5 PRO 220-240V 50/60/0Hz	22085217	360	350	0,29	under consideration					
2x49	1449	PC 2/49 T5 PRO 220-240V 50/60/0Hz	22085223	360	350	0,36	under consideration					
54	1149	PC 1/54 T5 PRO 220-240V 50/60/0Hz	22083870	360	350	0,29	60	53,8	0,27	0,95	80	-25 → +60
2x54	1149	PC 2/54 T5 PRO 220-240V 50/60/0Hz	22083886	360	350	0,36	117,4	107,6	0,53	0,97	80	-25 → +50
80	1449	PC 1/80 T5 PRO 220-240V 50/60/0Hz	22085239	360	350	0,29	under consideration					



**Electronic ballasts for dimming to 10 %  
Linear lamps**

**PCA ECO 18-58 W 220-240 V 50/60/0 Hz, dimmable**



- dimming range from 10 – 100 %
- lamp start at 10 % possible
- lamp friendly warm start within 0,6 sec.
- switching via the mains or with digital control signal
- dimming which is comfortable to the eye
- disturbance free precise control with a digital signal (DSI) or switch **DIM**
- integrated SMART interface
- fully electronic lamp management and digital communication with ASIC and  $\mu$ C
- constant light output independent of fluctuating supply voltage
- DC operation in emergency lighting installations to VDE 0108
- safe shutdown of defective lamps
- safe shutdown of lamps at end of life (rectifying effect)
- automatic restart after lamp replacement
- operating frequency ~40 – 100 kHz

Lamp		Ballast										
wattage	length	type	article number	length L	fixing centres D	weight	circuit power	lamp power	current at 230V/50Hz	$\lambda$ at 230V/50Hz	tc point	temperature range*
W	mm			mm	mm	kg	W **	W **	A **		°C	°C
18	590	PCA 1/18 ECO 220/240V 50/60/0Hz	20829538	360	350	0,21	20,0	16	0,09	0,93	80	-25 → +60
2x18	590	PCA 2/18 ECO 220/240V 50/60/0Hz	20829550	360	350	0,25	39,0	34	0,17	0,97	95	-25 → +60
36	1200	PCA 1/36 ECO 220/240V 50/60/0Hz	20829579	360	350	0,21	36,0	32	0,16	0,97	80	-25 → +60
2x36	1200	PCA 2/36 ECO 220/240V 50/60/0Hz	20829591	360	350	0,25	70,0	64	0,31	0,98	95	-25 → +60
58	1500	PCA 1/58 ECO 220/240V 50/60/0Hz	20829611	360	350	0,21	56,0	50	0,25	0,98	85	-25 → +60
2x58	1500	PCA 2/58 ECO 220/240V 50/60/0Hz	20829633	360	350	0,25	111,0	100	0,49	0,99	95	-25 → +50

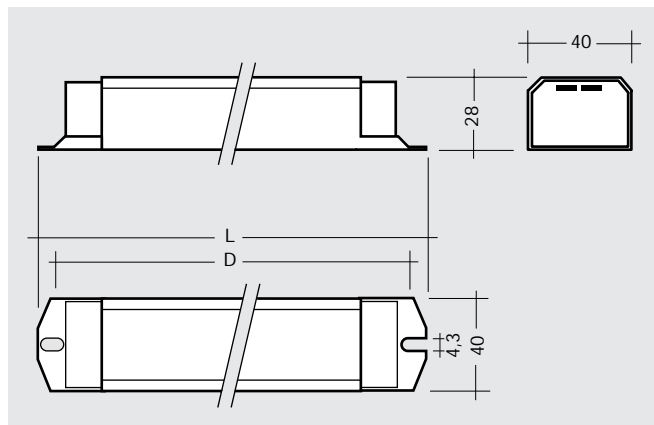
\* dimming to 10 % between 0°C to ta max.

\*\* valid at 100 % light output



Electronic ballasts for dimming to 10 %  
Linear lamps / T5 16 mm Linear lamps

**PCA 4/18 ECO / PCA 4/18 SD 220-240 V 50/60/0 Hz, dimmable**  
**PCA 4/14 T5 ECO / PCA 4/14 T5 SD 220-240 V 50/60/0 Hz, dimmable**



- dimming range from 10 – 100 %
- lamp start at 10 % possible
- lamp friendly warm start
- switching via the mains or with digital control signal
- dimming which is comfortable to the eye
- disturbance free precise control with a digital signal DSI (PCA ECO) or switchDIM (PCA SD)
- integrated SMART interface
- fully electronic lamp management and digital communication with ASIC and  $\mu$ C
- constant light output independent of fluctuating supply voltage
- DC operation in emergency lighting installations to VDE 0108
- safe shutdown of defective lamps
- safe shutdown of lamps at end of life (rectifying effect)
- automatic restart after lamp replacement
- operating frequency  $\geq 42$  kHz

Lamp		Ballast										
wattage	length	type	article number	length L	fixing centres D	weight	circuit power W ②	lamp power W ②	current at 230V/50Hz A ②	$\lambda$ at 230V/50Hz	tc point °C	temperature range °C ①
W	mm			mm	mm	kg						
4x14	550	PCA 4/14 T5 ECO 220-240V 50/60/0Hz	22083102	354	340	0,42	64,5	4x14	0,29	0,98	80	+10 → +60
4x14	550	PCA 4/14 T5 SD 220-240V 50/60/0Hz	22083111	354	340	0,42	64,5	4x14	0,29	0,98	80	+10 → +60
4x18	590	PCA 4/18 ECO 220-240V 50/60/0Hz	22082274	354	340	0,42	72,0	4x16	0,31	0,98	80	-25 → +60
4x18	590	PCA 4/18 SD 220-240V 50/60/0Hz	22082637	354	340	0,42	72,0	4x16	0,31	0,98	80	-25 → +60

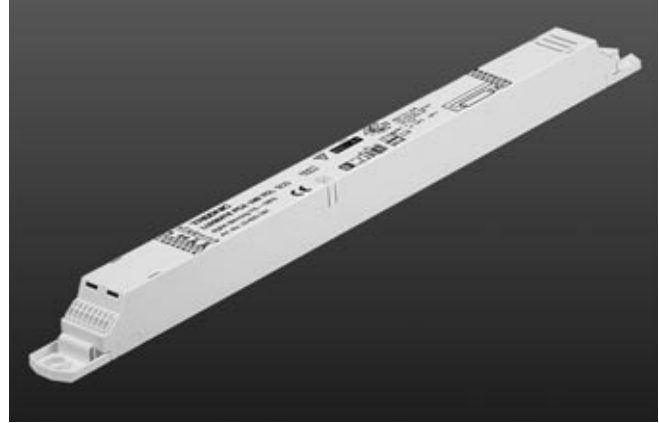
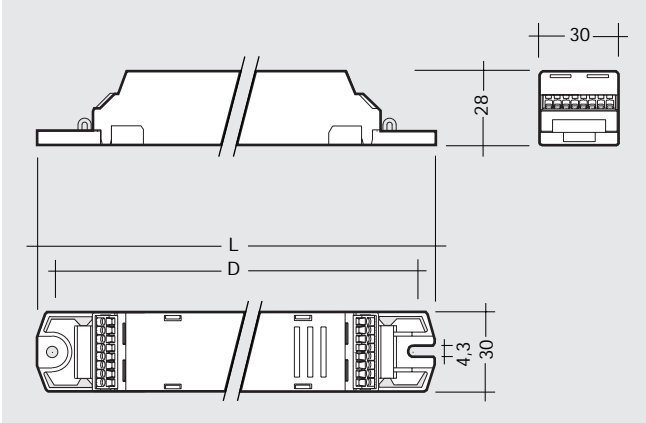
① dimming to 10% between 0 °C → ta max.

② valid at 100 % light output



**Electronic ballasts for dimming to 10 %  
Compact lamps**

**PCA ECO TC-L 36-55 W 220-240 V 50/60/0 Hz, dimmable**



- dimming range from 10 – 100 %
- lamp start at 10 % possible
- lamp friendly warm start
- switching via the mains or with digital control signal
- dimming which is comfortable to the eye
- disturbance free precise control with a digital signal (DSI) or switch**DIM**
- integrated SMART interface
- fully electronic lamp management and digital communication with ASIC and  $\mu$ C
- constant light output independent of fluctuating supply voltage
- DC operation in emergency lighting installations to VDE 0108
- safe shutdown of defective lamps
- safe shutdown of lamps at end of life (rectifying effect)
- automatic restart after lamp replacement
- operating frequency  $\geq 42$  kHz

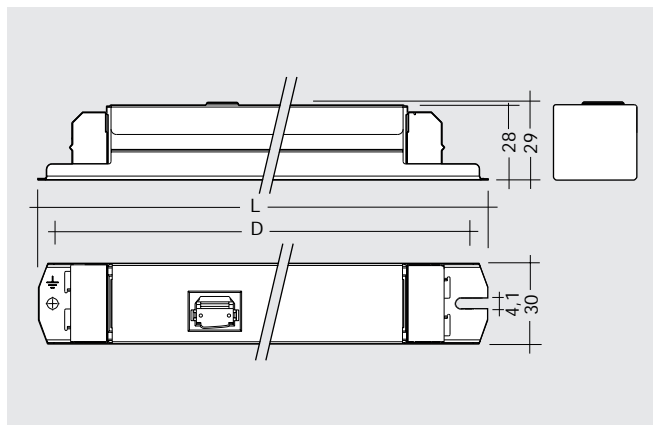
Lamp		Ballast											
watt- age W	type	type	article number	length L mm	fixing centres D mm	weight kg	circuit power W **	lamp power W **	current at 230V 50Hz A **	$\lambda$ at 230V 50Hz	tc point °C	temperature range * °C	
36	TC-L	PCA 1/36 ECO TCL	220/240V 50/60/0Hz	20829734	360	350	0,21	35,0	32	0,16	0,96	85	-25 → +60
2x36	TC-L	PCA 2/36 ECO TCL	220/240V 50/60/0Hz	20829756	360	350	0,25	71,0	2x32	0,30	0,98	95	-25 → +60
40	TC-L	PCA 1/40 ECO TCL	220/240V 50/60/0Hz	20829775	360	350	0,21	44,5	40	0,19	0,97	80	-25 → +60
2x40	TC-L	PCA 2/40 ECO TCL	220/240V 50/60/0Hz	20829797	360	350	0,25	88,0	2x40	0,38	0,99	95	-25 → +60
55	TC-L	PCA 1/55 ECO TCL	220/240V 50/60/0Hz	20829819	360	350	0,21	61,0	55	0,26	0,98	90	-25 → +60
2x55	TC-L	PCA 2/55 ECO TCL	220/240V 50/60/0Hz	20829831	360	350	0,25	118,0	2x55	0,50	0,99	95	-25 → +50

\* dimming to 10% between 0 °C to ta max.  
\*\* valid at 100 % light output



Electronic ballasts for dimming to 1 %  
Linear lamps T5, 16 mm high efficiency

**PCA ECO T5 14-35 W 220-240 V 50/60/0 Hz, dimmable**



- dimming range from 1 – 100 %
- lamp start at 1% possible
- lamp friendly warm start within 1,5 sec.
- switching via the mains or with digital control signal
- dimming which is comfortable to the eye
- disturbance free precise control with a digital signal (DSI) or switchDIM
- integrated SMART interface
- fully electronic lamp management and digital communication with ASIC and  $\mu$ C
- constant light output independent of fluctuating supply voltage
- DC operation in emergency lighting installations to VDE 0108
- safe shutdown of defective lamps
- safe shutdown of lamps at end of life (rectifying effect)
- return error signals possible
- automatic restart after lamp replacement
- operating frequency ~40 – 100 kHz



Lamp		Ballast										
wattage	length	type	article number	length L	fixing centres D	weight	circuit power	lamp power	current at 230V/50Hz	$\lambda$ at 230V/50Hz	tc point	temperature range*
W	mm			mm	mm	kg	W **	W **	A **		°C	°C
14	549	PCA 1/14 T5 ECO 220/240V 50/60/0Hz	22084979	360	350	0,32	18	14	0,09	0,95	u. c.*	+10 → +60
2x14	549	PCA 2/14 T5 ECO 220/240V 50/60/0Hz	22084985	360	350	0,36	u. c.*	2x14	u. c.*	0,95	u. c.*	+10 → +60
21	849	PCA 1/21 T5 ECO 220/240V 50/60/0Hz	22084991	360	350	0,32	25	21	0,11	0,95	u. c.*	+10 → +60
2x21	849	PCA 2/21 T5 ECO 220/240V 50/60/0Hz	22085005	360	350	0,36	u. c.*	2x21	u. c.*	0,95	u. c.*	+10 → +60
28	1149	PCA 1/28 T5 ECO 220/240V 50/60/0Hz	22084771	360	350	0,32	32	28	0,15	0,96	70	+10 → +60
2x28	1149	PCA 2/28 T5 ECO 220/240V 50/60/0Hz	22084787	360	350	0,36	61	2x28	0,28	0,98	75	+10 → +60
35	1449	PCA 1/35 T5 ECO 220/240V 50/60/0Hz	22084793	360	350	0,32	38	34	0,17	0,97	75	+10 → +60
2x35	1449	PCA 2/35 T5 ECO 220/240V 50/60/0Hz	22084806	360	350	0,36	75	2x34	0,32	0,98	85	+10 → +60

\* dimming to 3 % between 10°C to ta max.

\*\* valid at 100 % light output

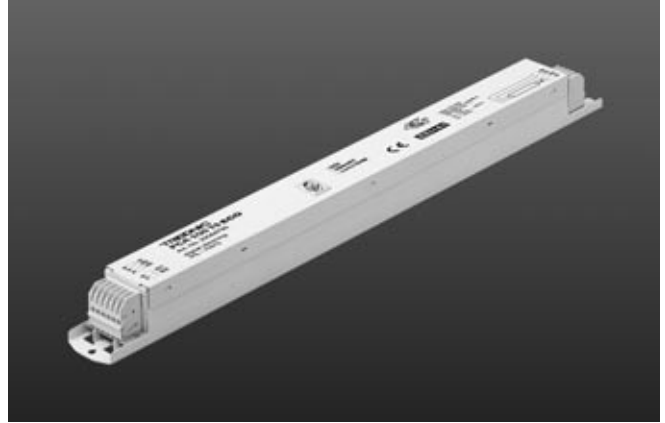
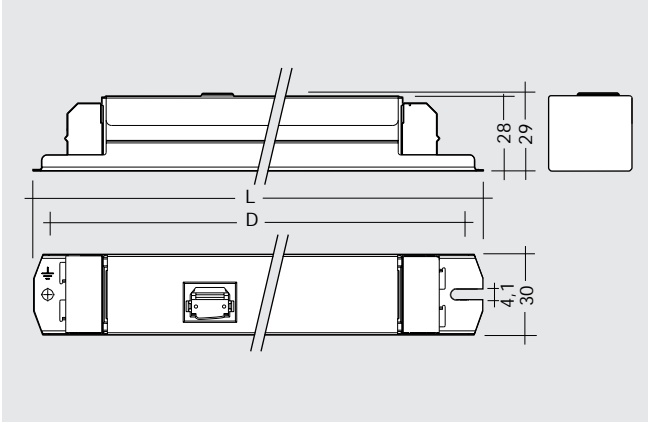
\* u. c. = under consideration





**Electronic ballasts for dimming to 3 %  
Linear lamps T5, 16 mm high output**

**PCA ECO T5 24-54 W 220-240 V 50/60/0 Hz, dimmable**



- dimming range from 3 – 100 % (10 – 100 % with 80 W)
- lamp start at 3 % possible (10 % with 80 W)
- lamp friendly warm start within 1,5 sec.
- switching via the mains or with digital control signal
- dimming which is comfortable to the eye
- disturbance free precise control with a digital signal (DSI) or switchDIM
- integrated SMART interface
- fully electronic lamp management and digital communication with ASIC and  $\mu$ C
- constant light output independent of fluctuating supply voltage
- DC operation in emergency lighting installations to VDE 0108
- safe shutdown of defective lamps
- safe shutdown of lamps at end of life (rectifying effect)
- return error signals possible
- automatic restart after lamp replacement
- operating frequency ~40 – 100 kHz



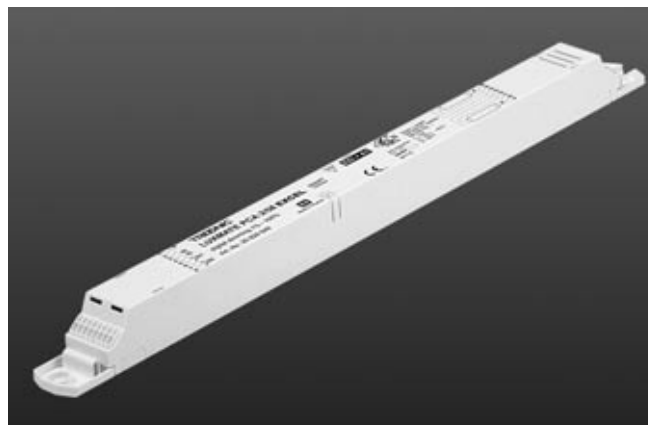
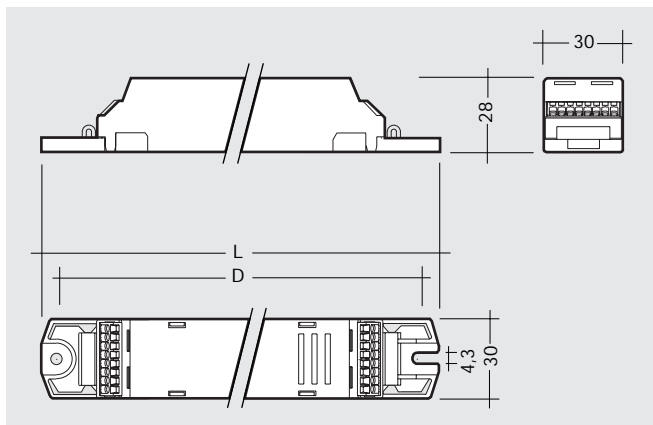
Lamp		Ballast										
wattage	length	type	article number	length L	fixing centres D	weight	circuit power	lamp power	current at 230V/50Hz	$\lambda$ at 230V/50Hz	tc point	temperature range*
W	mm			mm	mm	kg	W **	W **	A **		°C	°C
24	549	PCA 1/24 T5 ECO 220-240V 50/60/0Hz	22085014	360	350	0,32	u. c.*	23		under consideration		+10 → +60
2x24	549	PCA 2/24 T5 ECO 220-240V 50/60/0Hz	22085020	360	350	0,36	u. c.*	2x23		under consideration		+10 → +50
39	849	PCA 1/39 T5 ECO 220-240V 50/60/0Hz	22085036	360	350	0,32	u. c.*	38		under consideration		+10 → +60
2x39	849	PCA 2/39 T5 ECO 220-240V 50/60/0Hz	22085042	360	350	0,36	u. c.*	2x38		under consideration		+10 → +50
54	1149	PCA 1/54 T5 ECO 220-240 V 50/60/0Hz	22084815	360	350	0,32	58	50	0,23	0,98	80	+10 → +60
2x54	1149	PCA 2/54 T5 ECO 220-240 V 50/60/0Hz	22084821	360	350	0,36	111,5	2x50	0,5	0,99	75	+10 → +50
80	1449	PCA 1/80 T5 ECO 220-240V 50/60/0Hz	22085058	360	350	0,32	u. c.*	80		under consideration		+10 → +60

\* dimming to 3 % between 10°C to ta max.  
 \*\* valid at 100 % light output  
 \* u. c. = under consideration



Electronic ballasts for dimming to 1 %  
Linear lamps

**PCA EXCEL 18-58 W 220-240 V 50/60/0 Hz, dimmable**



- dimming range from 1 – 100 %
- lamp start at 1 % possible
- lamp friendly warm start within 0,6 sec.
- switching via the mains or with digital control signal
- dimming which is comfortable to the eye
- disturbance free precise control with a digital signal (DSI) or switch **DIM**
- integrated SMART interface
- fully electronic lamp management and digital communication with ASIC and  $\mu$ C
- constant light output independent of fluctuating supply voltage
- DC operation in emergency lighting installations to VDE 0108
- programmable parameter: minimum dimming level maximum dimming level DC light output
- safe shutdown of defective lamps
- safe shutdown of lamps at end of life (rectifying effect)
- return error signals possible
- automatic restart after lamp replacement
- operating frequency  $\geq 42$  kHz

Lamp		Ballast										
wattage	length	type	article number	length L	fixing centres D	weight	circuit power	lamp power	current at 230V/50Hz	$\lambda$ at 230V/50Hz	tc point	temperature range*
W	mm			mm	mm	kg	W **	W**	A**		°C	°C
18	590	PCA 1/18 EXCEL 220-240V 50/60/0Hz	20829544	360	350	0,21	20,0	16	0,09	0,93	80	-25 → +60
2x18	590	PCA 2/18 EXCEL 220-240V 50/60/0Hz	20829563	360	350	0,25	39,0	34	0,17	0,97	95	-25 → +60
36	1200	PCA 1/36 EXCEL 220-240V 50/60/0Hz	20829585	360	350	0,21	36,0	32	0,16	0,93	80	-25 → +60
2x36	1200	PCA 2/36 EXCEL 220-240V 50/60/0Hz	20829602	360	350	0,25	70,0	64	0,31	0,98	95	-25 → +60
38	1047	PCA 1/38 EXCEL 220-240V 50/60/0Hz	22082615	360	350	0,21	36,0	32	0,16	0,93	80	-25 → +60
2x38	1047	PCA 2/38 EXCEL 220-240V 50/60/0Hz	22082621	360	350	0,25	70,0	64	0,31	0,98	95	-25 → +60
58	1500	PCA 1/58 EXCEL 220-240V 50/60/0Hz	20829627	360	350	0,21	56,0	50	0,25	0,98	85	-25 → +60
2x58	1500	PCA 2/58 EXCEL 220-240V 50/60/0Hz	20829649	360	350	0,25	111,0	100	0,49	0,99	95	-25 → +50

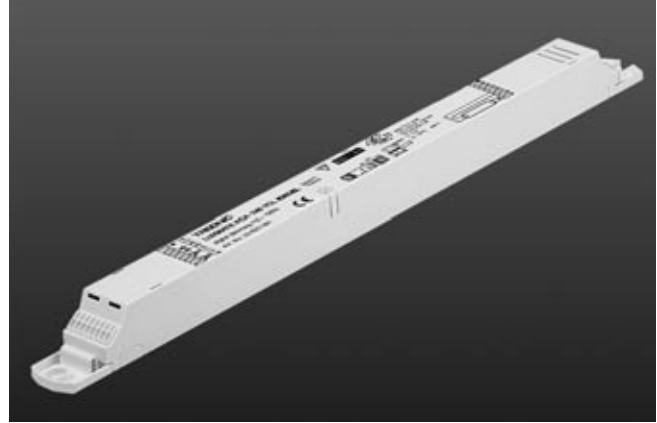
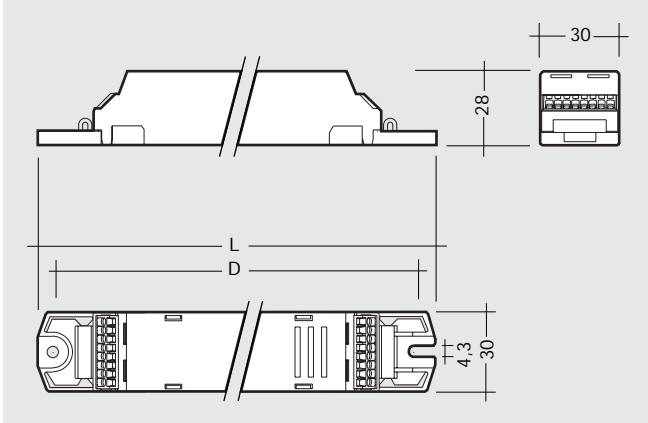
\* dimming to 1% between 0°C to ta max.

\*\* valid at 100 % light output



**Electronic ballasts for dimming to 3 %  
Compact lamps**

**PCA EXCEL TC-L 36-55 W 220-240 V 50/60/0 Hz, dimmable**



- dimming range from 3 – 100 %
- lamp start at 3 % possible
- lamp friendly warm start
- switching via the mains or with digital control signal
- dimming which is comfortable to the eye
- disturbance free precise control with a digital signal (DSI) or switch **DIM**
- integrated SMART interface
- fully electronic lamp management and digital communication with ASIC and  $\mu$ C
- constant light output independent of fluctuating supply voltage
- DC operation in emergency lighting installations to VDE 0108
- programmable parameter: minimum dimming level  
maximum dimming level  
DC light output
- safe shutdown of defective lamps
- safe shutdown of lamps at end of life (rectifying effect)
- return error signals possible
- automatic restart after lamp replacement
- operating frequency  $\geq$  42 kHz

Lamp		Ballast	article number	length L mm	fixing centres D mm	weight kg	circuit power W **	lamp power W **	current at 230V 50Hz A **	$\lambda$ at 230V 50Hz	tc point °C	temperature range * °C
36	TC-L	PCA 1/36 TCL EXCEL 220-240V 50/60/0Hz	20829740	360	350	0,21	35,0	32	0,16	0,96	85	-25 → +60
2x36	TC-L	PCA 2/36 TCL EXCEL 220-240V 50/60/0Hz	20829769	360	350	0,25	71,0	2x32	0,30	0,98	95	-25 → +60
40	TC-L	PCA 1/40 TCL EXCEL 220-240V 50/60/0Hz	20829781	360	350	0,21	44,5	40	0,19	0,97	80	-25 → +60
2x40	TC-L	PCA 2/40 TCL EXCEL 220-240V 50/60/0Hz	20829800	360	350	0,25	88,0	2x40	0,38	0,99	95	-25 → +60
55	TC-L	PCA 1/55 TCL EXCEL 220-240V 50/60/0Hz	20829825	360	350	0,21	61,0	55	0,26	0,98	90	-25 → +60
2x55	TC-L	PCA 2/55 TCL EXCEL 220-240V 50/60/0Hz	20829847	360	350	0,25	118,0	2x55	0,50	0,99	95	-25 → +50

\* dimming to 3 % between 0 °C to ta max.

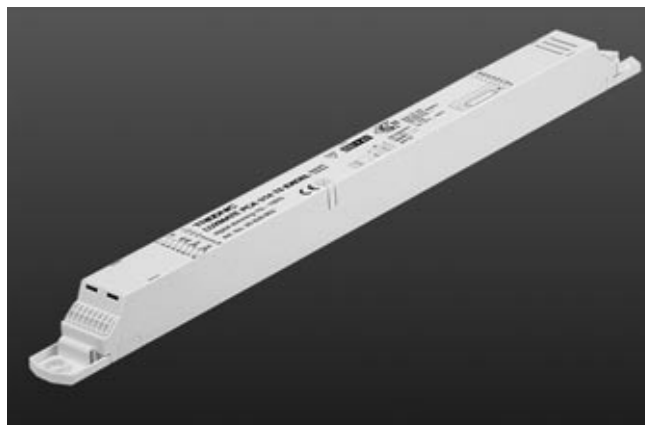
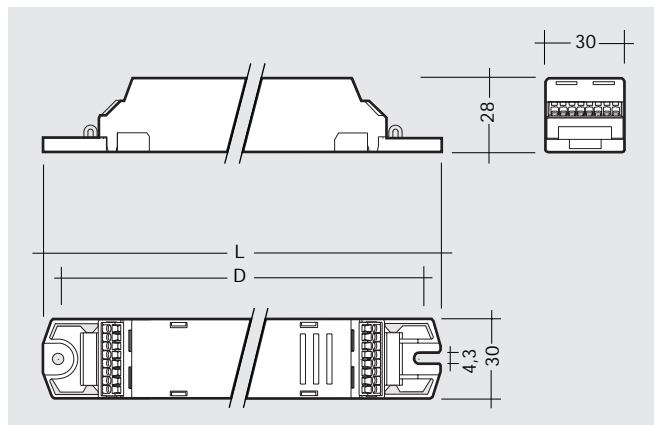
\*\* valid at 100 % light output



**EEL = A1**

Electronic ballasts for dimming to 1 %  
Linear lamps T5, 16 mm high efficiency

**PCA EXCEL T5 14-35 W 220-240 V 50/60/0 Hz, dimmable**



- dimming range from 1 – 100 %
- lamp start at 1 % possible
- lamp friendly warm start within 1,5 sec.
- switching via the mains or with digital control signal
- dimming which is comfortable to the eye
- disturbance free precise control with a digital signal (DSI) or switch **DIM**
- integrated SMART interface
- fully electronic lamp management and digital communication with ASIC and  $\mu$ C
- constant light output independent of fluctuating supply voltage
- DC operation in emergency lighting installations to VDE 0108
- programmable parameter: minimum dimming level maximum dimming level DC light output
- safe shutdown of defective lamps
- safe shutdown of lamps at end of life (rectifying effect)
- return error signals possible
- automatic restart after lamp replacement
- operating frequency  $\geq 42$  kHz

Lamp		Ballast										
wattage	length	type	article number	length L	fixing centres	weight	circuit power	lamp power	current at 230V/50Hz	$\lambda$ at 230V/50Hz	tc point	temperature range*
W	mm			mm	D mm	kg	W **	W**	A**		°C	°C
14	549	PCA 1/14 T5 EXCEL 220/240V 50/60/0Hz	20829853	360	350	0,21	18,0	13,5	0,09	0,92	80	+10 → +60
2x14	549	PCA 2/14 T5 EXCEL 220/240V 50/60/0Hz	20829866	360	350	0,25	34,5	27,5	0,16	0,97	95	+10 → +60
21	849	PCA 1/21 T5 EXCEL 220/240V 50/60/0Hz	20829872	360	350	0,21	24,0	20,5	0,11	0,94	70	+10 → +60
2x21	849	PCA 2/21 T5 EXCEL 220/240V 50/60/0Hz	20829888	360	350	0,25	49,0	41,0	0,22	0,98	75	+10 → +60
28	1149	PCA 1/28 T5 EXCEL 220/240V 50/60/0Hz	20829894	360	350	0,21	31,0	28,5	0,14	0,95	75	+10 → +60
2x28	1149	PCA 2/28 T5 EXCEL 220/240V 50/60/0Hz	20829901	360	350	0,25	59,0	54,5	0,26	0,98	80	+10 → +60
35	1449	PCA 1/35 T5 EXCEL 220/240V 50/60/0Hz	20829910	360	350	0,21	41,0	34,0	0,18	0,97	70	+10 → +60
2x35	1449	PCA 2/35 T5 EXCEL 220/240V 50/60/0Hz	20829926	360	350	0,25	74,5	64,5	0,33	0,98	90	+10 → +60

\* dimming to 1 % between 10°C to ta max.

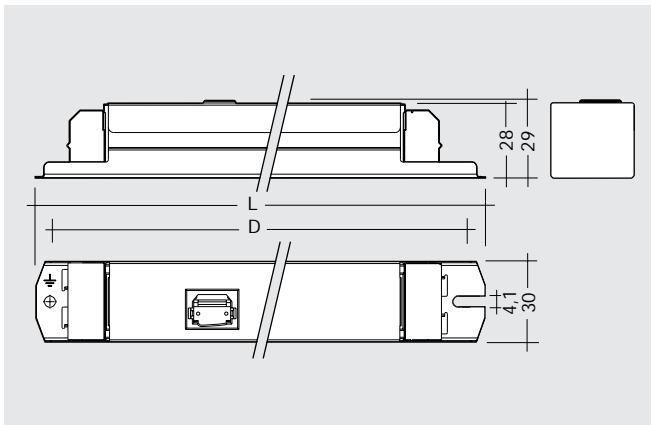
\*\* valid at 100 % light output

PCA T5 EXCEL are gradually being replaced by PCA T5 EXCEL one4all.



**Electronic ballasts for dimming to 1 %  
Linear lamps T5, 16 mm high efficiency**

**PCA EXCEL T5 one4all 14-35 W 220-240 V 50/60/0 Hz, dimmable**



- dimming range from 1 – 100 %
- lamp start at 1 % possible
- lamp friendly warm start within 1,5 sec.
- switching via the mains or with digital control signal
- dimming which is comfortable to the eye
- disturbance free precise control with a digital signal (DSI), switch**DIM** or **DALI** (digital addressable lighting interface)
- integrated SMART interface
- fully electronic lamp management and digital communication with ASIC and  $\mu$ C
- constant light output independent of fluctuating supply voltage
- DC operation in emergency lighting installations to VDE 0108
- programmable parameter: minimum dimming level maximum dimming level DC light output
- safe shutdown of defective lamps
- safe shutdown of lamps at end of life (rectifying effect)
- return error signals possible
- automatic restart after lamp replacement
- operating frequency ~40 – 100 kHz



Lamp		Ballast										
wattage	length	type	article number	length L	fixing centres D	weight	circuit power	lamp power	current at 230V/50Hz	$\lambda$ at 230V/50Hz	tc point °C	temperature range*
W	mm			mm	mm	kg	W**	W**	A**		°C	°C
14	549	PCA 1/14 T5 EXCEL 220/240V 50/60/0Hz	22084884	360	350	0,32	18	14	0,09	0,95	u. c.*	+10 → +60
2x14	549	PCA 2/14 T5 EXCEL 220/240V 50/60/0Hz	22084890	360	350	0,36	u. c.*	2x14	u. c.*	0,95	u. c.*	+10 → +60
21	849	PCA 1/21 T5 EXCEL 220/240V 50/60/0Hz	22084907	360	350	0,32	25	21	0,11	0,95	u. c.*	+10 → +60
2x21	849	PCA 2/21 T5 EXCEL 220/240V 50/60/0Hz	22084916	360	350	0,36	u. c.*	2x21	u. c.*	0,95	u. c.*	+10 → +60
28	1149	PCA 1/28 T5 EXCEL 220/240V 50/60/0Hz	22084540	360	350	0,32	32	28	0,15	0,96	70	+10 → +60
2x28	1149	PCA 2/28 T5 EXCEL 220/240V 50/60/0Hz	22084556	360	350	0,36	61	2x28	0,28	0,98	75	+10 → +60
35	1449	PCA 1/35 T5 EXCEL 220/240V 50/60/0Hz	22084569	360	350	0,32	38	34	0,17	0,97	75	+10 → +60
2x35	1449	PCA 2/35 T5 EXCEL 220/240V 50/60/0Hz	22084575	360	350	0,36	75	2x34	0,32	0,98	85	+10 → +60

\* dimming to 1 % between 10°C to ta max.

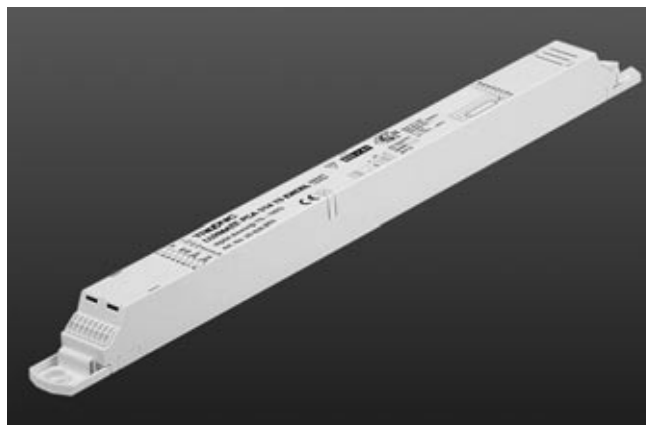
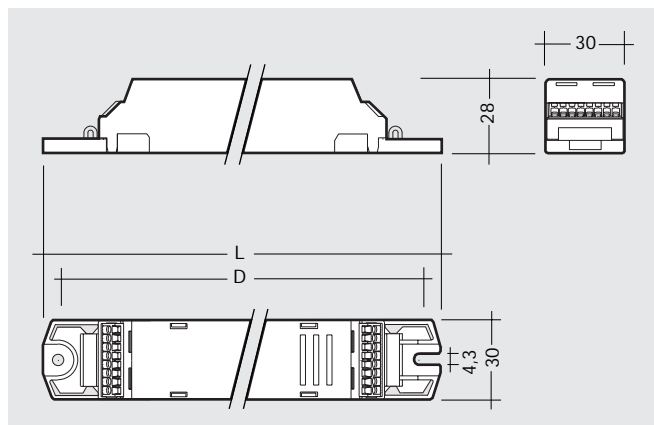
\*\* valid at 100 % light output

\* u. c. = under consideration



Electronic ballasts for dimming to 3 %  
Linear lamps T5 high output

**PCA EXCEL T5 24-54 W 220-240 V 50/60/0 Hz, dimmable**



- dimming range from 3 – 100 %
- lamp start at 3 % possible
- lamp friendly warm start within 1,5 sec.
- switching via the mains or with digital control signal
- dimming which is comfortable to the eye
- disturbance free precise control with a digital signal or switch **DIM**
- integrated SMART interface
- fully electronic lamp management and digital communication with ASIC and  $\mu$ C
- constant light output independent of fluctuating supply voltage
- DC operation in emergency lighting installations to VDE 0108
- programmable parameter:
  - minimum dimming level
  - maximum dimming level
  - DC light output
- safe shutdown of defective lamps
- safe shutdown of lamps at end of life (rectifying effect)
- return error signals possible
- automatic restart after lamp replacement
- operating frequency  $\geq 42$  kHz

Lamp		Ballast										
watt-age W	length mm	type	article number	length L mm	fixing centres D mm	weight kg	circuit power W **	lamp power W **	current at 230V 50Hz A **	$\lambda$ at 230V 50Hz	tc point °C	temperature range * °C
24	549	PCA 1/24 T5 EXCEL 220-240V 50/60/0Hz	20829932	360	350	0,21	27,5	22,0	0,12	0,96	80	+10 → +60
2x24	549	PCA 2/24 T5 EXCEL 220-240V 50/60/0Hz	20829948	360	350	0,25	56,5	46,0	0,25	0,98	95	+10 → +50
39	849	PCA 1/39 T5 EXCEL 220-240V 50/60/0Hz	20829954	360	350	0,21	42,5	37,0	0,19	0,97	90	+10 → +60
2x39	849	PCA 2/39 T5 EXCEL 220-240V 50/60/0Hz	20829967	360	350	0,25	85,5	74,5	0,38	0,99	85	+10 → +50
54	1149	PCA 1/54 T5 EXCEL 220-240V 50/60/0Hz	20829973	360	350	0,21	59,0	52,0	0,27	0,97	95	+10 → +60
2x54	1149	PCA 2/54 T5 EXCEL 220-240V 50/60/0Hz	20829989	360	350	0,25	115,0	104,0	0,51	0,99	85	+10 → +50

\* dimming to 3 % between +10 °C to ta max.

\*\* valid at 100 % light output

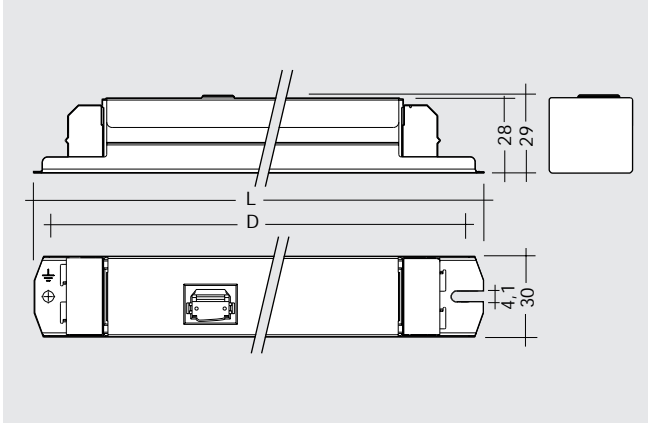
PCA T5 EXCEL are gradually being replaced by PCA T5 EXCEL one4all.



EEL = A1

**Electronic ballasts for dimming to 3 %  
Linear lamps T5, 16 mm high output**

**PCA EXCEL T5 one4all 24-80 W 220-240 V 50/60/0 Hz, dimmable**



- dimming range from 3 – 100 %  
(10 – 100 % with 80 W)
- lamp start at 3 % possible  
(10 % with 80 W)
- lamp friendly warm start within  
1,5 sec.
- switching via the mains or with digital  
control signal
- dimming which is comfortable to  
the eye
- disturbance free precise control with a  
digital signal (DSI), switch**DIM** or **DALI**  
(digital addressable lighting interface)
- integrated SMART interface
- fully electronic lamp management and  
digital communication with ASIC  
and  $\mu$ C
- constant light output independent  
of fluctuating supply voltage
- DC operation in emergency lighting  
installations to VDE 0108
- programmable parameter:  
minimum dimming level  
maximum dimming level  
DC light output
- safe shutdown of defective lamps
- safe shutdown of lamps at end of  
life (rectifying effect)
- return error signals possible
- automatic restart after lamp  
replacement
- operating frequency ~40 – 100 kHz



Lamp		Ballast										
wattage	length	type	article	length	fixing	weight	circuit	lamp	current	$\lambda$	tc point	temperature
W	mm		number	L	centres	kg	power	power	at 230V/50Hz	at 230V/50Hz	$^{\circ}$ C	range*
				mm	D mm		W **	W **	A **			$^{\circ}$ C
24	549	PCA 1/24 T5 EXCEL 220-240V 50/60/0Hz	22084922	360	350	0,32						+10 $\rightarrow$ +60
2x24	549	PCA 2/24 T5 EXCEL 220-240V 50/60/0Hz	22084938	360	350	0,36						+10 $\rightarrow$ +50
39	849	PCA 1/39 T5 EXCEL 220-240V 50/60/0Hz	22084944	360	350	0,32						+10 $\rightarrow$ +60
2x39	849	PCA 2/39 T5 EXCEL 220-240V 50/60/0Hz	22084950	360	350	0,36						+10 $\rightarrow$ +50
54	1149	PCA 1/54 T5 EXCEL 220-240 V 50/60/0Hz	22084581	360	350	0,32	58	50	0,23	0,98	80	+10 $\rightarrow$ +60
2x54	1149	PCA 2/54 T5 EXCEL 220-240 V 50/60/0Hz	22084597	360	350	0,36	111,5	2x50	0,50	0,99	75	+10 $\rightarrow$ +50
80	1449	PCA 1/80 T5 EXCEL 220-240V 50/60/0Hz	22084963	360	350	0,32	u. c.	80				+10 $\rightarrow$ +60

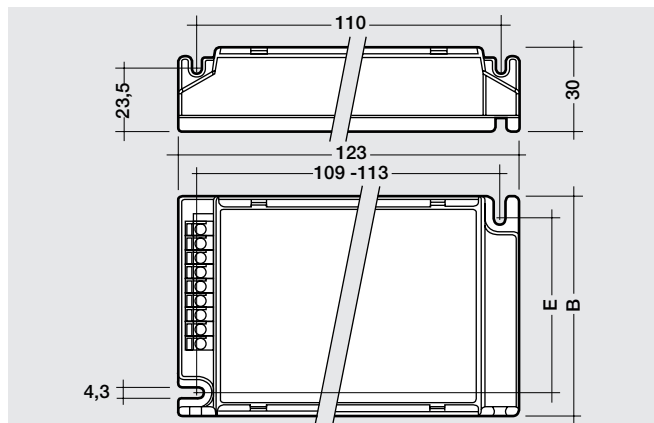
\* dimming to 3 % between 10 $^{\circ}$ C to ta max.

\*\* valid at 100 % light output



Electronic ballasts for dimming to 3 %  
Compact lamps

**PC-A 111** 11-42 W 220/240 V 50/60/0 Hz, dimmable



- dimming range from 3 – 100 %
- lamp start at 10 % possible
- lamp friendly warm start
- switching via the mains or with digital control signal
- dimming which is comfortable to the eye
- disturbance free precise control with a digital signal (DSI)
- fully electronic lamp management and digital communication with ASIC and  $\mu$ C
- constant light output independent of fluctuating supply voltage
- DC operation in emergency lighting installations to VDE 0108
- safe shutdown of defective lamps
- safe shutdown of lamps at end of life (rectifying effect)
- automatic restart after lamp replacement
- operating frequency 20 – 80 kHz

Lamp		Ballast										
wattage	type	type	article number	width B	fixing centres	weight	circuit power	lamp power	current	$\lambda$	tc point	temperature range*
W				mm	E mm	kg	W**	W**	at 230V/50Hz A**	at 230V/50Hz	°C	°C
11/13	TC-D/E; TC-SE	<b>PC 11/13 TCD A111</b> 220/240V 50/60Hz	20823578	80	64 - 68	0,22	15,0	12,5 ①	0,07	0,96	75	-15 → +60
2x11/13	TC-D/E; TC-SE	<b>PC 2x11/13 TCD A111</b> 220/240V 50/60Hz	20823610	100	84 - 88	0,26	29,0 ②	2x12,5	0,13	0,96	80	-15 → +60
18	TC-D/E; TC-T/E	<b>PC 18 TCD A111</b> 220/240V 50/60Hz	20823584	80	64 - 68	0,22	19,0	16,5	0,09	0,98	80	-25 → +60
2x18	TC-D/E; TC-T/E	<b>PC 2 x 18 TCD A111</b> 220/240V 50/60Hz	20823626	100	84 - 88	0,26	37,5	2x16,5	0,17	0,97	85	-25 → +60
26	TC-D/E; TC-T/E	<b>PC 26 TCD A111</b> 220/240V 50/60Hz	20823590	80	64 - 68	0,22	27,0	23,5	0,12	0,98	80	-25 → +60
2x26	TC-D/E; TC-T/E	<b>PC 2 x 26 TCD A111</b> 220/240V 50/60Hz	20823632	100	84 - 88	0,26	53,0	2x23,5	0,24	0,97	90	-25 → +60
32	TC-T/E	<b>PC 32 TCT A111</b> 220/240V 50/60Hz	20827558	80	64 - 68	0,22	33,7	30,5	0,15	0,99	85	-25 → +60
42	TC-T/E	<b>PC 42 TCT A111</b> 220/240V 50/60Hz	20827561	80	64 - 68	0,22	44,6	40,5	0,21	0,99	95	-25 → +60

\* dimming to 3 % between 0°C to  $t_a$  max.

\*\* valid at 100 % light output

① in operation with 13 W TC-D/E lamps

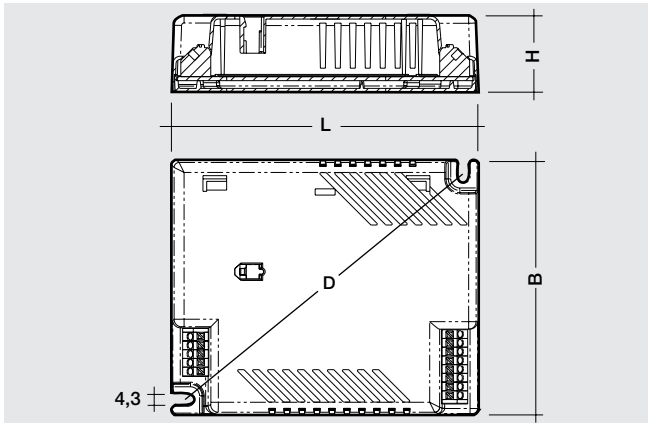
② in operation with 2 x 13 W TC-D/E lamps





Electronic ballasts for dimming to 3 %  
Compact lamps

**PCA ECO 11-42 W 220/240 V 50/60/0 Hz, dimmable**



- dimming range from 3 – 100 %
- lamp start at 3 % possible
- lamp friendly warm start
- switching via the mains or with digital control signal
- dimming which is comfortable to the eye
- disturbance free precise control with a digital signal (DSI) or switch**DIM**
- integrated SMART interface
- fully electronic lamp management and digital communication with ASIC and  $\mu$ C
- constant light output independent of fluctuating supply voltage
- DC operation in emergency lighting installations to VDE 0108
- safe shutdown of defective lamps
- safe shutdown of lamps at end of life (rectifying effect)
- automatic restart after lamp replacement
- operating frequency ~40 – 100 kHz

Lamp		Ballast											
wattage	type	type	article number	LxBxH	D	weight	circuit power	lamp power	current	$\lambda$	tc	temperature	
W				mm	mm	kg	W **	W**	A**	at 230V/50Hz	at 230V/50Hz	point °C	range* °C
11/13	TC-D/E; TC-S/E	PC 1/11/13 TCD ECO	220/240V 50/60/0Hz	22084878	123x79x31	129	0,22	under consideration					-15 → +60
2x11/13	TC-D/E; TC-S/E	PC 2/11/13 TCD ECO	220/240V 50/60/0Hz	22084862	123x102x31	142,2	0,25	under consideration					-15 → +60
18	TC-D/E; TC-T/E	PC 1/18 TCD ECO	220/240V 50/60/0Hz	22084859	123x79x31	129	0,22	20,5	17	0,10	0,92	u. c.*	-25 → +60
2x18	TC-D/E; TC-T/E	PC 2/18 TCD ECO	220/240V 50/60/0Hz	22084843	123x102x31	142,2	0,25	40	34	0,18	0,98	u. c.*	-25 → +60
26	TC-D/E; TC-T/E	PC 1/26 TCD ECO	220/240V 50/60/0Hz	22084765	123x79x31	129	0,22	28	24	0,13	0,97	u. c.*	-25 → +60
2x26	TC-D/E; TC-T/E	PC 2/26 TCD ECO	220/240V 50/60/0Hz	22084752	123x102x31	142,2	0,25	57,5	49,5	0,25	0,99	u. c.*	-25 → +50
32	TC-T/E	PC 1/32/42 TCT ECO	220/240V 50/60/0Hz	22084746	123x79x31	129	0,22	36	32	0,16	0,97	u. c.*	-25 → +60
2x32	TC-T/E	PC 2/32/42 TCT ECO	220/240V 50/60/0Hz	22084730	123x102x31	142,2	0,25	72	64	0,22	0,98	u. c.*	-25 → +50
42	TC-T/E	PC 1/32/42 TCT ECO	220/240V 50/60/0Hz	22084746	123x79x31	129	0,22	48,5	43,5	0,32	0,99	u. c.*	-25 → +60
2x42	TC-T/E	PC 2/32/42 TCT ECO	220/240V 50/60/0Hz	22084730	123x102x31	142,2	0,25	96,5	87	0,42	0,99	u. c.*	-25 → +50

\* dimming to 3 % between 0°C to ta max.

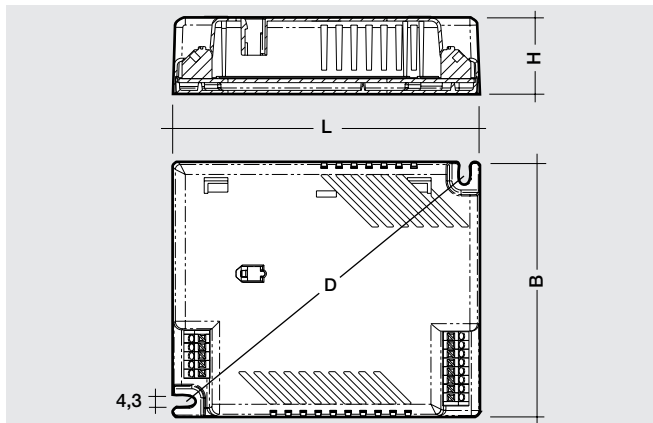
\*\* valid at 100 % light output

\* u. c. = under consideration



Electronic ballasts for dimming to 3 %  
Compact lamps

**PCA EXCEL one4all 11-42 W 220/240 V 50/60/0 Hz, dimmable**



- dimming range from 3 – 100 %
- lamp start at 3 % possible
- lamp friendly warm start within 0,6 sec.
- switching via the mains or with digital control signal
- dimming which is comfortable to the eye
- disturbance free precise control with a digital signal (DSI), switchDIM or DALI (digital addressable lighting interface)
- integrated SMART interface
- fully electronic lamp management and digital communication with ASIC and  $\mu$ C
- constant light output independent of fluctuating supply voltage
- DC operation in emergency lighting installations to VDE 0108
- programmable parameter: minimum dimming level maximum dimming level DC light output
- safe shutdown of defective lamps
- safe shutdown of lamps at end of life (rectifying effect)
- return error signals possible
- automatic restart after lamp replacement
- operating frequency ~40 – 100 kHz

Lamp		Ballast										
wattage	type	type	article number	LxBxH	D	weight	circuit power	lamp power	current	$\lambda$	tc	temperature
W				mm	mm	kg	W **	W**	at 230V/50Hz A**	at 230V/50Hz	°C	range* °C
11/13	TC-D/E; TC-SE	PC 1/11/13 TCD EXCEL 220/240V 50/60/0Hz	22084724	123x79x31	129	0,22	under consideration					-15 → +60
2x11/13	TC-D/E; TC-SE	PC 2/11/13 TCD EXCEL 220/240V 50/60/0Hz	22084718	123x102x31	142,2	0,25	under consideration					-15 → +60
18	TC-D/E; TC-T/E	PC 1/18 TCD EXCEL 220/240V 50/60/0Hz	22084709	123x79x31	129	0,22	20,5	17	0,10	0,92	u. c.*	-25 → +60
2x18	TC-D/E; TC-T/E	PC 2/18 TCD EXCEL 220/240V 50/60/0Hz	22084692	123x102x31	142,2	0,25	40	34	0,18	0,98	u. c.*	-25 → +60
26	TC-D/E; TC-T/E	PC 1/26 TCD EXCEL 220/240V 50/60/0Hz	22084686	123x79x31	129	0,22	28	24	0,13	0,97	u. c.*	-25 → +60
2x26	TC-D/E; TC-T/E	PC 2/26 TCD EXCEL 220/240V 50/60/0Hz	22084670	123x102x31	142,2	0,25	57,5	49,5	0,25	0,99	u. c.*	-25 → +50
32	TC-T/E	PC 1/32/42 TCT EXCEL 220/240V 50/60/0Hz	22084664	123x79x31	129	0,22	36	32	0,16	0,97	u. c.*	-25 → +60
2x32	TC-T/E	PC 2/32/42 TCT EXCEL 220/240V 50/60/0Hz	22084651	123x102x31	142,2	0,25	72	64	0,22	0,98	u. c.*	-25 → +50
42	TC-T/E	PC 1/32/42 TCT EXCEL 220/240V 50/60/0Hz	22084664	123x79x31	129	0,22	48,5	43,5	0,32	0,99	u. c.*	-25 → +60
2x42	TC-T/E	PC 2/32/42 TCT EXCEL 220/240V 50/60/0Hz	22084651	123x102x31	142,2	0,25	96,5	87	0,42	0,99	u. c.*	-25 → +50

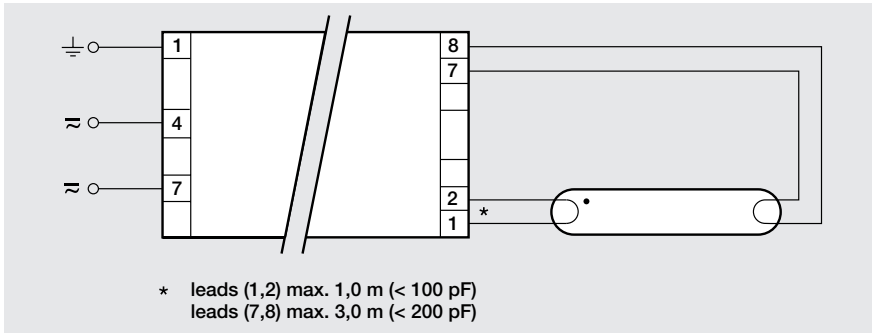
\* dimming to 3 % between 0°C to ta max.

\*\* valid at 100 % light output

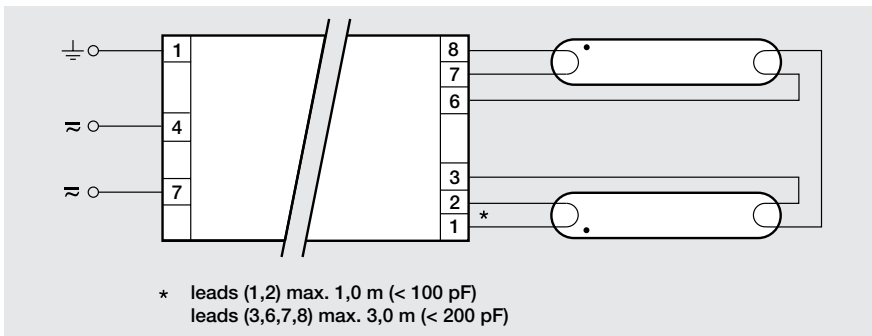
\* u. c. = under consideration



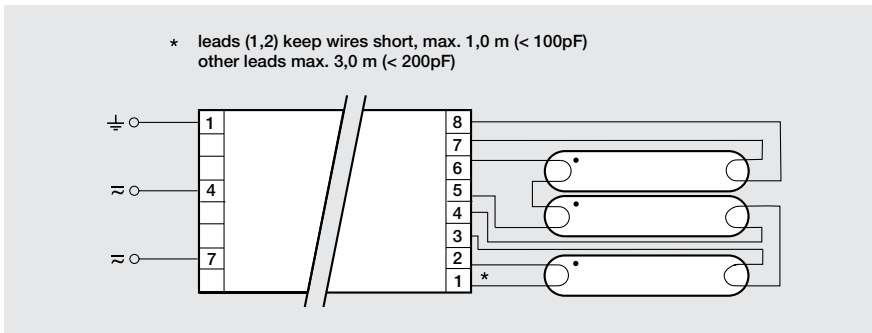
Circuit diagrams



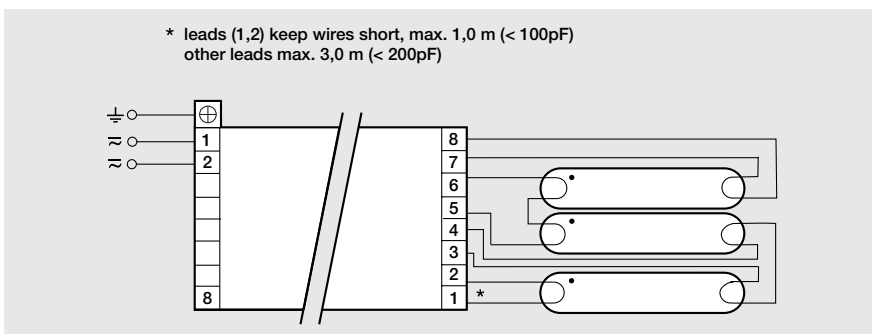
PC-E 011 18 – 70 W



PC-E 011 2 x 18 – 70 W



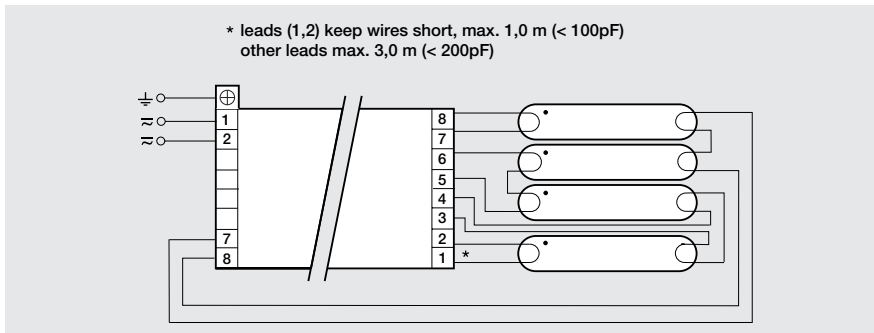
PC-E 011 3 x 18 W



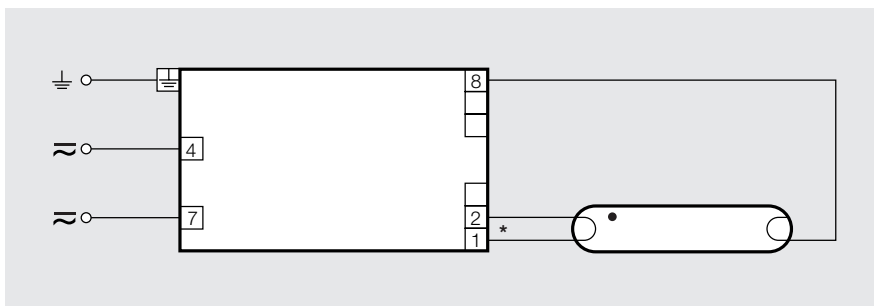
PC-E 011 3 x 36 W

Electronic ballasts

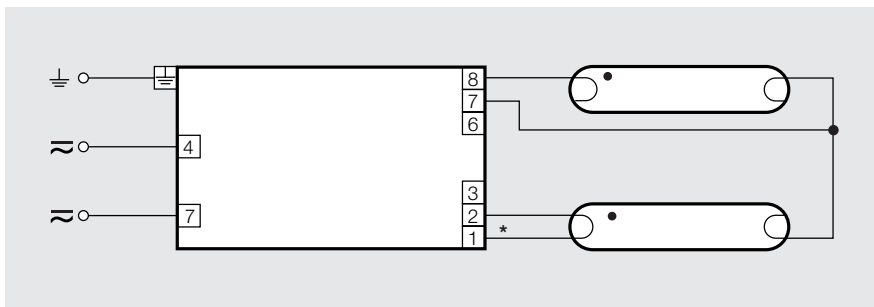
Circuit diagrams



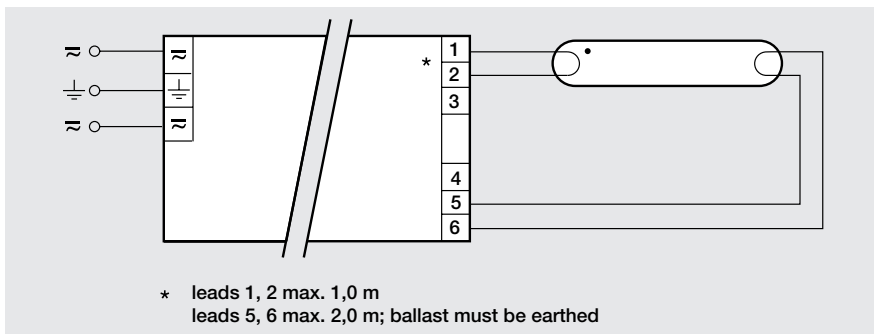
PC-E 011 4 x 18 W



PC INST 1 x 36 - 58 W

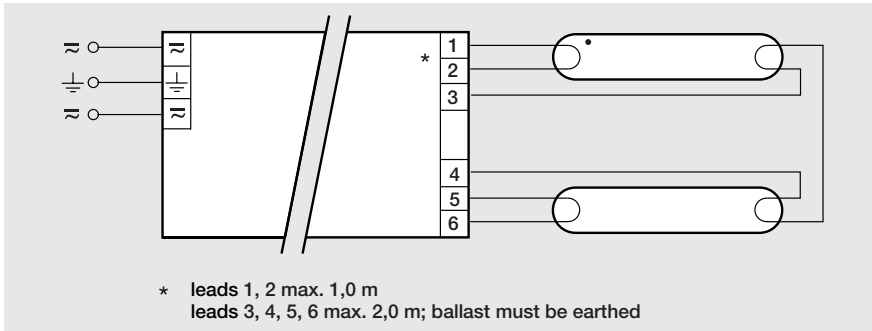


PC INST 2 x 36 - 58 W

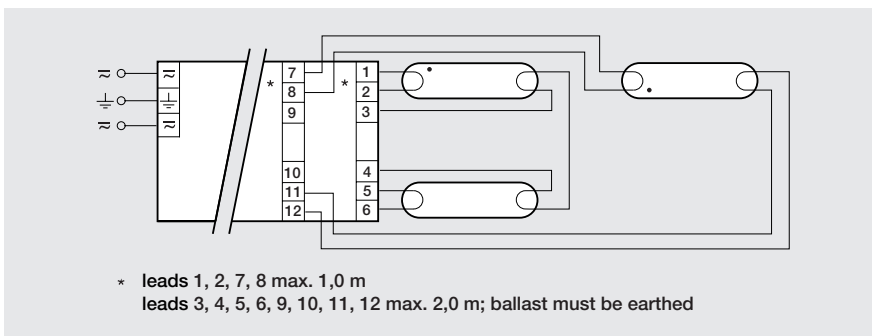


PC-F T5 14 - 35 W

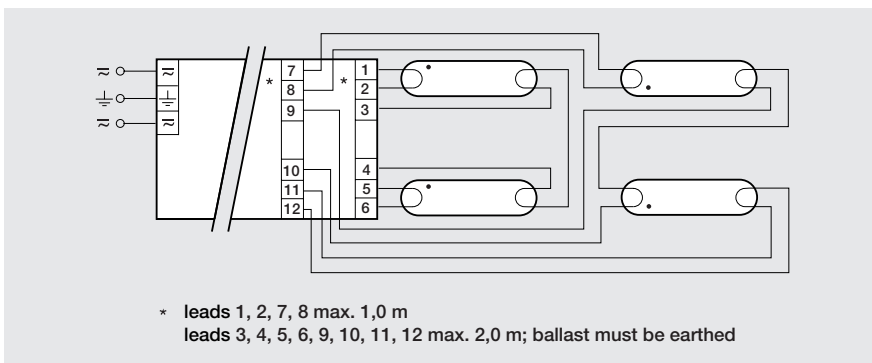
## Circuit diagrams



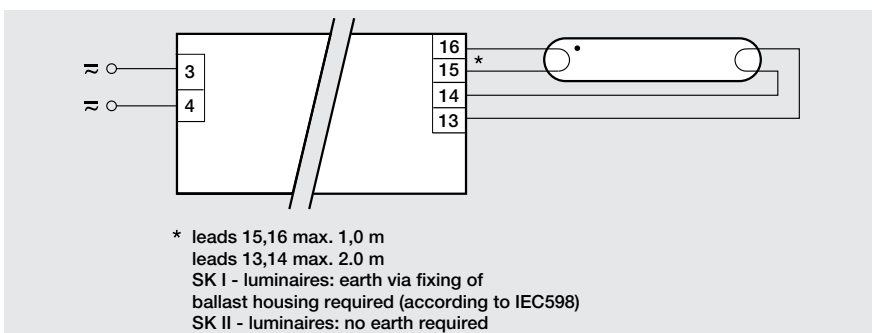
PC-F T5 2 x 14 – 35 W



PC-F T5 4/3 x 14 W with 3 lamps

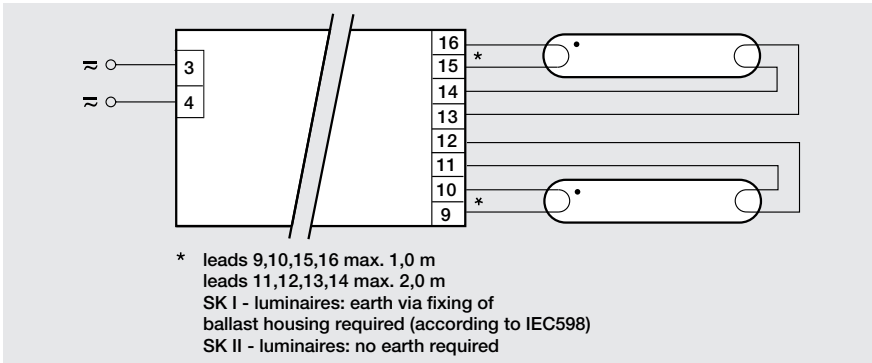


PC-F T5 4/3 x 14 W with 4 lamps

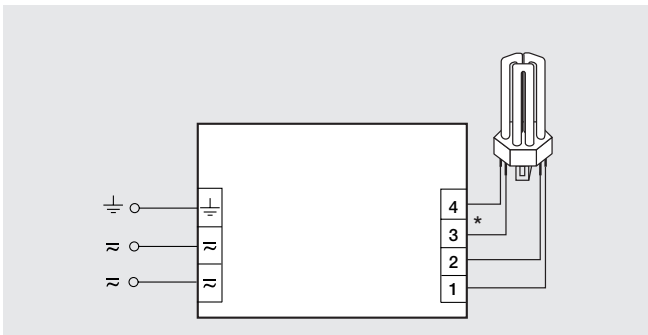


PC PRO T5 14 – 80 W

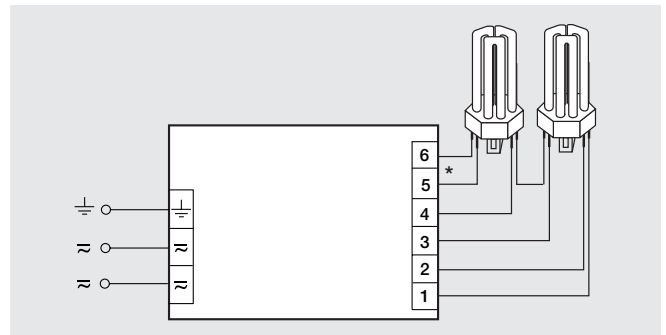
Circuit diagrams



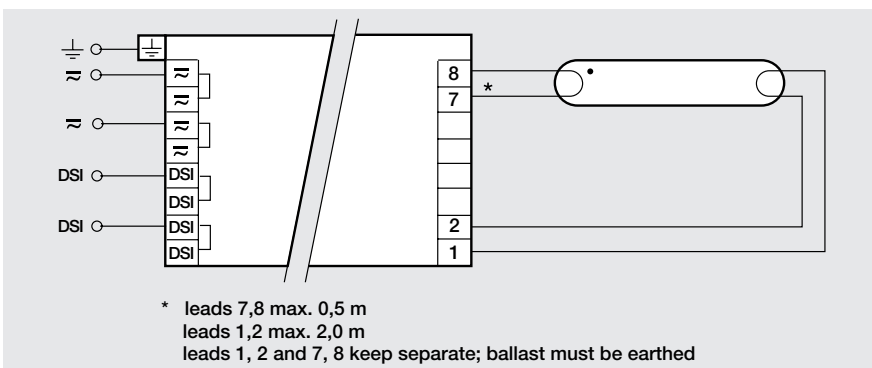
PC PRO T5 2x14 – 54 W



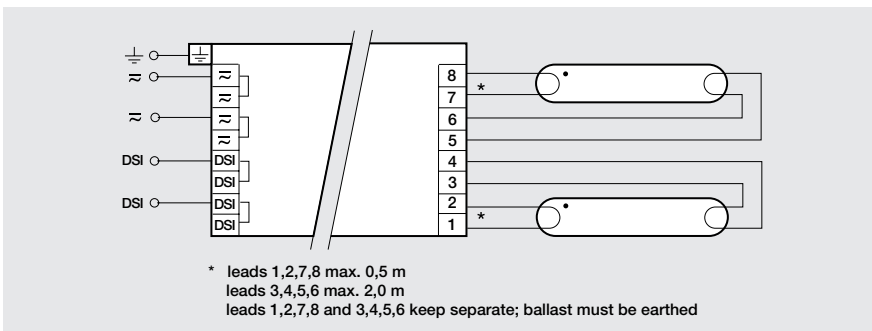
PC PRO b 5 – 42 W



PC PRO b 2 x 5 – 42 W keep wires short (max. 1 m)



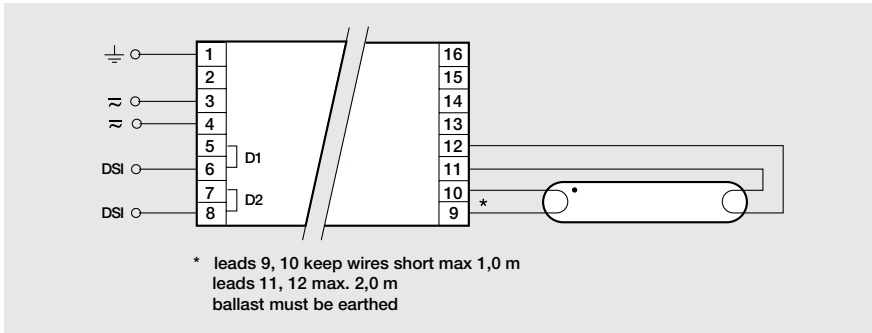
PCA 16 – 58 W



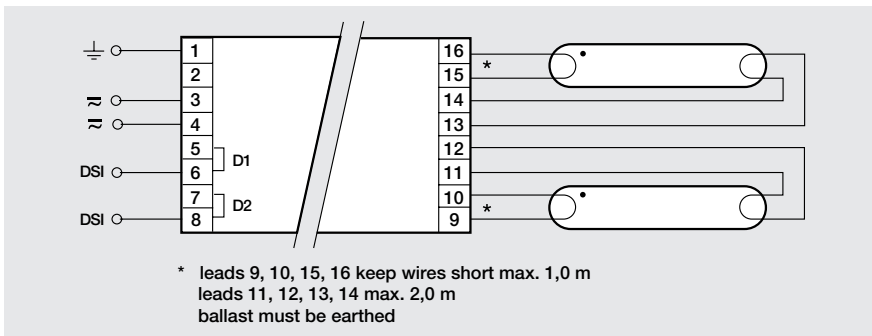
PCA 2 x 16 – 24 W

Electronic ballasts

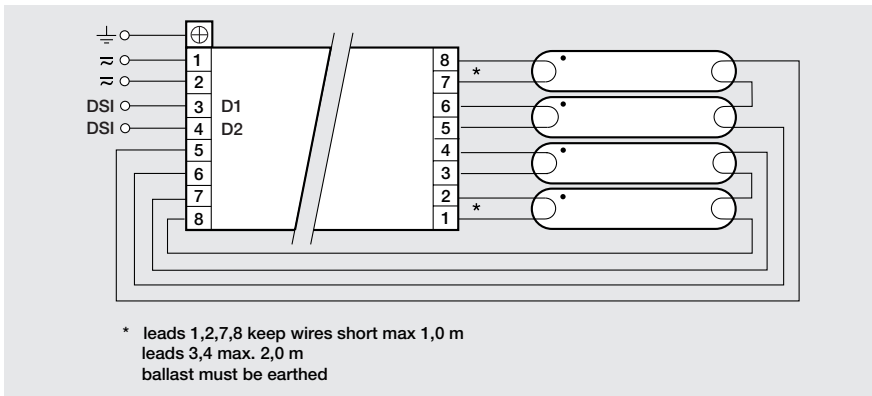
Circuit diagrams



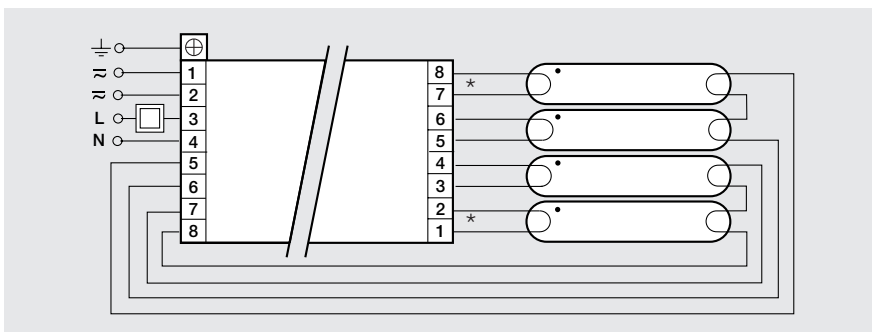
PCA ECO/EXCEL 18 – 58 W, 14 – 35 W, 24 – 54 W, TCL 36 – 55 W



PCA ECO/EXCEL 2 x 18 – 58 W, 2 x 14 – 35 W, 2 x 24 – 54 W, TCL 36 – 55 W

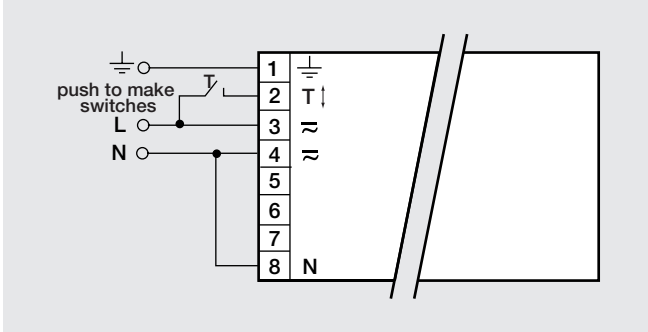


PCA ECO 4 x 14 W, 4 x 18 W

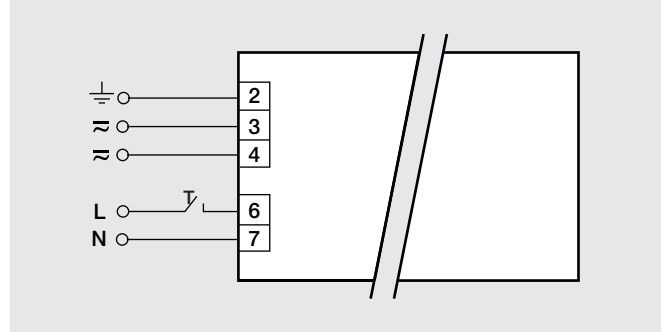


PCA SD 4 x 14 W, 4 x 18 W

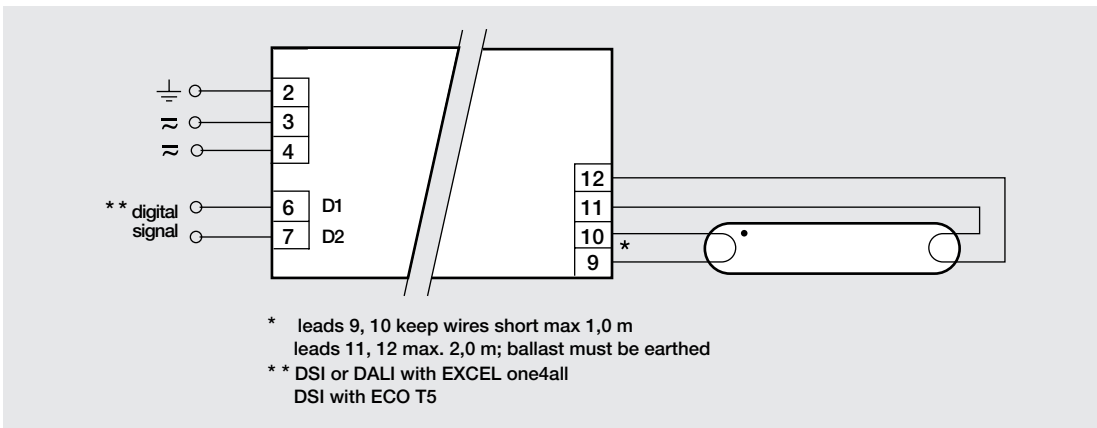
Circuit diagrams



switchDIM PCA ECO /EXCEL

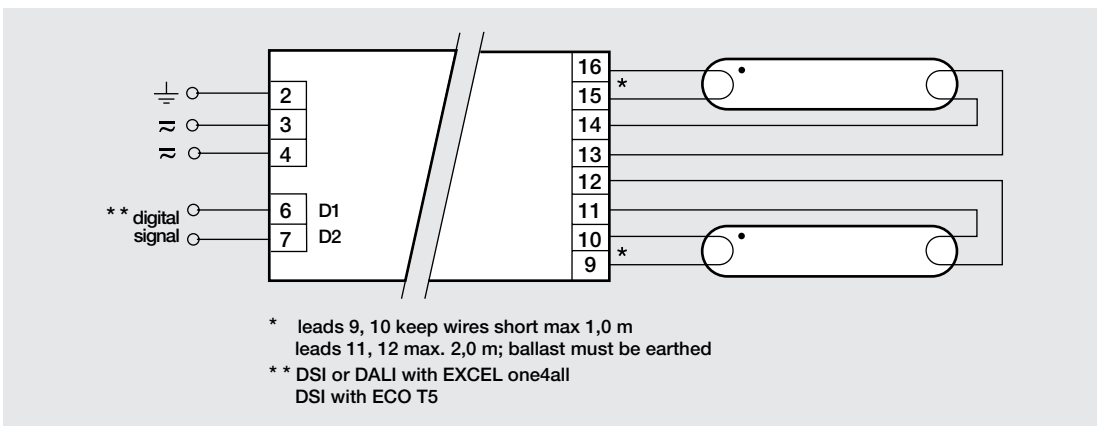


switchDIM PCA ECO T5 / PCA EXCEL one4all



PCA EXCEL one4all / PCA ECO T5

18 – 58 W, 14 – 35 W, 24 – 80 W

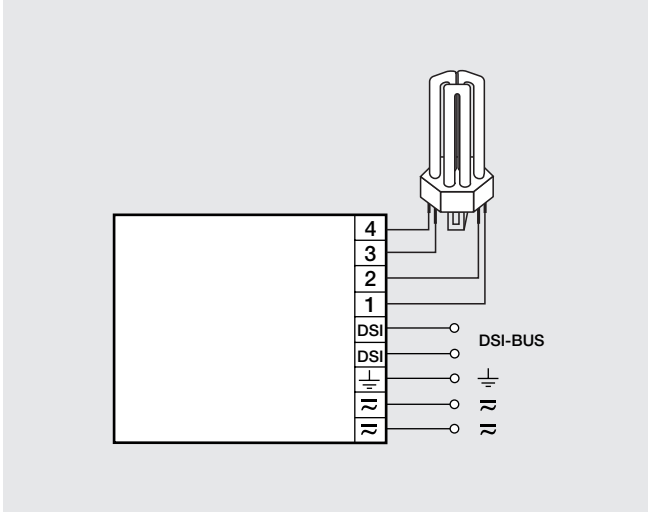


PCA EXCEL one4all / PCA ECO T5

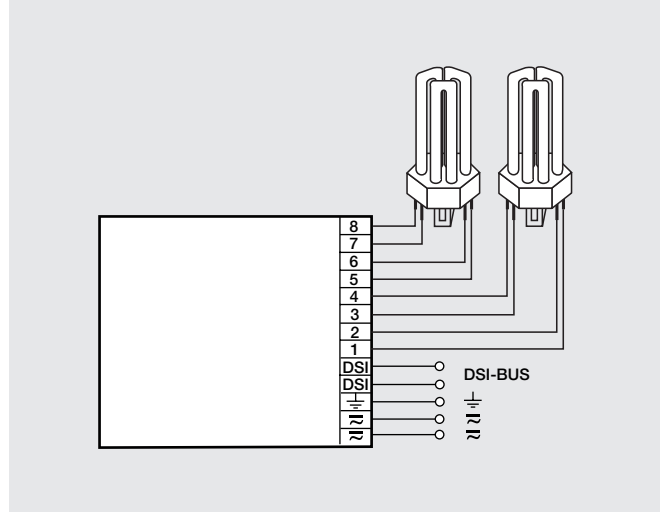
2x18 – 58 W, 2x14 – 35 W, 2x24 – 80 W



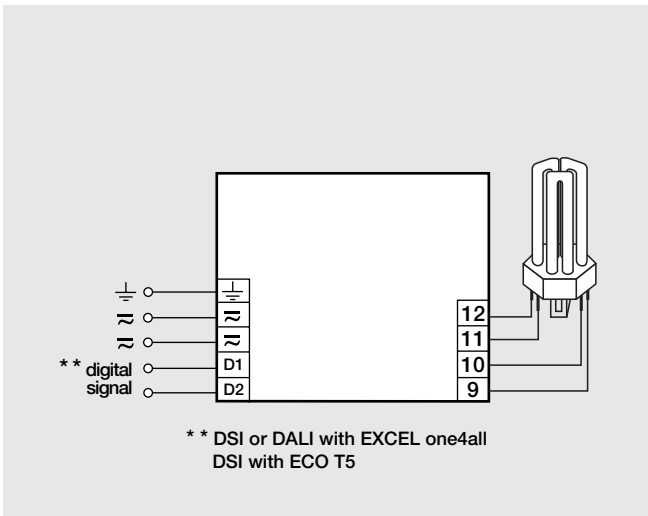
Circuit diagrams



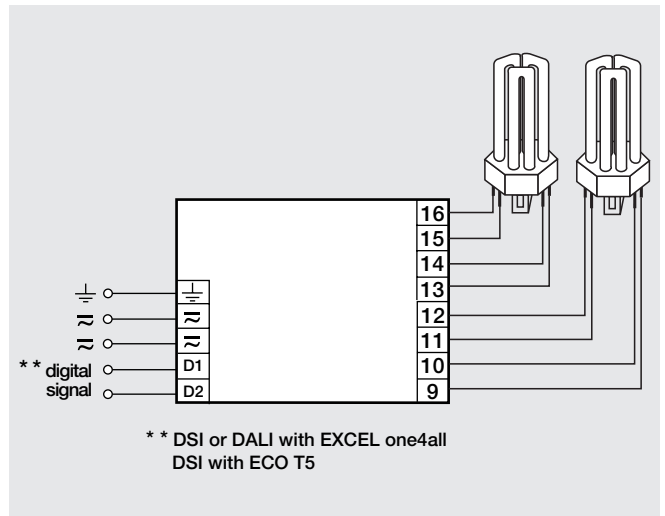
PC-A compact 1 x 11 – 42 W  
Keep wire connection between lamp and ballast short (max. 0,5 m)



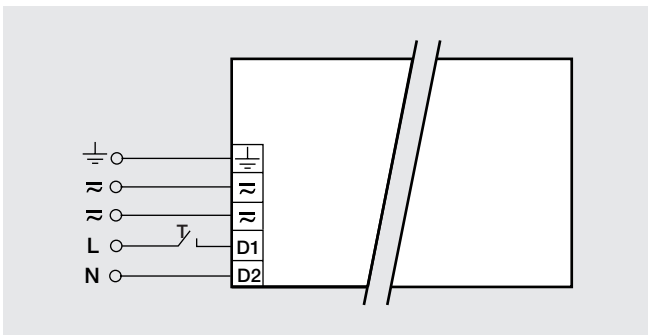
PC-A compact 2 x 11 – 26 W  
Keep wire connection between lamp and ballast short (max. 0,5 m)



PC-A EXCEL one4all / PCA ECO  
1 x 11 – 42 W TC-D/TC-T



PC-A EXCEL one4all / PCA ECO  
2 x 11 – 42 W TC-D/TC-T



switchDIM PCA ECO TC-D/TC-T / PCA EXCEL one4all TC-D/TC-T

# digitalDIM Lighting Control System

## Components for lighting solutions

digitalDIM makes it possible for you to produce creative lighting solutions. With fully electronic digital control gear such as PCA ballasts and TEL transformers you can dim a range of lamps on demand. By means of digital control devices like the DSI units and sensors individual installations can be realised. From simple control with push to make switches, to more complex control using building management systems digitalDIM covers all demands. The digital technology concept guarantees maximum flexibility today and future security.

## Perfect light quality

People receive about 80 % of all information via their eyes. Light gives us sight. Therefore the better the light is suited to a particular situation, the more precisely information can be gathered, and feeling and mood absorbed. With digitalDIM different light sources can be dimmed digitally and therefore exactly. digitalDIM satisfies the requirements of optimal lighting level and adjusts for individual lighting needs. The digital ballasts and transformers utilise a logarithmic dimming curve, that is adjusted to the requirements of the human eye.

The human eye is very sensitive in the range of 0 to 10 %, where irregular or sudden changes are uncomfortable. The unique digital concept with the logarithmic curve provides a comfortable change between 0 and 100 %. Together with the precise digital control provided by the DSI and DALI units the fully electronic PCA ballasts and TEL transformers have the technological means to provide perfect lighting quality.

## Digital technology

A specially developed ASIC (Application Specific Integrated Circuit) and modern power electronics together with DSI (Digital Serial Interface) and DALI (Digital Addressable Lighting Interface) units form the peak of lighting control. Unlike the 1-10 V system which uses analogue signals the system uses digital 8bit code. In this way all the disadvantages of the older analogue system can be overcome and the new possibilities of lighting control can be revealed.

## Simple installation despite higher functionality

Simple push to make switches can be used to switch, dim and even program lighting installations. With the flexible and open system concept there are no limits: IR control, daylight linked control or integration into building management systems (EIB, LONWORKS) are only a few possibilities.

## Energy savings

With the digitalDIM system energy savings of up to 70 % are possible. Such high savings come from both the economical operation of the lamp and from linking of the PCA ballasts and TEL transformers with daylight sensors and presence detectors. Through the use of high grade components digitalDIM units have a mean service life of 50.000 hours within the permissible temperature range and a MTBF value of 400.000 hours. In addition lamp life will be positively influenced by the use of the digitalDIM system.

Long term tests show that through the use of optimised warm start of the lamp (pre-heating of the cathodes) the switching frequency of the lamp can be increased dramatically compared with cold start. The exact digital control of brightness and power means that operation in the dimmed mode has no negative influence on lamp life. The digitalDIM units have comprehensive safety features. The PCA is constantly monitoring its own performance and the lamp, defective lamps will automatically be shut down and automatically restarted after lamp change. All digitalDIM PCA ballasts and TEL transformers meet all relevant European norms for safety, performance, quality and EMC (including RFI, harmonics) and are certified by European test houses.

The unique fully electronic digitalDIM components provide a basis for the perfect lighting control system.

## digitalDIM product range

Type	function
<b>PCA ballasts</b>	
PCA 111	Digital dimmable ballasts, DSI, compact lamps TCD/TCT
PCA ECO	Digital dimmable ballasts, DSI, SMART, switchDIM, linear lamps T8, T5, TCL/TCD/TCT
PCA EXCEL	Digital dimmable ballasts, DSI, SMART, switchDIM, linear lamps T8, T5, TCL/TCD/TCT
PCA EXCEL one4all	Digital dimmable ballasts, DSI, SMART, switchDIM, DALI, linear lamps T8, T5, TCL/TCD/TCT

Type	article number	function
<b>SMART</b>		
SMART-LS	24011257	SMART ambient light sensor
DSI-SMART	24031280	Ambient light sensor
SMART-Programmer	86447355	infrared programming unit for DSI-SMART
SMART-Controller	86447349	infrared remote controller for DSI-SMART
SMART-LS II	86448347	ultra compact ambient light sensor

### Control units

#### LUXMATE BASIC

DSI-T	20975272	push to make switch control
DSI-TS	20735419	push to make switch control for DIN rail
DSI-TD	20975439	push to make switch control with preset
PHD	20724776	DSI phase cutting dimmer 300VA
PD-TD	20975509	phase cutting falling edge 1 KVA
PAD-TD	20975518	phase cutting falling edge 1 KVA
DSI-AD	20823263	interface for analogue input (potentiometer)
DSI-ADS	24011314	interface for analogue input for DIN rail
DSI-EIB	20827097	EIB interface
EIBP	20827379	product data base for DSI-EIB interface
DSI-EIBS	24030297	EIB interface for DIN rail
DSI-LON	24011336	LON interface
LONP	24030313	programme disk (XIF) for DSI-LON
DSI-V	20975705	amplifier for DSI signals
DSI-RK	86449304	DSI relay module

#### LUXMATE BASIC IR

DSI-IR	22114184	IR control interface
DSI-2IR	22114190	2 channels IR control interface
IREL	22114571	IR sensor for building into luminaires DSI-IR / DSI-2IR
IREL	22114587	IR sensor for ceiling mounting DSI-IR / DSI-2IR
IRS	20975492	IR remote control for DSI-IR / DSI-2IR

#### LUXMATE DAYLIGHT

DSI-TLC	20975294	daylight linking interface 2 channels
DSI-TLE	20735573	daylight linking interface 3 channels
LSD	20731906	light sensor for daylight linking interface
FTT-TLS	22114530	LONWORKS daylight linking interface

#### winDIM

Cable winDIM 10 m	24031882	RS 232 cable incl. winDIM software
Cable winDIM 2 m / 8 m	24031637	RS 232 / RJ12 flush box incl. winDIM software
DSI-VPC	86449877	amplifier for winDIM cable

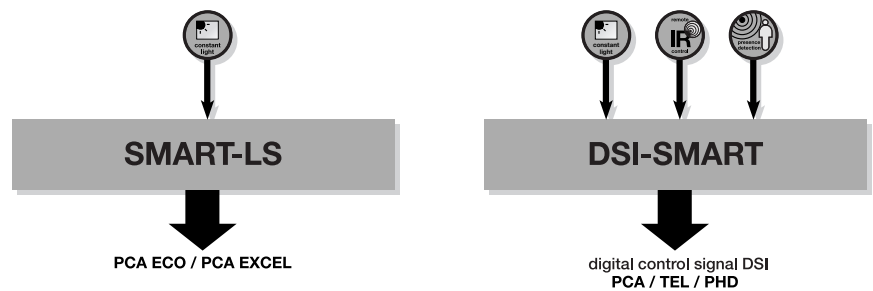
#### DALI – Modules

DALI-IPS	24033444	intelligent bus supply
DALI-GSC	24033450	multicontrol module
DALI-SCI	24033463	serial computer interface

## Functional overview

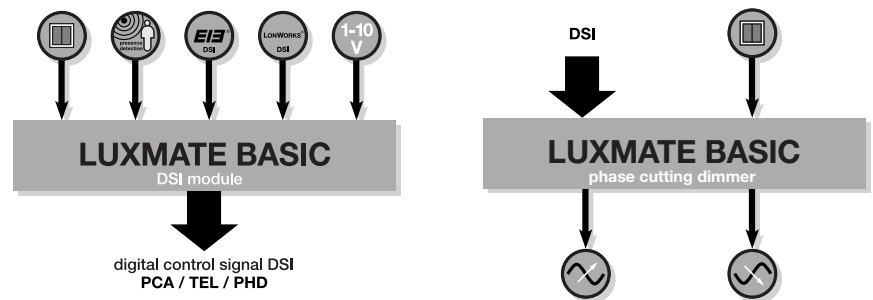
### SMART

Components for intelligent luminaires. SMART-LS light sensor for simple constant light systems and DSI-SMART for complex applications.



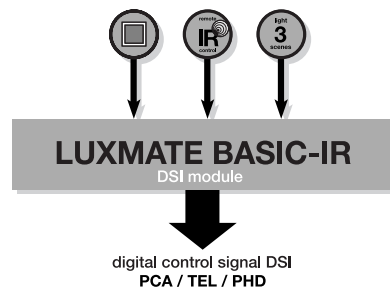
### LUXMATE BASIC

Simple light control with standard push to make switches and presence detectors as well as digital operation in existing control systems.



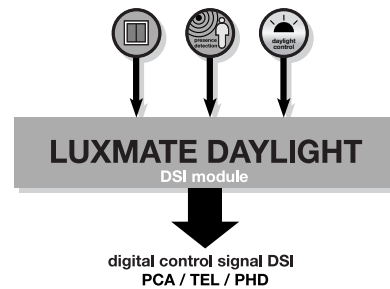
### LUXMATE BASIC-IR

Convenient light control with multi-channel infra-red hand controller and sensor.



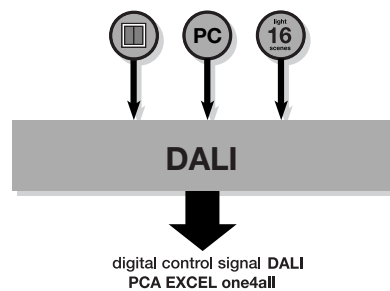
### LUXMATE DAYLIGHT

User friendly, daylight linked control with presence detectors for maximum energy savings.



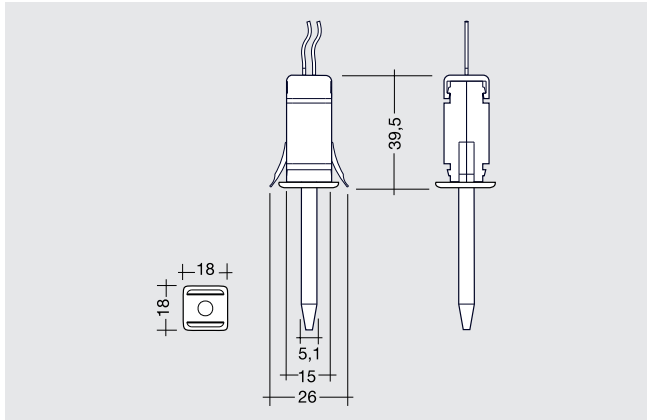
### DALI

Addressable light control with 64 addresses. 16 groups, 16 light scenes. Control with push to make switches and PC.



Light sensor for PCA ECO/PCA EXCEL  
for building into luminaires

**SMART-LS** light sensor



In combination with the PCA EXCEL and PCA ECO ballasts, the SMART-LS sensor offers a cost effective and easy to install maintained illuminance system. The sensor registers the available ambient light and maintains a pre-defined light level. Through the use of daylight it is possible to obtain savings of up to 30 % on energy, in addition to those associated with an electronic ballast.

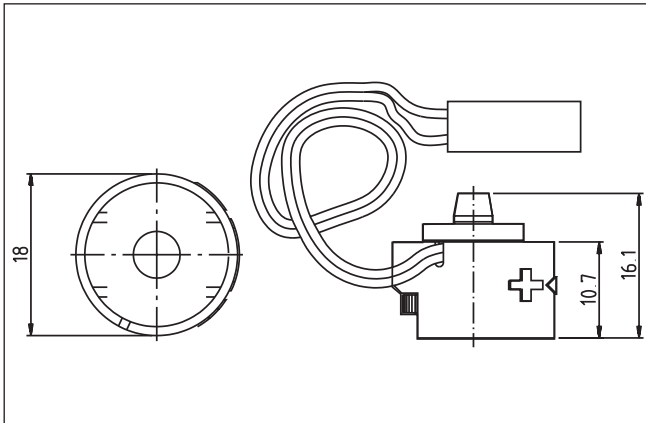
Changes in daylight will be automatically adjusted by the SMART-LS sensor, thereby ensuring a constant illuminance. Setting of the SMART-LS sensor is simplicity itself as no special tools or accessories are required. Once the SMART sensor has been installed the PCA EXCEL / PCA ECO ballasts can be switched ON / OFF by interrupting the mains or via the DSI signal. It is possible to adjust the light

level of the ballast and create a temporary override situation through the use of switchDIM. However, it is not possible to override the SMART-LS through the DSI signal other than to switch the ballasts.

description	article number	no. ballasts PCA EXCEL/ECO	max. lead length cm
SMART-LS	24011257	1	50

Light sensor for PCA ECO/PCA EXCEL  
for building into luminaires

**SMART-LS II** light sensor



In combination with the PCA EXCEL and PCA ECO ballasts, the SMART-LS II sensor offers a cost effective and easy to install maintained illuminance system. The sensor registers the available ambient light and maintains a pre-defined light level. Through the use of daylight it is possible to obtain savings of up to 30 % on energy, in addition to those associated with an electronic ballast.

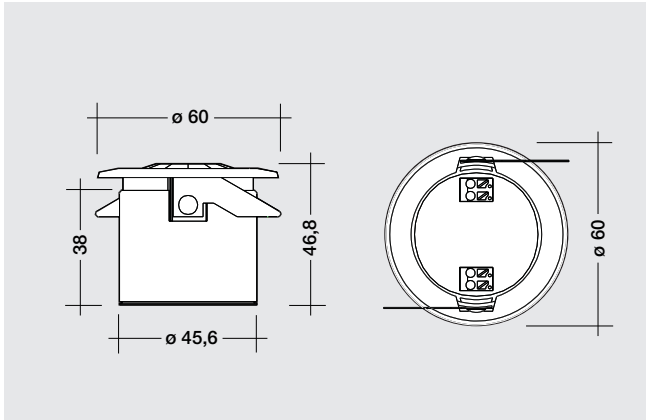
Changes in daylight will be automatically adjusted by the SMART-LS II sensor, thereby ensuring a constant illuminance. Setting of the SMART-LS II sensor is simplicity itself as no special tools or accessories are required. Once the SMART sensor has been installed the PCA EXCEL / PCA ECO ballasts can be switched ON / OFF by interrupting the mains or via the DSI signal. It is possible

to adjust the light level of the ballast and create a temporary override situation through the use of switchDIM. However, it is not possible to override the SMART-LS II through the DSI signal other than to switch the ballasts.

description	article number	no. ballasts PCA EXCEL/ECO	max. lead length cm
<b>SMART-LS II</b>	86448347	1	50

**Control module for PCA/TEL/PHD**  
for building into luminaires and remote mounting

**DSI-SMART** maintained illuminance/PIR sensor/control with infra-red



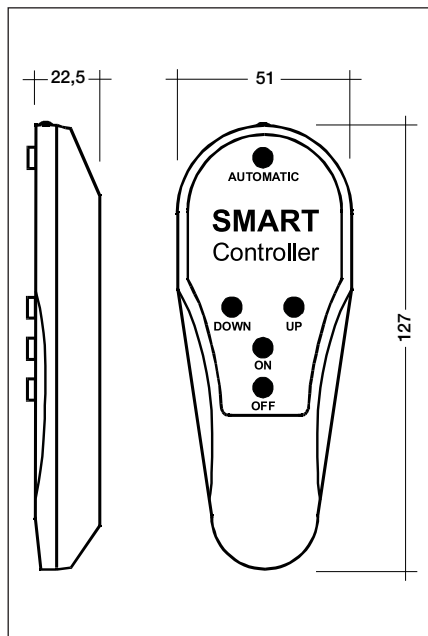
The DSI-SMART is a constant light system with integrated light measurement, presence detector and optional infra-red remote control (SMART-Controller) for building into luminaires and remote mounting.

With the optional SMART-Programmer the following operating parameters can be programmed:  
light level  
time delay  
P.I.R  
bright-out  
power up  
start

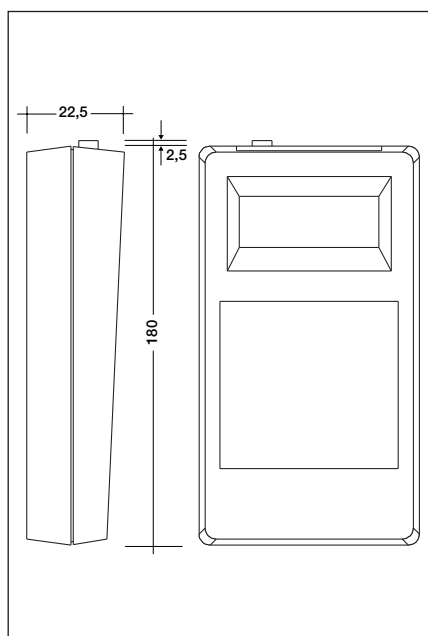
type		DSI-SMART	
article number:		24031280	
electrical supply:	voltage	V	220/240
	frequency	Hz	50/60
output:	digital DSI control signal	-	1
	signal	-	digital/serial
	voltage	V	12 ± 10 %
	data rate	Bd	1200
	max. number of	PCA/TEL/PHD	4
	max. cable length	m	250
temperature:	permitted ambient temperature	°C	0 → + 60

Control module for PCA/TEL/PHD  
for building into luminaires and remote mounting

### DSI-SMART infra-red remote control and infra-red programming unit



**SMART Controller**  
infra-red remote controller  
article number: 86447349

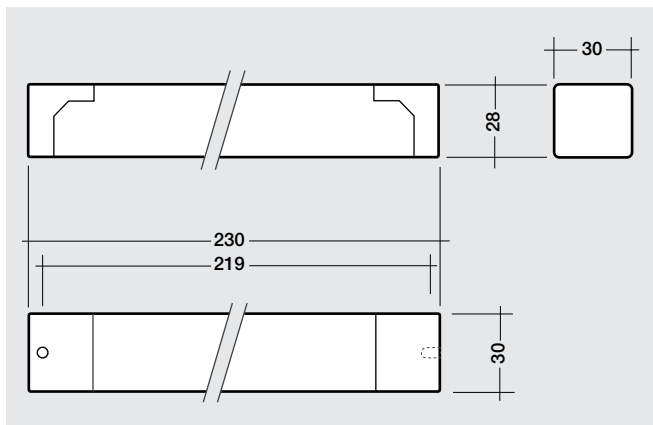


**SMART Programmer**  
infra-red programming unit  
article number: 86447355



Digital control module for PCA/TEL/PHD  
for building into luminaires and remote mounting

### LUXMATE DSI-T control with single/twin push to make switches/PIR sensor

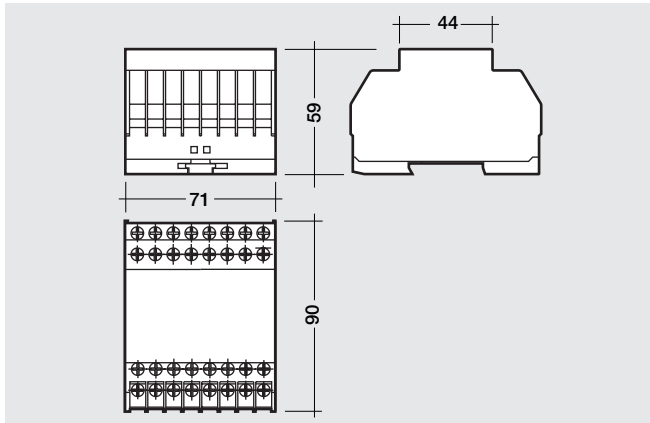


The LUXMATE DSI-T allows user friendly dimming and on/off switching by means of a freely available standard single or twin push to make switches. As many switches as you like can be connected in parallel to the DSI-T which allows control from many points.

By the connection of a PIR sensor the LUXMATE PCA/TEL/PHD units will be switched on automatically via the control wires.

type		DSI-T	
article number:		20975272	
electrical supply:	voltage	V	230/240
	frequency	Hz	50/60
	max. load	VA	1
input:	push to make switches	–	single or twin
	PIR sensor	–	OFF/ON-OFF
output:	digital DSI control signal	–	1
	signal	–	digital/serial
	voltage	V	12 ± 10 %
	data rate	Bd	1200
	max. number of	PCA/TEL/PHD	25
	max. cable length	m	100
temperature:	permitted ambient temperature	°C	0 → + 60

**LUXMATE DSI-TS** control with single or twin push to make switches/PIR sensor



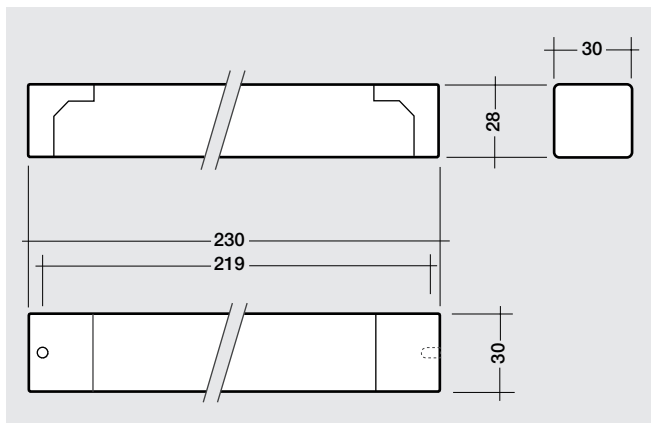
The LUXMATE DSI-TS allows user friendly dimming and on/off switching by means of a freely available standard single or twin push to make switches. As many switches as you like can be connected in parallel to the DSI-TS which allows control from many points.

By the connection of a PIR sensor the LUXMATE PCA/TEL/PHD units will be switched on automatically via the control wires.

type		DSI-TS	
article number:		24046473	
electrical supply:	voltage	V	230/240
	frequency	Hz	50/60
	max. load	VA	1
input:	push to make switches	–	single or twin
	PIR sensor	–	OFF/ON-OFF
output:	digital DSI control signal	–	1
	signal	–	digital/serial
	voltage	V	12 ± 10 %
	data rate	Bd	1200
	max. number of	PCA/TEL/PHD	100
	max. cable length	m	250
temperature:	permitted ambient temperature	°C	0 → + 50

Digital control module for PCA/TEL/PHD  
for building into luminaires and remote mounting

## LUXMATE DSI-TD control with single or twin push to make switches and pre-set function



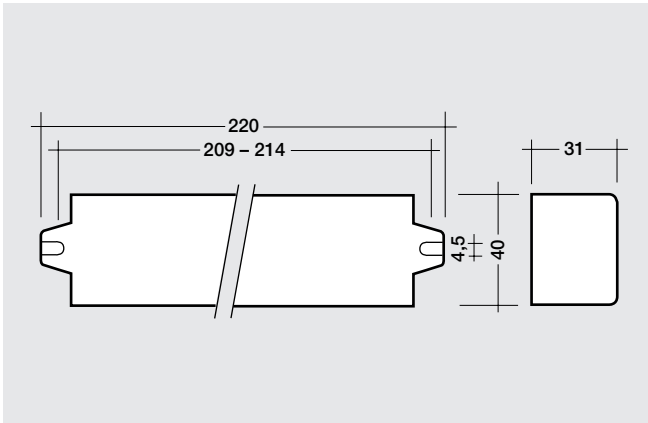
The DSI-TD allows user friendly dimming and on/off switching with a freely available single or twin push to make switch. As many switches as required can be wired in parallel and connected to the DSI-TD, which allows control from many points.

With the connection of an additional switch a pre-set dimming level can be programmed which can be recalled any time.

type		DSI-TD	
article number:		20975439	
electrical supply:	voltage	V	230/240
	frequency	Hz	50/60
	max. load	VA	1
input:	push to make switches	–	single or twin
	push to make reset	–	single
output:	digital DSI control signal	–	1
	signal	–	digital/serial
	voltage	V	12 ± 10 %
	data rate	Bd	1200
	max. number of	PCA/TEL/PHD	25
	max. cable length	m	100
temperature:	permitted ambient temperature	°C	0 → + 60

DSI phase cutting dimmer (rising edge) 300 VA  
for building into luminaires

**LUXMATE PHD 300 VA** control via DSI-signal

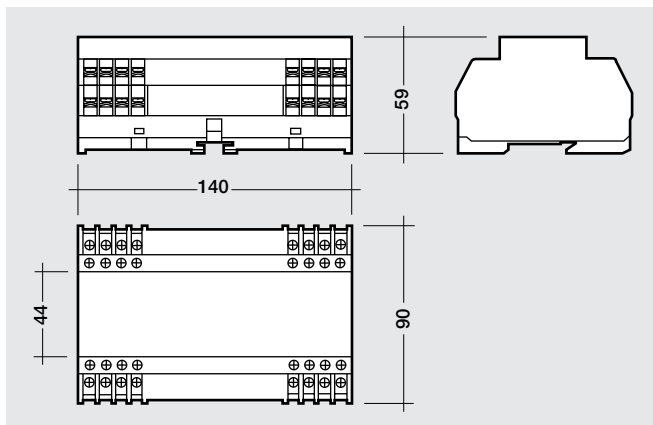


The phase cutting dimmer PHD module changes DSI commands so that the lamp receives the same supply as it would from a phase cutting dimmer. The connected load may be in the range 30 – 300 VA / 40 – 300 VA (e.g. GLS and halogen lamps or magnetic transformers)

type		PHD	
article number:		20724776	
electrical supply:	voltage	V	230
	frequency	Hz	50
	max. load	VA	1
input:	dimming	–	DSI-signal
	max. cable length	m	50
output:	AC voltage	–	rising edge
	max. load (incl. losses transformer)	VA/W	30 – 300 / 40 – 300
temperature:	permitted ambient temperature	°C	0 → + 60

**DSI phase cutting dimmer (rising edge) 1000 VA  
for DIN rail**

**LUXMATE PD-TD 1000 VA control via DSI-signal or push to make switches/pre-set function**



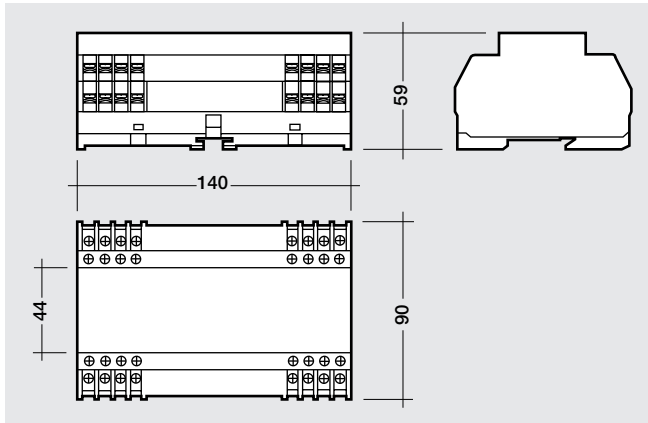
The phase cutting dimmer PD-TD module changes DSI commands so that the lamp receives the same supply as it would from a phase cutting dimmer. The connected load may be in the range 30 – 1000 VA (e.g. GLS and halogen lamps or magnetic transformers).

As an option the PD-TD can be controlled with a push to make switch. Conventional single or twin switches provide dimming and on/off switching. With the connection of an additional switch a pre-set dimming level can be programmed which can be recalled any time.

type		PD-TD	
article number:		20975509	
electrical supply:	voltage	V	230/240
	frequency	Hz	50
	max. load	VA	3,5
input:	dimming	–	DSI-signal
	push to make switches (stand alone)	–	single or twin
	push to make reset (stand alone)	–	single
output:	AC voltage	–	rising edge
	max. load (incl. losses transformer)	VA/W	30 – 1000
temperature:	permitted ambient temperature	°C	5 → + 40

DSI phase cutting dimmer (falling edge) 1000 VA  
for DIN rail

**LUXMATE PAD-TD 1000 VA** control via DSI-signal or push to make switches/pre-set function



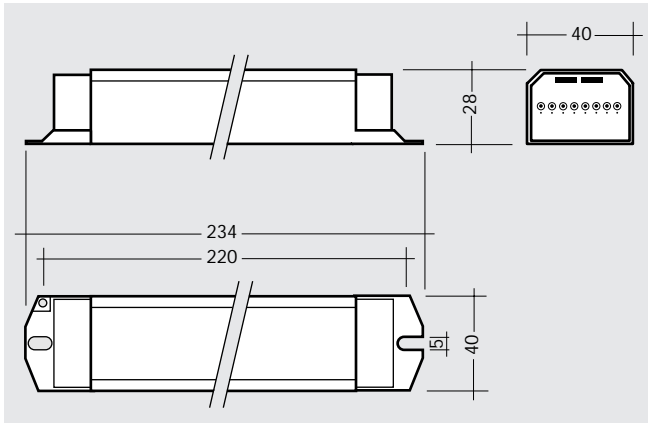
The phase cutting dimmer PAD-TD module changes DSI commands so that the lamp receives the same supply as it would from a phase cutting dimmer. The connected load may be in the range 30 – 1000 VA (e.g. electronic transformers).

As an option the PAD-TD can be controlled with a push to make switch. Conventional single or twin switches provide dimming and on/off switching. With the connection of an additional switch a pre-set dimming level can be programmed which can be recalled any time.

type		PAD-TD	
article number:		20975518	
electrical supply:	voltage	V	230/240
	frequency	Hz	50
	max. load	VA	4,4
input:	dimming	–	DSI-signal
	push to make switches (stand alone)	–	single or twin
	push to make reset (stand alone)	–	single
output:	AC voltage	–	falling edge
	max. load (incl. losses transformer)	VA/W	30 – 1000
temperature:	permitted ambient temperature	°C	5 → + 40

Digital control module for PCA/TEL/PHD  
for building into luminaires

### LUXMATE DSI-AD control with a 1 – 10 V signal / ON/OFF push to make switches



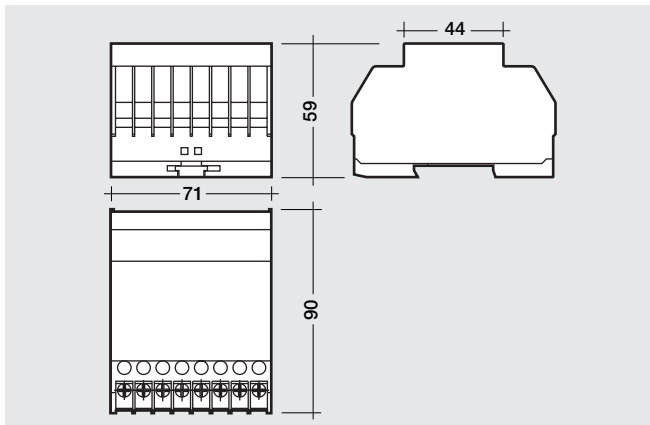
The DSI-AD module translates the 1 – 10 V analogue signal into a DSI digital control signal. In this way LUXMATE PCA/TEL/PHD units can be integrated into existing analogue control systems.

type		DSI-AD	
article number:		20823263	
electrical supply:	voltage	V	230/240
	frequency	Hz	50/60
	max. load	VA	4
input:	dimming	V	1 – 10
	potentiometer dimming (optional*)	kΩ	≥ 60 ≤ 100
	ON/OFF push to make switch (220 – 240 V)	–	1
output:	digital DSI control signal	–	1
	signal	–	digital/serial
	voltage	V	12 ± 10 %
	data rate	Bd	1200
	max. number of	PCA/TEL/PHD	100
	max. cable length	m	250
temperature:	permitted ambient temperature	°C	-25 → + 60

\* potentiometer with linear characteristics, load ≥ 0,5 W, ≥ 60 ≤ 100 kΩ

Digital control module for PCA/TEL/PHD  
for DIN rail

**LUXMATE DSI-ADS** control with a 1 – 10 V signal / ON/OFF push to make switches



The DSI-ADS module translates the 1 – 10 V analogue signal into a DSI digital control signal. In this way LUXMATE PCA/TEL/PHD units can be integrated into existing analogue control systems.

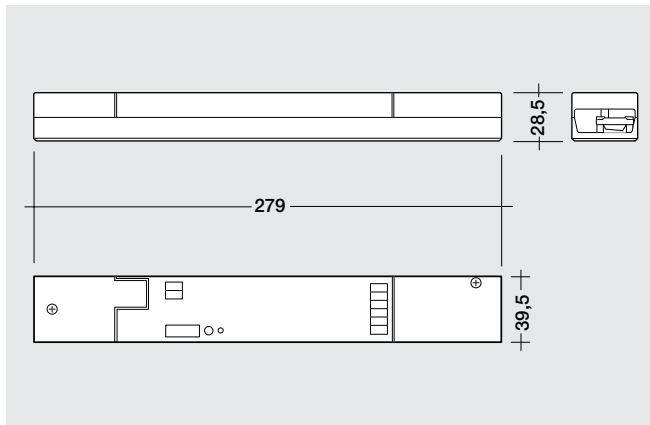
type		DSI-ADS	
article number:		24011314	
electrical supply:	voltage	V	230/240
	frequency	Hz	50/60
	max. load	VA	4
input:	dimming	V	1 – 10
	potentiometer dimming (optional*)	kΩ	≥ 60 ≤ 100
	ON/OFF push to make switch (220 – 240 V)	–	1
output:	digital DSI control signal	–	1
	signal	–	digital/serial
	voltage	V	12 ± 10 %
	data rate	Bd	1200
	max. number of	PCA/TEL/PHD	100
	max. cable length	m	250
temperature:	permitted ambient temperature	°C	0 → + 50

\* potentiometer with linear characteristics, load ≥ 0,5 W, ≥ 60 ≤ 100 kΩ



Digital control module for PCA/TEL/PHD  
for building into luminaires and remote mounting

## LUXMATE DSI-EIB control with an EIB-signal



The DSI-EIB module allows the connection of LUXMATE PCA/TEL/PHD units to an EIB system (European Installation Bus). The translation of EIB signals into DSI signals allows the LUXMATE units to switch, to dim, to question status as well as send failure messages back via the EIB Bus.

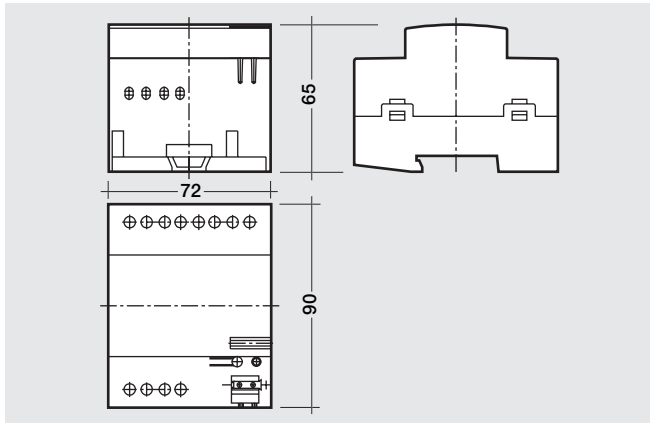
type		DSI-EIB	
article number:		20827097	
electrical supply:	voltage	V	230/240
	frequency	Hz	50/60
	max. load	VA	2,6
input:	dimming/switching/reporting	–	EIB
output:	digital DSI control signal	–	1
	signal	–	digital/serial
	voltage	V	12 ± 10 %
	data rate	Bd	1200
	max. number of	PCA/TEL/PHD	50
	max. cable length	m	250
temperature:	permitted ambient temperature	°C	-5 → + 45

### EIBP - product data base for DSI EIB/DSI EIBS

article number: 20827379  
disk format: 3,5 ''  
compatible with ETS version: 1,36 or higher

Digital control module for PCA/TEL/PHD  
for DIN rail

**LUXMATE DSI-EIBS** control with an EIB-signal



The DSI-EIBS module allows the connection of LUXMATE PCA/TEL/PHD units to an EIB system (European Installation Bus). The translation of EIB signals into DSI signals allows the LUXMATE units to switch, to dim, to question status as well as send failure messages back via the EIB Bus.

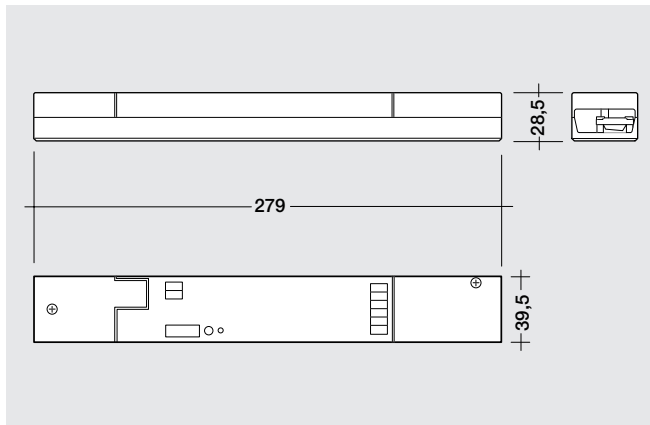
type		DSI-EIBS	
article number:		24030297	
electrical supply:	voltage	V	230/240
	frequency	Hz	50/60
	max. load	VA	2,6
input:	dimming/switching/reporting	–	EIB
output:	digital DSI control signal	–	1
	signal	–	digital/serial
	voltage	V	12 ± 10 %
	data rate	Bd	1200
	max. number of	PCA/TEL/PHD	50
	max. cable length	m	250
temperature:	permitted ambient temperature	°C	-5 → + 45

**EIBP - product data-base for DSI EIB/DSI EIBS**

article number: 20827379  
disk format: 3,5 ''  
compatible with ETS version: 1,36 or higher

Digital control module for PCA/TEL/PHD  
for building into luminaires and remote mounting

## LUXMATE DSI-LON control with LON-signal/3 channels



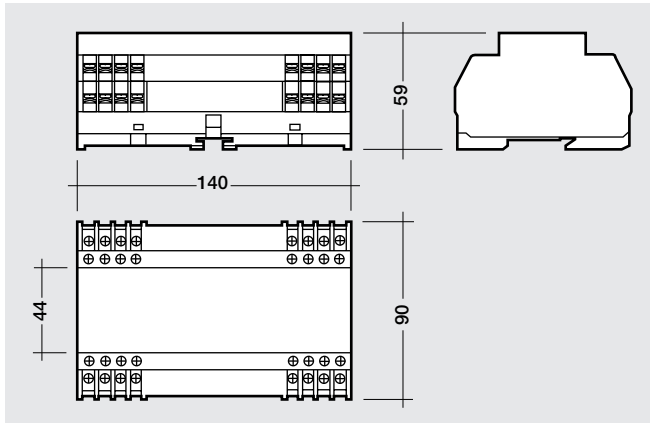
The DSI-LON module allows the connection of LUXMATE PCA/TEL/PHD units to a LONWORK system. The translation of LON signals into DSI signals allows the LUXMATE units to switch, to dim, to question status as well as send failure messages back via the LON bus.

type		DSI-LON	
article number:		24011336	
electrical supply:	voltage	V	230/240
	frequency	Hz	50/60
	max. load	VA	3
input:	dimming/switching/reporting	–	LON
output:	digital DSI control signal	–	3
	signal	–	digital/serial
	voltage	V	12 ± 10 %
	data rate	Bd	1200
	max. number of	PCA/TEL/PHD	3 x 15
	max. cable length	m	250
temperature:	permitted ambient temperature	°C	-25 → + 60

### LONP - product data-base for DSI LON

article number: 24030313  
disk format: 3,5 "

## LUXMATE FTT-TLS LON daylight control/3 channels



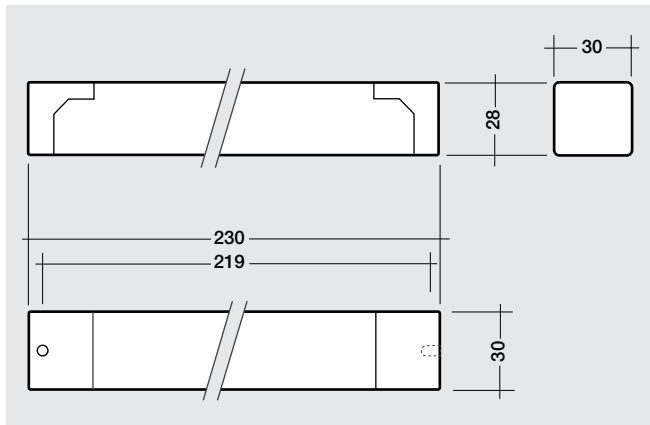
The FTT-TLS daylight control module allows the control of the artificial light in a LONWORKS network in conjunction with available daylight. The natural light can be recorded using a LUXMATE light sensor directly connected to the FTT-TLS or even a light sensor in the network.

3 luminaire groups can be continuously controlled between 1 and 100 % using a characteristic which can be programmed for each luminaire group.

type		FTT-TLS	
article number:		22114530	
electrical supply:	voltage	V	230/240
	frequency	Hz	50/60
	max. load	VA	< 10
input:	push to make switches	–	single or twin
	ON/OFF push to make switch	–	1
	switch manual/automatic	–	1
	LON-bus	–	FTT-10A
	light sensor	–	1
output:	digital DSI control signal	–	3
	signal	–	digital/serial
	voltage	V	12 ± 10 %
	data rate	Bd	1200
	max. number of	PCA/TEL/PHD	3 x 100
	max. cable length	m	250
temperature:	permitted ambient temperature	°C	0 → + 50

Digital control module for PCA/TEL/PHD  
for building into luminaires and remote mounting

### LUXMATE DSI-V amplifier for DSI-signal



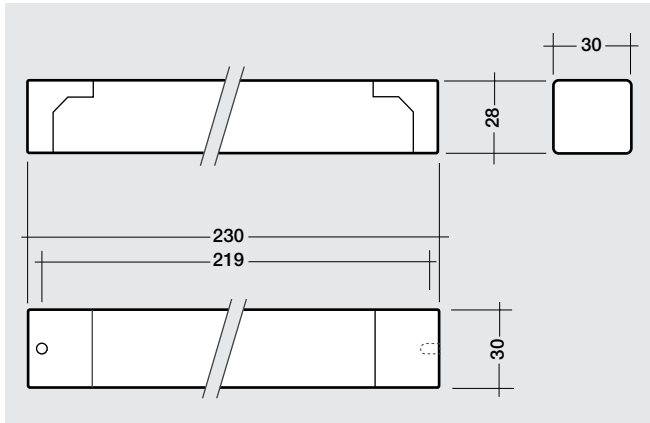
The DSI-V is an amplifier for the DSI-signals and makes it possible to connect a further 50 LUXMATE units to the control system after reaching the limit of the existing DSI modules.

type		DSI-V	
article number:		20975705	
electrical supply:	voltage	V	230/240
	frequency	Hz	50/60
	max. load	VA	0,6
input:	DSI-signal *	–	DSI
output:	digital DSI control signal	–	1
	signal	–	digital/serial
	voltage	V	12 ± 10 %
	data rate	Bd	1200
	max. number of	PCA/TEL/PHD	50
	max. cable length	m	250
temperature:	permitted ambient temperature	°C	-25 → + 60

\* one DSI-V corresponds to the load of 2 PCA ballasts

Digital control module for PCA/TEL/PHD  
for building into luminaires and remote mounting

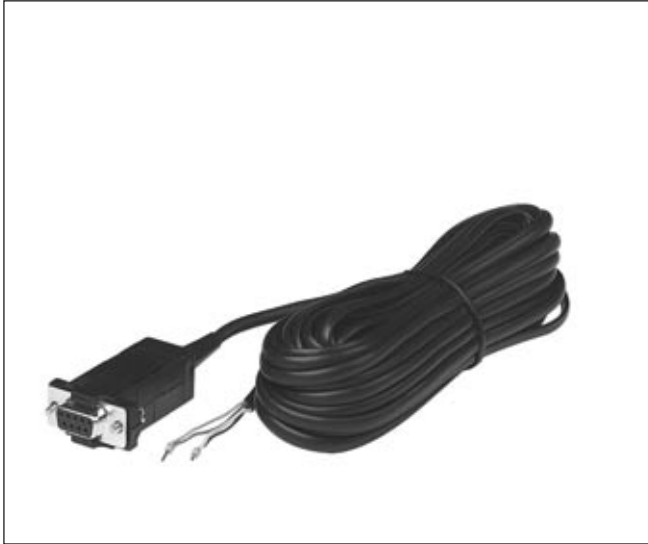
**DSI-VPC** DSI-signal amplifier for winDIM



The DSI-VPC is an amplifier for the win-  
**DIM** control signals. Up to 50 digital  
dimmable ballasts can be controlled from  
one PC.

type		DSI-VPC	
article number:		86449877	
electrical supply:	voltage	V	230/240
	frequency	Hz	50/60
	max. load	VA	0,6
input:	DSI-signal	–	RS-232 DSI /win <b>DIM</b>
output:	digital DSI control signal	–	1
	signal	–	digital/serial
	voltage	V	12 ± 10 %
	data rate	Bd	1200
	max. number of	PCA/TEL/PHD	50
	max. cable length	m	250
temperature:	permitted ambient temperature	°C	-25 → + 60

### winDIM cable



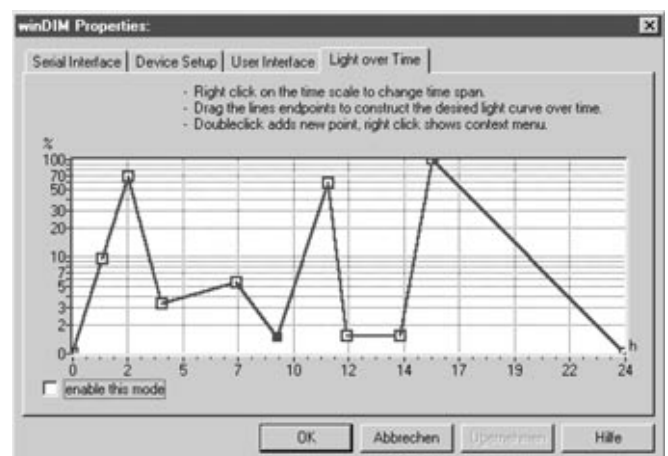
The winDIM cable enables the direct control of a digital dimmable ballast by means of winDIM - PC-software.

winDIM cable 10 m – article number: 24031882



The connection is via a RS232-interface. Apart from the necessary level adjustment all winDIM cable provide a galvanic separation.

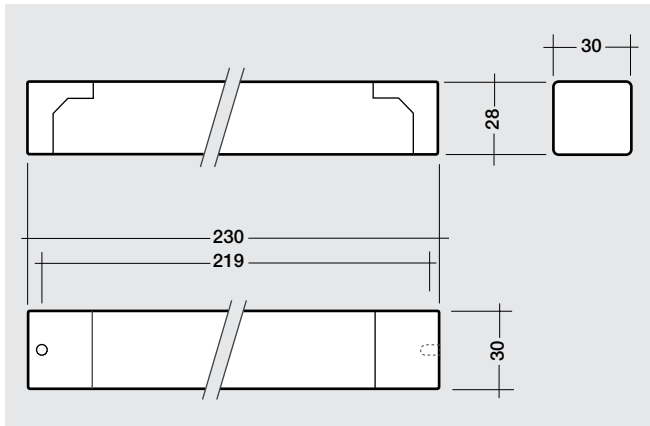
winDIM cable 2 m / 8 m – article number: 24031637



User friendly PC software for the control of digital dimmable ballasts. winDIM supports up to 5 groups, 3 scenes and automatic light level sequences.

Digital control module for PCA/TEL/PHD  
for building into luminaires

### LUXMATE DSI-IR control with infra-red/single push to make switches



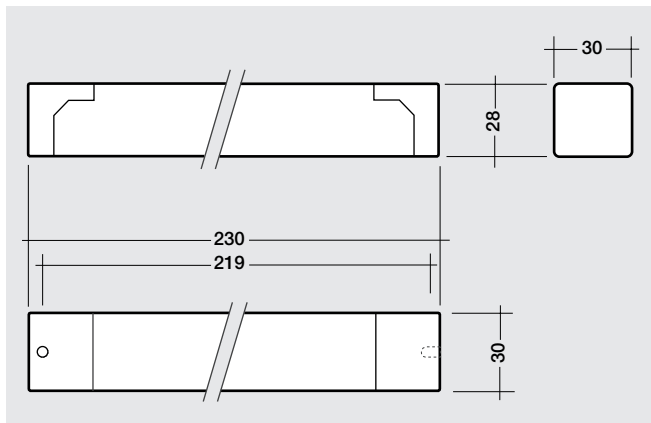
The infra-red control module DSI-IR allows the control of up to 25 digital electronic ballasts PCA, phase cutting dimmers PHD and electronic transformers TEL via the infra-red remote control IRS.

type		DSI-IR	
article number:		22114184	
electrical supply:	voltage	V	230/240
	frequency	Hz	50/60
	max. load	VA	1
input:	push to make switches	–	single
	infra-red receiver	–	1
output:	digital DSI control signal	–	1
	signal	–	digital/serial
	voltage	V	12 ± 10 %
	data rate	Bd	1200
	max. number of	PCA/TEL/PHD	25
	max. cable length	m	250
temperature:	permitted ambient temperature	°C	-25 → + 60



Digital control module for PCA/TEL/PHD  
for building into luminaires

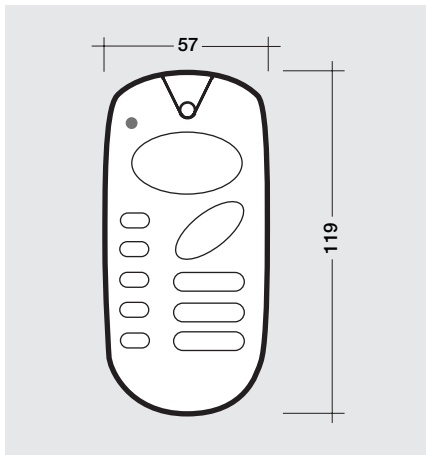
## LUXMATE DSI-2IR control with infra-red/single push to make switches



The infra-red control module DSI-2IR allows the control of 2 luminaire groups with each up to 25 digital electronic ballasts PCA, phase cutting dimmers PHD and electronic transformers TEL via the infra-red remote control IRS.

type		DSI-2IR	
article number:		22114190	
electrical supply:	voltage	V	230/240
	frequency	Hz	50/60
	max. load	VA	1
input:	push to make switches	–	single
	infra-red receiver	–	1
output:	digital DSI control signal	–	1
	signal	–	digital/serial
	voltage	V	12 ± 10 %
	data rate	Bd	1200
	max. number of	PCA/TEL/PHD	25
	max. cable length	m	250
temperature:	permitted ambient temperature	°C	-25 → + 60

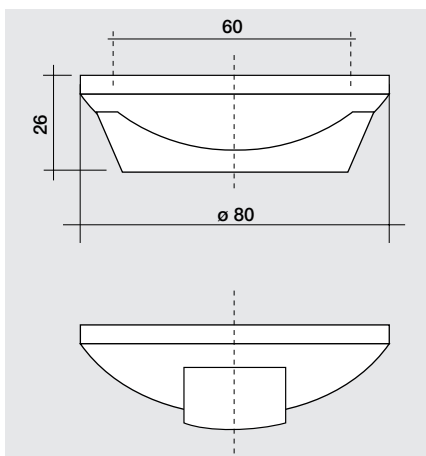
**LUXMATE BASIC-IR** infra-red remote control and infra-red receiver



**IRS**

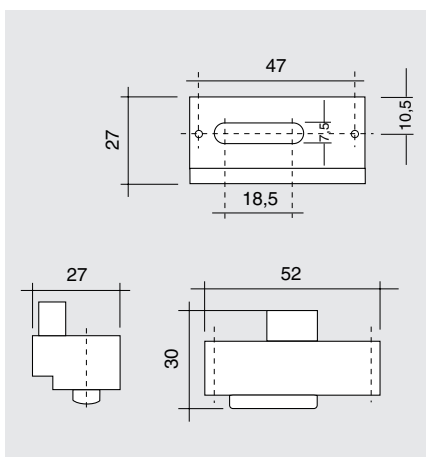
infra-red remote control IRS  
(all sizes in mm)  
article number: 20975492

The infra-red controller for the control of up to 5 differently addressed DSI-F modules. There is the possibility to save and recall 3 different scene settings. The IRS infra-red controller is delivered with a wall mounted holder.



**IRED**

infra-red receiver for remote mounting  
(all sizes in mm)  
article number: 22114587

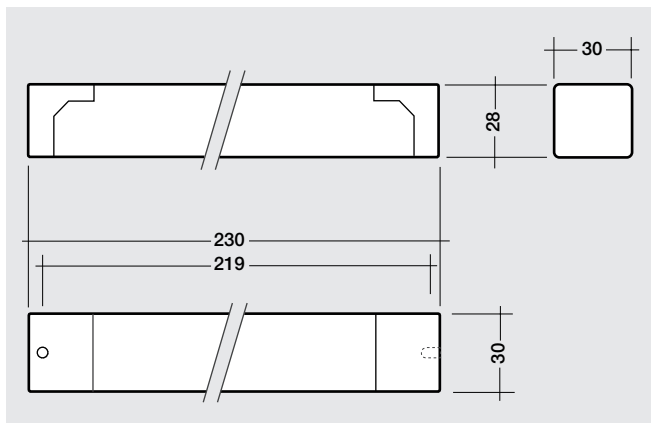


**IREL**

Infrared receiver for inbuilding  
(all sizes in mm)  
article number: 22114571

Digital control module for PCA/TEL/PHD  
for building into luminaires and remote mounting

## LUXMATE DSI-TLC control with daylight sensor/push to make switches/PIR sensor/2 channels



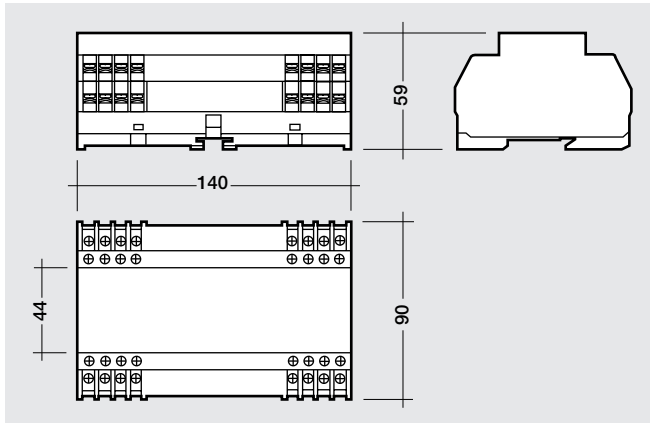
Digital DSI module for control with daylight linking of 2 lighting groups each with a maximum of 25 LUXMATE units (PCA/TEL/PHD). Simple programming of the daylight linking for each channel. Manual dimming and on/off switching with a freely available single or twin push to make switch.

As many switches as required can be wired in parallel and connected to the DSI-TLC, which allows control from many points. By the connection of a PIR sensor the LUXMATE PCA/TEL/PHD units will be switched automatically via the control wires.

type		DSI-TLC	
article number:		20975294	
electrical supply:	voltage	V	230/240
	frequency	Hz	50/60
	max. load	VA	1
input:	push to make switches	–	single or twin
	PIR sensor	–	ONLY OFF/ON-OFF
	light sensor	–	1
output:	digital DSI control signal	–	2
	signal	–	digital/serial
	voltage	V	12 ± 10 %
	data rate	Bd	1200
	max. number of	PCA/TEL/PHD	2 x 25
	max. cable length	m	100
temperature:	permitted ambient temperature	°C	0 → + 60

Digital control module for PCA/TEL/PHD  
for DIN rail

**LUXMATE DSI-TLE** control with daylight sensor/push to make switches/PIR sensor/3 channels

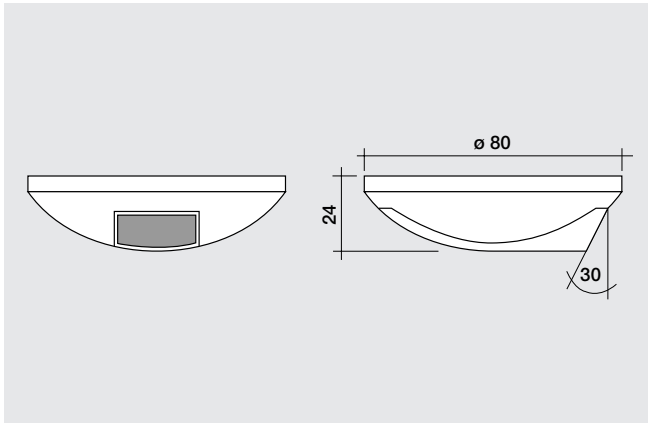


Digital DSI module for control with daylight linking of 3 lighting groups each with a maximum of 100 LUXMATE units (PCA/TEL/PHD). Simple programming of the daylight linking for each channel. Manual dimming and on/off switching with a freely available single or twin push to make switch.

As many switches as required can be wired in parallel and connected to the DSI-TLE, which allows control from many points. By the connection of a PIR sensor the LUXMATE PCA/TEL/PHD units will be switched automatically via the control wires.

type		DSI-TLE	
article number:		20735573	
electrical supply:	voltage	V	230/240
	frequency	Hz	50/60
	max. load	VA	7
input:	push to make switches	–	single or twin
	ON/OFF push to make switch	–	1
	switch manual/automatic	–	1
	light sensor	–	1
output:	digital DSI control signal	–	3
	signal	–	digital/serial
	voltage	V	12 ± 10 %
	data rate	Bd	1200
	max. number of	PCA/TEL/PHD	3 x 100
	max. cable length	m	250
temperature:	permitted ambient temperature	°C	0 → + 50

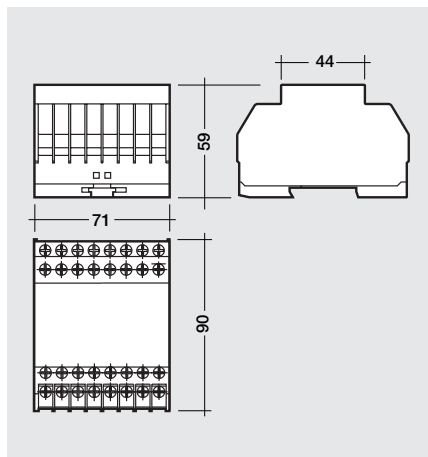
## Daylight sensor LSD article number 20731906



The LUXMATE system includes an attractively designed, robust ceiling sensor for detecting the proportion of daylight. Its sensing aperture is aligned in the direction of the daylight.

Any freely available light sensors with an output of 4 – 20 mA can be connected to the DSI-TLC and DSI-TLE (please ask for more technical details).

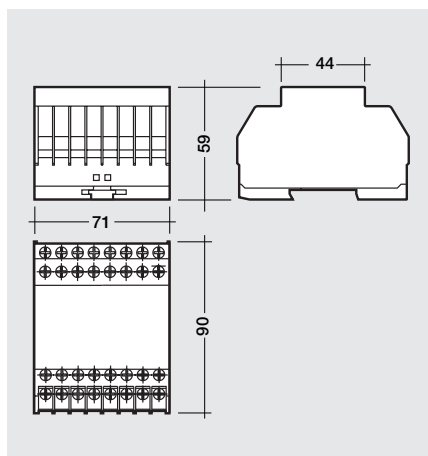
## DALI control modules



### DALI-IPS

article number: 24033444

The intelligent **DALI** bus supply (intelligent power supply) provides the necessary control power for all connected **DALI** components. The **DALI** can also be connected to a PC by means of an integrated serial interface thus enabling computer-controlled addressing and monitoring of **DALI** systems.



### DALI-GSC

article number: 24033450

The **DALI-GSC** multicontrol module allows the control of digital ballasts (dimming and switching) and call up lighting sets using standard push to make switches. The DIN rail module controls 4 groups and 4 light scenes. Several **DALI-GSC**'s can be operated on the same bus line thus enabling **DALI**'s full potential to be utilised (16 groups, 16 light scenes).

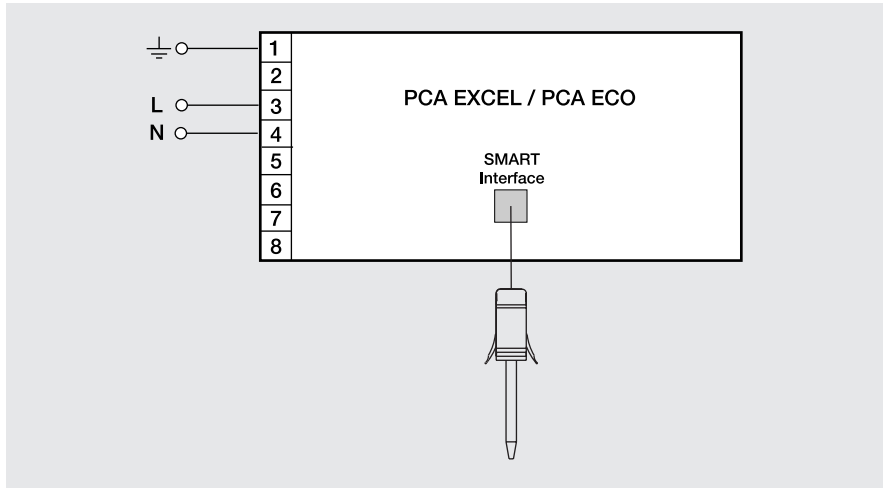


### DALI-SCI

article number: 24033463

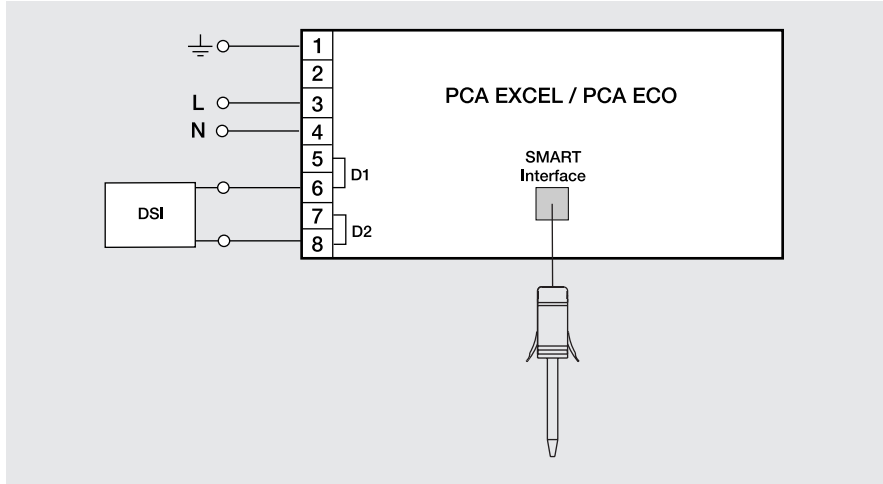
The **DALI-SCI** serial computer interface enables the control of **DALI** ballasts from any PC. The winDIM software for **DALI** transforms any PC into a user-friendly, flexible lighting management controller. The intelligent concept enables to operate several computers on the same control line.

Circuit diagrams SMART-LS



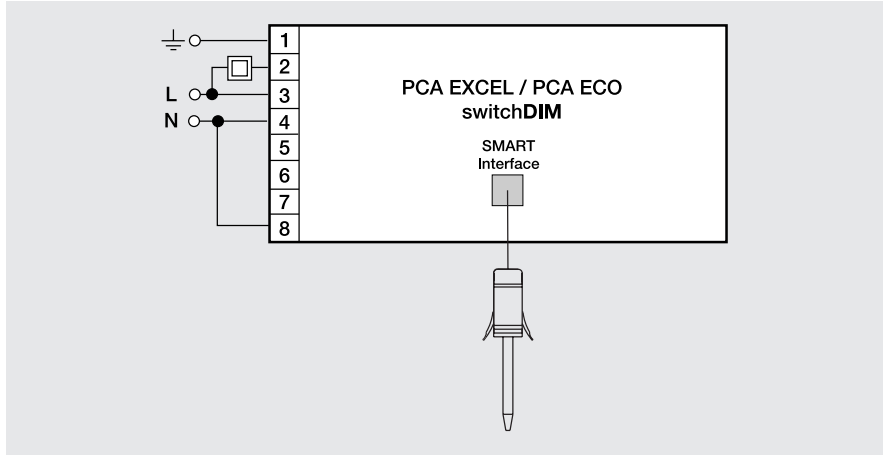
ON/OFF by directly switching of the mains. The PCA EXCEL / PCA ECO ballast will start with a soft start switched via the mains or by the DSI signal. Once switched the sensor will automatically determine the light level and adjust the ballast to its pre-defined level.

A) SMART-LS



ON/OFF through the DSI-signal. If a DSI signal is sent which = 0, the ballast will switch off. If a signal is sent greater than > = 1, the ballast switches on. Therefore it is possible to integrate luminaires with SMART-LS sensors into an existing installation. (The DSI signal cannot override the output of the SMART sensor).

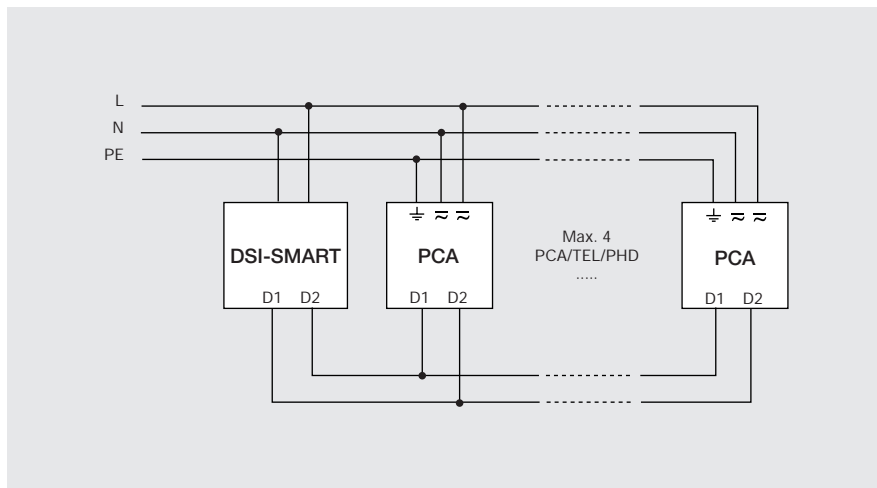
B) SMART-LS and DSI



SMART-LS with switchDIM. Through switchDIM it is possible to both switch the ballast and to create a temporary override condition. A short push on a push to make switch will either switch on or off the ballast. If the switch is held down the ballast will either dim up or down, thereby creating a temporary lighting condition. The SMART sensor will continue to function but will use the new level as its reference. This temporary condition will be maintained until the ballast is switched off, at which time the ballast will revert back to the original SMART-LS settings.

C) SMART-LS and switchDIM

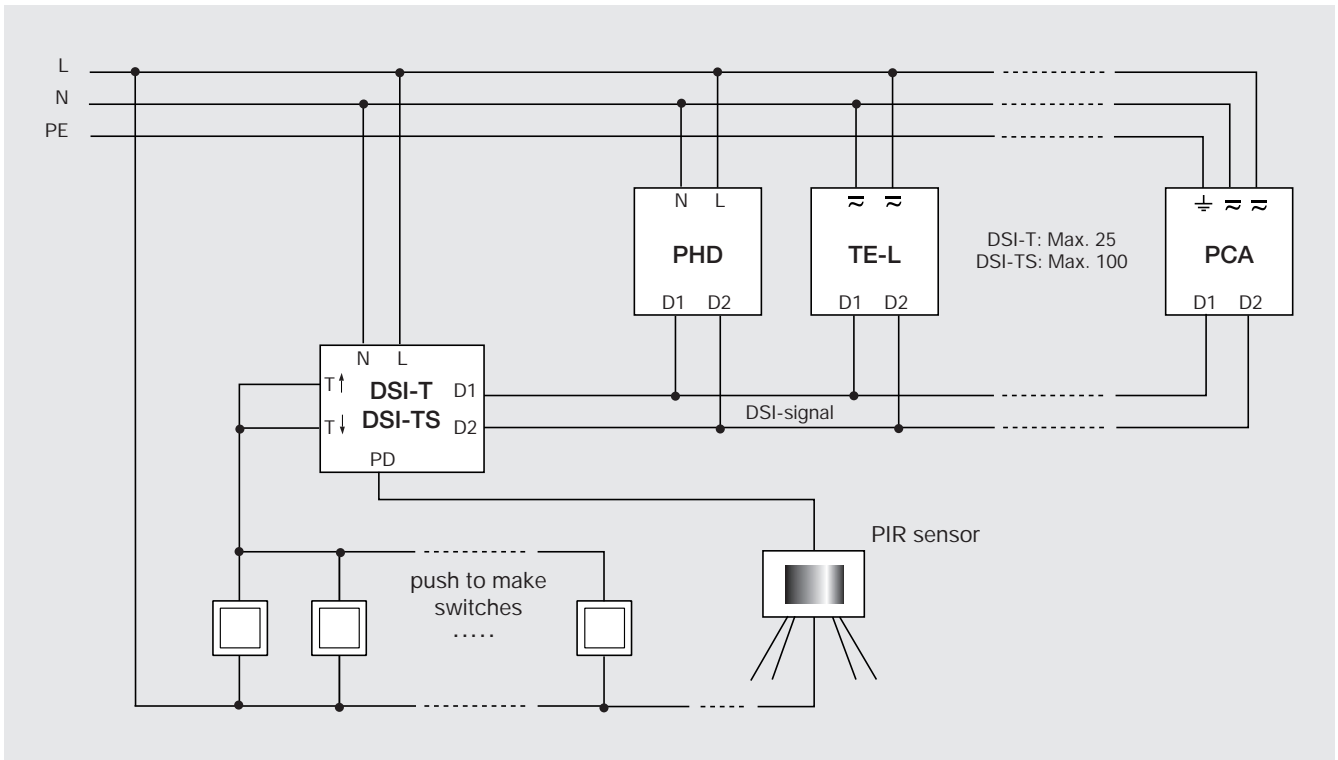
### Circuit diagrams DSI-SMART



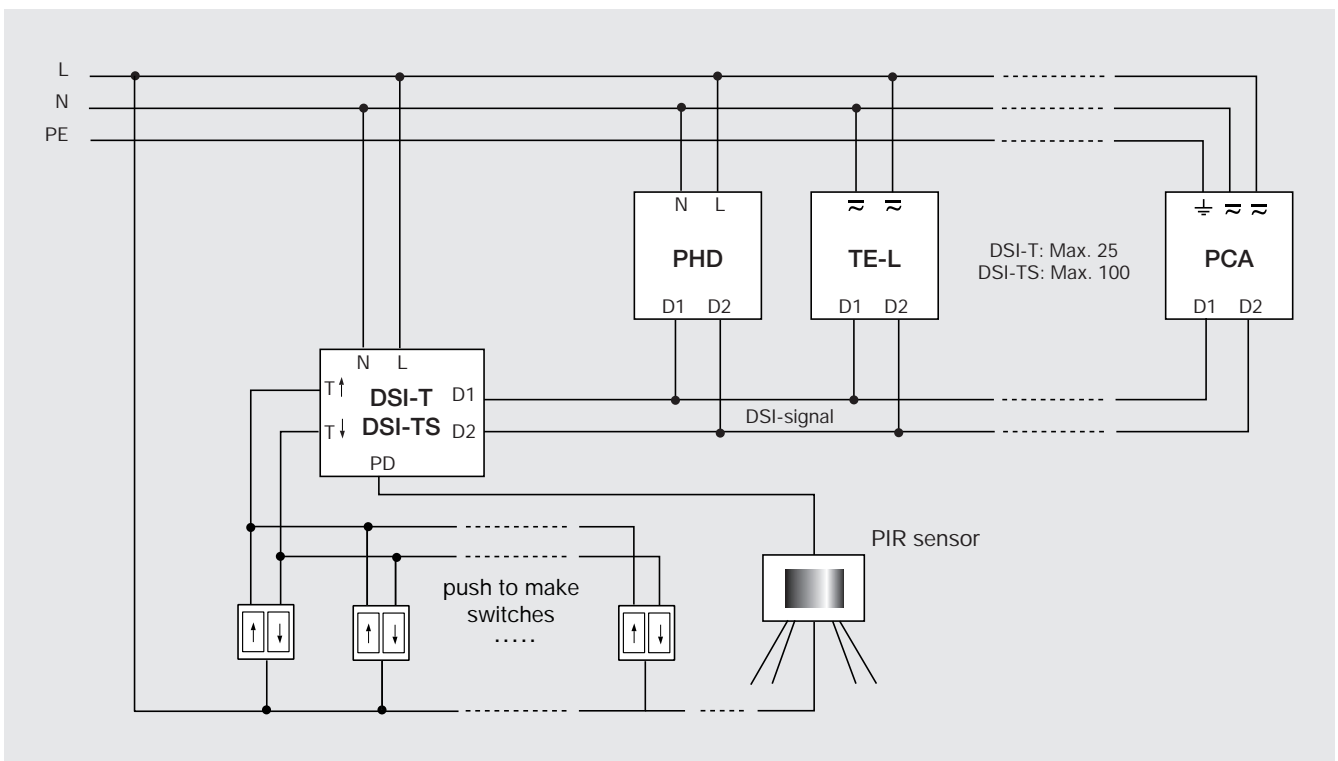
D) DSI-SMART



Circuit diagrams DSI - PCA/TEL/PHD

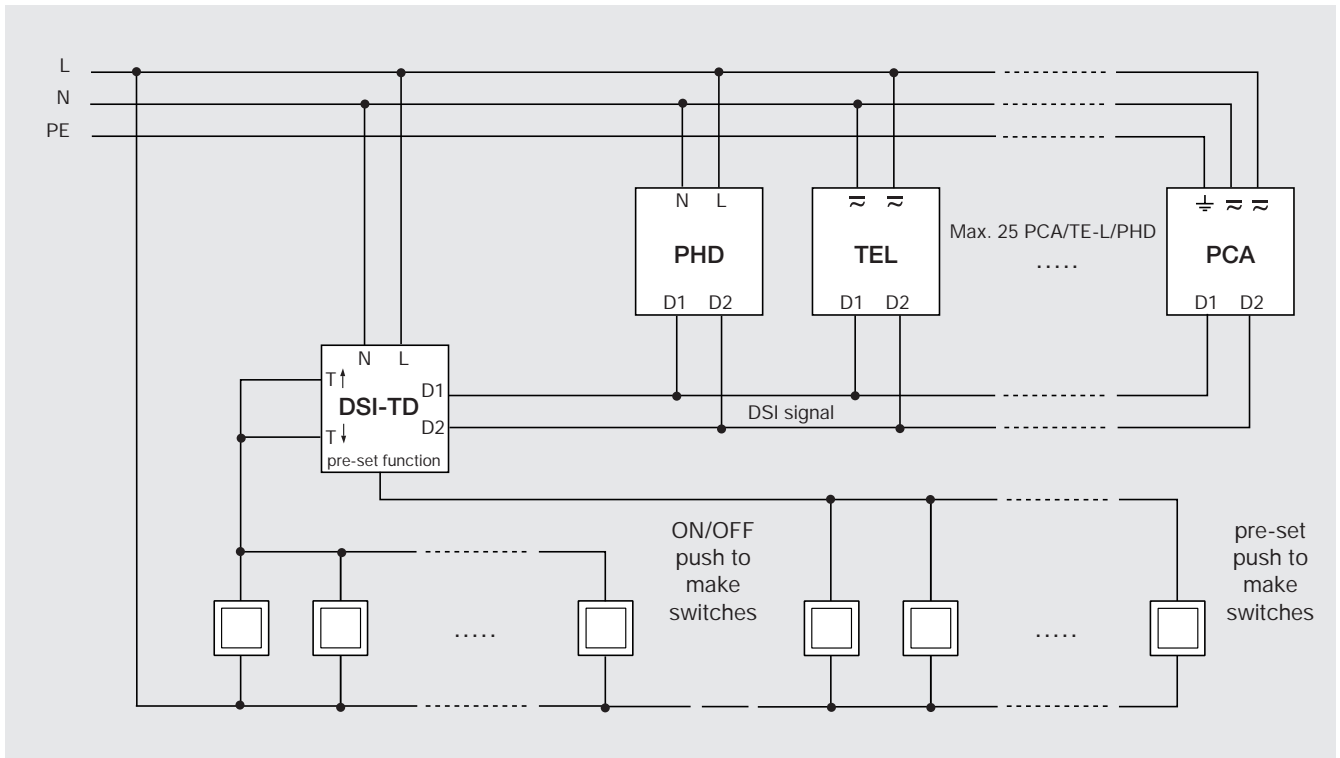


E) DSI-T / DSI-TS

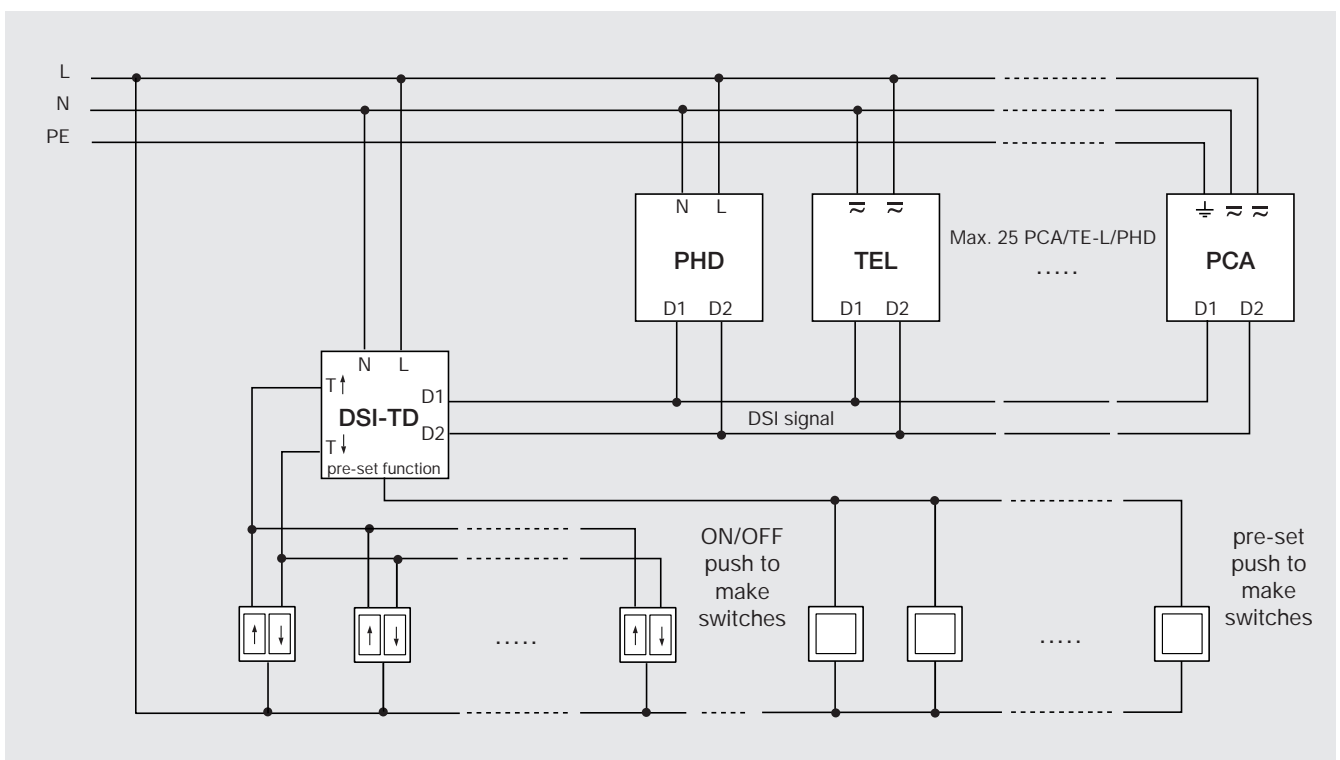


F) DSI-T / DSI-TS

Circuit diagrams DSI-TD – PCA/TEL/PHD

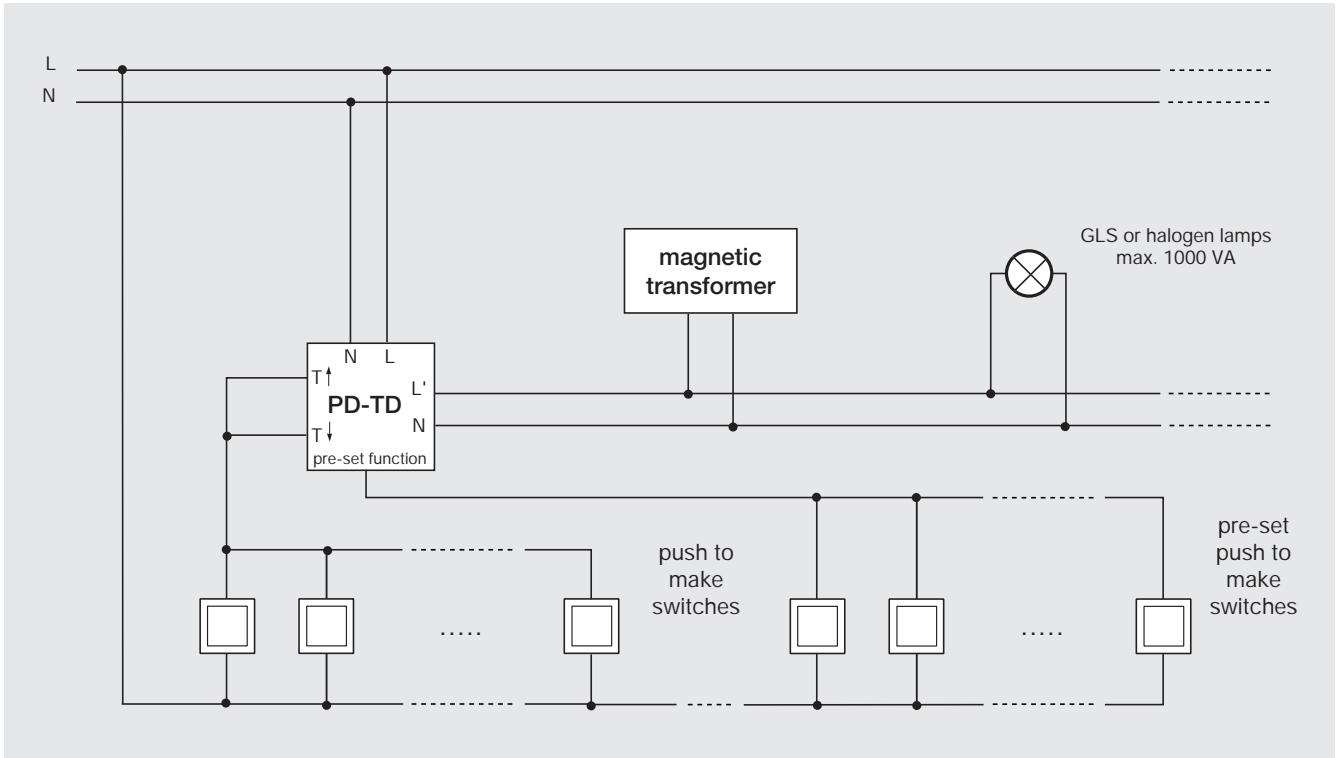


G) DSI-TD

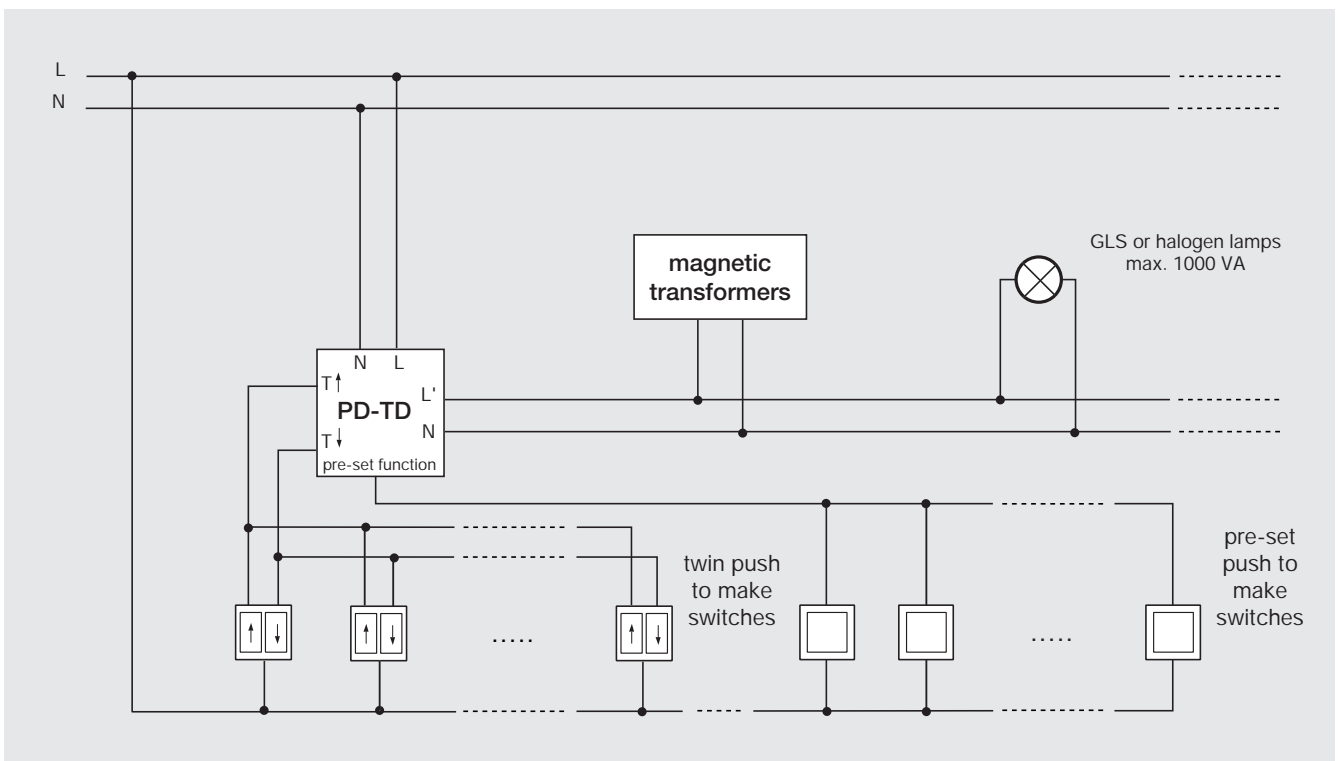


H) DSI-TD

Circuit diagrams PD-TD

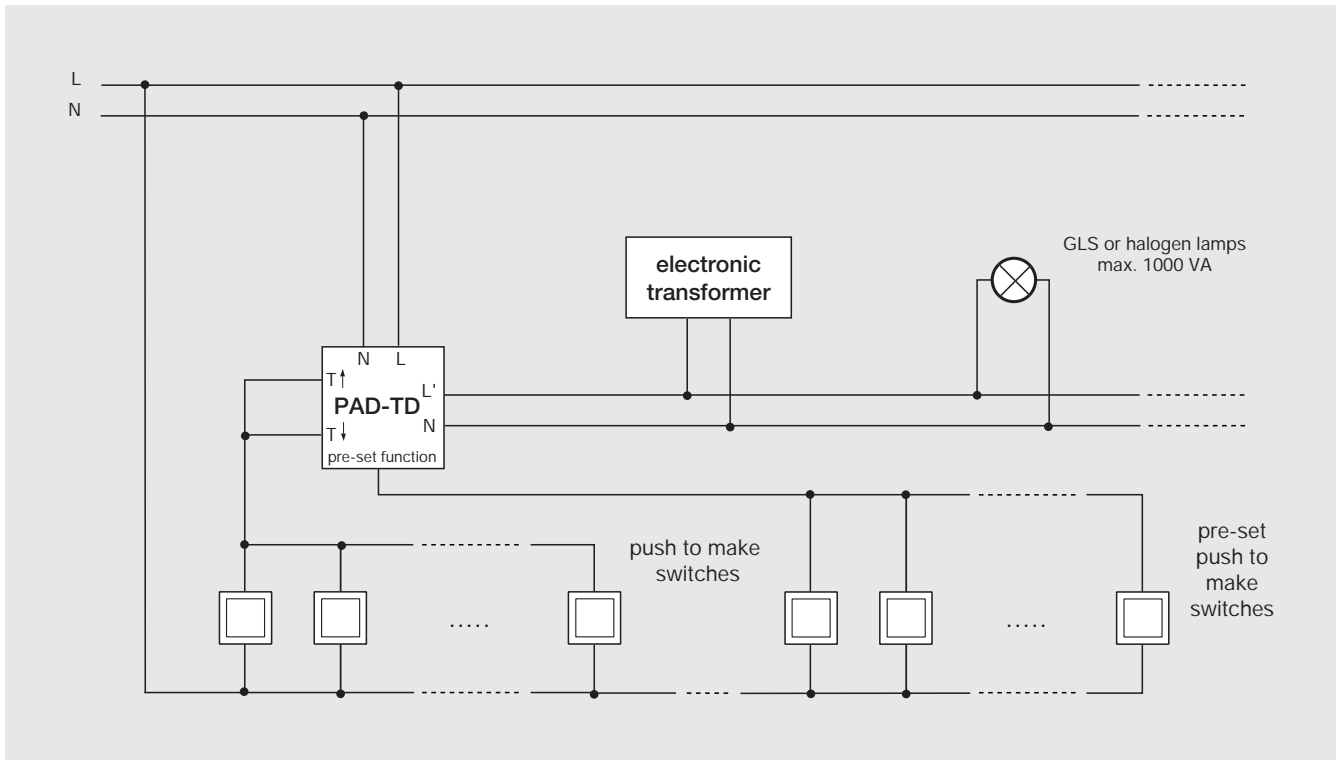


I) PD-TD

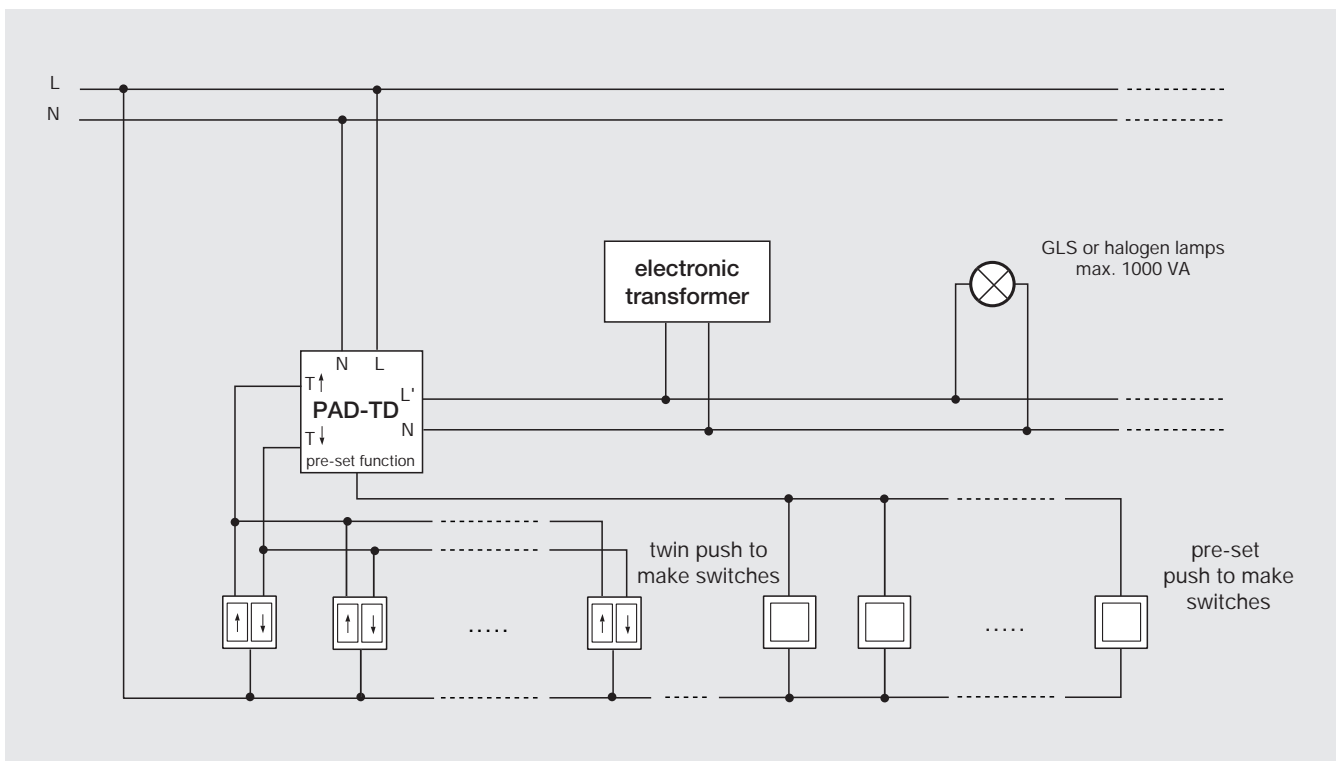


J) PD-TD

Circuit diagrams PAD – PCA/TEL/PHD

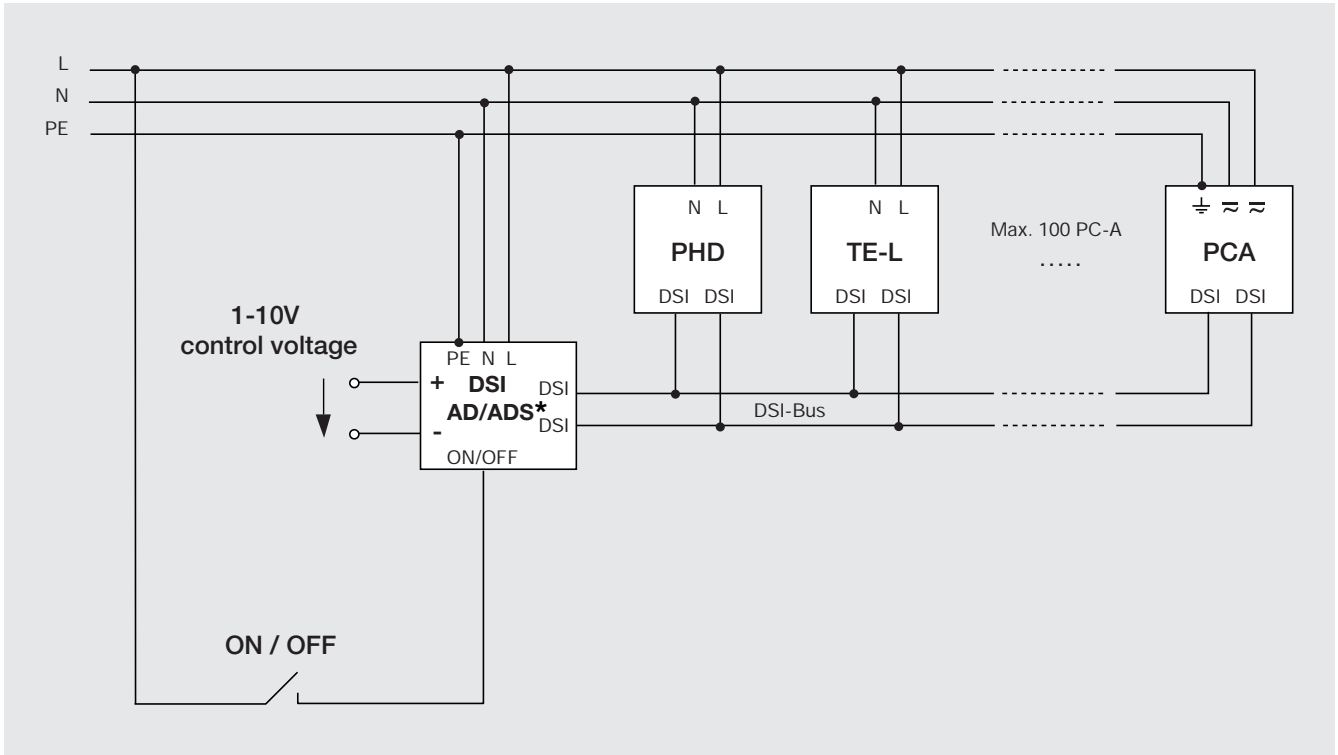


K) PAD-TD



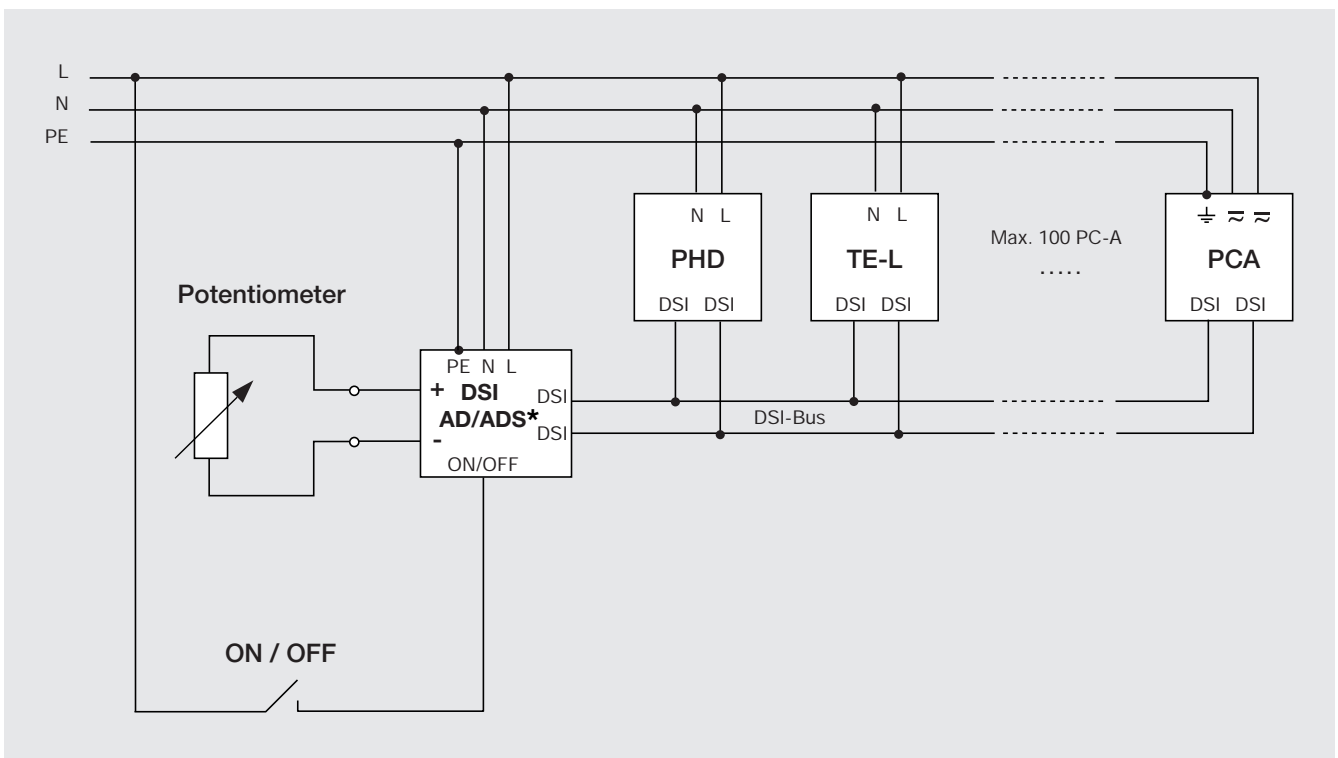
L) PAD-TD

Circuit diagrams DSI - PCA/TEL/PHD



M) DSI-AD/ADS

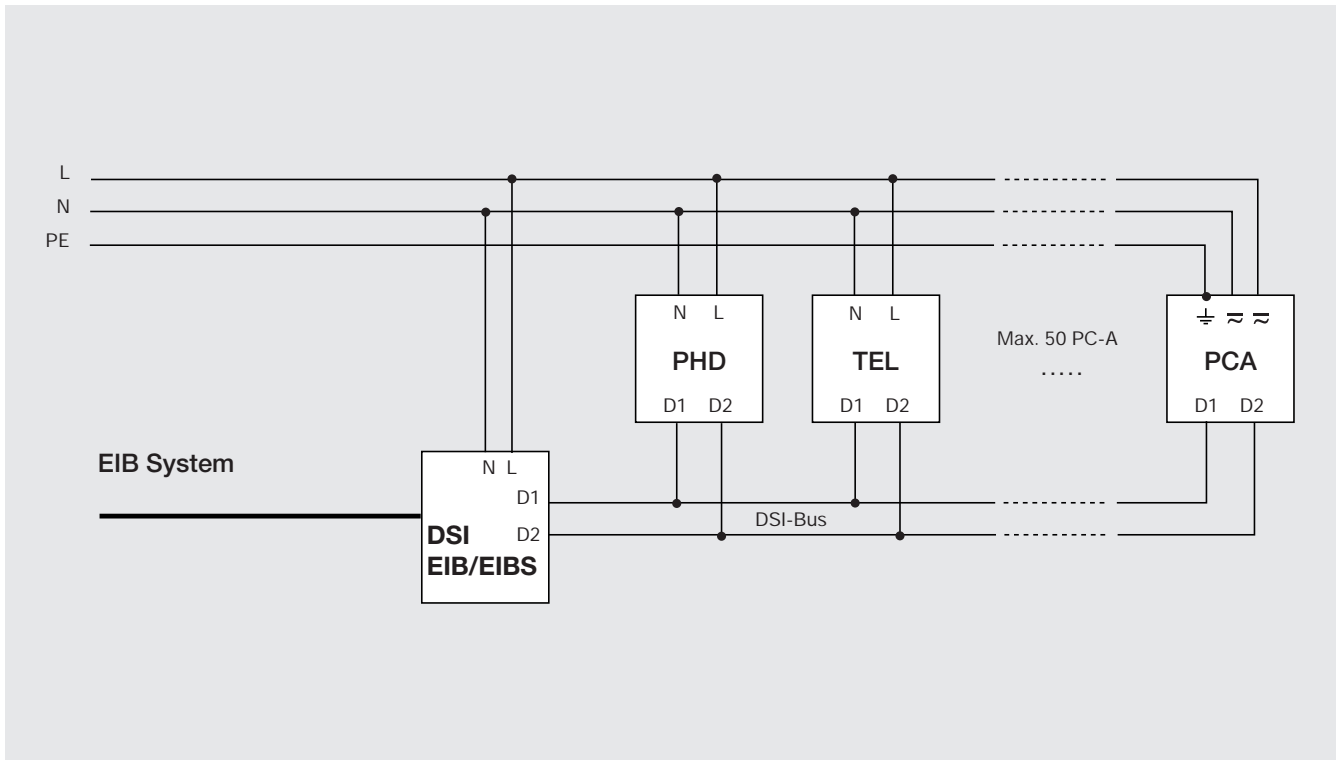
\* no earth required with DSI-ADS



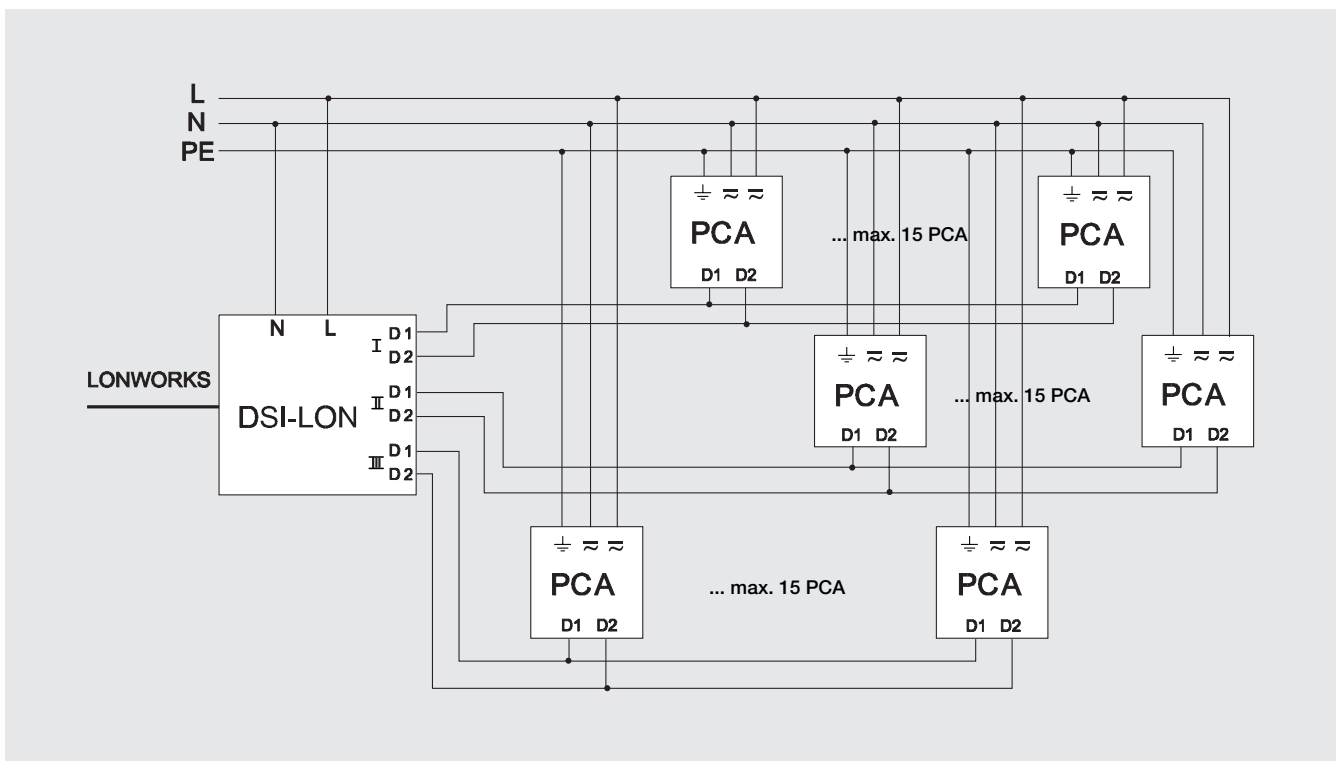
N) DSI-AD/ADS

\* no earth required with DSI-ADS

Circuit diagrams DSI - PCA/TEL/PHD

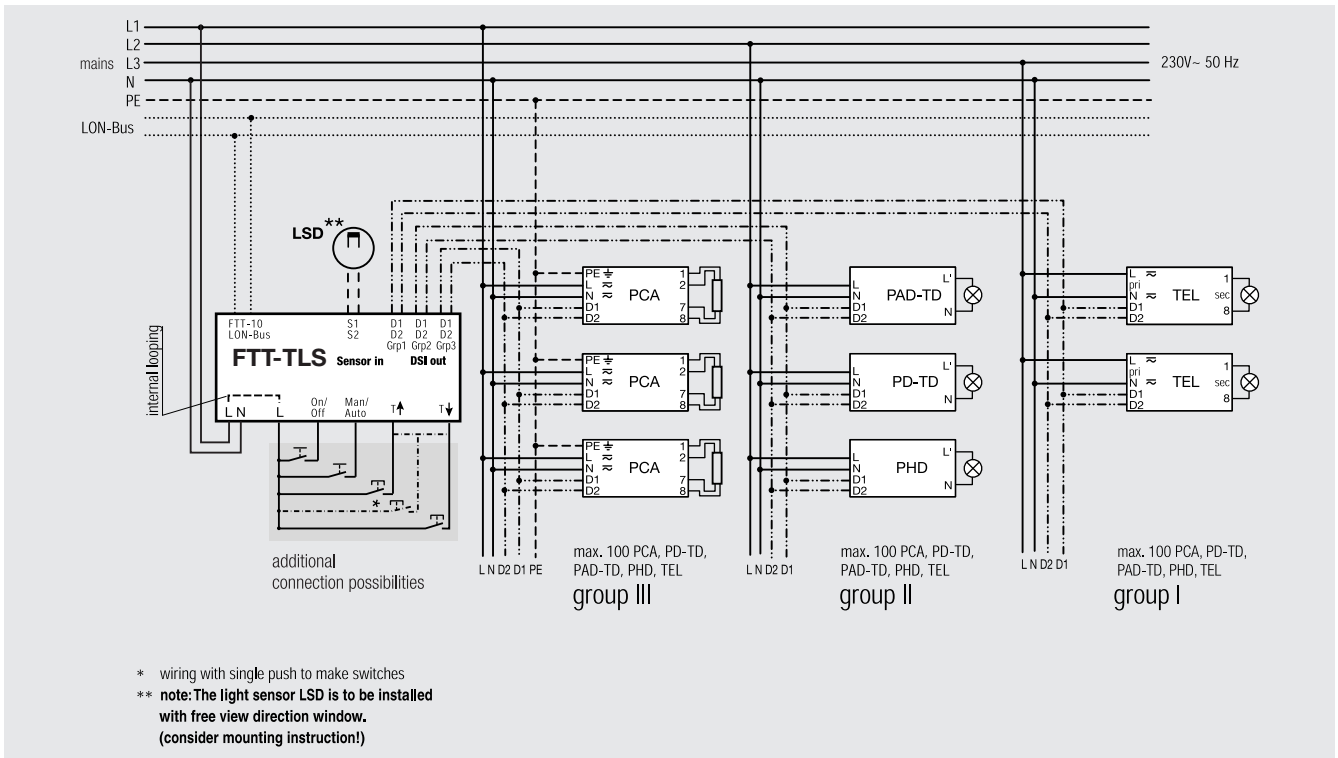


O) DSI-EIB/EIBS

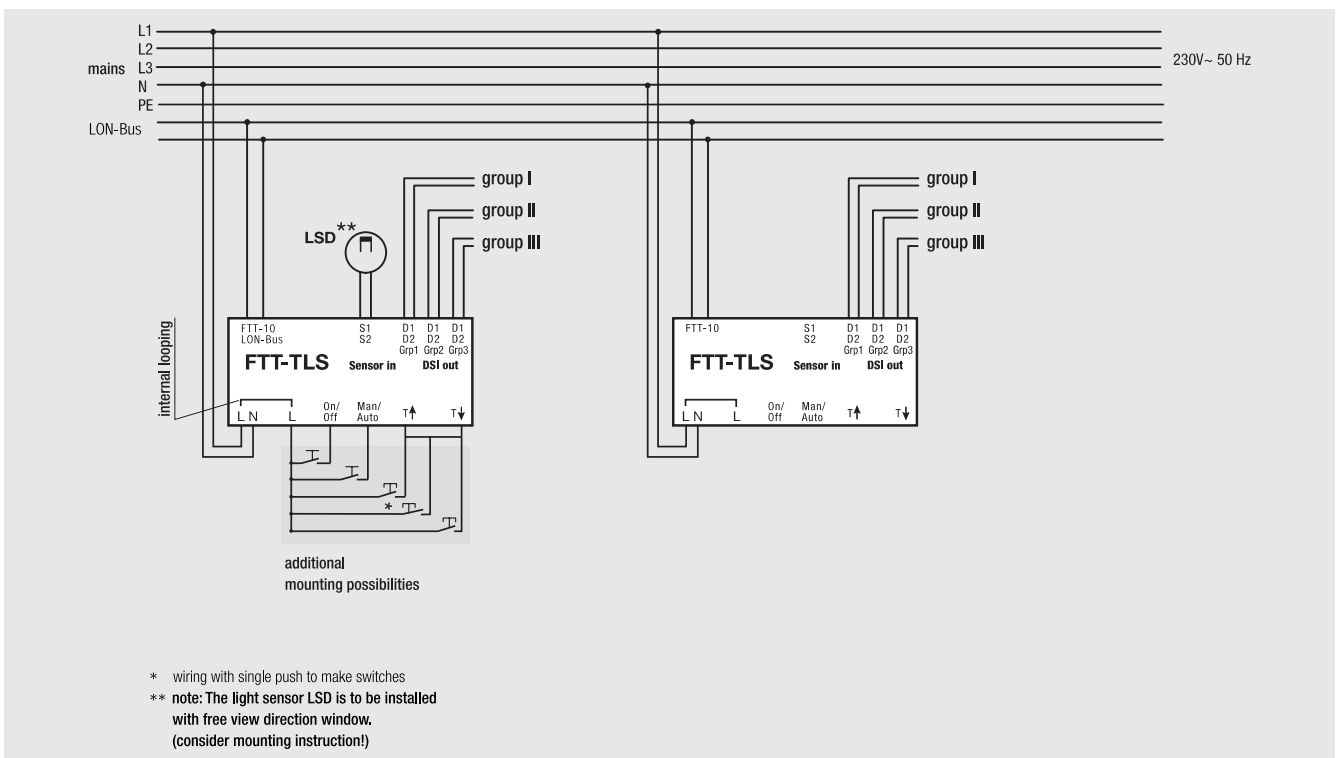


P) DSI-LON

Circuit diagrams DSI - PCA/TEL/PHD

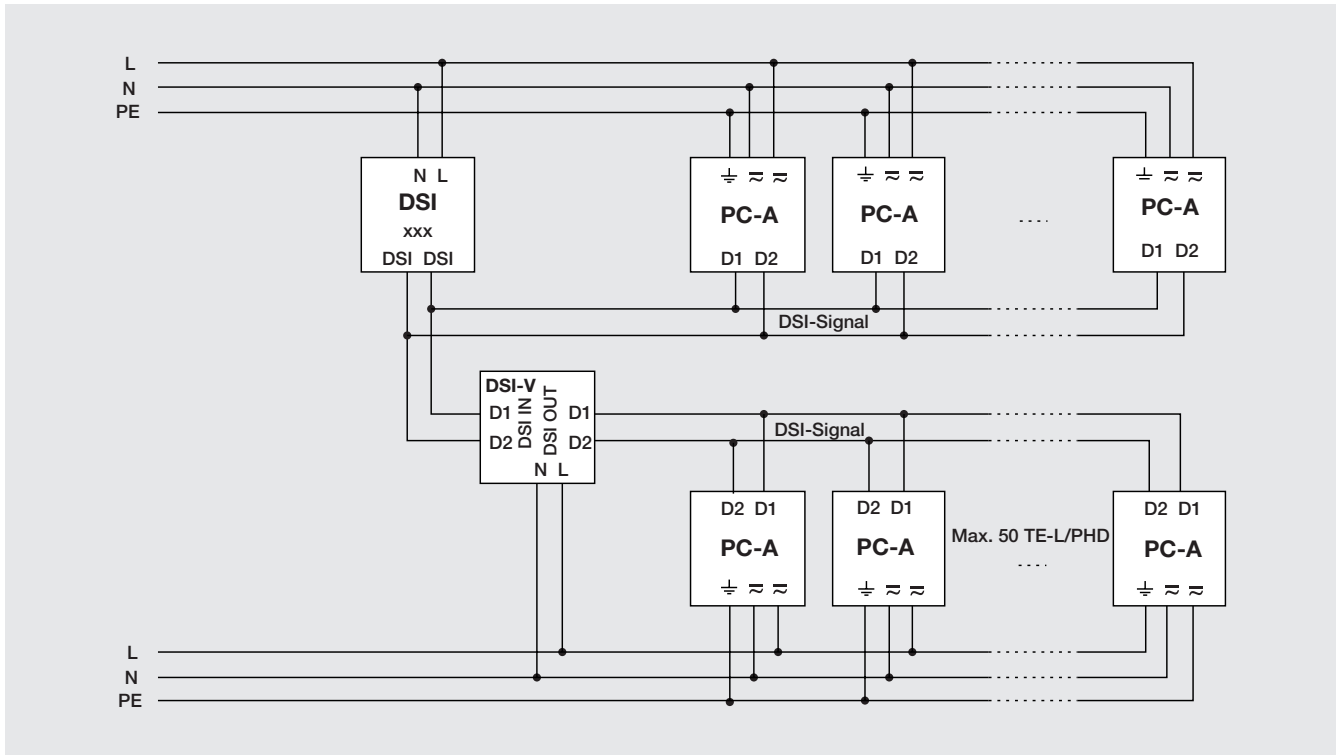


Q) FTT-TLS

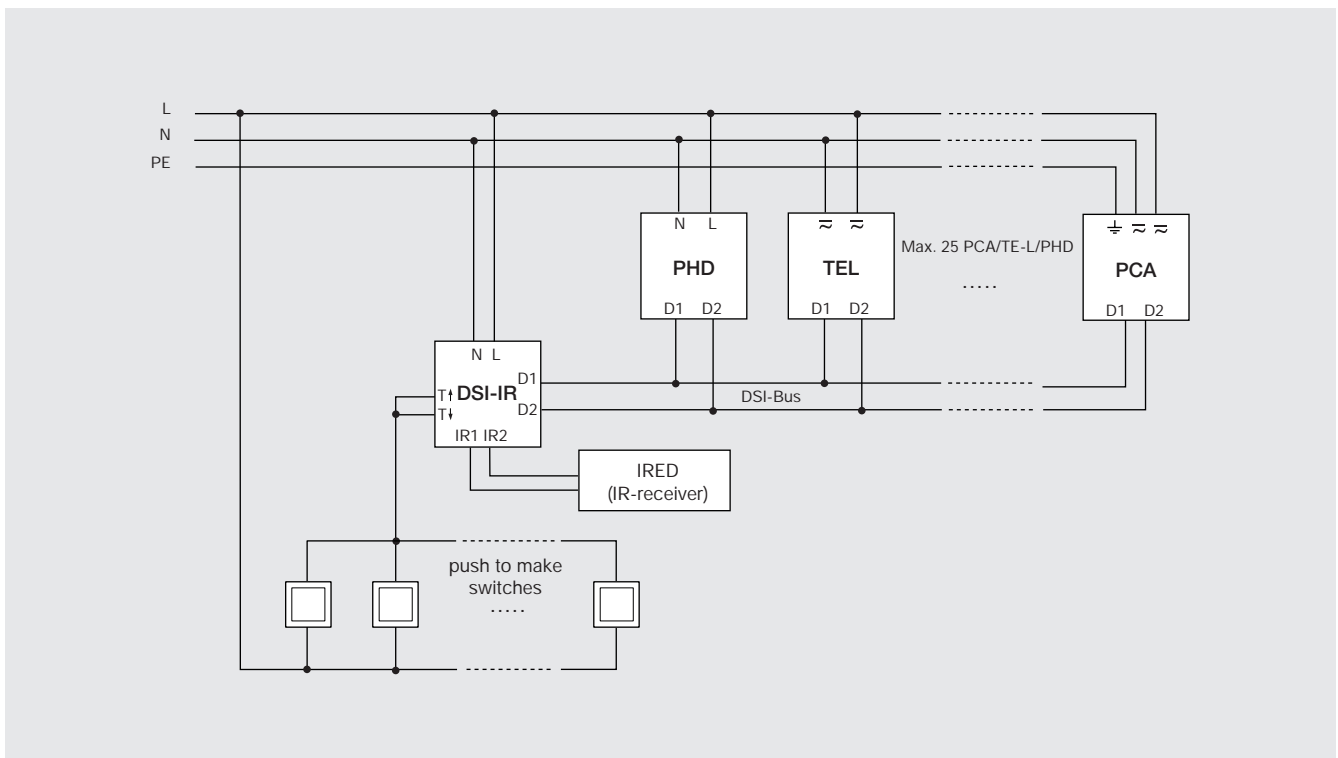


R) FTT-TLS

Circuit diagrams DSI - PCA/TEL/PHD



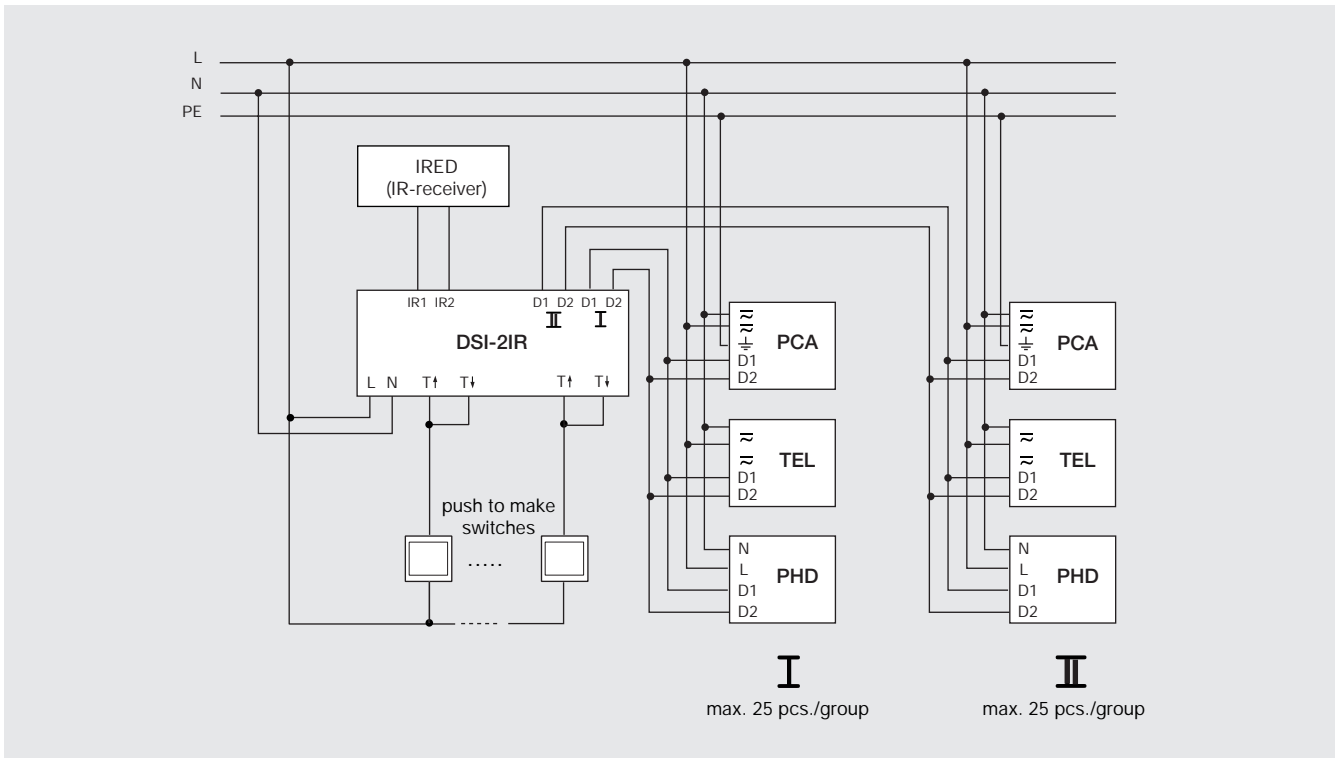
S) DSI-V



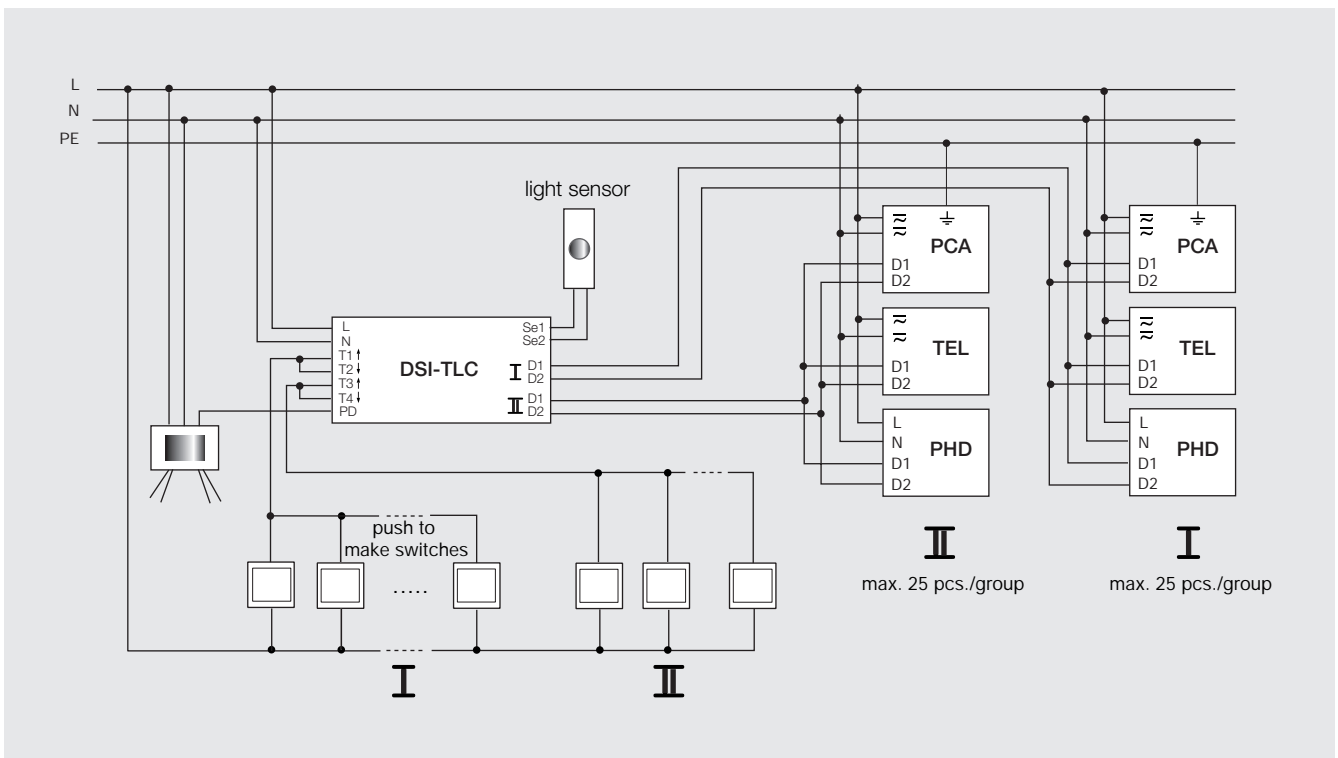
T) DSI-IR



Circuit diagrams DSI - PCA/TEL/PHD

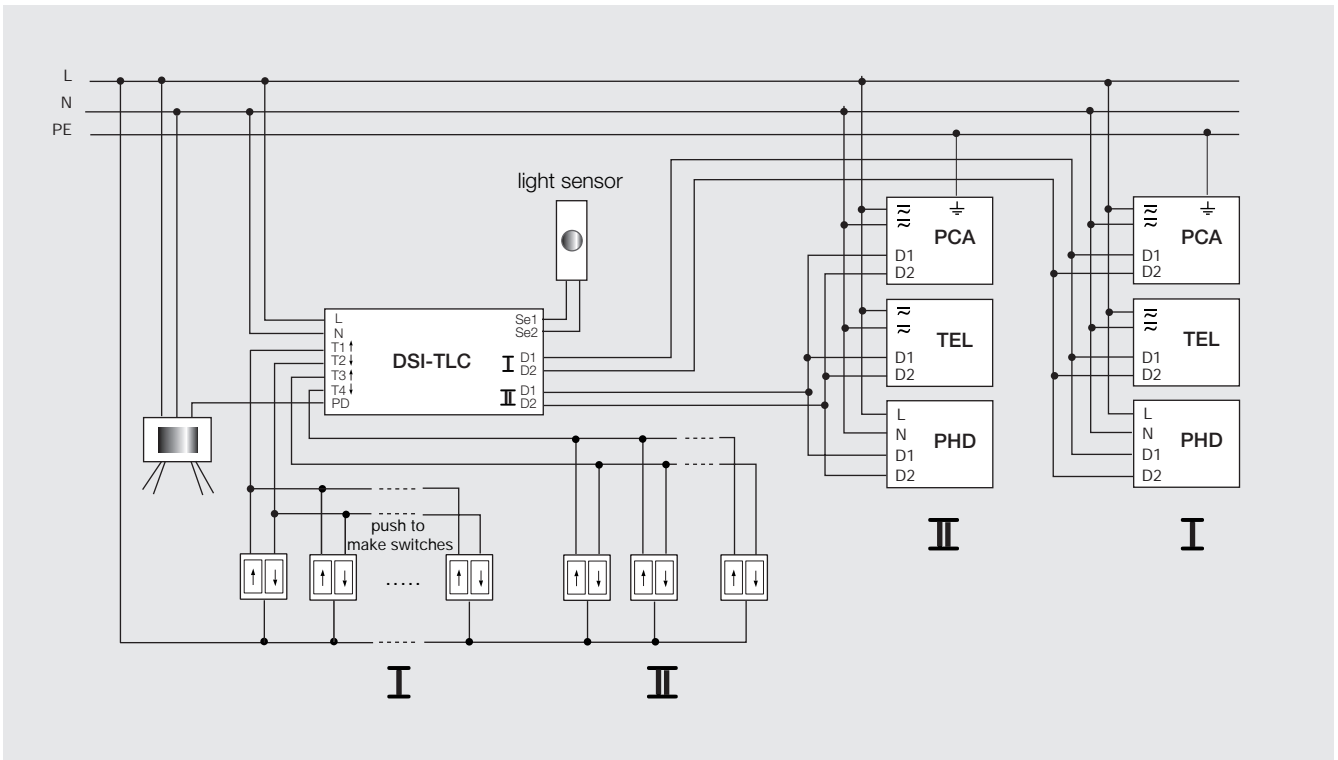


u) DSI-2IR

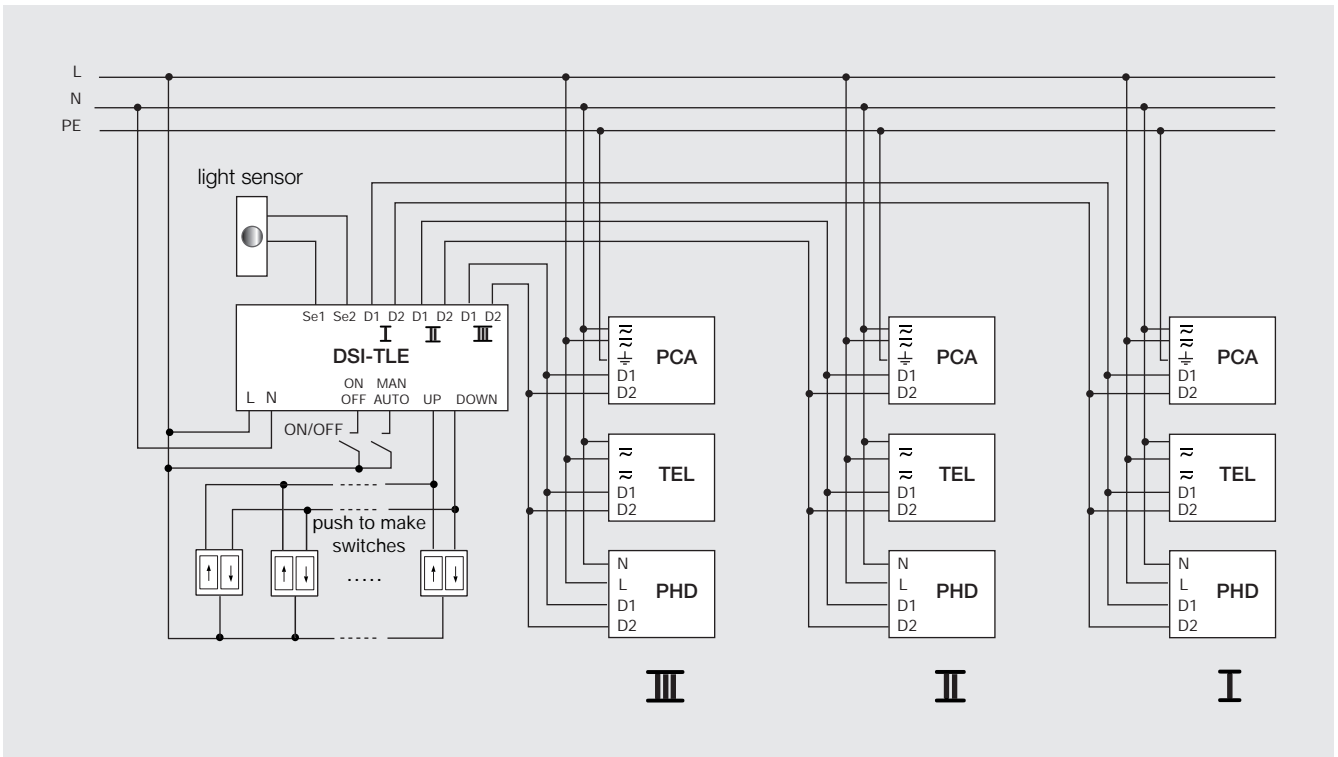


v) DSI-TLC

Circuit diagrams DSI - PCA/TEL/PHD



w) DSI-TLC



x) DSI-TLE

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