

Instruction Manual

SYL-1813 Multifunction Automotive Gauge

Version 1.9.2 (Aug 2017)

A. Specifications

- Power supply: 12 VDC (isolated)
- Power consumption: < 2 W
- Sampling rate: 4 samples/second
- Accuracy: 0.2% full scale ± 1
- Display range: -1999 ~ 9999
- Relay contact rating: 3 A @ 220 VAC
- Outside dimensions: 48 x 24 x 75 mm
- Mounting cutout dimension: 45 x 22 mm
- LED display: 0.28"
- Working condition: 0 ~ 50 °C, ≤ 85% RH

B. Front Panel



Figure 1. Front panel of SYL-1813.

- ① Display window
- ② Maximum and Minimum value indicator
- ③ Alarm and relay J1 indicator
- ④ Set key
- ⑤ Shift key
- ⑥ Up key

Description

1. LED display window to show readings from the sensor.
2. MAX (MIN) on when Display window shows the maximum value or the time of the Max. MAX (MIN) blinking when Display window shows the minimum value or the time of Min.
3. AL on indicates alarm is on and J1 relay is pulled in (closed).
4. Set key. To enter parameter setting mode, and to select or save parameters.
5. Shift key (">"). In the parameter setting mode, press this key to select the digit to be changed. In the normal operation mode, press this key to change the display in the sequence as shown in the diagram below. Please note that time is expressed in Hour.Minute (hh.mm) format.

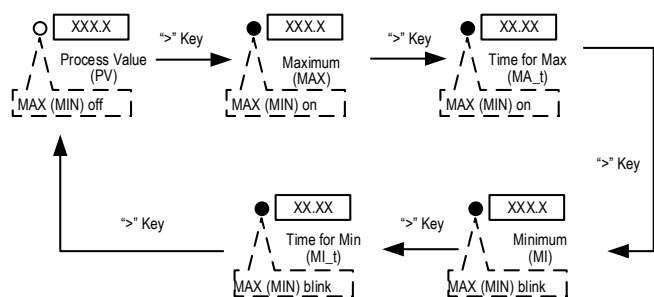


Figure 2. Check the peak values on the gauge by pressing Shift key.

6. Up key ("^"). In the parameter setting mode, press it to increase the displayed value. When displaying Max/Min, press and hold it for 3 seconds to clear the

Max/Min stored. In normal function, this key has two functions, show operation time and change display brightness. Press and hold it down to show the operation time since on. Release the key to show the current temperature (process value). Each time the key is pressed, the display brightness will also be changed from bright to dim or from dim to bright.

C. Terminal Assignment

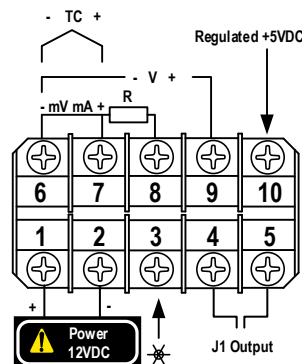


Figure 3. Terminal assignment of SYL-1813 gauge.

Description

1. Terminal 1 (+) and 2 (-) are for power input.
2. Terminal 3 is for display brightness control. When connecting the illumination signal (+12 V) to it, the brightness with synchronized with headlight. If not connected, the brightness can still be controlled by "^" up key.
3. Terminal 4 and 5 are for alarm relay output. See Application example 1 below for how to use it.
4. Terminal 6, 7, 8, and 9 are for different types of input signal. Use 6 and 7 for thermocouple input. Use 6, 7, and 8 for RTD sensor input. Use 6 and 9 for pressure sensor.
5. Terminal 10 supplies a regulated +5VDC for powering pressure transducer.

D. Parameter Setting

D.1 Basic parameter (press SET key then input code 0089 to enter)

D.1.A) Basic parameter description

| Symbol | Name | Description | Setting Range | Initial Setting | Note |
|-------------|------|-------------------|---------------|-----------------|------|
| <i>IntY</i> | Inty | Input Type | See Table 1 | <i>P</i> | |
| <i>dot</i> | Dot | Decimal Point | 0000 ~ 0.000 | <i>00.00</i> | 4 |
| <i>PuL</i> | PuL | Scale Low | -1999 ~ 9999 | <i>00.00</i> | 4 |
| <i>PuH</i> | PuH | Scale High | -1999 ~ 9999 | <i>03.15</i> | 4 |
| <i>PSb</i> | Psb | Zero offset | -1000 ~ 1000 | <i>0</i> | 1 |
| <i>PSbF</i> | PSbF | Range Coefficient | 0.500 ~ 2.000 | <i>1.000</i> | 2 |
| <i>CorF</i> | CorF | Temperature Unit | C: °C; F: °F | <i>F</i> | |
| <i>FILT</i> | FILT | Digital Filter | 0 ~ 3 | <i>0</i> | 3 |
| <i>End</i> | End | Exit | | | |

Note 1: For correcting the offset at zero: Display = measurement + PSb. This parameter only applies to temperature sensors.

Note 2: For correcting the error at Max: Display = measurement x PSbF.

Note 3: Digital filter. Filt = 0, no filter; 1, weak; 2, medium; 3, strong.

Note 4: These parameters define the scale boundary and resolution of the display value. They do not apply to temperature sensors.

Table 1. Sensor Input Type Options

| Symbol | Input Type | Range | Res. | Accy. | Impedance |
|-----------------|--------------------|--|------------|-------|-----------|
| <i>t</i> | TC, Type T | -200 ~ 400°C | 1°C (°F) | 0.3% | 100K |
| <i>r</i> | TC, Type R | -50 ~ 1600°C | 1°C (°F) | 0.3% | 100K |
| <i>j</i> | TC, Type J | -200 ~ 1200°C | 1°C (°F) | 0.2% | 100K |
| <i>H r E</i> | TC, WRe3 - WRe25 | 0 ~ 2300°C | 1°C (°F) | 0.2% | 100K |
| <i>u d o</i> | VDO water/oil Temp | 50 ~ 150°C | 1°C (°F) | 0.3% | (0.2mA) |
| <i>S</i> | TC, Type S | -50 ~ 1600°C | 1°C (°F) | 0.3% | 100K |
| <i>K</i> | TC, Type K | -200 ~ 1300°C | 1°C (°F) | 0.2% | 100K |
| <i>E</i> | TC, Type E | -200 ~ 900°C | 1°C (°F) | 0.2% | 100K |
| <i>P 100</i> | RTD, PT100 | -200 ~ 600°C | 1°C (°F) | 0.2% | (0.2mA) |
| <i>E u 50</i> | RTD, Cu50 | -50.0 ~ 150.0°C | 0.1°C (°F) | 0.5% | (0.2mA) |
| <i>375 r</i> | 0 ~ 375 Ω Pressure | Display range can be set to -1999 ~ 9999 | 16 bit A/D | 0.2% | (0.2mA) |
| <i>75 n u</i> | 0 ~ 75 mV Current | | | 0.1% | 100K |
| <i>30 n u</i> | 0 ~ 30 mV | | | 0.1% | 100K |
| <i>5 u</i> | 0 ~ 5 V | | | 0.1% | 100K |
| <i>1-5 u</i> | 1 ~ 5 V | | | 0.1% | 100K |
| <i>10 u</i> | 10 V | | | 0.1% | 100K |
| <i>10 n A</i> | 0 ~ 10 mA | | | 0.3% | 150Ω |
| <i>20 n A</i> | 0 ~ 20 mA | | | 0.2% | 150Ω |
| <i>4-20 n A</i> | 4 ~ 20 mA | | | 0.2% | 150Ω |

(Note: TC, thermocouples.)

D.1.B) How to change basic parameters (see Figure 4)

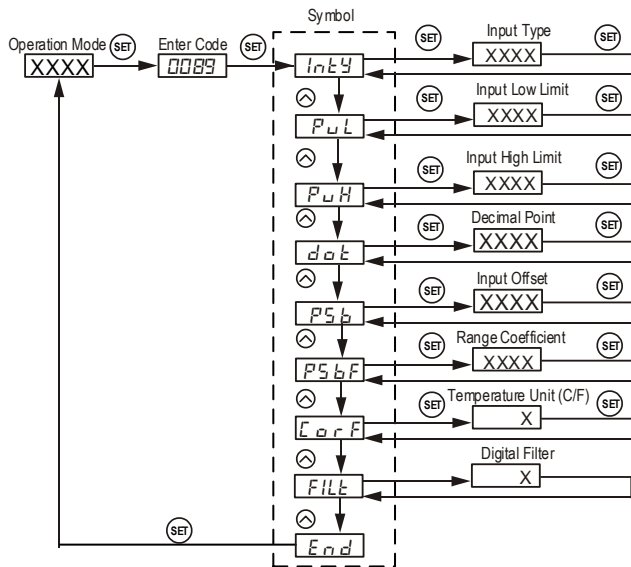


Figure 4. Basic Parameter Setting Flow Chart.

D.2 Alarm parameter (press SET then input code 0001 to enter)

D.2.A) Alarm parameters description

| Symbol | Name | Description | Setting Range | Initial Setting | Note |
|------------|------|-------------------------------|---------------|-----------------|------|
| <i>AH1</i> | AH1 | J1 pull in value | -1999 ~ 9999 | 900 | 5a |
| <i>AL1</i> | AL1 | J1 drop out value | -1999 ~ 9999 | 800 | 5a |
| <i>AH2</i> | AH2 | (Not available to this gauge) | ---- | 900 | 5b |
| <i>AL2</i> | AL2 | (Not available to this gauge) | ---- | 800 | 5b |
| <i>End</i> | End | Exit | | | |

Note 5a. J1 Relay action setting.

- 1) Set AH1 = AL1, relay is disabled.
- 2) Set AH1 > AL1, relay is for high limit alarm. See Figure 5 (left).
- 3) Set AH1 < AL1, relay is for low limit alarm. See Figure 5 (right).

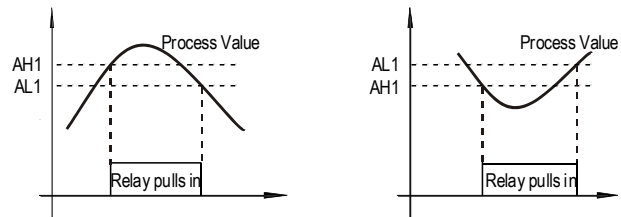


Figure 5. Reply (J1) action when the alarm is set as high alarm (left) and low alarm (right).

Note 5b. AH2 and AL2 are parameters should be ignored on this gauge. They are associated with J2 relay, which is not available on this gauge.

D.2.B) How to change alarm parameters

The procedure to change alarm parameters is similar to the procedure for basic parameter setting shown in Figure 4 except the access code is 0001 instead of 0089.

D.3. Peak value (press SET then input code 1037 to enter)

D.3.A) Peak value description

| Symbol | Name | Description | Setting Range | Initial Setting | Note |
|--------------|------|-----------------|---------------|-----------------|------|
| <i>n A</i> | MA | Maximum value | On/off | On | 6 |
| <i>n A-t</i> | MA-t | Time of maximum | On/off | Off | 6 |
| <i>n l</i> | MI | Minimum value | On/off | Off | 6 |
| <i>n l-t</i> | MI-t | Time of minimum | On/off | Off | 6 |
| <i>End</i> | End | Exit | | | |

Note 6, Peak function is inter-locked.

- 1) When MA is turned off, MA-t can't be set to "on".
- 2) When MI is turned off, MI-t can't be set to "on".

D.3.B) How to change peak value parameters

The procedure to change the peak value settings is similar to the procedure for changing basic parameters in Figure 4 except access code is 1037 instead of 0089.

D.3.C) Reset the peak value

The peak values are stored in the memory even the meter is powered off. To reset them, change display to show MA, MA-t, MI or MI-t. Then, press and hold "Λ" key for 3 seconds. The display will show "----", indicating the memory (for all four parameters) is reset. The meter will start to catch the new peak after 2 seconds.

E. Application Examples

E.1 Exhaust gas temperature (EGT) probe

Auber's EGT probes are type K thermocouples. To read an Auber's EGT probe, set the sensor type *Inty* to "k" (*K*). The gauge is preset for the EGT application. Wire the gauge as the diagram below (Figure 6) and it is ready to go.

(Continue on the next page)

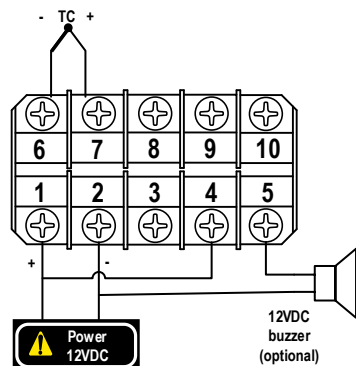


Figure 6. Wire the SYL-1813 with an EGT probe and an alarm buzzer.

E.2 Pressure transducers

Here is a brief description of how to set up the gauge for reading an Auber-103, 3 Bar MAP Sensor.

- Identify the power, signal, and ground wires on the pressure sender (please refer to the manual of pressure sender). Connecting power cable to terminal 10, signal cable to terminal 9, and ground cable to terminal 6.
- To display the pressure in bar (with 0.01 bar resolution), enter the Basic Parameter Setting Mode using access code 0089, change the input type **Inty** to "5v" input (5v), then set **dot** = 00.00, **PuL** = 00.01, and **PuH** = 03.15.
- To display the pressure in PSI (with 0.1 PSI resolution), enter the Basic Parameter Setting Mode with access code 0089, change the input type **Inty** to "5v" input (5v), then set **dot** = 000.0, **PuL** = 000.2, and **PuH** = 045.7.

E.3 Water/oil temperature sensor

If a VDO 150°C/300°F sender is used to read water/oil temperature, here is the basic settings.

- Connect the VDO sender to terminal 8; jump a wire between terminal 6 and 7; jump another wire between terminal 2 and 6.
- Enter the Basic Parameter Setting Mode using code 0089; set input type **Inty** = vdo; and set **CorF** to "C" or "F" for desired temperature unit.

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