Photocell, Fault Monitoring, Switch-Over and Flash Controller Unit - Data Sheet and Installation examples

CEL-CSW-DCW-O2-F - Two Output Channels

Key features
- Extremely reliable
- Very low power consumption
- Suitable for solar cell applications
- Integrated photocell
- Main-spare 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 (Main) only
- Current Alarm level
- Photocell Sensitivity
- Steady burn I Flash mode
- Indicator LEDs on/off

Indicator LEDs
- Over-current alarm
- Under-current alarm
- Output 1 (Main) ON
- Output 2 (Spare) 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 @12 V_{DC} 0,3W
- Power consumption @24 V_{DC} 0,7W
- Power consumption @48 V_{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 60 FPM, Flash duration 250ms
- Flash 40 FPM, Flash duration 250ms
- Flash 20 FPM, Flash duration 250ms
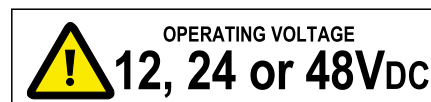
Option (SW: CSWB 1.06-4_DE_ 40_60):
-Flash: 1s on, 0,5s off, 1s on, 1,5 s off *
*BMVBW LS 11/60.01.87-01/5 Va 02, 24. September 2002, Page 15.

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.

OPERATING VOLTAGE
⚠ **12, 24 or 48V$_{DC}$**

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CEL-CSW-DCW-OA5-F, CEL-CSW-DCW-02-F and CEL-CSW-DCW-04-F

Description of operation:
The CSW controller measures the current consumption of the operational output every 0,5 seconds. If five consecutive inaccurate measurements are recorded, the output is switched off, an alarm is generated and the second output (if selected) is taken into use. After 30 minutes the CSW controller will attempt to switch the first (faulty) output back on, makes five measurements, and if the fault is cleared, the alarm is turned off. If it is still faulty the alarm stays on and the second output (if selected) is kept on. Alarm is also generated in case of power loss.
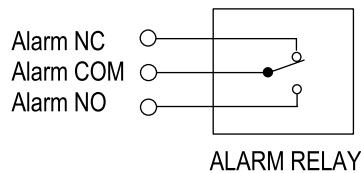
Remember always to check the DIP switch settings that output selections are correctly selected.

The CSW DIP switch settings tables on the following pages, show the selectable current limit ranges for defining the normal current consumption dependent on the types and numbers of LED lights used.
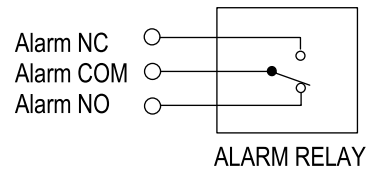The same table also shows additional functionality such as the photocell operation, country specific flash codes, flash rates, self-test modes and others.

Note! If no additional light 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.
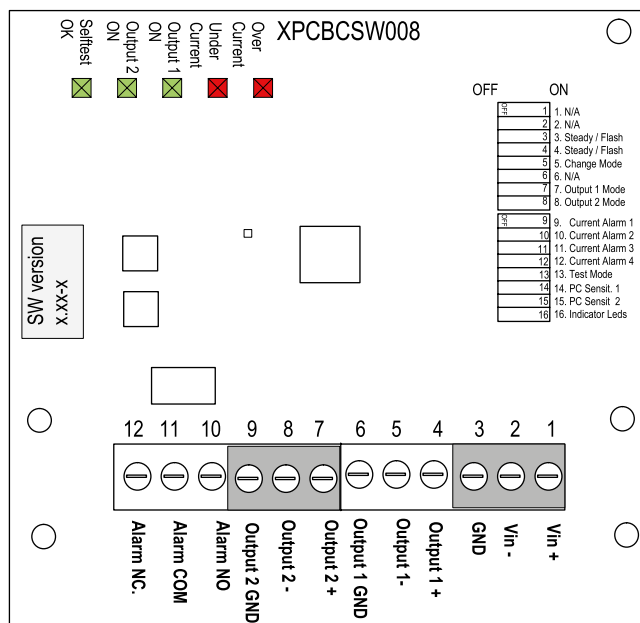
ALARM RELAY:

Alarm NC	
Alarm COM	
Alarm NO	

ALARM RELAY

Relay when power connected, no alarm.

Alarm NC	
Alarm COM	
Alarm NO	

ALARM RELAY

Relay when alarm on, or no power.

XPCBCSW008

Selftest OK
Output 2 ON
Output 1 ON
Under Current
Over Current

SW version
x.xx.x

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

| 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |

Alarm NC.
Alarm COM
Alarm NO
Output 2 GND
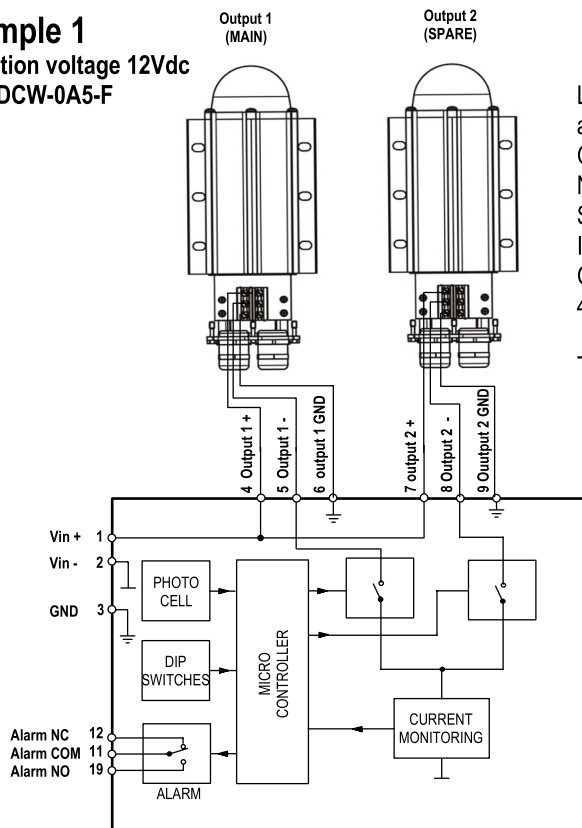Output 2 -
Output 2 +
Output 1 GND
Output 1-
Output 1 +
GND
Vin -
Vin +

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 (Main) output positive
5 Output 1 -	Output 1 (Main) output negative
6 Output 1 GND	Output 1 (Main) cable shield
7 Output 2 +	Output 2 (Spare) output positive
8 Output 2 -	Output 2 (Spare) output negative
9 Output 2 GND	Output 2 (Spare) 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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CEL-CSW-DCW-O2-F - Two Output Channels

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

Output 1 (MAIN)
Output 2 (SPARE)

4 Output 1 +
5 Output 1 -
6 output 1 GND
7 output 2 +
8 Output 2 -
9 Ouutput 2 GND

Vin + 1
Vin - 2
GND 3

PHOTO CELL
DIP SWITCHES
MICRO CONTROLLER
CURRENT MONITORING

Alarm NC 12
Alarm COM 11
Alarm NO 19
ALARM

LED lights (LI-10-DCW-F) connected to both Output 1 (Main) and Output 2 (Spare).
Operation voltage **12**Vdc
No Photocell control.
Steady burn.
If main fails, spare 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
	2	2. N/A
	3	3. Flash / Steady burn
	4	4. Flash / Steady burn
	5	5. Change Mode
	6	6. N/A
	7	7. Output 1 Mode
	8	8. Output 2 Mode
OFF		
	9	9. Current Alarm 1
	10	10. Current Alarm 2
	11	11. Current Alarm 3
	12	12. Current Alarm 4
	13	13. Test Mode
	14	14. PC Sensit. 1
	15	15. PC Sensit 2
	16	16. Indicator Leds

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

Output 1 (MAIN)
Output 2 (SPARE)

4 Output 1 +
5 Output 1 -
6 output 1 GND
7 output 2 +
8 Output 2 -
9 Ouutput 2 GND

Vin + 1
Vin - 2
GND 3

PHOTO CELL
DIP SWITCHES
MICRO CONTROLLER
CURRENT MONITORING

Alarm NC 12
Alarm COM 11
Alarm NO 19
ALARM
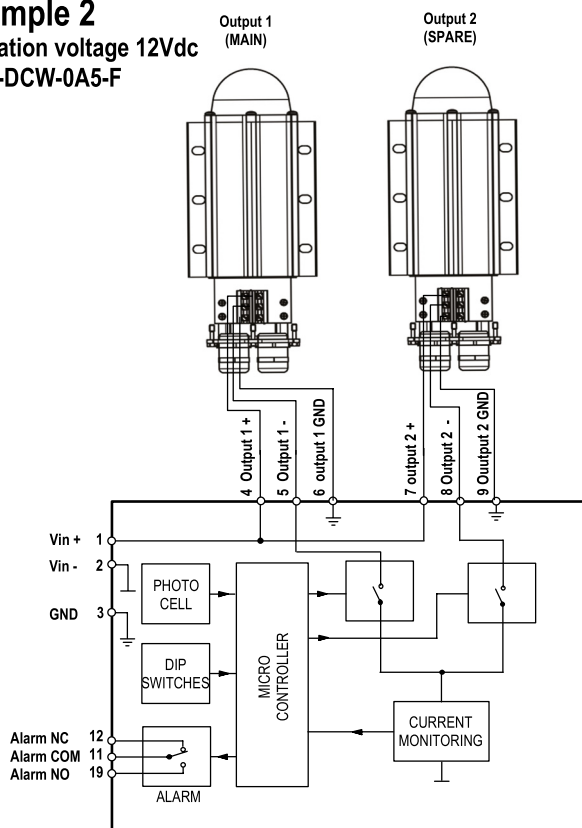
LED lights (LI-DCW-F) connected to both output 1 (Main) and output 2 (Spare).
Operation voltage **12**Vdc
Photocell control, 200 lux selected.
Steady burn.
If main fails, spare is taken into use and an alarm is generated.
One light takes 70 mA, and the current alarm range is set to 48 to 112 mA.

The correct DIP switch settings are shown below.

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

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AVIATION LIGHTING

CEL-CSW-DCW-O2-F - Two Output Channels

Example 3
Operation voltage 12Vdc
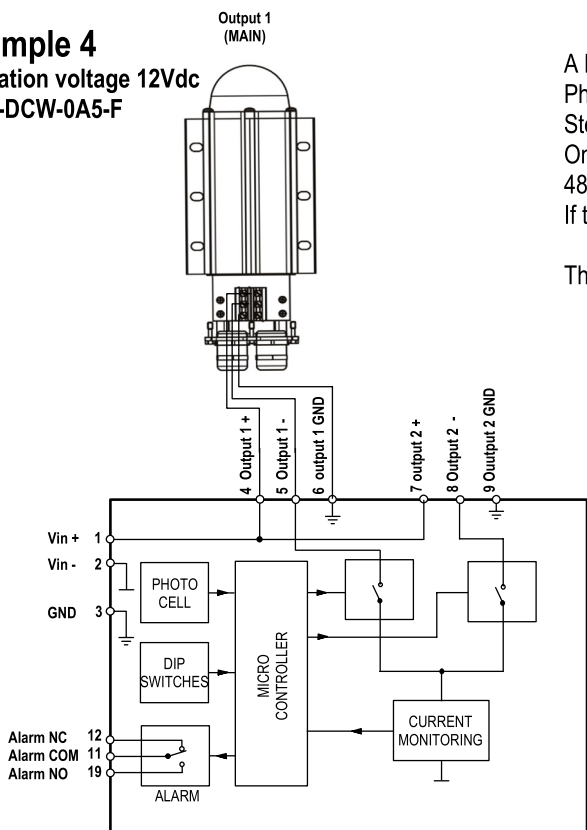**CSW-DCW-0A5-F**
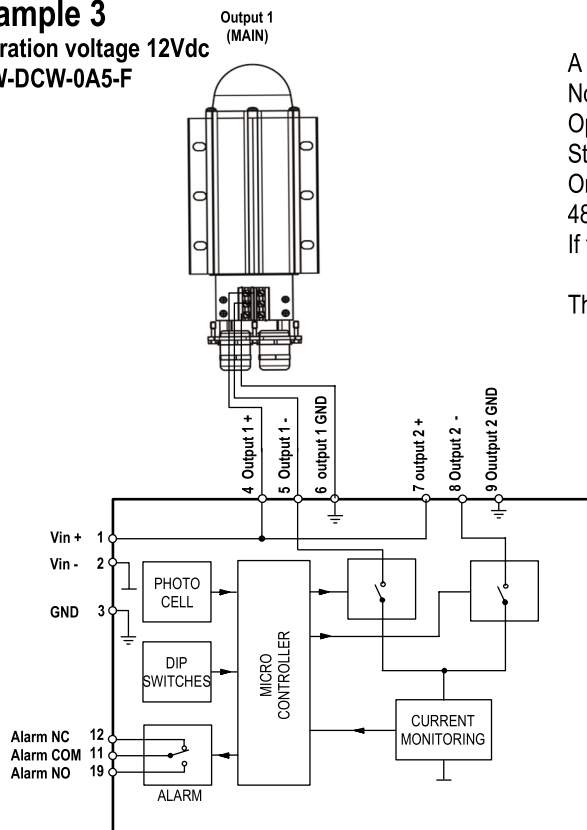
Output 1
(MAIN)

A LED light (LI-10-DCW-F) connected to Output 1 (Main).
No Photocell control
Operation voltage **12**Vdc.
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.

4 Output 1 +
5 Output 1 -
6 output 1 GND
7 output 2 +
8 Output 2 -
9 Ouutput 2 GND

Vin + 1
Vin - 2
GND 3

PHOTO CELL
DIP SWITCHES
MICRO CONTROLLER
CURRENT MONITORING

Alarm NC 12
Alarm COM 11
Alarm NO 19

ALARM

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

Example 4
Operation voltage 12Vdc
CSW-DCW-0A5-F

Output 1
(MAIN)

A LED light (LI-10-DCW-F) connected to Output 1 (Main).
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.

4 Output 1 +
5 Output 1 -
6 output 1 GND
7 output 2 +
8 Output 2 -
9 Ouutput 2 GND

Vin + 1
Vin - 2
GND 3

PHOTO CELL
DIP SWITCHES
MICRO CONTROLLER
CURRENT MONITORING

Alarm NC 12
Alarm COM 11
Alarm NO 19

ALARM

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

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CEL-CSW-DCW-O2-F - Two Output Channels

Switch	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 (Main) only off Led lights connected to both Output 1 (Main) and Output 2 (Spare)

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 (Main) used (Green LED) OUTPUT 2 ON Output 2 (Spare) used (Green LED) Self test OK Steady green, when everything is OK

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CEL-CSW-DCW-O2-F - Two Output Channels

light unit current consumptions:

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

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

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CEL-CSW-DCW-O2-F - Two Output Channels

7 x 11

215

CSW-DCW-xx-F

180

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