Power and Simplicity

XR440 Pocket Logger

Pace Scientific
Data Loggers and Sensors
A pocket-size Data Logger

with Sensors for:

• Temperature
• Relative Humidity
• Pressure
• AC Current
• Light and more!

Also records:

• Process Signals
• Pulses & Events

No Signal Conditioning or External Power Required!

Complete software on web: www.pace-sci.com

Four channels

The XR440 Pocket Logger® is a button-less, four channel recorder designed for easy setup and trouble-free operation.

Universal inputs

Connect any PACE sensor directly to any Pocket Logger input; you can mix and match sensors in any combination.

Proven Reliability

Proudly manufactured in the USA, the Pocket Logger’s reliability has been proven by years of tough field use. Accuracy specifications are maintained without user adjustment. An NIST traceable Certificate of Validation is included with each unit.

Simplicity

With no power cord to run, and weighing only 6 ounces, you can mount a Pocket Logger anywhere. Unlike strip-chart recorders, there is no paper or ink, and no buttons - so no one can tamper with your data. In the field, your recorded data is easily transferred to a portable PC. Or carry the logger back to your office - in your pocket!

Powerful Software

A Pocket Logger’s data is quickly transferred to a computer running Pocket Logger Software®. The software runs on any Windows PC and may be freely downloaded from our website! For advanced users, a command line interface enables the Pocket Logger to communicate with other programs.

Flexibility

You can access one or more Pocket Loggers at remote sites using dial-up modems (cellular or land line), or wireless transceivers. Multiple Pocket Loggers can be networked together using the M31 Multiplexer. Full support for dial-up modems, network and wireless communication is included with our free Pocket Logger Software.

Features

• Simple to use.
• Accepts over 60 direct-connect sensors.
• High accuracy: ±0.25% at 12 bits.
• Battery life of 2-3 years with any mix of sensors.
• User-replaceable battery.
• Real time ‘Strip Chart’ display mode.
Quick Setup
Select a sample rate, start and run mode, and sensor scaling. Descriptive labels for each sensor and the logging session may also be entered. Setups may be saved for later use.

On-line documentation
Questions about sensor wiring and scaling are quickly answered using the context sensitive help.

Free lifetime updates
Pocket Logger Software is compatible with the XR440 Pocket Logger and all earlier models, including our first loggers which shipped twenty years ago! The software is periodically updated with new capabilities. Updated software is posted on our website, available for free download.

Presentation quality graphs
An easy to read graph is instantly available whenever you transfer data from the Pocket Logger or view data in Real Time. Existing data files are quickly selected and displayed.

Graph components easily changed include:
• Data traces (combine, separate, or hide).
• Time scale (zoom).
• Moisture scale (relative humidity, dew point, or wet bulb).
• Temperature scale (deg C / deg F).
• Trace thickness.
• Color of any graph component.
• Font size.

Export data
All or any portion of your logged data may be quickly exported to Excel or other programs.
PT9xx Temperature Probes

Pace PT9xx Series Temperature Probes connect to any Pocket Logger input channel and contain a precision 30k ohm thermistor. Using 24 AWG copper wire, leads may be extended to over 100 FT (30 meters) with no degradation in accuracy. Accuracy specifications on page 15.

Common Features

- Accuracy to ±0.15°C
- Extend leads with ordinary copper wire
- ±0.1°C interchangeability

Size Comparison - PT9xx Series

PT960

Rugged stainless steel probe, 6 mm (0.236") diameter and 50 mm (approx 2 inch) length with 6.1 meter (20 ft) cable. TPE jacketed cable with a diameter of 3.3 mm (0.13"), a round cross section and 24 gage, polypropylene insulated leads. Suitable for immersion, HVAC, and soil burial applications. Probe’s cable is not recommended for immersion in fuels (fuel splashing on cable is OK).

Temperature range: -40 to 100°C (-40 to 212°F)
Lead length: 20 feet (6.1m)
Interchangeability: ±0.1°C from 0 to 70°C (32 to 158°F)

PT907

Closed end mylar tube 0.127” x 0.375” length. Parallel bonded 24 gage wire with PVC insulation, 4FT length. Not rated for immersion.

Temperature range: -50 to 105°C (-58 to 221°F)
Lead length: 4 feet (1.2m)
Interchangeability: ±0.1°C from 20 to 45°C (68 to 113°F)

Other Temperature Sensors and Probes

- Platinum High Temperature Sensors - see page 11
  PT520: -40 to 260°C (-40 to 500°F)

- Type J Thermocouple Probe
  PT450: Requires Mvt Module - see page 10
  Description: 6” x 1/8” dia. Stainless Steel sheath with 10 FT Teflon-Insulated Cable.

CF916-1/8

Optional bored-through stainless steel fitting for PT916 probe. 1/8 NPT male threads. Also compatible with PT450 Thermocouple Probe.
Relative Humidity & Temperature Probe

Uses two Pocket Logger channels. A total of two RH & Temp. Probes may be connected to one Pocket Logger. Relative Humidity data is easily converted to Wet Bulb or Dew Point with a mouse click.

- High Accuracy
- Long Term Stability

Operating Temperature: -40 to 85°C (-40 to 185°F)
Humidity Range: 0-95% R.H.
Accuracy: ±3% RH from 0 to 95% RH
Stability: ±1% RH typical at 50% RH in 5 years
Repeatability: ±0.5% RH
Physical: Rugged housing with sintered SS filter.
Size: 0.5” dia x 2.5” long (13mm x 64mm)
Temperature accuracy: See Specifications, page 15
Interchangeability: ±0.1°C from 0 to 70°C (32 to 158°F)
Part No: (available in 3 lead lengths)
  TRH-100 12” (0.3 meter) leads
  TRH-100-10FT 10 ft (3 meter) shielded cable
  TRH-100-20FT 20 ft (6 meter) shielded cable
  TRH-100-50FT 50 ft (15 meter) shielded cable

Relative Humidity & Temperature Module

Plugs into Pocket Logger, replacing the detachable terminal block. Uses two channels, one for temperature, and one for humidity / wet bulb / dew point. Same specifications as probe on left except for temperature and humidity range (see below). Two channels are available for other PACE sensors, 0-5 vdc or resistive signals.

Operating Temp: -40 to 60°C (-40 to 140°F)
Humidity Range: 0-90% R.H.
Size: Adds 0.36” (9 mm) to Pocket Logger’s length
Part No: TRH-200

Humidity, Light & Temperature Module

Same as module above, but includes built-in light sensor for logging light levels. Channel 4 is available for a PACE sensor, 0-5vdc or resistive signal.

Operating Temp: -30 to 60°C (-22 to 158°F)
Humidity Range: 0-90% R.H.
Size: Adds 0.36” (9 mm) to Pocket Logger’s length.
Part No: TRH-300

Light Sensor

Connects directly to any Pocket Logger channel. Wide dynamic range. Low cost. 0.3” dia., 2.5” length, integral shielded cable.

Operating Temp: -30 to 70°C (-22 to 158°F)
Physical: Thermoplastic lens and housing.
Part No: LS100-4FT (4 ft / 1.2 m cable)
  LS100-15FT (15 ft / 4.5 m cable)
Pressure Sensors

• Connect to any Pocket Logger input
• No external power required

Series P1600

For Compressed Air, Hot and Cold Water, Gas, Oil, Refrigerant, Steam and similar applications.

Total Error Band: ±1.0% of Span: -20 to 85°C ( -4 to 185°F)
±1.5% of Span: -40 to -20°C ( -40 to -4°F)
-85 to -125°C ( -145 to -19°F)

Operating Temperature: -40°C to 125°C ( -40 to 257°F)

Physical:
NEMA 4X housing.

Pressure Port: 1/4” NPT Male, 304 SS material*

Overall Size: 1.15” dia. x 2.7” (29 mm x 69 mm)

Cable Length: 10 ft (3 meter) cable

Part Numbers (range):
P1650-5 (0-5 psig)*
P1650-vac-15 (vacuum-15 psig)*
P1650-30A (0-30 PSIA)*

Span: -20 to 85°C
P1600-30 (0-30 psig)
P1600-50 (0-50 psig)
P1600-100 (0-100 psig)
P1600-200 (0-200 psig)
P1600-500 (0-500 psig)
P1600-1000 (0-1000 psig)
P1600-1500 (0-1500 psig)
P1600-2000 (0-2000 psig)
P1600-3000 (0-3000 psig)
P1600-5000 (0-5000 psig)
P1600-7500 (0-7500 psig)
P1600-10000 (0-10,000 psig)
P1600-14500 (0-14,500 psig)
P1600-20000 (0-20,000 psig)
P1600-vac-30 (vacuum-30 psig)
P1600-vac-150 (vacuum-150 psig)
P1600-vac-300 (vacuum-300 psig)

Barometric Pressure Sensor: see page 11

Series P350 / P300

For indoor air applications including Lab/Clean Room Pressurization, Filter Differential Pressure and Fan Static Pressure.

P350

Pressure ranges: Stocked ranges listed below
Total error band: ±2% of span over compensated temperature range.

Compensated range: 5 to 45°C

Operating temperature: -20 to 60°C

Pressure media: Dry air or non-ionic (inert) gas.

Physical:
Molded thermoplastic housing, three color-coded 16” (0.3 m) leads, plastic fittings for 1/8” or 4 mm I.D. tubing.

Proof pressure: 7.5 psi, except 0-30 PSIA model: 30 psi

Weight: 1.3 oz. (37 grams)

Overall size, P350:
0.88” x 1.58” x 3.79” (22 x 40 x 97 mm)

Overall size, P300:
1.3” x 1.5” x 2.25” (33 x 38 x 57 mm)

Part Numbers:
P350-D-0.1-inch (+ ± 0.1 inch H2O)
P350-D-0.5-inch (+ ± 0.5 inch H2O)
P350-D-1-inch (+ ± 1 inch H2O)
P350-D-5-inch (+ ± 5 inch H2O)
P350-D-10-inch (+ ± 10 inch H2O)
P300-30-PSI-A (0-30 PSIA)

P300

Part Numbers:
P300-30-PSI-A (0-30 PSIA)
Series P400

- High Accuracy - For Dry Air or Inert Gases
- Differential/Gage or Absolute Pressure
- Waterproof, Epoxy Encapsulated Housing

Pressure ranges: Listed below
Combined repeatability, linearity and hysteresis: ±0.25%
Total error band: ±1%, of F.S. (except ±2 inch model: ±2% of F.S.) over compensated temperature range.
Operating temperature: Psi models: -25 to 90°C
Inch H2O models: -10 to 85°C
Compensated range: Psi models: -20 to 85°C
Inch H2O models: 0 to 60°C
Pressure media: Dry air or non-ionic (inert) gas.
Physical: Molded thermoplastic housing, three color-coded 12” (0.3 m) leads, ports accept 3/32” or 3 mm I.D. tubing, or 1/8” I.D. tubing w/ included adapters.
Common mode pressure: 150 psi
Proof / Burst pressure: See www.pace-sci.com/pressure-400.htm
Weight: 0.3 oz. (8 grams)
Overall size: 0.9” x 0.6” x 0.75” (23 x 15 x 19 mm)
Part Numbers:
- P400-D-2-inch (±2 inch H2O)
- P400-D-20-inch (±20 inch H2O)
- P400-D-1-psi (±1 psi)
  alt: ±27.7 inch H2O
- P400-D-15-psi (±15 psi)
- P400-D-30-psi (±30 psi)
- P400-A-15-psia (±15 psi Absolute)

Series P450

- High Accuracy - For Dry Air or Inert Gases
- Gage Pressure (Single Port)

Pressure ranges: Listed below
Combined repeatability, linearity and hysteresis: ±0.25%
Total error band: ±1%, of F.S. (except ±2 inch model: ±2% of F.S.) over compensated temperature range.
Operating temperature: Psi models: -25 to 80°C
Inch H2O models: -10 to 80°C
Compensated range: Psi models: -10 to 80°C
Inch H2O models: 0 to 60°C
Pressure media: Dry air or non-ionic (inert) gas.
Physical: Molded thermoplastic housing, three color-coded 12” (0.3 m) leads, port accepts 3/32” or 3 mm I.D. tubing, or 1/8” I.D. tubing using included adapter.
Common mode pressure: N/A
Proof / Burst pressure: See www.pace-sci.com/pressure-450.htm
Weight: 0.6 oz. (17 grams)
Overall size: 2.03” x 1.39” x 0.6” (52 x 35 x 20 mm)
Part Numbers:
- P450-G-5-inch (0 - 5 inch H2O)
- P450-G-20-inch (0 - 20 inch H2O)
- P450-G-1-psi (0 - 1 psi)
  alt: 0 - 27.7 in. H2O
- P450-G-5-psi (0 - 5 psi)
- P450-G-30-psi (0 - 30 psi)
AC Voltage Sensors

- Connect to any Pocket Logger input
- Self Powered
- Rugged DIN mount case
- Use SV300 model for 24 / 120 / 240 vac circuits
- Use SV600 model for 120 / 240 / 480 vac circuits

**AC Voltage range:** 0-300, 0-600
**Frequency Range:** SV300: 48 to 400 Hz  
SV600: 48 to 65 Hz
**Voltage Overload:** Full scale rating
**Response:** 400 milliseconds
**Accuracy:** ±0.5% of F.S. (Includes effects of linearity from 10% to 100% F.S.)
**Temperature effect:** (-20°C to 65°C): ±1.0%
**Output Ripple:** Less than 1% full scale
**Output:** 0 to 5vdc linear
**Weight:** SV300: 4 oz.,  
SV600: 10 oz.
**Dielectric Test** (input/output isolation): 1500 VAC
**Burden:** 2.0 VA
**Size:** 1.5”H x 3.5”W x 2”D

*External potential transformer included with SV600;  
External transformer size: 1.6”H x 2.8”W x 1.5”D.*

**Part No.**  
SV300 (0-300 VAC)  
SV600 (0-600 VAC)

**IMPORTANT - AC Voltage Sensors must be mounted and wired in a box, panel or suitable enclosure.**

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AC Current Sensors

- Connect to any Pocket Logger input
- Self powered
- Monitor AC motors or any AC load
- Accurate to 1% of full scale
- Split Core design - easy to install

**Input Current:** AC current, single phase 50/400Hz, load power factor 0.5 to 1.0 lead or lag.
**Accuracy:** ±1% of reading from 10% to 100% of full scale. ±3% of reading at 5% of full scale.
**Temperature effect:** ±0.05% from -20 to 55°C (-4 to 131°F).
**Response Time:** 250 ms. (input from 10% to 90% of F.S.)
**Ripple:** 0.5%
**Voltage Rating:** 600 VAC. Tested with full wave 10 kV impulse for 60 seconds.
**Output:** 0 to 5vdc linear.
**Surge:** 1.6x full scale (continuous).
**Output cable:** 8 ft signal cable (2.4meter)
**Size:** 1.25” thick. Other dimensions below.

* *see website for Accuracy specs for SC10A, SC20A and SC50A

**Part No.**  
**Range**  
**Window**  
**Length**  
**Width**  
SC10A 0-10 amp ac 0.5” square 2.6” 2.3”
SC20A 0-20 amp ac 0.5” square 2.6” 2.3”
SC50A 0-50 amp ac 0.5” square 2.6” 2.3”
SC100A 0-100 amp ac 0.5” square 2.6” 2.3”
SC200A 0-200 amp ac 1.0” square 3.3” 3.0”
SC500A 0-500 amp ac 2.0” square 4.1” 4.0”
SC1000A 0-1000 amp ac 4.0” square 6.1” 6.0”
SC1500A 0-1500 amp ac 2.5” square 5.4” 4.7”

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Pace Scientific, Inc.  
PO Box 4418, Mooresville NC 28117 USA Tel: 704-799-0688 Fax: 704-799-0177  
Website: www.pace-sci.com
DC Current Sensors

- Connect to any Pocket Logger input
- No external power required
- 2kV Isolation
- Very low internal resistance
- Rugged epoxy encapsulated housing

Output Error (25°C): ±1.0% of F.S.; ±5, ±20 amp models: 1.5% F.S.
Temperature effect: On span: ±0.10% of F.S. per °C
On zero: ±0.15% of F.S. maximum
Response Time: 2 milliseconds (10% to 90% of full scale)
Over current rating: 180 amps; ±5, ±20 amp models: 30 amps
±5, ±20 amp models: 60 amps for 1 second pulse, 1% duty cycle
all other models: 800 amps for 1 second pulse, 1% duty cycle
Output: Linear dc voltage (0 amps = 2.5v)
Isolation: 2kV RMS minimum (terminals to signal cable)
Oper. Temp. Range: -40°C to 80°C (-40°F to 176°F)
Power requirements: 5vdc at 14ma max.
Output cable: 10 ft signal cable (3 meters)
Current Terminals: Two 1/4-20 aluminum studs, with nuts and lock washers. Suitable for ring terminals (ring terminals not supplied).
Mounting Holes: Two 0.19" dia. holes, 3.0" O.C.
Overall Size: 3.50" long, 2.55" wide, 1.25" high

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC05A</td>
<td>±5 amps dc</td>
</tr>
<tr>
<td>DC20A</td>
<td>±20 amps dc</td>
</tr>
<tr>
<td>DC50A</td>
<td>±50 amps dc</td>
</tr>
<tr>
<td>DC100A</td>
<td>±100 amps dc</td>
</tr>
<tr>
<td>DC150A</td>
<td>±150 amps dc</td>
</tr>
<tr>
<td>DC200A</td>
<td>±200 amps dc</td>
</tr>
</tbody>
</table>

NOTE: A maximum of one DC Current Sensor can be powered from one XR440 Pocket Logger.

Input Scaling Module

- Five DC voltage ranges available
- Connects directly to XR440 Pocket Logger
- Many possible configurations

A plug-in miniature input scaler and terminal block for use in place of the Pocket Logger’s detachable terminal block. Enables the Pocket Logger to accept additional input ranges (see table below).

<table>
<thead>
<tr>
<th>Input Type</th>
<th>Dash number</th>
</tr>
</thead>
<tbody>
<tr>
<td>+/-5vdc</td>
<td>-5v</td>
</tr>
<tr>
<td>0-10vdc</td>
<td>-10v</td>
</tr>
<tr>
<td>0-20vdc</td>
<td>-20v</td>
</tr>
<tr>
<td>0-30vdc</td>
<td>-30v</td>
</tr>
<tr>
<td>0-60vdc</td>
<td>-60v</td>
</tr>
<tr>
<td>4-20ma</td>
<td>-20m</td>
</tr>
</tbody>
</table>

*Standard* input (for all Pace sensors, 0-5vdc and resistance).

Module scaling is fixed at the factory and must be specified when ordering. A channel specified as ‘-S’ is a ‘Standard’ Pocket Logger input for Pace sensors, 0-5vdc or resistive signals.

Input impedance: All vdc input ranges: 100k ohms.
Size: Adds 0.36” (9 mm) to Pocket Logger’s length.
Part No: ISM-x-x-x-x*

*Substitute a dash number from the table above for each channel (1-2-3-4). For example, ISM-S-S-5v-5v specifies an Input Scaling Module with ‘Standard’ inputs for channels 1 and 2 and +/-5vdc inputs for channels 3 and 4.

Note: In order to implement an external start/stop logging trigger, channel 1 must be a ‘Standard’ (-S) input.
Thermocouple / Millivolt Modules

Six Millivolt plug-in modules are available, each with a different millivolt range. Three of the modules (Mvt-11b, Mvt-22b, Mvt-50u) also accept a Thermocouple (Type J, K, N, R, S, T, B, C or E). A built-in, precision thermistor provides ambient temperature readings and for thermocouples, cold junction compensation.

A Millivolt module configures a Pocket Logger as follows: Channel 1: Ambient temperature. Channel 3: Millivolt signal (or thermocouple). Channels 2 and 4: ‘Standard’ channels for any Pace sensors, or 0-5 vdc or resistive signals.

Operating temperature: -40°C to 60°C (-40°F to 140°C)
Size: Adds 0.35” (9 mm) to XR440’s length, no change to XR440’s height and width.

Thermistor Sensor: ±0.1°C interchangeability, 0-70°C
Millivolt input type: Single ended, (-) terminal internally connected to dc ground.
Millivolt input impedance: Greater than 10 Megohm.

### Individual Specifications

<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>Range:</td>
<td>0-20 mv</td>
<td>±11 mv</td>
<td>±22 mv</td>
<td>0-50 mv</td>
<td>±107 mv</td>
<td>0-500 mv</td>
</tr>
<tr>
<td>Resolution (12 bits):</td>
<td>5 μV</td>
<td>12 μV</td>
<td>24 μV</td>
<td>12 μV</td>
<td>120 μV</td>
<td>120 μV</td>
</tr>
<tr>
<td>Input Offset:</td>
<td>5 μV max</td>
<td>200 μV max</td>
<td>200 μV max</td>
<td>5 μV max</td>
<td>200 μV max</td>
<td>5 μV max</td>
</tr>
<tr>
<td>Input Offset Drift:</td>
<td>0.05 μV per °C max</td>
<td>2 μV per °C max</td>
<td>2 μV per °C max</td>
<td>0.05 μV per °C max</td>
<td>2 μV per °C max</td>
<td>0.05 μV per °C max</td>
</tr>
<tr>
<td>Thermocouple</td>
<td>NO</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>NO</td>
<td>NO</td>
</tr>
<tr>
<td>System Accuracy:</td>
<td>0.4% of F.S. max</td>
<td>0.8% of F.S. max</td>
<td>0.8% of F.S. max</td>
<td>0.4% of F.S. max</td>
<td>0.8% of F.S. max</td>
<td>0.4% of F.S. max</td>
</tr>
</tbody>
</table>

### Thermocouple Specifications

#### for Mvt-11b, Mvt-22b and Mvt-50u

<table>
<thead>
<tr>
<th>Type</th>
<th>Mvt-11b</th>
<th>Mvt-22b</th>
<th>Mvt-50u*</th>
</tr>
</thead>
<tbody>
<tr>
<td>J</td>
<td>200°C (392°F)</td>
<td>400°C (752°F)</td>
<td>760°C (1400°F)</td>
</tr>
<tr>
<td>K</td>
<td>270°C (518°F)</td>
<td>530°C (986°F)</td>
<td>1220°C (2228°F)</td>
</tr>
<tr>
<td>N</td>
<td>340°C (644°F)</td>
<td>630°C (1166°F)</td>
<td>1300°C (2372°F)</td>
</tr>
<tr>
<td>R</td>
<td>1030°C (1886°F)</td>
<td>1760°C (3200°F)</td>
<td>1760°C (3200°F)</td>
</tr>
<tr>
<td>S</td>
<td>1120°C (2048°F)</td>
<td>1760°C (3200°F)</td>
<td>1760°C (3200°F)</td>
</tr>
<tr>
<td>T</td>
<td>230°C (446°F)</td>
<td>400°C (752°F)</td>
<td>350°C (652°F)</td>
</tr>
<tr>
<td>B</td>
<td>1570°C (2858°F)</td>
<td>1820°C (3308°F)</td>
<td>1820°C (3308°F)</td>
</tr>
<tr>
<td>C</td>
<td>620°C (1148°F)</td>
<td>1210°C (2210°F)</td>
<td>2320°C (4208°F)</td>
</tr>
<tr>
<td>E</td>
<td>160°C (320°F)</td>
<td>310°C (590°F)</td>
<td>660°C (1220°F)</td>
</tr>
</tbody>
</table>

#### Resolution (12 bit mode, approximate)

<table>
<thead>
<tr>
<th>Type</th>
<th>Mvt-11b</th>
<th>Mvt-22b</th>
<th>Mvt-50u*</th>
</tr>
</thead>
<tbody>
<tr>
<td>J, T</td>
<td>0.2°C (0.4°F)</td>
<td>0.4°C (0.7°F)</td>
<td>0.2°C (0.4°F)</td>
</tr>
<tr>
<td>K, N</td>
<td>0.3°C (0.5°F)</td>
<td>0.6°C (1.1°F)</td>
<td>0.3°C (0.5°F)</td>
</tr>
<tr>
<td>R</td>
<td>0.8°C (1.4°F)</td>
<td>1.6°C (2.9°F)</td>
<td>0.8°C (1.4°F)</td>
</tr>
<tr>
<td>S, B</td>
<td>1.0°C (1.8°F)</td>
<td>2.0°C (3.6°F)</td>
<td>1.0°C (1.8°F)</td>
</tr>
<tr>
<td>C</td>
<td>0.6°C (1.1°F)</td>
<td>1.2°C (2.2°F)</td>
<td>0.6°C (1.1°F)</td>
</tr>
<tr>
<td>E</td>
<td>0.15°C (0.3°F)</td>
<td>0.3°C (0.5°F)</td>
<td>0.15°C (0.3°F)</td>
</tr>
</tbody>
</table>

#### Minimum Temperature

<table>
<thead>
<tr>
<th>Type</th>
<th>Mvt-11b, Mvt-22b, Mvt-50u*</th>
</tr>
</thead>
<tbody>
<tr>
<td>J</td>
<td>-130°C (-202°F)</td>
</tr>
<tr>
<td>K, N</td>
<td>-50°C (-58°F)</td>
</tr>
<tr>
<td>T</td>
<td>-200°C (-328°F)</td>
</tr>
<tr>
<td>E</td>
<td>-100°C (-148°F)</td>
</tr>
</tbody>
</table>

**Mvt-50u Limitation:**
If you use the Mvt-50u with a thermocouple, it must be set (in Pocket Logger Software) for either high or low (cold) temperature. When set for high temperatures, the lowest readable temperature is the ambient temperature of the Mvt Module. When set for low temperatures, the highest readable temperature is the ambient temperature of the Mvt Module. The Mvt-11b and Mvt-22b do not have this limitation.

### Part Numbers:
Mvt-11b, Mvt-20u, Mvt-22b, Mvt-50u, Mvt-107b, Mvt-500u (6 different models)

#### Type J Thermocouple Probe:
Stainless Steel sheath 6” long x 1/8” dia. Includes 10 ft (3 meter) Teflon cable.
Part Number: PT450 (accepts CF-916-1/8 Fitting - see page 4)
RTD Temperature Sensors

- PT520: Continuous temperature rating of 260°C (500°F)
- Connects directly to XR440 Pocket Logger

- Ideal for surface temperature measurements
- Low mass for fast response

The PT510 and PT520 Temperature Sensors consists of a thin-film platinum element encased in a high temperature laminate. The PT520 can operate at continuous temperatures of up to 260°C. The PT510 includes an adhesive backing for easy mounting. A maximum of four PT510 / PT520 sensors may be connected to one XR440.

NOTE: Standard 100 to 1000 ohm platinum RTDs do not work with the Pocket Logger.

Temperature Range:
PT520: -50 to 260°C (−58 to 500°F).
PT510: -50 to 200°C (−58 to 392°F).
Resistance: 10,000 ohms ±0.12% at 0°C.
Resistance Tolerance: ±0.12% at 0°C. (conforms to IEC 751 Class B).
Total System Accuracy: ±1°C at 0°C.
±1.5°C at 100°C.
±2°C at 200°C.
Resolution: ±0.3°C at 0°C.
Interchangeability: Better than 0.4°C over entire range.
Leads: Teflon insulated AWG 26, 40” (1 meter) length.
Size: 0.2” x 0.6” x 0.08” max.
5mm x 15mm x 2mm max.
Part No: PT510
PT520

Barometric Pressure Sensor

- Connect to any Pocket Logger input
- Pressure Media: Moist or Dry Air
- No External Power Required

Total Error Band (0-85°C): ±1.5% of Span
Pressure Range: 150 to 1300 millibar
Operating Temp. Range: -40 to 93°C (-40 to 200°F)
Size: 0.9” x 0.6” x 0.6” (23 x 15 x 15 mm)
Part No: P500-BARO
Optional Mounting Base: MB-4500

Readings may be scaled to read in any unit of pressure; see website for details.

Power Limitation: A maximum of two P500-BARO may be powered from one Pocket Logger.

M31 Multiplexer

Networks multiple Pocket Loggers. Up to three Pocket Loggers may be networked with one M31. Multiple M31’s may be daisy-chained.

The M31 can also link multiple Pocket Loggers to a single modem. Estimated battery life is more than 3 years under average use.

An M31 is not required to connect a single XR440 to a modem.

Size: 2.2 x 2.9 x 0.7” (56 x 74 x 18 mm)
Part No: M31

M31 Cable: Connects Pocket Logger to M31, or M31 to next M31. 5 ft (1.5 m) length.
Part No: ICM-5FT
### Accelerometers

Connects directly to the XR440 Pocket Logger, no external power required.

- **Triple Axis Accelerometers**
- **±3 g and ±16 g models**
- **Waterproof IP67 Protection**
- **Optional Precision Temperature Sensor**
- **Cable length 8 ft or 30 ft (2.4 or 9.1 meters)**

#### Pulse Module

Use to log data from a WattHour sensor, gas meter, or tipping-bucket rain gage. Counts pulses from reed-relay or switch closure.

- Connects directly to channel 4 of Pocket Logger. Internal lithium battery powers module for 10 years.
- **Maximum pulse rate:** 5 per second (5 Hz)
- **Minimum closure time:** 30 milliseconds
- **Physical:** Molded thermoplastic housing with four color-coded 12” (0.3m) leads.
- **Size:** 2.3” x 0.85” x 1.5” (58 x 22 x 38 mm)
- **Part No:** PM-1

#### Low-profile Weatherproof Case

Rugged molded case withstands all weather conditions. Features a hinged cover, quick release latch, continuous rubber seal and two cable fittings. Fittings accept cable diameters up to 0.25” (6.3 mm). Available in Yellow or Black.

- **Overall size:** 8.1” x 3.9” x 2.5” deep
- **Weight:** 9.6 oz., 272 grams
- **Protection rating:** NEMA 4X / IP65
- **Part No:** EC24-YEL Yellow case (pictured)  
  EC24-BLK Black case

#### Accelerometer Specifications

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Minimum Range</th>
<th>Cable Length</th>
<th>Temperature Sensor</th>
<th>Price SUS</th>
</tr>
</thead>
<tbody>
<tr>
<td>SA-03</td>
<td>±3 g</td>
<td>8 ft (2.4 m)</td>
<td>NO</td>
<td>150.</td>
</tr>
<tr>
<td>SA-03-30FT</td>
<td>±3 g</td>
<td>30 ft (9 m)</td>
<td>NO</td>
<td>175.</td>
</tr>
<tr>
<td>SA-03-T</td>
<td>±3 g</td>
<td>8 ft (2.4 m)</td>
<td>YES</td>
<td>170.</td>
</tr>
<tr>
<td>SA-03-T-30FT</td>
<td>±3 g</td>
<td>30 ft (9 m)</td>
<td>YES</td>
<td>195.</td>
</tr>
<tr>
<td>SA-16</td>
<td>±16 g</td>
<td>8 ft (2.4 m)</td>
<td>NO</td>
<td>150.</td>
</tr>
<tr>
<td>SA-16-30FT</td>
<td>±16 g</td>
<td>30 ft (9 m)</td>
<td>NO</td>
<td>175.</td>
</tr>
<tr>
<td>SA-16-T</td>
<td>±16 g</td>
<td>8 ft (2.4 m)</td>
<td>YES</td>
<td>170.</td>
</tr>
<tr>
<td>SA-16-T-30FT</td>
<td>±16 g</td>
<td>30 ft (9 m)</td>
<td>YES</td>
<td>195.</td>
</tr>
</tbody>
</table>

---

**Pulse Module**

- Connects directly to channel 4 of Pocket Logger. Internal lithium battery powers module for 10 years.
- **Maximum pulse rate:** 5 per second (5 Hz)
- **Minimum closure time:** 30 milliseconds
- **Physical:** Molded thermoplastic housing with four color-coded 12” (0.3m) leads.
- **Size:** 2.3” x 0.85” x 1.5” (58 x 22 x 38 mm)
- **Part No:** PM-1

---

**Low-profile Weatherproof Case**

- **Overall size:** 8.1” x 3.9” x 2.5” deep
- **Weight:** 9.6 oz., 272 grams
- **Protection rating:** NEMA 4X / IP65
- **Part No:** EC24-YEL Yellow case (pictured)  
  EC24-BLK Black case

---

**Accelerometers**

Connects directly to the XR440 Pocket Logger, no external power required.

- **Triple Axis Accelerometers**
- **±3 g and ±16 g models**
- **Waterproof IP67 Protection**
- **Optional Precision Temperature Sensor**
- **Cable length 8 ft or 30 ft (2.4 or 9.1 meters)**

---

**Pulse Module**

Use to log data from a WattHour sensor, gas meter, or tipping-bucket rain gage. Counts pulses from reed-relay or switch closure.

- Connects directly to channel 4 of Pocket Logger. Internal lithium battery powers module for 10 years.
- **Maximum pulse rate:** 5 per second (5 Hz)
- **Minimum closure time:** 30 milliseconds
- **Physical:** Molded thermoplastic housing with four color-coded 12” (0.3m) leads.
- **Size:** 2.3” x 0.85” x 1.5” (58 x 22 x 38 mm)
- **Part No:** PM-1

---

**Low-profile Weatherproof Case**

Rugged molded case withstands all weather conditions. Features a hinged cover, quick release latch, continuous rubber seal and two cable fittings. Fittings accept cable diameters up to 0.25” (6.3 mm). Available in Yellow or Black.

- **Overall size:** 8.1” x 3.9” x 2.5” deep
- **Weight:** 9.6 oz., 272 grams
- **Protection rating:** NEMA 4X / IP65
- **Part No:** EC24-YEL Yellow case (pictured)  
  EC24-BLK Black case

---

**Accelerometer Specifications**

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Minimum Range</th>
<th>Cable Length</th>
<th>Temperature Sensor</th>
<th>Price SUS</th>
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<tbody>
<tr>
<td>SA-03</td>
<td>±3 g</td>
<td>8 ft (2.4 m)</td>
<td>NO</td>
<td>150.</td>
</tr>
<tr>
<td>SA-03-30FT</td>
<td>±3 g</td>
<td>30 ft (9 m)</td>
<td>NO</td>
<td>175.</td>
</tr>
<tr>
<td>SA-03-T</td>
<td>±3 g</td>
<td>8 ft (2.4 m)</td>
<td>YES</td>
<td>170.</td>
</tr>
<tr>
<td>SA-03-T-30FT</td>
<td>±3 g</td>
<td>30 ft (9 m)</td>
<td>YES</td>
<td>195.</td>
</tr>
<tr>
<td>SA-16</td>
<td>±16 g</td>
<td>8 ft (2.4 m)</td>
<td>NO</td>
<td>150.</td>
</tr>
<tr>
<td>SA-16-30FT</td>
<td>±16 g</td>
<td>30 ft (9 m)</td>
<td>NO</td>
<td>175.</td>
</tr>
<tr>
<td>SA-16-T</td>
<td>±16 g</td>
<td>8 ft (2.4 m)</td>
<td>YES</td>
<td>170.</td>
</tr>
<tr>
<td>SA-16-T-30FT</td>
<td>±16 g</td>
<td>30 ft (9 m)</td>
<td>YES</td>
<td>195.</td>
</tr>
</tbody>
</table>
Heavy-duty Weatherproof Case

Rugged molded case withstands all weather conditions. Features a hinged cover, continuous neoprene o-ring seal, quick release latches, and fold-up carrying handle. Six feed-through cable glands accept cable diameters up to 0.25" (6.3 mm). Can be padlocked for security.

Overall Size: 8.2" x 6.5" x 3.5" deep (208 x 165 x 90 mm).
Weight: 22 oz. (607 grams)
Protection rating: NEMA 4X / IP65
Part No: EC506

Case with captive communication cable:
Cable is permanently routed through one cable gland on case. Allows data transfers to PC without opening cover. Cable end has a watertight cap. Mates with the IC209 Interface Cable.
Part No: EC506-IC ( enclosure with cable)

Case outfitted for Wireless Link:
Case configured to house XR440 Data Logger and battery powered Wireless Link. Includes battery holder for C size cells, and short (8") version of IC209 Cable (IC209-S). Order Wireless Link separately (page 14).
Part No: EC506-BP (houses XR440 and Wireless Link)

EC24, EC44 and EC506 Cases compared:
EC24: Smallest case; 25% smaller by volume than the EC44 with a narrow profile. Only 2 cable fittings, and with the -IC option only one cable fitting is available for sensor/signal cables. Wireless link option includes battery holder for AA size cells to power the Wireless Link.

EC44: Compact case, smaller than the EC506. Includes 6 cable fittings (same as EC506). Wireless Link option includes battery holder for C size cells to power the Wireless Link.

EC506: Heavy-duty case, about twice as large as the EC44. Includes 6 cable fittings (same as EC44), includes folding carrying handle and accepts a padlock. Wireless Link option includes battery holder for D size cells to power the Wireless Link.

Pocket Logger® Accessories

EC24 Case outfitted for Wireless Link:
Case is configured to house XR440 Data Logger and battery powered Wireless Link. Includes battery holder for AA size cells and short (8") version of IC209 Cable (IC209-S). Order Wireless Link separately (page 14).
Part No: EC24-BLK-BP Black case
EC24-YEL-BP Yellow case

Compact Weatherproof Case

Rugged molded case withstands all weather conditions. Features a hinged cover, continuous neoprene o-ring seal and two quick release latches. Six cable fittings installed on side of case. Fittings accept cable diameters up to 0.25" (6.3 mm).

Overall size: 6.5" x 5" x 3.3" deep
Weight: 11 oz., 312 grams
Protection rating: NEMA 4X / IP65
Part No: EC44

Case with captive communication cable:
Cable is permanently routed through one cable fitting on case. Allows data transfers to PC without opening cover. Cable end has a watertight cap. Mates with the IC209 Interface Cable.
Part No: EC44-IC (enclosure with cable)

Case outfitted for Wireless Link:
Case configured to house XR440 Data Logger and battery powered Wireless Link. Includes battery holder for D size cells, and short (8") version of IC209 Cable (IC209-S). Order Wireless Link separately (page 14).
Part No: EC44-BP (houses XR440 and Wireless Link)
Pocket Logger® Accessories

Wireless Communications Link

The Pace WTP-100 Wireless Link replaces the cable connection between the XR440 and a computer. It consists of two pre-configured wireless modules: one plugs into a computer’s USB port, and the other plugs into the Pace IC209 Cable, which plugs into the XR440.

- No software installation or setup required.
- Electrically isolates computer from data logger.

Indoor Range: Up to 100 ft (30 meters)
Outdoor Range: Up to 300 ft (100 meters)
Power, computer side: Powered from USB Port
Power, remote side: 5 to 12vdc (Battery cable and AC Adapter provided)
Operating Frequency: 2.4 GHz
Temperature Range: -40°C to 80°C (-40°F to 176°F)
Part No: WTP-100

Communication Cables

IC209 Cable: Connects Pocket Logger (or M31) to 9-pin Com port of PC. 5 ft (1.5 m) length. (Required)
Part No: IC209

USB Adapter: Connects IC209 Cable to USB Port. Use with IC209 Cable if your computer does not have a serial com port.
Part No: USB-A

Modem Cable: Connects Pocket Logger to land-line modem. 3 ft (0.9 m) length. (Contact Pace for recommended modem).
Part No: IC211

Extension Cable: Extends IC209, IC211, or ICM cable 12 ft (3.6 m)
Part No: ICE-12FT

Multiple XR440’s can connect to a single computer using one IC209 Cable and USB Adapter for each XR440. The number of USB ports on your computer can be increased as needed using a USB Hub.

Ordering

BY PHONE (704) 799-0688
Business hours: Mon-Fri, 8 am to 5 pm EST.

BY FAX (704) 799-0177

BY E-MAIL sales@pace-sci.com

BY MAIL Mail orders to: Pace Scientific / Sales Dept
PO Box 4418
Mooresville, NC 28117

PAYMENT We accept payment by check, VISA, MasterCard or C.O.D. Corporate purchase orders accepted upon credit approval. North Carolina residents must include applicable sales tax.

WARRANTY The XR440 Pocket Logger is backed by a 5 year limited warranty. All other products are backed by a 1 year limited warranty. Products that are damaged or modified are not covered.

Pace Scientific’s sole obligation for products that prove defective will be replacement, repair, or refund, at our discretion, for products returned within the warranty period. In no event shall Pace Scientific’s liability exceed the buyer’s purchase price.

SUPPORT Free technical support is available by phone during business hours. Or email your questions to: support@pace-sci.com

RETURNS Returns must be made within 30 days after delivery. We do not accept returns shipped to us C.O.D. Special order or damaged items are not returnable. Shipping and C.O.D. charges are not refundable.

EXPORT ORDERS Please click the “International Distributors” link at the top of any page on our website for a local distributor. If your country is not listed, you are welcome to order directly from our USA facility. Prepayment in U.S. funds is required. You may pay by MasterCard, VISA, wire transfer or check drawn on a U.S. bank. Contact us for shipping charges and wire transfer information.
Size: 4.70” x 2.40” x .93”; (120 x 61 x 24 mm).
Weight (with battery): 6 ounces; 156 grams.
Case material: Impact resistant ABS plastic.
Operating limits: -40 to 60°C (-40 to 140°F). 5-90% R.H. (non-condensing).
Clock accuracy: +/−2 min per month (-10 to 50°C).
Battery: 9 volt (user replaceable).
Battery life: Est. 2-3 years of continuous operation; battery voltage displays on PC.
Data Retention: Over 200 years with no power.
Data rate: 1200-19,200 baud, selectable on PC.
Number of channels: Four.
Starting modes: Three: Start after download, Start at pre-set time and date, Start on trigger.¹
Running modes: Three: Run continuous (memory wraps around), Stop when memory is full, Stop on trigger.¹
Sampling modes: Three: Single point, Average (accumulate readings every 2 secs; compute and store average value), or Pulse Counting (maximum pulses per sample interval: 8 bit: 255, 10 bit: 1023, 12 bit: 4095).²
Sampling rates: Twenty: From 2 secs to 12 hours. Plus 8 fast log rates from 200 Hz to 1 Hz with reduced functionality.³
Real time display: Channel readings updated every 2 secs on PC; can be active while recording.
Input termination: Removable screw-type terminal block.
Input impedance: Greater than 5 Megohm (when sampling).
Input protection: Over/under voltage, 40amps peak 8/20 us

MEASUREMENT RESOLUTION IS USER SELECTABLE FOR 8, 10 OR 12 BITS

8 BIT RESOLUTION
Memory capacity: 32,256 readings (129,024 with -M option)
Temperature accuracy:¹
( logger + probe) ±0.55°C from 0 to 40°C.
(±1°F from 32 to 104°F).
±1°C from -25 to 75°C.
(±1.8°F from -13 to 167°F).
Voltage input accuracy: ±0.65% of full scale.
Resolution: 0.4°C from 0 to 40°C.
1°C or better from -25 to 75°C.
2°C or better from -45 to 100°C.
0.4% of full scale.

10 BIT RESOLUTION
Memory capacity: 25,800 readings (103,200 with -M option)
Temperature accuracy:¹
( logger + probe) ±0.22°C from 0 to 40°C.
(±0.4°F from 32 to 104°F).
±0.5°C from -25 to 85°C.
(±0.9°F from -13 to 185°F).
Voltage input accuracy: ±0.32% of full scale.
Resolution: 0.1°C from 0 to 40°C.
0.25°C or better from -25 to 75°C.
0.5°C or better from -45 to 100°C.
0.1% of full scale.

12 BIT RESOLUTION
Memory capacity: 21,504 readings (86,016 with -M option)
Temperature accuracy:¹
( logger + probe) ±0.15°C from 0 to 40°C.
(±0.27°F from 32 to 104°F).
±0.3°C from -25 to 85°C.
(±0.5°F from -13 to 185°F).
Voltage input accuracy: ±0.25% of full scale.
Resolution: 0.025°C from 0 to 40°C.
0.063°C or better from -25 to 75°C.
0.125°C or better from -45 to 100°C.
0.025% of full scale.

Available Sensors
Over 60 direct-connect sensors are available for the XR440 including Temperature, Pressure, Light, Humidity/Dew Point, AC Current and AC Voltage. Sensors may be mixed and matched in any combination. See Accessories for details.

Input Ranges
Inputs auto-configure for sensor or input range selected in software and include 0-5vdc, 2 wire resistance (30k ohm midpoint), and 3 wire resistance (minimum 2k ohm). Plug-in modules are available for millivolt inputs, +/-5vdc, 0-10, 0-20, 0-30, 0-60vdc and 4-20 ma.

Approvals
The XR440 Pocket Logger is CE approved to EN50081-1 (RF emissions) and EN50082-1 (ESD and RF immunity).

Warranty
The XR440 Pocket Logger is backed by a 3 year limited warranty. Accessories are backed by a 1 year limited warranty.

NOTES
¹Triggering requires a switch, temperature probe or 2 wire resistance on channel 1. Channel 1 may be set ‘OFF’ while triggering to maximize memory capacity of ‘ON’ channels.
²Pulse counting requires PM-1 Pulse Module and is available only on channel 4.
³Communication with PC is not available while Fast Logging (1-200Hz) is active.
⁴Assumes use of Pace PT9xx series temperature probes.

Specifications subject to change without notice.

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Pocket Logger® Domestic Price List

<table>
<thead>
<tr>
<th>Product</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>XR440 (logs up to 32,256 readings)</td>
<td>$379.</td>
</tr>
<tr>
<td>XR440-M (logs up to 129,024 readings)</td>
<td>$399.</td>
</tr>
</tbody>
</table>

Each Pocket Logger includes battery, terminal block and Certificate of Validation traceable to NIST. Pocket Logger Software is included with each order.

Magnets: The Pocket Logger ships with magnetic pads affixed to its underside to simplify mounting. To specify rubber pads in place of magnets, add -RP to part number.

Wireless Link                  | WTP-100 | $250. |
Modem cable, 3 ft              | IC211   | $24.  |
Extension cable, 12 ft          | ICE-12ft| $12.  |

Temperature Probes
- PT907                        | $20.   |
- PT916-4                      | $44.   |
- PT916-6                      | $46.   |
- PT916-12                     | $52.   |
- PT916-1/8                    | $16.   |
- PT960                        | $54.   |
- PT510                        | $65.   |
- PT520                        | $70.   |

Temperature / Relative Humidity
- TRH-100                      | $205.  |
- TRH-100-10FT                 | $220.  |
- TRH-100-20FT                 | $225.  |
- TRH-100-50FT                 | $240.  |
- TRH-200                      | $195.  |
- TRH-300                      | $205.  |

Thermocouple / Millivolt Modules
- PT450                        | $60.   |

AC Current Sensors
- SC10A                       | $105.  |
- SC20A                       | $102.  |
- SC50A,SC100A,SC200A          | $98.   |
- SC500A                      | $126.  |
- SC1000A                     | $155.  |
- SC1500A                     | $163.  |

AC Voltage Sensors
- SV300                       | $195.  |
- SV600                       | $230.  |

DC Current Sensors
- DCxxxxA* (any model)        | $165.  |

Accelerometers
(see page 12 for details)

Solar Radiation Sensor
(see website for details)

Pressure Sensors
- P1600 all ranges*            | $175.  |
- P1650 all ranges*            | $220.  |
- P300-30-psi-A                | $170.  |
- P350 all ranges*             | $180.  |
- P400 all ranges*             | $140.  |
- P450 all ranges*             | $140.  |
- P500-BARO                   | $140.  |

*Specify range - see pages 6 and 7 for available part numbers.

Input Scaling Module
ISM-x-x-x-x*                   | $70.   |

Light Sensor
- LS100-4FT                   | $25.   |
- LS100-15FT                  | $33.   |

Pulse Module
PM-1                         | $115.  |

Multiplexer
- M31                        | $149.  |
- M31 cable, 5 ft             | $149.  |

Weatherproof Cases
EC506                        | $68.   |
EC506-IC                     | $88.   |
EC506-BP                     | $156.  |
EC44                        | $59.   |
EC44-IC                      | $79.   |
EC44-BP                      | $93.   |
EC24-BLK                     | $50.   |
EC24-BLK-IC                  | $70.   |
EC24-BLK-BP                  | $73.   |
EC24-YEL                     | $50.   |
EC24-YEL-IC                  | $70.   |
EC24-YEL-BP                  | $73.   |

Spare Parts

<table>
<thead>
<tr>
<th>Part</th>
<th>Price</th>
</tr>
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<tbody>
<tr>
<td>Terminal Block</td>
<td>TB-P6</td>
</tr>
<tr>
<td>Pocket Logger Battery</td>
<td>U9VL</td>
</tr>
</tbody>
</table>

Prices valid for North America.
For other regions refer to Export Price List.
Prices subject to change without notice; revised September 2016

TECHNICAL SUPPORT
Free technical support is available by phone during business hours (Mon - Fri, 8AM - 5PM EST).
Or email your questions to: support@pace-sci.com