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ENVIRONMENTAL
SENSORS INC.



GRO•POINT™ PRODUCT CATALOGUE

There's a lot happening below the surface™



V122013



ITEM #1617

GroPoint™ DATALOGGER GP-DL3T

Datalogger collects data from 3 moisture sensors and 1 temperature sensor



FEATURES:

- Memory operates on a 3.0V lithium coin cell
- 9V battery powers the sensors
- Logging intervals adjustable from every second to once every 9 hours.
- Included temperature sensor with 4.5ft (1.5m) cable

GroPoint Datalogger Product Description

GroPoint Dataloggers record sensor readings at time intervals selected by the user, from seconds up to nine hours. Data storage is in nonvolatile EEPROM memory and is maintained even if the battery fails. Batteries last more than one year under normal operation. Dataloggers can store up to 32,520 measurements divided between the sensor inputs. Water resistant enclosure.

Why use Dataloggers?

GP Dataloggers allow the user to compile data from sensors attached to the device. This data can be used to make informed decisions directly related to soil based issues. Windows* based software is used to initiate logging, retrieve measured data and view data in tabular or graphical format. Data is downloaded using GroPoint Data Shuttle.

GroPoint Datalogger Specifications

<i>Output:</i>	
<i>Storage:</i>	32,250 measurements
<i>Temperature range: Operating</i>	32 to 150°F (0 to 65°C)
<i>Temperature range: Storage:</i>	-4 to 160 °F (-20 to 70 °)
<i>Power requirements:</i>	Standard
<i>Dimensions:</i>	5.75" x 3.5" x 2" (14.6cm x 8.9cm x 5.1cm)
<i>Weight:</i>	0.6lbs (272 grams)



ITEM #1618

GroPoint™ DATALOGGER GP-DL4

Datalogger collects data from 4 moisture sensors



FEATURES:

- Memory operates on a 3.0V lithium coin cell
- 9V battery powers the sensors
- Logging intervals adjustable from every second to once every 9 hours.

GroPoint Datalogger Product Description

GroPoint Dataloggers record sensor readings at time intervals selected by the user, from seconds up to nine hours. Data storage is in nonvolatile EEPROM memory and is maintained even if the battery fails. Batteries last more than one year under normal operation. Dataloggers can store up to 32,520 measurements divided between the sensor inputs. Water resistant enclosure

Why use Dataloggers?

GP Dataloggers allow the user to compile data from sensors attached to the device. This data can be used to make informed decisions directly related to soil based issues. Windows* based software is used to initiate logging, retrieve measured data and view data in tabular or graphical format. Data is downloaded using GroPoint Data Shuttle.

GroPoint Datalogger Specifications

Output:

Storage: 32,250 measurements

Temperature range: Operating: 32 to 150°F (0 to 65°C)

Temperature range: Storage: -4 to 160 °F (-20 to 70 °)

Power requirements: Standard

Dimensions: 5.75" x 3.5" x 2" (14.6cm x 8.9cm x 5.1cm)

Weight: 0.6lbs (272 grams)



ITEM #1619

GroPoint™ GP-DU HAND HELD DISPLAY UNIT

Displays the moisture sensor measurement as a percentage



FEATURES:

- Battery operated
- Push button command
- Instant display
- Compact
- Self calibrated
- Reads analog soil moisture sensing devices
- Requires a 9V battery

GroPoint Hand Held Display Unit Product Description

GroPoint hand held display unit gives immediate information from a moisture sensor. GroPoint Display Unit features a large display window in a robust weather resistant casing with a 3 pin connector

Why us a Display Unit?

GP Hand Held Display Units provides instantaneous output of moisture content. It also allows the user to test each individual sensor to troubleshoot when the sensors are part of a larger system.

GroPoint Display Unit Specifications

<i>Output:</i>	32,250 measurements
<i>Storage:</i>	32 to 150°F (0 to 65°C)
<i>Temperature range: Operating</i>	-4 to 160 °F (-20 to 70 °)
<i>Temperature range: Storage:</i>	Battery operated (9V)
<i>Power requirements:</i>	4.75" x 2.75" x 1" (12.1cm x 7cm x 2.5cm)
<i>Size:</i>	0.4lbs (181grams)
<i>Weight:</i>	



ITEM #1620

GroPoint™ GP-HS CLASSIC

Moisture sensors for saline and clay soil moisture measurement



FEATURES:

- 0-5 mA output
- Moisture range from 8 – 42% (0.08 – 0.42m³/m³)
- Accuracy < +/- 1%
- Cable length of 16.4ft (5m)
- Connection – standard 3 pin, IP66/IP68 rated environmental connector
- Mechanical
- Analog

Moisture Sensors Product Description

GroPoint TDT technology and is accurate, reliable and robust. The GroPoint Classic HS is calibrated for this difficult environment. Manufactured in stainless steel with all electronics sealed in water-proof epoxy, GroPoint provides years of reliable service. The sensor responds immediately and accurately to changes in soil moisture. Unit is rugged, easy to use and maintenance. The moisture sensors are attached to 16.4 feet or 5 meter cable, with lengths up to 500' available upon request.

Why Measure Moisture?

This highly accurate GroPoint Classic Moisture Sensor provides cost effective soil moisture measurement. GroPoint Classic can be deployed in irrigation sensitive zones, such as around the root zone, to enable full control of precision irrigation needs. Moisture measurement is used in applications such as turf grass, high-value agriculture crops to better manage irrigation practices, increase plant and turf quality and reduce fertilizer run-off. GroPoint Moisture Sensors have a high level output signal for direct interface to a variety of control, datalogging, and telemetry systems.

GroPoint Moisture Sensor Specifications


<i>Output:</i>	0-5 mA, optional formats: 0-2.5V, 4-20mA
<i>Range:</i>	8% to 42%
<i>Accuracy:</i>	±1% of full scale
<i>Temperature range: Operating</i>	32 to 150°F (0 to 65°C)
<i>Temperature range: Storage:</i>	-4 to 160 °F (-20 to 70 °)
<i>Power requirements: Standard:</i>	5.5 – 18VDC, 10 – 20mA (max)
<i>Sensor Size:</i>	10.25" x 3.5" x 1.75" (26cm x 8.9cm x 4.4cm)
<i>Weight:</i>	1.4 lb. (635 g) including standard cable



ITEM #1626

GroPoint™ GP-MS CLASSIC

Moisture sensors for most or mixed soil moisture measurement

	<p style="text-align: center;">FEATURES:</p> <ul style="list-style-type: none"> ○ 0-5 mA output ○ Moisture range from 8 – 42% (0.08 – 0.42m³/m³) ○ Accuracy < +/- 1% ○ Cable length of 16.4ft (5m) ○ Connection – standard 3 pin, IP66/IP68 rated environmental connector ○ Mechanical ○ Analog
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Moisture Sensors Product Description

GroPoint TDT technology and is accurate, reliable and robust. Manufactured in stainless steel with all electronics sealed in water-proof epoxy, GroPoint provides years of reliable service. The sensor responds immediately and accurately to changes in soil moisture. Unit is rugged, easy to use and maintenance. The moisture sensors are attached to 16.4 feet or 5 meter cable, with lengths up to 500' available upon request.

Why Measure Moisture?

This highly accurate GroPoint Classic Moisture Sensor provides cost effective soil moisture measurement. GroPoint Classic can be deployed in irrigation sensitive zones, such as around the root zone, to enable full control of precision irrigation needs. Moisture measurement is used in applications such as turf grass, high-value agriculture crops to better manage irrigation practices, increase plant and turf quality and reduce fertilizer run-off. GroPoint Moisture Sensors have a high level output signal for direct interface to a variety of control, datalogging, and telemetry systems.

GroPoint Moisture Sensor Specifications


<i>Output:</i>	0-5 mA, optional formats: 0-2.5V, 4-20mA
<i>Range:</i>	8% to 42%
<i>Accuracy:</i>	±1% of full scale
<i>Temperature range: Operating</i>	32 to 150°F (0 to 65°C)
<i>Temperature range: Storage:</i>	-4 to 160 °F (-20 to 70 °)
<i>Power requirements: Standard:</i>	5.5 – 18VDC, 10 – 20mA (max)
<i>Sensor Size:</i>	10.25" x 3.5" x 1.75" (26cm x 8.9cm x 4.4cm)
<i>Weight:</i>	1.4 lb. (635 g) including standard cable



ITEM #1630

GroPoint™ GP-SS CLASSIC

Moisture sensors for sandy soil moisture measurement

	<p style="text-align: center;">FEATURES:</p> <ul style="list-style-type: none"> ○ 0-5 mA output ○ Moisture range from 8 – 42% (0.08 – 0.42m³/m³) ○ Accuracy < +/- 1% ○ Cable length of 16.4ft (5m) ○ Connection – standard 3 pin, IP66/IP68 rated environmental connector ○ Mechanical ○ Analog
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Moisture Sensors Product Description

GroPoint TDT technology and is accurate, reliable and robust. The GroPoint Classic SS is calibrated specifically for sandy soil. Manufactured in stainless steel with all electronics sealed in water-proof epoxy, GroPoint provides years of reliable service. The sensor responds immediately and accurately to changes in soil moisture. Unit is rugged, easy to use and maintenance. The moisture sensors are attached to 16.4 feet or 5 meter cable, with lengths up to 500' available upon request.

Why Measure Moisture?

This highly accurate GroPoint Classic Moisture Sensor provides cost effective soil moisture measurement. GroPoint Classic can be deployed in irrigation sensitive zones, such as around the root zone, to enable full control of precision irrigation needs. Moisture measurement is used in applications such as turfgrass, high-value agriculture crops to better manage irrigation practices, increase plant and turf quality and reduce fertilizer run-off. GroPoint Moisture Sensors have a high level output signal for direct interface to a variety of control, datalogging, and telemetry systems.

GroPoint Moisture Sensor Specifications


<i>Output:</i>	0-5 mA, optional formats: 0-2.5V, 4-20mA
<i>Range:</i>	8% to 42%
<i>Accuracy:</i>	±1% of full scale
<i>Temperature range: Operating</i>	32 to 150°F (0 to 65°C)
<i>Temperature range: Storage:</i>	-4 to 160 °F (-20 to 70 °)
<i>Power requirements: Standard:</i>	5.5 – 18VDC, 10 – 20mA (max)
<i>Sensor Size:</i>	10.25" x 3.5" x 1.75" (26cm x 8.9cm x 4.4cm)
<i>Weight:</i>	1.4 lb. (635 g) including standard cable



ITEM# 1634

GroPoint™ Single Value Controller

Activates irrigation control when the moisture content is outside of the set thresholds



FEATURES:

- Reacts immediately to moisture content changes
- Triggers irrigation controllers or valves
- Reliable
- Durable
- Analog

GroPoint Single Value Controller Product Description

Gro-Point™ Single Value Controller (GP-SVC) – Using the Gro-Point Single Value Controller with an existing irrigation system will permit pump start based on the volumetric moisture content. This results in lower risks to the crop, without human intervention. With Gro-Point GP-SVC, when the moisture reaches a user-selected threshold, a contact closure signal will be sent to the pump immediately. This threshold can be adjusted precisely within the usual range of frost condition, for best efficiency.

System requirement: one soil moisture sensor, one GP-SVC, power and wiring to the pump start. Several controllers can be wired to the same pump and the first to reach the parameters will turn on the pump.

Why use Moisture Control?

The Gro-Point™ family of products provides growers, landscapers, homeowners, farmers and maintenance staff with an user friendly data gathering system that can significantly enhance precision frost protection and irrigation practices. The following product overview identifies the various components available to either get started or develop a complete smart irrigation system based on the soil moisture conditions. This will ensure optimal growing conditions for your plants or green space using the least amount of water possible.

GroPoint Single Value Controller Specifications

Input: 24VAC, 14.4 output transformer (to supply 24VAC to the Controller and the Valve to be controlled)

Internal Relay Specifications: A maximum, 24VDC/24VAC (24W/24VA Max Switching Power)

Dimensions: 4.5" x 2.5" x 2.5" (11.4cm x 6.4cm x 6.4cm)

Dimensions with connectors: 5.25" x 3.5" x 2.5" (13.3cm x 8.9cm x 6.4cm)

Weight: 0.8lbs (363 grams)



ITEM #2525

GroPoint™ GPRS MODEM

Communicates with GP Gateway to transfer data



FEATURES:

- Operates with an a/c adapter
- Links directly to GP Gateway
- Real-time information transmitted
- Uses GPRS Mobile-T network in N.A.

GroPoint GPRM Modem Product Description

Gro-Point Wireless™ GPRS Modems uploads information from the GroPoint Field Nodes to the internet. Access to data is via www.gropoint.com. The modem redials automatically anytime the communication is lost.

Why use GPRM Modem?

The modem with the GroPoint Wireless System provide instantaneous data therefore reducing labor costs and optimizing the information to make wiser business decisions

GroPoint Modem Specifications:

Input:

<i>Sampling Frequency:</i>	Approximately once per 15 seconds
<i>Internal Relay Specifications:</i>	1A maximum, 24VDC/24VAC (24W/24VA Max Switching Power)
<i>Dimensions:</i>	4.5" x 2.5" x 2.5" (11.4cm x 6.4cm x 6.4cm)
<i>Dimensions with connectors:</i>	5.25" x 3.5" x 2.5" (13.3cm x 8.9cm x 6.4cm)
<i>Weight:</i>	0.8lbs (363 grams)



ITEM #2555

GroPoint™ IG Soil Moisture Sensor – SD-12 Interface

Moisture sensors with Irrigation gauge for soil moisture measurement



FEATURES:

- 0-5 mA output
- Moisture range 0% to 50%
- Accuracy < +/- 1%
- Repeatability of .5%
- Cable length of 3.3 ft (1m)
- Connection – standard 3 pin, IP66/IP68 rated environmental connector
- SD-12 Interface, digital

Moisture Sensors Product Description

GroPoint TDT technology and is accurate, reliable and robust. The small, sleek light weight design is extremely easy to install. When installed vertically, the sensor averages volumetric moisture content over a soil layer of about 8" (21cm). When installed horizontally, the sensor can be used to measure moisture at a specific soil depth. The moisture sensor is attached to a 3.3 feet (1 meter) cable, with lengths up to 500' available upon request.

Why Measure Moisture?

This highly accurate GroPoint Lite Moisture Sensor provides cost effective soil moisture measurement. GroPoint Lite can be deployed in irrigation sensitive zones, such as around the root zone, to enable full control of precision irrigation needs. Moisture measurement is used in applications such as turfgrass, high-value agriculture crops to better manage irrigation practices, increase plant and turf quality and reduce fertilizer run-off. GroPoint Moisture Sensors have a high level output signal for direct interface to a variety of control, datalogging, and telemetry systems.

GroPoint Moisture Sensor Specifications

<i>Output:</i>	0-5 mA, optional 4-20mA available
<i>Range:</i>	0% to 50%
<i>Accuracy:</i>	±1% of full scale
<i>Operating Voltage:</i>	6-18 VDC
<i>Warm Up Time:</i>	100mA
<i>Sensor Size:</i>	7.7 x 0.8 x 0.2 inch (19.6 x 2.0 x 0.5cm)
<i>Weight:</i>	0.6 lb. (272 g) including standard cable
<i>Temperature:</i>	-20C to +70C



ITEM #2575

GroPoint™ LITE

Moisture sensors for soil moisture measurement



FEATURES:

- 0-5 mA output
- Moisture range 0% to 50%
- Accuracy < +/- 1%
- Repeatability of .5%
- Cable length of 16.4 ft (5m)
- Connection – standard 3 pin, IP66/IP68 rated environmental connector
- Mechanical

Moisture Sensors Product Description

GroPoint TDT technology and is accurate, reliable and robust. The small, sleek light weight design is extremely easy to install. When installed vertically, the sensor averages volumetric moisture content over a soil layer of about 8" (21cm). When installed horizontally, the sensor can be used to measure moisture at a specific soil depth. The moisture sensor is attached to a 16.4 feet (5 meter) cable, with lengths up to 500' available upon request. This sensor is strictly equivalent to the GroPoint Classic sensor from electrical, connections and power requirements standpoints.

Why Measure Moisture?

This highly accurate GroPoint Lite Moisture Sensor provides cost effective soil moisture measurement. GroPoint Lite can be deployed in irrigation sensitive zones, such as around the root zone, to enable full control of precision irrigation needs. Moisture measurement is used in applications such as turf grass, high-value agriculture crops to better manage irrigation practices, increase plant and turf quality and reduce fertilizer run-off. GroPoint Moisture Sensors have a high level output signal for direct interface to a variety of control, datalogging, and telemetry systems.

GroPoint Moisture Sensor Specifications

<i>Output:</i>	0-5 mA, optional 4-20mA available
<i>Range:</i>	0% to 50%
<i>Accuracy:</i>	±1% of full scale
<i>Operating Voltage:</i>	6-18 VDC
<i>Warm Up Time:</i>	100mA
<i>Sensor Size:</i>	7.7 x 0.8 x 0.2 inch (19.6 x 2.0 x 0.5cm)
<i>Weight:</i>	0.6 lb. (272 g) including standard cable



ITEM #2577

GroPoint™ LITE 4-20mA

Moisture sensors for soil moisture measurement



FEATURES:

- 4-20 mA output (High Current)
- Moisture range from 0 to 50%
- Accuracy < +/- 1%
- Repeatability of .5%
- Cable length of 16.4 ft (5m)
- Connection – standard 3 pin, IP66/IP68 rated environmental connector

Moisture Sensors Product Description

GroPoint TDT technology and is accurate, reliable and robust. The small, sleek light weight design is extremely easy to install. When installed vertically, the sensor averages volumetric moisture content over a soil layer of about 8" (21cm). When installed horizontally, the sensor can be used to measure moisture at a specific soil depth. The moisture sensor is attached to a 16.4 feet (5 meter) cable, with lengths up to 500' available upon request. This sensor is strictly equivalent to the GroPoint Classic sensor from electrical, connections and power requirements standpoints.

Why Measure Moisture?

This highly accurate GroPoint Lite Moisture Sensor provides cost effective soil moisture measurement. GroPoint Lite can be deployed in irrigation sensitive zones, such as around the root zone, to enable full control of precision irrigation needs. Moisture measurement is used in applications such as turfgrass, high-value agriculture crops to better manage irrigation practices, increase plant and turf quality and reduce fertilizer run-off. GroPoint Moisture Sensors have a high level output signal for direct interface to a variety of control, datalogging, and telemetry systems.

GroPoint Moisture Sensor Specifications

<i>Output:</i>	4-20 mA
<i>Range:</i>	0% to 50%
<i>Accuracy:</i>	±1% of full scale
<i>Operating Voltage:</i>	6-18 VDC
<i>Warm Up Time:</i>	100mA
<i>Sensor Size:</i>	7.7 x 0.8 x 0.2 inch (19.6 x 2.0 x 0.5cm)
<i>Weight:</i>	0.6 lb. (272 g) including standard cable



ITEM #2580

GroPoint™ LITE 0-2.5V

Moisture sensors for soil moisture measurement



FEATURES:

- 0-2.5V output (Voltage)
- Moisture range from 0 to 50%
- Accuracy < +/- 1%
- Repeatability of .5%
- Cable length of 16.4 ft (5m)
- Connection – binder cable
- Analog output

Moisture Sensors Product Description

GroPoint TDT technology and is accurate, reliable and robust. The small, sleek light weight design is extremely easy to install. When installed vertically, the sensor averages volumetric moisture content over a soil layer of about 8" (21cm). When installed horizontally, the sensor can be used to measure moisture at a specific soil depth. The moisture sensor is attached to a 16.4 feet (5 meter) cable, with lengths up to 500' available upon request. This sensor is strictly equivalent to the GroPoint Classic sensor from electrical, connections and power requirements standpoints.

Why Measure Moisture?

This highly accurate GroPoint Lite Moisture Sensor provides cost effective soil moisture measurement. GroPoint Lite can be deployed in irrigation sensitive zones, such as around the root zone, to enable full control of precision irrigation needs. Moisture measurement is used in applications such as turfgrass, high-value agriculture crops to better manage irrigation practices, increase plant and turf quality and reduce fertilizer run-off. GroPoint Moisture Sensors have a high level output signal for direct interface to a variety of control, datalogging, and telemetry systems.

GroPoint Moisture Sensor Specifications

<i>Output:</i>	0-2.5V
<i>Range:</i>	0% to 50%
<i>Accuracy:</i>	±1% of full scale
<i>Operating Voltage:</i>	6-18 VDC
<i>Warm Up Time:</i>	100mA
<i>Sensor Size:</i>	7.7 x 0.8 x 0.2 inch (19.6 x 2.0 x 0.5cm)
<i>Weight:</i>	0.6 lb. (272 g) including standard cable



ITEM #2595

GroPoint™ PRO - SDI-12 Interface

Soil Moisture Sensor, Temperature and EC Measurements

	<p style="text-align: center;">FEATURES:</p> <ul style="list-style-type: none"> ○ Digital Sensor ○ Integrates with digital control systems ○ Accuracy < +/- 1% ○ Cable length 16.4ft (5m) ○ Reads temperature, electrical conductivity ○ Wetting front function ○ SDI-12 Interface
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Moisture Sensors Product Description

GroPoint Pro TDT technology and is accurate, reliable and robust. The small, sleek light weight design is extremely easy to install. When installed vertically, the sensor averages volumetric moisture content over a soil layer of about 8" (21cm), read temperature in the soil and electrical conductivity. The sensor also acts as a wetting front by setting dry/wet parameters. When installed horizontally, the sensor can be used to measure moisture at a specific soil depth. The moisture sensor is attached to a 9.8 feet (3 meter) cable, with lengths up to 500' available upon request.

Why Measure Moisture?

This highly accurate GroPoint Pro Moisture Sensor provides cost effective soil moisture measurement. GroPoint Pro can be deployed in irrigation sensitive zones, such as around the root zone, to enable full control of precision irrigation needs. Moisture measurement is used in applications such as turfgrass, high-value agriculture crops to better manage irrigation practices, increase plant and turf quality and reduce fertilizer run-off. GroPoint Moisture Sensors have a high level output signal for direct interface to a variety of control, datalogging, and telemetry systems.

Measurements

Soil Moisture: 0–55% volumetric, ±1.5% over range at 25 °C

Bulk Conductivity: 0 to 4 dS/m, 10% absolute

Temperature: 30 to +80 °C

Connections

Red: DC Input Voltage

Green: Ground

White SDI-12 I/O Bus



GroPoint™ PRO - SDI-12 Interface ITEM #2595 (cont)

Soil Moisture Sensor, Temperature and EC Measurements

Mechanical

Dimensions: 8" long, 1.125" wide, 0.5" thick
 Cable: 3m long, 4xAWG22, dual-shielded twisted pair rated for direct burial

Electrical

Parameter:	Operating:	Maximum:
DC Input Voltage	7.5 to 14 VDC	18.0 VDC
DC Startup Current	15mA	50mA (surge, 60ms)
DC Idle Current:	1mA (at 7.5V)	
DC Measurement Current:	60 mA (typical)	00 mA
Measurement Duration	2 seconds (typical)	3 seconds
Temperature	20 °C to +70 °C	-40 °C to +85 °C

SDI-12 Command Set

The GroPoint Pro responds to the following SDI-12 commands (a = sensor address):

Command:	Meaning:	Response
a!	Acknowledge active	Device address (default address is '0')
a!	Send Identification	Identification string, e.g.
aAb!	Change Address	New device address b
?!	Address Query	Device address
aM!	Start Measurement	Measurement time and count (4 for GPP)
aD0!	Send Data	Data values in ASCII format (see below)

All other commands received by the GroPoint Pro sensor will be acknowledged with the device address only.

Measurement Sequence and Output Format

Example measurement sequence with sensor address = 3 (SDI-12 Logger issued commands are in bold, followed by the sensor response):

```

3M!30024
3
3D0!3+12.6+1.64+25.8+10.0
  
```

In response to the **3D0!** command, the sensor address is echoed back, followed by the volumetric water content in percent (+0.00% to +55.0%), the bulk conductivity in decisiemens per metre (+0.00 dS/m to +4.00 dS/m), the temperature in degrees Celsius (-30.0 °C to +80.0 °C), and finally the wetting front in relative units (+0.00 to +10.0). All data values are delimited by the + or – symbol.

Identification Output Format

```

3I!
313ESIENVIRGPPRO113
  
```


In response to the **3I!** command, the sensor address is echoed back, followed by the SDI-12 protocol version (1.3 without the dot), the ESI identifier (ESIENVIR), the product descriptor (GPPRO), and finally the firmware version (1.1.3 without the dots).



ITEM #2611

GroPoint™ - Battery Module

Connects directly to the field nodes



FEATURES:

- Easy to install
- Operated by lithium battery
- Durable and reliable
- Weather resistant

GroPoint Battery Module Product Description

The GroPoint™ Battery Module powers the GroPoint Field Nodes.

- Wireless solution for powering a GroPoint Field Node and sensor devices
- Unique power management system to run GroPoint Field Nodes and a device through switched power outputs
- Replaceable 3.6V dc lithium “D” cell battery

Why Use Wireless Communication?

Wireless communication gives real-time information that may be critical to your operation. This form of information improves the quality of your product by evaluating and reacting while saving money and time.

GroPoint Battery Module Specifications

<i>Size:</i>	4.9” x 3.18” x 2.23” (124.5mm x 80.9mm x 56.6mm)
<i>Power:</i>	3.6V dc Lithium ion battery “D” cell
<i>Tightening Torque:</i>	0.56 N•m (5 in•lbf)
<i>Connections:</i>	PVC cable, 5 in Euro-style 150mm pigtail QD
<i>Operating temp:</i>	-40 to 70°C
<i>Case material:</i>	Polycarbonate
<i>Weight:</i>	0.57 lb. (0.26 kg)



ITEM #2613

GroPoint™ - Gateway

Gateway receives the signals from the field nodes



FEATURES:

- Easy to install
- Communicates with field nodes up to 3km away
- Can read up to 56 field nodes
- Durable and reliable
- Plugs directly into the modem

GroPoint Gateway Product Description

The GroPoint™ Gateway communicates with field nodes.

- Configurable sampling, alarming and reporting
- Power options include lithium ion battery pack, solar and a/c adapter
- Range: 3 km or 1.2 miles line of site in good conditions (unlimited when combined with repeaters or cell modem module)
- Easy to install with local display unit to confirm operation

The GroPoint Gateway communicates all information from each individual field node

Why Use Wireless Communication?

Wireless communication gives real-time information that may be critical to your operation. This form of information improves the quality of your product by evaluating and reacting while saving money and time.

Field Node Specifications

<i>Size:</i>	3.18" x 3.79" x 1.86" (80.9mm x 96.2mm x 47.3mm)
<i>Power:</i>	Lithium ion battery module or solar option
<i>Reads</i>	up to 56 field nodes
<i>FCC</i>	Approved antenna
<i>Range*</i>	900 MHz: Up to 9.6 kilometers (6 miles) 2.4 GHz: Up to 3.2 kilometers (2 miles)
<i>Transmit Power</i>	900 MHz: 30 dBm Conducted 2.4 GHz: 18 dBm Conducted (≤ 20 dBm EIRP with standard 2 dB antenna)
<i>Antenna Connector Ext.</i>	Reverse Polarity SMA, 50 Ohms
<i>Antenna Max.</i>	Tightening Torque 0.45 N•m (4 in•lbf)
<i>Weight:</i>	0.57 lb. (0.26 kg)



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ITEM #2615

GROPOINT™ - Field Node for Weather Station

Field communication to transfer data to Gateway



FEATURES:

- Easy to install within plants
- Durable and reliable
- Uses a battery
- Transmits real time information to a modem

RELATED COMPONENTS:

- GP Barometric Pressure Sensor ITEM #2970
- GP Wind Speed Sensor ITEM #2971
- GP Wind Direction Sensor ITEM #2972
- GP Relative Humidity Sensor ITEM #2973
- GP Solar Radiation Sensor ITEM #2975
- GP Weather Station Stand ITEM #2976
- GP Weather Station Tripod ITEM #2977

GP Field Node for Weather Station Product Description

The GP Field Node for Weather Stations, can be used communicate readings of weather sensors like wind direction, wind speed, humidity, barometric pressure, temperature, solar radiation and leaf wetness. The Node reads 5 km line of site and is unlimited when combined with repeaters or cell modem. The system is easy to install with local display to confirm communication. User-selectable serial communication style (RS232 or RS485) Power options include lithium ion battery pack and solar. Fully symmetric, bidirectional transceivers enable two-way communications and receive acknowledgments FHSS radios operate and synchronize automatically; no user setup is required. Selectable network IDs reduce interference from collocated networks

Why Use Wireless Communication?

Wireless communication gives real-time information that may be critical to your operation. This form of information improves the quality of your product by evaluating and reacting while saving money and time.

Field Node Specifications

- Size:** 3.18" x 3.79" x 1.86" (80.9mm x 96.2mm x 47.3mm)
- Power:** Lithium ion battery module or solar option
- Reads** up to 5 weather sensors
- FCC** Approved antenna
- Range*** 900 MHz: Up to 9.6 kilometers (6 miles) 2.4 GHz: Up to 3.2 kilometers (2 miles)
- Transmit Power** 900 MHz: 30 dBm Conducted 2.4 GHz: 18 dBm Conducted (≤ 20 dBm EIRP with standard 2 dB antenna)
- Antenna Connector Ext.** Reverse Polarity SMA, 50 Ohms
- Antenna Max.** Tightening Torque 0.45 N•m (4 in•lbf)
- Weight:** 0.57 lb. (0.26 kg)



ITEM #2616

GroPoint™ - Field Node for Moisture/Temp Sensors

Field radio unit – communicates with and transfers data to Gateway



FEATURES:

- Easy to install within plants
- Durable and reliable
- Uses a battery
- Transmits real time information to a modem

RELATED COMPONENTS:

- GP GroPoint Classic ITEM #1626
- GP GroPoint Lite ITEM #2575
- GP Temperature Sensor ITEM #2634

GP Field Node for Moisture/Temperature Product Description

Gro-Point™ field node reads up to four (4) Gro-Point™ soil moisture sensors (digital - sdi12 or analog), and one temperature sensor.

- Configurable sampling, alarming and reporting
- Power options include lithium ion battery pack and solar
- Range: 5 km or 3 miles line of site (unlimited when combined with repeaters or cell modem module)
- Easy to install with local display unit to confirm operation.

Other nodes read flow and pressure sensors or weather station instrumentation (see related Gro-Point™ product technical specifications for more detail)

Why Use Wireless Communication?

Wireless communication gives real-time information that may be critical to your operation. This form of information improves the quality of your product by evaluating and reacting while saving money and time.

Field Node Specifications


- Size:* 3.18" x 3.79" x 1.86" (80.9mm x 96.2mm x 47.3mm)
- Power:* Lithium ion battery module or solar option
- Reads* up to 4 moisture/temperature sensors
- FCC* Approved antenna
- Range** 900 MHz: Up to 9.6 kilometers (6 miles) 2.4 GHz: Up to 3.2 kilometers (2 miles)
- Transmit Power* 900 MHz: 30 dBm Conducted 2.4 GHz: 18 dBm Conducted (≤ 20 dBm EIRP with standard 2 dB antenna)
- Antenna Connector Ext.* Reverse Polarity SMA, 50 Ohms
- Antenna Max.* Tightening Torque 0.45 N•m (4 in•lbf)
- Weight:* 0.57 lb. (0.26 kg)



ITEM #2620

GroPoint™ - Field Node for Counter Sensors

Field radio unit – communicates with and transfers data to Gateway



FEATURES:

- Easy to install within plants
- Durable and reliable
- Uses a battery
- Transmits real time information to a modem

RELATED COMPONENTS

GP Tipping bucket rain gauge ITEM#2977
GP Flow meter

GP Field Node for Moisture/Temperature Product Description

The GP Field Node for Counter Sensors operates 2 counter sensors such as the GP Tipping Bucket Rain Gauge and Flow Meters.

- Configurable sampling, alarming and reporting
- Power options include lithium ion battery pack and solar
- Range: 5 km or 3 miles line of site (unlimited when combined with repeaters or cell modem module)
- Easy to install with local display unit to confirm operation.

Other Gro-Point™ field nodes read up to four (4) Gro-Point™ soil moisture sensors (digital - sdi12 or analog), temperature and pressure sensors or weather station instrumentation (see related Gro-Point™ product technical specifications for more detail)

Why Use Wireless Communication?

Wireless communication gives real-time information that may be critical to your operation. This form of information improves the quality of your product by evaluating and reacting while saving money and time.

Field Node Specifications

- Size:* 3.18" x 3.79" x 1.86" (80.9mm x 96.2mm x 47.3mm)
- Power:* Lithium ion battery module or solar option
- Reads* up to 4 counting sensors
- FCC* Approved antenna
- Range** 900 MHz: Up to 9.6 kilometers (6 miles) 2.4 GHz: Up to 3.2 kilometers (2 miles)
- Transmit Power* 900 MHz: 30 dBm Conducted 2.4 GHz: 18 dBm Conducted (≤ 20 dBm EIRP with standard 2 dB antenna)
- Antenna Connector Ext.* Reverse Polarity SMA, 50 Ohms
- Antenna Max.* Tightening Torque 0.45 N•m (4 in•lbf)
- Weight:* 0.57 lb. (0.26 kg)



ITEM #2634

GroPoint™ TEMPERATURE SENSOR Thermistor



FEATURES:

- 0-5mA output
- Temperature range from -40° to 50°C (-40° - 122°F)
- Accuracy < +/- .21%
- Cable length of 50 ft (15.2m)
- Connection – wired directly to field node
- Mechanical

Temperature Sensors Product Description

A temperature sensor measures temperature in air, water, or soil. Measurement range is -40° to 50°C (-40° to 122°F) in water or soil, -40° to 100°C (-40° to 212°F) in air; response time is minutes typical to 90% in air moving 1 m/sec (2.2 mph); response time in stirred water is 1 minute typical to 90%. This model sensor is attached to a 15.2m (50 ft) cable. Response time is < 3 minutes typical to 90% in 1 m/sec air flow/< 30 seconds typical to 90% in stirred water

Why Measure Temperature?

The GP temperature sensor provides information on the ambient temperature in the air or soil so that accurate information can be used for frost protection and other applications..

GroPoint Temperature Sensor Specifications

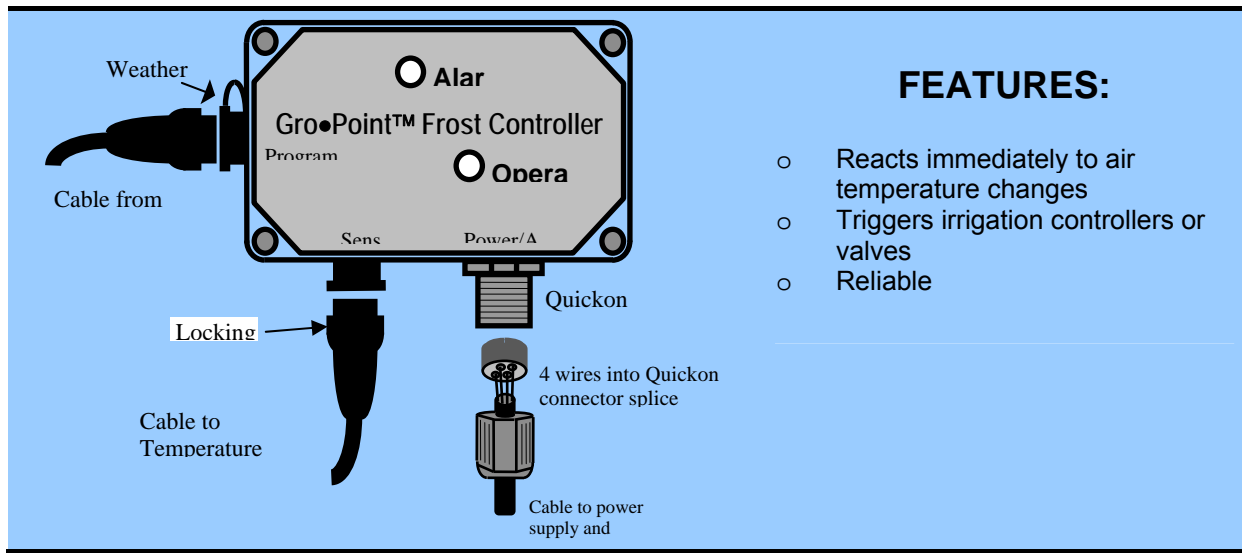
Output: 0-5 mA
Range: -40° to 50°C (-40° - 122°F)
Accuracy: ±0.21% of full scale
Probe Size: 0.5 cm x 2.5 cm (0.20 in. x 1.0 in.)
Weight: 280g (9.9 oz). including standard cable



ITEM #2825

GroPoint™ Frost Controller

Activates irrigation control when there is frost risk



FEATURES:

- Reacts immediately to air temperature changes
- Triggers irrigation controllers or valves
- Reliable

GroPoint Frost Protection Product Description

Gro-Point™ Frost Controller (GP-FC) – Using the Gro-Point Frost Controller with an existing frost protection system will permit pump start based on the current temperature conditions. This results in lower risks to the crop, without human intervention. With Gro-Point GP-FC, when the temperature reaches a user-selected threshold, a contact closure signal will be sent to the pump immediately. This threshold can be adjusted precisely within the usual range of frost condition, for best efficiency. System requirement: one thermistor, one GP-FC, power and wiring to the pump start. Several frost controllers can be wired to the same pump and the first to reach the temperature threshold will turn on the pump.

Why use Frost Protection?

The Gro-Point™ family of products provides growers, landscapers, homeowners, farmers and maintenance staff with an user friendly data gathering system that can significantly enhance precision frost protection and irrigation practices. The following product overview identifies the various components available to either get started or develop a complete smart irrigation system based on the soil moisture conditions. This will ensure optimal growing conditions for your plants or green space using the least amount of water possible.

GroPoint Datalogger Specifications

Input: 6-18 VDC, less than 25mA, can run a long time off of a car battery

Temperature Sensor: Accuracy: $\pm 0.7^\circ\text{F}$, Resolution: $\pm 0.7^\circ\text{F}$.

Measurement Range: 0.1°F to 99.8°F

Alarm Threshold Range: 5°F to 50°F

Sampling Frequency: Approximately once per 15 seconds

Internal Relay Specifications: 1A maximum, 24VDC/24VAC (24W/24VA Max Switching Power)

Dimensions: 4.5" x 2.5" x 2.5" (11.4cm x 6.4cm x 6.4cm)

Dimensions with connectors: 5.25" x 3.5" x 2.5" (13.3cm x 8.9cm x 6.4cm)

Weight: 0.8lbs (363 grams)



ITEM #2970

GroPoint™- BAROMETRIC PRESSURE SENSOR WE100



FEATURES:

- 4-20 mA output
- Marine grade cable with strain relief

Barometric Pressure Sensors Product Description

This highly accurate Barometric Pressure Sensor covers a pressure range from 800 to 1100 mb. The barometric pressure transmitter is fully temperature compensated within an operating range of -40° to 65° C. The barometric pressure sensors are attached to 25' of marine grade cable, with lengths up to 500' available upon request. The barometric pressure transmitter's output is 4-20 mA with a two wire configuration.

Why Measure Barometric Pressure?

One important parameter in monitoring weather systems is barometric pressure. Changes read by a barometric pressure meter or transmitter indicates weather front movement. Most weather stations include a barometric pressure sensor as one parameter they monitor. Barometric pressure transmitters are also used for many other applications including ocean buoys, ships, checking engine performance, airports, and many more.

A major use for barometric pressure sensors is related to determining surface and ground water level readings.


Barometric Pressure Sensor Specifications

<i>Output:</i>	4-20 mA
<i>Range:</i>	800-1100 mb
<i>Accuracy:</i>	±1% of full scale
<i>Linearity/Hysteresis:</i>	± 0.1%
<i>Operating Voltage:</i>	10-36 VDC
<i>Current Draw:</i>	Same as sensor output
<i>Warm Up Time:</i>	3 seconds minimum
<i>Operating Temp:</i>	-40° to +131°F (-40° to +55°C)
<i>Sensor Size:</i>	3x2x1 inch (7.6x5.1x2.5 cm)
<i>Weight:</i>	0.13 lb. (59 g)



ITEM #2971

GroPoint™ - WIND SPEED SENSOR WE550



FEATURES:

- 4-20 mA output
- Marine grade cable with strain relief
- Fully encapsulated electronics
- 1" mounting elbow

Wind Speed Sensor Product Description

The Wind Speed Sensor is constructed of high-impact materials, ensuring its durability and ruggedness even in severe weather conditions. The wind speed indicator has a very low threshold, and it responds accurately to subtle changes in wind speed. The wind speed transmitter is molded to 25' of marine grade cable, with lengths up to 500' available upon request. The wind speed sensor's output is 4-20 mA with a two wire configuration. The wind speed transmitter's electronics are completely encapsulated in marine grade epoxy within a rubber sleeve.

Why Measure Wind Speed?

Wind speed is an important weather parameter to monitor and record for many applications including meteorology, aviation, shipping, industry, construction, and many more. Some of the more common applications are for predicting and supporting weather forecasts, determining the safety of operating mechanical equipment like cranes and lifts in industry, estimating the efficiency of operating power generating wind farms, navigation and safe operation in the shipping industry, aircraft safety, wastewater and landfill odor control, and others.

Wind Speed is caused by air pressure gradients or the regions between weather fronts, air moves in the direction of the low pressure system. The steeper the gradient the stronger the wind. Additionally, wind speed is determined by many other factors including the Coriolis effect, friction, and land topography. Wind speed is typically reported in meters per second or miles per hour in the United States. For the shipping or boating industry wind speed can be reported in knots (a knot equal to one nautical mile per hour or approximately 1.15 miles per hour or approximately 0.5 meters per second).

Wind Speed Sensor Specifications


Type: Three cup anemometer
Threshold: <=3 mph (1.35 m/s)
Output: 4-20 mA
Range: 0 to 110 mph (0 to 50 m/s)
Accuracy: 0.2 mph over the range 11 to 55 mph (0.09 m/s from 4.9 to 24.6 m/s)

Operating Voltage: 10-36 VDC
Current Draw: Same as sensor output
Warm Up Time: 3 seconds minimum
Operating Temp: -40 to +131°F (-40 to +55°C)
Sensor Size: 7 inch diameter x 8-1/2 inch (18 cm diameter x 21.6 cm)
Weight: 1lb. (0.5 kg)



ITEM #2972

GroPoint™ - WIND DIRECTION SENSOR WE570



FEATURES:

- 4-20 mA output
- Marine grade cable with strain relief
- Fully encapsulated electronics
- 1" mounting elbow

Wind Direction Sensor Product Description

The Wind Direction Sensor is designed to accurately measure wind direction even in the harshest environments. The wind direction sensor is molded to 25' of marine grade cable, with lengths up to 500' available upon request. The wind direction sensor's output is 4-20 mA with a two wire configuration. The wind direction sensor's electronics are completely encapsulated in marine grade epoxy within a rubber sleeve.

Why Measure Wind Direction?

Wind speed is an important weather parameter to monitor and record for many applications including meteorology, aviation, shipping, industry, construction, and many more. Some of the more common applications are for predicting and supporting weather forecasts, determining the safety of operating mechanical equipment like cranes and lifts in industry, estimating the efficiency of operating power generating wind farms, navigation and safe operation in the shipping industry, aircraft safety, wastewater and landfill odor control, and others.

Wind Direction is caused by air pressure gradients or the regions between weather fronts, air moves in the direction of the low pressure system. Additionally, wind direction is determined by many other factors including the Coriolis effect, friction, and land topography. Wind direction is always given as the direction the wind is coming from.

Wind Direction Sensor Specifications


Type: Wind Vane with potentiometer
Output: 4-20 mA
Range: 0-360° (352° electrical, 8° open)
Sensitivity: 1 m/s (2.2 mph)
Accuracy: 1% of full scale
Weight: 1lb. (0.5 kg)

Operating Voltage: 10-36 VDC
Current Draw: Same as sensor output
Warm Up Time: 3 seconds minimum
Operating Temp: -40° to +131°F (-40° to +55°C)
Sensor Size: 8 1/2 inch diameter x 10 1/2 inch (21.5 cm dia. x 26.7 cm)



ITEM # 2973

GroPoint™ - WE600 RELATIVE HUMIDITY SENSOR



FEATURES:

- 4-20 mA output
- Marine grade cable with strain relief
- Fully encapsulated electronics

Humidity Transmitters Product Description

The Relative Humidity Sensor is a precise, durable unit. Humidity sensors are composed of a solid state capacitance element with a linear amplifier. The humidity sensor output is 4-20 mA with a three wire configuration. The Temperature Sensor is a high quality, rugged instrument, precision RTD calibrated to US National Standards. Each sensor is mounted on 25' of marine grade cable, with lengths up to 500' available upon request. The electronics are completely encapsulated in marine grade epoxy within a stainless steel housing.

What is Relative Humidity?

Air moisture content is typically described by a relative humidity measurement. Relative humidity is the ratio of the water vapor content to the concentration of water vapor that the atmosphere could hold. In general, the relative humidity will vary inversely with air temperature so that the relative humidity is highest when the temperature is lowest, and vice versa. Typically after sunrise, when the air warms, the relative humidity falls. Relative humidity is typically given in a percentage reading. The vapor in the air is considered at 100% relative humidity when the concentration of water vapor in air is equal to the water vapor concentration at saturation.

Why Measure Relative Humidity?

Relative humidity has a major effect on the environment. Humidity readings provide a chance to control these effects. Effects include causing discomfort in people or animals, damaging materials in warehouses or other storage facilities, affecting the climates for optimal production processes, impacting the quality of construction materials and many others.

Humidity and Temperature Sensors Specifications *Solar Shield sold separately*

<i>Type:</i> Capacitance	<i>Current Draw:</i> 3mA plus sensor output
<i>Output:</i> 4-20 mA	<i>Warm Up Time:</i> 3 seconds minimum
<i>Range:</i> 0 to 100% RH	<i>Operating Temp:</i> -40 to +131°F (-40 to +55°C)
<i>Accuracy:</i> ±2% RH	<i>Sensor Size:</i> 1-1/8 inch diameter x 7 inch (2.9 cm dia. x 18 cm)
<i>Operating Voltage:</i> 10-36 VDC	<i>Weight:</i> 0.5 lb. (227 g)



ITE M #2975

GroPoint™ - SOLAR RADIATION SENSOR WE300



FEATURES:

- 4-20 mA output
- Marine grade cable with strain relief
- Mounting plate included

Solar Radiation Sensor Description

This precision Solar Radiation sensor or pyranometer includes a bubble level, leveling screws and mounting hardware for easy installation. Solar Radiation sensors use a high stability silicon photovoltaic (PV) detector (blue enhanced) to obtain accurate readings. The solar radiation sensors are attached to 25 ft of marine grade cable, with lengths up to 500 ft available upon request. The pyranometer's output is 4-20 mA with a two wire configuration.

Why Measure Solar Radiation

Atmospheric circulation is driven by solar radiation. Determining the solar radiation and its interaction with the atmosphere and the Earth's surface is important, since solar radiation accounts for almost all of the energy available to the Earth. There are two ways solar radiation reaches the Earth's surface. The first is direct solar radiation where the solar radiation is directly transmitted through the atmosphere. The second is diffuse solar radiation where the incoming solar radiation is scattered or reflected to the Earth's surface. Almost 50% of shortwave solar radiation is absorbed by the Earth's surface and changed into thermal infrared radiation. Direct solar radiation is measured by using solar radiation sensors or pyranometers. These type of solar radiation sensors have a transparent hemisphere which measures the total amount of shortwave solar radiation. Solar radiation sensors or pyranometers measure the total radiation or sum of the direct radiation and the diffuse solar radiation.

Solar Radiation Sensors Specifications

<i>Detector:</i>	High-stability silicon photovoltaic detector (blue enhanced).
<i>Output:</i>	4-20 mA
<i>Range:</i>	0 to 1500W/m ²
<i>Spectral Response:</i>	400 to 1100 nm
<i>Accuracy:</i>	1% of full scale
<i>Operating Voltage:</i>	10-36 VDC
<i>Current Draw:</i>	Same as sensor output
<i>Warm Up Time:</i>	3 seconds minimum
<i>Operating Temp:</i>	-40° to +131°F (-40° to +55°C)
<i>Sensor Size:</i>	3inch diameter x 1-1/2 inch (7.6 cm dia. x 3.8 cm long)
<i>Weight:</i>	1/4 lb. (114 g)



ITEM# 2979

GroPoint™ - LEAF WETNESS SENSOR LW100



FEATURES:

- Easy to install within plants
- Durable and reliable

Leaf Wetness/Rainfall Sensor Product Description

The LW100 Leaf Wetness Sensor can be used to monitor leaf moisture. The sensor is easy to install directly within a plant. To install, the sensor should be hung within the plant from its cable at the location where leaf wetness needs to be monitored. The angle of the sensor should be set to approximately the same angle as that of the leaves that are being monitored.

Leaf Wetness Sensor Specifications

Power Requirements: 12VDC @1.0 mA

Output: 0-5 VDC

Size: 3x5.5 inch (7.6x14 cm)

Shipping Weight: 2 lbs (907 g)

Instrument Connections

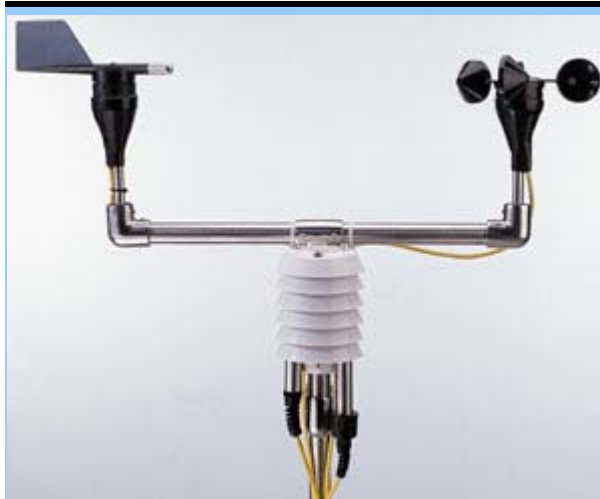
Black = Ground

Red = +12VDC

Brown = Signal Out 0-5 VDC



GroPoint™ - WE900 WEATHER STATION (4-20mA)



FEATURES:

- Easy-to-use and economical
- High quality, rugged, industrial grade sensors for monitoring, alarming, and reporting
- Wind Direction, Wind Speed, Humidity, and Temperature Sensor electronics are fully encapsulated in marine grade epoxy for complete environmental protection and a long operating life

Weather Monitoring Station Product Description

WE900 Weather Station is an easy-to-use and economical weather station for monitoring many weather conditions. The weather station is designed to be a drop-in weather monitoring station for easy integration with existing systems. The weather station's 4-20 mA sensors will interface with any SCADA, PLC, or RTU system that can accept a 4-20mA input.

Designed for general meteorological applications, the Weather Station is a rugged and low-cost system for a variety of weather monitoring applications, including:

- Agriculture
- Education
- Environmental Studies
- Landfills
- Reclamation
- Wastewater Facilities
- Water Budget Analysis
- Water Conservation

Included Sensors and Hardware

The WE900 Global Water Weather Station includes the following weather sensors and installation hardware:

- GP WE550 Wind Speed Sensor
- GP WE570 Wind Direction Sensor
- GP WE700 Temperature Sensor
- GP WE600 Humidity Sensor
- GP WE770 Solar Shield



- and the WE820 1 inch 304 stainless steel mounting frame with 316 stainless steel fittings, 6 ft tall, 3 ft wide crossbar
- Junction box

Mounting Hardware

Weather Station includes full assembly on a sturdy and durable stainless steel tube frame that can be mounted onto a pre-existing base or onto the WE830 Tripod for upright installation. The unit is designed for durability and endurance in harsh conditions. The [WE770 Solar Shield](#), a ventilated sun shield with high reflective, low heat retention, and low thermoconductivity, is provided as protection and a mounting platform for the Temperature and Humidity sensors.

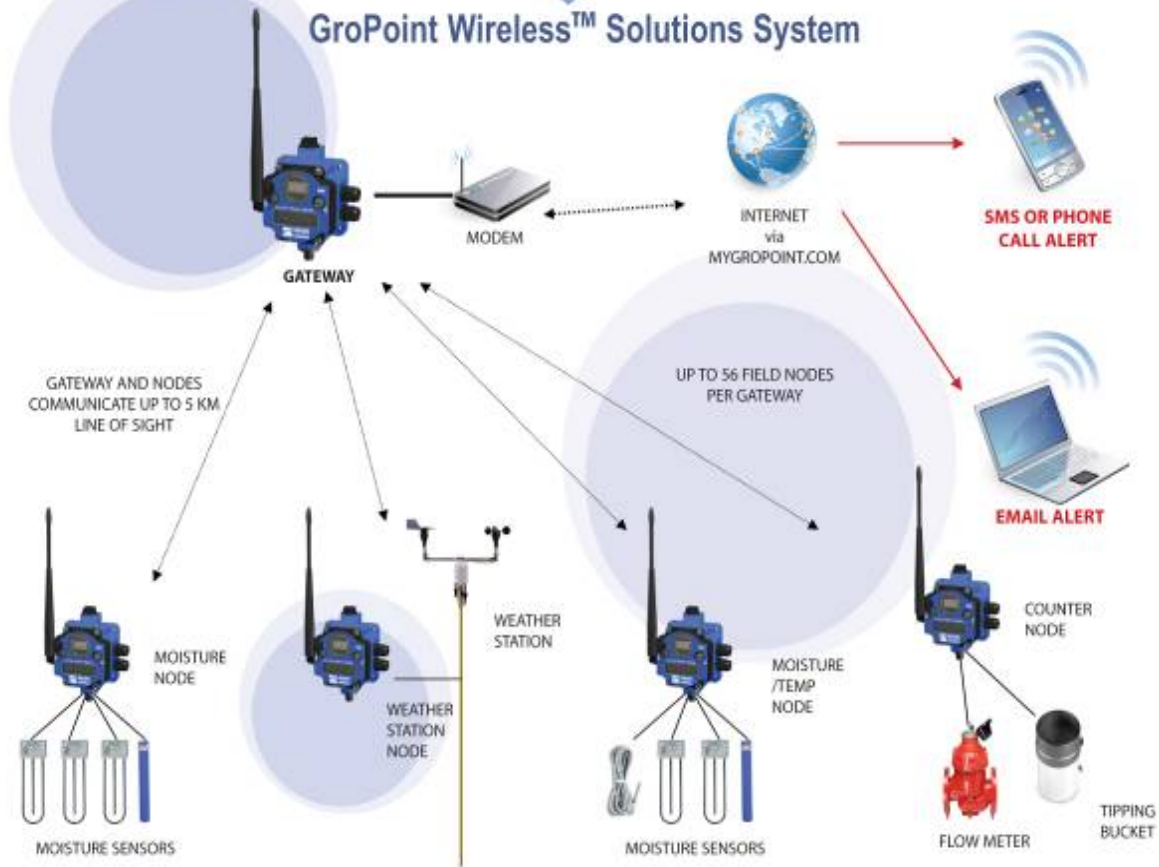
Weather Monitoring Station Installation

Proper siting for weather sensors is important to ensure accurate readings. For example, wind sensors should not be installed too close to a building, as turbulence created by the building can interfere with readings. The Solar Radiation sensor should be installed in direct sunlight on a level surface (bubble level and leveling screws are included with purchase).

Purchase of both the Wind Direction and Wind Speed sensors includes a T-mounting bar with a 1" stainless steel coupling unit and allen wrench for easy allen set screw installation. Individual wind sensors or solar radiation sensors include 1" stainless steel elbow couplers and an allen wrench. The Solar Shield (with a stainless steel elbow coupler) can be used for protection and easy installation of the Temperature and Humidity sensors. The Barometric Pressure sensor can be mounted with straps for a variety of applications (including inside a datalogger or to a display for hand-held use).



GroPoint Wireless™ Solutions System



<p>Field Nodes: Moisture Node Weather Station Node Moisture/Temperature Node Counter Node</p>	<p>Output Controls Flow Meters Pumps Valves Controllers</p>	<p>Sensors: GroPoint™ Classic GroPoint™ Lite GP Thermistor GP Barometric Pressure GP Wind Speed Sensor</p>	<p>GP Wind Direction Sensor GP Relative Humidity Sensor GP Tipping Bucket Rain Gauge GP Solar Radiation Sensor GP Leaf Wetness GP Water Level Sensor</p>
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GroPoint System

This system is very effective to show trends of irrigation, moisture presence and temperate

