

7010 MEASUREMENT MODULE

THE HEART OF THE SYSTEM

Datascan 7000 is a range of revolutionary intelligent measurement and data collection units developed for factory, industrial and scientific data acquisition applications. Datascan 7000 introduces new standards in interfacing sensors to computers. It provides users with a distributed, real-time, global data supply that can be easily and cost effectively configured, installed and expanded into existing plant and computer systems without fear of obsolescence.

7010 Features

- Isolated self-configuring network providing global data
- Dual token network operation
- 16 bit measurement performance
- Acquisition rates up to 1000 channels/sec
- Individual channel speed selection
- Comprehensive range of modular I/O interfaces
- Expandable to 1000 channels
- Comprehensive range of built-in software commands
- Distribution over 1.2 Km twisted pair network
- High common and series mode noise rejection
- Compact, rugged DIN rail mounted unit
- Low power design

THE HEART OF THE SYSTEM

The 7010 provides the measurement facilities and controls the operation of the Datascan system. On board each 7010 is a programmable, high performance ADC, a serial interface for connection to the host computer, a network interface permitting up to 32 measurement modules to be connected together, and an expansion bus allowing the connection of up to 256 channels of analog or digital I/O.

Network

Each measurement module can be used autonomously with the appropriate analog or digital scanner units, or as part of a real-time network. Up to 32 measurement modules can be connected on a single screened twisted pair network by means of the isolated RS485 network port. The token passing network can extend over a distance of 1.2Km (4000ft) and support up to a total channel capacity of 1000 channels of various types. The network band width permits an update rate of 1000 channels/sec.

The network is continuously broadcasting all the measured data globally. At any point a host computer or terminal can be connected to a measurement module user port, and access part, or all of the measured data on the network. The multi-tasking executive running on the 7010 enables configuration and re-configuration to be carried out dynamically.

A dual token feature of the network enables one set of channels to be scanned at a frequency higher than a second set, providing a facility for mixed high speed and low speed scanning frequencies.

Expansion Bus

The expansion bus provides the method by which additional analog and digital scanner modules can be connected. Up to 256 channels can be added to each measurement module. These can be mounted locally to the measurement module, over a distance of 10 metres.

7010 TECHNICAL SPECIFICATION

Rugged Design

Great attention has been paid to the packaging, installation and operation of the system in harsh environments. Extensive use of CMOS surface mounted technology enables the unit to be packaged into compact, rugged, DIN rail mounted carriers, making it easy to install close to the measurement point.

With features such as high noise rejection, wide operating temperature range and network distribution, Datascan can be located in plant areas which are normally restricted from sensitive electronic equipment, ensuring measurement integrity and a significant reduction in cabling and installation costs.

Analog/Digital Converter (ADC)

The high performance ADC provides the facility for selecting the resolution and measurement speed for individual channels. Either 16 bit or 14 bit resolution can be selected with a measurement speed of 40 rdgs/sec at 16 bits or up to 400 rdgs/sec at 14 bits. The unit is sensitive to 0.62 μ V, and the unique method of conversion provides high immunity to common and series mode noise. Autorange is available as standard.

Processor

The powerful on board CMOS processor provides the control and real time data processing capability of the 7010. Linearisation, user selectable polynomials, alarm limit checks and channel labelling are all carried out by the processor. Battery supported memory holds all the module configuration in a non-volatile form, making programming a one-off task.

Software commands

Over 50 software commands enable ease of programming, and reduce significantly the programming and processor load on the host. Commands can be given in a simple ASCII format, and data from the unit can be transferred in up to five different formats of binary or ASCII.

ADC Resolution	16 /14 bit (individual channel resolution programmable)
Measurement Speed	40 rdgs/sec @16 bits 400 rdgs/sec @14 bits
RS232 Interface (user port)	baud rates 300, 1.2K, 9.6K, 38.4K baud (switch selectable) 10m maximum to host
System performance	
Single 7010	300 analog results/sec
Network with 4 x 7010	600 analog results/sec
Expansion Bus	
Total channels per 7010	256 analog or digital
Maximum cable length	10 metres
Power Requirements	
Battery back-up life	24V AC or DC @ 500 mA 5 years unpowered
Network	
Electrical specification	RS485
Transmission rate	93.75Kbaud
Data rate	1000 results/sec
Total channels/network	1000
Max. no. of 7010s	32
Max. length	1.2 km (4000 ft)
Recommended cable types	Belden 9207 (up to 1.2km) Belden 8761 (up to 300m)
Dimensions	
height:	230mm
width:	123mm
depth:	80mm
weight:	700 gms
Operating temp:	-10°C to +60°C
Storage temp:	-20°C to +80°C
Relative humidity	90% non-condensing

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