OBELUX CSW-DCW

Fault monitoring, switch-over and flash controller unit

User Manual
For Application Software 5.2

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1 About this document

This document describes the Obelux CSW-DCW operation and available options. It covers installation and setup of the CSW-DCW unit, DIP switch effects and operation of the unit on practical level.

2 About this product

Obelux CSW-DCW is a combined all-in-one aviation obstacle light controller (current monitor), flasher and photocell unit with independent outputs to drive obstacle warning lights.

It can be further enhanced with GPS synchronization, GSM SMS messaging interface and external photocell using RS-485 bus. Options are factory-installable so they need to be included in the first order. This manual explains using options that are not present at every CSW-DCW.

Obelux CSW-DCW is based on Obelux CSW but having wide DC input and changed layout. Please note that CSW-DCW can operate with DC supply voltages between 10 … 60 V_{DC} while CSW has models according to supply voltage. Attention is needed if CSW-DCW is replaced by a CSW unit.

Like Obelux CSW, the CSW-DCW is available for various current monitoring windows. CSW-DCW has four output channels with factory-preset monitoring current range - hard limits of current window are set at the factory and this configuration is part of product code. Hard limits are typically selected from the following values:

- 0.5 A per channel (suitable for driving LI series Obelux aviation obstacle lights)
- 4 A per channel (suitable for driving MI-2KR series Obelux aviation obstacle lights)
- 8 A per channel

Within these hard limits, the current monitoring window can be further set using the configuration switches or remote SMS configuration tool. Undercurrent and overcurrent situations are handled.

In addition to sending an alarm via dry contact and SMS messaging, the CSW-DCW can drive backup light(s) during master light outage.

CSW-DCW is microprocessor-controlled. Application software is stored in the CPU, the central processing unit. CPU programming is done at the factory. Application upgrade, if such exists, requires that the CSW-DCW is sent to Obelux for the upgrade. Likewise, CSW-DCW repair can take place at Obelux.

2.1 Versions

Obelux CSW-DCW is available as the following models:

Obelux CSW-DCW-	8+2	-	F
	1		2

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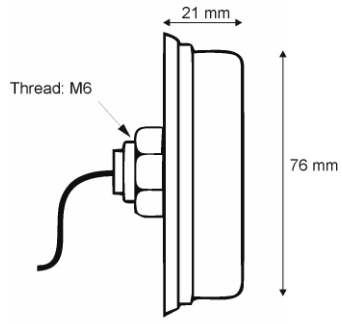
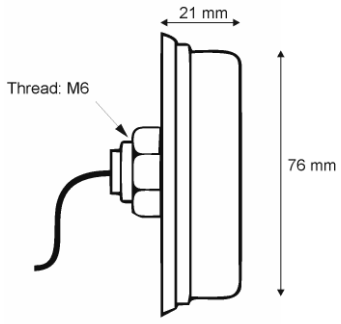
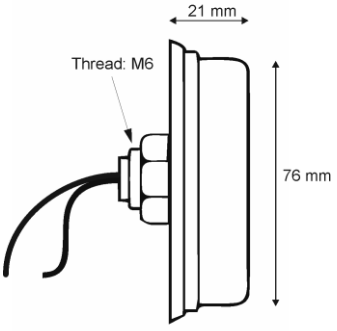
1	Output channel current hard limits
2	4 x 0.5 A output channels
4	4 x 1 A output channels
16	4 x 4 A output channels
32	4 x 8 A output channels
8+1	2 x 4 A output channels (channels 1, 2) + 2 x 0.5 A output channels (channels 3, 4)
8+2	2 x 4 A output channels (channels 1, 2) + 2 x 1 A output channels (channels 3, 4)

2	Factory-installed options
GPS	GPS synchronization
GSM	GSM modem for text messaging
F	Factory default

Options can be combined; e.g. Obelux CSW-DCW-16-GSM-GPS is Obelux CSW with wide DC supply, 4 x 2 A output channels, GSM modem and GPS synchronization.

Compatible antennas for use with Obelux CSW-DCW:

		
GPS External Antenna Order code: ANT-GPS-3M	GSM External Antenna Order code: ANT-GSM-3M	GPS-GSM External Antenna Order code: ANT-GSM-GPS-3M

Connectors at the other end of cable are compatible with receptacles on CSW-DCW and GSM modem. Cable length is typically 3.0 m. Other cable lengths are available – contact Obelux sales for more information.

Model information together with serial number can be found on the sticker installed on the CSW-DCW enclosure.

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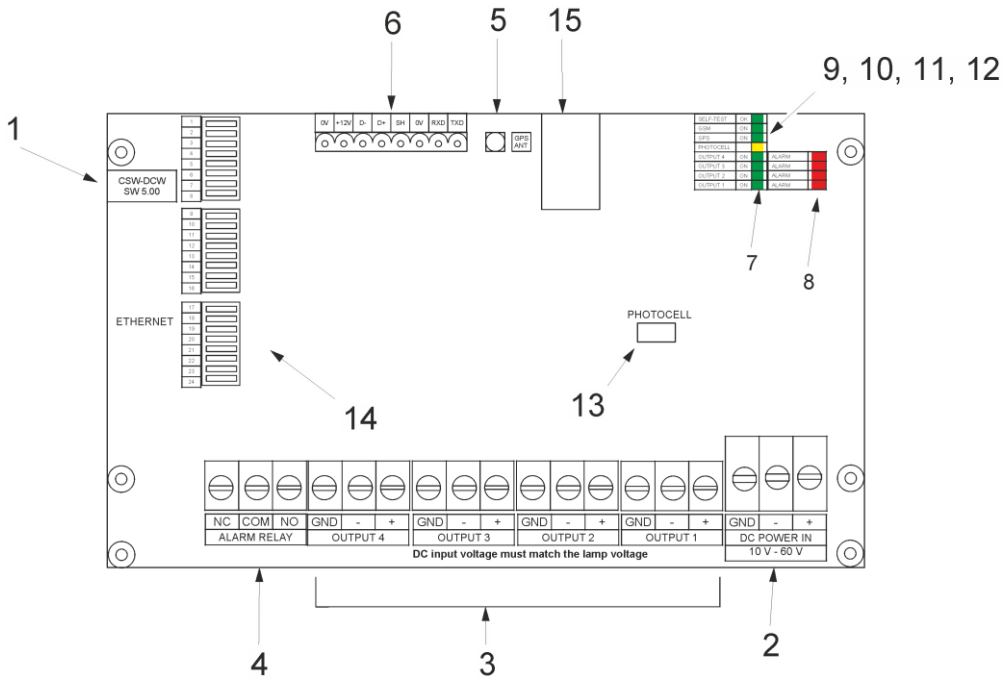
3 Connectors



Item	Description
1	CSW-DCW Application software version label
2	Supply power (DC input to CSW-DCW)
3	Output connectors (four channels)
4	Alarm relay output connector
5	GPS External Antenna connector (Radiall RP-MCX)
6	External photocell I/O and power supply to photocell GSM modem I/O and power supply to GSM modem
7	Output status indicator LEDs [Green]
8	Output alarm indicator LEDs [Red]
9	Photocell status indicator LED [Yellow]
10	GPS synchronization status indicator LED [Green]
11	GSM status indicator LED [Green]
12	Self-test ok status indicator LED [Green]
13	Internal photocell
14	Configuration DIP switches (three switch blocks with eight switches in each)
15	GPS receiver module

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4 Electrical connections

The CSW-DCW requires several cable connections; this section describes these connections and the wires that can be used with these connections. The useable cables are limited by cable glands and CSW board connectors.

	Positive (+) DC supply power to CSW and positive (+) DC supply on outputs to lamps are connected together i.e. hard-wired to each one. DC input voltage must match lamp voltage.

4.1 Supply power to CSW (2)

The positive connector (+) on each output channel is hard-wired to positive connector (+) of supply power connector.

Connectors	DC supply (shared with output channels)		
	+	-	GND
Cable gland	M25 (for 13-18 mm cable diameter)		
Conductor cross-section	Minimum	Maximum	
	0.5 mm²	10 mm²	

Supply voltage shall not exceed 60 V_{DC}. Tighten the connector screws using flat-head (straight) screwdriver.

4.2 Outputs (3)

The positive connector (+) on each output channel is hard-wired to positive connector (+) of supply power connector.

Connectors	Four output channels, each channel with		
	+	-	GND
Cable gland	M25 (for 13-18 mm cable diameter)		
Conductor cross-section	Minimum	Maximum	
	0.2 mm²	4 mm²	

Unused output connectors can be left floating i.e. no wiring there is required. They shall not be short-circuited.

Tighten connectors securely using flat-head (straight) screwdriver.

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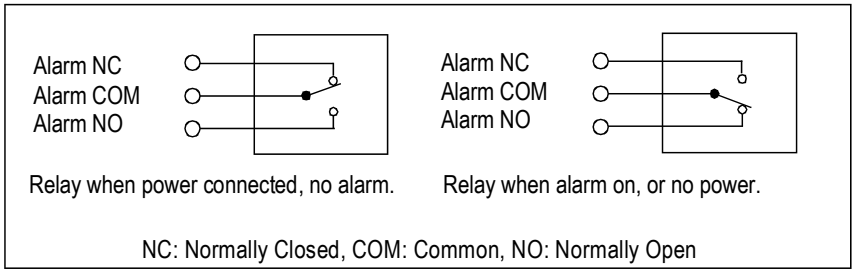
4.3 Alarm relay output (4)



Unused alarm relay connectors can be left floating i.e. no wiring there is required.

When CSW-DCW is without power and when it starts (reboots), the relay signals an alarm. Alarm relay state changes during start-up process if there are no pending alarms to be signaled.

Connectors			
	COM Common	NO Normally Open	NC Normally Closed
Cable gland	M16 (for 4.5-10 mm cable diameter)		
Conductor cross-section	Minimum	Maximum	
	0.2 mm²	4 mm²	

4.4 GPS External Antenna (5)

Please note that this connector has two functions: in addition to being a connector, there is a switch inside. Center tap is part of switch. Use caution when plugging the antenna connector in.

GPS receiver is factory-installed option. Please note that if the CSW-DCW is mounted indoors or with limited sky view, an external GPS antenna connected to GPS ANT on the CSW-DCW board is needed. Connector on CSW-DCW board is RP-MCX (Snap-On; Straight; R-MCX) from Radiall – compatible R-MCX connector on the antenna cable is Radiall R300.113.100 (Right Angle Plug; Crimp Type; For Flexible Cables).

External antennas for GPS are available from Obelux as an option.

Plugging an external active GPS antenna into this socket disables internal GPS antenna on the GPS module. This is achieved with a built-in switch in the GPS External Antenna connector.

CSW-DCW provides 3.3 V_{DC} to this External GPS Antenna connector to power the antenna amplifier circuit inside GPS Antenna.

4.5 GSM Modem (6)

The RS-232 connection is used to connect a GS64 Terminal GSM / GPRS modem. Obelux CSW-DCW and the GSM modem communicate using AT commands. The CSW-DCW uses SIM card memory to store phone numbers.

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GSM modem may have external antenna. If the CSW-DCW is equipped with GPS and external antenna for GPS, the two antennas can be inside same antenna housing. In this case, there are two antenna cables, one to be connected to the external GPS antenna connector and another to the external antenna connector on the GSM modem. GSM antenna connector is typically FME.

A GSM mobile phone network subscription with SMS text messaging enabled and valid SIM card is required. These are typically supplied by the customer. Follow GSM modem manufacturer's advice an instructions to install SIM card.

4.6 External photocell (6)

The RS-485 network (bus) connection here is used to connect an external photocell unit.

Connectors			
	D+ (Tx+ & Rx+)	D- (Tx- & Rx-)	SH (Shield)
Cable gland	M16 (for 4.5-10 mm cable diameter)		
Conductor cross-section	Minimum		Maximum
	0.2 mm²		4 mm²

RS-485 bus is implemented with one pair. Therefore, communication on RS-485 bus is half-duplex.

5 Operation

The CSW-DCW, as the former model CSW, unit is basically used to flash aviation obstruction warning lights.

In addition to driving the lamps, this unit has several other features. It monitors the current going into each lamp and raises an alarm if the current is either lower (undercurrent situation) than expected or higher than expected (overcurrent situation).

The CSW-DCW can have a GPS receiver mounted on the printed circuit board that is used to synchronize all CSW-DCW flash sequences so that all CSW-DCW units flash their lights simultaneously all over the planet. Also, the CSW-DCW has an internal photocell on the board that can be used to switch off the lights at day time.

5.1 Start-up

The CSW-DCW application takes some time to perform start-up tests as there are numerous features that require detection and initialization. Also, the start-up process now includes an output test pattern. The Self-test OK LED blinks during start-up process.

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5.2 Flash models

The CSW-DCW has several different user selectable flash models. A flash model is a result of three settings: Base sequence, Flash mode, and Flash Duration. These three settings together form a wide selection of different models.

Base sequence can be selected from

- Always on,
- 20, 40 or 60 flashes per minute,
- ICAO/FAA sequence,
- BMVBW sequence or
- 0.5 s on – 1.5 s off sequence.

Flash mode can be selected from:

- “All outputs”,
- “Outputs 1-3 in sequence”,
- “All outputs + output 4 always”,
- “Outputs 1-3 in sequence + output 4 always”.

Flash duration can be selected from:

- 100 ms,
- 250 ms,
- 500 ms and
- CASA flash duration mode (2/3 ON, 1/3 OFF).

5.3 Current monitoring

The CSW-DCW monitors the current going into each aviation obstacle light once it is lit. Every time a light is set to illuminate, the channel output is checked for short-circuit. If short-circuit is detected, the output channel (light) is disabled and an alarm is raised. 10 A current is recognized as short-circuit.

Also, whenever a light is illuminated, the current this obstacle light draws from power supply via CSW-DCW current monitoring circuit is checked 20 times in each second in order to detect possible light unit failure. If the current going to a light is outside the selected range, an alarm is raised. Over-current situation will also disable the light. The acceptable current range is selected for each output and stored in the configuration.

It is important to select the correct current range for the connected lights, as temperature changes may alter the current required by the lamp.

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5.4 Global synchronization with GPS

The CSW-DCW unit can have an optional factory-installed GPS module. When a GPS module is installed with appropriate antenna, the CSW-DCW synchronizes its clock and the flash models so that units flash simultaneously. The timing difference from one CSW-DCW to another is less than one millisecond when the units are GPS-synchronized. GPS synchronization status is signaled with GPS led on the CSW-DCW board.

5.5 Photocell

The CSW-DCW unit has a photocell installed on it. When the lights are turned off by photocell, it will take five (5) minutes to turn them on, and when lights are on, it will take another five (5) minutes to turn them off by photocell.

The photocell can be disabled, or set to threshold of 400, 800 or 1600 lx.

Note: thresholds have been changed in CSW-DCW compared to values used in previous CSW models.

5.6 Alarms

Alarms are raised when an output current is too low, too high and optionally when there is a GPS synchronization problem or an external photocell problem.

The alarm(s) clear when the active error condition disappears. The CSW-DCW will also try to clear the error conditions at least once per hour. This way, GPS synchronization alarms caused by poor weather or similar will probably clear without any intervention. It is also important to realize, that not all alarms disable lights. GPS and undercurrent situations do not disable any lights, and may clear faster than the over current alarm. If there is no communication with external photocell for 5 minutes, an alarm is raised and lights are turned on.

GPS alarm is triggered only if valid GPS time pulses are not received for 48 hours and GPS alarms are enabled.

5.7 Main/Spare operation

The Main/Spare operation changes the output layout of the CSW-DCW to use two Main/Spare output combinations. If the light unit connected to the main output fails, the spare light unit is used instead. Each output has individually configurable current load levels, as said before.

Alarms are generated as in normal operation. To enable Main/Spare operation set DIP 17 to ON.

6 Configuration

This chapter describes the configuration of the CSW-DCW board. The configuration is carried out by setting the 24 DIP switches on the CSW-DCW board. OFF position for a dip-switch is towards the left edge of the CSW-DCW board.

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Having all 24 DIP switches to OFF is a special case. This setup is reserved for external control using GSM modem. Configuration messages from GSM modem using SMS service are honoured only when all DIP switches are at OFF.

However, when the Obelux CSW-DCW starts and all DIP switches are off, the CSW-DCW reads stored configuration from memory and starts using this configuration if it is a valid one. If there is no valid configuration, the CSW-DCW uses configuration where all DIP switches are set to OFF. This configuration disables all channels.

6.1 Base sequence

The DIP switches numbered 1, 2 and 3 select the Base Sequence.

- (off,off,off) Selects always Steady-burn.
- (on,off,off) Selects 60 flashes per minute total. (One flash / second)
- (off,on,off) Selects 40 flashes per minute total. (One flash / 1.5 seconds)
- (on,on,off) Selects 20 flashes per minute total. (One flash / 3 seconds)
- (off,off,on) Selects the BMVBW flash sequence.
  Please note: Set DIP switches 4 and 5 to OFF when using this base sequence.
- (on,off,on) Selects the ICAO/FAA flash sequence.
  Please note: Set DIP switches 4, 5 and 6 to OFF when using this base sequence.
- (off,on,on) Selects flash sequence 0.5 s on - 1.5 s off.
  Please note: Set DIP switches 4 and 5 to OFF when using this base sequence.
- Any other selection is RESERVED for future expansions.

6.2 Flash duration

The DIP Switches numbered 4 and 5 select the Flash duration. The Flash duration tells the CSW how long each flash is. This setting has no effect if the Base Sequence is set to either BMVBW, ICAO/FAA or 0.5 on – 1.5 off.

- (off,off) Selects 100ms flash duration. (1/10 of a second)
- (on,off) Selects 250ms flash duration. (¼ of a second)
- (off,on) Selects 500ms flash duration. (½ of a second)
- (on,on) Selects CASA compliant flash duration (Duty cycle: 2/3 ON, 1/3 OFF).

IMPORTANT: Only use Steady Burn, 20 FPM, 40 FPM or 60 FPM base sequences with the CASA compliant flash duration setting! Other base sequences may cause undesired operation.

6.3 Flash mode

DIP switches 6 and 7 select the flash mode. The flash mode setting effects the method with which the flashes are directed to the outputs.

- (off,off) All enabled outputs flash together.
- (on,off) Outputs 1-3 are flashed in sequence, output 4 remains off.
- (off,on) Outputs 1-3 flash together and output 4 remains on.

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- (on,on) Outputs 1-3 flash in sequence and output 4 remains on.

On Obelux CSW-DCW-8+1 and CSW-DCW-8+2 models, the flash mode behaves differently:

- (off,off) All enabled outputs flash together.
- (on,off) Output 1 flashing, outputs 2-4 are on (i.e. light is burning steady).
- (off,on) Outputs 1-2 are flashing together with outputs 3-4 are on.
- (on,on) Outputs 1-2 are flashing in sequence with outputs 3-4 are on.

6.4 GPS Alarm enable

The alarm is raised if the GPS receiver is detected, but it has not provided a valid sync event for 48 hours. A long timeout is used as poor weather conditions may sometimes temporarily block the GPS satellite signal.

6.5 Photocell sensitivity

DIP switches 9 and 10 select the photocell sensitivity. These settings also apply if an external photocell is used.

- (off,off) Photocell operation disabled. (Recommended)
- (on,off) Photocell enabled, disables outputs if light level above 400 Lux.
- (off,on) Photocell enabled, disables outputs if light level above 800 Lux.
- (on,on) Photocell enabled, disables outputs if light level above 1600 Lux.

6.6 Output settings

The CSW-DCW has 4 outputs. All outputs may have different current guard levels. It is important to select the correct range for the lights. Incorrect setting may cause unnecessary alarms and interrupted operation. For example, if a light draws 3.9 A current, the correct selection is 2.0 A – 6.0 A. The 1.5 A - 4.5 A range should not be selected as the upper limit is too close to 3.9 A as environmental changes may cause the light draw more current.

- Output 1 is configured using DIP switches 11, 12 and 13.
- Output 2 is configured using DIP switches 14, 15 and 16.
- Output 3 is configured using DIP switches 19, 20 and 21.
- Output 4 is configured using DIP switches 22, 23 and 24.

Please, refer to DIP switch settings for current guard ranges matching your CSW-DCW model. This information is available later in this document.

6.7 Main/Spare operation

The CSW-DCW has two Main/Spare pairs. To enable Main/Spare operation, set DIP 17 to ON.

First pair:

- Output 1 (Main 1)

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– Output 2 (Spare 1)

Second pair

– Output 3 (Main 2)
– Output 4 (Spare 2)

6.8 GSM Modem

GSM Modem (GS64 Terminal) can be used to remotely monitor the CSW-DCW operation. The CSW-DCW can send alarm reports through the GSM modem. It is also possible to use remote-settings by SMS commands. In order to have the remote settings feature operational, all the configuration DIP switches on the CSW-DCW circuit board must be set to “OFF”.

Please see chapter 7 (GSM Operations) for instructions for the GSM modem initialization, SMS commands and remote settings.

6.9 Test mode

Test mode makes CSW-DCW system testing easier. Set the test-mode DIP switch (DIP 8) to ON to enter test mode.

In test mode, the CSW-DCW shortens the photocell timing periods. Additionally, the outputs are operated as follows:

– Output 1 remains ON for 20 seconds.
– Output 2-4 remain ON for 10 seconds in turns.

The cycle is repeated until test-mode DIP is set OFF. GSM alarms are generated normally in test-mode. When test-mode DIP is turned from OFF to ON, all alarms are cleared.

	In production environment, use test mode with appropriate caution.

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6.10 Worked example 1

This example presents how to use Obelux CSW-DCW-02-F to control Obelux LI-10 low intensity aviation obstacle lights in master/spare set-up with internal photocell in CSW-DCW-2A. We have selected 800 lux (or more) where low intensity lights are turned off.

In this example, Lamp 1 is main and Lamp 2 is spare. If Lamp 1 fails, the CSW-DCW-02-F turns Lamp 1 off and Lamp 2 on.

Obelux LI-10-DCW-F consumes approx. 70 mA when operated with 12 V_{DC}. This current value falls within 18 mA – 124 mA category so this one is selected in the configuration.

With low intensity aviation obstacle lights, steady-burning mode is used.

- Steady burning mode.
- Photocell threshold is at 800 lux.
- Output 1 is enabled with current guard levels set at 18 mA and 124 mA.
- Output 2 is enabled with current guard levels set at 18 mA and 124 mA.
- Output 3 is disabled.
- Output 4 is disabled.
- Main/Spare operation enabled.
- Normal operation is enabled.

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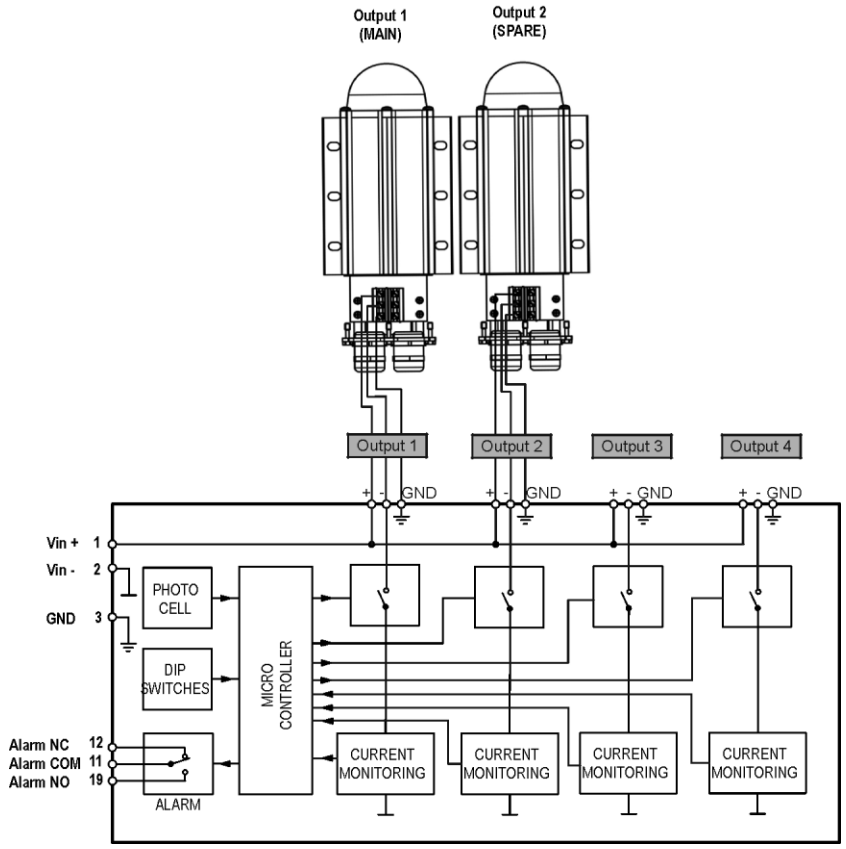
Illustration using Obelux CSW-DCW-02-F



DIP switch settings			
	OFF	ON	
1	■		Flash sequence
2	■		Flash sequence
3	■		Flash sequence
4	■		Flash duration
5	■		Flash duration
6	■		Flash mode
7	■		Flash mode
8	■		Test mode
	OFF	ON	
9	■		Photocell
10		■	Photocell
11		■	Output 1
12	■		Output 1
13	■		Output 1
14		■	Output 2
15	■		Output 2
16	■		Output 2
	OFF	ON	
17		■	Master/Spare
18	■		Ext/Int photocell
19	■		Output 3
20	■		Output 3
21	■		Output 3
22	■		Output 4
23	■		Output 4
24	■		Output 4

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6.11 Worked example 2

This example presents how to use Obelux CSW-DCW-16-F to control Obelux MI-2KR-24 medium intensity aviation obstacle lights in Polish operation mode i.e. three lights in sequence. Other site-specific operating requirements are 40 flashes per minute, 250 ms flash duration and internal photocell in use.

We have selected 800 lux (or more) where medium intensity lights are turned off.

Obelux MI-2KR-24 consumes approx. 1.2 A when operated with 24 V_{DC}. This current value instructs to select Obelux CSW-DCW-16-F having 4 output channels each capable to drive up to 4 A.

Current value also falls within 0.50 A – 1.50 A category.

In the configuration, there shall be:

- 40 flashes per minute.
- 250 ms flash duration.
- Outputs 1-3 are flashing in sequence, output 4 is disabled.
- Photocell threshold is at 800 lux.
- Internal photocell is in use.
- Output 1 is enabled with current guard levels set at 0.5 A and 1.5 A.
- Output 2 is enabled with current guard levels set at 0.5 A and 1.5 A.
- Output 3 is enabled with current guard levels set at 0.5 A and 1.5 A.
- Output 4 is disabled.
- Main/Spare operation is disabled.
- Normal operation is enabled.

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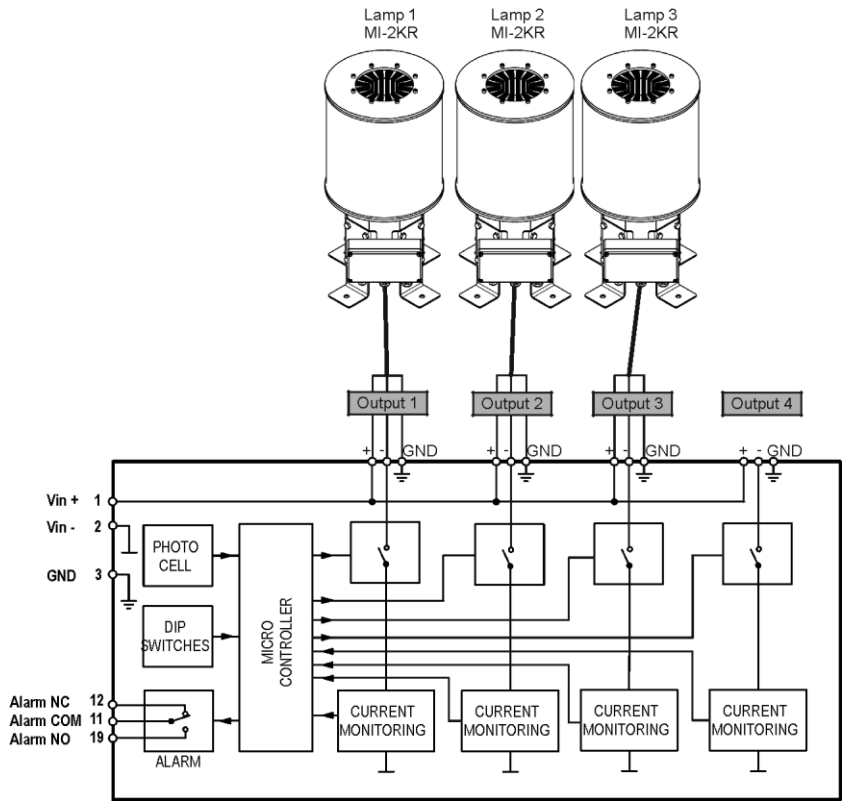
Illustration using Obelux CSW-DCW-16-F



DIP switch settings

	OFF	ON	
1	■		Flash sequence
2		■	Flash sequence
3	■		Flash sequence
4		■	Flash duration
5	■		Flash duration
6		■	Flash mode
7	■		Flash mode
8	■		Test mode
	OFF	ON	
9	■		Photocell
10		■	Photocell
11	■		Output 1
12		■	Output 1
13	■		Output 1
14	■		Output 2
15		■	Output 2
16	■		Output 2
	OFF	ON	
17	■		Master/Spare
18	■		Ext/Int photocell
19	■		Output 3
20		■	Output 3
21	■		Output 3
22	■		Output 4
23	■		Output 4
24	■		Output 4

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7 GSM Operations

The CSW-DCW unit with an external GSM modem supports several commands and queries that enable remote monitoring of the CSW-DCW unit and of the attached lights. In addition, the CSW-DCW reports alarms with an SMS.

7.1 Before operating CSW with the GSM modem

Before the GSM modem can be operated, some steps must be taken:

- A valid SIM card is needed for use in the GSM modem.
  First, insert the SIM card to a standard GSM phone.
  Important: Disable PIN query on the SIM card.
  Important: Remove any phone numbers pre-set into the SIM card. It is common with operators to set customer service numbers into their SIM cards. If these numbers are not removed, all alarm messages are sent to them as well.

- (Optionally) Add desired phone numbers into the SIM card phonebook.
  (This can be done at a later time through SMS commands).

1. Power off both the CSW-DCW and the GSM modem.
2. Insert the SIM card into the GS64 Terminal GSM modem inside the CSW-DCW enclosure. Follow manufacturer's instructions in removing and replacing the SIM if the SIM is located in a SIM cage.
3. Power-on the CSW-DCW unit and GSM modem.
4. Wait until self-test is completed.
5. If you did not set any phone numbers, it is now time to do so:
   Send SMS "ADD" to add the sender's phone number to the SIM card phonebook.
6. Verify modem operation with a status query sent to CSW-DCW using SMS.

7.2 Who receives alarm reports?

Alarm reports are sent to all numbers stored in the SIM card phonebook. These numbers can be pre-configured with a mobile phone, or remotely using SMS commands.

To add a phone number remotely, send SMS message with text "ADD <phone number>" to CSW-DCW. Note that in order to use the optional phone number with add command, the sender's phone number must have been added to the SIM phonebook. This can be achieved by sending just the "ADD" command without the optional number when SIM phonebook is empty.

Use international format (prefixed with plus sign and country code) in phone numbers.

7.3 Alarm reports

An alarm report is sent each time a change in alarm status is detected. An alarm message can be sent if an alarm has cleared. It may take a few minutes before all alarm SMS message are sent.

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If one alarm report recipient receives the same alarm message twice or more, that phone number is likely listed multiple times in the SIM phonebook. Refer to chapter 7.9.2 for instructions on how to remove a number.

The alarm report contains output status (“OK”, “Fail” or “Not used”), The current actually going into the lamp, and the selected current range of the output. GPS status also is reported (“GPS not installed”, “GPS Alarm 48h”, “GPS No Sync” or “GPS Last Sync <hh:mm:ss>”). The “GPS No Sync” is only reported after start-up when no valid sync events are received. Otherwise, GPS status is always either “GPS Last Sync <time>” or “GPS Alarm 48h”.

An example of an alarm report:

```
CSW ALARM
Out1:OK 500mA (300-800)mA
Out2:OK 520mA (300-800)mA
Out3:FAIL 900mA (300-800)mA
Out4:Not used
GPS Last Sync 00:00:01
Coordinates 60.12N, 024.52E
```

7.4 Which CSW-DCW triggered an alarm?

Default method is keep a list of subscription numbers used with CSW’s and CSW-DCW’s where location of each phone number is recorded.

When the CSW-DCW is equipped with GPS option and GPS received has obtained valid location information from GPS system, position is reported with the status and alarm messages.

7.5 Who can remotely configure a CSW-DCW?

Configuration messages are accepted from any phone number which is listed in the SIM card phonebook. Adding sender’s number command is accepted from any phone number.

7.6 Status report queries

A Status report can be queried from a CSW-DCW at any time. The status query is only accepted from a number listed in the SIM card phonebook. Status messages are sent to the number from which the query originated.

Query CSW-DCW status with SMS command “STATUS”.

The status report contains significantly more information if compared to an alarm report. A status report contains two messages. The first status message indicates the current status of all outputs and status of the GPS module. Here is an example of the first message:

```
Status 1
Out1:Fail 0mA (19-131)mA
Out2:Not Used
```


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```
Out3:Not Used
Out4:Not Used
GPS Last sync 00:00:01
Coordinates 60.12N, 024.52E
```

The second status message indicates software version, CSW-DCW model, software date, information whether local or remote configuration is used, system configuration, photocell status, total uptime and total restarts. Here is an example of the second message:

```
Status 2: SW4.2-16 [2010-04-13], [Local]
System config 00000100000,
Photocell Not Used,
Uptime 1d23h45m,
7 Resets
```

7.7 Remote configuration

In order to use the CSW-DCW with a remote configuration control, all 24 DIP switches on the CSW-DCW system board must be set to OFF. The remote configuration is only accepted if the number from which the command was received is listed in the SIM card phonebook.

Before remotely configuring any CSW-DCW, make sure you are using a DIP table from a manual that matches the software version and model of the CSW-DCW unit. If you are unsure of the CSW-DCW version number or model, use status query to find out.

Set remote configuration with SMS command “SET CONFIG <configuration string>”.

The configuration string is a sequence of 11 numbers that define the CSW-DCW configuration completely. The easiest way to come up with a configuration string is as follows:

1. Take a copy of the appropriate DIP switch table and look at it.
2. Find the line for the desired configuration for “flashing sequence selection”.
3. The first number of the configuration string is listed on that line in the column marked “S”. Write this number down.
4. Next, find the line for the desired configuration for “Flash duration”.
5. The second number of the configuration string is again listed in the column marked “S”. Write this number down after the previous number.

Repeat for each configuration entry in order (“Flash mode”, “GPS alarm enable” and so on…)

You should end up with a string of 11 numbers, which is the configuration string. Look below for an example.

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Configuration	Feature
1	Flash rate is 60 fpm
1	Flash duration is 250 ms
2	Outputs 1-3 flashing together; output 4 is steady-burning
0	Normal operation (Test mode disabled)
3	Photocell is in use, level set to 400 lux
1	Output 1 used, lowest current range
1	Output 2 used, lowest current range
0	No main/spare operation
0	Using internal photocell
1	Output 3 used, lowest current range
1	Output 4 used, lowest current range

7.8 Responses

The CSW-DCW responds to all received messages:

- “Command completed successfully”, if the command has no other success report.
- “Error: Out of range”, in certain situations, where the given parameter is too long or otherwise out of allowed range.
- “Error: No access rights, permission denied”, if the command sender’s phone number is not in the SIM card’s phonebook.
- “Phone number already listed in phonebook”, if the command “add” was sent and the phone number was already listed.

7.9 Commands

Commands to control CSW-DCW are case insensitive, but they are all written in capital letters here for clarity.

7.9.1 ADD <optional phone number>

This command adds the given (optional) phone number in the SIM card. If no number is listed, the sender’s number is added.

Important: Always use international phone-number format with the optional number!

It is possible to add a single phone number multiple times by use of the optional phone number, but this is not recommended. A good practice is to send a plain “add” command from each number that is required to get alarm messages.

The command will respond “Success” if the new number was successfully added.

7.9.2 REMOVE <optional phone number>

This command removes the given (optional) phone number from the SIM card phonebook. If no phone number is given, the command will remove the sender’s phone number.

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Important: Always use international phone-number format with the optional number!

In order for this command to work, the sender's phone number must be listed in the SIM card phonebook before execution of the command. If sender's number is not listed, the command will fail with "No access rights" error. If the given number is not found, the command will fail with "Not found" error. If the command succeeds, a "Removed successfully …" message is sent.

Notice: In case the number being removed is listed multiple times, only one of the instances is deleted.

7.9.3 STATUS

This command makes the CSW-DCW to generate a status report and send in to the originating phone number.

The command works only, if the SMS originating phone number is listed in the SIM card phonebook. If this is not the case, the command will fail with "No access rights" error message.

NOTE: See chapter 7.6 for examples on the status message contents.

7.9.4 SET CONFIG <configuration string>

This command sets the CSW-DCW configuration.

The command works only if the sender phone number is listed in the SIM card phonebook and all 24 DIP switches on the CSW-DCW system board are set to OFF.

If the originating number is unknown, the command will fail with "No access rights" -reply.

If the CSW-DCW is configured using DIP switches, the command will fail with "Error: Remote configuration not enabled" response. Also, if the configuration string is invalid the command fails with "Error: Configuration string contained invalid selection at char #<n>" response. (n being the number of the invalid selection starting from the first character of the sent configuration string).

NOTE: See chapter 7.7 for instructions on how to make a configuration string.

7.9.5 LIGHT ON <Optional time in minutes>

This command forces lights on (as configured) for an optional amount of time. If no time is specified, it defaults to 720 minutes (12 hours). Use "LIGHT ON 0" to restore default operation. Maximum time is 1500 minutes, which equals to 25 hours. A higher value will cause the command to fail.

This command works only if the originating number is listed in the SIM card phonebook.

7.9.6 LIGHT OFF <Optional time in minutes>

This command forces lights off for an optional amount of time. If no time is specified, it defaults to 720 minutes (12 hours). Use "LIGHT OFF 0" to restore default operation. Maximum time is 1500 minutes, which equals to 25 hours. A higher value will cause the command to fail.

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This command works only if the originating number is listed in the SIM card phonebook.

7.9.7 Clear

This command clears all alarms states from the CSW-DCW. It can be used to resume normal operation in case an alarm has been raised, and later repaired without powering down the CSW-DCW.

The command can also be used in order to verify that an error situation still exists. Normally, the CSW-DCW unit tries all failed outputs every 14.56 hours.

8 Onboard LEDs

This chapter describes the behavior of the on-board message LEDs during start-up, normal operation and during alarms.

8.1 Self test OK (Green)

The Self-test LED is primarily a power-on indicator: it flashes during start-up, and during normal operation the LED is always on. If the LED is off, the CSW-DCW is not powered, or has failed completely.

8.2 GSM (Green)

This LED indicates the connection status of the GSM module. During GSM modem detection and initialization process, this LED flashes along with the Self test OK LED.

In normal operation this LED is off if GSM modem was not detected, and on if it was. If the GSM modem was found, the LED indicates communications traffic by flashing shortly.

8.3 GPS (Green)

This LED indicates the connection status of the GPS module. The LED is off if a GPS module was not detected. During initialization, the LED blinks if the GPS module was detected. In normal operation the LED flashes once a second if a navigation fix is obtained. If a fix is not found or is lost the LED stays off.

8.4 Photocell indicator (Yellow)

This LED indicates the current Photocell state:

- If off, photocell operation is not enabled.
- If on, the photocell is in use and lights are ON.
- If it flashes (1 second ON, 1 second OFF), photocell is in use and lights are switched off.

Short flashes indicate external photocell communications traffic.

Fast flashing (100 ms ON, 100 ms OFF) indicates external photocell failure.

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8.5 Output indicators (Green)

The output indicators show the actual operation of the outputs (lights).

8.6 Output alarm indicators (Red)

Each output has an alarm indicator. These indicators are off during normal operation.

ALARM LED On	Overcurrent. Output is disabled.
ALARM LED flashing slowly	Undercurrent. Output remains enabled.
ALARM LED Off	No alarm. Output is enabled.

9 End-of-Life/Disposal

The European Parliament and the Council of European Union issued directive 2012/19/EU to contribute to sustainable production and consumption by, as a first priority, the prevention of WEEE and, in addition, by the re-use, recycling and other forms of recovery of such wastes so as to reduce the disposal of waste and to contribute to the efficient use of resources and the retrieval of valuable secondary raw materials.

Obelux aviation obstacle light products sold inside European Union can be returned to manufacturer if no local WEEE separate collection and re-use services are available. Please contact Obelux for details.

Obelux does not refurbish returned items but forwards them to authorized WEEE treatment facility.

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10 DIP Switch Settings – Model 02

DIP Switches					Obelux CSW-DCW-02-x DIP Switches Current alarm range 18mA-530mA per output
1 -> 3	1	2	3	*S	Flashing sequence selection.
	off	off	off	0	Steady burning. All active channels.
	on	off	off	1	60 flashes / minute
	off	on	off	2	40 flashes / minute
	on	on	off	3	20 flashes / minute
	off	off	on	4	BMVBW sequence: 1s on - 0.5s off - 1s on - 1.5s off. *Note1
	on	off	on	5	ICAO/FAA sequence. *Note2
	off	on	on	6	Sequence: 0.5s on - 1.5s off. *Note3
	on	on	on	7	RESERVED
4 -> 5	4	5		S	Flash duration.
	off	off		0	100 millisecond flashes.
	on	off		1	250 millisecond flashes.
	off	on		2	500 millisecond flashes.
	on	on		3	CASA Flash duration (Duty cycle: 2/3 ON, 1/3 OFF)
6 -> 7	6	7		S	Flashing mode.
	off	off		0	All active Outputs flash together.
	on	off		1	Outputs 1-3 are flashing in sequence, Output 4 not used.
	off	on		2	Outputs 1-3 are flashing together, Output 4 is steady burning.
	on	on		3	Outputs 1-3 are flashing in sequence, Output 4 is steady burning.
8	8			S	Test mode enable
	off			0	Normal operation
	on			1	Test mode. (*See documentation for information about test mode)
9 -> 10	9	10		S	Photocell operation
	off	off		0	Photocell not used.
	on	off		1	Lights are disabled if lighting level is above 400 lux.
	off	on		2	Lights are disabled if lighting level is above 800 lux.
	on	on		3	Lights are disabled if lighting level is above 1600 lux.
11 -> 13	11	12	13	S	Output 1 settings.
	off	off	off	0	Output 1 disabled.
	on	off	off	1	Output 1 enabled with current guard levels 18mA - 124mA
	off	on	off	2	Output 1 enabled with current guard levels 63mA - 187mA
	on	on	off	3	Output 1 enabled with current guard levels 93mA - 220mA
	off	off	on	4	Output 1 enabled with current guard levels 125mA - 375mA
	on	off	on	5	Output 1 enabled with current guard levels 185mA - 435mA
	off	on	on	6	Output 1 enabled with current guard levels 247mA - 500mA
	on	on	on	7	Output 1 enabled with current guard levels 310mA - 530mA
14 -> 16	14	15	16	*S	Output 2 settings.
	off	off	off	0	Output 2 disabled.
	on	off	off	1	Output 2 enabled with current guard levels 18mA - 124mA
	off	on	off	2	Output 2 enabled with current guard levels 63mA - 187mA

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	on	on	off	3	Output 2 enabled with current guard levels 93mA - 220mA
	off	off	on	4	Output 2 enabled with current guard levels 125mA - 375mA
	on	off	on	5	Output 2 enabled with current guard levels 185mA - 435mA
	off	on	on	6	Output 2 enabled with current guard levels 247mA - 500mA
	on	on	on	7	Output 2 enabled with current guard levels 310mA - 530mA
17	17			S	Master / Slave operation select.
	off			0	Normal operation
	on			1	Master / Slave operation.
18	18			S	External / Internal photocell selection.
	off			0	Use internal photocell
	on			1	Use external photocell
19 -> 21	19	20	21	S	Output 3 settings.
	off	off	off	0	Output 3 disabled.
	on	off	off	1	Output 3 enabled with current guard levels 18mA - 124mA
	off	on	off	2	Output 3 enabled with current guard levels 63mA - 187mA
	on	on	off	3	Output 3 enabled with current guard levels 93mA - 220mA
	off	off	on	4	Output 3 enabled with current guard levels 125mA - 375mA
	on	off	on	5	Output 3 enabled with current guard levels 185mA - 435mA
	off	on	on	6	Output 3 enabled with current guard levels 247mA - 500mA
	on	on	on	7	Output 3 enabled with current guard levels 310mA - 530mA
22 -> 24	22	23	24	S	Output 4 settings.
	off	off	off	0	Output 4 disabled.
	on	off	off	1	Output 4 enabled with current guard levels 18mA - 124mA
	off	on	off	2	Output 4 enabled with current guard levels 63mA - 187mA
	on	on	off	3	Output 4 enabled with current guard levels 93mA - 220mA
	off	off	on	4	Output 4 enabled with current guard levels 125mA - 375mA
	on	off	on	5	Output 4 enabled with current guard levels 185mA - 435mA
	off	on	on	6	Output 4 enabled with current guard levels 247mA - 500mA
	on	on	on	7	Output 4 enabled with current guard levels 310mA - 530mA

*Note1: When using BMVBW sequence, set DIP 4 and 5 to OFF.
*Note2: When using ICAO/FAA sequence, set DIP 4, 5 and 6 to OFF.
*Note3: When using sequence 0.5 s on - 1.5 s off, set DIP 4 and 5 to OFF.
*S: The “S” Column is used with GSM modem remote configuration.

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11 DIP Switch Settings – Model 04

DIP Switches					Obelux CSW-DCW-04-x DIP Switches Current alarm range 36 mA – 1060 mA per output
1 -> 3	1	2	3	*S	Flashing sequence selection.
	off	off	off	0	Steady burning. All active channels.
	on	off	off	1	60 flashes / minute
	off	on	off	2	40 flashes / minute
	on	on	off	3	20 flashes / minute
	off	off	on	4	BMVBW sequence: 1s on - 0.5s off - 1s on - 1.5s off. *Note1
	on	off	on	5	ICAO/FAA sequence. *Note2
	off	on	on	6	Sequence: 0.5s on - 1.5s off. *Note3
	on	on	on	7	RESERVED
4 -> 5	4	5		S	Flash duration.
	off	off		0	100 millisecond flashes.
	on	off		1	250 millisecond flashes.
	off	on		2	500 millisecond flashes.
	on	on		3	CASA Flash duration (Duty cycle: 2/3 ON, 1/3 OFF)
6 -> 7	6	7		S	Flashing mode.
	off	off		0	All active Outputs flash together.
	on	off		1	Outputs 1-3 are flashing in sequence, Output 4 not used.
	off	on		2	Outputs 1-3 are flashing together, Output 4 is steady burning.
	on	on		3	Outputs 1-3 are flashing in sequence, Output 4 is steady burning.
8	8			S	Test mode enable
	off			0	Normal operation
	on			1	Test mode. (*See documentation for information about test mode)
9 -> 10	9	10		S	Photocell operation
	off	off		0	Photocell not used.
	on	off		1	Lights are disabled if lighting level is above 400 lux.
	off	on		2	Lights are disabled if lighting level is above 800 lux.
	on	on		3	Lights are disabled if lighting level is above 1600 lux.
11 -> 13	11	12	13	S	Output 1 settings.
	off	off	off	0	Output 1 disabled.
	on	off	off	1	Output 1 enabled with current guard levels 36mA - 248mA
	off	on	off	2	Output 1 enabled with current guard levels 126mA - 374mA
	on	on	off	3	Output 1 enabled with current guard levels 186mA - 440mA
	off	off	on	4	Output 1 enabled with current guard levels 250mA - 750mA
	on	off	on	5	Output 1 enabled with current guard levels 370mA - 870mA
	off	on	on	6	Output 1 enabled with current guard levels 494mA - 1000mA
	on	on	on	7	Output 1 enabled with current guard levels 620mA - 1060mA
14 -> 16	14	15	16	*S	Output 2 settings.
	off	off	off	0	Output 2 disabled.
	on	off	off	1	Output 2 enabled with current guard levels 36mA - 248mA
	off	on	off	2	Output 2 enabled with current guard levels 126mA - 374mA

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	on	on	off	3	Output 2 enabled with current guard levels 186mA - 440mA
	off	off	on	4	Output 2 enabled with current guard levels 250mA - 750mA
	on	off	on	5	Output 2 enabled with current guard levels 370mA - 870mA
	off	on	on	6	Output 2 enabled with current guard levels 494mA - 1000mA
	on	on	on	7	Output 2 enabled with current guard levels 620mA - 1060mA
17	17			S	Master / Slave operation select.
	off			0	Normal operation
	on			1	Master / Slave operation.
18	18			S	External / Internal photocell selection.
	off			0	Use internal photocell
	on			1	Use external photocell
19 -> 21	19	20	21	S	Output 3 settings.
	off	off	off	0	Output 3 disabled.
	on	off	off	1	Output 3 enabled with current guard levels 36mA - 248mA
	off	on	off	2	Output 3 enabled with current guard levels 126mA - 374mA
	on	on	off	3	Output 3 enabled with current guard levels 186mA - 440mA
	off	off	on	4	Output 3 enabled with current guard levels 250mA - 750mA
	on	off	on	5	Output 3 enabled with current guard levels 370mA - 870mA
	off	on	on	6	Output 3 enabled with current guard levels 494mA - 1000mA
	on	on	on	7	Output 3 enabled with current guard levels 620mA - 1060mA
22 -> 24	22	23	24	S	Output 4 settings.
	off	off	off	0	Output 4 disabled.
	on	off	off	1	Output 4 enabled with current guard levels 36mA - 248mA
	off	on	off	2	Output 4 enabled with current guard levels 126mA - 374mA
	on	on	off	3	Output 4 enabled with current guard levels 186mA - 440mA
	off	off	on	4	Output 4 enabled with current guard levels 250mA - 750mA
	on	off	on	5	Output 4 enabled with current guard levels 370mA - 870mA
	off	on	on	6	Output 4 enabled with current guard levels 494mA - 1000mA
	on	on	on	7	Output 4 enabled with current guard levels 620mA - 1060mA

*Note1: When using BMVBW sequence, set DIP 4 and 5 to OFF.
*Note2: When using ICAO/FAA sequence, set DIP 4, 5 and 6 to OFF.
*Note3: When using sequence 0.5 s on - 1.5 s off, set DIP 4 and 5 to OFF.
*S: The “S” Column is used with GSM modem remote configuration.

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12 DIP Switch Settings – Model 16

DIP Switches					Obelux CSW-DCW-16-x DIP Switches Current alarm range 150mA-4A per output
1 -> 3	1	2	3	*S	Flashing sequence selection.
	off	off	off	0	Steady burning. All active channels.
	on	off	off	1	60 flashes / minute
	off	on	off	2	40 flashes / minute
	on	on	off	3	20 flashes / minute
	off	off	on	4	BMVBW sequence: 1s on - 0.5s off - 1s on - 1.5s off. *Note1
	on	off	on	5	ICAO/FAA sequence. *Note2
	off	on	on	6	Sequence: 0.5s on - 1.5s off. *Note3
	on	on	on	7	RESERVED
4 -> 5	4	5		S	Flash duration.
	off	off		0	100 millisecond flashes.
	on	off		1	250 millisecond flashes.
	off	on		2	500 millisecond flashes.
	on	on		3	CASA Flash duration (Duty cycle: 2/3 ON, 1/3 OFF)
6 -> 7	6	7		S	Flashing mode.
	off	off		0	All active Outputs flash together.
	on	off		1	Outputs 1-3 are flashing in sequence, Output 4 not used.
	off	on		2	Outputs 1-3 are flashing together, Output 4 is steady burning.
	on	on		3	Outputs 1-3 are flashing in sequence, Output 4 is steady burning.
8	8			S	Test mode enable.
	off			0	Normal operation.
	on			1	Test mode. (*See documentation for information about test mode)
9 -> 10	9	10		S	Photocell operation
	off	off		0	Photocell not used.
	on	off		1	Lights are disabled if lighting level is above 400 lux.
	off	on		2	Lights are disabled if lighting level is above 800 lux.
	on	on		3	Lights are disabled if lighting level is above 1600 lux.
11 -> 13	11	12	13	S	Output 1 settings.
	off	off	off	0	Output 1 disabled.
	on	off	off	1	Output 1 enabled with current guard levels 0.15A - 1.00A
	off	on	off	2	Output 1 enabled with current guard levels 0.50A - 1.50A
	on	on	off	3	Output 1 enabled with current guard levels 0.75A - 2.25A
	off	off	on	4	Output 1 enabled with current guard levels 1.00A - 3.00A
	on	off	on	5	Output 1 enabled with current guard levels 1.50A - 3.50A
	off	on	on	6	Output 1 enabled with current guard levels 2.00A - 4.00A
	on	on	on	7	Output 1 enabled with current guard levels 2.50A - 4.25A
14 -> 16	14	15	16	*S	Output 2 settings.
	off	off	off	0	Output 2 disabled.
	on	off	off	1	Output 2 enabled with current guard levels 0.15A - 1.00A
	off	on	off	2	Output 2 enabled with current guard levels 0.50A - 1.50A
	on	on	off	3	Output 2 enabled with current guard levels 0.75A - 2.25A

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	off	off	on	4	Output 2 enabled with current guard levels 1.00A - 3.00A
	on	off	on	5	Output 2 enabled with current guard levels 1.50A - 3.50A
	off	on	on	6	Output 2 enabled with current guard levels 2.00A - 4.00A
	on	on	on	7	Output 2 enabled with current guard levels 2.50A - 4.25A
17	17			S	Master / Slave operation select.
	off			0	Normal operation.
	on			1	Master / Slave operation.
18	18			S	External / Internal photocell selection.
	off			0	Use internal photocell
	on			1	Use external photocell
19 -> 21	19	20	21	S	Output 3 settings.
	off	off	off	0	Output 3 disabled.
	on	off	off	1	Output 3 enabled with current guard levels 0.15A - 1.00A
	off	on	off	2	Output 3 enabled with current guard levels 0.50A - 1.50A
	on	on	off	3	Output 3 enabled with current guard levels 0.75A - 2.25A
	off	off	on	4	Output 3 enabled with current guard levels 1.00A - 3.00A
	on	off	on	5	Output 3 enabled with current guard levels 1.50A - 3.50A
	off	on	on	6	Output 3 enabled with current guard levels 2.00A - 4.00A
	on	on	on	7	Output 3 enabled with current guard levels 2.50A - 4.25A
22 -> 24	22	23	24	S	Output 4 settings.
	off	off	off	0	Output 4 disabled.
	on	off	off	1	Output 4 enabled with current guard levels 0.15A - 1.00A
	off	on	off	2	Output 4 enabled with current guard levels 0.50A - 1.50A
	on	on	off	3	Output 4 enabled with current guard levels 0.75A - 2.25A
	off	off	on	4	Output 4 enabled with current guard levels 1.00A - 3.00A
	on	off	on	5	Output 4 enabled with current guard levels 1.50A - 3.50A
	off	on	on	6	Output 4 enabled with current guard levels 2.00A - 4.00A
	on	on	on	7	Output 4 enabled with current guard levels 2.50A - 4.25A

*Note1: When using BMVBW sequence, set DIP 4 and 5 to OFF.
*Note2: When using ICAO/FAA sequence, set DIP 4, 5 and 6 to OFF.
*Note3: When using sequence 0.5s on - 1.5s off, set DIP 4 and 5 to OFF.
*S: The “S” Column is used with GSM modem remote configuration.

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13 DIP Switch Settings – Model 32

DIP Switches					Obelux CSW-DCW-32-x DIP Switches Current alarm range 300mA - 8500mA per output
1 -> 3	1	2	3	*S	Flashing sequence selection.
	off	off	off	0	Steady burning. All active channels.
	on	off	off	1	60 flashes / minute
	off	on	off	2	40 flashes / minute
	on	on	off	3	20 flashes / minute
	off	off	on	4	BMVBW sequence: 1s on - 0.5s off - 1s on - 1.5s off. *Note1
	on	off	on	5	ICAO/FAA sequence. *Note2
	off	on	on	6	Sequence: 0.5s on - 1.5s off. *Note3
	on	on	on	7	RESERVED
4 -> 5	4	5		S	Flash duration.
	off	off		0	100 millisecond flashes.
	on	off		1	250 millisecond flashes.
	off	on		2	500 millisecond flashes.
	on	on		3	CASA Flash duration (Duty cycle: 2/3 ON, 1/3 OFF)
6 -> 7	6	7		S	Flashing mode.
	off	off		0	All active Outputs flash together.
	on	off		1	Outputs 1-3 are flashing in sequence, Output 4 not used.
	off	on		2	Outputs 1-3 are flashing together, Output 4 is steady burning.
	on	on		3	Outputs 1-3 are flashing in sequence, Output 4 is steady burning.
8	8			S	Test mode enable
	off			0	Normal operation
	on			1	Test mode. (*See documentation for information about test mode)
9 -> 10	9	10		S	Photocell operation
	off	off		0	Photocell not used.
	on	off		1	Lights are disabled if lighting level is above 400 lux.
	off	on		2	Lights are disabled if lighting level is above 800 lux.
	on	on		3	Lights are disabled if lighting level is above 1600 lux.
11 -> 13	11	12	13	S	Output 1 settings.
	off	off	off	0	Output 1 disabled.
	on	off	off	1	Output 1 enabled with current guard levels 0.3A – 2.0A
	off	on	off	2	Output 1 enabled with current guard levels 1.0A – 3.0A
	on	on	off	3	Output 1 enabled with current guard levels 1.5A – 4.5A
	off	off	on	4	Output 1 enabled with current guard levels 2.0A – 6.0A
	on	off	on	5	Output 1 enabled with current guard levels 3.0A – 7.0A
	off	on	on	6	Output 1 enabled with current guard levels 4.0A – 8.0A
	on	on	on	7	Output 1 enabled with current guard levels 5.0A – 8.5A
14 -> 16	14	15	16	*S	Output 2 settings.
	off	off	off	0	Output 2 disabled.
	on	off	off	1	Output 2 enabled with current guard levels 0.3A – 2.0A
	off	on	off	2	Output 2 enabled with current guard levels 1.0A – 3.0A
	on	on	off	3	Output 2 enabled with current guard levels 1.5A – 4.5A

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	off	off	on	4	Output 2 enabled with current guard levels 2.0A – 6.0A
	on	off	on	5	Output 2 enabled with current guard levels 3.0A – 7.0A
	off	on	on	6	Output 2 enabled with current guard levels 4.0A – 8.0A
	on	on	on	7	Output 2 enabled with current guard levels 5.0A – 8.5A
17	17			S	Master / Slave operation select.
	off			0	Normal operation
	on			1	Master / Slave operation.
18	18			S	External / Internal photocell selection.
	off			0	Use internal photocell
	on			1	Use external photocell
19 -> 21	19	20	21	S	Output 3 settings.
	off	off	off	0	Output 3 disabled.
	on	off	off	1	Output 3 enabled with current guard levels 0.3A – 2.0A
	off	on	off	2	Output 3 enabled with current guard levels 1.0A – 3.0A
	on	on	off	3	Output 3 enabled with current guard levels 1.5A – 4.5A
	off	off	on	4	Output 3 enabled with current guard levels 2.0A – 6.0A
	on	off	on	5	Output 3 enabled with current guard levels 3.0A – 7.0A
	off	on	on	6	Output 3 enabled with current guard levels 4.0A – 8.0A
	on	on	on	7	Output 3 enabled with current guard levels 5.0A – 8.5A
22 -> 24	22	23	24	S	Output 4 settings.
	off	off	off	0	Output 4 disabled.
	on	off	off	1	Output 4 enabled with current guard levels 0.3A – 2.0A
	off	on	off	2	Output 4 enabled with current guard levels 1.0A – 3.0A
	on	on	off	3	Output 4 enabled with current guard levels 1.5A – 4.5A
	off	off	on	4	Output 4 enabled with current guard levels 2.0A – 6.0A
	on	off	on	5	Output 4 enabled with current guard levels 3.0A – 7.0A
	off	on	on	6	Output 4 enabled with current guard levels 4.0A – 8.0A
	on	on	on	7	Output 4 enabled with current guard levels 5.0A – 8.5A

*Note1: When using BMVBW sequence, set DIP 4 and 5 to OFF.
*Note2: When using ICAO/FAA sequence, set DIP 4, 5 and 6 to OFF.
*Note3: When using sequence 0.5s on - 1.5s off, set DIP 4 and 5 to OFF.
*S: The “S” Column is used with GSM modem remote configuration.

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14 DIP Switch Settings – Model 8+1

DIP Switches					Obelux CSW-DCW-8+1-x DIP Switches Current alarm range 150mA-4.25A and 18mA-530mA
1 -> 3	1	2	3	*S	Flashing sequence selection.
	off	off	off	0	Steady burning. All active channels.
	on	off	off	1	60 flashes / minute
	off	on	off	2	40 flashes / minute
	on	on	off	3	20 flashes / minute
	off	off	on	4	BMVBW sequence: 1s on - 0.5s off - 1s on - 1.5s off. *Note1
	on	off	on	5	ICAO/FAA sequence. *Note2
	off	on	on	6	Sequence: 0.5s on - 1.5s off. *Note3
	on	on	on	7	RESERVED
4 -> 5	4	5		S	Flash duration.
	off	off		0	100 millisecond flashes.
	on	off		1	250 millisecond flashes.
	off	on		2	500 millisecond flashes.
	on	on		3	CASA Flash duration (Duty cycle: 2/3 ON, 1/3 OFF)
6 -> 7	6	7		S	Flashing mode.
	off	off		0	All active Outputs flash together.
	on	off		1	Output 1 flashing, outputs 2-4 on (steady-burning light).
	off	on		2	Outputs 1-2 flashing together, outputs 3-4 on (steady-burning light).
	on	on		3	Outputs 1-2 flashing in sequence, outputs 3-4 on (steady-burning light).
8	8			S	Test mode enable
	off			0	Normal operation
	on			1	Test mode. (*See documentation for information about test mode)
9 -> 10	9	10		S	Photocell operation
	off	off		0	Photocell not used.
	on	off		1	Lights are disabled if lighting level is above 400 lux.
	off	on		2	Lights are disabled if lighting level is above 800 lux.
	on	on		3	Lights are disabled if lighting level is above 1600 lux.
11 -> 13	11	12	13	S	Output 1 settings.
	off	off	off	0	Output 1 disabled.
	on	off	off	1	Output 1 enabled with current guard levels 0.15A - 1.00A
	off	on	off	2	Output 1 enabled with current guard levels 0.50A - 1.50A
	on	on	off	3	Output 1 enabled with current guard levels 0.75A - 2.25A
	off	off	on	4	Output 1 enabled with current guard levels 1.00A - 3.00A
	on	off	on	5	Output 1 enabled with current guard levels 1.50A - 3.50A
	off	on	on	6	Output 1 enabled with current guard levels 2.00A - 4.00A
	on	on	on	7	Output 1 enabled with current guard levels 2.50A - 4.25A
14 -> 16	14	15	16	*S	Output 2 settings.
	off	off	off	0	Output 2 disabled.
	on	off	off	1	Output 2 enabled with current guard levels 0.15A - 1.00A
	off	on	off	2	Output 2 enabled with current guard levels 0.50A - 1.50A

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	on	on	off	3	Output 2 enabled with current guard levels 0.75A - 2.25A
	off	off	on	4	Output 2 enabled with current guard levels 1.00A - 3.00A
	on	off	on	5	Output 2 enabled with current guard levels 1.50A - 3.50A
	off	on	on	6	Output 2 enabled with current guard levels 2.00A - 4.00A
	on	on	on	7	Output 2 enabled with current guard levels 2.50A - 4.25A
17	17			S	Master / Slave operation select.
	off			0	Normal operation
	on			1	Master / Slave operation.
18	18			S	External / Internal photocell selection.
	off			0	Use internal photocell
	on			1	Use external photocell
19 -> 21	19	20	21	S	Output 3 settings.
	off	off	off	0	Output 3 disabled.
	on	off	off	1	Output 3 enabled with current guard levels 18mA - 124mA
	off	on	off	2	Output 3 enabled with current guard levels 63mA - 187mA
	on	on	off	3	Output 3 enabled with current guard levels 93mA - 220mA
	off	off	on	4	Output 3 enabled with current guard levels 125mA - 375mA
	on	off	on	5	Output 3 enabled with current guard levels 185mA - 435mA
	off	on	on	6	Output 3 enabled with current guard levels 247mA - 500mA
	on	on	on	7	Output 3 enabled with current guard levels 310mA - 530mA
22 -> 24	22	23	24	S	Output 4 settings.
	off	off	off	0	Output 4 disabled.
	on	off	off	1	Output 4 enabled with current guard levels 18mA - 124mA
	off	on	off	2	Output 4 enabled with current guard levels 63mA - 187mA
	on	on	off	3	Output 4 enabled with current guard levels 93mA - 220mA
	off	off	on	4	Output 4 enabled with current guard levels 125mA - 375mA
	on	off	on	5	Output 4 enabled with current guard levels 185mA - 435mA
	off	on	on	6	Output 4 enabled with current guard levels 247mA - 500mA
	on	on	on	7	Output 4 enabled with current guard levels 310mA - 530mA

*Note1: When using BMVBW sequence, set DIP 4 and 5 to OFF.
*Note2: When using ICAO/FAA sequence, set DIP 4, 5 and 6 to OFF.
*Note3: When using sequence 0.5 s on - 1.5 s off, set DIP 4 and 5 to OFF.
*S: The “S” Column is used with GSM modem remote configuration.

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15 DIP Switch Settings – Model 8+2

DIP Switches					Obelux CSW-DCW-8+2-x DIP Switches Current alarm range 150mA-4.25A and 36mA-1060mA
1 -> 3	1	2	3	*S	Flashing sequence selection.
	off	off	off	0	Steady burning. All active channels.
	on	off	off	1	60 flashes / minute
	off	on	off	2	40 flashes / minute
	on	on	off	3	20 flashes / minute
	off	off	on	4	BMVBW sequence: 1s on - 0.5s off - 1s on - 1.5s off. *Note1
	on	off	on	5	ICAO/FAA sequence. *Note2
	off	on	on	6	Sequence: 0.5s on - 1.5s off. *Note3
	on	on	on	7	RESERVED
4 -> 5	4	5		S	Flash duration.
	off	off		0	100 millisecond flashes.
	on	off		1	250 millisecond flashes.
	off	on		2	500 millisecond flashes.
	on	on		3	CASA Flash duration (Duty cycle: 2/3 ON, 1/3 OFF)
6 -> 7	6	7		S	Flashing mode.
	off	off		0	All active Outputs flash together.
	on	off		1	Output 1 flashing, outputs 2-4 on (steady-burning light).
	off	on		2	Outputs 1-2 flashing together, outputs 3-4 on (steady-burning light).
	on	on		3	Outputs 1-2 flashing in sequence, outputs 3-4 on (steady-burning light).
8	8			S	Test mode enable
	off			0	Normal operation
	on			1	Test mode. (*See documentation for information about test mode)
9 -> 10	9	10		S	Photocell operation
	off	off		0	Photocell not used.
	on	off		1	Lights are disabled if lighting level is above 400 lux.
	off	on		2	Lights are disabled if lighting level is above 800 lux.
	on	on		3	Lights are disabled if lighting level is above 1600 lux.
11 -> 13	11	12	13	S	Output 1 settings.
	off	off	off	0	Output 1 disabled.
	on	off	off	1	Output 1 enabled with current guard levels 0.15A - 1.00A
	off	on	off	2	Output 1 enabled with current guard levels 0.50A - 1.50A
	on	on	off	3	Output 1 enabled with current guard levels 0.75A - 2.25A
	off	off	on	4	Output 1 enabled with current guard levels 1.00A - 3.00A
	on	off	on	5	Output 1 enabled with current guard levels 1.50A - 3.50A
	off	on	on	6	Output 1 enabled with current guard levels 2.00A - 4.00A
	on	on	on	7	Output 1 enabled with current guard levels 2.50A - 4.25A
14 -> 16	14	15	16	*S	Output 2 settings.
	off	off	off	0	Output 2 disabled.
	on	off	off	1	Output 2 enabled with current guard levels 0.15A - 1.00A
	off	on	off	2	Output 2 enabled with current guard levels 0.50A - 1.50A

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	on	on	off	3	Output 2 enabled with current guard levels 0.75A - 2.25A
	off	off	on	4	Output 2 enabled with current guard levels 1.00A - 3.00A
	on	off	on	5	Output 2 enabled with current guard levels 1.50A - 3.50A
	off	on	on	6	Output 2 enabled with current guard levels 2.00A - 4.00A
	on	on	on	7	Output 2 enabled with current guard levels 2.50A - 4.25A
17	17			S	Master / Slave operation select.
	off			0	Normal operation
	on			1	Master / Slave operation.
18	18			S	External / Internal photocell selection.
	off			0	Use internal photocell
	on			1	Use external photocell
19 -> 21	19	20	21	S	Output 3 settings.
	off	off	off	0	Output 3 disabled.
	on	off	off	1	Output 3 enabled with current guard levels 36mA - 248mA
	off	on	off	2	Output 3 enabled with current guard levels 126mA - 374mA
	on	on	off	3	Output 3 enabled with current guard levels 186mA - 440mA
	off	off	on	4	Output 3 enabled with current guard levels 250mA - 750mA
	on	off	on	5	Output 3 enabled with current guard levels 370mA - 870mA
	off	on	on	6	Output 3 enabled with current guard levels 494mA - 1000mA
	on	on	on	7	Output 3 enabled with current guard levels 620mA - 1060mA
22 -> 24	22	23	24	S	Output 4 settings.
	off	off	off	0	Output 4 disabled.
	on	off	off	1	Output 4 enabled with current guard levels 36mA - 248mA
	off	on	off	2	Output 4 enabled with current guard levels 126mA - 374mA
	on	on	off	3	Output 4 enabled with current guard levels 186mA - 440mA
	off	off	on	4	Output 4 enabled with current guard levels 250mA - 750mA
	on	off	on	5	Output 4 enabled with current guard levels 370mA - 870mA
	off	on	on	6	Output 4 enabled with current guard levels 494mA - 1000mA
	on	on	on	7	Output 4 enabled with current guard levels 620mA - 1060mA

*Note1: When using BMVBW sequence, set DIP 4 and 5 to OFF.
*Note2: When using ICAO/FAA sequence, set DIP 4, 5 and 6 to OFF.
*Note3: When using sequence 0.5 s on - 1.5 s off, set DIP 4 and 5 to OFF.
*S: The “S” Column is used with GSM modem remote configuration.

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16 LED Indications

Led	Description
Selftest OK	**Self-test indicator (Green)** LED ON: CSW has started and is operating normally. LED FLASHING: CSW is starting up. This may take a few minutes. LED OFF: CSW un-powered or failed.
GSM	**GSM Status indicator (Green)** LED ON + SHORT FLASH: GSM in use, flash indicates com traffic. LED OFF: GSM modem not detected.
GPS	**GPS status indicator (Green)** LED FLASHING: GPS found, flash indicates satellite sync event LED FLASHING during start-up: GPS module detected LED OFF: No satellite synchronization
Photocell indicator	**Photocell status indicator. (Yellow)** LED ON: Photocell operating, Lights are ON. LED FLASHING: Photocell operating, Lights are OFF. LED OFF: Photocell disabled. LED ON + SHORT FLASH: Flash is external photocell com traffic indication. FAST FLASHING: External photocell alarm condition.
Output 1-4 Alarms	**Per output alarms. (Red)** LED ON: Over-current, output disabled by software. LED FLASHING: Under-current, output not disabled. LED OFF: No alarm.
Output 1-4 Indicators	**Per output indicators. (Green)** LED ON: Output is feeding current at the moment. LED OFF: Output is not feeding current at the moment.

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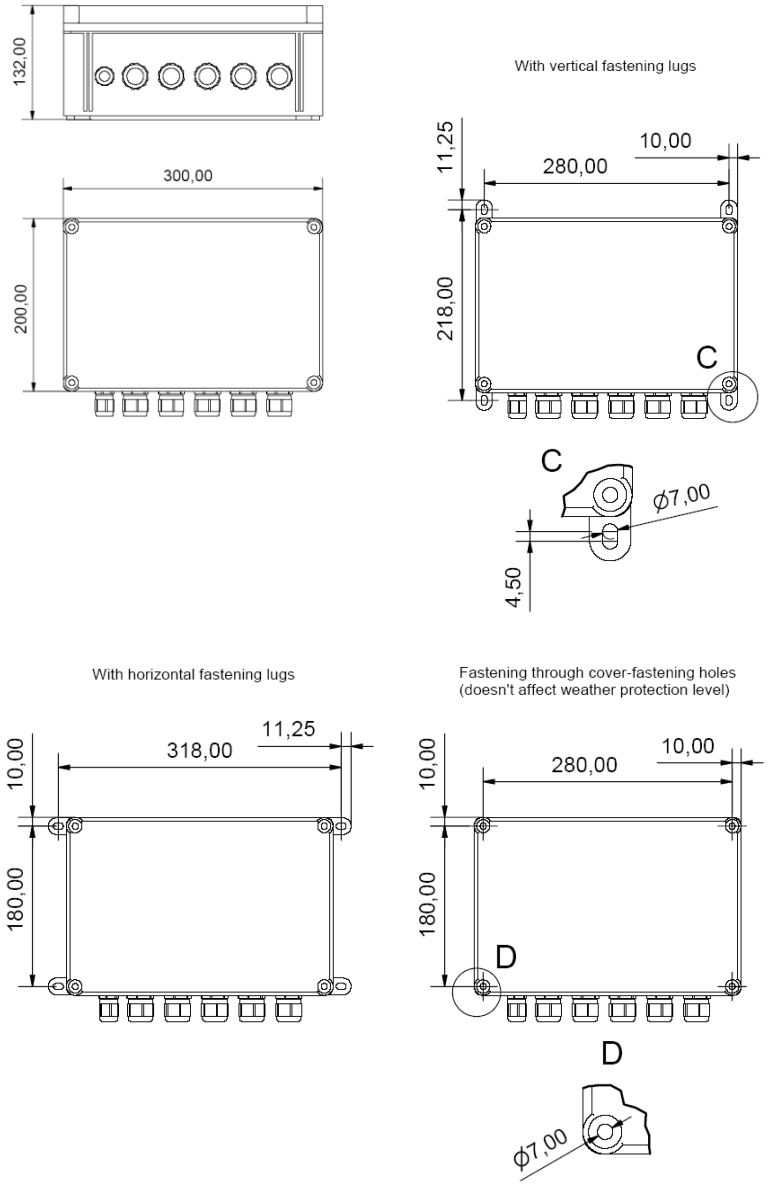
17 Installation



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18 Change log

Date	Description	Author
2013-08-14	Release	RJä
2013-08-19	Amended: GPS Coordinates in status and alarm SMS messages	RJä

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