

***Critical Environment Technologies
Canada Inc.***

www.critical-environment.com

**Installation Manual for
*AST-IS7***

**Infrared CO₂ / Temperature Sensor Transmitter with
Industrial Enclosure (wall or duct) and LCD Display**



MANUAL REVISION-D, February 24, 2015

**#145, 7391 VANTAGE WAY
DELTA, BC CANADA V4G 1M3
PH: 604-940-8741 TOLL FREE: 877-940-8741**

IMPORTANT NOTE

Read and understand this manual prior to using this instrument. Carefully read the warranty policy, service policy, notices, disclaimers and revisions on the following pages.

This product must be installed by a qualified electrician or trained technician and according to instructions indicated in this manual. This instrument should be inspected and calibrated regularly by a qualified and trained technician. For more information, refer to sections *10 Maintenance* and *8 Calibration* of this manual.

This instrument has not been designed to be intrinsically safe. For your safety, **do not** use it in classified hazardous areas (explosion-rated environments).

INSTRUMENT SERIAL NUMBER:

PURCHASE DATE:

PURCHASED FROM:

WARRANTY POLICY

- Disconnect power before servicing

Critical Environment Technologies Canada Inc. (CETCI), also referred to as the manufacturer, warrants this instrument, (excluding sensors, battery packs, batteries, pumps and filters) to be free from defects in materials and workmanship for a period of **two years from the date of purchase by the original owner**. The sensors have a warranty period of **one year on a pro-rated basis from the date of purchase**. If the product should become defective within this warranty period, we will repair or replace it at our discretion.

The warranty status may be affected if the instrument has not been used and maintained per the instructions in this manual or has been abused, damaged, or modified in any way. This instrument is only to be used for purposes stated herein. The manufacturer is not liable for auxiliary interfaced equipment or consequential damage.

Due to ongoing research, development, and product testing, the manufacturer reserves the right to change specifications without notice. The information contained herein is based on data considered accurate. However, no warranty is expressed or implied regarding the accuracy of this data.

All goods must be shipped to the manufacturer by prepaid freight. All returned goods must be pre-authorized by obtaining a Returned Merchandise Authorization (RMA) number. Contact the manufacturer for a number and procedures required for product transport.

SERVICE POLICY

CETCI maintains an instrument service facility at the factory. Some CETCI distributors / agents may also have repair facilities; however, CETCI assumes no liability for service performed by anyone other than CETCI personnel.

Repairs are warranted for 90 days after date of shipment (sensors have individual warranties).

Should your instrument require non-warranty repair, you may contact the distributor from whom it was purchased or you may contact CETCI directly.

Prior to shipping equipment to CETCI, contact our office for an RMA #. All returned goods must be accompanied with an RMA number.

If CETCI is to do the repair work, you may send the instrument, prepaid, to:

Attention: Service Department
Critical Environment Technologies Canada Inc.
Unit 145, 7391 Vantage Way
Delta, BC, V4G 1M3

Always include your Returned Merchandise Authorization (RMA) number, address, telephone number, contact name, shipping / billing information, and a description of the defect as you perceive it. You will be contacted with a cost estimate for expected repairs, prior to the performance of any service work.

For liability reasons, CETCI has a policy of performing all needed repairs to restore the instrument to full operating condition.

Pack the equipment well (in its original packing if possible), as we cannot be held responsible for any damage incurred during shipping to our facility.

COPYRIGHTS

This manual is subject to copyright protection; all rights are reserved. Under

international and domestic copyright laws, this manual may not be copied or translated, in whole or in part, in any manner or format, without the written permission of CETCI.

DISCLAIMER

Under no circumstances will CETCI be liable for any claims, losses or damages resulting from or arising out of the repair or modification of this equipment by a party other than CETCI service technicians, or by operation or use of the equipment other than in accordance with the printed instructions contained within this manual or if the equipment has been improperly maintained or subjected to neglect or accident. Any of the forgoing will void the warranty.

Under most local electrical codes, low voltage wires cannot be run within the same conduit as line voltage wires. It is CETCI policy that all wiring of our products meet this requirement.

It is CETCI policy that all wiring be within properly grounded (earth or safety) conduit.

REVISIONS

This manual was written and published by CETCI. The manufacturer makes no warranty or representation, expressed or implied including any warranty of merchantability or fitness for purpose, with respect to this manual.

All information contained in this manual is believed to be true and accurate at the time of printing. However, as part of its continuing efforts to improve its products and their documentation, the manufacturer reserves the right to make changes at any time without notice. Revised copies of this manual can be obtained by contacting CETCI or visiting www.critical-environment.com.

Should you detect any error or omission in this manual, please contact CETCI at the following address:

Critical Environment Technologies Canada Inc.

Unit 145, 7391 Vantage Way, Delta, BC, V4G 1M3, Canada

Toll Free: +1.877.940.8741

Telephone: +1.604.940.8741

Fax: +1.604.940.8745

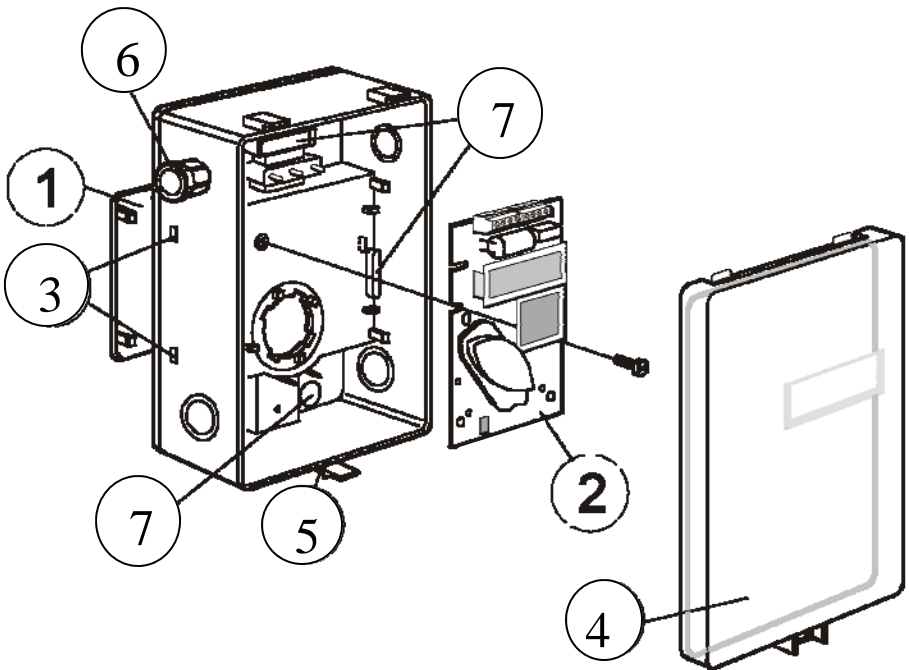
Email: marketing@cetci.com

Website: www.critical-environment.com

In no event will CETCI, its officers or employees be liable for any direct, special, incidental or consequential damages resulting from any defect in any manual, even if advised of the possibility of such damages.

AST-IS7 (with display)

The AST-IS7 is an infrared Carbon Dioxide (CO₂) and temperature sensor/transmitter with an LCD display, in a water tight housing, to be mounted as an industrial wall mount or duct style. The enclosure cover has a built-in rubber gasket and all other connections must be tight and sealed to prevent water intrusion. Improper installation resulting in damage is not covered under warranty.

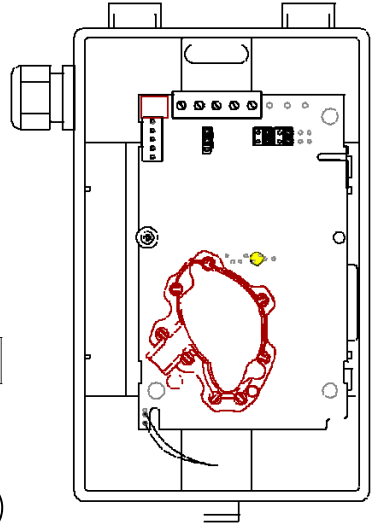
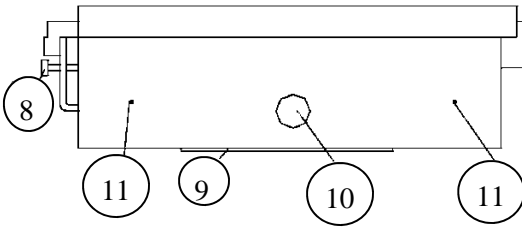


ITEM LOCATORS

- 1 Wall plate
- 2 PCB (Factory supplied mounted in box)
- 3 Holes for wall plate hooks
- 4 Snap-in lid
- 5 Locking screw of the lid (not shown)
- 6 PG9 cable entry bushing
- 7 Air holes

ITEM LOCATORS, CONT'D.....

- 8 Lid locking screw
- 9 Wall plate
- 10 Screw to hold the wall plate
- 11 Drill marks for cable entry bushings



Dismounting the wall plate

The sensor is delivered with the wall plate mounted. The wall plate has to be removed before the sensor is mounted onto the wall. Unthread the screw on the side of the box. See item "10" in drawing above.

Wall Mounting Instruction

Normally the PCB should not be removed from the housing. If for some reason the PCB must be removed it must be handled carefully and protected from electrostatic discharge.

1) Electrical cable entry: The box has a factory mounted cable entry bushing in dimension PG9, item-6 in drawing on previous page. Never feed more than one cable through each cable entry bushing, or else gas might leak through!

2) Screw the wall plate onto the wall: The wall plate has holes for three screws. Drill holes for 3,5mm screws and put dowel into them. Dowels and screws 3,5 x 25mm are included in a plastic bag

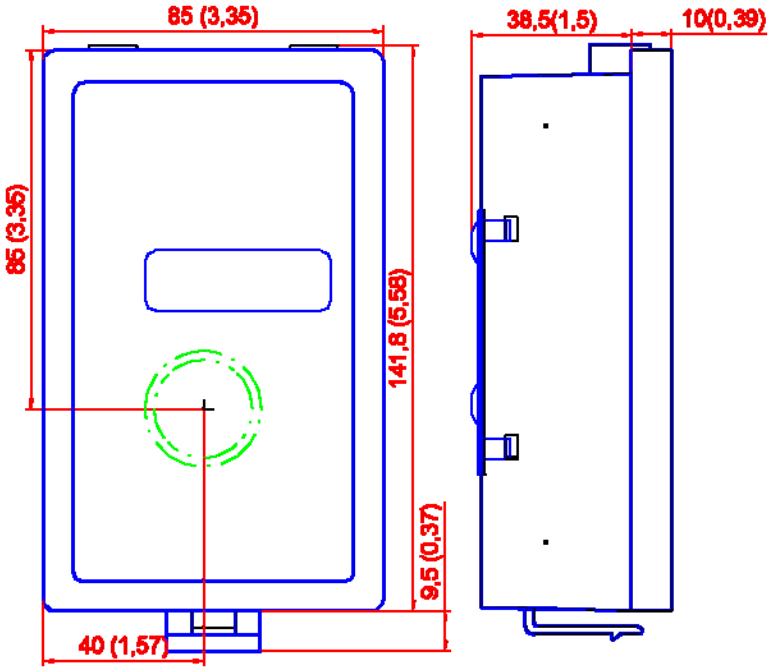
3) Attaching the sensor box to the wall plate is done by a snap-in fitting. The wall plate has three hooks that fit in holes in the sensor box. Fasten the screw on the side of the box, item-10 in drawing above and on previous page.

4) The lid can be locked with the screw at the bottom of the sensor box, item-5 on drawing on previous page.

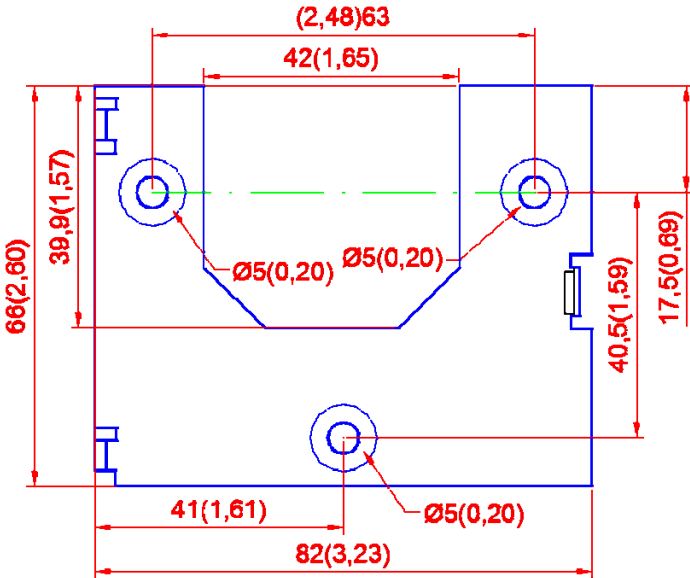
If for some reason the PCB must be removed it must be handled carefully and protected from electrostatic discharge! Normally, removing the PCB is not required.



DIMENSIONS

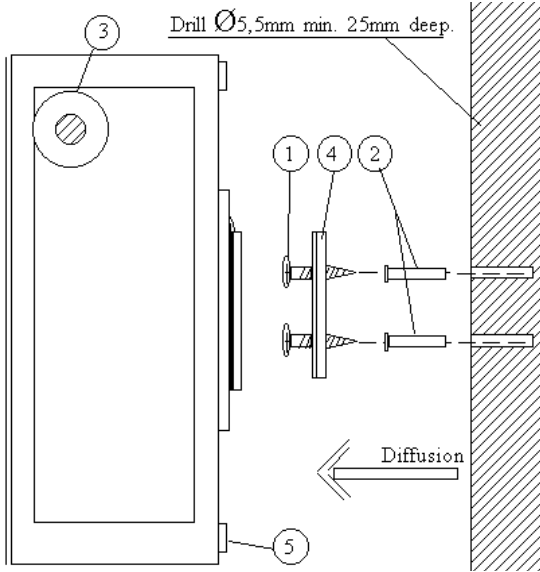


DIMENSIONS OF TRANSMITTER IN mm AND INCHES



DIMENSIONS OF WALL PLATE IN mm AND INCHES

CO2 TRANSMITTER WITH INDUSTRIAL ENCLOSURE



Mounting Transmitter to a wall

- 1 Screw 5x25
- 2 Dowel
- 3 Cable entry bushing PG9
- 4 DIN rail
- 5 Draining holes

The DIN rail places the sensor 7 mm from the wall. This distance is very important for the response time because the air inlets are situated at the back of the housing facing the wall. The sensor should be mounted with the cable entry bushing upwards and the draining holes downwards.

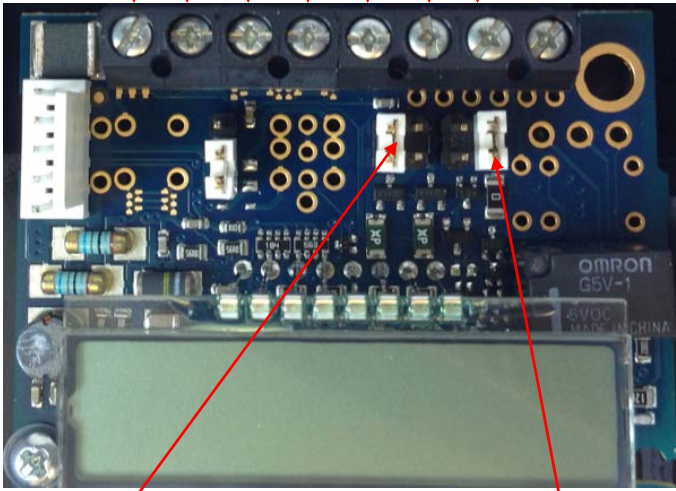
If for some reason the PCB must be removed it must be handled carefully and protected from electrostatic discharge! Normally, removing the PCB is not required.



WIRING TERMINALS & SIGNAL OUTPUT JUMPER SETTINGS

NOTE: STANDARD RANGE IS 0-2000 PPM

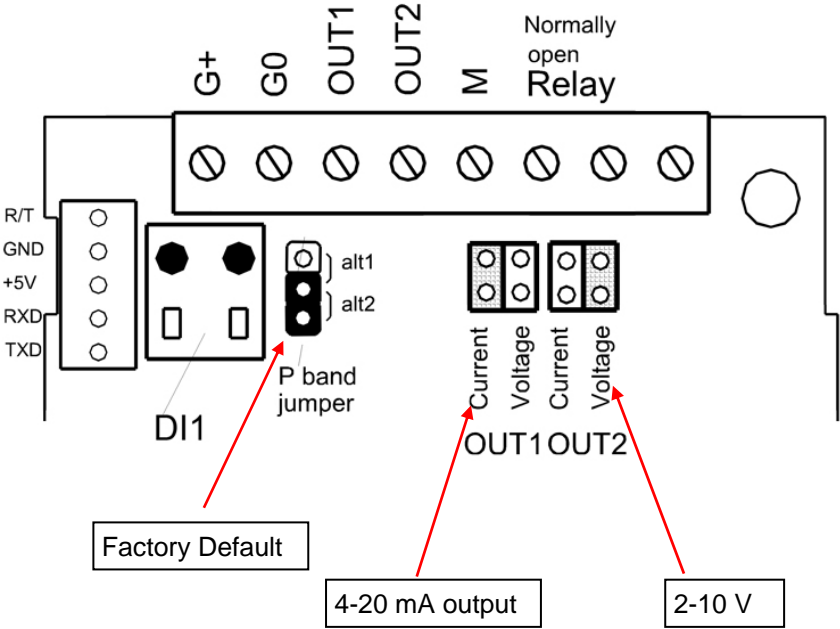
- + l** POWER 24VAC / DC+
- ⊥** POWER GROUND (-)
- OUT-1** ANALOG OUT 4-20mA(+) CO₂
- OUT-2** ANALOG OUT 2-10VDC(+) Temp
- M** - SIGNAL GROUND (-)
- OUTPUT - 3 RELAY - CLOSED** - >1000 PPM
- OUTPUT - 3 RELAY - OPEN** - <900 PPM



CURRENT OUTPUT JUMPER SET for 4-20 mA

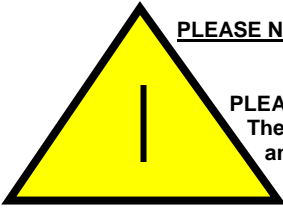
VOLTAGE OUTPUT JUMPER SET for 2-10 V

THE TERMINALS & JUMPERS ARE LOCATED UNDER THE TOP PORTION.
 THE DARKER AREAS ARE INDICATING THIS TRANSMITTER HAS BEEN SET FOR
 VOLTAGE OUTPUT.



Electrical connections

The **power supply** has to be connected to G+ and G0. G0 is considered as system ground. If the analogue output is connected to a controller *the same ground reference has to be used for the **AST-IS7** unit and for the control system!* Unless different transformers are used, special precautions need to be taken.



PLEASE NOTE! The **AST-IS7** signal ground *is not* galvanically separated from the **AST-IS7** power supply!

PLEASE NOTE!
The same ground reference has to be used for the **AST-IS7** unit and for the control system!

If possible keep the sensor powered up after mounting. Connect the analogue output before measuring.

Note 1: *The ground terminal is used as negative power supply DC input or AC phase ground G0 (half wave rectifier). The signal ground M, protected by a PTC resistor, is the same as power ground G0 (permitting a "3-wire" configuration). A single transformer may be used for the entire system.*

Note 2: *AST-IS7 can deliver a voltage or a current loop for OUT1/OUT2. To change between voltage and current output mode the hardware jumpers are used. There is one jumper for OUT1 and one for OUT2, so that one output can be a voltage output and the other a current output. Both, voltage output and current output, can have start points 0 % (0-10 VDC or 0-20mA) or 20% (2-10 VDC or 4-20mA). The same start point is used for both outputs. See the function manual.*

| Connection Terminal | Function | Electrical Data | Remarks |
|--|---------------------|--|---|
| G+ | Power (+) | 24VDC/DC+ (+20%), 3W | 2W without output load |
| G0 | Power ground (-) | 24VAC/DC- | See note 1! |
| Out-1 (CO ₂) | Analog Output-1 (+) | 0-10 VDC or 0-20 mA 2-10 VDC or 4-20 mA | According to positions of Out-1 & start point jumpers See note-2 |
| Out-2 Temperature 0°C—50°C (32°F—122°F) | Analog output-2 (+) | Same as Out-1 | According to positions of Out-2 & start point jumpers See note-2 |
| M | Signal ground (-) | Connected to G0 via PTC fuse | See note-1 |

Table-1. Terminal connections for AST-IS7

This product is in accordance with EMC 2004/108/EC, 92/31/EEG including amendments by the CE-marking Directive 93/68/EEC.

This product fulfills the following demands:
EN 61000-4-2 Level 2, EN 61000-4-3 Level 2, EN 61000-4-4 Level 4, EN 61000-4-6,
EN 61000-4-8 Level 4, EN 55022 Class B



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