Calibration Procedure

The S-503 humidity generator used in combination with the DM-509-T-03 hand-held hygrometer is ideal for quick and accurate calibration. If re-adjustment is necessary, refer to Figure 2 for the location of the potentiometers. Carefully remove filter from the head, if any. **DO NOT TOUCH THE SENSOR**. The HX/HT-740/741 should be calibrated at two points, one low and one high point. Once the first (low) value is reached and the reading of the DM-509-Reference has stabilized, adjust the potentiometer labeled P1. After the second (high) value is reached and stabilized, adjust the P2 potentiometer. Repeat this procedure until the reading is within the limits.

As an alternative to the S-503 humidity generator, reference bottles can be used. However, this method is less accurate and can take up to two hours per point to stabilize. These bottles can be purchased from Ohmic Instruments Co.

Calibration

Each unit is calibrated against standards traceable to the National Institute of Standards and Technology.

Calibration certificates

In addition to the normal calibration procedure, each transmitter can be supplied with its own traceable calibration certificate.

Calibration interval time

Under normal ambient conditions (0 to 50°C, 0 to 70% RH) and for an accuracy of ± 2% RH, we recommend an annual calibration. For an accuracy ±5% RH we recommend calibration every five years. For environments with airborne chemicals or for high humidity and high temperature conditions we recommend more frequent calibration.

Limited Warranty

This product is warranted by Ohmic Instruments Company to be free of defects in material and workmanship for one year after delivery. A product found to be defective for these reasons within this period will be repaired or replaced free of charge by Ohmic. We give no other warranties. Ohmic Instruments Co. shall not be liable for any damages or losses, whether direct or indirect. The warranty cannot be transferred or assigned to third parties.

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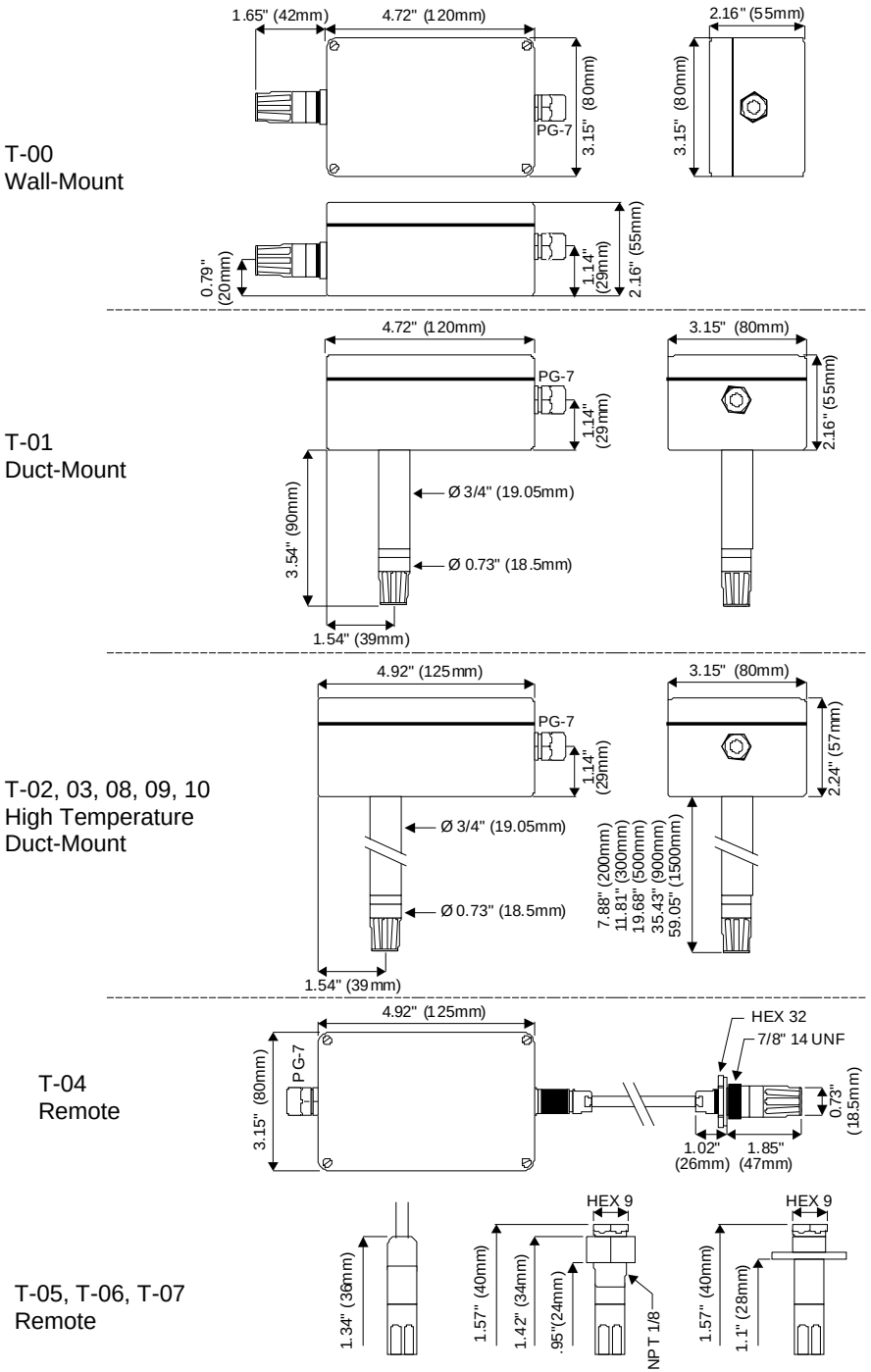
Instruction Manual for Relative Humidity & Temperature Transmitter HX/HT-740/741 Series

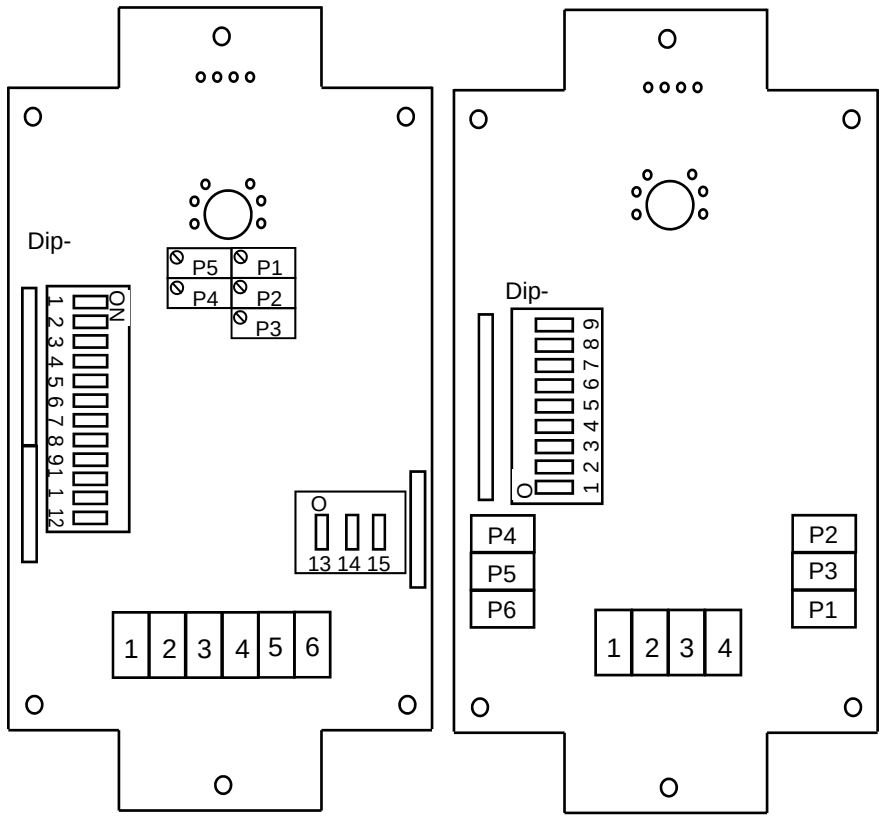
CE

Introduction

The 740 series is a line of 3/4-wire Relative Humidity Transmitters. The 741 series is a line of 2-wire Relative Humidity Transmitters. Both have optional Temperature Transmitter. The units provide a linear output signal directly proportional to the relative humidity or temperature. The 3/4-wire transmitter has a user selectable output of 0..1V,5V,10V, 0..20mA, or 4..20mA. The 2-wire transmitter uses the same wires for power supply and output (4..20 mA only). The units require from 8 to 35V DC power supply depending on output. Models with prefix **HX** measure relative humidity only; prefix **HT** indicates the unit measures relative humidity and temperature.

Type	Description	Model	Model
Wall-mount	RH Transmitter	HX-740-T-00	HX-741-T-00
Wall-mount	RH & Temperature Transmitter	HT-740-T-00	HT-741-T-00
Duct-mount	RH Transmitter	HX-740-T-01	HX-741-T-01
Duct-mount	RH & Temperature Transmitter	HT-740-T-01	HT-741-T-01
Duct-mount, high temperature	RH Transmitter, L = 300mm	HX-740-T-02	HX-741-T-02
Duct-mount, high temperature	RH & Temperature Transmitter, L = 300mm	HT-740-T-02	HT-741-T-02
Duct-mount, high temperature	RH Transmitter, L = 500mm	HX-740-T-03	HX-741-T-03
Duct-mount, high temperature	RH & Temperature Transmitter, L = 500mm	HT-740-T-03	HT-741-T-03
Remote	RH Transmitter, 7/8" - 14 UNF	HX-740-T-04	HX-741-T-04
Remote	RH & Temperature Transmitter, 7/8" - 14 UNF	HT-740-T-04	HT-741-T-04
Remote	RH Transmitter, miniature diam. 8mm	HX-740-T-05	HX-741-T-05
Remote	RH Transmitter, mini diam. 8mm, 1/8" NPT	HX-740-T-06	HX-741-T-06
Remote	RH Transmitter, mini diam. 8mm, Flange	HX-740-T-07	HX-741-T-07
Duct-mount, high temperature	RH Transmitter, L = 900mm	HX-740-T-08	HX-741-T-08
Duct-mount, high temperature	RH & Temperature Transmitter, L = 900mm	HT-740-T-08	HT-741-T-08
Duct-mount, high temperature	RH Transmitter, L = 1500mm	HX-740-T-09	HX-741-T-09
Duct-mount, high temperature	RH & Temperature Transmitter, L = 1500mm	HT-740-T-09	HT-741-T-09
Duct-mount, high temperature	RH Transmitter, L = 200mm	HX-740-T-10	HX-741-T-10
Duct-mount, high temperature	RH & Temperature Transmitter, L = 200mm	HT-740-T-10	HT-741-T-10





1. Output Temp mA
2. Output Temp Volt
3. + Power Supply
4. - Power Supply / - output
5. Output RH Volt
6. Output RH mA

P1 Zero RH
P2 Span RH
P3 I-Max RH
P4 Zero Temp.
P5 Span Temp.

1. Temperature -
2. Temperature +
3. Humidity +
4. Humidity -

P1 Zero RH
P2 Span RH
P3 I-Max RH
P4 Zero Temp.
P5 Do Not Adjust!
P6 Span Temp.

Figure 2

CONNECTION DIAGRAMS FOR THE HX/HT740/741 SERIES
RH & TEMPERATURE TRANSMITTERS

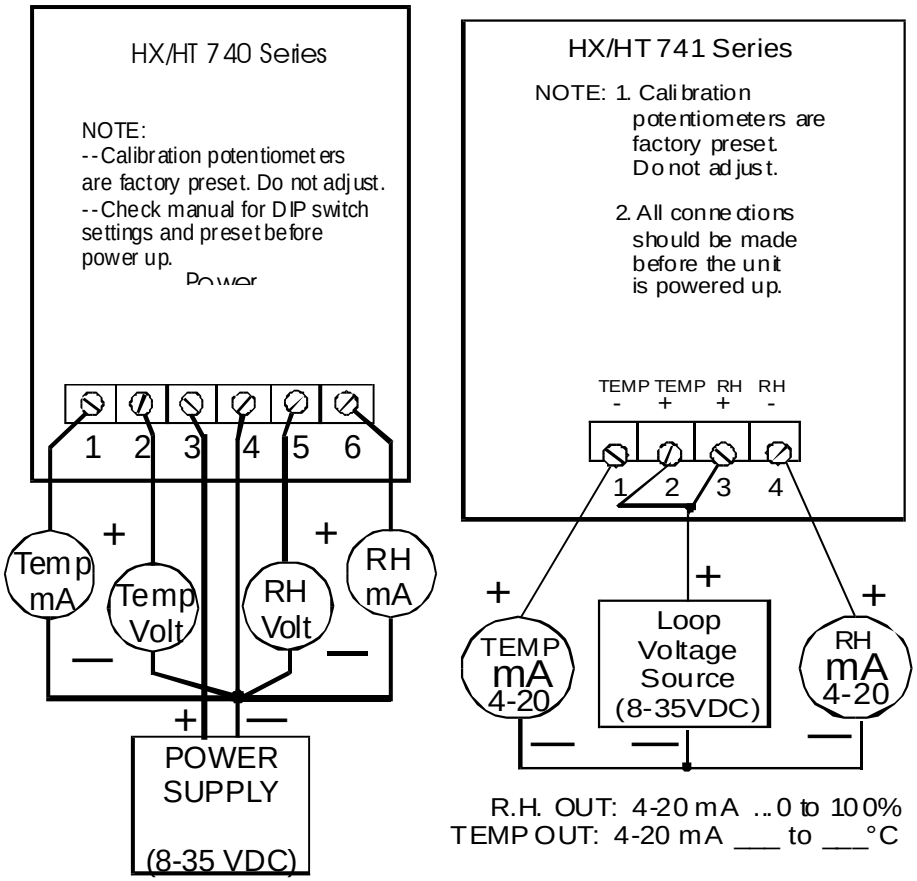


Figure 1

Specifications HX-740 series
3 or 4-wire R. H. Transmitter

0 to 100% RH	*Measuring range*	0 to 100% RH
5 to 95% RH	*Working range*	5 to 95% RH
User selectable 0..1V, 5V, 10V, 0..20 mA, or 4 to 20mA 0..10v std.	*Output*	4 to 20mA
± 2% RH	*Accuracy @ 25°C typ.*	± 2% RH
0.05% RH/ °C typical	*Temperature drift*	0.05% RH/ °C typical
14 to 35 VDC (0..5, 10 V) 8 to 35 VDC (0..1 V, or current)	*DC power supply*	8 to 35V DC
10 sec. w/o filter (90% change)	*Response time*	10 sec. w/o filter (90% change)
± 2% RH, 24 months typical (depending on conditions)	*Stability*	± 2% RH, 24 months typical (depending on conditions)
± 0.01% RH/ Volt typical	*Supply influence*	± 0.01% RH/ Volt typical
-20 to +60°C (Models T-00 & T-01)	*Operating temp.*	-20 to +60°C (Models T-00 & T-01)
-40 to +150°C (Models T-02, T-03, T-04, T-05, T-06, T-07, T-08, T-09, T-10)	*Operating temp. sensor-tip*	-40 to +150°C (Models T-02, T-03, T-04, T-05, T-06, T-07, T-08, T-09, T-10)

Specifications HX-741 series
2-wire R. H. Transmitter

3/4wire HT-740 series w/Temp.

User-selectable	*Range*	User-selectable
10°C steps between –50 and +100°C 50°C steps between –50 and 150°C	*Zero selection*	10°C steps between –50 and +100°C 50°C steps between –50 and 150°C
10°C steps between 10 and 160°C 50°C steps between 50 and 250°C	*Span selection*	10°C steps between 10 and 160°C 50°C steps between 50 and 250°C
User Selectable (See above)	*Output*	4 to 20mA
± 0.2°C typical	*Accuracy*	± 0.2°C typical
± 0.01°C/ Volt typical	*Supply influence*	± 0.01°C/ Volt typical

2-wire HT-741 series w/Temp.

WARNING The remote sensor head/cable assembly and the electronic unit have corresponding serial numbers. They cannot be exchanged without recalibration.

RH/TEMP Output selection for 740 series only.

Disconnect power before opening cover. Set dip-switches according to table 1. Refer to figure 2 for dip-switch location. No recalibration required after changing output settings.

OUTPUT SELECTION TABLE RH			
OUTPUT	DIP-SWITCH POSITION		
	13	14	15
0..20mA	0	0	0
4..20mA	1	0	0
0..10v	0	0	0
0..5v	0	0	1
0..1v	0	1	0

OUTPUT SELECTION TABLE TEMP.			
OUTPUT	DIP-SWITCH POSITION		
	10	11	12
0..20mA	0	0	0
4..20mA	1	0	0
0..10V	0	0	0
0..5v	0	0	1
0..1v	0	1	0

Table 1

Temperature Range Selection

Standard Range is 0 to 100°C. The range can be changed in steps of 10°C or 50°C for zero and span. If the zero selection is done in 10°C steps the span selection **must** be done in 10°C steps also.

Table 2 gives the temperature range selection in 50°C steps.

Table 3 (next page) gives the temperature range selection in 10°C steps.

Refer to Figure 1 (Page 7) for the location of the dip-switch.

TEMPERATURE RANGE SELECTION IN 50°C STEPS

ZERO	DIP-SWITCH POSITION				
°C	1	2	3	4	5
-50	0	0	1	0	0
0	1	0	1	0	0
50	0	1	1	0	0
100	1	1	1	0	0
150	0	0	0	1	0

SPAN	DIP-SWITCH POSITION			
°C	6	7	8	9
250	1	1	0	1
200	0	0	1	1
150	1	0	1	1
100	0	1	1	1
50	1	1	1	1

Table 2

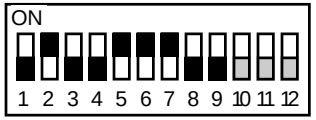
TEMPERATURE RANGE SELECTION IN 10°C STEPS

ZERO	DIP-SWITCH POSITION				
°C	1	2	3	4	5
-50	0	0	0	0	1
-40	1	0	0	0	1
-30	0	1	0	0	1
-20	1	1	0	0	1
-10	0	0	1	0	1
0	1	0	1	0	1
10	0	1	1	0	1
20	1	1	1	0	1
30	0	0	0	1	1
40	1	0	0	1	1
50	0	1	0	1	1
60	1	1	0	1	1
70	0	0	1	1	1
80	1	0	1	1	1
90	0	1	1	1	1
100	1	1	1	1	1

SPAN	DIP-SWITCH POSITION			
°C	6	7	8	9
160	0	0	0	0
150	1	0	0	0
140	0	1	0	0
130	1	1	0	0
120	0	0	1	0
110	1	0	1	0
100	0	1	1	0
90	1	1	1	0
80	0	0	0	1
70	1	0	0	1
60	0	1	0	1
50	1	1	0	1
40	0	0	1	1
30	1	0	1	1
20	0	1	1	1
10	1	1	1	1

Table 3

Examples:

Range to be selected	Zero selection	Span selection	Dip-switch layout
-30 to +100°C	-30°C	130°C	
-50 to +150°C	-50°C	200°C