

PBKIN-MOD conductivity sensor with RS485 interface

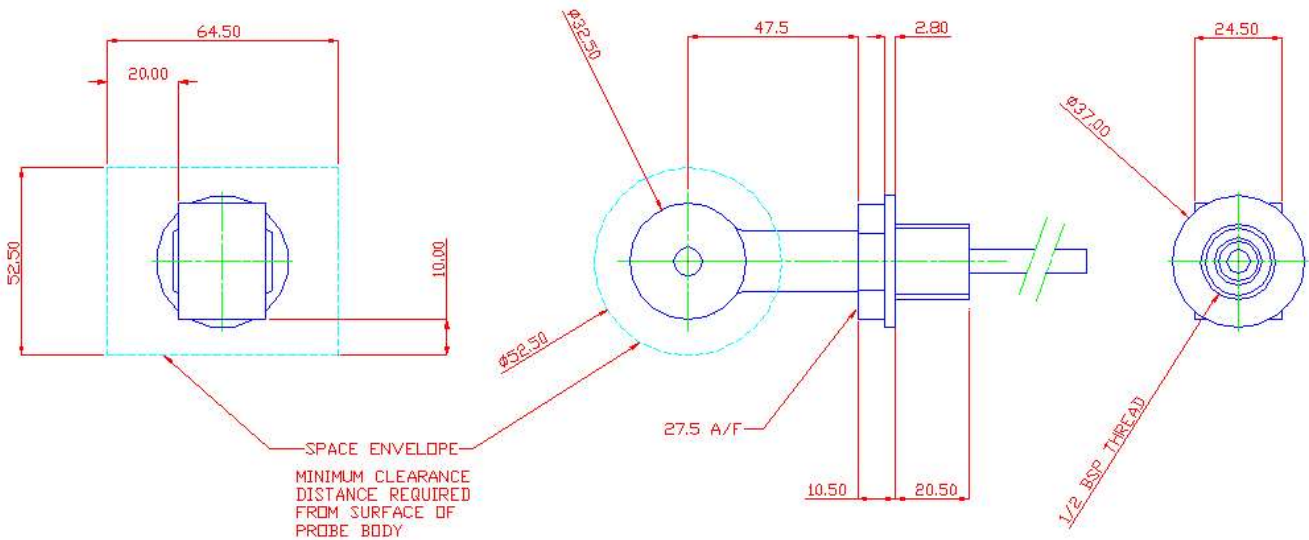


Model Number:	PBKIN-MOD	
Product Description:	Conductivity sensor with Modbus interface	
Measurement Range:	Selectable, 0-2mS/cm, 0-20mS/cm (default), 0-200mS/cm	
Materials Of Construction:	Moulding:	Polypropylene PP H7058-25R
	Encapsulation:	Electolube UR5528 POR Polyurethane resin
	Cable:	UL2464 PVC Jacket
Pressure Rating:	5 bar	
Electrical Ratings:	+18 to 24V DC @ 16mA	
Electrical Connection:	Tinned wire ends	
Cable Length:	3 Metres	
Accuracy:	Temperature	+/- 1.5 % @ 25°C
	Conductivity	+/- 1.5 % @ 25°C
Regulatory Compliances:	RoHS	

Connections:

Red:	+18 to 24V DC @ 16mA	Power supply
Black:	0V	Power supply return and RS485 0V
Orange:	RS485A	
Brown:	RS485B	

Dimensional Drawing:



Mechanical mounting.

The sensor can be fitted into tanks using a back nut and sealing washer or into the side of a 'T' piece inline with a pipe using an adaptor.

Note however that there needs to be a minimum clearance around the end of the sensor as specified in the drawings above.

The sensor should only be held during tightening using the hexagon on the body, on no account should the sensor be tightened using the head or a bar through the hole in the head, this will damage the sensor.

RS485 Modbus operation.

The RS485 default comms protocol is 9600 baud, 8 data bits, No parity and 1 stop bit but other protocols are available on request.

The baud rate can be selected from 9600, 14400, 19200, 38400, 57600 or 115200 Baud using a register.

Changing the Parity and the Stop bits is only a factory option at the moment

The default slave address for the module is 247, it will also accept a broadcast on address 0 but will not acknowledge.

The Modbus interface accepts only function 3 (Read Holding registers) and function 6 (Write Single Register) commands.

All registers are unsigned 16 bit values.

The user RS485 Modbus registers are as follows:

Reg	Name	Min	Max	Read only	Setting mode only	Saved	Notes
0	Slave Address	1	254		✓	✓	Default 247
1	Baud rate	0	5		✓	✓	See below #1
2	Parity	0	2			✓	Not currently implemented
3	Stop bits	1	2			✓	Not currently implemented
4	Temperature result	0	999	✓			250 = 25.0 °C
5	Conductivity Result	0	65535	✓			4550 = 4.550mS on 20mS range, see below #2
6	Uncompensated conductivity Result	0	65535	✓			4550 = 45.50mS on 200mS range, see below #2
7	Gain Range	0	2		✓	✓	0=20mS, 1 = 200mS, 2 = 2mS
8	Temperature Compensation	0	255		✓	✓	Default 170 = 1.70 % per °C
9	Sensor Software Ver.	0	65535	✓			20=version 2.0
10	RS485 Event counter	0	65535	✓			Count of RS485 packets.
11	Sensor sample counter	0	65535	✓			Count of sensor samples. 3 per second
12	User calibration target	0	65535		✓	✓	See below #4
13	Setting mode	0	65535				See below #3

Please note: other registers are used for factory testing and calibration and should not be accessed or written to.

Note #1: Register 1 , Baud Rate

The possible baud rates are 0 = 9600, 1 = 14400, 2 = 19200, 3= 38400, 4 = 57600 & 5 = 115200 baud. Default is 0, 9600 baud

Note #2: The 16 bit values in the conductivity registers are scaled differently according to the current gain range selected.

On the 20mS range (reg 7 = 0) the values 0 to 65535 = 0 to 65.535 mS

On the 200mS range (reg 7 = 1) the values 0 to 65535 = 0 to 655.35 mS

On the 2mS range (reg 7 = 2) the values 0 to 65535 = 0 to 6.5535 mS

Note #3: Register 13, Setting mode

To enable changing of certain settings registers the sensor needs to be put into setting mode.

This is achieved by putting the value 54321 into register 20

Setting mode will remain enabled until the next power cycle or until a value other than 1234 is written to this register.

Note #4: Register 12, User calibration

Entering a value of greater than 10 into this register will calibrate the sensor to the conductivity value entered. E.g entering 5000 into this register will calibrate the sensor to 5.000mS if the sensor is on the 20mS range.

Entering a value of 10 or less will clear the user calibration and revert back to the factory calibration.

The value entered should match the temperature compensated value of the liquid the sensor is in.

Please be careful with this register, it should only be required to adjust the factory conductivity by a small amount and calibration should be done at reasonable conductivity value.

Note: The user calibration is applied to all 3 ranges.

Note: It takes a few internal samples for the sensor to be calibrated, the value read from register 21 is only updated when the calibration is complete.

For more information or support please contact info@pedak.nl