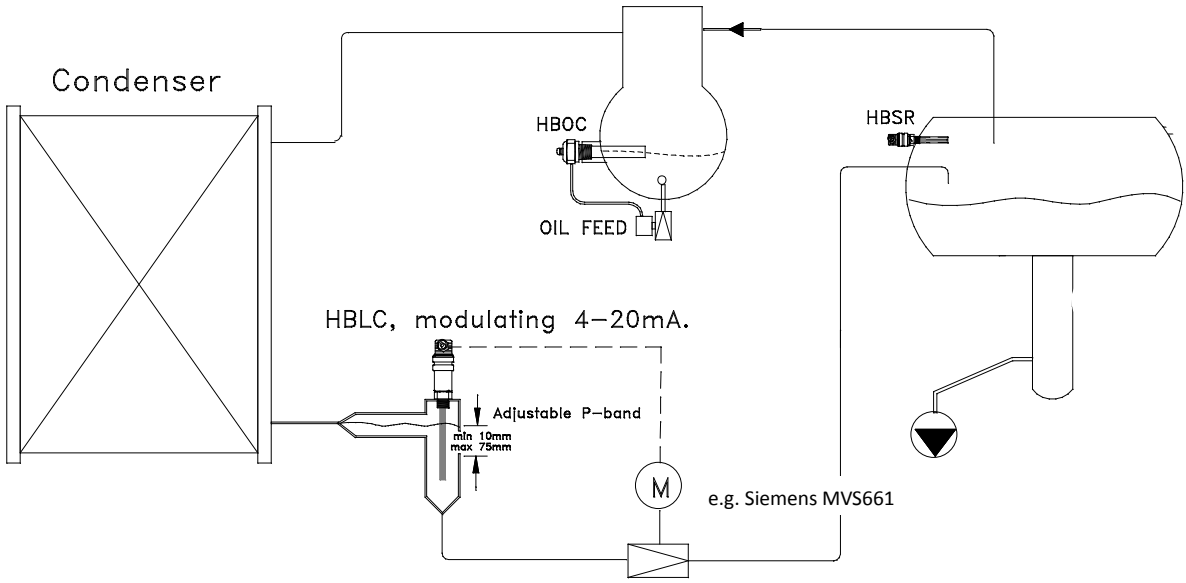


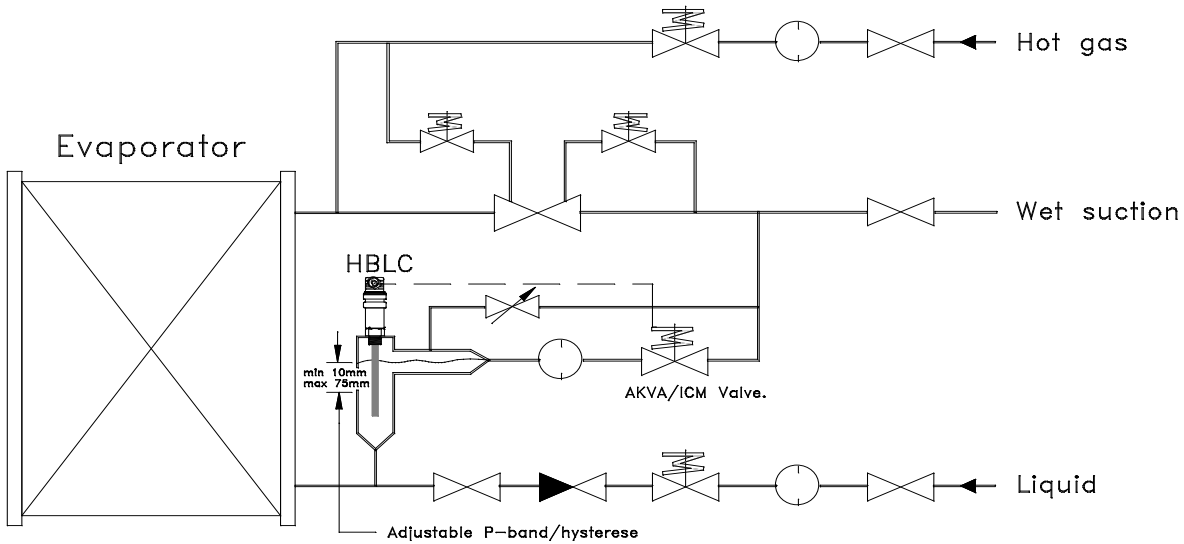


# HBLC - Liquid Level Control Sensor

## Example on high pressure control



## Example on defrost control



# HBLC - Liquid Level Control Sensor

## Set up level Control:

All safety and control function are included in the HBLC sensor, all default settings can easily be changed by using HBLC configuration tool, (HBLC-Tool).

Setup	Setting Range	Factory setting
Setting of required level, SV	0 to 100%	50%
Proportional band in % of measuring range, P-band	0 to 100%	10%
Alarm setting, H/L	0 to 100%	80%
Setting high or low alarm	High or Low	High
Setting of alarm hysteresis	1 to 10%	2%
Alarm delay in sec.	0 to 600s	10s
Alarm relay function	NO or NC	(NC = 'Fail safe') NC
Filter function/time constant	0 to 30s	5s
Calibration function	Yes or No	Yes
Setting of Control Output	Analog 4-20mA/Puls(PWM)	Analog
Control Output, puls setting	Time ,0 to 120sec.	60s.
Run in signal	ON or OFF	(Always active) OFF
Control/Level mode	Yes or No	(control = YES) Yes

## Note:

HBLC-V is a stand-alone level sensor with control function built-in and with cable connection to direct operate a modulating motor or solenoid.

HBLC-C is a level sensor **without** valve cable, the analog 4-20mA output correspond to either the actual liquid level in % (Level mode) or modulating control output (Control mode)

Alarm function in "control mode" is deviation, corresponding in % off the set value (SV)  
in "level mode" is absolute, corresponding to the calibrated measuring range.  
Choose either HIGH or LOW alarm function.

## ACCESSORIES:

Siemens modulating motor valve MVS661 series

USB/M12 cable for setup on PC: HBxC-USB

Configuration tool (software) comes with the cable

M12 connection cable: **HBxC-M12/5** (5 meters/197")  
**HBxC-M12/10** (10 meters/394")

# HBLC - Liquid Level Control Sensor



## LED INDICATION:

- Red LED: indicates level ALARM
- Yellow LED: indicates 'active' Control function rising signal "ON", falling signal short flash
- Green LED: indicates power ON

In operation: Green power LED flashes when run signal is ON.

## Calibration & settings

For highest accuracy zero % calibration must be done during start up:

Note: 0% or 100% calibration can be performed independently of each other. Normally we recommend only a 0% calibration to obtain high accuracy.

### For 0% Calibration:

1. Apply supply voltage.
2. Empty the evaporator, condenser or vessel
3. Activate the push button (R) for about 5 sec. to get the transmitter in calibration mode. Indication: Control LED light up (ON), when ready for calibration the led switch OFF.
4. Activate the push button (R) once. Indication: Control LED flashes once. When the green power LED flash normally the 0% calibration is complete.

### For 100% Calibration:

1. Apply supply voltage.
2. Fill up the evaporator, condenser or vessel
3. Activate the push button (R) for about 5 sec. to get the transmitter in calibration mode. Indication: Control LED light up (ON), when ready for calibration the led switch OFF.
4. Activate the push button (R) twice. Indication: Control LED flashes twice. When the green power LED flash normally the 0% calibration is complete.

### Service and check of measuring accuracy:

The HBLC sensor is designed for long time operation, re-calibration is normally not required. If calibration is required, then only perform a zero % calibration.



HB Products

**Configuration Instruction:**

- 1) Press 'Search for COM Port' to verify which COM Ports are already in use.  
**ONLY THEN**
- 2) Connect USB-M12 cable to PC and HBLC/DX sensor.
- 3) Press 'Search for COM Port' again and select the newly added COM Port. Green progress bar below and flashing LEDs on sensor indicate connection.
- 4) Configure sensor:  
If 'Read configuration is successfully' Select 'Show current configuration' to check current set values. Change relevant parameters and 'Set Configuration' or 'Reset to default'

Set the configuration:  
Set Configuration

Reset data to default:  
Reset to default

COM13 - selected and open

HBLC Configuration Tool, version 1.7.0

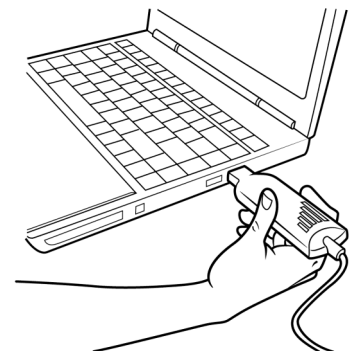
**Instruction:**

1. Install HBLC configuration tool on the computer.
2. Follow 'configuration instructions'



**Note:**

Connection to the sensor is established when red, yellow and green LED flashes repetively.



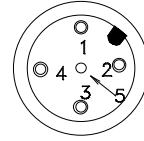
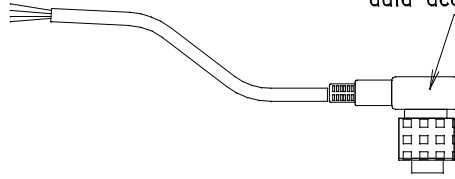
# HBLC - Liquid Level Control Sensor

**Electrical Connection:**

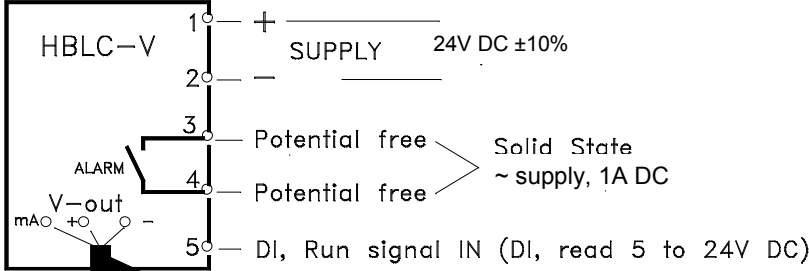
M12 Cable, wire colour

- 1 = Brown
- 2 = White
- 3 = Blue
- 4 = Black
- 5 = Gray

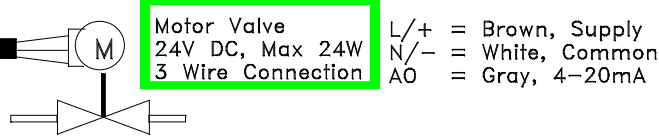
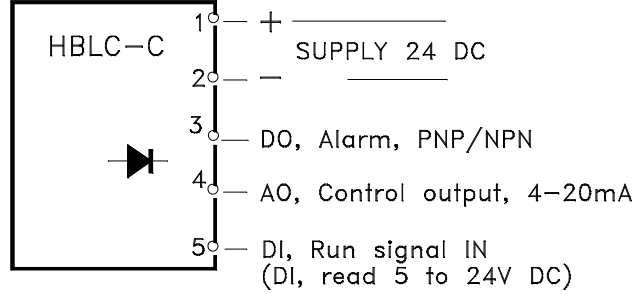
5p M12 plug, IP67 data acc. to DIN. 0627



With Valve Cable



Without Valve Cable



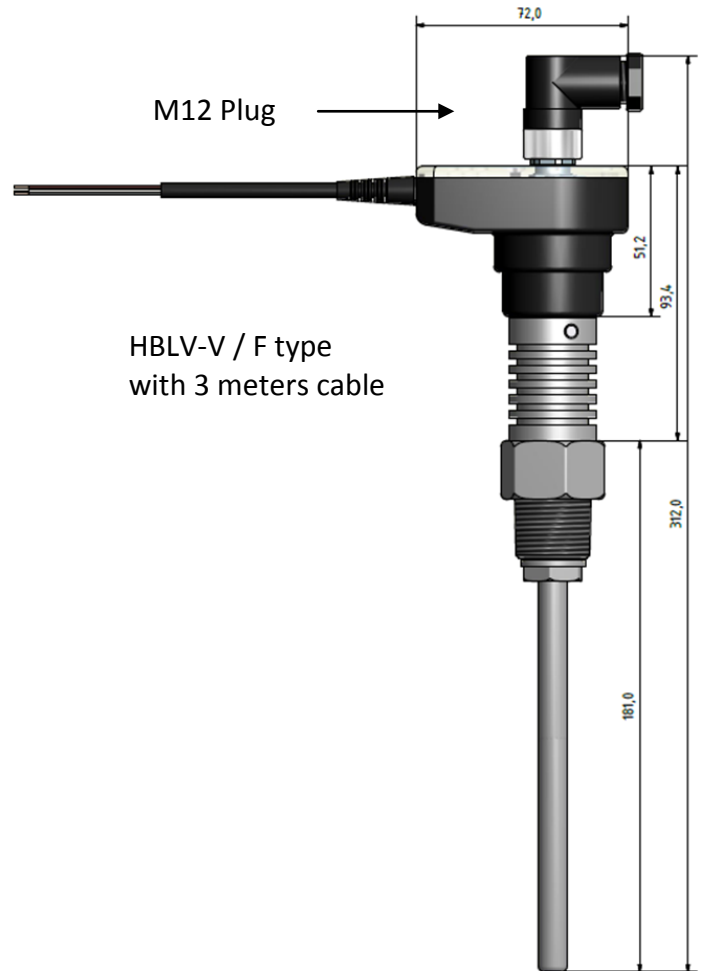
**Mechanical size:**

**HBLC-V:**

has a 3 meter/118" cable for connection to 24V DV modulating motor valve and potential free Alarm output

**HBLC-C:**

is with selectable analog output corresponding to the liquid level or can be used to control output.



**Note:**

- Level control only starts when DI, run signal IN is ON (PIN 5/gray wire)**
- The Green power LED flashes when run signal is ON.**
- Reset of an Alarm: Activate the Push button for about 5 sec.**

# HBLC - Liquid Level Control Sensor

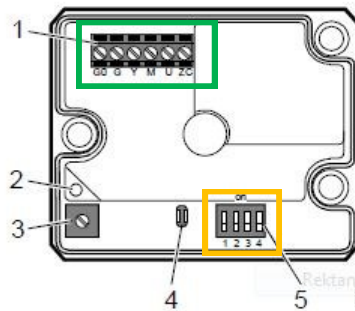
## CONNECTING THE HBLC-V WITH THE SIEMENS MVS661 VALVE



Note

Make sure to set the DIP switches correct and connect the cables from the sensors to the right terminals

Operator controls and indicators in the electronics housing



- 1 Connection terminals
- 2 LED for indication of operating state
- 3 Minimal stroke setting potentiometer Rv
- 4 Autocalibration
- 5 DIL switches for mode control

Configuration of DIL switches



Switch	Function	ON / OFF	Description
<p>1</p>	Positioning signal Y	ON	Current [mA]
		OFF	Voltage [V] <sup>1)</sup>
<p>2</p>	Positioning range Y and U	ON	DC 2...10 V, 4...20 mA
		OFF	DC 0...10 V, 0...20 mA <sup>1)</sup>
<p>3</p>	Position feedback U	ON	Current [mA]
		OFF	Voltage [V] <sup>1)</sup>
<p>4</p>	Nominal flow rate $k_{vs}$	ON	63 %
		OFF	100 % <sup>1)</sup>

<sup>1)</sup> Factory setting

Source: Siemens MVS 661 instruction manual

## CABEL COLOR CODES

- to 'GO'
- + to 'G'
- mA to 'Y'

