

8B isoLynx®**SLX300 Data Acquisition System****► Features**

- Modbus RTU and TCP Support
- 1500Vrms Input-to-Output & Channel-to-Channel Isolation
- 240Vrms Field-Side Protection
- Wide I/O Selection:
19 Families, 123 Models Analog
6 Families, 14 Models Digital
- Mix & Match Analog & Digital I/O
- Advanced Features Include: Alarms, Counters, Timers, PWMs, and more
- -40°C to +85°C Operating Temperature
- CE Compliant
- Hazardous Locations Certifications Pending

Description

Dataforth's newest data acquisition system builds on the proven reliability of the isoLynx® SLX200 SCM5B-based system and also takes advantage of the miniature size and outstanding performance of the SensorLex® 8B isolated signal conditioning modules to provide a more compact, lower cost solution. Like the SLX200, the superior reliability, accuracy, and isolation of the SLX300 make it ideal for use in rugged industrial applications. Through the use of pluggable modules, the SLX300 offers maximum flexibility of analog and digital channel configuration for a broad range of factory automation, process control, test and measurement, machine control, and data acquisition applications. The isoLynx® SLX300 uses industry standard Modbus RTU and TCP protocols, thus enabling communication with a wide range of existing third-party software tools and HMI/SCADA packages.

Fast I/O Channel-to-Channel Isolated

The flexible, modular SLX300 design can be configured with up to 12 channels of isolated analog input, four channels of isolated analog output, and eight channels of isolated digital I/O using the popular low-cost Dataforth 8B and SCMD modules. The isolation rating is 1500Vrms from input to output and from channel to channel. The system can be powered by +5VDC or a wide range 7 to 34VDC using the 8BPWR-2 module, and it can be either panel or DIN rail mounted. Multiple powerful, high-speed microcontrollers and high performance data converters at the heart of the system enable simultaneous analog and digital I/O at sustained rates of up to 2.4kS/s. In addition, a burst mode is provided for analog input that allows sampling up to 60kS/s.

Industry's Widest I/O Selection

The isoLynx® SLX300 can be configured for any application by selecting from over 120 analog I/O modules and 14 digital I/O modules. These module selections enable monitoring of common industrial signals including millivolt, volt, milliamp, amp, linearized and non-linearized thermocouple, 3- and 4-wire RTD, potentiometer, slidewire, strain gage, AC-to-True RMS output, frequency, 2-wire transmitter, and DC LVDT. Analog output modules provide isolated high-level voltage and current options. Industry standard digital I/O solid-state relay modules provide AC/DC input and output monitoring and control. Both analog and digital output channels can be configured as alarm outputs. The ability to mix and match module types on a per-channel basis ensures maximum system flexibility.

Operation and storage temperature for the isoLynx® SLX300, as well as for all analog and digital I/O modules used in the most extreme environments, is -40°C to +85°C; the relative humidity range is 0 to 95% noncondensing. The SLX300 system is CE Compliant and designed for operation in Class I, Division 2, Hazardous Locations.

Powerful Functionality

The SLX300 has many features and special purpose functions for data acquisition and control needs. Sampled data from analog input channels is stored to a 256k sample buffer as current, minimum, maximum, and average readings with selectable averaging weight. A burst mode of operation allows up to 60kS/s sampling rate on analog input channels and also provides a waveform generator function using the analog output channels. Continuous and burst sampling modes can be set up with a 48 entry scan list to specify scan sequence, scan rate, and scan count. In addition to performing standard digital I/O, the eight digital I/O channels can be configured to perform seven different special functions: counter, timer, waveform measurement, time between events, frequency generator, pulse width modulation generator, and one-shot generator. Four alarm states – high, high-high, low, and low-low – can be set on the analog input, digital input, and digital I/O special function channels with alarm output mapped to a user selectable analog output or digital output channel.

Configurable analog and digital default output values ensure output signals are set to safe values upon system startup or when unexpected power outages or brownouts occur. System status and mode LEDs constantly display communication activity, mode of operation, and alarm status.

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Flexible Communications and Configuration

The isoLynx® SLX300 interfaces to a host system through a choice of communication links. RS-232 or RS-485 serial links operate at up to 115k baud, use true fail-safe transceivers, and have software controlled termination networks, eliminating the need for DIP switches. A full-speed USB 2.0 interface provides a common connection to modern computers and a 10/100 Ethernet connection is also available. The Modbus RTU protocol used on serial and USB interfaces and the Modbus TCP protocol used on the Ethernet interface are open, industry standard protocols that define how devices on a network communicate with each other. This ensures that the system can be

integrated seamlessly onto existing Modbus networks using common Modbus function codes.

A free configuration tool is provided for quick and easy system setup. Channel I/O setup, communication, default output, and other parameters are stored in non-volatile memory (see Figure 1 and Figure 2). A LabVIEW VI library enables fast application development using industry standard tools. Future offerings will include both low end and high end software tools for data acquisition and control using the SLX300.

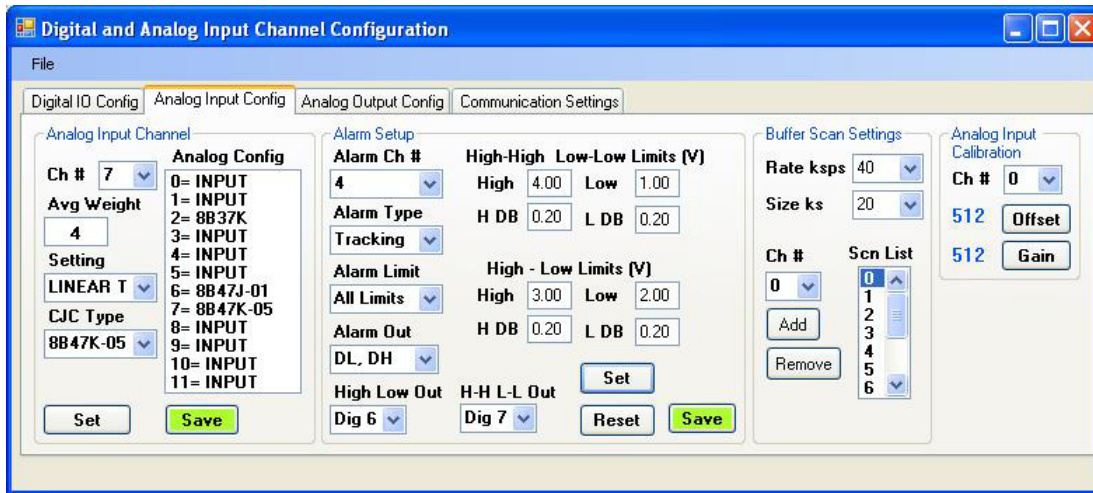


Figure 1: Configuration Tool - System Setup

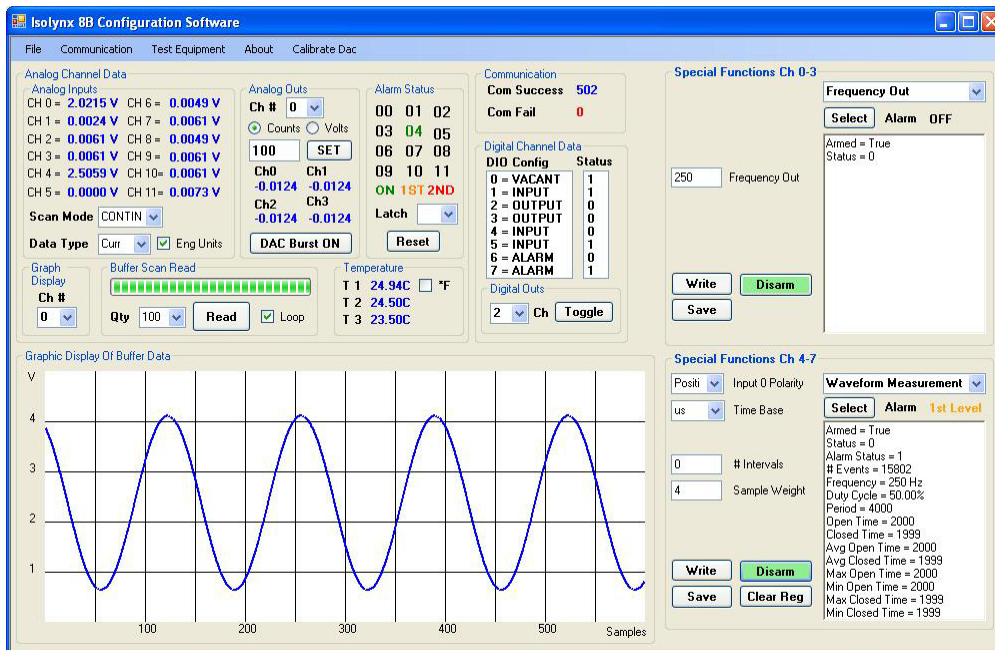


Figure 2: Configuration Tool - Channel Monitoring and Data Display

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Specifications Typical at $T_A = +25^\circ\text{C}$ and +5V power

Analog Input Channel Count Module Type Accuracy ⁽¹⁾ Resolution Input Protection Isolation (Input-to-Output & Ch-to-Ch) Throughput ⁽²⁾ Sampling Buffer Scan List Averaging Alarm Alarm Response	12 Mix and match input types on a per-channel basis 8B30/31/32/33/34/35/36/37/38/40/41/42/43/45/47 All models with 0-5V output $\pm 0.07\%$ $\pm 0.024\%$ 240VAC Continuous, ESD per EN61000-6-2 1500Vrms max 2.4kS/s max continuous, 60kS/s max burst, programmable 256k sample Up to 48 entries in any order Selectable weight Program High/High-High/Low/Low-Low per Channel Programmable Analog Out, Digital Out	Digital I/O Special Functions Counter / Timer Waveform Measurement Time Between Events Frequency Generator PWM Generator One-Shot Generator Alarm Alarm Response	Frequency to 80kHz, Count to 1M, RPM to 65k Frequency, # periods, pulse width, period, duty cycle Min, Max, Avg, Selectable Time Base Up to 15kHz Selectable Time Base 20 μ s min pulse, Programmable pre- and post-delay Program per function Programmable Digital Out
Analog Output Channel Count Module Type Accuracy ⁽¹⁾ Resolution Output Protection Isolation (Output-to-Input & Ch-to-Ch) Throughput ⁽²⁾	4 Mix and match output types on a per-channel basis 8B39/49 All models with 0-5V input $\pm 0.07\%$ $\pm 0.024\%$ 40VAC max, ESD per EN61000-6-2 1500Vrms max 2.0kS/s max continuous	Communications RS-232 RS-485 USB Ethernet	115.2kbaud, DB-9 Connector 115.2kbaud, Pluggable Screw Terminal Connector Full Speed, 2.0 Compliant, Type B Connector 10/100 Base-T, Static IP, RJ-45 Connector
Digital I/O Channel Count Module Type Isolation (Input-to-Output & Ch-to-Ch) Throughput ⁽²⁾ Alarm Alarm Response	8 Mix and match I/O types on a per-channel basis SCMD-MIAC5x, SCMD-MIDC5x SCMD-MOAC5x, SCMD-MODC5x SCMD-MORx5, SCMD-PT 1500Vrms max 2.0kS/s max continuous Program High/High-High/Low/Low-Low per Channel Programmable Digital Out	Protocol RS-232, RS-485, USB Ethernet	Modbus RTU Modbus TCP
		Software Tools	Free Configuration Sample, LabVIEW VI Library
		Power +5VDC 7-34VDC	270mA ⁽³⁾ Use 8BPWR-2, 320mA ⁽³⁾
		Physical Dimensions (l)(w)(h) Mounting	17.4" x 3.35" x 1.92" (442mm x 85mm x 49mm) Panel or DIN rail
		Environmental Operating Temp. Range Storage Temp. Range Relative Humidity	-40°C to +85°C -40°C to +85°C 0 to 95% Noncondensing
		Emissions, EN61000-6-4 Radiated, Conducted	Class A
		Immunity, EN61000-6-2 RF ESD, EFT	ISM Group 1 Performance A, $\pm 0.5\%$ Span Error Performance B

NOTES:

(1) System accuracy does not include module accuracy. Reference module datasheets for further details.

(2) Throughput varies with system configuration.

(3) Does not include module power consumption. Reference module datasheets for further details.

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Ordering Information

Model	Description
SLX300-10	12-Ch AI, 4-Ch AO, 8-Ch DIO, RS-232, Panel Mount
SLX300-20	12-Ch AI, 4-Ch AO, 8-Ch DIO, RS-485, Panel Mount
SLX300-30	12-Ch AI, 4-Ch AO, 8-Ch DIO, USB, Panel Mount
SLX300-40	12-Ch AI, 4-Ch AO, 8-Ch DIO, Ethernet, Panel Mount
SLX300-10D	12-Ch AI, 4-Ch AO, 8-Ch DIO, RS-232, DIN Rail Mount
SLX300-20D	12-Ch AI, 4-Ch AO, 8-Ch DIO, RS-485, DIN Rail Mount
SLX300-30D	12-Ch AI, 4-Ch AO, 8-Ch DIO, USB, DIN Rail Mount
SLX300-40D	12-Ch AI, 4-Ch AO, 8-Ch DIO, Ethernet, DIN Rail Mount
SLX146-02, -07	Null Modem Serial Cable, Male DB-9 to Female DB-9; 2m, 7m
SLX147-01, -02, -05	USB Cable, Type A to Type B; 1m, 2m, 5m
SLX370	Software Tools on CD; Config Sample, LabVIEW VI
SLX380	Quick Start Guide, Hardware Manual, Software Manual
SLX141-01, -02, -07	Ethernet Cable, 1m, 2m, 7m
SLX141-X01, -X02, -X07	Ethernet Crossover Cable, 1m, 2m, 7m
SCMXRK-002	19" Metal Rack for Mounting Backpanels
SCMXRAIL1-XX	DIN EN50022-35x7.5 (slotted steel), length -XX in meters
SCMXRAIL3-XX	DIN EN50022-35x15 (slotted steel), length -XX in meters
8B30-04, -05, -06	milliVolt Input Modules, 3Hz BW
8B31-04, -05, -06, -08, -10, -13	Voltage Input Modules, 3Hz BW
8B32-01, -02	Current Input Modules, 3Hz BW
8B34-01, -02, -03, -04	2- and 3-Wire RTD Input Modules, 3Hz BW
8B35-01, -02, -03, -04	4-Wire RTD Input Modules, 3Hz BW
8B36-01, -02, -03, -04	Potentiometer Input Modules, 3Hz BW
8B37J, K, T, R, S	Thermocouple Input Modules, Non-linearized, 3Hz BW
8B38-06, -07, -08	Strain Gage Input Modules, 3kHz BW
8B38-36, -37, -38	Strain Gage Input Modules, 3Hz BW
8B39-01, -03	Current Output Modules, 100Hz BW
8B40-04, -05, -06	milliVolt Input Modules, 1kHz BW
8B41-04, -05, -06, -08, -10, -13	Voltage Input Modules, 1kHz BW
8B42-01, -02	2-Wire Transmitter Input Modules, 100Hz BW
8B43-11 through -20	DC LVDT Input Modules, 1kHz BW
8B45-01 through -08	Frequency Input Modules
8B47J-xx, K-xx, T-xx	Thermocouple Input Modules, Linearized, 3Hz BW
8B49-01, -02	Voltage Output Modules, 100Hz BW
8B50-04, -05, -06	milliVolt Input Modules, 20kHz BW
8B51-04, -05, -06, -08, -10, -13	Voltage Input Modules, 20kHz BW
8BPWR-2	Power Supply Module, 7-34VDC Input
SCMD-MIAC5x	Miniature Digital AC Input Modules
SCMD-MIDC5x	Miniature Digital DC Input Modules
SCMD-MOAC5x	Miniature Digital AC Output Modules
SCMD-MODC5x	Miniature Digital DC Output Modules
SCMD-MORx5	Miniature Relay Output Modules
SCMD-PT	Miniature Pass-Thru Module
SCMXPRT-001	Power Supply, 5VDC, 1A, 120VAC Input
SCMXPRT-001	Power Supply, 5VDC, 1A, 220VAC Input
SCMXPRT-003	Power Supply, 5VDC, 3A, 120VAC Input
SCMXPRT-003	Power Supply, 5VDC, 3A, 220VAC Input
PWR-4505	Power Supply, 5VDC, 5A, 85-264VAC Input
PWR-PS5RB	Power Supply, 24VDC, 0.6A, 100-240VAC Input
PWR-PS5RC	Power Supply, 24VDC, 1.3A, 100-240VAC Input
PWR-PS5RD	Power Supply, 24VDC, 2.1A, 100-240VAC Input
PWR-PS5RE	Power Supply, 24VDC, 4.2A, 100-240VAC Input

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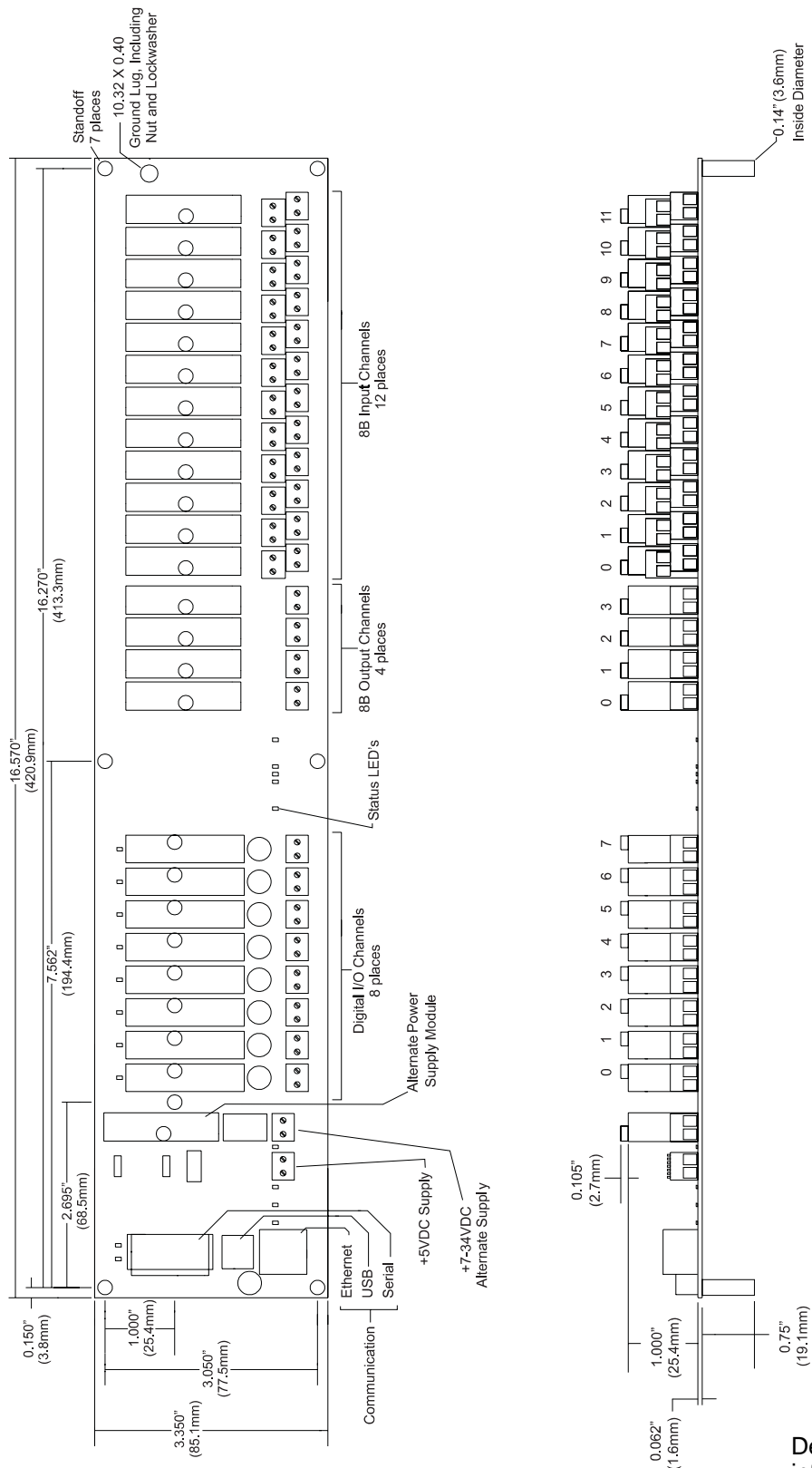


Figure 3: 8B isoLynx® SLX300 Block Diagram

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