



*GE Measurement & Sensing Technologies*  
*General Eastern Instruments*

**PROCESS MADE PERFECT**



**Low Dew Point Instrumentation  
for Process Control Operations**

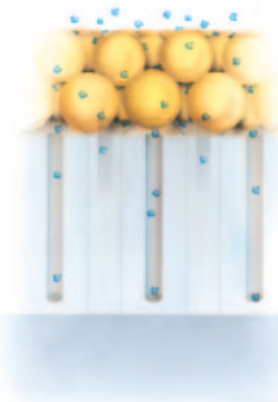
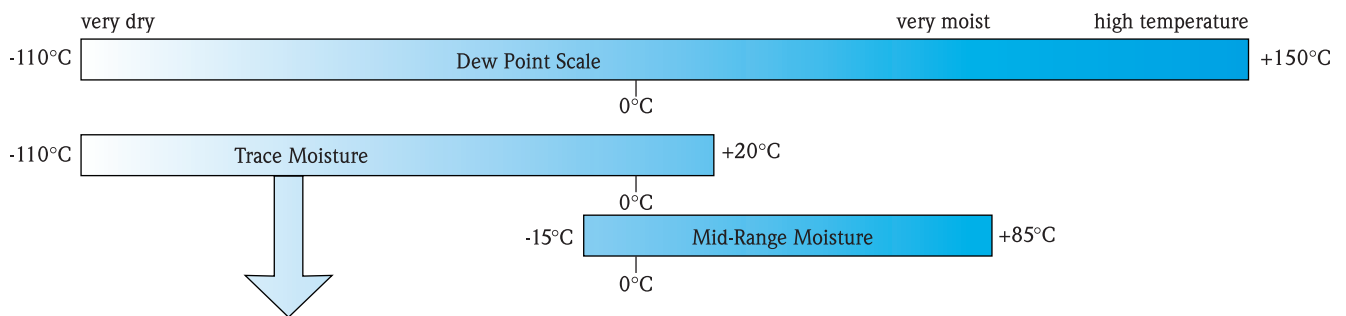


# The DewPro / HygroTwin / Hygrotec / HygroGuard Series

The DewPro<sup>®</sup> Trace Moisture Line of compact transmitters offers accurate, reliable measurement of the moisture content of gases and liquids. The HygroTwin<sup>™</sup>, Hygrotec<sup>™</sup> and HygroGuard<sup>™</sup> Series consist of separate probes and transmitters. Both DewPro and HygroTwin/Hygrotec/HygroGuard instruments provide convenience and versatility for dryer manufacturers and users, gas analysis in semiconductor manufacturing, chemical and petrochemical processing, compressed gas bottling and usage, and other process control applications where the accurate monitoring of trace moisture is crucial.

## When Water is the Critical Factor

Water can be a contaminant in blanket gases, feed stocks, and other process gases or liquids. In other applications, a precise level of humidity is critical to the conditioning of the material. General Eastern's DewPro, HygroTwin/Hygrotec, and HygroGuard lines utilize a planar capacitive aluminum oxide sensor for trace moisture measurements from +20°C down to -110°C dew point temperatures.



## Trace Sensor Technology

Our planar capacitive gold/aluminum oxide sensor is the technology of choice for dew point temperatures below 0°C in gases and non-conductive liquids. Sensor elements are created on ceramic substrates; elements are composed of porous, thin-film aluminum oxide dielectrics with high-purity aluminum bases and thin deposited gold films as the capacitor plates (see illustration above). The moisture of the process fluid equilibrates rapidly with the porous aluminum oxide. The moisture content is reflected in the capacitance of the sensor.



## Features

Depending on the model selected, DewPro® or HygroTwin™/Hygrotec™ / HygroGuard™ transmitters provide:

- Simple two-wire connection
- Planar capacitive sensor for fast, accurate response
- Integral filtering and flow regulation — no sampling system needed
- Easy indoor or outdoor mounting
- Field calibration possible with portable MMY245



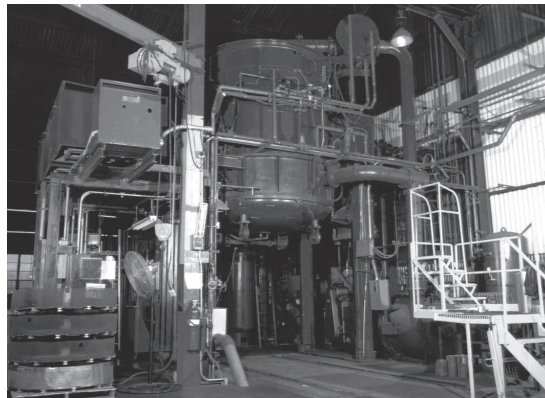
## Hygrotec™ MMY 150 Applications

- Dew point measurement and control in specialty gases, dry air, or adsorption gas dryers
  - Conveying air
  - Purging air
  - Instrument air
  - Carbon dioxide
  - Nitrogen
  - Argon
  - Oxygen
  - Furnace gases
  - and more



## DewPro® MMY 31 Applications

- Glove boxes
- Environmental chambers
- High altitude testing
- In-process measurements

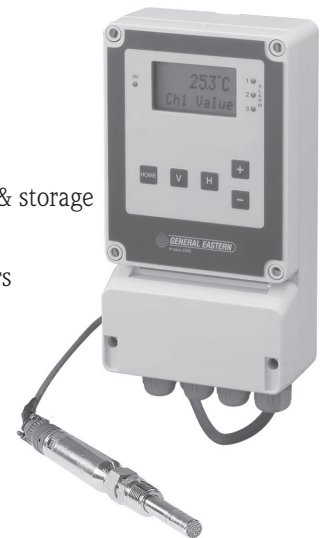


## Hygrotec MMY 170 Applications

- Gases and non-conductive liquids
- Moisture content of freeze dryers
- Semiconductor manufacturing
- Chemical Vapor Deposition (CVD)
- Natural Gas
- Feedstocks for polymer production
- Instrument air
- Hydrogen cooling of generators
- Ethylene production
- Heat treating
- Medical air
- Blanket gases
- and more

## MMY 2650 Applications

- Clean rooms
- Food processing & storage
- ETO sterilizers
- Medical air dryers
- Desiccant dryers
- Heat treating
- Pharmaceutical/medical storage
- Leak testing



## DewPro® MMY 35 Applications

- OEM product for manufacturers



# DewPro<sup>®</sup> MMY 30

The DewPro<sup>®</sup> MMY 30 is a loop-powered transmitter with 4-20 mA output. The MMY 30 is specifically designed to measure dew point or ppm at line pressure or atmospheric pressure for control of desiccant air dryers. These benefits apply to both dryer users and manufacturers.

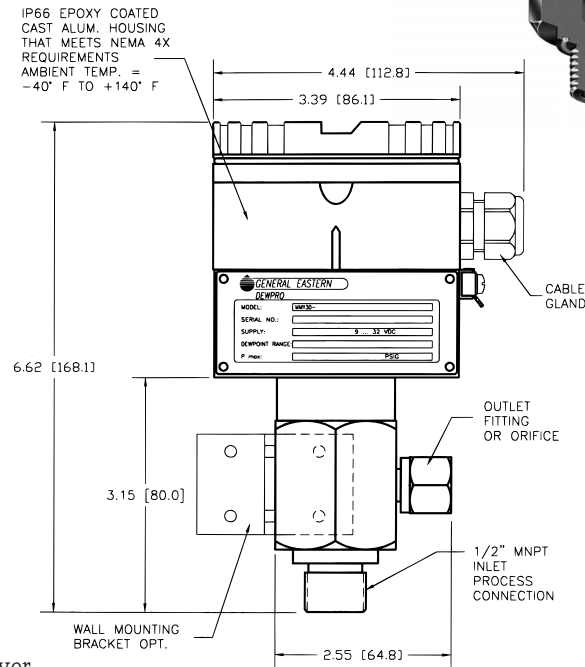


## Features:

- Simple, 4 - 20 mA two-wire connection
- Fast response planar sensor
- Integral filtering and flow regulation
- Trouble-free indoor or outdoor mounting
- Field calibration with the optional MMY245
- Microprocessor in NEMA 4X (IP66) enclosure
- FM approved (Class 1) - Division 2 standard

## Options:

- Display with user interface
- FM approval to Class 1, Division 1
- English or metric fittings
- External display available with loop-power supply and alarm contacts



Ordering Information: See page 10

## Dimensions/Specifications

<b>Sensing Element:</b>	Planar sensor, aluminum oxide capacitance principle	<b>Storage Temperature:</b>	-40°C to +60°C (-40°F to +140°F)
<b>Measurement Range:</b>	-90°C to +10°C (-130°F to +50°F) dew point temperature; 0 to 10, 0 to 100, 0 to 1000 ppm <sub>v</sub> (fully adjustable with integral display)	<b>Air Bleed Off at 100 psig (7 bar):</b>	Approximately 1 SCFH (28 sl/h)
<b>Recommended Recalibration Cycle:</b>	12 months, depending on the application	<b>Maximum Operating Pressure:</b>	450 psig (30 bar)
<b>Calibration Accuracy:</b>	± 2°C (± 3.6°F) dew point over the entire range	<b>Helium Leak-rate:</b>	< 10 <sup>-6</sup> mbar l/s
<b>Repeatability:</b>	± 1°C (± 1.8°F)	<b>Output:</b>	4 to 20 mA, 16µA resolution
<b>Maximum Sensor Relative Humidity:</b>	50% at dew point temperature >0°C (32°F)	<b>Flow Block:</b>	316 SS with 1/2" MNPT or G 1/2 thread (DIN ISO 228) and Viton o-ring seal
<b>Temperature Coefficient:</b>	ΔTd/ΔT < 0.2°C/°C (<0.2°F/°F)	<b>Wrench Width for Flow Block:</b>	1-5/8" (42 mm)
<b>Operating Temperature:</b>	-40°C to +60°C (-40°F to +140°F)	<b>Electronics:</b>	Microprocessor-controlled
		<b>Power Supply:</b>	24 V DC nominal, 12 to 32 V DC range
		<b>Protection:</b>	NEMA 4X (IP 67)
		<b>Weight:</b>	3.2 lbs. (1.5 kg)



# DewPro<sup>®</sup> MMY 31

The DewPro<sup>®</sup> MMY 31 measures dew point or ppm<sub>v</sub> in dry gases. It is a cost-effective, loop-powered dew point transmitter designed for “in-line” installation where a trace moisture measurement is required, but display, alarms, and other features are not needed. The planar capacitive aluminum oxide sensor provides excellent corrosion resistance, longer calibration stability, quick response times, and an exceptionally low temperature coefficient.

The MMY 31 mounts directly in-line for applications such as glove boxes, where a bypass is not appropriate. It is easily installed via a 1/2" MNPT or G 1/2 adjustable insertion length compression fitting. Applications include glove boxes, environmental chambers, and high altitude testing.

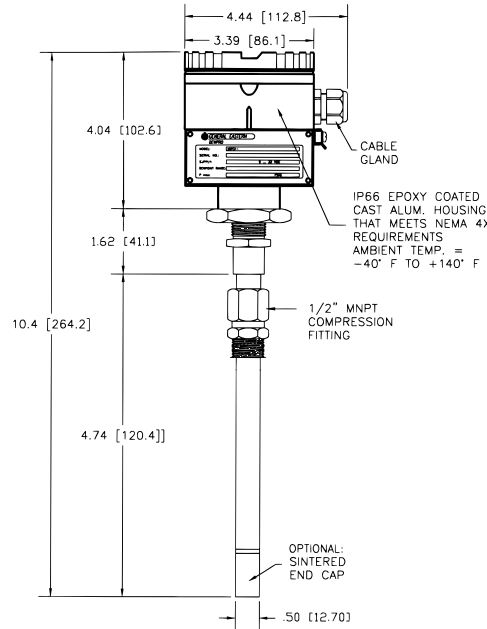


## Features:

- Simple, 4 - 20 mA two-wire connection
- Fast response planar sensor
- Trouble-free indoor or outdoor mounting
- Field calibration with the optional MMY245
- Microprocessor in NEMA 4X (IP66) enclosure
- FM approved (Class 1) - Division 2 standard

## Options:

- English or Metric fittings
- FM approved Class 1, Division 1
- On-board display and user interface
- External displays available with loop-power supplies and/or alarm contacts



Ordering Information: See page 10

## Dimensions/Specifications

<b>Sensing Element:</b>	Planar sensor, aluminum oxide capacitance principle	<b>Storage Temperature:</b>	-40°C to +60°C (-40°F to +140°F)
<b>Measurement Range:</b>	-90 °C to +10°C (-130°F to +50°F) dew point temperature; 0 to 10, 0 to 1000 ppm <sub>v</sub> (fully adjustable with integral display)	<b>Sintered Filter:</b>	100 micron
<b>Recommended Recalibration Cycle:</b>	12 months, depending on application	<b>Standard Operating Pressure:</b>	0 - 1750 psig (0 - 120 bar)
<b>Calibration Accuracy:</b>	±2°C (3.6°F) dew point over the entire range	<b>Helium Leak-rate:</b>	< 10 <sup>-6</sup> mbar l/s
<b>Repeatability:</b>	±1°C (±1.8°F)	<b>Output:</b>	4 to 20 mA, 16 uA resolution
<b>Maximum Sensor Relative Humidity:</b>	50% at dew point temperatures > 0°C (32°F)	<b>Electronics:</b>	Microprocessor-controlled
<b>Temperature Coefficient:</b>	ΔTd/ΔT < 0.2°C/°C (<0.2°F/°F)	<b>Power supply:</b>	24 V DC nominal, 12 to 32 V DC tolerance
<b>Operating Temperature:</b>	-40°C to +60°C (-40°F to +140°F)	<b>Protection:</b>	NEMA 4X (1P67)
		<b>Weight :</b>	3.2 lbs (1.5 kg)
		<b>Probe Tube:</b>	316 stainless steel, 1/2" (12.7 mm) diameter, insertion length 2" (50 mm) to 3.5" (90 mm)
		<b>Typical Probe Mounting:</b>	1/2" tube x 1/2" MNPT or 1/2" tube x G 1/2 compression fitting Others available, consult factory

# DewPro<sup>®</sup> MMY 35

The DewPro<sup>®</sup> MMY 35 is a compact, trace moisture transmitter probe designed to measure the dew point of dry air systems. The microprocessor-controlled DewPro MMY 35 provides a 4-20mA output signal that corresponds to the measured dew point.

The MMY 35 provides a measurement range of -90°C to +10°C (-130°F to +50°F) with ±2°C (±3.6°F) accuracy, and a proven, planar capacitive sensor. The instrument can be configured and controlled with a PC using DewPro Communication software. This software permits the user to set the dew point range, adjust the loop current and read the dew point. The MMY 35 can interface with a PC via an 8 pin connector using 2 pins for the RS 485 communication and 2 pins for the current loop connected to 24V DC power supply. All wetted parts are of 316 stainless steel except the sensor and its ceramic feed-through mount. The housing is of anodized aluminum. A three meter long, eight core cable is optional.

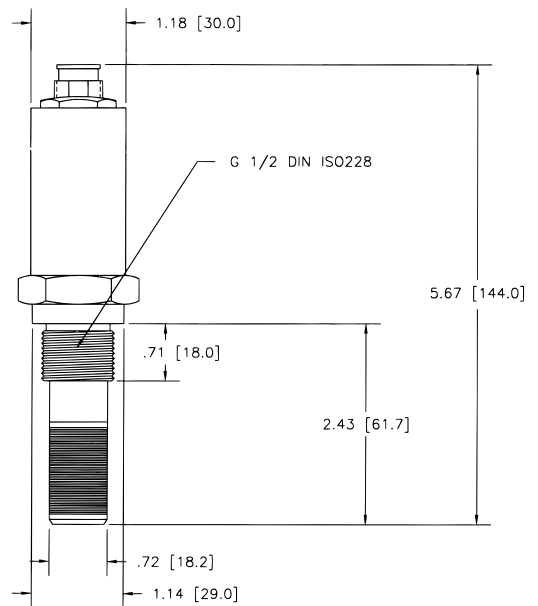


## Features:

- 4 to 20 mA loop-powered dry air streams
- Planar capacitive gold/aluminum sensor
- Designed to meet the needs of OEM customers

## Options:

- DewPro Communication Software
- Eight-core connection cable (specify length)
- External display available with loop-power supply and alarm contacts



Ordering Information: See page 11

## Dimensions/Specifications

<b>Supply Power:</b>	24 V DC nominal (9 to 32 V DC)	<b>Maximum Relative Humidity:</b>	50% at dew point temperatures > 0°C (32°F)
<b>Current Loop:</b>	4 mA to 20 mA corresponding to a standard dew point range of -90°C to +10°C (-130°F to +50°F)	<b>Temp. Coefficient:</b>	<0.2°C/°C (<0.2°F/°F)
<b>Communication:</b>	RS 485, DewPro protocol	<b>Ambient and Storage Temperature:</b>	-40°C (-40°F) to +50°C (+122°F)
<b>Cable Connector:</b>	Rating IP 65; Pins 1 (+) (red) and 2 (-) (black) = current loop supply power; 3 (-) (brown) and 4 (+) (yellow) = RS 485 communication. Pin 5 through 8 (green, white, orange, blue) are not being used for the loop powered version.	<b>Nominal Operating Temperature:</b>	-20°C (-4°F) to +40°C (+104°F)
<b>Sensing Element:</b>	Planar gold/aluminum oxide, capacitance principle	<b>Maximum Operating Pressure:</b>	150 psig (10 bar)
<b>Calibration Range:</b>	-90°C to +10°C (-130°F to +50°F) dew point temperature	<b>Helium Leak-rate:</b>	< 10 <sup>-6</sup> mbar l/s
<b>Recommended Recalibration Cycle:</b>	12 to 24 months, depending on application and required accuracy	<b>Maximum Gas Velocity:</b>	50 m/s at 1 bar, 5 m/s at 10 bar
<b>Calibration Accuracy:</b>	±2°C (±3.6°F) dew point at 20°C (68°F) ambient temperature	<b>Probe Mounting Adapter:</b>	Stainless steel 316 (1.4571) with G 1/2 thread (DIN/ISO 228) and O-ring seal
<b>Repeatability:</b>	±1°C (±1.8°F)	<b>Rating:</b>	IP 40
		<b>Wrench Width:</b>	30 mm
		<b>Protection From Particles:</b>	Protective cap with 10 micron filter
		<b>Weight:</b>	0.55 lb (250 grams)

# DewPro® MMY 245

The MMY245 Moisture Analyzer is a convenient, portable instrument that can quickly spot check the performance of gas dryers for compressed air, breathing air, SF6 gas used in power switches, and pure gas supplies. The planar capacitive sensor combines accurate dew point measurement with fast response time. The sensor is stored in a very dry environment within the analyzer between measurements, which speeds response time.

The MMY245 can be configured according to the desired moisture unit of measure, temperature unit of measure, or other operating parameters. An optional pressure sensor provides real-time correction for concentration units of measure or a pressure constant for use with stable pressure measurements. Voltage outputs 0-5 V DC are standard in non-hazardous areas.

The MMY245 can serve as field validator for DewPro MMY transmitters.

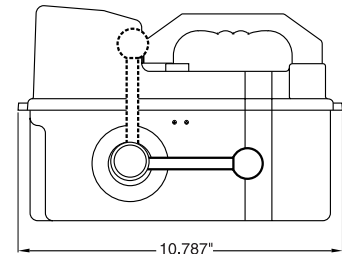
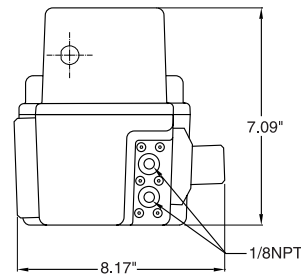


## Features

- Convenient, portable analyzer measures dew point within gases, shoulder strap standard
- Planar sensor within desiccant chamber for fastest response
- Pressure dew point measurement range of -100°C to +20°C
- User-selectable moisture measurement units
- Fully portable — powered by four common, “D” batteries with auto shut-off feature
- Intrinsically safe — rugged NEMA-4X/IP66 enclosure (Approval Pending)
- Two non-IS voltage outputs

## Options:

- Optional pressure sensor
- Carrying case with shoulder strap
- Quick connect sample hose and assorted fittings
- Communication cable



Ordering Information: See page 11

## Dimensions/Specifications

<b>Operating Voltage:</b>	Battery Powered - 4x “D” cells	<b>Accuracy:</b>	±2°C (±3.6°F) dew point temperature
<b>External Dimensions:</b>		<b>Readout Units of Measure:</b>	Dew Point °C, Dew Point °F, ppm <sub>v</sub> , Lbs/MMSCF, g/m <sup>3</sup> , g/kg, %RH
<b>Enclosure:</b>	11” (L) x 8.17” (W) x 7.09” (D) (28 cm x 17.7 cm x 18 cm)	<b>Secondary Readout Units of Measure:</b>	Temperature °C, Temperature °F, Pressure psig**, Pressure psia**, Pressure bars**, arbitrary scaled input voltage, plus all primary units of measure
<b>Weight:</b>	< 7 lbs., including 4 common “D” size batteries	<b>Repeatability:</b>	±1.0°C dew point temperature
<b>Display:</b>	Large, 4 digit LCD display with rate of change bar graph indicator. Low battery indicator. “Hot Start” power up feature displays most recent setup	<b>Max. Pressure Rating:</b>	150 psig (10 bar)
<b>Enclosure:</b>	NEMA-4X/IP66 impact resistant plastic enclosure; intrinsically safe: designed to meet FM Class 1, Division 1, Groups A-G, approval pending	<b>Operating &amp; Storage Temperature:</b>	-20°C to +40°C (-4°F to +105°F)
<b>Sensor:</b>	Planar, temperature compensated	<b>Resolution:</b>	0.1°C dew point temperature
<b>Measurement Range:</b>	-100°C to +20°C (-148°F to +68°F) dew point temperature	<b>Calibration:</b>	Factory recalibration recommended every 6-12 months depending on use

\*\* With optional pressure transducer

# Hygrotec™ MMY 150 / DY 55

## Trace Moisture Analyzer

The Hygrotec™ MMY 150 provides economical trace moisture analysis system for dew point in specialty gases and dry air. It consists of a MMY 150 transmitter and DY 55 probe. The probe utilizes a proven, planar capacitive sensor for fast response times, corrosion-resistance, calibration stability, and a low temperature coefficient. The probe converts the capacitance into a standardized PFM signal and transmits it to the MMY 150. Process moisture is controlled with one current output, one voltage output, two alarm relays, and one system alarm relay.

The MMY 150 is a stand-alone, single-channel analyzer that measures dew point temperatures from -100°C to +20°C (-148°F to +68°F) with ±2°C (3.6°F) accuracy. The analyzer includes a four digit LCD display and analog bar graph. The microprocessor-controlled analyzer displays dew point temperature in °C, or, optionally, in ppm<sub>v</sub>. This optional version can also communicate with an external computer to provide multi-channel configuration or integration with other process analyzers. The MMY 150 mounts in a 19" rack mount, a panel mount or a wall mount enclosure with 230/115 V AC power supply.



### Features

- Cost-effective, flexible trace moisture analyzer with dew point and optional ppm<sub>v</sub> display
- Dew point measurement range of -100°C to +20°C with ±1°C accuracy
- Interference-free PFM signal transmission
- Compact, 7 pitch (35mm) module
- Standardized, programmable probe output signal; with three alarms
- RACKBUS compatible

Dimensional Drawing &  
Ordering Information: See page 12

### DY 55 Probe Specifications

<b>Sensor:</b>	Planar gold/aluminum capacitance
<b>Calibration Range:</b>	-80°C to +20°C (-112°F to +68°F) dew point temp.
<b>Recommended Recalibration Cycle:</b>	6-24 months, depending on application and required accuracy
<b>Accuracy:</b>	±2°C (±3.6°F)
<b>Repeatability:</b>	±1°C (±1.8°F)
<b>Max. Relative Humidity:</b>	50% @ dew points > 0°C (32°F)
<b>Temperature Coefficient:</b>	<0.2°C/°C (<0.2°F/°F)
<b>Ambient &amp; Storage Temperature:</b>	-60°C to +50°C (-76°F to +122°F)
<b>Nominal Operating Temperature:</b>	-20°C to +40°C (-4°F to +105°F)
<b>Max. Operating Pressure:</b>	350 bar (5100 psi)
<b>Helium Leak Rate:</b>	<10 <sup>-7</sup> , mbar l/s
<b>Max. Gas Velocity:</b>	50.0 m/s at 1 bar; 5.0 m/s at 10 bar; 0.5 m/s at 100 bar
<b>Signal Transmission:</b>	Standardized pulse (PFM) via two-wire cable
<b>Probe Mounting Adapter:</b>	Stainless Steel 1.4571 with G 1/2 thread (DIN/ISO 228) and Viton "O" ring seal
<b>Rating:</b>	IP 40
<b>Tightening Torque:</b>	50 Nm
<b>Wrench Width:</b>	30 mm
<b>Protection:</b>	Cap w/10µm filter
<b>Weight:</b>	250 grams (.55 lb)

### MMY 150 Analyzer Specifications

<b>Electronics:</b>	Microprocessor-controlled
<b>Measurement Units:</b>	Dew point temperature, ppm <sub>v</sub> optional
<b>Instrument Range:</b>	-100°C to +20°C (-148°F to +68°F), standard 0.01 to 9999 ppm <sub>v</sub> (optional)
<b>Display:</b>	4-character LCD w/ bar graph and two control fields
<b>Outputs:</b>	One 0/4-20 mA into 500 ohms max. load One 0/2-10 V output, 10 kohm min. load programmable range, damping & fail-safe mode (max/max/hold); two alarm relays SPDT dry contacts rating 2.5A, max. 250 V AC, max. 300VA at cos. <0.7, max. 100 W @ 100 V DC, programmable set points, fail-safe mode min. (dry) or max. (wet), and hysteresis; one system alarm, rating same as above, triggered by the self-diagnostics program.
<b>Supply Power Module:</b>	24 V DC, tolerance 20 to 30V DC, max. 2 V ripple within the tolerance, max. 125 mA
<b>Power Supply:</b>	Monorack II, 230/115 V AC, wall mount enclosure
<b>Analyzer Module:</b>	Formatted to Europa Card 100 x 160mm, fitting into a Racksyst, electrical connection via 28 pin plug DIN 41612
<b>Front Panel:</b>	7 pitch (35mm), black plastic, with blue overlay
<b>Protection:</b>	IP 20
<b>Weight:</b>	300 grams (.65 lb)

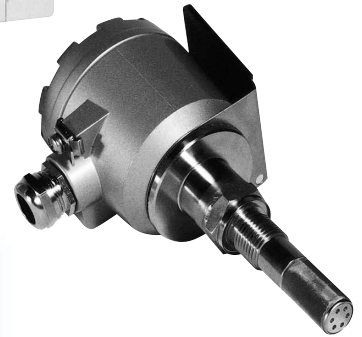


# Hygrotec™ MMY 170 / DY 75

## Trace Moisture Analyzer

The Hygrotec™ MMY 170 extends the capabilities of the Hygrotec MMY 150 by providing both moisture and temperature measurements in both gases and liquids. It consists of a MMY170 transmitter and DY 75 probe. The probe utilizes a planar capacitive gold/aluminum oxide moisture sensor and an RTD temperature sensor. The temperature signal is used for compensation of the moisture reading as well as for the measurement of process temperature.

The MMY 170 is an intrinsically safe (EEx ia) IIC analyzer and probe combination that measures dew point temperatures from -100°C to +20°C (-148°F to +68°F) with ±2°C (±3.6°F) accuracy. The analyzer includes a four digit LCD display and analog bar graph; it operates with a 24 V DC power supply. The microprocessor-controlled analyzer displays dew point temperature in °C, ppm<sub>v</sub>, and, optionally, in ppm<sub>w</sub> over a 0.01 to 9999 range. The MMY 170 mounts either in a 19" rack or a panel mount enclosure. Rack, panel mount or wall enclosure with 230/115 V AC power supply.



### Features

- Cenelec approved EEx ia, Zone 0, T6, IIC
- Cost-effective, flexible trace moisture analyzer with dew point and optional ppm<sub>w</sub> display
- Dew point measurement range of -100°C to +20°C with ±2°C accuracy
- Interference-free PFM signal transmission
- Compact, 7 pitch (35mm) module
- Standardized, programmable probe output signal; with three alarms

Dimensional Drawing &  
Ordering Information: See page 13

### DY 75 Probe Specifications

<b>Sensor:</b>	Planar gold/aluminum capacitance
<b>Calibration Range:</b>	-90°C to +20°C (-130°F to +68°F) dew point temperature
<b>Recommended Recalibration cycle:</b>	6-24 months, depending on application and required accuracy
<b>Accuracy:</b>	±2°C (±3.6°F)
<b>Repeatability:</b>	±1°C (±1.8°F)
<b>Max. Relative Humidity:</b>	50% @ dew points > 0°C (32°F)
<b>Temperature Coefficient:</b>	<0.2°C/°C (<0.2°F/°F)
<b>Ambient &amp; Storage Temperature:</b>	-60°C to +50°C (-76°F to +122°F)
<b>Nominal Operating Temp.:</b>	-20°C to +40°C (-4°F to +105°F)
<b>Max. Operating Pressure:</b>	350 bar (5100 psi)
<b>Helium Leak Rate:</b>	<10 <sup>-7</sup> , mbar l/s
<b>Max. Gas Velocity:</b>	50.0 m/s at 1 bar 5.0 m/s at 10 bar 0.5 m/s at 100 bar
<b>Signal Transmission:</b>	Standardized pulse (PFM) via three-wire cable
<b>Probe Mounting Adapter:</b>	Stainless Steel 1.4571 with G 1/2 thread (DIN/ISO 228) and O-ring seal out of Viton
<b>Rating:</b>	IP 65
<b>Tightening Torque:</b>	50 Nm
<b>Wrench Width:</b>	30 mm;
<b>Protection:</b>	Cap w/10µm filter
<b>Weight:</b>	830 grams (1.8 lbs)

### MMY 170 Analyzer Specifications

<b>Electronics:</b>	Microprocessor-controlled
<b>Measurement Units:</b>	Dew point temperature in °C, ppm <sub>v</sub> , ppm <sub>w</sub> (optional)
<b>Instrument Range:</b>	-100°C to +20°C (-148°F to +68°F), standard. 0.01 to 9999 ppm <sub>v</sub> , and ppm <sub>w</sub> , optional
<b>Display:</b>	4-character LCD w/bar graph 0-100% and 2 control fields
<b>Outputs:</b>	Two current outputs of 0/4-20 mA into 500 ohms max., two 0/2-10 V outputs, 10 kohm; programming range, damping, and fail-safe mode (i.e. min./max/hold); two alarm relays SPDT dry contacts rating 2.5A max. 250 V AC, max. 300 VA at cos φ <0.7, max.100 W @ 100 V DC, programmable set points, and hysteresis, one system alarm, rating same as above, triggered by the self-diagnostics program. Rackbus: Serial bus connections to ZA 672 communications interface. User Interface: Six push-buttons for display manipulation, setting parameters and functions utilizing the supplied programming matrix.
<b>Supply Power:</b>	24 V DC, tolerance 20 to 30 V DC, max. 2 V ripple within the tolerance, max. 125 mA
<b>Power Supply:</b>	Monorack II, 230/115 V AC, wall mount enclosure
<b>Analyzer Module:</b>	Formatted to Europa Card 100 x 160mm, fitting into a Racksyst, electrical connection via 28 pin plug DIN 41612
<b>Front Panel:</b>	7 pitch (35mm), black plastic with blue overlay
<b>Enclosures:</b>	Monorack wall mount, 65 x 165 x 200mm with integral power supply (selectable voltage 220/110 V AC, 200/100 V AC, or 48/24 V AC); panel mount version 1, 144 x 48 x 260 mm (requires 24 V DC power supply or optional 220/115 V AC power supply; this version supports up to four Hygrotec MMY 170 analyzers with one NT 471 power supply; cable connection via screw terminals.
<b>Protection:</b>	IP 20
<b>Weight:</b>	Electronics module: 300 grams (.65 lb) Monorack: 1.3 kg (2.86 lbs)

# MMY 2650

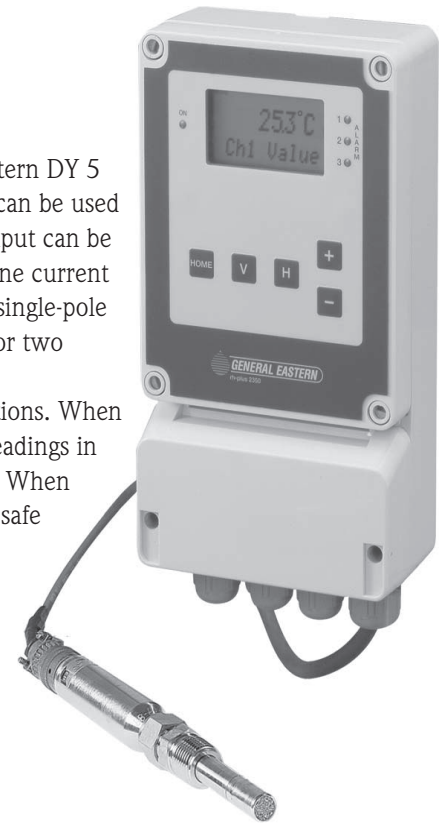
## Dew Point Analyzer

The MMY 2650 is a moisture analyzer designed to operate with the General Eastern DY 5 planar gold aluminum oxide dew point sensor. The unit offers an optional input that can be used for pressure compensation, an external temperature probe, or any other sensor this input can be configured to accept 0 to 5 VDC and 4 to 20mA. The standard product comes with one current output (0-20 mA or 4-20 mA), a system alarm relay, and 3 adjustable relays, all with single-pole double-throw 2.5A contacts, selectable failsafe mode, and adjustable hysteresis. One or two additional current outputs are available.

The Model MMY2650 is available in both wall mount or panel mount configurations. When used with the DY 5 Dew Point Probe, the system is capable of providing dew point readings in the range of -80°C to +20°C dew point over a temperature range of -20°C to +60°C. When used with approved Zener Barriers the Model MMY 2650 is approved as intrinsically safe for use in hazardous areas by Cenelec and FM. ATEX approval pending .

### Features

- Optional pressure or temperature compensation
- One or three current outputs
- Three adjustable relay outputs plus system alarm
- User-configurable for a wide variety of applications
- Two Line LCD



Dimensional Drawing & Ordering Information: See page 14

### MMY 2650 Trace Moisture Analyzer Specifications

<b>Electronics:</b>	State of the art micro-controller providing utmost flexibility to meet application needs
<b>Standard Inputs:</b>	2 (moisture and temperature)
<b>Optional Input:</b>	For pressure transducer providing live pressure compensation or other sensor. Signals: 0/1 to 5V, 0/4 to 20mA loop powered, or 4 to 20 mA. If live measurement is not available, pressure compensation can be achieved by entering a constant pressure value in matrix location V3HO
<b>Moisture Probe:</b>	Interconnects with DY 5 probe
<b>User Interface:</b>	Five push-buttons, easy configuration using a matrix
<b>Display:</b>	Alpha-Numeric LCD, displays measured value with units of measure, matrix location and programming instructions, error indication with error code if malfunction occurs; user selectable scanning feature alternating the display every 5 seconds through active channels (3 max)
<b>EMI/RDI/ESD Protection:</b>	Full compliance with EN 61326-1
<b>Units of Measure: (Moisture)</b>	Dew point °C, °F, ppm <sub>v</sub> (needs pressure measurement using the optional input for live calculation or pressure constant entered in matrix location V3-HO), lbs/MMSCF, g/m <sup>3</sup> , g/kg, vapor pressure in hPa, mmHg, rh%, process pressure calculated dew point °C, °F, (needs temperature measurement using the optional input for live calculation or pressure constant entered in matrix cell V3-HO))
<b>Units of Measure:</b>	(Temp.) °C, °F
<b>Units of Measure:</b>	(Pressure) Optional input used with a pressure transducer: bara, barg, psia, psig, hPa, hPag
<b>Measurement Ranges:</b>	User Programmable
<b>Analog Outputs:</b>	3, each configurable to any input, 0/4 to 20 mA, load resistance <500 Ohms, 0/1 to 5V, source resistance 249 Ohms, user selectable range, user selectable condition in case of error to 110%, -10% or hold at last measured value
<b>Digital Outputs:</b>	4 relays (SPDT dry contacts rated at 250V AC, 2.5 A, PAC = 300VA, cos phi > 0.7, P DC 100W, 100 VDC). 1 relay is system alarm. 3 relays are configurable to any input failsafe mode: energized/de-energized selectable, programmable hysteresis, high/low alarm selectable
<b>Serial Output:</b>	RS 485, update rate once per second
<b>Serial Communication:</b>	RS 485, needs GEI communication software for setup or diagnostics
<b>Program:</b>	Non-volatile memory
<b>Data :</b>	EEPROM
<b>Oper./Storage Temp:</b>	-10°C to 50°C (14°F to 122°F)
<b>Supply Voltage:</b>	85 to 275 VAC, optional 18 to 36 VDC
<b>Power Consumption:</b>	5.8 VA for line voltage units, 2.2 W for DC powered units
<b>Enclosures:</b>	Wall mount, IP54, NEMA 12, separate connection compartment
<b>Cable Entry:</b>	PG cable glands PG 9, 2 x PG 11, PG 13
<b>Weight:</b>	1 kg (2.2 lbs)

### DY 5 Probe Specifications

<b>Sensor:</b>	Planar gold/aluminum capacitance
<b>Calibration Range:</b>	-80°C to +20°C (-112°F to +68°F) special calibration to -100°C (-148°F)
<b>Recommended Recalibration Cycle:</b>	6 to 12 months depending on the application
<b>Accuracy:</b>	±2°C (±3.6°F) in the standard calibration range
<b>Repeatability:</b>	Better than 1°C ( 1.8°F)
<b>Calibration Data:</b>	Stored in analyzer's EPROM microprocessor
<b>Standard Operating Temperature:</b>	-20°C to +60°C (-4°F to +140°F)
<b>Max. Rel. Humidity:</b>	50% @ dew point > 0°C (32°F)
<b>Temp. Sensor:</b>	Zener device, range -70°C to +70°C (-94°F to + 158°F)
<b>Signal Transmission:</b>	Frequency, generated by probe electronics
<b>Operating Pressure:</b>	0 to 1750 psig (0 to 120 bar)
<b>Recommended Flow Rate:</b>	1 to 5 SCFH (in a bypass mode)
<b>Gas Flow Velocity:</b>	Static up to 165 ft/sec @ 14.7 psi, 16.5 ft/sec @ 150 psig, 1.65 ft/sec at 1500 psig with no particles in the stream; higher with sintered end cap
<b>Probe Tube:</b>	1/2" diameter, 316 stainless steel
<b>Mounting Adapter:</b>	1/2" tube x 1/2" MNPT, 316 SS compression fitting standard
<b>Cable Connection:</b>	Rugged multi-pin connector; screw terminal in explosion-proof junction box with 1/2" FNPT conduit connection
<b>Probe Cable:</b>	4-conductor, AWG 22, stranded, shielded to maintain EMI/RFI/ESD resistance, up to 1000 ft.
<b>Weight:</b>	.45 kg (1 lb)

### MMY 2650 Panel Mount Enclosure Specifications

<b>Material:</b>	Black anodized aluminum
<b>Dimensions:</b>	144mm x 144mm panel (5.67" x 5.67")
<b>Depth:</b>	Maximum protrusion at the rear of the panel: 209mm (8.23") Maximum protrusion at the front of the panel: 8.25mm (0.32") w/ bezel Maximum protrusion at the front of the panel with door: 32mm (1.26")
<b>Panel cutout:</b>	138 mm x 138mm (5.43" x 5.43")
<b>Wiring:</b>	Same configuration as the wall mount unit, wired in the rear
<b>Mounting:</b>	Insert from front into the panel, install the clamps, tighten the clamps' screws from the rear against the panel using a long screwdriver
<b>Front panel:</b>	Overlay w/membrane buttons integrated LEDs & clear window for display

# Ordering Information

MMY 30 - 1 2 3 4 5

1 **Approvals**

- A FM approved intrinsically safe Class I, II, III, Div. 1, Grps. A-G (I.S. power supply or barriers required)
- B FM approved explosion proof, Class I, Div. 1, Grps. A-D
- C Non-incendive Class I, Div. 2, Grps. A-D; Dust ignition proof Class II, III, Div. 1, Grps. E-G
- R No approvals
- Y Other

\* Note: If "1" is selected, a 1/4" tube fitting is supplied. If "2" is selected, a 6 mm tube fitting is supplied as specified in orifice configuration.

2 **Process Connection\***

- 1 1/2" NPT, male thread      9 Other
- 2 G 1/2 male thread

3 **Orifice Configuration**

- A Inlet: None    Outlet: Orifice (no tube fitting)    D Inlet: Orifice    Outlet: Tube fitting, no orifice
- B Inlet: None    Outlet: Orifice with tube fitting    Y Other
- C Inlet: None    Outlet: Tube fitting, no orifice

4 **Enclosure**

- 1 1/2" NPT, female with cable gland and plug      9 Other
- 2 PG 16, female with cable gland and plug

5 **Units, Range, Display, Fault Status**

- A Td -90°C to +10°C (-130°F to +50°F), no display, error 22 mA
- B Td -90°C to +10°C (-130°F to +50°F), no display, error Hold
- C Td -90°C to +10°C (-130°F to +50°F), no display, error 3.6 mA
- D 0 to 100 ppm<sub>v</sub>, 1 bar, no display, error 22 mA
- E 0 to 100 ppm<sub>v</sub>, 1 bar, no display, error Hold
- F 0 to 100 ppm<sub>v</sub>, 1 bar, no display, error 3.6 mA
- G Selectable parameters and ranges, integral display and user interface
- Y Other

MMY 31 - 1 2 3 4 5

1 **Approvals**

- A FM approved intrinsically safe Class I, II, III, Div. 1, Grps. A-G (I.S. power supply or intrinsically safe barriers required)
- B FM approved explosion proof, Class I, Div. 1, Grps. A-D
- C FM approved non-incendive Class I, Div. 2, Grps. A-D; Dust ignition proof Class II, III, Div. 1, Grps. E-G
- R No approvals
- Y Other

2 **Process Connection**

- 3 1/2" NPT compression fitting      8 G 1/2 male thread fitting, gasket, ferrula
- 6 No mounting hardware      9 Other

3 **Protective Cap**

- A Standard 100 micron sintered cap      9 Other
- B Cap with 4 x 0.25" holes

4 **Enclosure Conduit**

- 1 1/2" NPT, female with cable gland and plug
- 2 PG - 16 female with cable gland and plug
- 9 Other

5 **Units, Range, Display, Fault Status**

- A Td -90°C to +10°C (-130°F to +50°F), no display, error 22 mA
- B Td -90°C to +10°C (-130°F to +50°F), no display, error Hold
- C Td -90°C to +10°C (-130°F to +50°F), no display, error 3.6 mA
- D 0 to 100 ppm<sub>v</sub> 1 bar, no display, error 22 mA
- E 0 to 100 ppm<sub>v</sub> 1 bar, no display, error Hold
- F 0 to 100 ppm<sub>v</sub> 1 bar, no display, error 3.6 mA
- G Selectable parameters and ranges, integral display and user interface
- Y Other



# Ordering Information

MMY 35 - **1** **2** **3** **4** **5**

**1** **Certificate**

R Standard (not certified)

**2** **Process Connection**

G Thread G 1/2 to DIN ISO 228

**3** **Cable Connector**

B Bayonet plug-in connection

**4** **Moisture Output Signal**

1 4-20 mA loop powered (2-wire)      3 TTL frequency 360 Hz to 40 Hz (4-wire)  
2 Frequency 360 Hz to 40 Hz (4-wire)

**5** **Output Fault Status (4-20 mA)**

A 110%      C -10%  
B Hold last value

MMY 245 - **1** **2**

**1** **Certification**

R Standard

Y Other

**2** **Pressure Compensation**

R Basic configuration - no pressure sensor

P Pressure sensor built-in for ppm compensation

Y Other

### Accessories:

**63004006** Cable assembly, MMY245 to DewPro®, RS485 cable

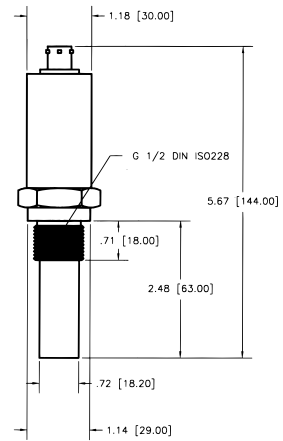
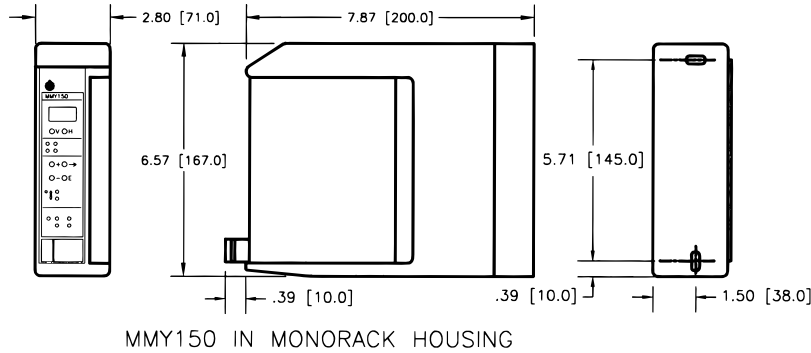
**63004005** Connector/cable assembly, RS485 DewPro® (RS485 communication cable)

**63005033** Carrying case including shoulder strap

**63005032** Replacement shoulder strap

**63002013** Connector/cable assembly, external power and non-IS outputs with 3 meter of cable

# Ordering Information



## MMY 150 -

- 1
- 2
- 3
- 4
- 5
- 6

### 1 Certificate

R Without certificate

### 2 Version

- 1 Dew point measurement only
- 3 Dew point, ppm<sub>v</sub>, Rackbus communication

### 3 Power Supply

A 20 to 30 V DC

### 4 Analog Output

- 1 One analog output 0/4 to 20 mA, 0/2 to 10 V

### 5 Alarm Relays

A Two dry alarm contacts (SPDT)

### 6 System Alarm

- 1 One dry alarm contact (SPDT)

## Monorack Wall-Mounted Housing

### Monorack II-R1 - 1

- 1

- A 110/220 V AC 50/60 Hz detachable
- D 24/48 V AC 50/60 Hz detachable
- E 24 V DC, without power unit
- L 100/200 V AC 50/60 Hz detachable

## DY 55 -

- 1
- 2
- 3
- 4

### 1 Certificate

R Standard (not certified)

### 2 Process Connection

G Thread G 1/2 to DIN ISO 228

### 3 Housing

B With Bendix plug-in connection

### 4 Sensor Protection

- 2 Protection tube with 10µm fine filter

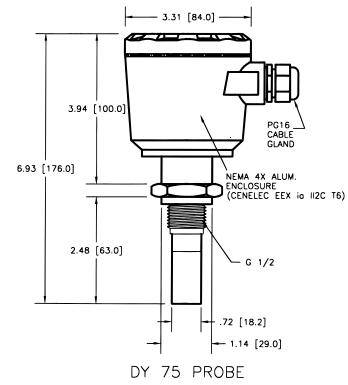
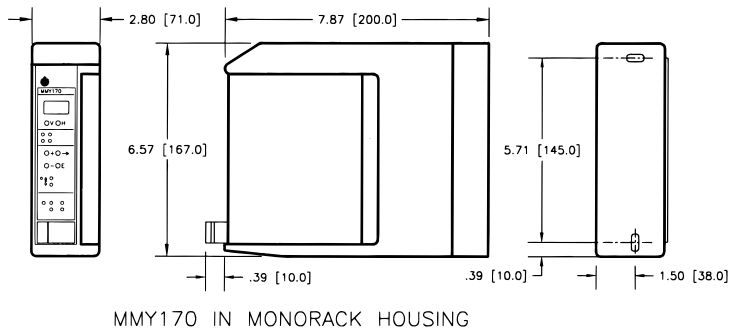
## 55C150 Cable

### 55C150 - 1

- 1

- R Cable 5 m long
- L Cable longer than 17 ft (specify total length in ft.)
- M Cable longer than 5 m (specify total length in meters)

# Ordering Information



## MMY 170 - 1 2 3 4 5 6

### 1 Certificate

- R Without certificate
- A CENELEC approved (EEx ia) IIC, Zone 0, T6

### 2 Version

- 1 Dew point, ppm<sub>v</sub>, temperature with compensation, Rackbus communication
- 2 Additional moisture unit ppm<sub>v</sub> for liquids

### 3 Power Supply

- E 20 to 30 V DC

### 4 Analog Output

- 2 0/4 to 20 mA, 0/2 to 10 V for moisture  
0/4 to 20 mA, 0/2 to 10 V for temperature

### 5 Alarm Relays

- A Two dry alarm contacts (SPDT)

### 6 System Alarm

- 1 One dry alarm contact (SPDT)

## DY 75 - 1 2 3 4

### 1 Certificate

- A CENELEC approved, (EEx ia) IIC T6, Zone 0
- N Natural gas probe, certified (EEx ia) IIC T6, Zone 1
- R Standard (not certified)

### 2 Process Connection

- G Thread G 1/2 (DIN ISO 228)

### 3 Housing

- H Harting plug-in connection
- W PG-16 WADI connection

### 4 Sensor Protection

- 2 Protection tube with 10µm fine filter

## Analyzer 2650 Interconnecting Cable

### 1 C 2 50- 3

- 1 7 Multi-pin connector & tinned ends (use with probe DY5-\_7)
- 2 Spade lugs and tinned ends (use with probe DY5-\_2)

### 2 Analyzer Series

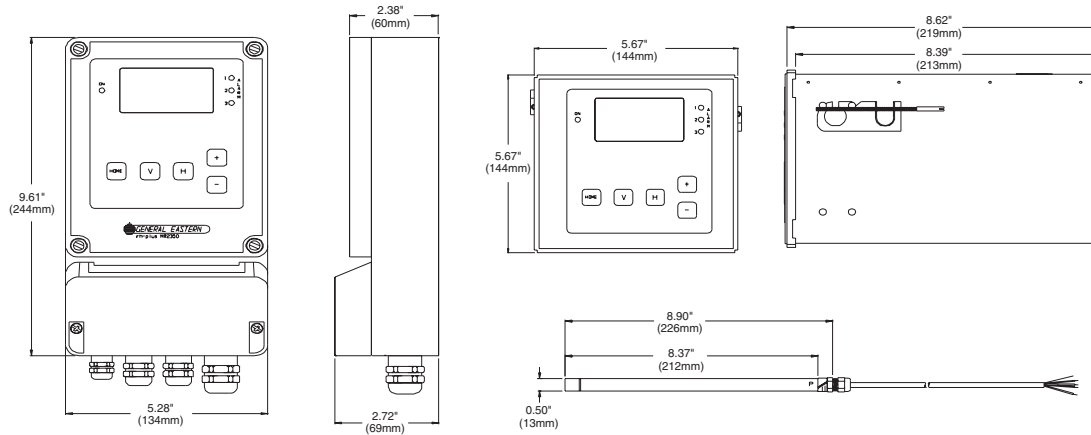
- 25 Used with 2550 series
- 28 Used with 2850 series

### 3 Cable Length

- 0 5 ft. long
- L Other length (specify required length up to 1000 ft.)



# Ordering Information



## Analyzer 2650 - 1 2 3 4 5 6

### 1 Certification/Approvals

- R For safe area
- Y Other

### 2 Enclosure

- 5 Panel mount enclosure, 5.67" x 5.67" (144mm x 144mm), 8.23" (209mm) depth
- 6 Field enclosure (wall mount), NEMA 12, IP 54
- 7 NEMA 7 enclosure Class 1, Div. 1, Groups B, C, and D
- 8 Panel mount (see option 4) but with lockable door
- 9 Other

### 3 Operation with

- B DY5 xx trace moisture probe
- Y Other

### 4 Optional Input

- 1 None
- 2 One optional input for pressure or other sensor (voltage or current)
- 9 Other

### 5 Outputs

- A One current output 0/4 to 20mA
- B Two current outputs 0/4 to 20mA
- C Three current outputs 0/4 to 20mA
- Y Other

### 6 Power Supply

- A ~ Line power 85 to 265 VAC, 47-63Hz, 0.2A
- B == 18 to 36 VDC, 0.2A
- Y Other

## Moisture

## Probe DY5 - 1 2 3 4 5

### 1 Mounting Adapter

- 0 No fitting, but includes 1/2" tube nut and ferrules
- 2 3/4" MNPT x 1/2" tube, 316 SS compression fitting
- 3 1/2" MNPT x 1/2" tube, 316 SS compression fitting
- 4 3/4" x 16 "O" ring x 1/2" tube, 316 SS compression fitting
- 6 SS-8-VCR-3 gland with female nut SS-8-VCR-1 welded to the probe tube; includes gasket/retainer assembly
- 9 Other

### 2 Probe Structure/Cable Connector

- 1 Replacement moisture probe for junction box probes; 1/2" diameter, 5" long, 316 SS probe with 1/2" MNPT welded on for mounting on existing junction box
- 2 Probe mounted to a junction box, length 10"
- 7 Probe with 8-pin cable connector, length 7.8"
- 9 Other

### 3 Analyzer

- 25 The probe will be used with the model 2550
- 26 The probe will be used with the model 2650
- 28 The probe will be used with the model 2850
- 99 Other

### 4 Protective Sensor Cap

- 0 Standard end cap
- S Sintered stainless, 100 µm (for high flow, particulates, liquids, and dryers)
- Y Other

### 5 Special Modification/Certification

- 00 None
- C1\* With circuitry designed for Class 1, Div. 1, Gr. B, C & D (used with intrinsic safety barriers)
- C2\* CSA Approved for use in Class 1, Div. 2, Gr. B, C & D areas
- CX\*\* Explosion-proof design with flame arrestor-equipped flow cell for Class 1, Div. 1, Gr. C & D
- YY Other

\* ONLY available with Probe Structure Option 2

\*\* ONLY available with Probe Structure Option 2 and Mounting Adapter Option 3

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