

# MYCRO™ 352 Single-Loop Digital Controller

EXPANDABLE MULTI-PURPOSE  
DESIGN for all Industrial  
Applications

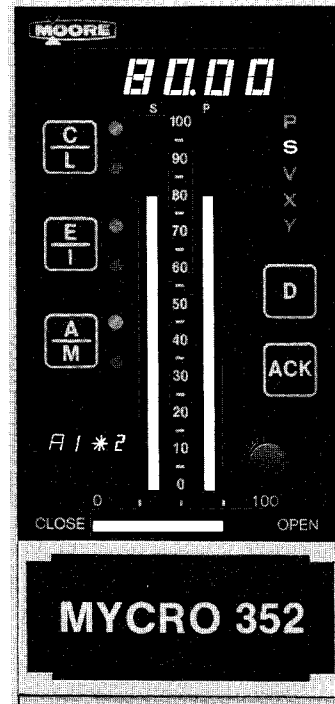
LARGE 4-1/2 DIGIT  
INDICATION of a User-  
Selected Variable

NETWORK INTERFACE for  
Peer-to-Peer Communications  
or Computer Access

FUNCTION BLOCK  
CONFIGURATION

ALPHANUMERIC READOUT  
of User Configurable  
Loop Tag, Process  
Engineering Units,  
and More

LOCAL CONFIGURATION  
from Faceplate using  
Concealed Pushbuttons



SMART TRANSMITTER  
INTERFACE to  
Mycro XTC™ Transmitter-  
Controller and Other HART®  
Devices

CONTINUOUS BARGRAPH  
DISPLAY for Process, Setpoint,  
and Valve

PID, PD, ID & PID  
with Adaptive Gain  
all Included

LIBRARY OF COMMON  
CONTROL STRATEGIES  
Stored in Memory

DIRECT INPUT OPTIONS  
for T/C, RTD, MV, Frequency,  
or Computer Pulse

## DESCRIPTION

The MYCRO 352 Single-Loop Digital Controller (Model 352 SLDC) is a stand-alone, microprocessor-based industrial controller designed for use in a broad range of general purpose applications. The unique, free-format function block design of the 352 allows operations typically performed by several individual instruments to be incorporated into a single, self-contained unit. By combining simple single-loop control with advanced functionality, the 352 can adapt to changing control strategies and application needs without requiring changes in equipment, training, or operating procedures.

Functions and operations, such as inputs, outputs, controls, and computations are stored within the memory of the 352 as modular, easy-to-select function blocks. Typically, a function block has user-selected parameter values, calibration limits, and information specifying how it is linked to other FBs. Control is implemented by selecting and connecting (i.e. configuring) the function blocks. No special programming devices or techniques are required. Controls on the faceplate of the 352 are used to select function blocks and enter any required values. Additionally, a series of configurations covering most applications is stored in memory for immediate selection and use, either as is or modified by the user.

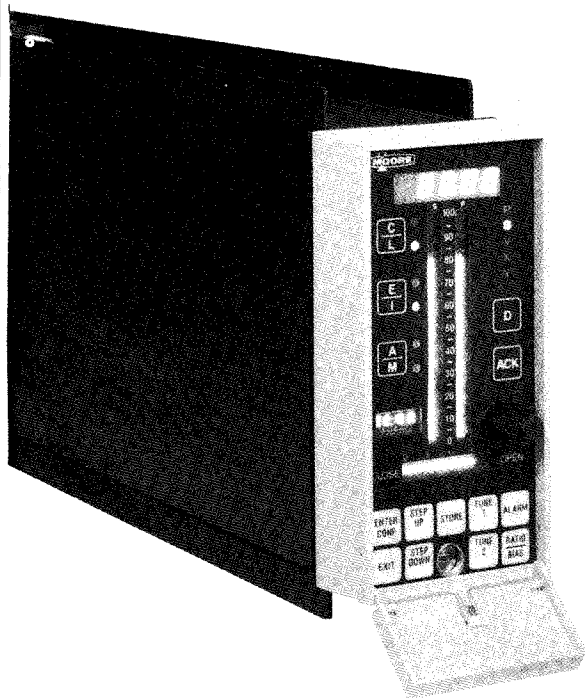
Two types of controller models are available, the Model 352B (Basic) and Model 352E (Expanded). The 352B includes a

standard complement of function blocks for single-loop, ratio-set, or external-set operation. The Expanded version offers a greater number and additional types of FBs for advanced control strategies, such as pressure/temperature compensation of a flow signal, deadtime compensation for transport lag, feedforward control, single-station cascade control, and override control. Any existing Model 352B can be easily upgraded to a Model 352E through use of an expander board and additional rear-mounted screw terminal kit.

An additional third input option can also be selected to accommodate thermocouple, frequency, millivolt, RTD, or computer pulse inputs, or a smart transmitter interface can be implemented. The optional transmitter interface enables direct interaction with field transmitters which use HART, including the Moore Products Co. Mycro XTC Transmitter-Controller. Transmitter parameters can be monitored and adjusted from the 352 faceplate. Transmitter data can also be passed to operator stations.

A serial data communications interface is also available for connection of a 352 to the Moore Products Co. Local Instrument Link (LIL) for communications with other controllers and computers.

SPECIFICATIONS



**ELECTRICAL & ENVIRONMENTAL**

**Power Supply**

*Standard:* 120/240 Vac (85 to 264 Vac); 47 to 63 Hz

*Optional:* 24 Vac, 24 Vdc

**2-Wire Transmitter Power**

*Voltage:* 26 Vdc,  $\pm 7.5\%$

*Current:* 80 mA at 26 Vdc (max.), short circuit protected

**Power Requirements**

25 W, 45 VA (max.)

**Hazardous Area Classification**

FM and CSA approved as non-incendive for Class 1, Division 2 service in Groups A, B, C & D

**Ambient Temperature Range**

32 to 122°F (0 to 50°C)

**Humidity**

5 to 95% relative humidity with 0.028 lbs. of water per lb. of dry air

**RFI Protection**

Less than 0.5% full scale signal change at RFI field strength of 10V per meter with frequency range from 20 Hz to 1 GHz

**Net Weight**

*Model 352E:* 9 lbs.

*Model 352B:* 7 lbs.

**Heat Dissipation**

80 BTU/Hr.

**Scan Time**

100 msec.

**Single-Loop Control**

*Types:* PID, PD, ID & PID with adaptive gain

**INPUTS**

*Voltage:* 1-5 Vdc, standard calibration (1M ohm min.), non-isolated

*Current:* 4-20 mA, with 250 ohm dropping resistors 1-5 mA and 10-50 mA (optional)

*Optional Third Input:* RTD (non-isolated), Frequency (non-isolated), Voltage (non-isolated), T/C (isolated), Millivolt (isolated), Computer Pulse (isolated), Smart Transmitter (non-isolated)

*Digital:* 24 Vdc at 10 mA (max.), optically isolated

**OUTPUTS**

*Current:* 4-20 mA, non-isolated into 800 ohms (max.)

*Digital:* Open collector transistor, 30 Vdc 100 mA (max.)

*Relay:* SPDT contacts, direct or reverse acting rated at 1A, 115 Vac (isolated)

**STANDARD CONFIGURATIONS**

Over 21 of the most common types of control have been configured at the factory and stored in memory. These control strategies, called Factory Configured Options (FCOs), can be easily recalled from memory and used without any configuration or programming. The following FCOs are available:

- Single-Loop PID Control with Tracking Setpoint
- Single-Loop PID Control without Tracking Setpoint
- External-Set PID Control with Tracking Setpoint
- External-Set PID Control without Tracking Setpoint
- Ratio-Set PID Control with Tracking Setpoint
- Loading Station
- Auto/Manual Station
- Auto/Manual Station with Bias
- Indicating Station
- Default Parameters
- Single-Loop PID Control with Tracking Setpoint — Computer/Local Operation\*
- Single-Loop PID Control without Tracking Setpoint — Computer/Local Operation\*
- External-Set PID Control with Tracking Setpoint — Computer/Local Operation\*
- External-Set PID Control without Tracking Setpoint — Computer/Local Operation\*
- Ratio-Set PID Control with Tracking Setpoint — Computer/Local Operation\*
- Loading Station — Computer/Local Operation\*
- Auto/Manual Station — Computer/Local Operation\*
- Auto/Manual Station with Bias — Computer/Local Operation\*
- Indicating Station — Computer/Local Operation\*
- Single-Station Cascade Control\*\*
- Single-Loop Feedforward Control\*\*

\* Requires serial interface option

\*\* Requires Model 352E controller

**FUNCTION BLOCKS**

Control strategies within the Model 352 are designed through configuration of the following function blocks, which are stored in memory.

TYPE	NUMBER	
	352B	352E
<b>Inputs</b>		
Analog	2	5
Digital (Discrete)	1	3
LIL Interface	1	1
Third Input Option	1	1
<b>Outputs</b>		
Analog	1	3
Digital (Discrete)	2	2
SPDT Relay	—	2
<b>Control Functions</b>		
Alarms	1	1
Bias	1	1
Multi-Function Controller	1	2
Deviation Amplifier	1	2
Operator's Display	1	1
General Purpose Hold	1	2
Integrator/Totalizer	1	1
Hi/Lo Limit	1	2
Logic	2	8
Override Selector	1	1
Ratio	1	1
General Purpose Track & Hold	1	2
Setpoint Track & Hold	1	2
Auto/Manual Transfer Switch	1	1
External/Internal Transfer Switch	1	1
Dual Transfer Switch	1	1
General Purpose Transfer Switch	—	2
Math	—	4
Batch Switch	—	1
Ten-Segment Characterizer	—	1
Quad Comparator	—	1
Divide-By N Counter	—	1
Dead-Time Table	—	1
Flip Flop Logic	—	1
Gain & Bias	—	2
Inverter	—	2
Lag	—	1
Lead	—	1
Rate Limiter	—	1
Hi/Lo Signal Selector	—	2
Square Root Extractor	—	1
Delay Timer	—	1
One-Shot Timer	—	1
Repeat Cycle Timer	—	1
<b>TOTAL</b>	<b>25</b>	<b>71</b>

**ACCESSORIES**

- *Model 352 Configuration Management Software (P/N 15939-43)* — PC-based software package that allows configuration of a 352, when it is equipped with the Local Instrument Link option, through either a Model 320 Independent Computer Interface or a Model 3932 Independent Computer Interface (ICI-2.5).
- *Transmitter Power Supply (P/N 15124-1)* — Acopian Model B24G210M 24 Vdc 2.0 Amp Power Supply.
- *Adapter Bezel (P/N 15738-123)* — A 3" x 6" adapter to utilize existing panel cutouts for a 352.
- *Blank Filler Panel (P/N 15738-168)* — Provides uniform control room appearance when panel provides space for additional 352 units prior to installation.
- *Rear Terminal Enclosure Kit (P/N 15738-179)* — Allows conduit wiring to be run to 352 for enclosed protection of rear-mounted screw terminals. Includes necessary mounting hardware, bracket, and cover.
- *Loop Identification Card* — Custom printed loop identification for flip-down access door. Up to 5 lines with 24 characters per line can be specified.

**MODEL NUMBER**

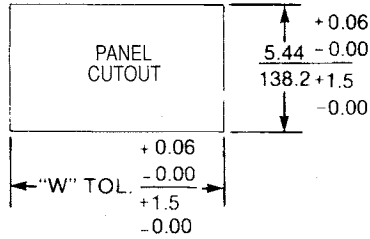
Sample Model No.	352B	A	1	1	N	N	F
<b>Basic Model No.</b>							
Basic	352B						
Expanded	352E						
<b>Power Supply</b>							
120/240 Vac (85 to 264 Vac); 47-63 Hz	A						
24 Vac, +10%; -15%; 47-63 Hz	B						
24 Vdc, +20%, -15%	C						
<b>Mounting Case</b>							
Standard 20 Screw Terminals	1						
Standard 40 Screw Terminals (required for 352E)	2						
Not Required	N						
<b>Operator's Panel</b>							
Analog & Digital Display (Standard)	1						
Not Required (Includes Blank Panel)	N						
Delete — Panel Not Included (Can only be furnished with Mounting Case option N)	D						
<b>Input No. 3 Option</b>							
Computer (Dual Pulse/Pulse Direction)	C						
RTD (DIN Curve and US Curve)	D						
Frequency Input	F						
Millivolt or Thermocouple (J,K,T,E,S,R,B)	T						
Additional 1-5 Vdc Voltage Input	V						
Thermocouple Input (Hi-Isolation and Common Mode Rejection)	H						
Smart Transmitter Interface	M						
Not Required	N						
<b>Local Instrument Link Interface Option</b>							
RS-422 Half Duplex	1						
Not Required	N						
<b>Hazardous Area Classification</b>							
FM/CSA approved, Class 1, Division 2, Groups A, B, C & D	F						
Not Required	N						

**ORDERING INFORMATION**

- Specify model number, selecting:
  - Basic Model No.
  - Power Supply
  - Mounting Case
  - Operator's Panel
  - Input No. 3 Option
  - Local Instrument Link Interface Option
  - Hazardous Area Classification
- Select 352 accessories, as required

DIMENSIONS

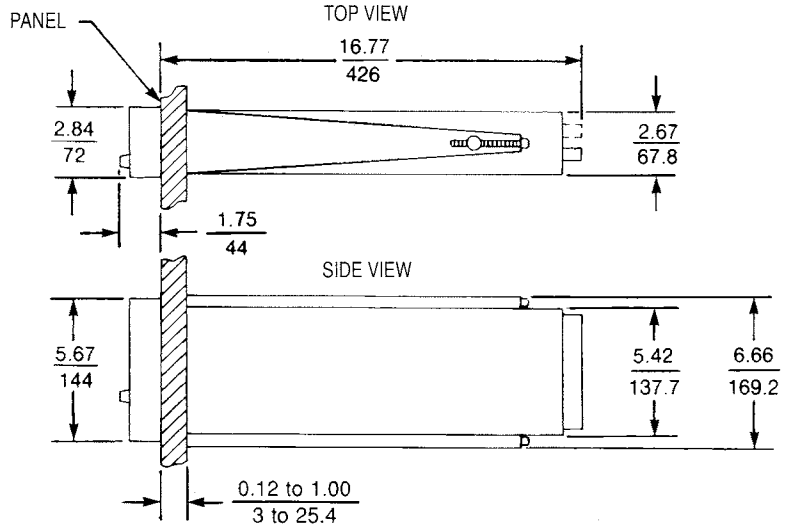
PANEL CUTOUT



SINGLE UNIT W =  $\frac{2.68}{68.0}$   
 MULTIPLE UNIT "W"  
 "W" INCH =  $(2.84 \times N) - 0.16$   
 "W" mm =  $(72.1 \times N) - 4.1$   
 N = NO. OF STATIONS

Alternate Single Unit DIN  
 Standard Cutout: 138 mm high x 68 mm wide

CASE DIMENSIONS



DIMENSIONS  $\frac{\text{INCHES}}{\text{mm}}$

REFERENCE LITERATURE

- Bulletin 3520. MYCRO 352 Single-Loop Digital Controller
- Bulletin 35-1. MYCRO Local Instrument Link System
- GC352-A. Optional Inputs for the MYCRO 351, 352, & 382
- GC352-T. MYCRO 352 Operation and Configuration Video Training Kit/Training Panel
- GC32S-4. MYCRO 352 Configuration Management Software

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