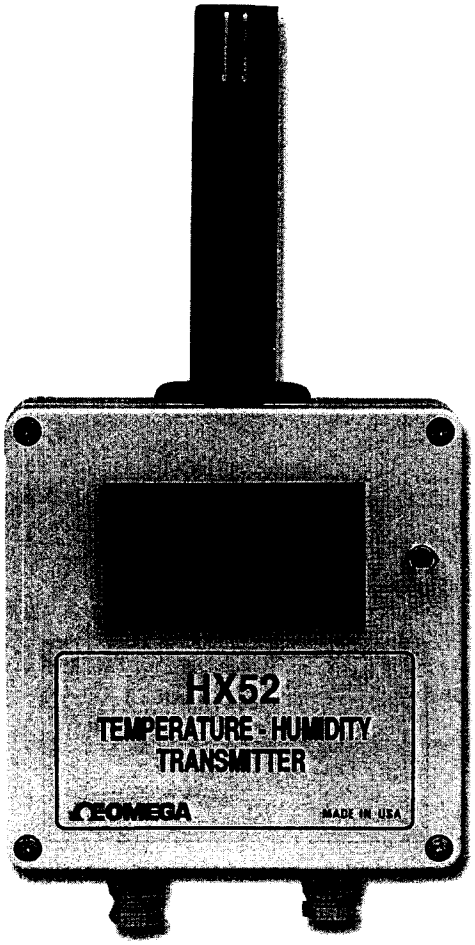
1 YEAR WARRANTY

MADE IN USA

User's Guide



HX51, HX52

RH, RH/Temperature Transmitters

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INTRODUCTION

The HX51 humidity and HX52 humidity-temperature transmitters supply accurate humidity and temperature (HX52) data from a room or process air source on a continuous basis to a computer, chart recorder, printer, meter or control circuit.

Every instrument has terminals for both DC and AC power, and 0-1V, 0-5V and 4-20 mA outputs.

The humidity or humidity-temperature probe can be mounted on the instrument enclosure or at a remote location; that choice must be made at the time of purchase. The probe can be fitted with a sintered-metal filter for dusty or harsh environments.

Optional is a RS-232C serial digital (ASCII) output.

Also optional is a front-cover-mounted display to help in setting up and monitoring; this can be very helpful when the output is used at a location distant from the instrument and probe.

Transmitters with RS-232C ports and/or displays will have a board-mounted DIP switch for choosing English or metric units.

SPECIFICATIONS

Sensors:

Humidity sensor:	Capacitive (Thin Film)
Temperature (HX52):	PT100 RTD

Range:

Relative Humidity:	5% to 95% RH
Temperature (HX52):	-4° to 176°F (-20° to 80°C)

Accuracy:

Relative Humidity:	±2% RH
Temperature (HX52):	±0.5°C

Resolution (optional display):

Relative Humidity:	0.1%RH
Temperature (HX52):	0.1°F or °C

SPECIFICATIONS (continued)

Response Time:

Relative Humidity:	90% of final value in 15 sec.
Temperature (HX52):	Approximately 60 seconds

Analog Outputs (separate and concurrent):

Relative Humidity:

0-1V, 0-5V and 4-20mA represent 0-100%RH

Temperature (HX52):

0-1V, 0-5V and 4-20mA represent -4 to 176°F (-20 to 80°C)

Operating Range:	-4° to 176°F (-20° to 80°C)
Power Supply:	120 or 220VAC, 50-60Hz, also 10-30 VDC

Input Current (with all options):

10-30VDC:	HX51: 25mA, HX52: 38mA
110VAC:	HX51: 15mA, HX52: 18mA
220VAC:	HX51: 8mA, HX52: 9mA

Output Impedance (0-1V and 0-5V outputs):

1KΩ

Enclosure: ABS plastic, NEMA Class 4

Note: Enclosures with displays or case-mounted probes are not watertight.

Dimensions:

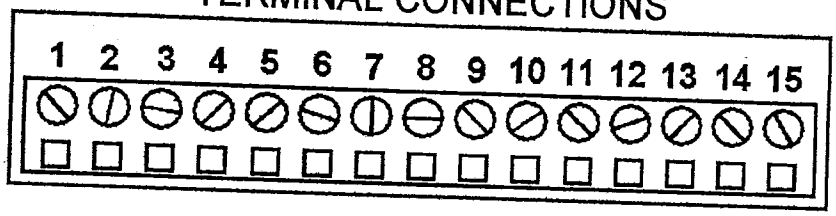
Housing:	4.8" x 4.8" x 2.2"
Probe:	4.5" x 1" diameter

Weight: 18 ounces

Options:

Display:	0.5" LCD, 4 digits
RS-232C port:	4 wire: TXD, CTS, RTS, GND
RS-232 serial port cable:	9 pin D-Sub connector
Custom cable lengths:	For probe and RS-232 cables[1, 2]
Sintered-metal filter:	Harsh environments

TERMINAL CONNECTIONS



1. 4-20 mA Temp
2. 0-5 Volt Temp
3. 0-1 Volt Temp

} HX52

4. 4-20 mA %RH
5. 0-5 Volt %RH
6. 0-1 Volt %RH
7. Ground
8. V+ (10-30 VDC)
9. 220 VAC
10. 110 VAC
11. 220/110 VAC
12. No Connection
13. RTS
14. CTS
15. TXD

} RS-232C port option

INSTALLATION AND SETUP FOR HX51, HX52

Note: Make all connections with Power Off. Remove cover to attach transmitter to mounting area and to attach power and signal cables. Attach in location free of physical dangers such as excessive heat or continuous condensing moisture.[3]

POWER HOOKUP*

1a) If using 110VAC power, hook white (neutral) wire into slot 10. Then hook black (hot) wire into slot 11.

1b) If using 220VAC power, hook either hot wire into slot 11. Then hook the other hot wire into slot 9.

1c) If using 10-30VDC, first hook ground wire into slot 7. Then hook V+ wire into slot 8.

%RH OUTPUT*

2a) If you want 0-1V FS, hook output ground reference to slot 7. Then hook %RH output wire to slot 6.

2b) If you want 0-5V FS, hook output ground reference to slot 7. Then hook %RH output wire to slot 5.

2c) If you want 4-20mA FS, hook output ground reference to slot 7. Then hook %RH wire to slot 4.

TEMPERATURE OUTPUT (HX52)*

3a) If you want 0-1V FS, hook output ground reference to slot 7. Then hook temperature output wire to slot 3.

3b) If you want 0-5V FS, hook output ground reference to slot 7. Then hook temperature output wire to slot 2.

3c) If you want 4-20mA FS, hook output ground reference to slot 7. Then hook temperature output wire to slot 1.

RS-232C PORT HOOKUP (optional feature, see Appendix A)*

4a) Hook RS-232 ground reference to slot 7.

4b) Hook RTS (Ready to Send) output wire to slot 13.

4c) Hook CTS (Clear to Send) input wire to slot 14.

4d) Hook TXD (Transmit Data) output wire to slot 15.

MOUNTING THE PROBE (remote probe)

Mount at location where measurements are to be made. Do not change the length of the cable supplied at purchase as doing so will change the calibration. Protect the probe with a sintered-metal filter (optional) if dust or spray is present.

METRIC OR ENGLISH UNITS (with RS232 and/or display)

To change units, set DIP switch #2 (see Diagram 1) to CLOSED for metric or OPEN for english units.

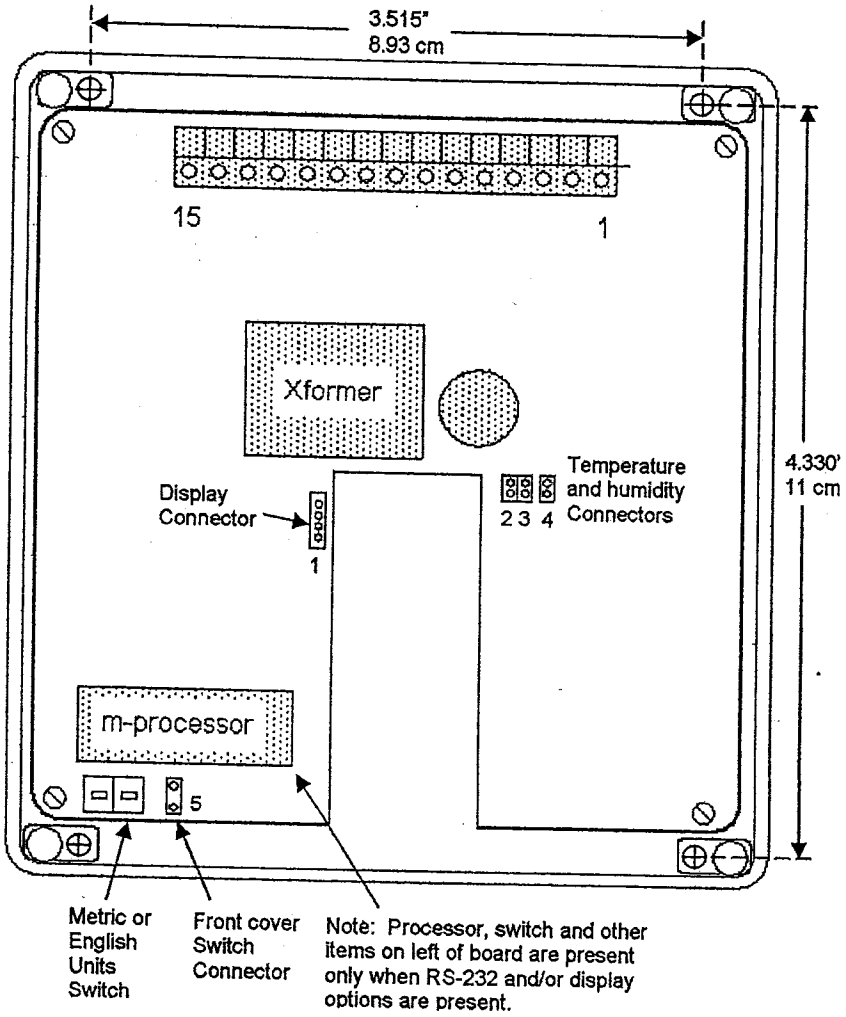
REPLACING COVER

Use care not to damage the seal; if the cover has a display, use proper polarity when reinstalling connectors (see Diagram 1).

DISPLAY SWITCH (HX52 with display)

Set the switch to "%RH" to display humidity and to "TEMP." to display temperature.

*NOTE: Be sure to tighten screws above slots when finished.



Connector Polarity:

1 Red wire down (display option)
2 Grey wire up
3 Red wire up
4 Black wire up
5 Black wire down (HX52 with display option)

Diagram 1: Location and Polarity of Connectors and Switches.

APPENDIX A – Communication by means of (optional) RS-232C serial data port

The transmitter provides data output to the RS-232 terminals (see TERMINAL CONNECTIONS Pg 3). The voltage levels are plus and minus 9 volts. A voltage of +9 volts represents a space (logical "0"). A voltage of -9 volts represents a mark (logical "1"). The protocol is: 1 start bit, 7 data bits, 1 odd parity bit, 1 stop bit, ASCII data format, 1200 baud.

Sample data formats:
073.6 deg F 031.7 %RH
023.1 deg C 032.9 %RH

RS-232 Data output connection:

Signal	Signal Direction	XMTR Terminal	9-pin D-S Pin No.	Wire Color
Ground		7	5	BLK
TXD	to PC	15	2	GRN
CTS	from PC	14	7	GRY
RTS	to PC	13	8	WHT

When the transmitter is powered up, an RTS signal (logical "1") becomes available on terminal 13. The PC program or printer must respond with a CTS signal (logical "0"). Once handshaking is established, ASCII data will be transferred at 1200 baud. Each line (record) of data is terminated with a CR (carriage return) and an LF (line feed). Transmission will continue until the CTS signal returns to a logical "1".

APPENDIX B – Collecting data by means of resident "Hyper-Terminal" program on Win 95, 98, NT4, and Win 2000 PC's

A. Set up Communication Port.
   1) Find and open "HyperTerminal" under "Accessories" and "Communications"
   2) Type a name like "Humidity Transmitter" and select an icon, then click "OK"
   3) In the "Connect using:" box, select a COM port - probably "COM 1". Click "OK"

B. Set up "COM 1 Properties"
   1) Set "Bits per second:" to "1200"
   2) Set "Data bits:" to "8"
   3) Set "Parity:" to "None"
   4) Set "Stop bits:" to "1"
   5) Set "Flow control:" to "None"
   6) Click "OK", the select "Save"

C. Connect cable and transfer data
   1) Connect the RS-232 cable to "COM 1" port
   2) Power up transmitter
   3) Select "Call" from "Call" menu. Data will fill window
   4) To stop, select "Disconnect" from "Call" menu
   5) To save data, select "Save As..." and give file a name

D. To transfer to Excel
   1) Select data file from C5 above and open with "Notepad"
   2) Select data to be transferred and "Copy"
   3) Open a new blank Excel worksheet, select "Paste"
   4) Select entire Column "A". Under "Data" menu, select "Text to columns..." and click "Next"
   5) Follow directions to separate data, then click "Finish"

APPENDIX C – Explanation of error codes

E-06 Relative Humidity below range: <3.0 %RH
E-07 Relative Humidity above range: >97.0 %RH
E-08 Temperature below range: <-4°F or <-20°C
E-09 Temperature above range: >175°F or >80°C

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[1]In order to insure the proper calibration, all custom-length cables for the HX52 must be ordered at the time the transmitter is purchased; or the unit must be returned for calibration.

[2]The maximum length for probe cables is 150 ft.; please consult manufacturer if longer cable is required.

[3]Cable grips will seal on round cables from 2.5 to 6.5mm diameter. For wire bundles, if you wish to insure water tightness, use RTV silicon or other sealant safe for electronics at end of cable grip.

NOTES:

MADE IN USA WARRANTY/DISCLAIMER

OMEGA ENGINEERING, INC. warrants this unit to be free of defects in materials and workmanship for a period of **13 months** from date of purchase. OMEGA's Warranty adds an additional one (1) month grace period to the normal **one (1) year product warranty** to cover handling and shipping time. This ensures that OMEGA's customers receive maximum coverage on each product.

If the unit malfunctions, it must be returned to the factory for evaluation. OMEGA's Customer Service Department will issue an Authorized Return (AR) number immediately upon phone or written request. Upon examination by OMEGA, if the unit is found to be defective, it will be repaired or replaced at no charge. OMEGA's WARRANTY does not apply to defects resulting from any action of the purchaser, including but not limited to mishandling, improper interfacing, operation outside of design limits, improper repair, or unauthorized modification. This WARRANTY is VOID if the unit shows evidence of having been tampered with or shows evidence of having been damaged as a result of excessive corrosion; or current, heat, moisture or vibration; improper specification; misapplication; misuse or other operating conditions outside of OMEGA's control. Components which wear are not warranted, including but not limited to contact points, fuses, and triacs.

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The purchaser is responsible for shipping charges, freight, insurance and proper packaging to prevent breakage in transit.

FOR **WARRANTY** RETURNS, please have the following information available BEFORE contacting OMEGA:

1. Purchase Order number under which the product was PURCHASED,
2. Model and serial number of the product under warranty, and
3. Repair instructions and/or specific problems relative to the product.

FOR **NON-WARRANTY** REPAIRS, consult OMEGA for current repair charges. Have the following information available BEFORE contacting OMEGA:

1. Purchase Order number to cover the COST of the repair,
2. Model and serial number of the product, and
3. Repair instructions and/or specific problems relative to the product.

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