

**Photocell, fault monitoring, switch-over and flash controller unit
Data Sheet and Installation examples****Key features**

- Extremely reliable
- Very low power consumption
- Suitable for solar cell applications
- Integrated photocell
- Master-slave switch-over
- Flash or steady burn mode
- Alarm output

Benefits

- Long maintenance intervals
- Low battery costs

Characteristics

- User selectable photocell sensitivity
- Microprocessor controlled
- Fault monitoring based on current flow through LED lamp
- Potential free relay alarm
- Shock resistant Polycarbonate enclosure (degree of protection IP65)
- Dimensions (LxWxH): 200mm x 200mm x 130mm

User selectable parameter switches

- Photocell on/off
- Output 1 (Master) only
- Current Alarm level
- Photocell Sensitivity
- Steady burn / Flash mode
- Indicator LEDs on/off

Indicator LEDs

- Over-current alarm
- Under-current alarm
- Output 1 (Master) ON
- Output 2 (Slave) ON
- Selftest OK

Electrical characteristics

- Operating voltage range 12...20V_{DC}
With 12V_{DC} operating voltage light
- Operating voltage range 23...28V_{DC}
With 24V_{DC} operating voltage light
- Operating voltage range 44...59V_{DC}
With 48V_{DC} operating voltage light
- Power consumption @12V_{DC} 0,3W
- Power consumption @24V_{DC} 0,7W
- Power consumption @48V_{DC} 1,5W
- Operating temperature range -40...+55°C

Order code:

- CEL-CSW-DCW-0A5-F (current alarm range 12mA-770mA)
- CEL-CSW-DCW-02-F (current alarm range 45mA-2250mA)
- CEL-CSW-DCW-04-F (current alarm range 90mA-4120mA)

**Alarm relay characteristics**

- Two pole contacts: Normally Open (NO) and Normally Closed (NC)
- Active when CSW-DCW-xx-F is powered
- Switch voltage (max): 110 V_{DC} / 125 V_{AC}
- Switch current (max): 1 A
- Switch power (max): 30 W
- Contact resistance 0.1 ohm

Flash mode

- Flash 60FPM, Flash duration 250 ms
- Flash 40FPM, Flash duration 250 ms
- Flash 20FPM, Flash duration 250 ms

Option (SW: CSWB 1.06-4_DE_40_60):

- Flash: 1s on, 0,5s off, 1s on, 1,5 s off *

*BMVBW LS 11/60.01.87-01/5 Va 02, 24. September 2002, Page 15.

NOTE:

Several light units can be connected in parallel, but then separate currents has to be summed up to get the correct current limit. Alarm will only be triggered outside the current limits.

This document is valid for software CSWB 1.06-4_20_40_60 .



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Data Sheet and Installation examples

CSW-DCW-0A5-F, CSW-DCW-02-F and CSW-DCW-04-F

Description of operation:

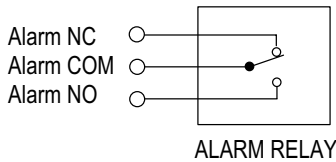
The CSW measures the current consumption of the output in use every 0,5 seconds. If five consecutive measurements occur giving an overcurrent fault, an alarm is generated, and the second output (if available) is switched on. After 30 minutes the CSW will try to switch the first (faulty) output back on, making five measurements, and if the fault has been cleared, the alarm is turned off. If it is still faulty the alarm stays on and the other output (if available) is kept on. Alarm is also generated in case of power loss.

Remember always to check that the output selection is correct: For one output only or both outputs in use.

The CSW DIP Switch table shows the available ranges for current alarms. Normal current consumption for the system depends on the number and type of LED lights used. The same table also shows how to set the photocell into use or out of use, and how to define its sensitivity. If photocell is used, CSW-unit must be installed outdoors.

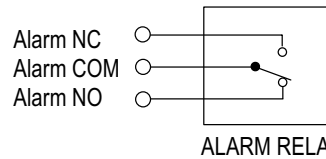
Note! If no slave unit is connected to output 2 as a backup, all LED lights of the failed output are automatically switched off when an alarm is generated.

ALARM RELAY:



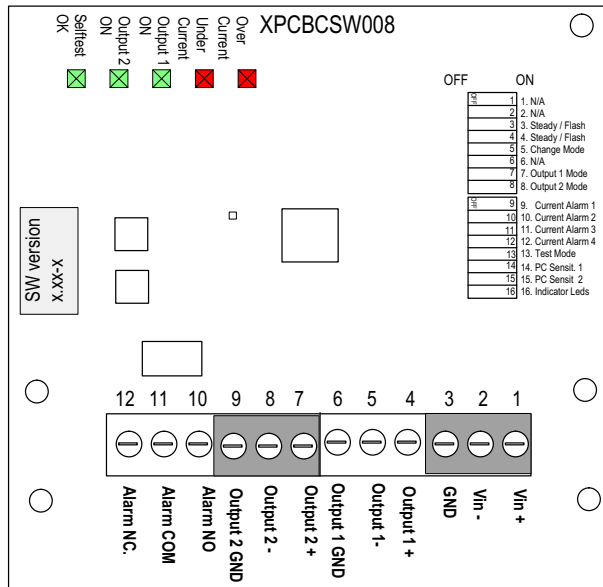
ALARM RELAY

Relay when power connected, no alarm.



ALARM RELAY

Relay when alarm on, or no power.



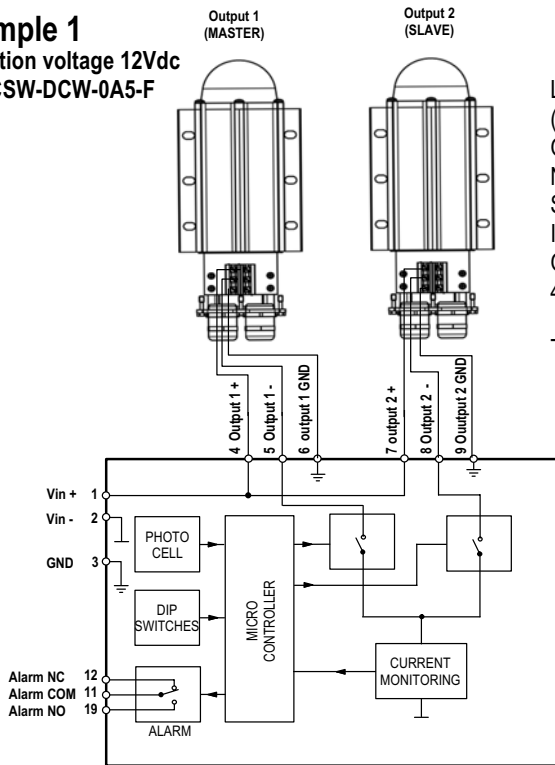
Connectors

- 1 Vin + Power supply, positive input 12VDC, 24VDC or 48VDC
- 2 Vin - Power supply, negative input
- 3 GND Power supply ground, power supply cable shield.
- 4 Output 1 + Output 1 (Master) output positive
- 5 Output 1 - Output 1 (Master) output negative
- 6 Output 1 GND Output 1 (Master) cable shield
- 7 Output 2 + Output 2 (Slave) output positive
- 8 Output 2 - Output 2 (Slave) output negative
- 9 Output 2 GND Output 2 (Slave) cable shield
- 10 Alarm NC External alarm output, Normally Closed
- 11 Alarm NO External alarm output, Normally Open
- 12 Alarm COM External alarm output, COMMON

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Example 1
Operation voltage 12Vdc
CEL-CSW-DCW-0A5-F

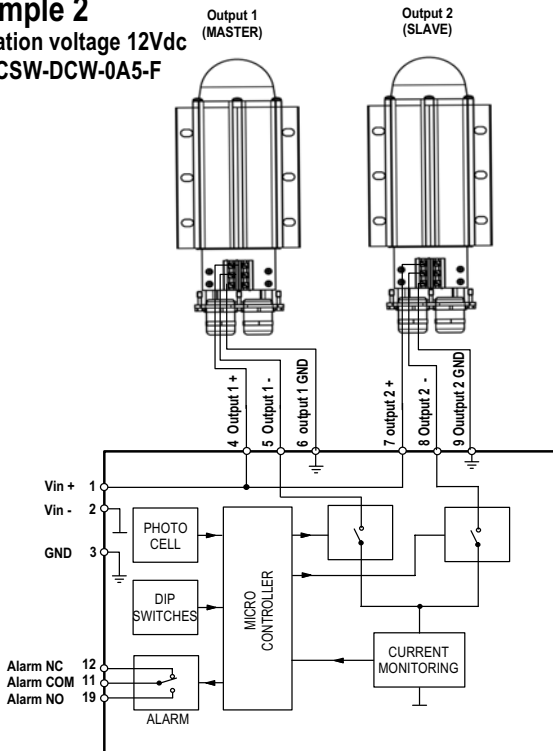


LED lights (CEL-LI-10-DCW-F) connected to both Output 1 (Master) and Output 2 (Slave).
Operation voltage 12Vdc
No Photocell control.
Steady burn.
If master fails, slave is taken into use and an alarm is generated.
One light takes 70 mA, and the current alarm range is set to 48to 112 mA.

The correct DIP switch settings are shown below.

OFF	ON	
OFF	1	1. N/A
OFF	2	2. N/A
OFF	3	3. Flash / Steady burn
OFF	4	4. Flash / Steady burn
OFF	5	5. Change Mode
OFF	6	6. N/A
OFF	7	7. Output 1 Mode
OFF	8	8. Output 2 Mode
OFF	9	9. Current Alarm 1
OFF	10	10. Current Alarm 2
OFF	11	11. Current Alarm 3
OFF	12	12. Current Alarm 4
OFF	13	13. Test Mode
OFF	14	14. PC Sensit. 1
OFF	15	15. PC Sensit. 2
OFF	16	16. Indicator Leds

Example 2
Operation voltage 12Vdc
CEL-CSW-DCW-0A5-F



LED lights (CEL-LI-DCW-F) connected to both output 1 (Master) and output 2 (Slave).
Operation voltage 12Vdc
Photocell control, 200 lux selected.
Steady burn.
If master fails, slave is taken into use and an alarm is generated.
One light takes 70 mA, and the current alarm range is set to 48 to 112 mA.

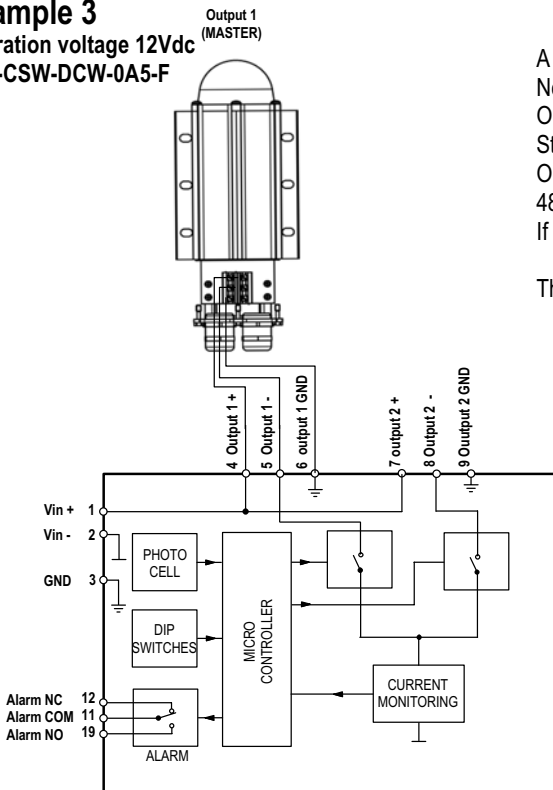
The correct DIP switch settings are shown below.

OFF	ON	
OFF	1	1. N/A
OFF	2	2. N/A
OFF	3	3. Flash / Steady burn
OFF	4	4. Flash / Steady burn
OFF	5	5. Change Mode
OFF	6	6. N/A
OFF	7	7. Output 1 Mode
OFF	8	8. Output 2 Mode
OFF	9	9. Current Alarm 1
OFF	10	10. Current Alarm 2
OFF	11	11. Current Alarm 3
OFF	12	12. Current Alarm 4
OFF	13	13. Test Mode
OFF	14	14. PC Sensit. 1
OFF	15	15. PC Sensit. 2
OFF	16	16. Indicator Leds

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Example 3

Operation voltage 12Vdc
CEL-CSW-DCW-0A5-F



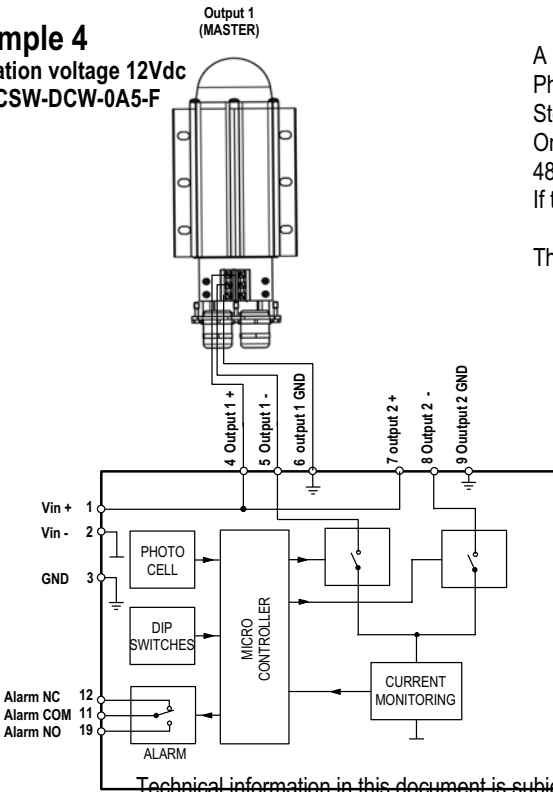
A LED light (CEL-LI-10-DCW-F) connected to Output 1 (Master).
No Photocell control
Operation voltage 12Vdc.
Steady burn.
One light takes 70 mA, and the current alarm range is set to 48 mA to 112 mA.
If the current consumption is outside this range, an alarm is generated.

The correct DIP switch settings are shown below.

OFF	ON	
<input type="checkbox"/>	<input checked="" type="checkbox"/>	1. N/A
<input type="checkbox"/>	<input checked="" type="checkbox"/>	2. N/A
<input type="checkbox"/>	<input checked="" type="checkbox"/>	3. Flash / Steady burn
<input type="checkbox"/>	<input checked="" type="checkbox"/>	4. Flash / Steady burn
<input type="checkbox"/>	<input checked="" type="checkbox"/>	5. Change Mode
<input type="checkbox"/>	<input checked="" type="checkbox"/>	6. N/A
<input type="checkbox"/>	<input checked="" type="checkbox"/>	7. Output 1 Mode
<input type="checkbox"/>	<input checked="" type="checkbox"/>	8. Output 2 Mode
<input type="checkbox"/>	<input checked="" type="checkbox"/>	9. Current Alarm 1
<input type="checkbox"/>	<input checked="" type="checkbox"/>	10. Current Alarm 2
<input type="checkbox"/>	<input checked="" type="checkbox"/>	11. Current Alarm 3
<input type="checkbox"/>	<input checked="" type="checkbox"/>	12. Current Alarm 4
<input type="checkbox"/>	<input checked="" type="checkbox"/>	13. Test Mode
<input type="checkbox"/>	<input checked="" type="checkbox"/>	14. PC Sensit. 1
<input type="checkbox"/>	<input checked="" type="checkbox"/>	15. PC Sensit. 2
<input type="checkbox"/>	<input checked="" type="checkbox"/>	16. Indicator Leds

Example 4

Operation voltage 12Vdc
CEL-CSW-DCW-0A5-F



A LED light (CEL-LI-10-DCW-F) connected to Output 1 (Master).
Photocell control, 200 lux selected.
Steady burn.
One light takes 70 mA, and the current alarm range is set to 48 to 112 mA.
If the current consumption is outside this range, an alarm is generated.

The correct DIP switch settings are shown below.

OFF	ON	
<input type="checkbox"/>	<input checked="" type="checkbox"/>	1. N/A
<input type="checkbox"/>	<input checked="" type="checkbox"/>	2. N/A
<input type="checkbox"/>	<input checked="" type="checkbox"/>	3. Flash / Steady burn
<input type="checkbox"/>	<input checked="" type="checkbox"/>	4. Flash / Steady burn
<input type="checkbox"/>	<input checked="" type="checkbox"/>	5. Change Mode
<input type="checkbox"/>	<input checked="" type="checkbox"/>	6. N/A
<input type="checkbox"/>	<input checked="" type="checkbox"/>	7. Output 1 Mode
<input type="checkbox"/>	<input checked="" type="checkbox"/>	8. Output2 Mode
<input type="checkbox"/>	<input checked="" type="checkbox"/>	9. Current Alarm 1
<input type="checkbox"/>	<input checked="" type="checkbox"/>	10. Current Alarm 2
<input type="checkbox"/>	<input checked="" type="checkbox"/>	11. Current Alarm 3
<input type="checkbox"/>	<input checked="" type="checkbox"/>	12. Current Alarm 4
<input type="checkbox"/>	<input checked="" type="checkbox"/>	13. Test Mode
<input type="checkbox"/>	<input checked="" type="checkbox"/>	14. PC Sensit. 1
<input type="checkbox"/>	<input checked="" type="checkbox"/>	15. PC Sensit. 2
<input type="checkbox"/>	<input checked="" type="checkbox"/>	16. Indicator Leds

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Switch	CEL-CSW-DCW-0A5-F switches	
1 to 2	not used	
3 to 4	Steady burn / Flash mode	
	3	4
	on on	Steady burn
	on off	Flash 60 FPM , Flash duration 250 ms
	off on	Flash 40 FPM , Flash duration 250 ms
	off off	Flash 20 FPM , Flash duration 250 ms
5	Change mode	
	off Must be always off	
6	not used	
7	Photocell ON /OFF	
	on Photocell on. Day and night switch in use	
	off Photocell off	
8	Output 1-2	
	on A led light connected to Output 1 (Master) only	
	off Led lights connected to both Output 1 (Master) and Output 2 (Slave)	
9 to 12	Current alarm range	CSW-DCW-0A5-F
	9	10 11 12
	on on on on	low limit[mA] high limit[mA]
	on on on off	12 28
	on on off on	18 42
	on on off off	24 56
	on on off off	30 70
	on off on on	36 84
	on off on off	48 112
	on off off on	60 140
	on off off off	72 168
	off on on on	90 210
	off on on off	120 280
	off on off on	150 350
	off on off off	180 420
	off off on on	210 490
	off off on off	240 560
	off off off on	300 700
	off off off off	330 770
13	Photocell test mode	
	on - light switched on after 3 seconds delay and off after 3 seconds delay	
	off - light switched on after 3 seconds delay and off after 3 minutes delay	
14 to 15	Photocell sensitivity	
	14	15
	on on	100 lux on , 400 lux off
	on off	100 lux on , 100 lux off
	off on	200 lux on , 200 lux off
	off off	400 lux on , 400 lux off
16	Indicator LEDs on/off	
	on Indicator LEDs in use	
	off Indicator LEDs not used	
	LEDs	
	Over Current	Current too high (red LED)
	Under Current	Current too low (red LED)
	OUTPUT 1 ON	Output 1 (Master) used (Green LED)
	OUTPUT 2 ON	Output 2 (Slave) used (Green LED)
	Self test OK	Steady green, when everything is OK

Switch	CEL-CSW-DCW-02-F switches					
1 to 2	not used					
3 to 4	Steady burn / Flash mode					
	3	4				
	on	on	Steady burn			
	on	off	Flash 60 FPM , Flash duration 250 ms			
	off	on	Flash 40 FPM , Flash duration 250 ms			
	off	off	Flash 20 FPM , Flash duration 250 ms			
5	Change mode					
	off Must be always off					
6	not used					
7	Photocell ON /OFF					
	on Photocell on. Day and night switch in use					
	off Photocell off					
8	Output 1-2					
	on A led light connected to Output 1 (Master) only					
	off Led lights connected to both Output 1 (Master) and Output 2 (Slave)					
9 to 12	Current alarm range				CSW-DCW-02-F	
	9	10	11	12	low limit[mA]	high limit[mA]
	on	on	on	on	45	135
	on	on	on	off	65	195
	on	on	off	on	85	255
	on	on	off	off	100	300
	on	off	on	on	130	390
	on	off	on	off	175	525
	on	off	off	on	200	600
	on	off	off	off	225	675
	off	on	on	on	250	750
	off	on	on	off	275	825
	off	on	off	on	300	900
	off	on	off	off	325	975
	off	off	on	on	400	1200
	off	off	on	off	500	1500
	off	off	off	on	650	1950
	off	off	off	off	750	2250
13	Photocell test mode					
	on - light switched on after 3 seconds delay and off after 3 seconds delay					
	off - light switched on after 3 seconds delay and off after 3 minutes delay					
14 to 15	Photocell sensitivity					
	14	15				
	on	on	100 lux on , 400 lux off			
	on	off	100 lux on , 100 lux off			
	off	on	200 lux on , 200 lux off			
	off	off	400 lux on , 400 lux off			
16	Indicator LEDs on/off					
	on Indicator LEDs in use					
	off Indicator LEDs not used					
	LEDs					
	Over Current	Current too high (red LED)				
	Under Current	Current too low (red LED)				
	OUTPUT 1 ON	Output 1 (Master) used (Green LED)				
	OUTPUT 2 ON	Output 2 (Slave) used (Green LED)				
	Self test OK	Steady green, when everything is OK				

Switch	CEL-CSW-DCW-04-F switches					
1 to 2	not used					
3 to 4	Steady burn / Flash mode					
	3	4				
	on	on	Steady burn			
	on	off	Flash 60 FPM , Flash duration 250 ms			
	off	on	Flash 40 FPM , Flash duration 250 ms			
	off	off	Flash 20 FPM , Flash duration 250 ms			
5	Change mode					
	off Must be always off					
6	not used					
7	Photocell ON /OFF					
	on Photocell on. Day and night switch in use					
	off Photocell off					
8	Output 1-2					
	on A led light connected to Output 1 (Master) only					
	off Led lights connected to both Output 1 (Master) and Output 2 (Slave)					
9 to 12	Current alarm range			CSW-DCW-04-F		
	9	10	11	12	low limit[mA]	high limit[mA]
	on	on	on	on	90	250
	on	on	on	off	120	360
	on	on	off	on	160	460
	on	on	off	off	180	550
	on	off	on	on	230	710
	on	off	on	off	320	960
	on	off	off	on	370	1100
	on	off	off	off	400	1230
	off	on	on	on	460	1370
	off	on	on	off	500	1510
	off	on	off	on	550	1650
	off	on	off	off	590	1780
	off	off	on	on	730	2200
	off	off	on	off	910	2730
	off	off	off	on	1190	3570
	off	off	off	off	2250	4120
13	Photocell test mode					
	on - light switched on after 3 seconds delay and off after 3 seconds delay					
	off - light switched on after 3 seconds delay and off after 3 minutes delay					
14 to 15	Photocell sensitivity					
	14	15				
	on	on	100 lux on , 400 lux off			
	on	off	100 lux on , 100 lux off			
	off	on	200 lux on , 200 lux off			
	off	off	400 lux on , 400 lux off			
16	Indicator LEDs on/off					
	on Indicator LEDs in use					
	off Indicator LEDs not used					
	LEDs					
	Over Current	Current too high (red LED)				
	Under Current	Current too low (red LED)				
	OUTPUT 1 ON	Output 1 (Master) used (Green LED)				
	OUTPUT 2 ON	Output 2 (Slave) used (Green LED)				
	Self test OK	Steady green, when everything is OK				

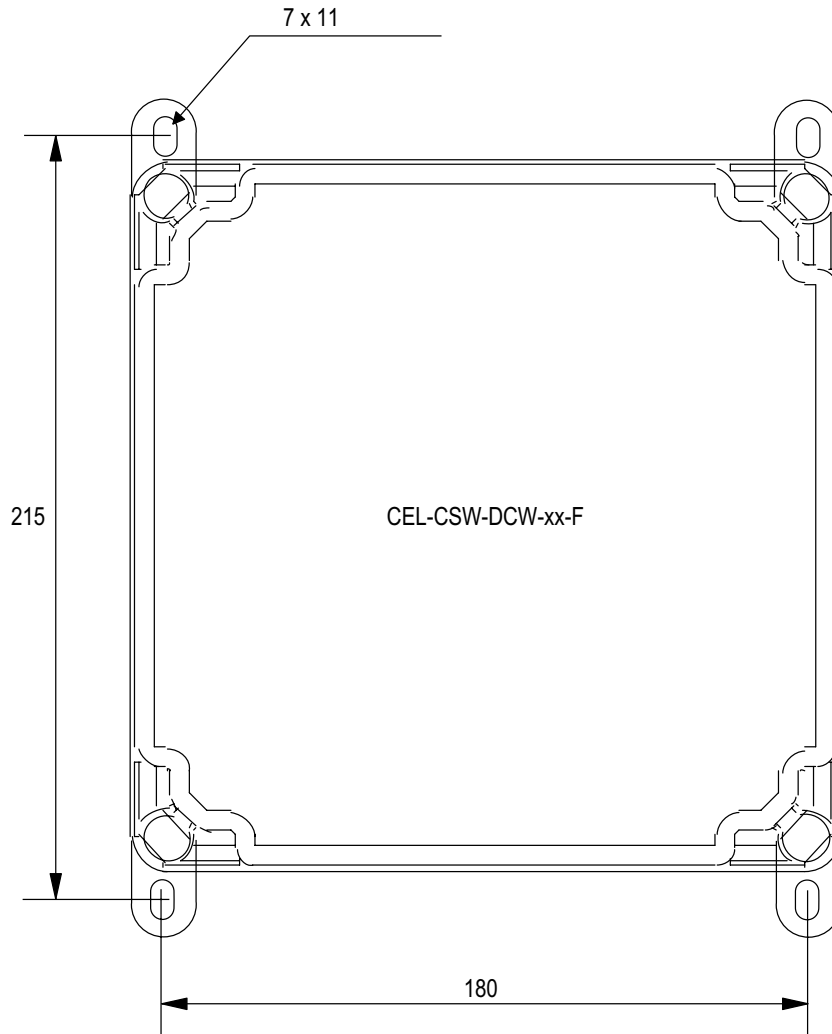
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LED light unit current consumptions:

Type:	Voltage dc	Current (mA):	CEL-CSW -DCW-XX-F	CEL-CSW- XX - YY -F
CEL-10-12-F	12	200	02	12 - 16
CEL-32-12-F	12	750	02	12 - 16
CEL-30-12-CST	12	830	02	12 - 16
CEL-10-24-F	24	190	02	24 - 16
CEL-32-24-F	24	380	02	24 - 16
CEL-30-24-CST	24	420	02	24 - 16
CEL-150-24-CST	24	1600	04	24 - 16
CEL-10-48-F	48	100	02	48 - 16
CEL-32-48-F	48	190	02	48 - 16
CEL-30-48-CST	48	210	02	48 - 16
CEL-LI-10-DCW-F	12	70	0A5	12 - 02
CEL-LI-10-DCW-F	24	40	0A5	24 - 02
CEL-LI-10-DCW-F	48	23	0A5	48 - 02
CEL-LI-32-DCW-F	12	216	0A5	12 - 02
CEL-LI-32-DCW-F	24	110	0A5	24 - 02
CEL-LI-32-DCW-F	48	58	0A5	48 - 02
CEL-MI-IF-024	24	2400	04	24 - 16
CEL-MI-IF-048	48	1000	04	48 - 16

Example ordering codes for CSW: CEL-CSW-DCW-02-F CEL-CSW-24-16-F

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