



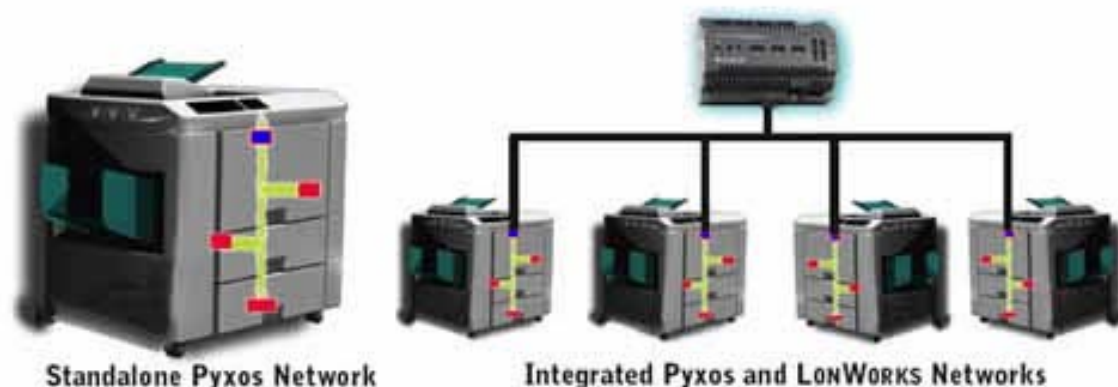
## Introduction

This bulletin explains network variable exchanges in a Pyxos FT network.

## The Pyxos FT Network

A Pyxos FT network consists of up to thirty-two Pyxos Points embedded inside sensors and actuators, and a Pyxos Pilot that interfaces with the outside world. The network operates at 312.5 kilobits per second using a deterministic signaling method and a common protocol that scans all thirty-two Pyxos Points every 25 milliseconds—faster with fewer Pyxos Points.

Figure 1 shows both a standalone Pyxos network and one that integrates Pyxos and LONWORKS® technology together.



**Figure 1.** Standalone and Integrated Pyxos Networks

## Pyxos Network Variables

The Pyxos Pilot and its associated Pyxos Points each host data points that they exchange as *Pyxos network variables*. A Pyxos network variable is a 1 to 32 byte value, and a Pyxos Point may have up to 128 Pyxos network variables. To provide common encoding of data values, each Pyxos network variable has a data type that is defined by a network variable type definition in a LONMARK® resource file. By using LONMARK resource files, the Pyxos platform leverages the extensive work done by Echelon and LONMARK International to define a rich set of standard data types to represent the wide variety of data types used in control systems. For example, type definitions are available for representing current, position, power, pressure, temperature, time, voltage, alarm conditions, device status, switch state, and many other types of data. Use of

LONMARK standard network variable types also makes it easy for Pyxos Pilot manufacturers to seamlessly integrate with LONWORKS networks. Alternatively, Pyxos networks may be used standalone with a host processor, or incorporated into a programmable logic controller or data gathering panel.

More than 170 standard data types are defined in the LONMARK standard resource files. The standard resource files are distributed by LONMARK International, and the definitions can be viewed at [types.lonmark.org](http://types.lonmark.org). If an appropriate data type is not available, manufacturers can either create private types that they optionally document in a manufacturer-specific resource file, or they can work with LONMARK International to define new standard types. More than 300 manufacturers participate in 15 different industry-specific task groups within LONMARK International to define new profiles and standard types.

## Enabling Pyxos Pilot and Points

A Pyxos Pilot manufacturer may choose to create all of the Pyxos Points used with a Pyxos Pilot, or they may use Pyxos Points from multiple manufacturers. Pyxos Pilot manufacturers can provide specifications to the suppliers of Pyxos Points in the form of LONMARK network variable type definitions for the Pyxos network variables that will be published and consumed by a Pyxos Point.

To enable Pyxos Pilots and Pyxos Points from different manufacturers to interoperate, each type of Pyxos Point is identified by a standard program ID (SPID). The SPID is an 8-byte number within each Pyxos Point. The format of a SPID is defined by the Pyxos FT protocol, which uniquely identifies the manufacturer, device class, usage, and model number for a Pyxos Point. The manufacturer of a Pyxos Point provides a Point Interface (PIF) file for each of their standard program IDs. The PIF file defines the Pyxos network variables on the point in a standard format. A Pyxos Pilot can read this file to determine the Pyxos network variables published and consumed by a Pyxos Point.

## Pyxos EVK Evaluation Kit

A Pyxos EVK Evaluation Kit that will be supplied by Echelon can be used to: define standard program IDs; view standard resource types; create and modify manufacturer-specific resource types; create, modify, and import Pyxos interface (PIF) files; and generate interface source code for Pyxos Pilots and Pyxos Points.

## Reference Information

### *LonMarkResourceFiles1300.exe*

This release of the resource files includes the version 13.00 resource files and the Resource File API Version 2.3 run-time files—all in one executable.

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