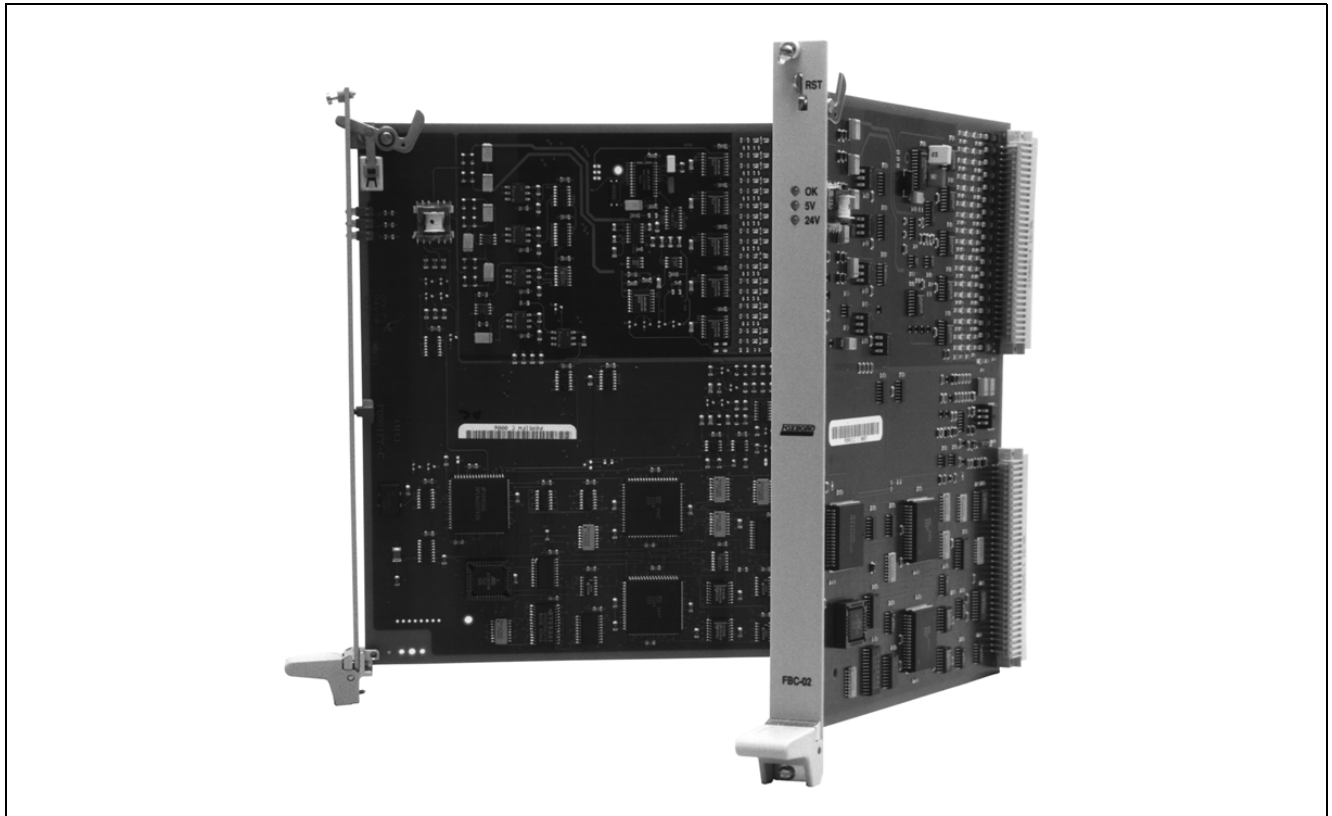# I/A Series® Hardware
32 Channel Group-Isolated Analog Input Fieldbus Card Thermocouple (FBC02)

The I/A Series Group-Isolated Analog Input Fieldbus Card, FBC02, consists of 32 analog single-ended input channels for various type thermocouple inputs. Each channel accepts a 2-wire, Type E, J, K, T, B, R, or S thermocouple. The FBC02 does not support a grounded-tip thermocouple application.

NOTE
Any mixture of thermocouple types can be attached to an individual FBC02.

A 33rd channel is connected to a 4-wire platinum Resistance Temperature Detector (RTD) for cold junction compensation. The FBC02 performs signal conversions required to interface to the I/A Series Fieldbus via the Fieldbus Processor 10 (FBP10).

The FBC02 channels are electrically separate card-to-card, but are not separated channel-to-channel on the same card.

The FBC02 features include:

• Burnout detection of thermocouple inputs which generates error flags per channel

• RTD value check with generated error flag.

The FBC02 mounts directly into a single slot of the Industrial Chassis 12 (ICH12) and Industrial Chassis 19 (ICH19). Signal wiring is via the discrete Termination Cable Assembly (TCA) connected at the rear of the chassis. The FBC02 uses three standard TCAs and one TCA that contains the RTD for the 33rd channel. The RTD TCA may connect to any segment connector (1 through 4). There are no plug type TCAs available for FBC02.

The FBC02 card does not support redundancy.

Product Specifications

FUNCTIONAL SPECIFICATIONS

Analog Inputs
SINGLE-ENDED CHANNELS
32
THERMOCOUPLE TYPES
E, J, K, T, B, R, S with the same type TC on all inputs of the same module
INPUT RANGE
−10.5 mV to +69.5 mV
ACCURACY
±0.2% of span at 25°C
NON-LINEARITY
±0.1% Full Scale Resolution (maximum)
WARM-UP TIME
15 minutes to ±0.003% Full Scale Resolution (maximum)
OFFSET TEMPERATURE COEFFICIENT
±1.0 µV/°C (maximum)
GAIN TEMPERATURE COEFFICIENT
±30 ppm/°C (maximum)
LONG TERM GAIN DRIFT
±15 ppm/month (maximum)
COMMON MODE INPUT IMPEDANCE
10 MΩ in parallel with 80 pf, typical

DIFFERENTIAL INPUT IMPEDANCE
10 MΩ (minimum)
COMMON MODE VOLTAGE
Up to 250 V ac
COMMON MODE REJECTION RATIO
115 dB @ 50 or 60 Hz
REFERENCE JUNCTION ERROR
±0.4°C (maximum)
T/C LINEARIZATION CONFORMANCE
±0.2°C (maximum)
CONVERSION TIME
65 ms (approximately) per channel, all 32 channels within 2.5 s

Power Requirements
INPUT VOLTAGE
+5.25 V dc at 0.35 A
+24 V dc at 0.005 A
CONSUMPTION
+5.25 V dc (1.84 W)
+24 V dc (0.12 W)
HEAT DISSIPATION
Total 1.96 W (maximum)

Conversion Speed/Rejected Frequency Configuration Options			
Integration Period (ms)	**Resolution FS**	**Update Time (seconds)**	**Rejected Frequency (Hz)**
20/16.67 software selectable	12 bit	2.5 (maximum)	50/60 software selectable

ENVIRONMENTAL SPECIFICATIONS

Operating
TEMPERATURE
0 to +70°C (32 to +158°F)
RELATIVE HUMIDITY
20 to 80% (Noncondensing)

Transportation and Storage
TEMPERATURE
−40 to +70°C (−13 to +158°F)
RELATIVE HUMIDITY
20 to 80% (Noncondensing)

Contamination
Class G1 (Mild) as defined in ISA Standard, S71.04

PHYSICAL SPECIFICATIONS

Mounting
ICH12, ICH19 Chassis, single I/O slot

Mass
0.61 kg (1.3 lb)

Field Termination Connections
Discrete Wires from External Termination Assemblies. The TCAs are discrete wire type, plug type, or ring lug type.

TERMINOLOGY

- Non-isolated - Each channel is referenced to ground and the card itself is referenced to ground.
- Group-isolated - Electrically separate card-to-card but not channel-to-channel on the same card.
- Isolated - Each channel is electrically separated from any other channel, card, group, building, site, etc.

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