

*Specification of
Analog (4~20mA) &
Digital (TTL) Transmitter Boards*

Model #SM16x1



SENKO

“Better Safety Better Life”

www.senko.co.kr



4 to 20mA & Digital Transmitter Boards

Model Number #SM16X1

- PRODUCT DESCRIPTION -

SENKO Transmitter board converts the sensor signal into analogue output of 4 to 20mA and digital output as its application. This Transmitter board can be used as a transmitter not only for electrochemical oxygen and toxic sensor but also combustible catalytic and IR gas sensor just by changing the small sensor board. The Transmitter automatically perceives the sensor type and gas when the small sensor board connects to main board

SENKO Transmitter boards have advantages such as

- ADVANTAGES -

- One-push calibration (Zero, Span)
- Wide range of operating voltage
- Analog (4 to 20mA) and Digital (TTL) interface
- High stability of sensor signal
- Bias load for some electrochemical toxic gas sensors
- Small size and wide compatibility with various applications

- SENSORS -

GAS	SENSOR	Full Range / Resolution	ID for Digital Output
Oxygen	Electrochemical (SS1118)	0~100% / 0.1%	0xEF
Oxygen	Electrochemical (SS2118)	0~30% / 0.1%	0xEE
Carbon Monoxide	Electrochemical (SS2128)	0~500ppm / 1ppm	0xED
Carbon Monoxide	Electrochemical (SS1128)	0~1,000ppm / 1ppm	0xEC
Carbon Monoxide	Electrochemical (SS3128)	0~2,000ppm / 2ppm	0xEB
Hydrogen Sulfide	Electrochemical (SS1198)	0~100ppm / 0.1ppm	0xEA
Hydrogen	Electrochemical (SS1178)	0~1,000ppm / 2ppm	0xE9
Ammonia	Electrochemical (SS11B8)	0~100ppm / 0.5ppm	0xE8
Sulfur Dioxide	Electrochemical (SS1158)	0~20ppm / 0.1ppm	0xE7
Nitrogen Dioxide	Electrochemical (SS11C8)	0~20ppm / 0.1ppm	0xE6
Nitric Oxide	Electrochemical (SS11D8)	0~250ppm / 0.5ppm	0xE5
Combustible (CH4)	Catalytic sensor	0~100%LEL / 1%LEL	0xE4
Combustible (CH4)	IR sensor	0~100%LEL / 1%LEL	0xE3

DUE TO ONGOING RESEARCH AND PRODUCT IMPROVEMENT, SPECIFICATIONS ARE SUBJECT TO CHANGE WITHOUT NOTICE

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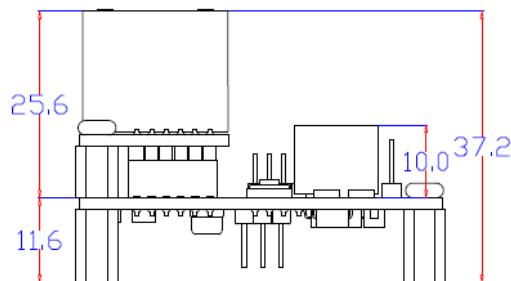
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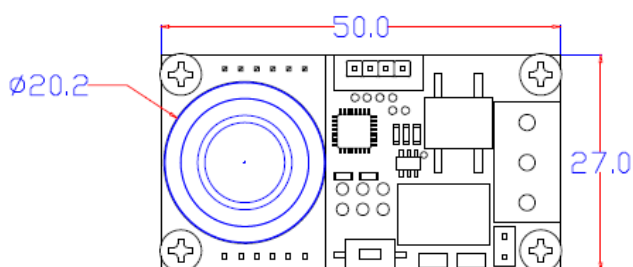
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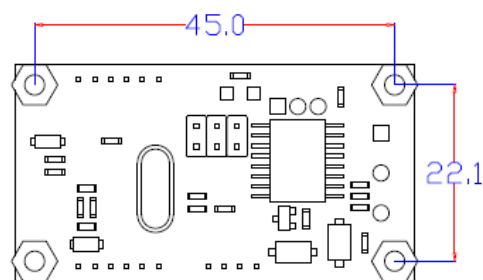
- SPECIFICATIONS -



SIDE VIEW



TOP VIEW



BOTTOM VIEW

	SPECIFICATION
Sensor Type	Electrochemical, Catalytic, IR sensor
Dimensions	Main board : 67 mm x 27 mm x 36 mm Small sensor board : 21 mm x 27 mm
Input Voltage	Analog 10 – 30 V DC or Digital 5 V DC
Power Consumption	Electrochemical : 15mA, 12V DC
	Catalytic : 45mA, 12V DC
	IR : 55mA, 12V DC
Visual Indications	Flashing LED (ZERO – 0.5sec flashing, SPAN – 1sec flashing)
Analog Signal Outputs	4–20mA
Digital Signal Outputs	TTL (3V Level)
	TTL Parameter
	Baud rate : 9600 bps, Parity : none, Stop bit : 1, Data bit : 8
Calibration Switch	O2 : ZERO Calibration 10 sec, SPAN Calibration 3–8 sec More Type : ZERO Calibration 3–8 sec, SPAN Calibration 10 sec
Storage Condition	– 25 / + 60 °C
Operating Condition	See sensor data sheet

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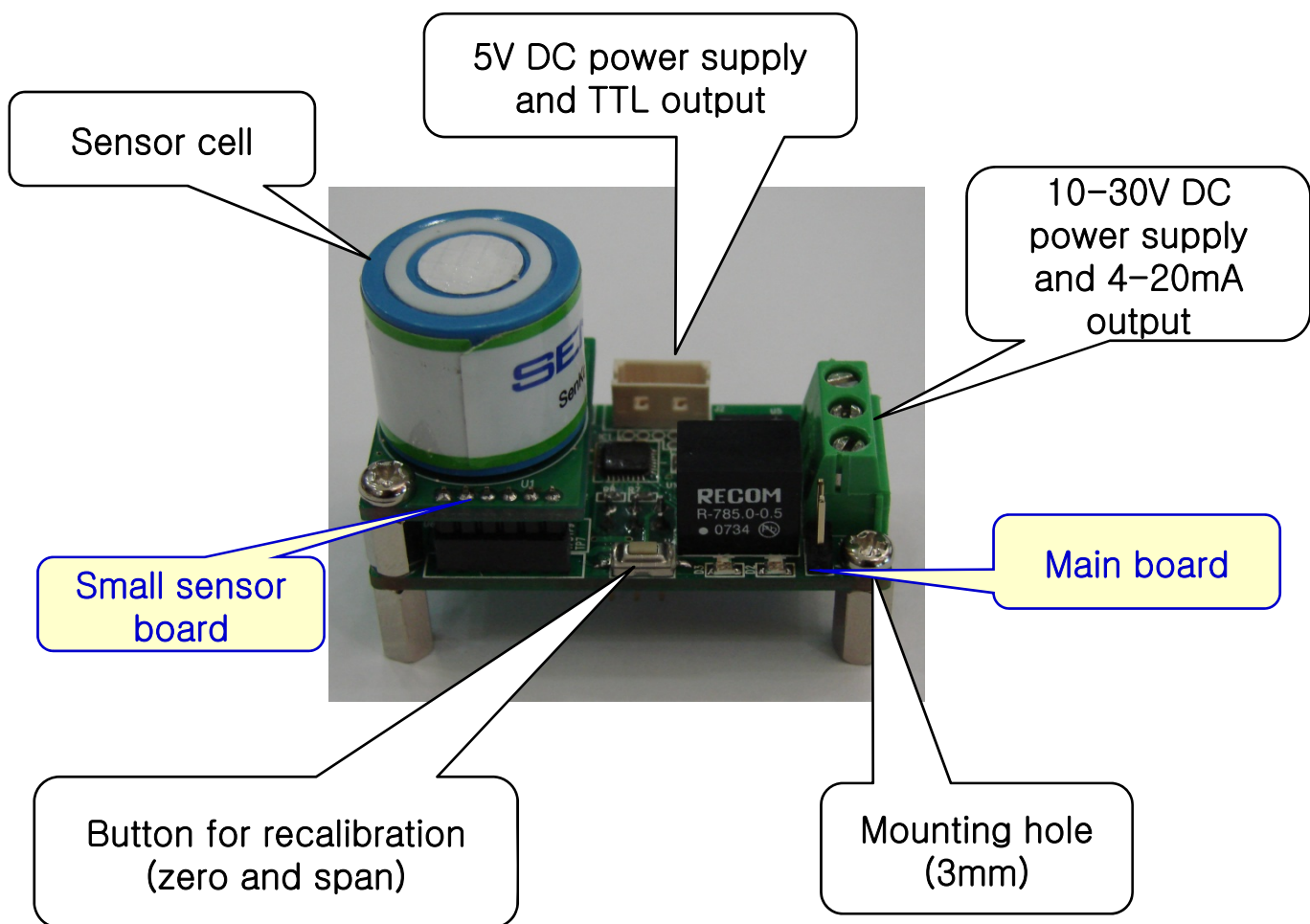
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- COMPONENTS -



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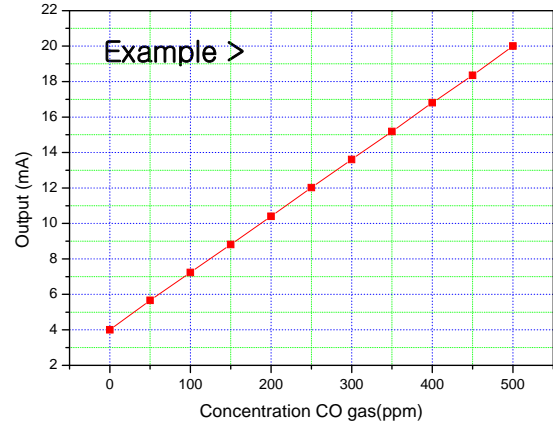
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- 4 to 20mA Analog Output -

Concentration	Output
Output at zero gas concentration	4mA
Output at full-scale concentration	20mA



- TTL Digital Output -

Communication Protocol	<ul style="list-style-type: none"> • Data command 												
	<table border="1"> <thead> <tr> <th>START</th> <th>LENGTH</th> <th>CMD</th> <th>CRC</th> <th>END</th> </tr> </thead> <tbody> <tr> <td>0x7F</td> <td>0x02</td> <td>0x01</td> <td>0x03</td> <td>0x7F</td> </tr> </tbody> </table>	START	LENGTH	CMD	CRC	END	0x7F	0x02	0x01	0x03	0x7F		
	START	LENGTH	CMD	CRC	END								
	0x7F	0x02	0x01	0x03	0x7F								
<p>LENGTH : LENGTH ~ CMD 까지 총 byte 수 CMD : 0x01, Zero Calibration-> 0x02, SPAN Calibration-> 0x03 CRC : LENGTH ~ CMD 까지 xor</p>													
<ul style="list-style-type: none"> • Data Response 													
	<table border="1"> <thead> <tr> <th>START</th> <th>LENGTH</th> <th>DEST</th> <th>DATA</th> <th>CRC</th> <th>END</th> </tr> </thead> <tbody> <tr> <td>1Byte</td> <td>1Byte</td> <td>1Byte</td> <td>2Byte</td> <td>1Byte</td> <td>1Byte</td> </tr> </tbody> </table>	START	LENGTH	DEST	DATA	CRC	END	1Byte	1Byte	1Byte	2Byte	1Byte	1Byte
START	LENGTH	DEST	DATA	CRC	END								
1Byte	1Byte	1Byte	2Byte	1Byte	1Byte								
	<p>START : start frame -> 0x7F LENGTH : LENGTH ~ DATA 까지 총 Byte 수 DEST : sensor id -> 0xEF DATA : sensor data (low high) CRC : LENGTH ~ DATA 까지 xor END : end frame -> 0x7E</p>												
	<ul style="list-style-type: none"> • Calibration Response 												
	<table border="1"> <thead> <tr> <th>START</th> <th>LENGTH</th> <th>RES</th> <th>CRC</th> <th>END</th> </tr> </thead> <tbody> <tr> <td>1Byte</td> <td>1Byte</td> <td>1Byte</td> <td>1Byte</td> <td>1Byte</td> </tr> </tbody> </table>	START	LENGTH	RES	CRC	END	1Byte	1Byte	1Byte	1Byte	1Byte		
START	LENGTH	RES	CRC	END									
1Byte	1Byte	1Byte	1Byte	1Byte									
	<p>LENGTH : LENGTH ~ RES 까지 총 Byte 수 RES : Zero Calibration Response ->0x04 Span Calibration Response ->0x05 CRC : LENGTH ~ RES 까지 xor</p>												

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