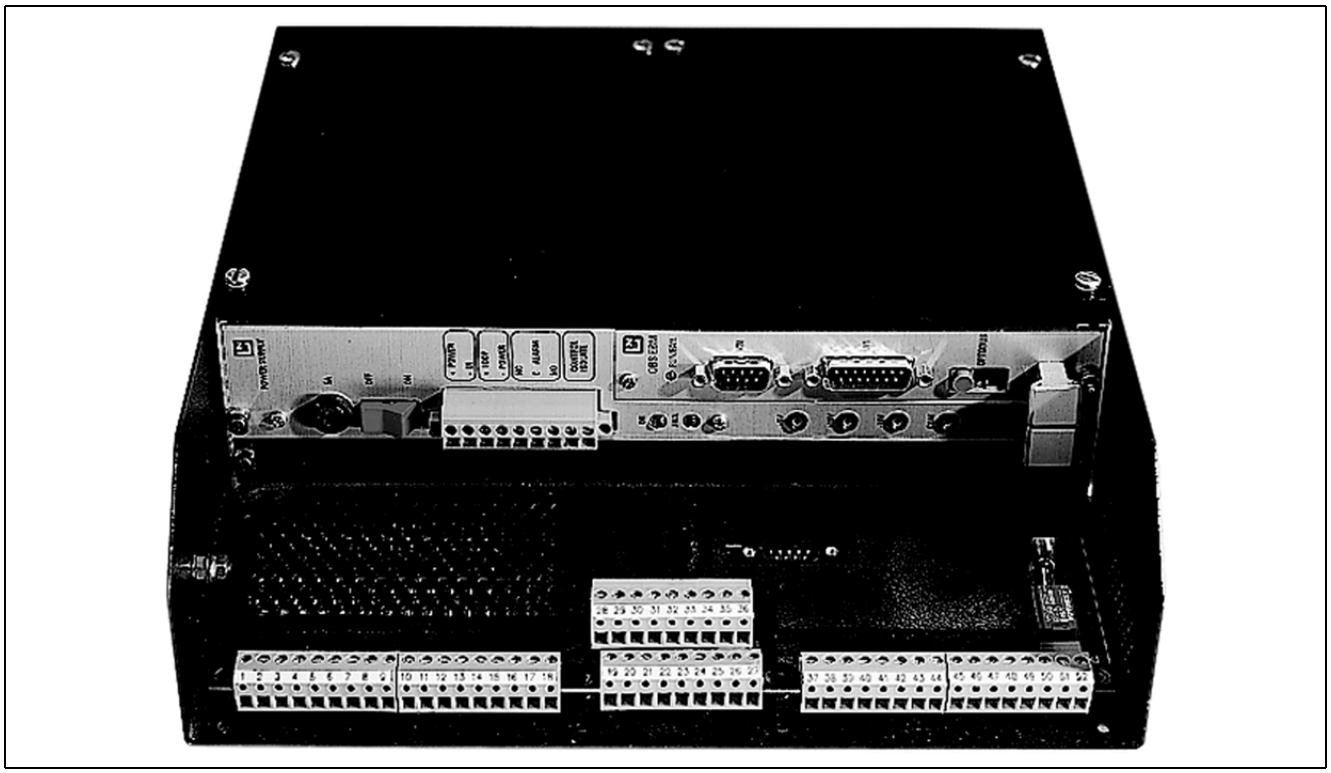
FOXBORO®

PSS 21H-8A6 B4

I/A Series® Remote Terminal Unit (RTU)
C50-CP Condensed Package I/O Module



The Condensed Package (CP) I/O module combines the functionality of the Analog Digital Input (ADI) Module with the Digital Output (TDO) Module to produce a compact I/O Module. The CP is the ideal solution for applications that require only a small quantity I/O at a remote location.

FEATURES

- Compact size with 16 digital inputs, six analog inputs and eight relay outputs
- Digital inputs are software configurable as Status, Momentary Change Detect (MCD), 12/24-bit Accumulator, Sequence Of Events (SOE), or a combination of these
- Two pass control operations with hardware checking
- Optical isolation on all digital inputs
- All input terminals use screw type terminals with test points and can be unplugged to remove the logic board
- Zero and full scale voltage checks on Analog-to-Digital Converter with offset compensation
- Common $+V_E$ or $-V_E$ selectable on groups of eight digital inputs
- Digital input bounce elimination circuitry with added chatter filter

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Product Specifications

Module Description

With an OPTObus Slave Module installed in Slot 1 of the CP chassis, a connection can be made via an optical fiber link to an OPTObus Master board. The CP I/O then appears as additional I/O to the RTU housing and the OPTObus Master Module (see Figure 1).

The CP chassis comes in two configurations (see Figure 2 and Figure 3):

- The Distributed Configuration is used only to distribute I/O
- The Main File configuration uses a Master Processor Module, making the C50-CP an RTU in its own right

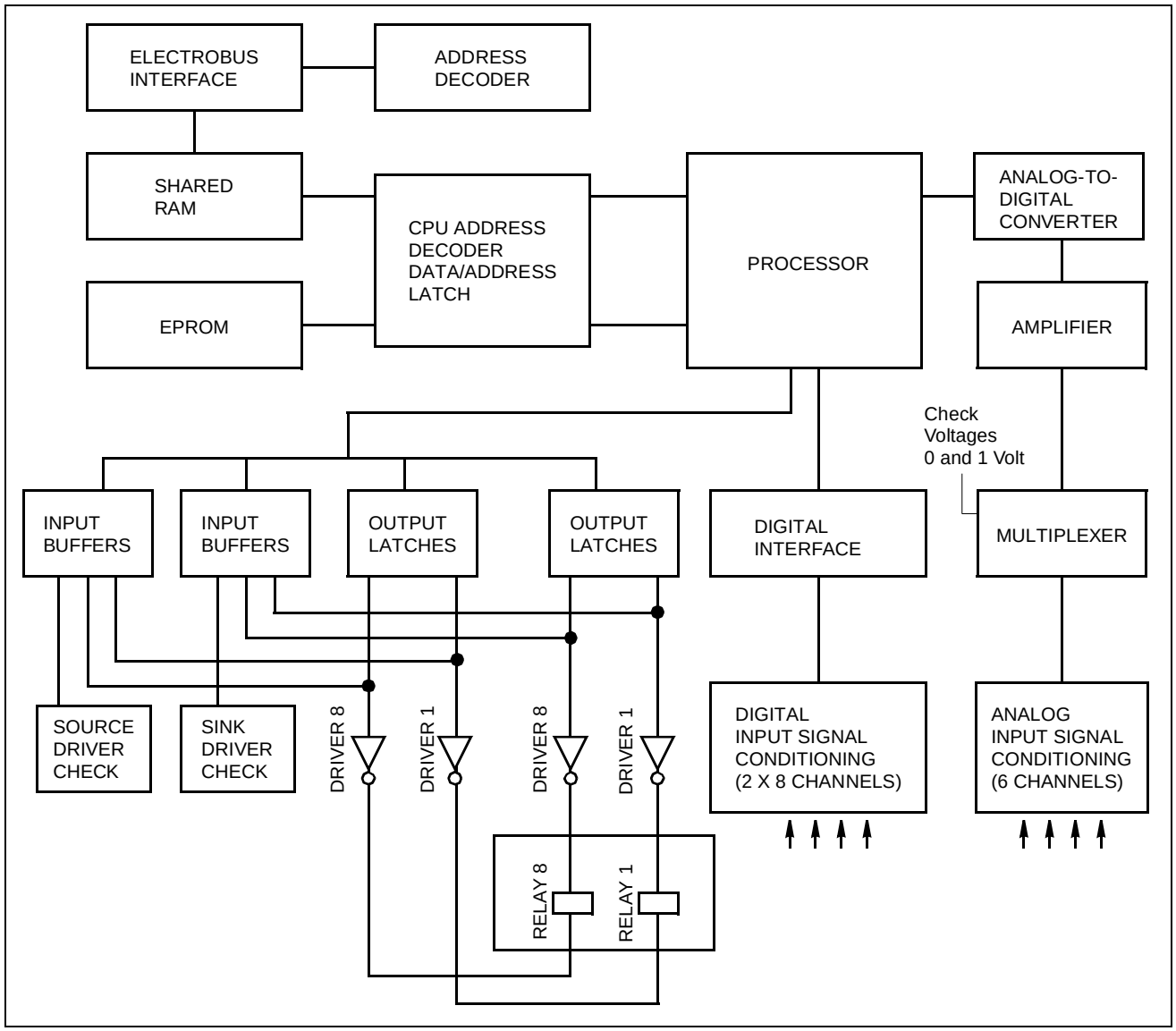

Figure 1. C50-CP Condensed Package I/O Module Functional Block Diagram

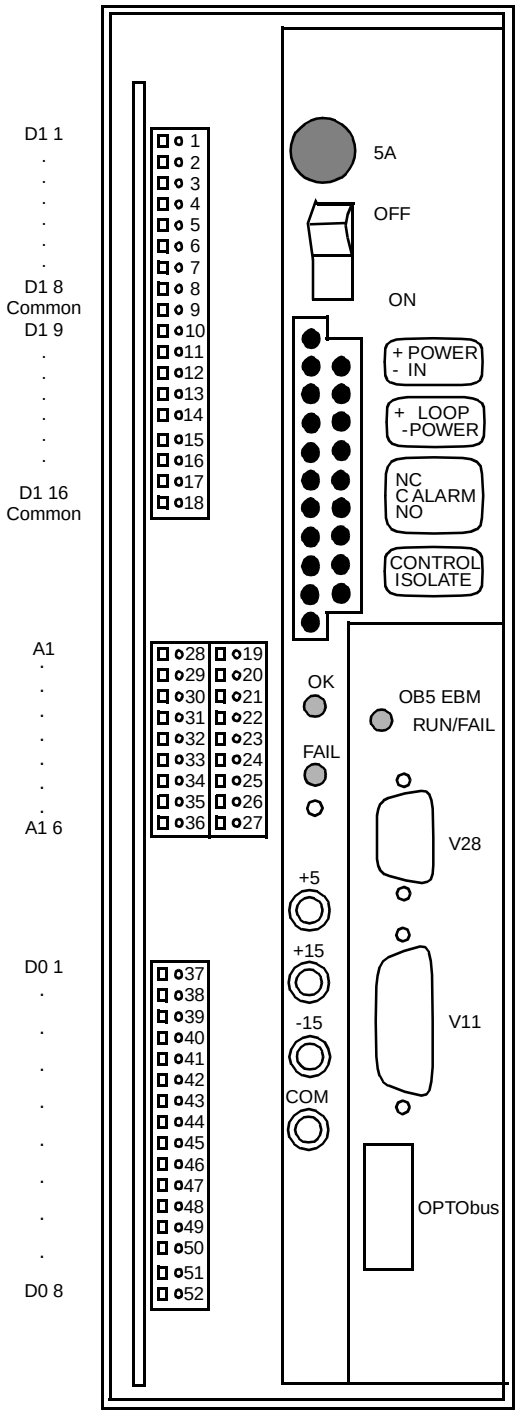

Figure 2. C50-CP Front Panel
in Distributed Configuration

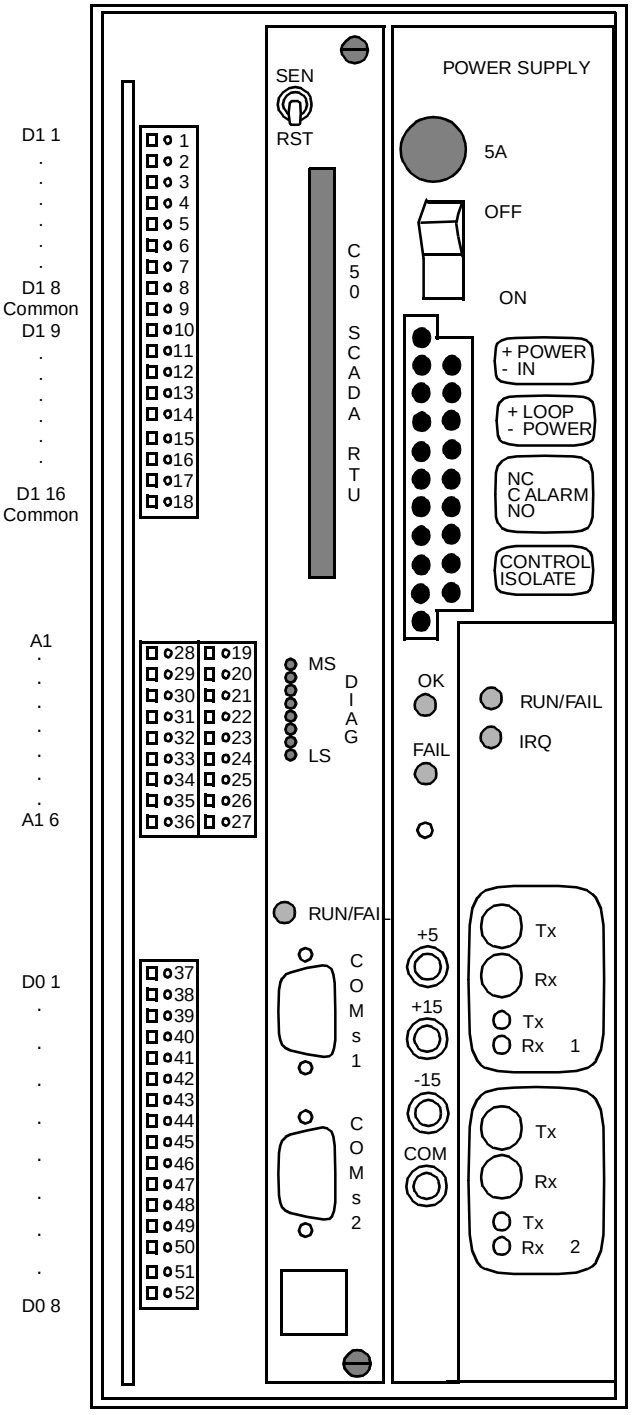

Figure 3. C50-CP Front Panel
in Main File Configuration

Inputs

The C50 Condensed Package (CP) I/O Module supports a combination of digital and analog inputs.

Versions are available supporting 24, 48, or 129 V dc inputs. The 16 digital inputs are grouped into two sets of eight and each set can be either sourcing or sinking. Each digital input is individually configured using the software, enabling one card to have combinations of Status Inputs, Momentary Change Detect (MCD) inputs, Sequence Of Events (SOE) inputs and Accumulators. The CP I/O is responsible for the time tagging of SOEs, while the Master Processor Module processes the remaining types and allocates them to scan groups.

The analog input section consists of a multiplexer, amplifier and an Analog-to-Digital Converter (ADC). The circuitry provides a multiplexed sample to the ADC, which converts the signal to a 12-bit word. These results are then stored in shared memory for access by the Master Processor Module via the Electrobus interface.

Automatic zero drift correction is provided by the onboard microprocessor. Zero end full scale voltage references are available as internal data base points, enabling access by the Master Station I/O Module.

Outputs

The CP I/O module contains source and sink drivers for eight relays, which the user can configure as fixed length pulse outputs (trip/close pairs), variable length pulse outputs (raise/lower pairs), or digital setpoints.

A two pass operation is used to ensure output integrity. During Pass 1, the onboard processor accepts data from the Master Processor Module through shared memory. The processor checks the validity of the command and performs a hardware check on the output driver circuits. If all tests succeed, a read back of the command is sent to the Master Processor Module.

During Pass 2, the Master Processor Module sends the execute command and the CP processor operates the required relay. The CP automatically times the duration of pulse outputs, then turns the necessary relay off.

PHYSICAL SPECIFICATIONS

Physical Size

DISTRIBUTED CONFIGURATION
270 mm x 80 mm x 282 mm

MAIN FILE CONFIGURATION
270 mm x 110 mm x 282 mm

ENVIRONMENTAL SPECIFICATIONS

Temperature
0°C to 60°C (option -20°C to 60°C)

Humidity
20% to 95% (non-condensing)

FUNCTIONAL SPECIFICATIONS

Power Requirements
DISTRIBUTED CONFIGURATION
10 Watts
MAIN FILE CONFIGURATION
20 Watts

Digital Outputs
CONTROL OUTPUTS
Eight Schrack RE relay outputs
RE RELAY CONTACT RATING
250 V ac/6 Amps
30 V dc/6 Amps resistive
50 V dc/500 mA @ 20 msec
50 V dc/300 mA @ 40 msec
40 V dc/200 mA @ 60 msec
129 V dc/200 mA @ 20 msec
RELAY ISOLATION
2 KV rms 1 minute, output to frame
1 KV rms 1 minute, across contact
2 KV rms 1 minute, between outputs
OUTPUT TYPES
Trip/Close (in pairs)
Raise/Lower (in pairs)
Setpoint (1 to 8 bits)
RELAY TRANSIENT PROTECTION
IEC 255-4 Class 3
ANSI C37.90a-1974
INDICATORS
Red/green RUN/FAIL LED visible from front
CONTROL ISOLATE
Control Isolate switch provided
TERMINALS
Phoenix plug/header combination used on all I/O
Plug assembly includes test points

Digital Inputs
INPUT CIRCUITS
16 inputs in two groups of 8
INPUT TYPE
Any input can be used as:
Status
MCD
SOE
Accumulator (12/24 bit)
CIRCUIT TYPES
Common return per eight inputs
Common positive or common negative
STATUS INPUT VOLTAGE
24 V dc maximum
48 V dc maximum
129 V dc maximum
Resistors are linked via tracks on PCB to match required voltage
INPUT CURRENT
Approx. 5 mA per input
ISOLATION
Limited by surge protection devices to 170 V dc or peak ac
STATUS TRANSIENT PROTECTION
Impulse
5 KVolts CM
5 KVolts DM
High Frequency Disturb
2.5 KVolts CM
2.5 KVolts DM

Analog Inputs
INPUT CIRCUITS
Six input circuits with individual shield terminals
MULTIPLEXER
Solid State
ADC TYPE
Dual Slope
RESOLUTION
12 bits + sign
CONVERSION SPEED
80 msec/channel maximum
DATA AGE
400 msec maximum
INPUT SIGNAL RANGE
±1 V or 0 to 2 V dc
FULL SCALE RANGE
±2000 counts (over range ±2047 counts) or +4000 counts (over range +4095 counts)
COMMON MODE ERROR
0.01% per V to a maximum of ±6 V
TEMPERATURE ERROR
0.0016% per °C from 0°C to 60°C
MAX. ERROR
±0.25% over full common mode and temperature range
DIFFERENTIAL MODE VOLTAGE
±50 V dc or peak ac without damage
DIFFERENTIAL MODE REJECTION
50 dB minimum @ 50 Hz
COMMON MODE VOLTAGE
Operating within specifications ±6 V
Without damage ±50 V dc or peak ac
COMMON MODE REJECTION
80 dB @ 6 V peak,
dc to 50 Hz @ 1 KΩ impedance unbalance
TRANSIENT PROTECTION
Meets IEEE Std 472-1974; ANSI C37.90-1974; IEC 255-4 Class 3
REFERENCE VOLTAGES
Zero volts and full scale positive (+1 V)

ORDERING INFORMATION	
Part Number	**Description**
0303335	24 V Digital Input Logic Board
0303347	48 V Digital Input Logic Board
0303348	129 V Digital Input Logic Board
1050050	Firmware

NOTE

Firmware must be separately ordered and installed.

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