Datascan Analog Input Modules 7020 & 7021

General Description

The Datascan is a series of intelligent distributed input/ output modules designed for real time measurement, data collection and communication. The products are ideal for factory, industrial and scientific applications. The Datascan series includes intelligent Measurement Processors and various types of input/output modules for channel expansion, in all a total of 26 modules for differring I/O requirements. The 7020/21 are analog input modules and can be used with either the 7010 or 7300 series of measurement processor.

Main Features

- Direct Sensor connection for DC voltages, Thermocouples, strain gauges, RTD's, resistance and 4-20 mA converters
- In built Cold Junction compensation
- On board energisation for RTD's and strain gauges.
- I6 bit measurement performance with 0.625µV sensitivity
- Solid state differential inputs
- High Common Mode and Series Mode rejection
- Local measurement speed up to 400 readings/sec 1000/sec over the network
- Channel mix and match capability
- Individual channel programming of sensor type and speed
- Digital configuration permitting mix and match of analog and digital inputs
- Compact Rugged DIN rail mounted
- Quoted accuracies guaranteed for 12 months, includes all errors

The **Datascan** 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 Datascan can be used universally with any type of computer as the data interface is by means of a standard serial port.

Datascan modules can be configured in local clusters of channels or alternatively as part of a total distributed network. Datascan can support up to 256 channels of local inputs or outputs using the unit's local expansion bus. Alternatively it can become part of a distributed network of up to 1000 channels spanning a distance of up to 4 Km (15000 ft).

Specification

Model Type	No of Inputs	Sensor Types	Resolution	Input Impedance
7020	**16** (3 pole)	DC Voltage, Thermocouples, 4-20 mA	16 bits @ 40 rdgs/sec 14 bits @ 400 rdgs/sec	30M ohms
7021	**8** (6 pole) with pulsed energisation	DC Voltage, Thermocouples, Resistance Thermometers, Strain Gauges, 4-20 mA, Resistance	16 bits @ 40 rdgs/sec 14 bits @ 400 rdgs/sec	30M ohms

The 7020 and 7021 are expansion input scanners and signal conditioning units for the 7010 and 7300. The 7020 is a 16 channel unit, whereas the 7021 provides a total of 8 channels.

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

The 7021 provides direct sensor energisation for strain gauges and resistance thermometers. Both models have integral CJC for direct Thermocouple measurement.

Sensor	Range	16 bit	14 bit	Accuracy
DC voltage (7020/21)	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)

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

Temperature coeff <30 ppm / °C (CJC Error 0.6 °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.

A facility is provided to configure analog channels as digital inputs.

DIN rail mounting combined with plug-in screw terminal blocks make these modules easy to install and maintain.

Channels can be mixed and matched under software control.

Wide range of supporting software

Sensor Type Thermocouple 7020/21	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	0.3 °C 0.6 °C
J Type	-50 to 360 °C 360 to 800 °C	0.02 °C 0.20 °C	0.1 °C 1.0 °C	0.3 °C 0.5 °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	0.6 °C 0.4 °C 0.6 °C
T Type	-150 to 400 °C	0.02 °C	0.1 °C	0.3 °C
R Type	0 to 1600 °C	0.10 °C	0.4 °C	1.4 °C
S Type	0 to 1700 °C	0.10 °C	0.4 °C	1.4 °C
E Type	-50 to 290 °C 290 to 1000 °C	0.02 °C 0.10 °C	0.1 °C 0.4 °C	0.3 °C 0.7 °C
B Type	200 to 1600 °C	0.50 °C	2.0 °C	4.4 °C
Resistance thermometers PT100 (7021 only)	-50 to 300 °C -150 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 (7021 only)	0-10,000 µe	0.62 µe	3.0 µe	10 µe
4-20 mA (7020/21)	4-20 mA			+/-0.15%

Other Details

Overload Protection

+/- 30V continuous

+/- 200V transient <0.1s

Common/series mode rejection

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

Power	Dimensions	Weight	Op temp	Humidity
100mW typ 200mW max	W 178 mm H 123 mm D 80 mm	450 grams	-10 to 60°C storage -20 to 80°C	RH 90% Non-Condensin

PARTNERSHIP COURTYARD,
RAMPARTS ROAD,
DUNDALK, IRELAND
TEL: +353 42 9332399

SALES@MEASURESOFT.COM

13380 SOUTH GESSNER,
MISSOURI CITY,
TX 77489, USA
TEL: +1 281 969 7529

WWW.MEASURESOFT.COM

Issue 2.2 5/96