M1-Series

Humidity goes Digital

HYGROCLIP®

Humidity and Temperature Transmitter

- Proven sensor technology provide ±2.0%RH / ±0.3°C accuracy
- Long term stability of better than 1% RH per year
- Potentiometer free - digital calibration
- On-site loop validation and calibration with HygroPalm® 3 calibrator
- Unique, cost effective installation procedure
- Duct, wall and space mount configurations
- 2-wire loop-powered or 3-wire versions

rotronic®

LEADING IN HUMIDITY MEASUREMENT

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The Digital Advantage

The M1-series humidity and temperature transmitters use the very latest digital technology. Digital signal processing significantly benefits humidity and temperature measurement in the following key areas:

- *Measurement Accuracy:* Digital processing of the sensor signals by the M1 transmitters provides more scope and greater flexibility when compensating sensor characteristics such as linearity and temperature coefficient. The ROTRONIC HYGROMER® capacitive sensor has always been the leader in both precision and stability. With the application of digital technology, sensor performance is now further enhanced.
- Calibration and sensor data are retained permanently within each M1 transmitter. Software-based calibration is simple and precise; there are no hard-to-reach, hard-to-adjust potentiometers. Multiple calibration points can be selected across the full measurement range.

Transmitters of the M1 series are primarily used in HVAC applications that require highly accurate humidity and temperature measurement. Three different mechanical configurations are available to suit different applications ranging from commercial HVAC to industrial HVAC.

MAIN FEATURES:

- Software based transmitter calibration
- Available with RH and temperature outputs, RH only, and temperature only
- Test connector for communication with HygroPalm 3
- Probe operating limits of 0…100% RH and -40…60°C (-40…140°F)

Ordering a M1 Transmitter

	M1					
Circuit Type **2** 2-wire, loop powered **3** 3-wire						
Configuration **D** Duct **W** Wall **S** Space						
Output Signals **HT** humidity and temperature **HX** humidity only **XT** temperature only						
Output Signal Type **1** 0…20 mA (M13 only) **2** 4…20 mA **3** 0…1 V (M13 only) **4** 0…5 V (M13 only) **5** 0…10 V (M13 only)						
Temperature output signal. Enter “X” for none **1** 0…50°C **2** -30…70°C **3** 0…100°F						

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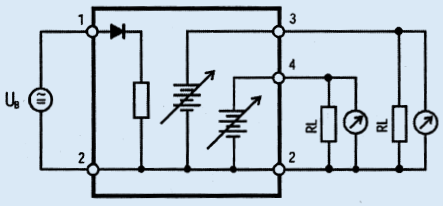
Field Service made easy with the M1 Series

On-site validation and maintenance of the sensors is made simple with the M-1 series transmitters. Use a HygroPalm 3 and service cable to perform the following:

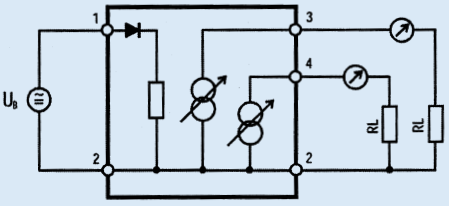
- Display of the RH and temperature values from the transmitter on the HygroPalm 3.
- Single point calibration of the transmitter using a reference probe attached to the HygroPalm 3.
- Single and multipoint calibration of the transmitter against a known reference environment.

Service cables for the M1-Series

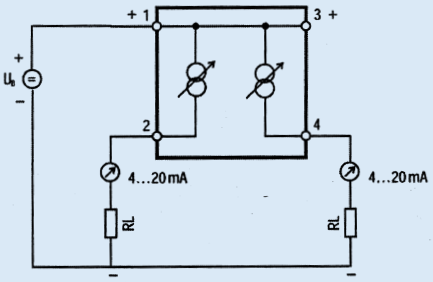
CABLE NUMBER	TRANSMITTER	DESCRIPTION
ACRLXB5	M1 Duct M1 Wall	Used to connect the M1 transmitter to the HygroPalm 3. This allows for a single point adjustment against the reference probe on the HygroPalm. In addition, it also allows single/multipoint adjustment against a reference environment.
AC1625	M1 Space	
MOK-01-B5	All	Used to connect HygroClip S reference probe to HygroPalm 3 calibrator



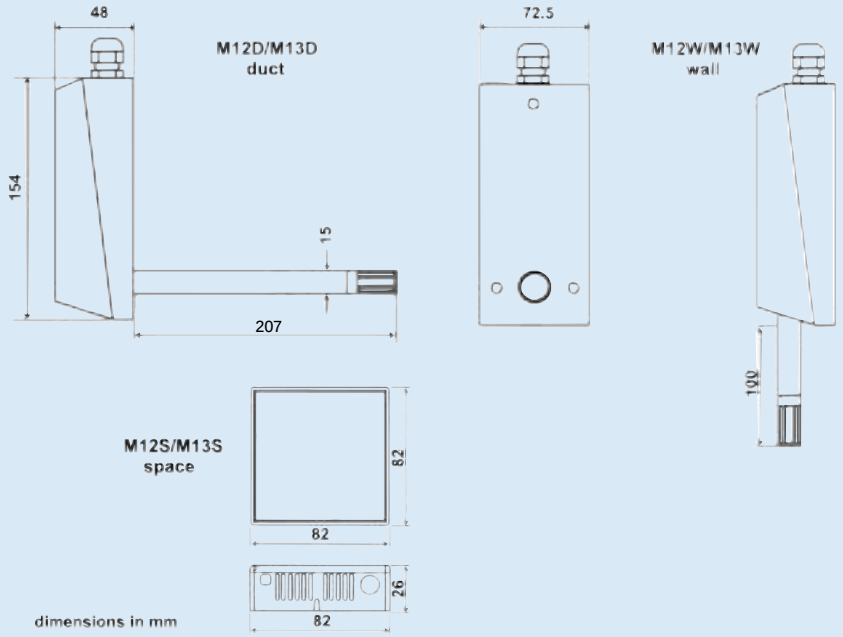
3 wire voltage outputs



3 wire current outputs



2 wire current outputs



Installation: The M1 series transmitters use Rotronic's proven enclosure which provides:

- Separation of wiring base plate and electronics module
- Installation of base plate during any stage of construction. Electronics module is then simply plugged in after all construction is complete
- Electronics module can be removed without any changes to transmitter wiring

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Specifications for M12 & M13

FEATURES	M12	M13
Humidity sensor	Rotronic Hygromer® C94 thin film capacitive	
Temperature sensor	Pt100 RTD	
OUTPUTS	**M12**	**M13**
Circuit type	2-wire loop-powered	3-wire
Signal type	4...20 mA	0...20 mA, 4...20 mA 0...1V, 0...5V, 0...10V
Standard output ranges	0...100% RH -30...70°C, 0...50°C or 0...100°F	
SPECIFICATIONS	**M12**	**M13**
Operating limits	0...99% RH non condensing -40...60°C / -40...140°F	
Accuracy at 23°C	± 2.0% RH / ± 0.3°C (± 0.5°F)	
Repeatability	better than 0.5%RH and 0.1°C / (0.2°F)	
Humidity sensor stability	better than 1% RH per year	
Power supply	10...28 VDC, 10 + 0.02 x load 20 mA per output	10...35 VDC (50 mA) or 12...24 VAC minimum 15 V for current outputs < 50 mA
Maximum load for current outputs	500 Ohm @ 24 VDC	250 Ohm
Minimum load for voltage outputs	n/a	1000 Ohm
Electrical connections	W and D models: cable grip and terminals S model: terminals	
Housing material	ABS	
Sensor protection	W and D models: type D15G, stainless steel wire mesh, PPS frame S model: n/a	
Protection grade	W and D models: IP65/NEMA4 S model: IP52 / NEMA5	
Weight	W and D models: 292 g / 10.3 oz S model: 110 g / 4 oz	
CE Conformity	EN61000-6-4 EN61000-6-2	

Accessories

ORDER CODE	DESCRIPTION	
HygroPalm 3	Handheld calibrator. Requires HygroClip S relative humidity and temperature probe	
HygroClip S	Relative humidity and temperature probe for HygroPalm 3.	
MOK-01-B5	Used to connect HygroClip S reference probe to HygroPalm 3 calibrator	
ACRLXB5	Applies to M12D / M13D / M12W / M13W	Service cable connecting transmitter to HygroPalm 3 for field calibration and loop validation
AC1625	Applies to M12S and M13S	
ER-15	Calibration device (Duct and wall only)	
EAXX-SCS	Certified humidity standards (5 per box) XX = 00, 05, 10, 20, 35, 50, 65, 80, 95%RH	