Datascan 8/16 Channel Measurement Processors 7220 & 7221

General Description

The Datascan 7200 series is a series of intelligent distributed input output modules designed for real time measurement and data collection and communication. Developed for factory, industrial and scientific data acquisition applications the Datascan introduces new standards for interfacing sensors to computers. The 7200 series is used in applications where a small number of channels are required at local or remote locations.

Main Features

- Direct Sensor Connection for DC voltage, Thermocouples, Strain Gauges, PRT's and 4-20mA Converters

- Expandable over 1.2km Twisted Pair Network (4Km with Network Extender)

- 16 Bit measurement performance with 0.625µV sensitivity

- In-built Cold Junction Compensation

- Solid State Differential Inputs

- Up to 400 channels/sec Measurement Speed

- Mix and Match Channel Configuration

- On Board Energisation

- High Common and Series Mode Noise Rejection

- Simple yet Powerful built-in Command Set

- Compact Rugged DIN Rail Mounted Unit

The **7200** series is designed to provide a simple reliable accurate and cost effective means of connecting plant sensors to standard computers for real time monitoring and data acquisition. The 7200 series provides a low cost, high performance interface at locations with smaller numbers of analog sensors.

The **7200** series can be used autonomously or alternatively as part of a total distributed network. The 7200 can be connected by means of the unique token passing real time network. The system can be expanded through connecting any of the other measurement processors in the range. Each 7200 incorporates a programmable 16 bit ADC an isolated serial interface, an isolated token passing network, on board non volatile memory for storing unit configurations, 8 or 16 inputs depending on model type . The unit is encapsulated in a compact, rugged DIN rail mounting unit, making them ideal to install in harsh environments.

Specification

The 7220/21 are analog input measurement processors. The 7220 is a 16 channel unit whereas the 7221 provides a total of 8 channels.

Both units provide direct sensor connection for Thermocouples DC voltages, 4-20 mA inputs.

The 7221 provides direct sensor energisation for strain gauges and resistance thermometers, (as the 7220 it has integral CJC for Thermocouples).

Model Type	No of Inputs	Sensor Types	Resolution	Input Impedance
7220	**16** (3 pole)	DC Voltage, Thermocouples, 4-20 mA,	16 bits @ 40 rdgs/sec 14 bits @ 400 rdgs/sec	30M ohms
7221	**8** (4 pole) with pulsed energisation	DC Voltage, Thermocouples, Resistance, Thermometers, Strain Gauges, 4-20 mA, current	16 bits @ 40 rdgs/sec 14 bits @ 400 rdgs/sec	30M ohms

Sensor	Range	16 bit	14 bit	Accuracy
DC voltage (7220/21)	10 V 1.3V 150mV 20mV Auto	320 µV 40 µV 5 µV 0.625µV	1.28 mV 160 µV 20 µV 2.5 µV	+/-0.02%rdg+0.01%range+1bit +/-0.02%rdg+0.01%range+1bit +/-0.02%rdg+0.01%range+1bit 16bit(+/-0.02%rdg+0.01%range+5µV) 14bit(+/-0.02%rdg+0.01%range+10µV)

Calibration period 12 months.   Calibration temperature 20°C.   All quoted errors are worst case.

Temperature coeff <30 ppm / °C (CJC Error 0.5 °C)

Each channel can be individually programmed for specific sensors, speed and measurement range.

The high performance 16 bit ADC (Analog to digital converters) offers sensitivities as high as 0.625 µV.

The integrating technique of conversion provides very high immunity to mains borne noise.

Software support

Datascan can be used with a wide range of standard software products available from several vendors.

Other details

Sensor Type Thermocouple 7220/21	Ranges	Sensitivity 16 bit resolution	Sensitivity 14 bit resolution	Limits of Error
K Type	-100 to 500 °C 500 to 1200 °C	0.02 °C 0.20 °C	0.1 °C 1.0 °C	0.4 °C 0.7 °C
J Type	-50 to 360 °C 360 to 800 °C	0.02 °C 0.20 °C	0.1 °C 1.0 °C	0.4 °C 0.6 °C
N Type	-200 to 100 °C 100 to 580 °C 580 to 1300 °C	0.10 °C 0.05 °C 0.10 °C	0.4 °C 0.2 °C 0.4 °C	0.7 °C 0.5 °C 0.7 °C
T Type	-150 to 400 °C	0.02 °C	0.1 °C	0.4 °C
R Type	0 to 1600 °C	0.10 °C	0.4 °C	1.5 °C
S Type	0 to 1700 °C	0.10 °C	0.4 °C	1.5 °C
E Type	-50 to 290 °C 290 to 1000 °C	0.02 °C 0.10 °C	0.1 °C 0.4 °C	0.4 °C 0.8 °C
B Type	200 to 1600 °C	0.50 °C	2.0 °C	4.5 °C
Resistance thermometers PT100 (7221 only)	-50 to 300 °C -50 to 500 °C	0.02 °C 0.20 °C	0.1 °C 1.0 °C	0.25 °C 0.50 °C
Strain Gauges Full 1/2 1/4 bridge (7221 only)	0-10,000 µe	0.62 µe	3.0 µe	10 µe
4-20 mA (7220/21)	4-20 mA	0.01 µA	0.08 µA	+/-0.15%

Common/series mode rejection

DC common mode : 100 dB's
AC common mode : 120 dB's
AC series mode : 60 dB's

Overload Protection

+/- 30V continuous

+/- 200V transient <0.1s

Baud Rate:

300, 1200, 9600, 38.4K

Network Specifications

Standard : RS485
Media : Twisted Pair
Distance : 1.2Km

(4Km with network extender)

Power	Dimensions	Weight	Op temp	Humidity
Supply 24V dc/ac consumption <2 Watts @ 24V	W 230 mm H 123 mm D 80 mm	750 grams	-10 to 60°C storage -20 to 80°C	RH 90% Non-Condensing