Critical Environment Technologies Canada Inc.

www.critical-environment.com

Installation Manual for
AST-IS6

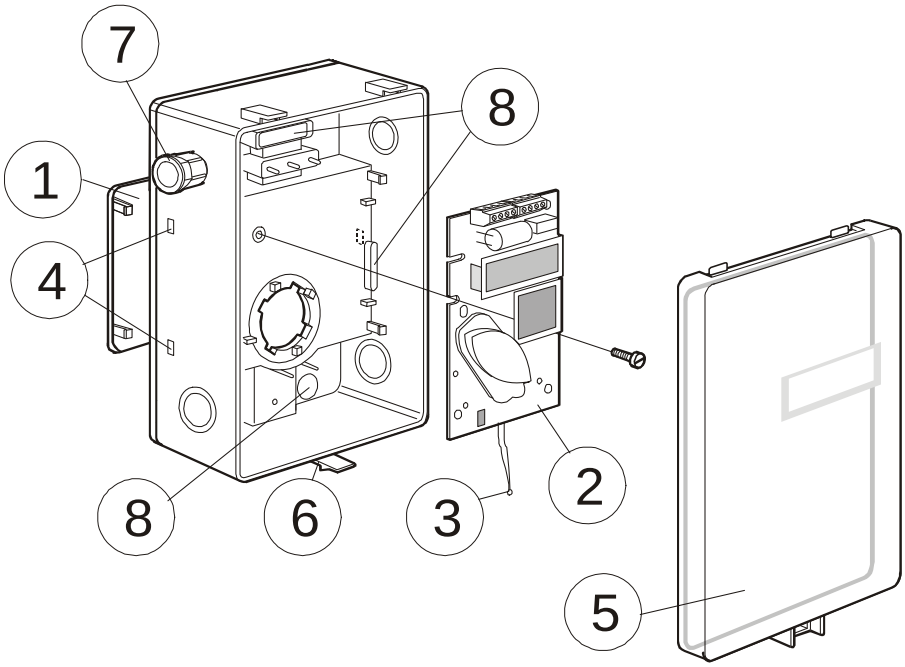
Infrared CO2 / Temperature sensor / transmitter with Industrial enclosures (wall or duct)

MANUAL REVISION-A, APRIL 5, 2010

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

AST-IS6

Is an infrared Carbon Dioxide (CO2) sensor/transmitter with a temperature sensor, all mounted in an industrial wall mount or duct enclosure. The enclosure cover has a built-in rubber gasket and all other connections must be tight and sealed to prevent water intrusion.

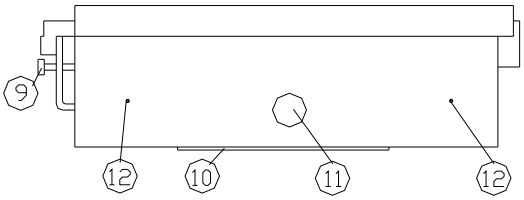


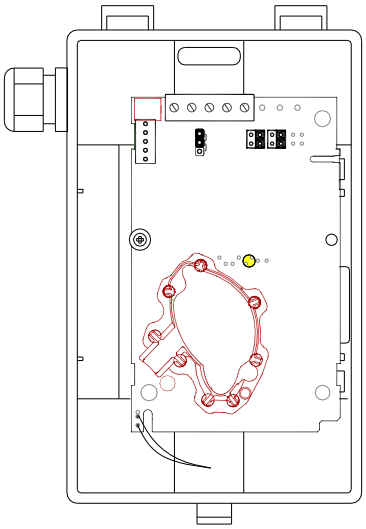
ITEM LOCATORS

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

ITEM LOCATORS, CONT'D…..

9 Lid locking screw
10 Wall plate
11 Screw to hold the wall plate
12 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 "11" 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 handed carefully and protected from electrostatic discharge.

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

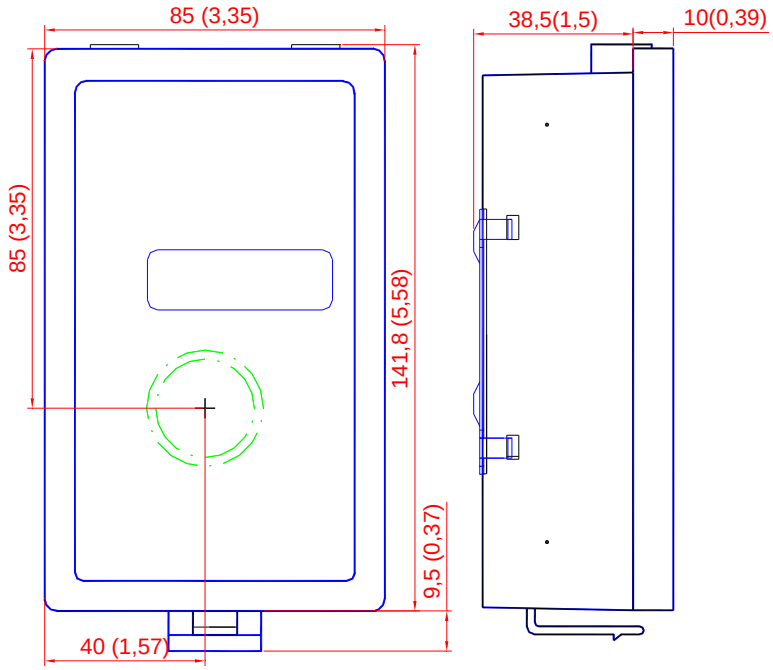
2) Screw the wall plate onto the wall: The wall plate has holes for three screws. Drill holes for 3,5mm screws and put dowel into them. Dowels and screws 3,5 x 25mm are included in a plastic bag

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.

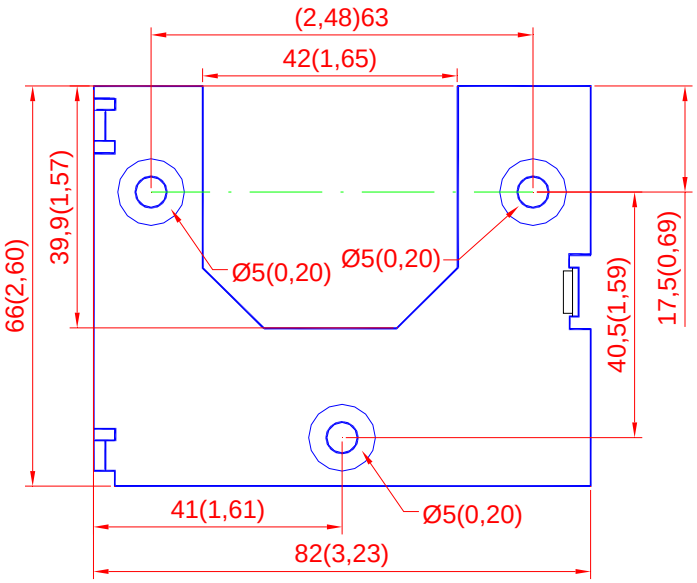
4) The lid can be locked with the screw at the bottom of the sensor box.

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

DIMENSIONS



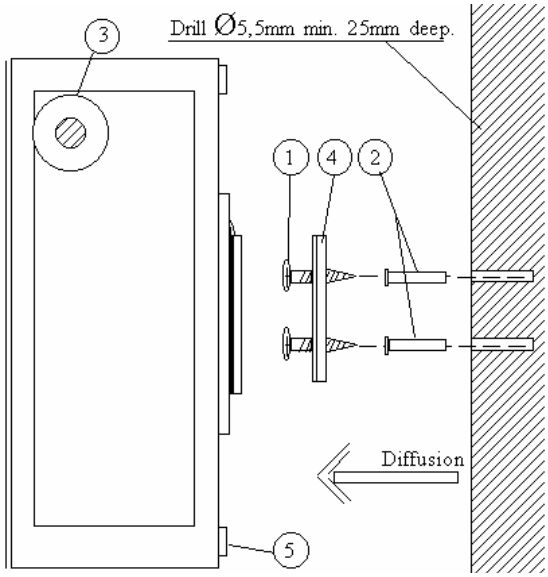
DIMENSIONS OF TRANSMITTER IN mm AND INCHES



DIMENSIONS OF WALL PLATE IN mm AND INCHES

CO2 / TEMPERATURE TRANSMITTER c/w <u>OPTIONAL</u> HEATER WITH INDUSTRIAL ENCLOSURE

AST-IS6 cw INTERNAL HEATER



Mounting Transmitter onto a wall

Screw 5x25
Dowel
Cable entry bushing PG9
DIN rail
Draining holes

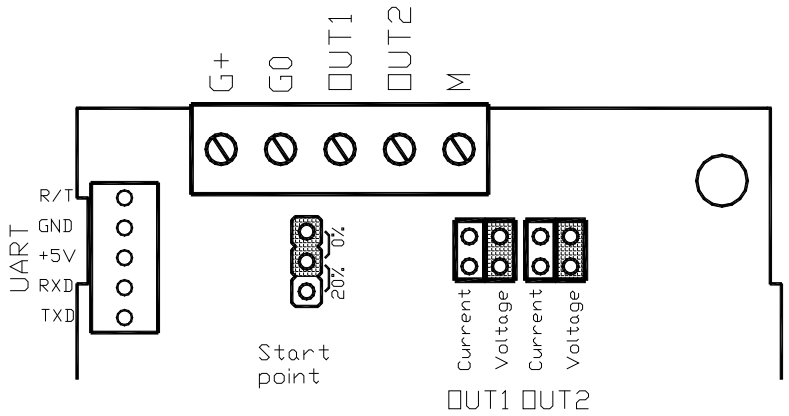
The DIN rail places the sensor 7 mm from the wall. This distance is very important for the response time because the air inlets are situated at the back of the housing facing the wall. The sensor should be mounted with the cable entry bushing upwards and the draining holes downwards.

The sensor PCB is in an extra housing inside the outer housing.

The heater is connected to G+ and G0. Minimum temperature –30 ^{Oc}

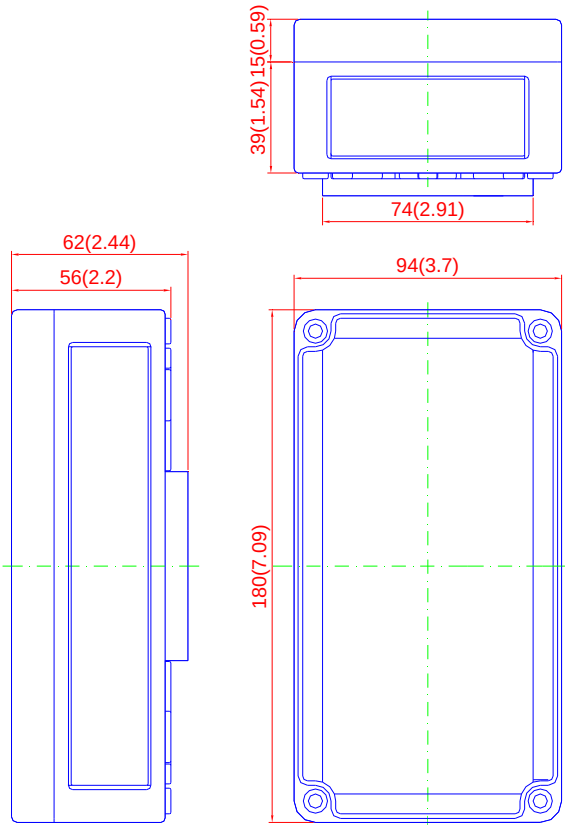
If for some reason the PCB must be removed it must be handed carefully and protected from electrostatic discharge! Normally, removing the PCB is not required.

WIRING TERMINALS



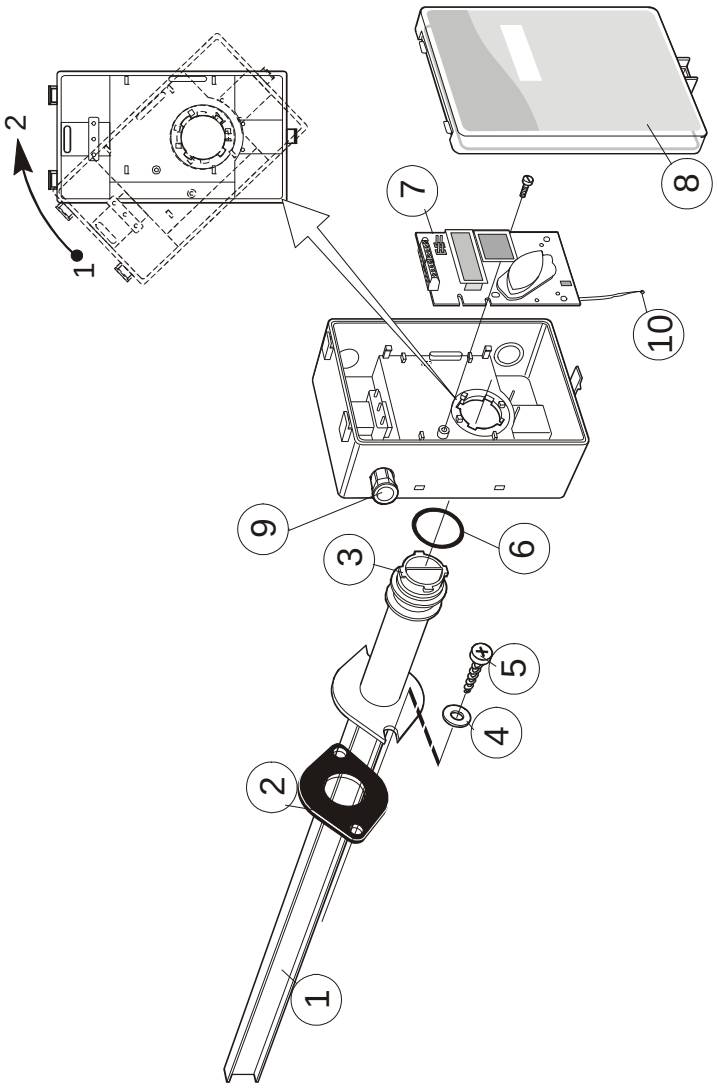
Terminals and jumpers on AST-IS6. The darker positions are default settings.

DIMENSIONS



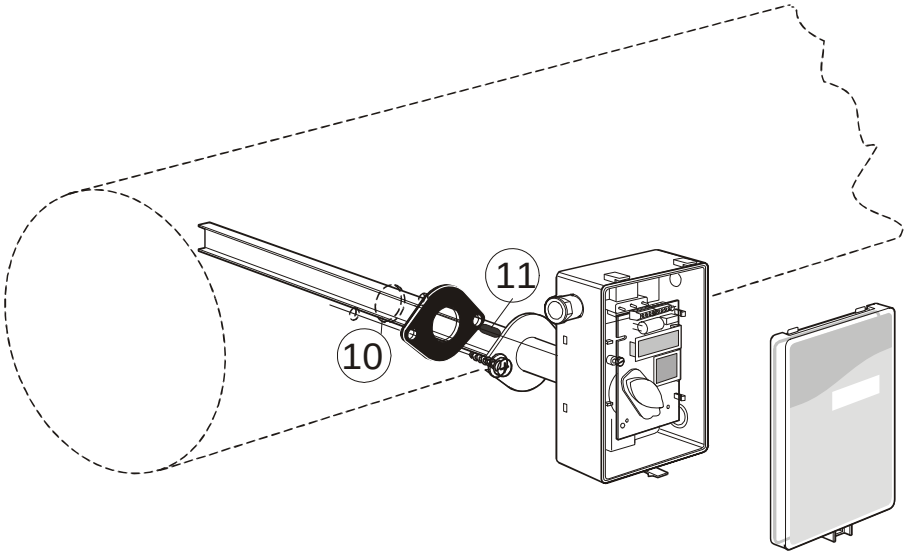
DIMENSIONS OF TRANSMITTER IN mm AND INCHES

CO2 / TEMPERATURE TRANSMITTERS FOR DUCT APPLICATIONS



1 Sampling probe
2 Sealing gasket
3 Largest locking nut
4 2 washers BRB 5,3x10x1
5 2 screws RXS 4,8x16
6 O-ring 29,2x3,53 (Factory supplied mounted in box)
7 PCB (Factory supplied mounted in box)
8 Snap-in lid
9 PG9 cable entry bushing
10 Temperature sensor (to be put into the sampling tube)

MOUNTING AST-IS6 ONTO A DUCT



10 Hole with 25 mm diameter
11 Temperature sensor with 110 mm cable mounted in the sampling probe

Mounting Instruction

Since there might be a substantial pressure difference in duct mounting applications, it is essential to avoid ambient air from suction into the duct mounting box. For correct function it is indispensible that the seals of the box cover, the cable entry bushings, the cable feed through and the duct entrance are absolutely tight. The duct entrance may need extra sealing paste in order to prevent leakage. The PCB must be handed carefully and protected from electrostatic discharge.

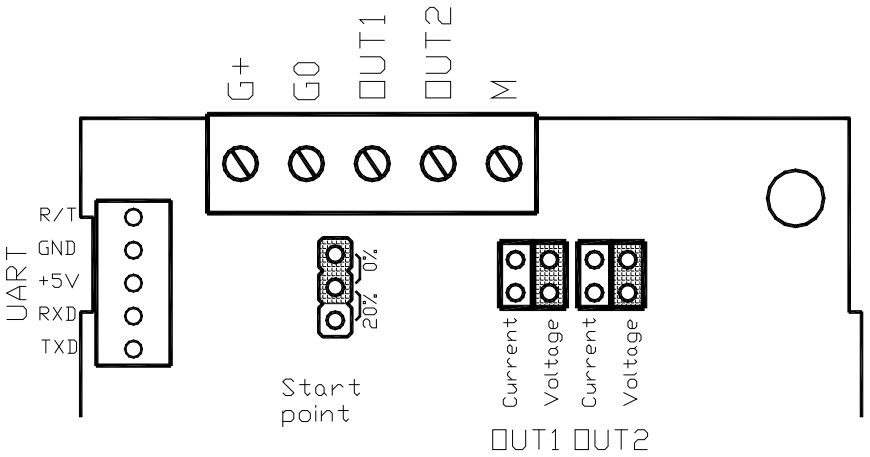
1) **Electrical cable entry:** The box has a factory mounted cable entry bushing in dimension PG9. Never feed more than one cable through each cable entry bushing, or else gas might leak through!

2) **Mounting the tube:** Drill a hole (10) with 25 mm diameter (or 1 inch) for the sampling probe and two holes with 4 mm diameter for the screws (5) into the air duct and mount the tube (1) with the gasket (2). The sampling probe should be mounted with the largest locking nut on top. The unit can be mounted with the air coming from the left or right.

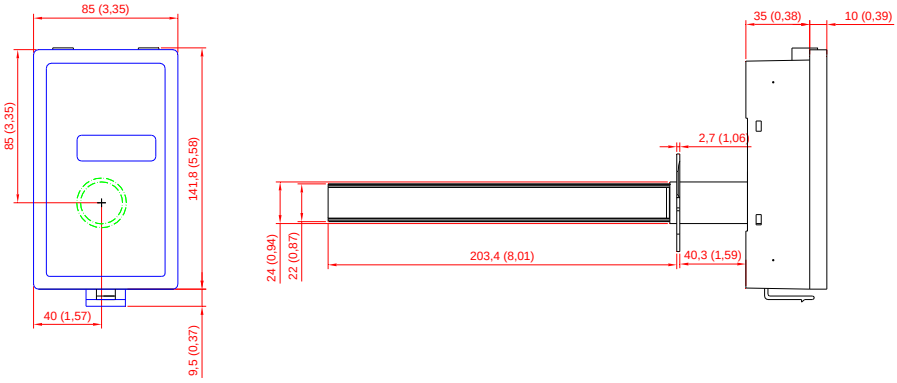
3) **Attaching the sensor box** is made to the sampling probe by a snap-in bayonet fitting. First, carefully stick the temperature probe (11) into the sampling probe. (1). Orient the box onto the sampling probe so that the box upside is on the same side as the largest locking nut (3). When the probe is fitted into the notches of the box, then turn the box clockwise until stop (see Figure 1). Position 1 indicates *open* where the box can be removed from the sampling probe. In position 2 the box is locked to the probe.

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

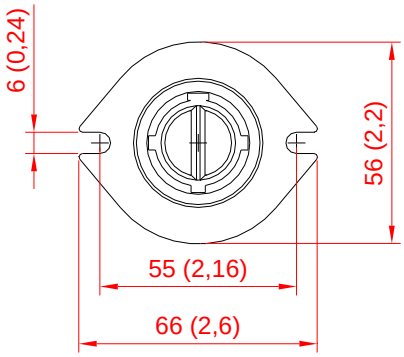
WIRING TERMINALS



DIMENSIONS



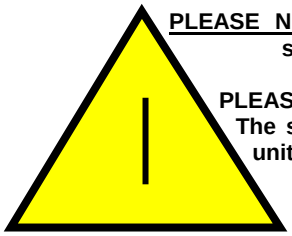
DIMENSIONS OF TRANSMITTER IN mm AND INCHES



DIMENSIONS OF SAMPLING PROBE IN mm AND INCHES

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-IS6 unit and for the control system!* Unless different transformers are used, special precautions need to be taken.



PLEASE NOTE! The *AST-IS6* signal ground *is not* galvanically separated from the *AST-IS6* power supply!

PLEASE NOTE!
The same ground reference has to be used for the *AST-IS6* unit and for the control system!

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

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	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	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 I. Terminal connections for AST-IS6

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-IS6 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.*