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This manual is updated to the following versions:

LogXR Software 1.01.31

Click Help | About to view current LogXR Software version. For customers with older software, please download and install the latest version; instructions on page 8.

XR5 Firmware 1.00.89

For customers with older firmware, please update your XR5's firmware (instructions on page 38).

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Introduction

XR5-SE Data Logger

The Pace XR5-SE Data Logger has 8 analog inputs with 12 bit resolution. Compatible direct-connect sensors include Temperature, Pressure, Relative Humidity, AC Current, and AC Voltage, *with no external power required*. Directly log contact closures, resistance, 4-20ma, 0-2.5v and 0-5v signals. Three 24 bit pulse / frequency inputs are available for logging wind speed, kWh, rainfall, water flow and gas consumption. Battery life exceeds 2 years for typical applications. Options include millivolt and thermocouple ranges (page 59) and scaling cables for higher voltage ranges, such as +/-27v (page 52).

Free Software

Pace LogXR Software is a free download from Pace Scientific's website <http://www.pace-sci.com/data-loggers-xr5.htm>. LogXR is currently available for Windows and Linux based computers. LogXR for the Mac is in development.

High Accuracy / Large Memory

Using Pace's precision PT900 series thermistor probes, temperature data is accurate to +/-0.15°C at 25°C with no calibration. Voltage inputs are accurate to +/-0.25% of full scale. The XR5-SE's non-volatile memory can store up to 63,642 time-stamped twelve bit readings (standard model) or up to 260,250 readings (XR5-SE-M model).

Free Lifetime Firmware and Software Updates

Pace is committed to free lifetime firmware and software updates for the XR5. The latest versions will always be a free download from the Pace website. Pace customers who bought our first data logger, the XR220 Pocket Logger®, in 1992 can still get the latest Pocket Logger Software (greatly enhanced since the original release) as a free download from our website.

Fast or Slow Logging

Any log interval between 1 second and 12 hours may be selected, or fast log rates from 2Hz to 1000Hz.

Powerful Recording Modes

Logging may be triggered, then stopped and re-triggered by alarm conditions, an external signal, or by LogXR menu selections. Using the Average or Peak mode, readings are sampled every second and the Average or Peak value stored at the selected log interval. Channel pairs may be logged as differential readings (Channel A – Channel B) and differential readings may be used to generate alarms or trigger logging. Logging can stop when the memory is full, or continue in a wrap-around mode.

Ethernet Connectivity

Using the Pace DS100 Ethernet Module, LogXR supports communications with one or more XR5s connected to an Ethernet LAN. A built-in scheduler enables logged data to be periodically transferred to a computer from any number of XR5 Data Loggers. All XR5 communication functions are supported, including the Real Time display and updating firmware. Both wired and wireless Ethernet connectivity is supported.

Secure Data

The XR5's rugged EEPROM memory retains data for over 100 years. Data is securely transferred via the industry-standard Xmodem CRC protocol. A two-level password system may be utilized to prevent unauthorized data transfers or setup modifications. For maximum data security, a user-defined encryption key may be enabled (details on page 58). Transferred data conforms to US FDA 21 CFR Part 11; users can confirm that the original data has not been tampered or altered in any way.

Individual Alarms

All analog inputs have individual high and low alarm limits. Alarm activity can trigger a variety of responses, including logging data, sending a detailed SMS message to a cell phone (GSM modem required), setting an external alarm output, blinking the XR5's Alarm LED, and/or dialing out to a computer (modem required).

Cycle Logging

Custom logging "cycles" may be selected. For example: Log for 10 seconds at 100Hz, then pause for 59 minutes and 50 seconds, and then repeat. Another example: Log every minute from 8AM until 5PM, pause 16 hours, and then repeat (until a pre-set time is reached or the memory is full).

Real Time Display

When an XR5 Data Logger is connected to a computer running LogXR Software, a Real Time Display is available. When selected, current XR5 readings are updated every 2 seconds. The Real Time Display can function while simultaneously logging data in all logging modes except the "Fast Logging" modes.

Excel Compatible Data

Transferred data is formatted as a readable, Excel compatible text file. Once opened in Excel, data may be saved as an Excel workbook.

Modem Communications

An XR5 Data Logger may connect to an optional land-line or cellular modem, allowing the user to collect data from remote sites. Using a land-line modem, the XR5 Data Logger can non-intrusively share an existing phone line, and periodically transfer data to a central computer. A built-in scheduler supports automated data collection from one or hundreds of remote sites at user-defined intervals.

Long battery life

The XR5-SE Data Logger is powered by a pair of user-replaceable lithium batteries. Battery life is greater than 2 years under typical usage. An external power input is provided. If external power is used, the batteries will power the unit during power outages (battery shelf life is over 10 years).

Switch Closures

The states of up to eight unpowered switches or contact closures can be directly logged by the XR5-SE. If desired, the switches can be logged as % ON Time. For example, if Channel 1 is set to Type: Switch and Mode: Average, then Channel 1 data will display the % ON Time of the switch. If the Log Interval is set to 100 seconds, and during the first 100 second period the switch was closed for only 1 second, the Channel 1 value for this period will be 1.00 (1% ON time). If the switch is closed during the entire next 100 second period, the Channel 1 data value for this next period will be 100.00 (100% ON Time).

Text Interface

XR5 Data Loggers can also display text-based menu screens for setup and data transfer. Any computer or PDA equipped with a serial port and "off-the-shelf" communication software can be used with the XR5. Contact Pace for the free XR5-SE's Terminal Mode User's Guide.

Direct-Connect Sensors

PACE offers over 30 precision sensors optimized for XR5 Data Loggers, including Temperature, Humidity, Pressure, Light, AC Current and AC Voltage. All PACE sensors require no external power, simplifying field installations. Many 3rd party sensors are compatible with XR5 Data Loggers; see page 54 for requirements.

LogXR Software

Installation

WINDOWS VERSION

LogXR for Windows is distributed as a single executable file; two versions are available:

[LogXR-Install.exe](#)
Environment.

Installs LogXR application files and the Java Runtime

[LogXR-Install-without-JRE.exe](#)

Installs LogXR application files only (a much smaller file).
Use only if you have JRE 1.4.2 or higher installed on your
computer (available from the [Sun website](#)).

To install:

Once the LogXR exe file is saved to your computer, double click the file to install it.
Then launch LogXR by clicking Start | Programs | LogXR

LINUX VERSION

LogXR for Linux is distributed as a single RPM file; two versions are available:

[LogXR-Linux.rpm](#)
Environment.

Installs LogXR application files and the Java Runtime

[LogXR-Linux-no-JRE.rpm](#)

Installs LogXR application files only (a much smaller file).
Use only if you have JRE 1.4.2 or higher installed on your
computer (available from the [Sun website](#)).

To install:

1. Log in as user (not root).
2. Download the above file into your user home directory.
3. Double-click the LogXR rpm file to launch the RPM Installer.
After the installation is complete:
4. Log in as root.
5. Change permissions associated with /dev/ttyS0 and any other serial port to "execute".

When launching LogXR, you must be logged in as user (not root).

Serial Ports:

After installation, LogXR is initially set to use serial port /dev/ttyS0. In order to choose a different serial port, you must first modify the text file "cplist.xsf" located in the Pace/Systems folder. Add a new line to "cplist.xsf" for each serial port that exists on your computer. Then launch LogXR. Any serial port can now be selected by clicking Port | Select.

Note: A Macintosh version of LogXR is in development, please contact Pace for details.

XR5 Hardware Setup

A computer running LogXR Software is used to set up the XR5. Once set up, the XR5 can log data without being connected to a computer. While the XR5 is connected to a computer, you may send a setup, transfer logged data, view current status conditions, display readings in real time, and perform other functions.

Required Hardware

Pace XR5 Data Logger (any model)

IC209 Interface Cable

Win98/ME/2000/XP or Linux Computer running LogXR Software

IC209 Interface Cable

Connect the 9 pin end to an unused Com Port on your computer (ie: Com1; Com2). Plug the other end of the interface cable into the XR5.

USB Port

Some newer computers do not have a serial (com) port. In this case a USB/Serial Port Adapter is required. USB/Serial Port Adapters are available at computer and office supply stores for under \$40. We recommend the following USB/Serial Adapters:

For Windows computers

- IOGear USB Serial Adapter #GUC232A
- Belkin USB PDA Adapter #F5U109
- KeySpan USB Serial Adapter #USA-19HS
<http://www.keyspan.com/products/usb/usa19hs/>.

For Linux computers

- KeySpan USB Serial Adapter #USA-19HS
<http://www.keyspan.com/products/usb/usa19hs/>

Other USB/Serial Port Adapters that have a 9 pin male connector (to accept the IC209 Cable) and are compatible with your computer's operating system should also work fine.

NOTE

If desired, it is OK to maintain a permanent connection (via the IC209 Interface Cable) to a powered or unpowered computer. Doing this does not reduce the XR5's battery life.

