

225-HMP60x

User Manual

225-HMP60A (0-1 V outputs)

225-HMP60C (0-5 V outputs)

Temperature and Relative Humidity Sensor



Phone (530) 823-7185

Email nova@novalynx.com Website www.novalynx.com

Receiving and Unpacking

Carefully unpack all components and compare to the packing list. Notify NovaLynx Corporation immediately concerning any discrepancy. Inspect equipment to detect any damage that may have occurred during shipment. In the event of damage, any claim for loss must be filed immediately with the carrier by the consignee. Damages to equipment sent via Parcel Post or UPS require the consignee to contact NovaLynx Corporation for instructions.

Returns

If equipment is to be returned to the factory for any reason, call NovaLynx between 8:00 a.m. and 4:00 p.m. Pacific Time to request a Return Authorization Number (RA#). Include with the returned equipment a description of the problem and the name, address, and daytime phone number of the sender. Carefully pack the equipment to prevent damage or additional damage during the return shipment. Call NovaLynx for packing instructions in the case of delicate or sensitive items. If packing facilities are not available take the equipment to the nearest Post Office, UPS, or other freight service and obtain assistance with the packaging. Please write the RA# on the outside of the box.

Warranty

NovaLynx Corporation warrants that its products are free from defects in material and workmanship under normal use and service for a period of one year from the date of shipment from the factory. NovaLynx Corporation's obligations under this warranty are limited to, at NovaLynx's option: (i) replacing; or (ii) repairing; any product determined to be defective. In no case shall NovaLynx Corporation's liability exceed product's original purchase price. This warranty does not apply to any equipment that has been repaired or altered, except by NovaLynx Corporation, or that has been subjected to misuse, negligence, or accident. It is expressly agreed that this warranty will be in lieu of all warranties of fitness and in lieu of the warranty of merchantability.

Address

NovaLynx Corporation
431 Crown Point Circle, Suite 120
Grass Valley, CA 95945-9531 USA
Phone: (530) 823-7185
Email: nova@novalynx.com
Website: www.novalynx.com

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1 FORWARD

Thank you for purchasing NovaLynx products. NovaLynx has been designing and manufacturing weather instruments since 1988. NovaLynx represents several well-known brands of quality manufacturers, including Gill Instruments, RM Young, Kipp & Zonen, and Vaisala. It is our hope that our products will meet all your monitoring requirements.

2 INTRODUCTION

225-HMP60 Temperature and Relative Humidity Sensors are highly accurate and easy to use. The replaceable humidity sensor element and RTD temperature sensor are protected by a filter/cap which screws into the stainless steel body. The probe is detachable from the 12" (30 cm) cable by means of an M8 connector. Additional cable may be ordered per foot (NovaLynx 330-0524).

Relative humidity is measured by a thin film capacitive sensing element. The sensor range is 0 to 100% relative humidity. Temperature is measured by a 1000 ohm RTD element. The temperature range is -40 to +60°C (-40 to +140°F).

- Model 225-HMP60A features two 0-1 V outputs
- Model 225-HMP60C features two 0-5 V outputs

3 WIRE INSTALLATION TABLE

CAUTION - To prevent damage to the sensor and monitoring equipment, disconnect power from the system before connecting the sensor. Note carefully which wire table applies to your sensor.

225-HMP60 with Standard 12" Cable				
Pin	Wire Color	Function	225-HMP60A	225-HMP60C
1	Brown	+Power input	5 to 28 Vdc	8 to 28 VDC
2	White	Relative humidity signal	0 to 1 V	0 to 5 V
3	Blue	Ground (common)	GND	GND
4	Black	Temperature signal	0 to 1 V	0 to 5 V
NC	Clear	Earth ground	Earth GND	Earth GND

225-HMP60 with Extended Cable				
24 AWG, 5-conductor, shielded (PN 330-0524)				
Pin	Wire Color	Function	225-HMP60A	225-HMP60C
1	Red	+Power input	5 to 28 Vdc	8 to 28 VDC
2	Brown	Relative humidity signal	0 to 1 V	0 to 5 V
3	Black	Ground (common)	GND	GND
4	White	Temperature signal	0 to 1 V	0 to 5 V
NC	Bare	Earth ground	Earth GND	Earth GND

4 SPECIFICATIONS

225-HMP60x Temperature and Relative Humidity Sensor	
Relative Humidity	
Humidity sensor	Vaisala INTERCAP® (replaceable)
Measurement Range	0 to 100% RH
Typical accuracy:	
at 0 ... +40 °C (+32 ... +140 °F)	±3 %RH (0 ... 90 %RH)
	±5 %RH (90 ... 100 %RH)
at -40 ... 0 °C and +40 ... +60 °C (-40 ... +32 °F and +104 ... +140 °F)	±5 %RH (0 ... 90 %RH)
	±7 %RH (90 ... 100 %RH)
Temperature	
Temperature sensor	1000 ohm platinum resistive element (RTD)
Measurement range	-40 ... +60 °C (-40 ... +140 °F)
Accuracy:	
at +10 ... +30 °C (+50 ... +86 °F)	±0.5 °C (±32.9 °F)
at -40 ... +10 and +30 ... +60 °C (-40 ... +50 and +86 ... +140 °F)	±0.6 °C (±33.08 °F)
Analog outputs	
2 channels	HMP60A: 0 ... 1 VDC HMP60C: 0 ... 5 VDC
Start-up time	4 seconds
External loads	HMP60A: RL min. 10 kΩ HMP60C: RL min. 50 kΩ
Accuracy at +20 °C (+68 °F)	±0.2 % of FS
Temperature dependence	±0.01 % of FS/°C (±0.006 % of FS/°F)
Power requirements	
Power consumption	1 mA average, max. peak 5 mA
Operating voltage	HMP60A: 5 ... 28 VDC HMP60C: 8 ... 28 VDC
Operating environment	
Operating temperature	-40 ... +60 °C (-40 ... +140 °F)
IP rating	IP65
EMC compliance	EN 61326-1, industrial environment
Regulatory compliance	CE, ROHS Directive, EMC Directive
Mechanical	
Probe body	Stainless steel (AISI 316)
Probe filter	Chrome coated ABS plastic (replaceable)
Probe connector	4-pin M8 (IEC 60947-5-2)
Cable	Polyurethane or FEP, 12 inch (30 cm), tinned leads
Size	0.47" Dia (12 mm) x 3" L (80 mm), threaded M12 x 1
Weight / Shipping	1 oz (28 g) / 0.4 lb (182 g)

5 INSTALLATION

Note: The tip of the sensor may be protected by a yellow plastic cap to prevent damage in shipping. Remove the yellow cap before installing the sensor.

The **225-HMP60** sensors must be protected from direct sunlight and precipitation when used outdoors for weather monitoring. A variety of sunshields are available, ranging from self-aspirated to fan-aspirated models. Fan aspirated sunshields are preferred where there is little or no air movement. Some fan-aspirated units include a solar array, eliminating the need for an external power source for the fan.

Sunshield	Type	Power Supply
380-280-HMP60	Self Aspirated	n/a
380-281	Self Aspirated	n/a
380-283	Fan Aspirated	Integrated solar panel / NiMh battery
380-RHRS	Self Aspirated	n/a
380-43502	Fan Aspirated	12-14 Vdc @ 500 mA for blower, AC adapter included

Note: When model 380-280-HMP60 Sunshield is ordered at the same time as the 255-HMP60x Sensor, the sensor is pre-assembled, making installation simpler.

Recommended sunshields include brackets for mast mounting by means of a U-bolt. The U-bolt can be removed for surface mounting the bracket. Refer to instructions included with the specific model for installation of the sensor and mounting options.

Mast-mounted sensors are usually positioned at "shelter" height, or about four feet above ground level, on the north side of the mast. Temperature readings can be affected by heat reflected from the ground so try to avoid installation over asphalt or bare ground.

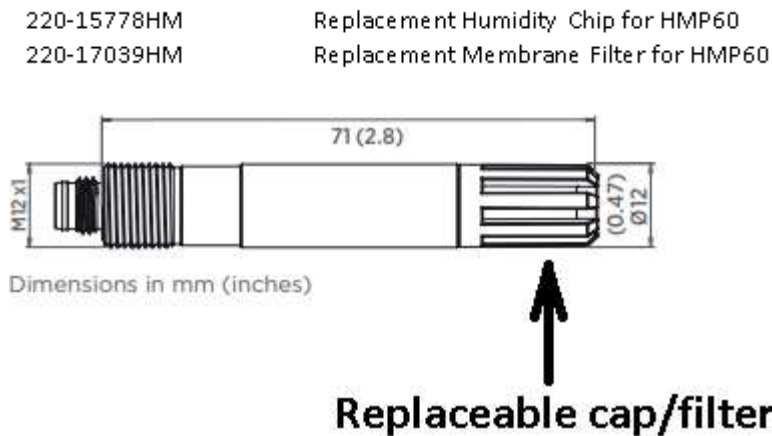
Wire the sensor to your monitoring equipment according to the wire installation tables (Section 3). Use the table marked "225-HMP60 with Extended Cable" if the optional additional cable was ordered. Program your logger or PLC to power the sensor for at least 4 seconds before taking a reading.

6 MAINTENANCE

The **225-HMP60 Relative Humidity and Temperature Sensors** do not require calibration and have no calibration adjustments available to the user. Field-check the accuracy of the sensor by comparison with an accurate reference on an annual basis, or more often in dusty or polluted areas.

The probe may be removed from the sunshield for inspection and service if necessary. With the probe removed, clean off any dust that has collected on or inside the sunshield.

The sensor elements are protected by a removable cap/filter. The cap can be replaced if the filter is dirty. The humidity sensor chip is replaceable. The chip is factory-trimmed so that there is no need to calibrate after replacing the part. The temperature sensing element is a separate part and is not user-serviceable. *Note: Unscrew counter-clockwise to remove the cap.*



The base of the probe is connected to the cable by an M8 connector. *Note: The connection may be covered by heat shrink tubing.* The probe may be disconnected and returned to NovaLynx for a calibration check, or the entire probe, cable and sunshield can be returned for service or a calibration check. If only the probe is to be returned, inspect the cable carefully to ensure it is not the cause of any problems you may have experienced with the sensor.

7 CALIBRATION TEST KIT

The NovaLynx **220-HMK15 Humidity Calibrator** (sold separately) is available for checking the calibration of electronic RH sensors by the user. The calibrator includes two chambers with saturated salt solutions to test the sensor at 12% and 75% RH. Testing at two points verifies the overall operating range of the humidity sensor. Spot checking at ambient conditions may not always detect a marginally defective sensing element.

The calibration chambers work best in stable temperature conditions (indoors), but can also be used to make quick and accurate field tests. In either case, the chamber humidity reading is corrected according to the temperature indicated on a built-in thermometer. Sensor readings can be taken within 5 minutes.

8 TROUBLESHOOTING

If the sensor's output signal appears to be in error or is absent, check the power connections. At the sensor cable, measure the input power source voltage with a voltmeter. Check each signal output by disconnecting the signal wire from the monitoring equipment and then measure the output voltage.