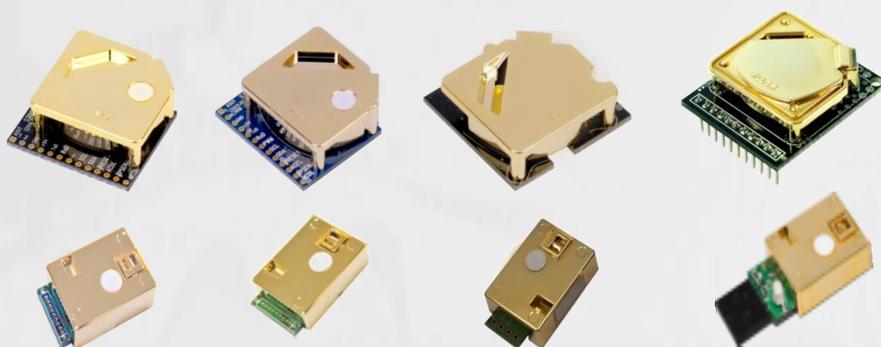


Brief Manual of TRB-100ST

(Monitoring, 10min. MCDL, ACDL tester)

*** For S/T series sensors**

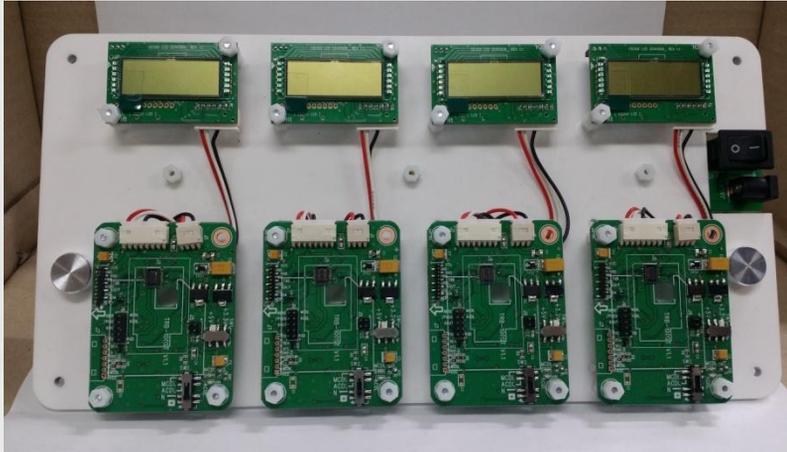


S-Series	S-100, S-100R, S-110, S-200, S-300, S-300E, S-300-3V, S-100H
T-Series	T-100, T-110, T-110-3V, MT-100

Ver 2.0

ELT SENSOR COPR.

TRB-100ST, product constitution



Main Body – 4pcs sensor test

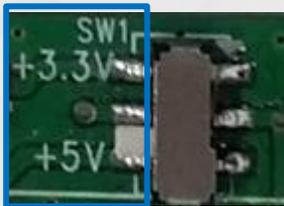
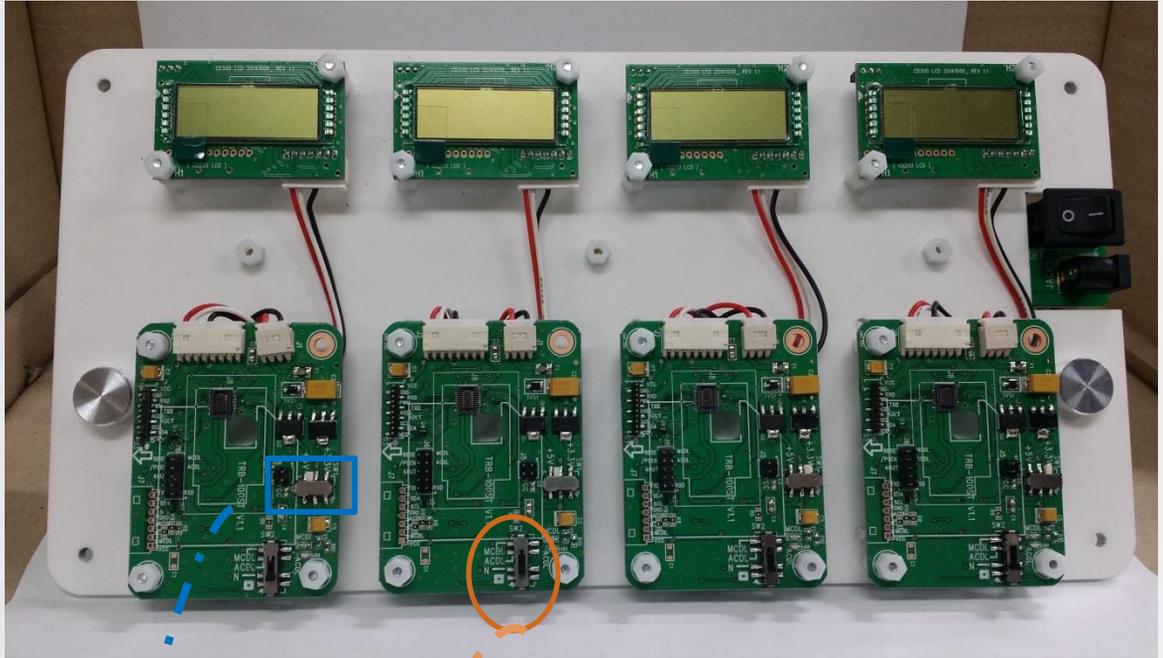


2pcs Bar for Stand

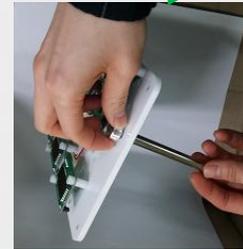


Adapter (110~220VAC-DC, 3A output)

TRB-100ST JIG-Board Configuration



SW1: Voltage Input setting



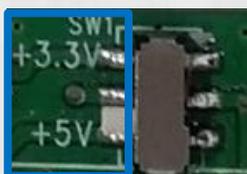
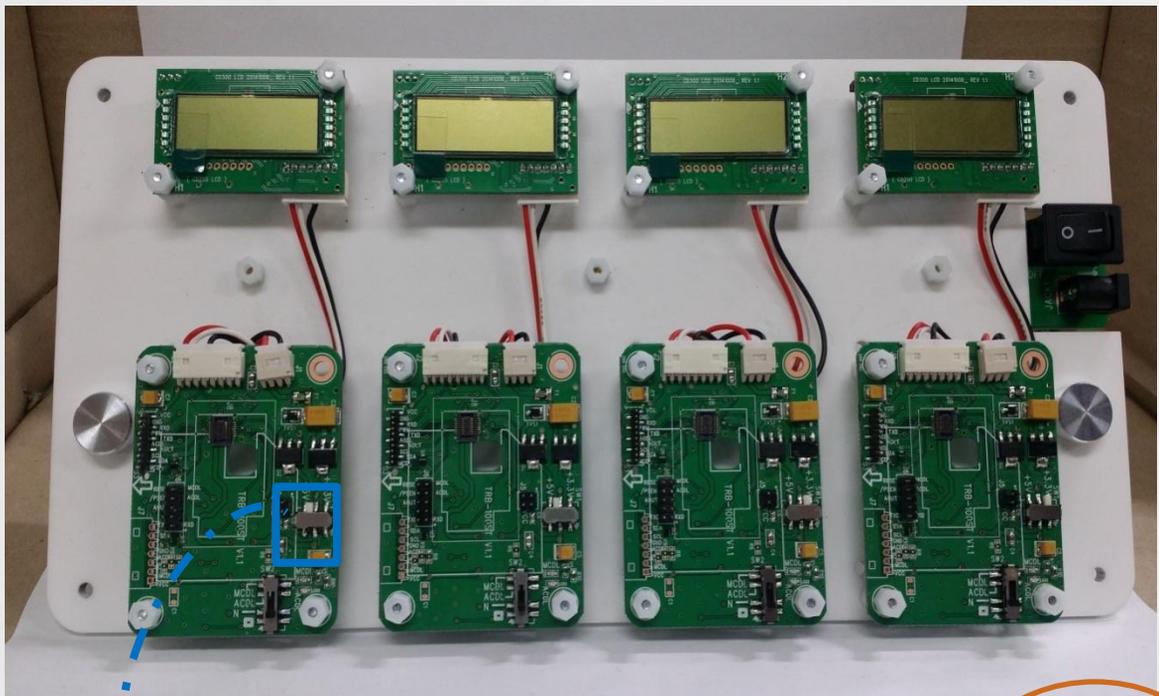
Bar for Stand



SW2: Calibration Function setting.

1. Monitoring with No-Calibration Function

1. Let TRB-100ST be located where CO₂ to be measured.
2. Plug the sensor modules into Jig Board's connectors gripping PCB of sensor only without pressing gold-colored-cavity not to be twisted.
3. Let SW1 to be 5V or 3.3V depending on Voltage Input of Sensors.

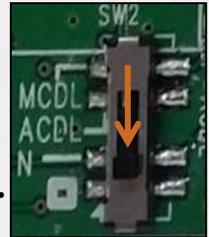


SW1: +3.3V / +5V Voltage Input model

SW2: No Calibration Function Setting



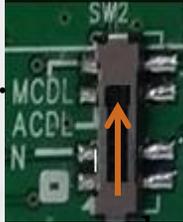
4. Let SW2 to be N (No Calibration set).
5. Let the power on and read values displayed on LCD. the LCD display the CO2 ppm value through U-ART.
ex) 456 -> 456 ppm, 2345 -> 2,345 ppm.



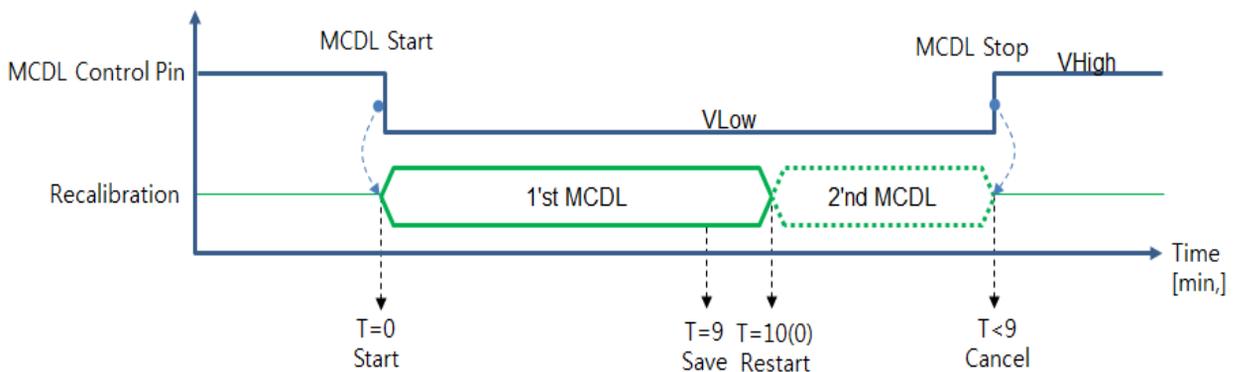
※ Caution

- ✓ Be careful not to add or remove module during power on.
- ✓ When measure CO2 value, let people or heater not close near sensors because even a breath of a person has 40,000ppm CO2, which effect the accurate measurement.
- ✓ plug in jack to 12V adapter, of which current capacity should be equal or bigger than 3A. DC Supply should be regulated , low noise power source for best accuracy. (It is recommended to use the adapter which was enclosed on purchase.)

2. 10minute Manual Recalibration Function

1. Let TRB-100ST be located on the fresh air flowing circumstance near 400ppm such as the room with windows opened or open place to outside. The recalibration done at 380~420ppm gives best accuracy.
2. plug in jack to 12V adapter, of which current capacity should be equal or bigger than 3A . DC Supply should be regulated , low noise power source for best accuracy.
3. Install the (4) right sensor modules on Board's connectors
4. Let SW2 to be MCDL setting.


SW2: MCDL Calibration Function Setting
5. Wait over 10minutes. As time passed 9~10 minutes since power on, LCD start to close to 400 ppm and resume reading of CO2 Concentration. Be careful to quit MCDL process before 18minutes unless repetition of Manual Calibration is needed.



Time Diagram of MCDL

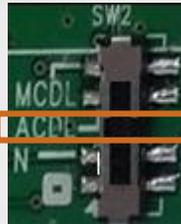
6. If good, Power off and uninstall the sensors and finish. If not, check if the air-flow is near 400ppm and repeat above process.

※ Caution

- ✓ Be careful not to add or remove module during power on.
- ✓ let people or heater not close near sensors on measuring CO₂ because even a breath of a person has 40,000ppm CO₂, which effect the accurate measurement.
- ✓ The recalibration with 400ppm standard CO₂ gas could give most accurate result.
- ✓ The 10 minute Recalibration should be finished by power off before 18~20minute has passed to prevent sensor's restart Recalibration process since the time 18 ~20 minutes.

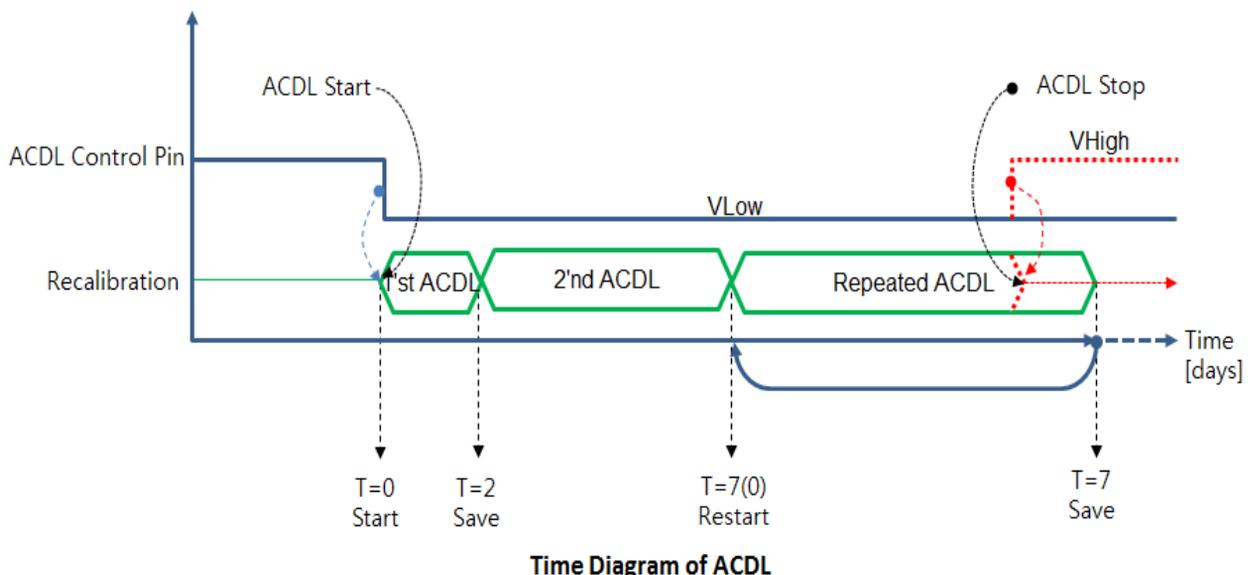
3. Automatic Recalibration Function

1. Let TRB-100S1 be located where CO₂ concentration needs to be measured for ventilation Application.
2. Let SW2 to be “N” setting first.
3. plug in jack to 12V adapter, of which current capacity should be equal or bigger than 3A . DC Supply should be regulated , low noise power source for best accuracy.
4. Install the (4) right sensor modules on Board’s connectors.
5. Let SW2 to be CAL2 setting.



SW2: ACDL Calibration Function Setting

6. Sensor re-calibrate every 7th days, LCD start to close to 400 ppm and resume reading of CO₂ Concentration after once in 2days since power. Sensor re-start counting the period repeatedly during the SW2 remains as ‘ACDL’ setting.

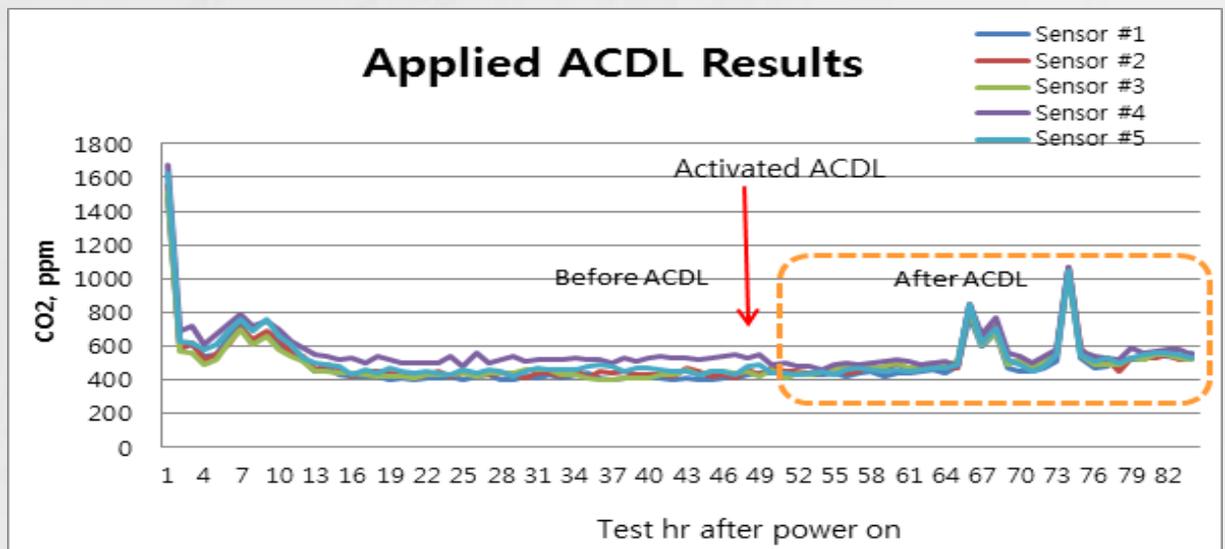


❖ Automatic Calibration Concept

Outside levels of CO₂ are generally very low at around 380 to 420 ppm. Inside buildings people are the major source of CO₂. When a building is unoccupied for 4 to 8 hours, CO₂ levels will tend to drop to outside levels.

For Air Quality Monitoring Application, Sensor remembers the lowest CO₂ concentration during the fixed period and assumes this low point is at outside levels. The sensor performs a statistical analysis to see if there have been any small changes in the sensor reading that could be attributable to sensor drift and the correction factor is changed adjust for this drift.

As the picture 1 below shows, Sensor #1~#5 with drift start to be accurate and kept stable through 1st ACDL once in 2 days, after 3 weeks, with premise that sensors in houses and offices face fresh air at least one time per week periodically. It has base on the statistically adjustment.





Thanks for Reading

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