A70H-HTP

Atmospheric Temperature Sensors

Instruction Manual

Pictured:
A70H-T

This Manual includes sections on:

A70H-T	Atmospheric Temperature Sensor
A70H-T-S	Atmospheric Temperature Sensor w/ Shield
A70H-HT	Atmospheric Temperature and Humidity Sensor
A70H-HT-S	Atmospheric Temperature and Humidity Sensor w/ Shield
A70H-HTP	Atmospheric Temperature, Humidity and Pressure Sensor
A70H-HTP-S	Atompsheric Temperature, Humidity and Pressure Sensor w/ Shield

DOCUMENT VERSION:
210428

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A70H-HTP

Atmospheric Temperature Sensors

A70H-T & A70H-T-S

The A70H-T is a high sensitivity atmospheric temperature sensor. The sensor is in a single IP65/NEMA4 UV protected casing. The available radiation shield is ABS plastic with stainless steel mounting hardware.

FEATURES

-Available with Solar Radiation Shield (A70H-HT-S)
-Comes Standard as A70H-HT Sensor Only

APPLICATIONS

-Building Automation and Controls
-Environmental Monitoring

SPECIFICATIONS

Range:	Humidity - 0-100% R.H.
	Temperature - -40°C to 60°C
Resolution:	Humidity - 0.5% R.H.
	Temperature - 0.1°C
Accuracy:	Humidity - ±3% R.H.
	Temperature - ±0.5°C
Electrical:	Power Supply - 12-24 VDC
	Output Signal - 4-20 mA; 0-10V, RS485, I²C, SDI-12
	Current Consumption - <20mA
Operating Temperature:	-40°C to 60°C
Ingress Protection:	IP65/NEMA4
Storage Conditions:	10°C to 60°C @ 20% to 90% R.H.
Weight:	120g / 4.2 oz (With Shield, 730g / 1.6 lbs)
Materials:	ABS, Aluminum, Stainless Steel
Radiaiton Shield Dimensions:	7”D x 12”H

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A70H-HTP

Atmospheric Temperature Sensors

INSTALLATION:

Install the product in a stable environment, away from artificial heating and cooling devices and avoiding direct sunlight if possible. Use the supplied U-bolts to attach the angled mount to a vertical pipe or stanchion that is approximately 2" in diameter. The Comptus logo should be angled towards the ground with the mounting plane for the radiation shield horizontal above the U-bolts. The angled mount can also be directly attached to a vertical face with screws or bolts.

Slide the free end of the sensor probe into the large cable gland on the bottom of the radiation shield until the sensor probe is one third to one half of the way into the radiation shield. Stop before you get to the hex of the gland nut that holds the black cable. Tighten down the large cable gland on the bottom of the radiation shield to lock the sensor probe in place.

Remove the cable ties from the coiled black cable and slide the free end (with wire leads) of the cable through the large round hole in the mounting plane. Remove the three wing nuts from the radiation shield and feed the black cable down until you can mount the three studs through the holes on the mounting plane. Attach in place with the wing nuts from the underside of the mounting plane.

ELECTRICAL CONNECTIONS:

CABLE	4-20 mA Output	RS485 Output
RED	V+	V+
BLACK	V-	V-
YELLOW	Temp Current Signal	RS485 DA+
BLUE	N/A	RS485 DB-

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OUTPUT CHARACTERISTICS:

Current (4-20mA)
Temperature(˚C) = ((I-4)/16 * 100) – 40 where I = output current in mA.

RS485 Communications Protocol (MODBUS-RTU)
If the transmission distance is over 100m please add a 120-ohm termination resistor on the front and back end of the bus interface respectively.

Communication parameters: Baud rate: 9600; Data bits:8; Stop bit:1; Parity: none
Slave address: factory default is FFH (set according to the need, 00H to FFH)
The 03H Function Code Example: Read the Atmospheric Temperature
Host Scan Order (slave address: 0xFF)
FF 03 00 00 00 01 91D4
Slave Response
FF 03 02 19AD 5BBD
Temperature: (19AD)H = (6573)D = (6573/100)-40 = 25.73˚C

The 10H Function Code Example: Modify the slave address (fixed command, ensure that no other devices are on the bus)
Host Scan Order (Changed to 33H):
00 10 00 01 00 01 02 00 33 EA04
Slave Response
00 10 00 01 00 01 51D8

The 03H Function code Example: Read the Slave Address (fixed command, ensure that no other devices are on the bus)
Host Scan Order:
00 03 00 01 00 01 D41B
Slave Response:
00 03 02 00 FF C5C4

Note:
All underlined is fixed bit;
The last two bytes is CRC check command

A70H-HTP

Atmospheric Temperature Sensors

A70H-HT & A70H-HT-S

The A70H-HT is a high sensitivity atmospheric humidity and temperature sensor. The sensor is in a single IP65/NEMA4 UV protected casing. The available radiation shield is ABS plastic with stainless steel mounting hardware.

FEATURES

-Available with Solar Radiation Shield (A70H-HT-S)
-Comes Standard as A70H-HT Sensor Only

APPLICATIONS

-Building Automation and Controls
-Environmental Monitoring

SPECIFICATIONS

Range:	Humidity - 0-100% R.H.
	Temperature - -40°C to 60°C
Resolution:	Humidity - 0.5% R.H.
	Temperature - 0.1°C
Accuracy:	Humidity - ±3% R.H.
	Temperature - ±0.5°C
Electrical:	Power Supply - 12-24 VDC
	Output Signal - 4-20 mA; 0-10V, RS485, I²C, SDI-12
	Current Consumption - <20mA
Operating Temperature:	-40°C to 60°C
Ingress Protection:	IP65/NEMA4
Storage Conditions:	10°C to 60°C @ 20% to 90% R.H.
Weight:	120g / 4.2 oz (With Shield, 730g / 1.6 lbs)
Materials:	ABS, Aluminum, Stainless Steel
Radiaiton Shield Dimensions:	7”D x 12”H

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A70H-HTP

Atmospheric Temperature Sensors

INSTALLATION:

Install the product in a stable environment, away from artificial heating and cooling devices and avoiding direct sunlight if possible. Use the supplied U-bolts to attach the angled mount to a vertical pipe or stanchion that is approximately 2" in diameter. The Comptus logo should be angled towards the ground with the mounting plane for the radiation shield horizontal above the U-bolts. The angled mount can also be directly attached to a vertical face with screws or bolts.

Slide the free end of the sensor probe into the large cable gland on the bottom of the radiation shield until the sensor probe is one third to one half of the way into the radiation shield. Stop before you get to the hex of the gland nut that holds the black cable. Tighten down the large cable gland on the bottom of the radiation shield to lock the sensor probe in place.

Remove the cable ties from the coiled black cable and slide the free end (with wire leads) of the cable through the large round hole in the mounting plane. Remove the three wing nuts from the radiation shield and feed the black cable down until you can mount the three studs through the holes on the mounting plane. Attach in place with the wing nuts from the underside of the mounting plane.

ELECTRICAL CONNECTIONS:

CABLE	4-20 mA Output	RS485 Output
RED	V+	V+
BLACK	V-	V-
YELLOW	Temp Current Signal	RS485 DA+
BLUE	Humidity Current Signal	RS485 DB-

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A70H-HTP

Atmospheric Temperature Sensors

OUTPUT CHARACTERISTICS:

Current (4-20mA)
T Temperature(˚C) = ((I-4)/16 * 100) – 40 where I = output current in mA.
H Humidity(%) = (I-4)/16 * 100% where I = output current in mA.

RS485 Communications Protocol (MODBUS-RTU)
If the transmission distance is over 100m please add a 120-ohm termination resistor on the front and back end of the bus interface respectively.

Communication parameters: Baud rate: 9600; Data bits:8; Stop bit:1; Parity: none
Slave address: factory default is FFH (set according to the need, 00H to FFH)
The 03H Function Code Example: Read the Atmospheric Temperature & Humidity
Host Scan Order (slave address: 0xFF)
FF 03 00 00 00 02 D1D5
Slave Response
FF 03 04 19AD 1BE4 79FA
Temperature: (19AD)H = (6573)D = (6573/100)-40 = 25.73˚C
Humidity: (1BE4)H = (7140)D = 7140/100 = 71.40%

The 10H Function Code Example: Modify the slave address (fixed command, ensure that no other devices are on the bus)
Host Scan Order (Changed to 33H):
00 10 00 01 00 01 02 00 33 EA04

Slave Response:
00 10 00 01 00 01 51D8

The 03H Function code Example: Read the Slave Address (fixed command, ensure that no other devices are on the bus)

Host Scan Order:
00 03 00 01 00 01 D41B

Slave Response:
00 03 02 00 FF C5C4

Note:
All underlined is fixed bit;
The last two bytes is CRC check command

A70H-HTP

Atmospheric Temperature Sensors

A70H-HTP & A70H-HTP-S

The A70H-HTP-S is a high sensitivity atmospheric humidity, temperature and barometric pressure sensor with radiation shield. The sensors are in a single IP65/NEMA4 UV protected casing. The available radiation shield is ABS plastic with stainless steel mounting hardware. The mounting bracket is supplied with two 2-1/4" U-bolts for mounting to a mast. The 4-wire sensor cable is 10' (3m) long. Connections are for V+, V-, data A and data B.

FEATURES

-Available with Solar Radiation Shield (A70H-HTP-S)
-Comes Standard as A70H-HTP Sensor Only

APPLICATIONS

-Building Automation and Controls
-Environmental Monitoring

SPECIFICATIONS

Range:	Humidity - 0-100% R.H.
	Temperature - -40°C to 60°C
	Pressure - 10-110kPa (100-1100 mbar)
Resolution:	Humidity - 0.5% R.H.
	Temperature - 0.1°C
	Pressure - 0.1 mbar
Accuracy:	Humidity - ±3% R.H.
	Temperature - ±0.5°C
	Pressure - ±1 mbar
Electrical:	Power Supply - 12-24 VDC
	Output Signal - MODBUS RTU - RS485
	Current Consumption - <20mA
Operating Temperature:	-40°C to 60°C
Ingress Protection:	IP65/NEMA4
Storage Conditions:	10°C to 60°C @ 20% to 90% R.H.
Weight:	120g / 4.2 oz (With Shield, 730g / 1.6 lbs)
Materials:	ABS, Aluminum, Stainless Steel
Radiaiton Shield Dimensions:	7"D x 12"H

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INSTALLATION:

Install the product in a stable environment, away from artificial heating and cooling devices and avoiding direct sunlight if possible. Use the supplied U-bolts to attach the angled mount to a vertical pipe or stanchion that is approximately 2" in diameter. The Comptus logo should be angled towards the ground with the mounting plane for the radiation shield horizontal above the U-bolts. The angled mount can also be directly attached to a vertical face with screws or bolts.

Slide the free end of the sensor probe into the large cable gland on the bottom of the radiation shield until the sensor probe is one third to one half of the way into the radiation shield. Stop before you get to the hex of the gland nut that holds the black cable. Tighten down the large cable gland on the bottom of the radiation shield to lock the sensor probe in place.

Remove the cable ties from the coiled black cable and slide the free end (with wire leads) of the cable through the large round hole in the mounting plane. Remove the three wing nuts from the radiation shield and feed the black cable down until you can mount the three studs through the holes on the mounting plane. Attach in place with the wing nuts from the underside of the mounting plane

ELECTRICAL CONNECTIONS:

CABLE	RS485 Output
RED	V+
BLACK	V-
YELLOW	RS485 DA+
BLUE	RS485 DB-

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A70H-HTP

Atmospheric Temperature Sensors

OUTPUT CHARACTERISTICS:

RS485 Communications Protocol (MODBUS-RTU)
If the transmission distance is over 100m please add a 120-ohm termination resistor on the front and back end of the bus interface respectively.

Communication parameters: Baud rate: 9600; Data bits:8; Stop bit:1; Parity: none
Slave address: factory default is FFH (set according to the need, 00H to FFH)
The 03H Function Code Example: Read the Atmospheric Temperature, Humidity and Barometric Pressure
Host Scan Order (slave address: 0xFF)
FF 03 00 00 00 03 1015
Slave Response
FF 03 06 19AD 1BE4 2715 5A2C
Temperature: (19AD)H = (6573)D = (6573/100)-40 = 25.73°C
Humidity: (1BE4)H = (7140)D = (7140/100) = 71.40%
Pressure: (2715)H = (10005)D = (10005/100) = 100.05 kpa = 1000.5 mbar
The 10H Function Code Example: Modify the slave address (fixed command, ensure that no other devices are on the bus)
Host Scan Order (Changed to 33H):
00 10 00 01 00 01 02 00 33 EA04
Slave Response
00 10 00 01 00 01 51D8

The 03H Function code Example: Read the Slave Address (fixed command, ensure that no other devices are on the bus)
Host Scan Order:
00 03 00 01 00 01 D41B
Slave Response:
00 03 02 00 FF C5C4

Note:
All underlined is fixed bit;
The last two bytes is CRC check command

Register Map:
40001 Temperature °C (value/100 – 40) i.e. 5923/100 - 40 = 19.23°C
40002 Humidity % (value/100) i.e. 6055/100 = 60.55%
40003 Barometric pressure mbar (value/10) i.e. 9985/10 = 998.5 mbar

Specifications subject to change without notice
Installation Questions and Troubleshooting

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