Controllers
Model 353 Process Automation Controller LonWorks Remote I/O
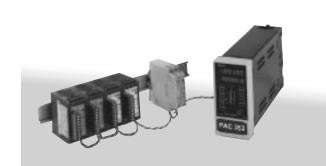
Introduction

Features & Benefits

▶ High speed digital fieldbus with peer-to-peer communications between intelligent field devices allows quantity and type of I/O to scale to individual needs

▶ Star, bus, and loop network wiring options provide quick, cost effective installation

▶ Free topology network allows for easy system expansion

▶ The ability to distribute I/O over a fieldbus network.

Description

The Model 353 Process Automation Controller uses LonWorks technology to communicate to remote I/O over a single twisted pair network. By distributing I/O over LonWorks, users can benefit from a digital fieldbus. The Model 353 can be connected to over 100 I/O points. When connecting to discrete I/O, the Model 353 eliminates the need for a small PLC. With the Windows®-based configuration utility, the Model 353 can be configured using ladder logic and function blocks, satisfying the needs of combined continuous and discrete control applications. Connecting to analog I/O expands the number of loops that can be controlled from a single station.

Remote I/O

A variety of LonWorks remote I/O modules are available as shown in the table below.

Table 1   LonWorks Remote I/O Modules

Part No.	Module	Current Draw 15V	24V
27005-3	Two 4-20 mA Inputs	50 mA	30 mA
27005-4	One T/C, RTD Input	41 mA	30 mA
27005-5	4 DC Inputs (-1 to 1V or -20 to +20mA)	25 mA	20 mA
27005-6	Same as 27005-5 w/Factory Cal.	25 mA	20 mA
27005-7	4 High Level DC Inputs	25 mA	20 mA
27005-8	Same as 27005-7 w/Factory Cal.	25 mA	20 mA
27005-9	Two 4-20 mA Outputs	100 mA	70 mA
27005-10	3 Isolated DC Discrete Inputs	29 mA	20 mA
27005-11	3 Isolated AC Discrete Inputs	26 mA	18 mA
27005-12	8 Discrete Inputs (0-42V)	36 mA	26 mA
27005-13	3 Mechanical Relay Outputs	77 mA	50 mA
27005-14	3 Solid State Relay Outputs	38 mA	26 mA
27005-15	8 Discrete Outputs (0-42V)	35 mA	26 mA
27005-16	4 in/4 out Discrete (0-42V)	32 mA	24 mA
16802-3	16 Discrete Inputs (0-42V)	70 mA	50 mA
16802-4	16 Discrete Outputs (0-42V)	85 mA	60 mA

Specifications

Power Supply

The power requirement for the modules is +10V to 36V. Table 1 shows the current draw when powered with 15V and 24V. Oder power supply **#27005-24** (115/230 VAC input/24 VDC, 2.1 A) for the necessary input requirement.

Cable Wiring

The Model 353 uses the new Free Topology Transceiver (FTT). The FTT allows the LonWorks network to be wired in a bus or free topology (star, loop, mixed). Free topology simplifies installation, reduces wiring costs, and makes it easy to expand the network. Refer to Table 3 for cable specifications. In the table, the maximum network length depends upon whether the network is wired in a bus or a free topology. Note that FTT can be wired in a bus configuration to achieve longer distances. When wired in a free topology format, there are specific limitations on the distance between nodes. The maximum total length of a free topology configuration is 1640 feet (500m).

Start-Up Kit

In order to connect LonWorks equipment together, each module (node) must be "installed" on a LonWorks network. Up to 64 nodes can be configured on a single network channel. Once the nodes are installed on the network, the

individual I/O points (variables) must be "binded" in order for them to communicate. For example, a discrete input from a discrete input module must be bound to a discrete input block in the Model 353. The process of configuring, installing, and binding LonWorks products is accomplished via a LonWorks configuration tool. For convenience, Siemens resells SmartPack Configuration Software from Acromag.

An Echelon LonTalk Adapter is used to communicate between the computer and the LonWorks network. The SmartPack Configuration Software, LonTalk Adapter, and necessary cables are provided in a start-up kit. The contents of the LonWorks start-up kit (P/N16353-65) are listed in Table 4 and available separately.

Table 4   LonWorks Start-up Kit

Part No.	Description
15939-70v1.00	Echelon SLTA/2 Device Driver
27005-1	Echelon LonTalk Adapter
27005-2	Acromag 50SW-CFS-MO3-1.44
16260-27	Cable, 15 ft., DB9M to DB9F
16353-66	Cable, SLTA/2 to LonWorks Network

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Table 3   Cable Parameters

Cable Type	AWG	Max. Bus Length Max.	Free Topology Node to Node Distance
Belden 85102, single twisted pair, stranded 9/29, unshielded, plenum	16	8858 ft. (2700 m)	1640 ft. (500 m)
Belden 8471, single twisted pair, stranded 9/29, unshielded, non-plenum	16	8858 ft. (2700 m)	1312 ft. (400 m)
Level IV, twisted pair, typically solid & unshielded	22	4593 ft. (1400 m)	1312 ft. (400 m)
JY (St) Y 2x2x0.8, 4-wire helical twist, solid, shielded	20.4	2952 ft. (900 m)	1049 ft. (320 m)