

Controllers

Model 353 Process Automation Controller

Introduction

Features & Benefits

- ▶ Affords easy integration with and migration to existing systems
- ▶ Multiple loop capabilities for indication, control, logic, or sequencing accommodate comprehensive process control needs
- ▶ Scalable hardware provides lower entry costs, without limiting future needs
- ▶ Full configuration capability via front faceplate push-buttons allows quick field changes without requiring additional tools
- ▶ Ethernet networking option provides higher speed, peer-to-peer communications.
- ▶ RS485 MODBUS® network connection allows multi-drop wiring for operation, monitoring, troubleshooting, or configuration from a system workstation
- ▶ Local Instrument Link (LIL) networking option provides integration with existing systems
- ▶ Front panel PC connection accommodates local configuration, monitoring, or troubleshooting using the graphical configuration software
- ▶ Removable Real Time Clock/Configuration Board (RTC/CB) option minimizes maintenance and complexity via a simple board replacement technique that stores a complete copy of the control strategy configuration
- ▶ Factory Configured Options (FCOs) facilitate fast configuration for common applications
- ▶ Password protection provides individual security for various plant personnel
- ▶ Hardware designed to support emerging fieldbus technologies for both field and network connections ensures smooth plant integration
- ▶ Graphical configuration program provides a choice of function block or ladder logic configuration
- ▶ Short case design allows mounting in 12" deep cabinets
- ▶ Coated circuit boards ensure reliable operation and environmental integrity

Description

The Model 353 Process Automation Controller is a stand-alone, microprocessor-based industrial controller designed for a broad range of process applications. It can serve as a simple single-loop controller or as a multi-loop controller with complete control and logic functions for a small unit batch or continuous process. The Model 353's fieldbus and networking options enable it to function as an integral element in a plant system.



Loops are configured for control, sequence, or logic as needed within the Model 353. Each configured loop can have a virtual operator display that is viewed locally using the LOOP button on the faceplate and is mapped to network communication for a plant operator station. Alarm management is handled using the L (Loop) & S (Station) indicator lights along with the priority assignments and flashing options of each alarm.

User defined pushbuttons in each loop can be used for traditional functions, such as Console/Local, External/Internal Switching or individual user requirements, such as Start, Stop or Jog. Multiple variables are displayed on the operator faceplate and viewed using the D button. User defined units assigned to each variable are displayed via the UNITS button. Complete configuration of the Model 353 is available using buttons located behind the flipdown ID door.

A built-in library of preconfigured control strategies (FCOs) enable selection of common basic controller types for quick field set-up. A large selection of reusable function blocks enable simple changes to FCOs or the design of a custom control strategy to meet the needs of specific process control application. The Model 353 Configuration Utility accommodates design, downloading, uploading, and on-line monitoring capabilities for improved management of controller configurations. In addition, sequencer/logic loops can be configured and monitored on-line in ladder diagram format for those more familiar with this language.

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Technical data

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Specifications

Electrical & Environmental

Power Supply

Standard: 120/240 Vac (85 to 264 Vac); 47 to 63 Hz
Optional: 24 Vdc, +20%, -15%

Power Requirements

25 Watts, 40 VA (max.)

2-Wire Transmitter Power

Voltage: 25 Vdc \pm 3V
Current: 120 mA, short circuit protected

Hazardous Area Approvals Pending

FM/CSA: Class I, Division 2, Groups A, B, C & D
ABS
CE

(Consult Siemens for current approvals)

Ambient Temperature Range

Operating: 32 to 122°F (0 to 50°C)
Storage: -40 to 185°F (-40 to 85°C)

Climate Conditions - IEC654-1

Class B3 - Standard Mounting
Class D1 - Installed per instructions in Class D1 enclosure

Electrostatic Discharge

IEC 801-2

RFI Protection

IEC 801-3

Electrical Transients

IEC 801-4

Net Weight

6 lbs.

Heat Dissipation

80 BTU/Hr.

Scan Time

Varies with configuration: 20 msec (minimum)

Inputs

Analog Inputs (non-isolated)

1-5 Vdc, 4-20 mA with included 250 resistor
MPU Controller Board: Qty 3
I/O Expander Board: Qty 1

Digital Inputs (isolated)

0-1 Vdc OFF, 15-30 Vdc ON
MPU Controller Board: Qty 3
I/O Expander Board: Qty 1

Analog Input, Universal (isolated)

Thermocouple: J, K, T, E, S, R, B & N
RTD: DIN 43760, US (NBS126), JIS C-1604
Slidewire: 500-5000
Ohms: 0-5000
Millivolt: Narrow: -19.0 to 19.0 mV; Wide: -30.0 to 77.0 mV
I/O Expander Board: Qty 2

Digital/Frequency Input, Universal (isolated)

Frequency Range: 0 to 25,000 Hz
Minimum Operating Frequency: 0.05 Hz
ON Voltage: 4-30 Vdc
OFF Voltage: 0-1 Vdc
Input Current: <5 mA @ 30 Vdc
I/O Expander Board: Qty 2

Outputs

Analog Outputs (non-isolated)

4-20 mA into 800 ohms (max.)
MPU Controller Board: Qty 2
I/O Expander Board: Qty 1

Digital Outputs (non-isolated)

Open Collector Transistor (emitter @ station common)
Load Voltage: 30Vdc (maximum)
Load Current: 100 mA (maximum)
Off State Leakage Current: <200 A @ 30 Vdc
MPU Controller Board: Qty 2

Relay Outputs (SPDT)

Contact Rating: 5A @ 120 Vac, 2.5 A @ 230 Vac, Resistive Load
Minimum Current: 100 mA @ 10 mVdc; 150 mA @ 50 mVac
I/O Expander Board: Qty 2

Optional Boards

Local I/O Expander
Local Instrument Link Network
Real Time Clock/Removable Configuration Board
Ethernet Communications

Standard Configuration

Nine of the most common control strategies have been stored in a built-in library and can be selected with a single pushbutton entry. These control strategies, which can be customized to accommodate individual needs, are:

- ▶ Single-Loop Controller with Tracking Setpoint
- ▶ Single-Loop Controller with Fixed Setpoint
- ▶ Ratio Set Controller with Operator Setpoint Limits
- ▶ Single-Loop Controller with Operator Setpoint Limits
- ▶ Cascade Loop Controller
- ▶ Cascade Loop Controller with Operator Setpoint Limits
- ▶ External Set Controller with Tracking Setpoint
- ▶ External Setpoint with Fixed Setpoint
- ▶ Dual Loop controller