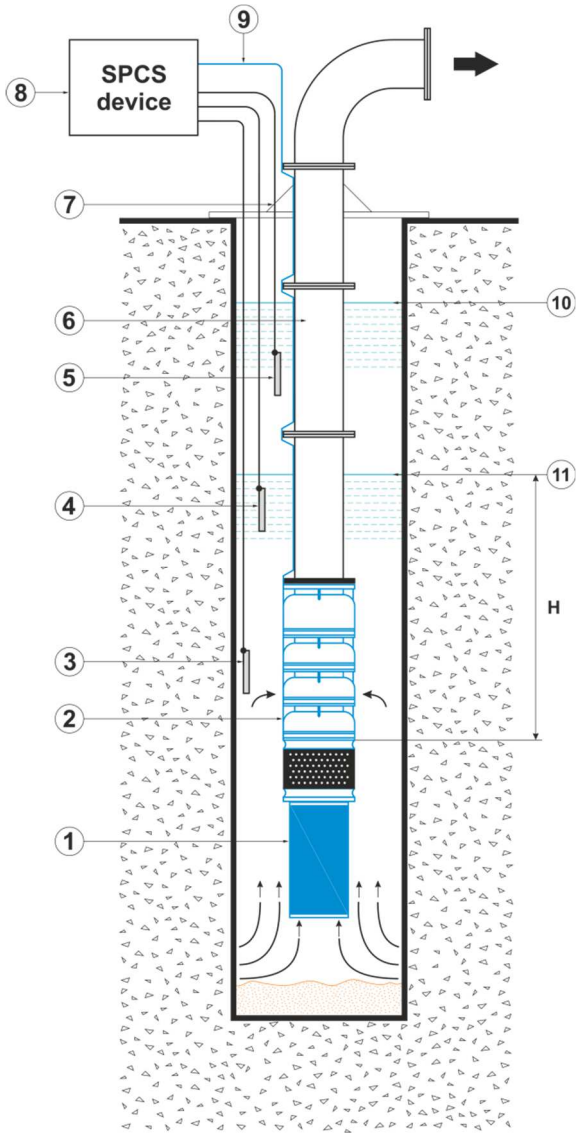
Application

The "WLC" module is designed for conductive liquids (water) level control in pump systems. An example diagram of a typical water level pump control system in well installation is shown on Fig. 1.



1 – Submersible motor
2 – Pump
3 – Common probe (electrode)
4 – Low level probe (electrode)
5 – High level probe (electrode)
6 – Submersible pipe column
7 – Base plate
8 – Solar power drive system with "WLC" module
9 – Pump motor power supply cable
10 – High level
11 – Low level

H – Positive suction head

Fig. 1 – Typical well installation diagram with water level management by "WLC" module, using one sensors (electrodes) set

The working principle of the "WLC" module is based on the resistance between the "HIGH" to "COMMON" and "LOW" to "COMMON" electrodes. The distance between the "HIGH" and "LOW" probes, forms the level hysteresis. The distance between the "LOW" and "COMMON" electrodes, forms the dry run protection level.

Recommended sensors (electrodes) are "Lovato" *11SN13 – Kit of 3 level electrodes*, or similar types.

WLC Module Technical Data

Type	***WLC***
Control System Side (CON1)	
Digital Output 0 (DO0)	Active "High" (24Vdc). ***Reaction from sensor set 1.***
Digital Output 1 (DO1)	Active "High" (24Vdc). ***Reaction from sensor set 2.***
Communication Serial Port (RX, TX)	For "SPCS" units internal use only
Power Supply (+24V_IN, D_GND)	+24Vdc / 100mA
Sensor Side (CON2)	
HIGH1 level (HI1)	Sensor Set 1 – high level sensor (electrode)
LOW1 level (LO1)	Sensor Set 1 – low level sensor (electrode)
HIGH2 level (HI2)	Sensor Set 2 – high level sensor (electrode)
LOW2 level (LO2)	Sensor Set 2 – low level sensor (electrode)
COMMON (COM)	Common (ground) electrodes
General Data	
Reaction time	≤2 sec.
Level electrodes voltage frequency	50Hz
Sensitivity	Resistance between level electrodes ≤ 30 kΩ
Isolation Voltage	$1kVdc_{(min)}$ for 1 sec. (optional $2kVdc_{(min)}$ for 1 sec.)
Ingress Protection Degree	IP 20
Operation Temperature	-10ºC / + 50ºC
Indication	Red LED
Operation Mode	1 Sensor Set / 2 Sensor Sets
Communication	System Internal Serial Port *

**** -*** *used for internal communication in "SPCS" units only*

DO0 State	***DO1 State***	***Water Level Indication LED State***	***Comment***
1	0	*2 sec.* lit "ON" → *2 sec.* extinct;	*Winking uniformly with period 4 seconds.*
0	1	*0,2 sec.* lit "ON" → *3,8 sec.* extinct;	*1 short wink, long dark pause.*
1	1	*0,2 sec.* lit "ON" → *0,2 sec.* extinct → *0,2 sec.* lit "ON" → → *3,4 sec.* extinct;	*2 short winks, long dark pause.*
0	0	*0,2 sec.* lit "ON" → *0,2 sec.* extinct → *0,2 sec.* lit "ON" → → *0,2 sec.* extinct → *0,2 sec.* lit "ON" → *3,0 sec.* extinct;	*3 short winks, long dark pause.*

NOTE: ***"1"*** *- digital output logic active state;* ***"0"*** *- digital output logic inactive state;*

On the figure below are presented the "WLC" module front panel and LED indication window. On the panel could be seen the connectors' designation:

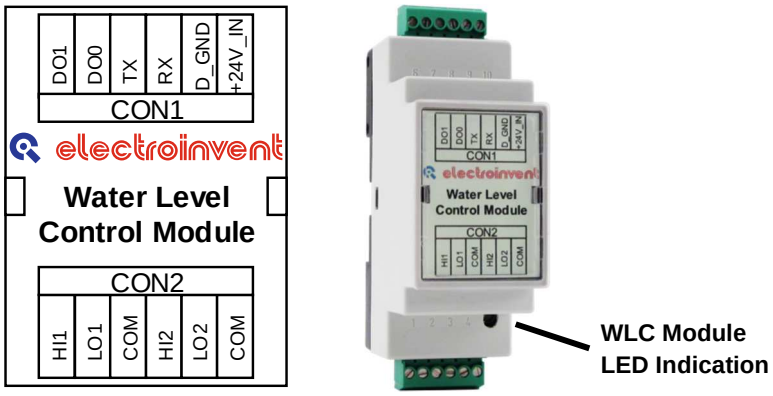


Fig. 2 - "WLC" module front panel and indication window

On the time diagram below (Fig. 3) is represented the functionality of the "WLC" module:

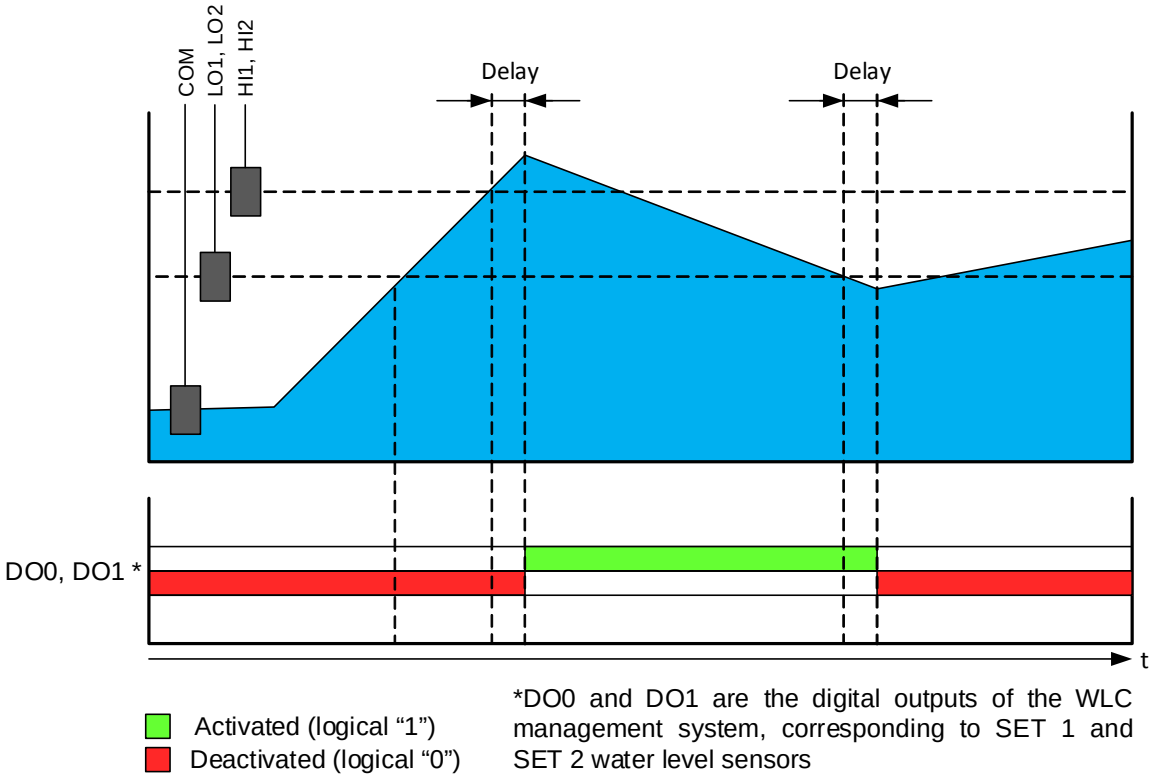
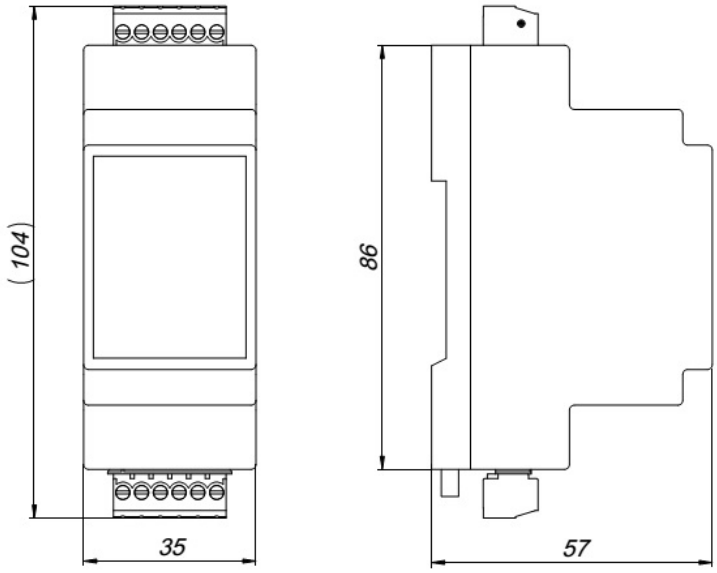


Fig. 3 – "WLC" module functionality time-diagram

Dimensions



WLC Module Overall Dimensions, [mm]

NOTE: The module's enclosure is mounting on M36 DIN-rail.

Contacts

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