

SM ECM-SMART SENSOR MODULE

Description

SM ECM-SMART sensor module is designed for SemeaTech 4-Series electrochemical (EC) sensors. The design enables different EC sensors to share the same PCB with very consistent and stable TTL UART digital interface.



Figure 1. SemeaTech EC sensors

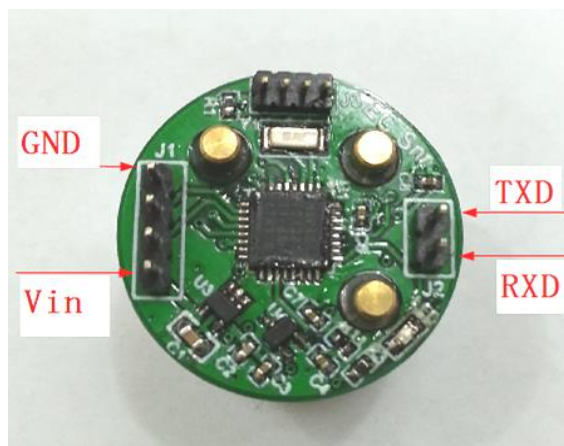


Figure 2. SM ECM-SMART Sensor Module

J1 Pin Definition

Pin	1	2	3	4
Definition	Vin	/	/	GND

J2 Pin Definition

Pin	1	2
Definition	TXD	RXD

Specifications

Product model	SM ECM-SMART
Sensors types	SemeaTech three-electrode electrochemical sensors
Gas concentration range	Refer to EC sensor datasheet
Resolution	Refer to EC sensor datasheet
Measurement error	< ±5%
Operating voltage	4 ~ 12 DVC

Operating current	≤ 5mA@+5.0 VDC ;
Output mode	UART
Operating environment	-20°C ~ +50°C 0%~90% RH (No condensation)
Storage temperature	-20°C ~ +60°C
Dimensions	Φ22 x 25 mm
Weight	10 g

Communication Settings

Baud rate	9600bps
Data bits	8
Stop bit	1
Check bit	None

Communication Command

This module uses UART interface with a set of commands as below. All data is in HEX format.

1. Commands for gas concentration request (From controller)

Example : AA 01 01 C1 E0 EE

- Byte1--AA : Start byte of a command ;
- Byte2--01 : Command for concentration sending request;
- Byte3--01 : Module address (fixed at 0x01) ;
- Byte4--C1 : CRC16 (Modbus) Check high byte ;
- Byte5--E0 : CRC16 (Modbus) Check low byte ;
- Byte5—EE : Command end byte ;

Note: In this command Byte 2 and Byte 3 will be checked with CRC 16 mode;

2. command for sending gas concentration (senor module responding to controller)

Exmample : AA 01 01 80 00 00 00 15 CA EE

- Byte1--AA : Start byte of a command ;
- Byte2--01 : Command for concentration sending
- Byte3--01 : Module address (fixed at 0x01) ;
- Byte4--80 : Data “+/-” signed byte (0x80 for “-” ; 0x00 for “+”) ;
- Byte5/6 – 00 00 : Integer part of concentration data (0 ~ 65535) ;
- Byte7-- 00 : Decimal part of concentration data (0.00 ~ 0.99) ;
- Byte8 -- 15 : High byte of CRC16 value of Byte 2 ~ Byte 7 ;

Byte9 -- CA : Low byte of CRC16 value of Byte 2 ~ Byte 7 ;

Byte10 -- EE : Command end byte ;

Note: In this command Byte 2 ~ Byte 7 will be checked with CRC 16 mode;

Dimensions (mm)

