

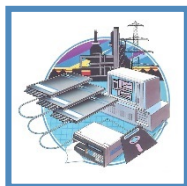
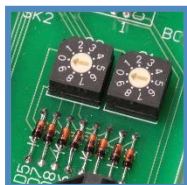


IMP Design & Concept

In this simple concept, plant parameters are measured by intelligent, multichannel modules, called Isolated Measurement Pods (IMPs) or rack mounted cards called Isolated Measurement Cards (IMCs). These are all linked together on a low cost twisted pair communications network, to a host computer, which programs and controls the IMPs/IMCs and stores and displays the data.

A wide range of precise process parameter measurements can be made using built-in sensor energization, integral signal conditioning and a 16 bit ADC; signal noise is kept to an absolute minimum by using selectable integration times, and drift correction is automatically applied between scans.

The 3595 1C IMP/51C IMC uses reed-relay switching, which makes it ideal for applications requiring high inter-channel isolation, and is capable of measuring up to 250 volts with the optional high voltage connector. The IMP is housed in an NEMA4/IP55 environmentally sealed package, and both types use a multichannel removable connector block which makes installation and exchange simple.



Technical Specifications

Number of channels:	20
Switching:	reed-relay, 3 pole
Reed relay life:	>108 operations
Maximum signal measured:	±12V
Maximum input voltage:	±14V
Overload protection, continuous:	50V
Maximum voltage between any two points:	200V

Measurement

Voltage dc:	0 to ±12V
Current dc:	0 to 20mA
Thermocouple types:	B,E,J,K,N,T,R,S
Thermocouple Cold Junction:	External or Auto
Thermocouple open circuit detection:	programmable

Interference Rejection

<i>20ms/16.67ms integration time</i>	
Normal Mode, 50 or 60 Hz, ±0.1%	>60dB
Effective Common Mode Rejection; dc:	>140dB
50 or 60Hz ±1.0% :	>140dB
50 or 60Hz ±0.1% :	>120dB
<i>5 ms / 4.17 ms / 1.25 ms / 1.04 ms integration time</i>	
Normal Mode, 50 or 60 Hz, ±0.1%	>60dB
Effective Common Mode Rejection, 50 or 60Hz ±0.1% :	>80dB

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DC Voltage

Temperature Coefficient of ADC:

<(0.0015%rdg+0.2μV)per °C

16.67ms Integration Time

Range	Full Scale	Sensitivity	Limits of Error
20mV	22.000	1μV	±[0.02%rdg + 5μV]
200mV	220.00	10μV	±[0.02%rdg + 0.01%fs]
2V	2.2000	100μV	±[0.01%rdg + 0.01%fs]
12V	12.000	1mV	±[0.05%rdg + 0.01%fs]

4.17ms Integration Time

Range	Full Scale	Sensitivity	Limits of Error
20mV	22.000	2μV	±[0.02%rdg + 20μV]
200mV	220.00	20μV	±[0.02%rdg + 0.04%fs]
2V	2.2000	200μV	±[0.01%rdg + 0.04%fs]
12V	12.000	2.5mV	±[0.05%rdg + 0.04%fs]

1.04ms Integration Time

Range	Full Scale	Sensitivity	Limits of Error
20mV	22.000	8μV	±[0.02%rdg + 80μV]
200mV	220.00	80μV	±[0.02%rdg + 0.16%fs]
2V	2.2000	800μV	±[0.01%rdg + 0.16%fs]
12V	12.000	8mV	±[0.05%rdg + 0.16%fs]

DC Current

Sensitivity (assuming 100 Ω shunt): 10nA

Error as for DC voltage + error of shunt resistor + leakage currents

Thermocouples

The following based on 16.67ms integration times.

All specified in degrees Celcius.

Error quoted is conformity to IEC584 (BS4937).

Type	Mid Range	Error	Full Range	Error
B (Pt-30% Rh/Pt-6%Rh)	400 to 1820	<0.3	80 to 1820	<2.0
E (Ni-Cr/Cu-Ni)	-100 to 250	<0.3	-210 to 1000	<0.5
J (Fe/Cu-Ni)	-100 to 350	<0.3	-210 to 1200	<0.7
K (Ni-Cr/Ni-Al)	-100 to 450	<0.3	-200 to 1370	<1.0
N (Nicros/Nisil)	-180 to 1280	<0.3	-250 to 1300	<0.8
T (Cu/Cu-Ni)	-100 to 400	<0.3	-200 to 400	<0.5
R (Pt-13% Rh/Pt)	0 to 1600	<1.0	-50 to 1760	<2.0
S (Pt-10% Rh/Pt)	0 to 1760	<1.0	-50 to 1760	<1.5

Sensitivity, types B,E,J,K,N,T: 0.1°C (0.18°F)

Sensitivity, Types R,S: 0.2°C (0.36°F)

Total thermocouple error equals Conformity plus voltage errors.

Additional error when using automatic Cold Junction Compensation:

Range: -15° to 60°C (5° to 140°F) <0.4°C (0.72°F)

-20° to 70°C (-4° to 158°F) <0.6°C (1.08°F)

External Cold Junction Range: -30° to +80°C (-22° to 176°F)

Open circuit detection threshold: 1.9kΩ ± 0.1kΩ

Physical

Dimensions: 420mm x 218mm x 30mm (16.54" x 8.58" x 1.18")

Weight: 1.23 kg (2.69lbs)

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