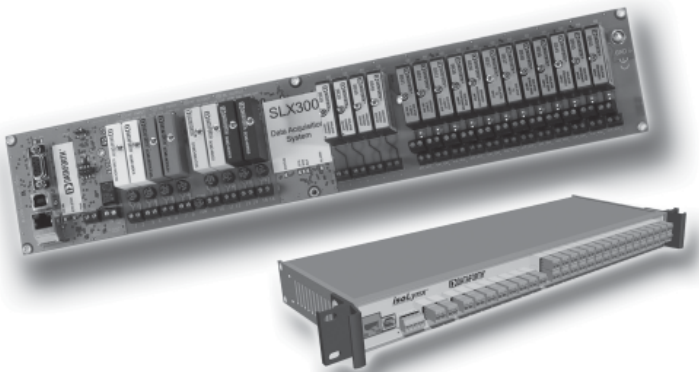


8B *isoLynx*®

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:
Analog - 15 Families, 70 Models
Digital - 5 Families, 14 Models
- Mix and Match Analog & Digital I/O
- Advanced Features Including Alarms, Counters, Timers, PWMs, and More
- -40°C to +85°C Operating Temperature
- C-UL-US Listed
(Class I, Division 2, Groups A, B, C, D)
- CE Compliant
- ATEX Compliance Pending
- Manufactured per RoHS Directive 2002/95/EC

Description

Dataforth's newest data acquisition system builds on the proven reliability and outstanding performance of the SCM5B isoLynx® SLX200 DAQ system and miniature-sized SensorLex® 8B isolated signal conditioning modules to provide a compact, low cost solution for wide ranging, rugged industrial applications. Like the SLX200, the SLX300 ensures superior reliability, accuracy, and isolation. Through the use of pluggable modules, the SLX300 offers maximum flexibility of analog and digital channel configuration for 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

Using Dataforth's SensorLex® 8B analog modules and SCMD digital modules, the flexible, modular SLX300 design can be configured with up to twelve channels of isolated analog input, four channels of isolated analog output, and eight channels of isolated digital I/O. 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 8B_PWR-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 3.0kS/s. In addition, a burst mode of operation is provided for analog input that allows sampling up to 100kS/s on analog input channels.

Industry's Widest I/O Selection

The isoLynx® SLX300 can be configured for any application by selecting from over 70 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 specifically for data acquisition and control. Current sampled data from analog input channels is stored to a 192k sample buffer. Data is available as minimum, maximum, and average readings with selectable averaging weight. A burst mode of operation allows up to 100kS/s sampling rate on analog input channels and also provides a waveform generator function using the analog output channels. Continuous scan mode scans up to 16 input channels, and burst sampling mode 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: pulse/frequency counter, pulse/frequency counter with de-bounce, waveform measurement, time between events, frequency generator, pulse width modulation (PWM) generator, and one-shot generator. The SLX300 also allows four alarm states – high, high-high, low, and low-low – to be set on the analog input and digital I/O special function channels with alarm output mapped to a user selectable analog 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.

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 from 2.4kbps to 921.6kbps, use true fail-safe transceivers, and have software controlled termination networks, eliminating the need for dip switches. A USB Virtual Communications Port provides a common connection to modern computers and a 10/100 Base-T Ethernet connection is also available. Up to 32 systems can be multidropped on the RS-485 serial link and up to 4 sockets are supported on Ethernet.

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.

Free configuration software is provided for quick and easy system setup (see Figure 1 and Figure 2). Channel I/O setup, communication, default output, and other parameters are stored in non-volatile memory. A LabVIEW VI library enables fast application development using industry standard tools. The SLX300 system can be either panel or DIN rail mounted. It is also available in a rack-mounted or bench top 1U enclosure.

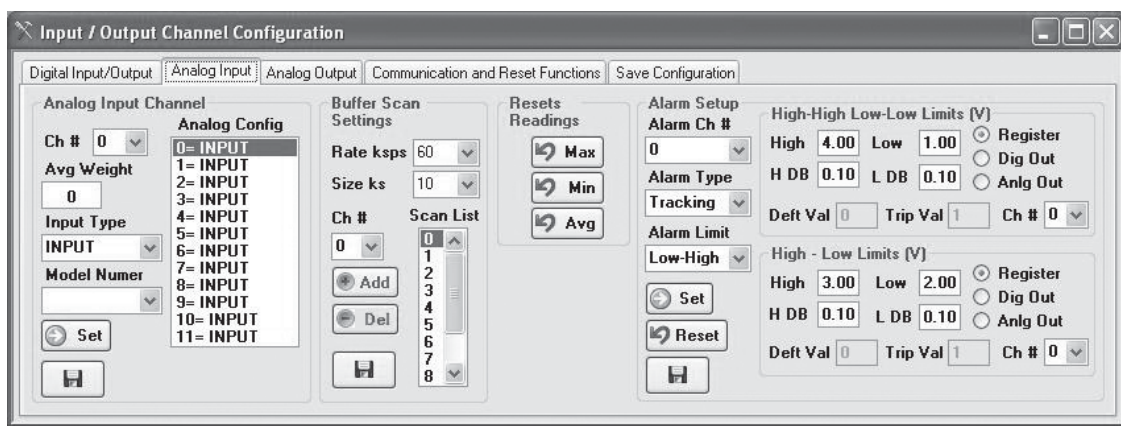


Figure 1: Configuration Tool - System Setup

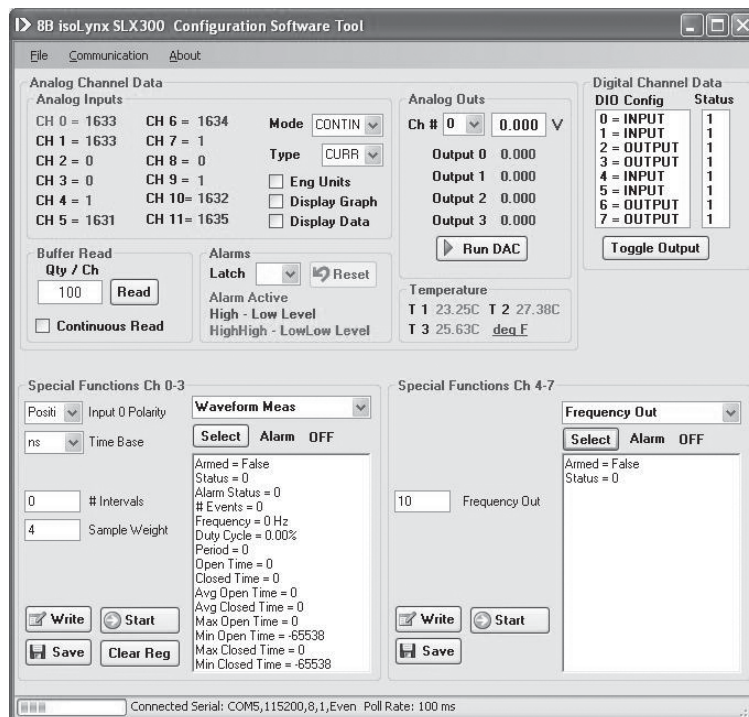


Figure 2: Configuration Tool - Channel Monitoring and Data Display

Specifications

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

Analog Input Channel Count Module Type Accuracy ⁽¹⁾ Resolution Cold Junction Compensation Accuracy, +25°C Accuracy, -40°C to +85°C 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 8B30/31/32/33/34/35/36/37/38/40/41/42/43/45/47/50/51/PT All models with 0-5V output ±0.07% ±0.024% ±0.5°C ±1.5°C 240VAC continuous, ESD per EN61000-6-2 1500Vrms max 3.0kS/s max continuous, 100kS/s max burst ⁽⁴⁾ , programmable 192k sample, 384k bytes 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 Pulse/Frequency Counter Pulse/Frequency Counter with De-bounce Waveform Measurement Time Between Events Frequency Generator PWM Generator One-Shot Generator Alarm Alarm Response Communications RS-232 RS-485 USB Ethernet Protocol RS-232, RS-485, USB Ethernet Software Tools Power +5VDC 7-34VDC (8BPWR-2 required) Physical Dimensions (l)(w)(h) Panel Mount DIN Rail Mount Bench Top 1U Enclosure Mounting Environmental Operating Temp. Range Storage Temp. Range Relative Humidity Emissions, EN61000-6-4 Radiated, Conducted Immunity, EN61000-6-2 RF ESD, EFT	Frequency to 80kHz, count to 10M, RPM to 65k Frequency to 50Hz, count to 10M Frequency to 15kHz, # periods, pulse width, period, duty cycle Min, max, avg, selectable timebase Up to 100kHz Selectable timebase 20µs min pulse, programmable pre- and post-delay Program High/High-High/Low/Low-Low per function Programmable digital out 2.4kbps to 921.6kbps, DB-9 connector 2.4kbps to 921.6kbps, pluggable screw terminal connector USB-to-serial bridge (Virtual Communications Port), type B 10/100 Base-T, static IP, RJ-45 connector Modbus RTU Modbus TCP Free configuration software tool 270mA ⁽³⁾ 320mA ⁽³⁾ 16.24" x 3.47" x 1.92" (413mm x 88mm x 49mm) 16.24" x 3.47" x 2.00" (413mm x 88mm x 51mm) 16.73" x 6.0" x 1.72" (424.9mm x 152.4mm x 43.7mm) Panel or DIN rail Rack-mounted or bench top 1U enclosure -40°C to +85°C -40°C to +85°C 0 to 95% Noncondensing ISM, Group 1 Class A ISM, Group 1 Performance A ±0.5% span error Performance B
Analog Output Channel Count Module Type Accuracy ⁽¹⁾ Resolution Output Protection Isolation (Output-to-Input & Ch-to-Ch) Throughput ⁽²⁾ Programmable Waveform	4 Mix and match output types on a per-channel basis 8B39/49 All models with 0-5V input ±0.07% ±0.024% 40VAC max, ESD per EN61000-6-2 1500Vrms max 1.0kS/s max continuous 4.0kS/s max burst, programmable 16k samples per channel		
Digital I/O Channel Count Module Type Isolation (Input-to-Output & Ch-to-Ch) Throughput ⁽²⁾	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		

NOTES:

(1) System accuracy does not include module accuracy or SLX300 CJC accuracy. SLX300 CJC accuracy replaces CJC accuracy in 8B37/47 module datasheets. 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.

(4) Burst Mode Scan rate is reduced when CJC, linearization, averaging, and/or alarm functions are enabled.

Ordering Information

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

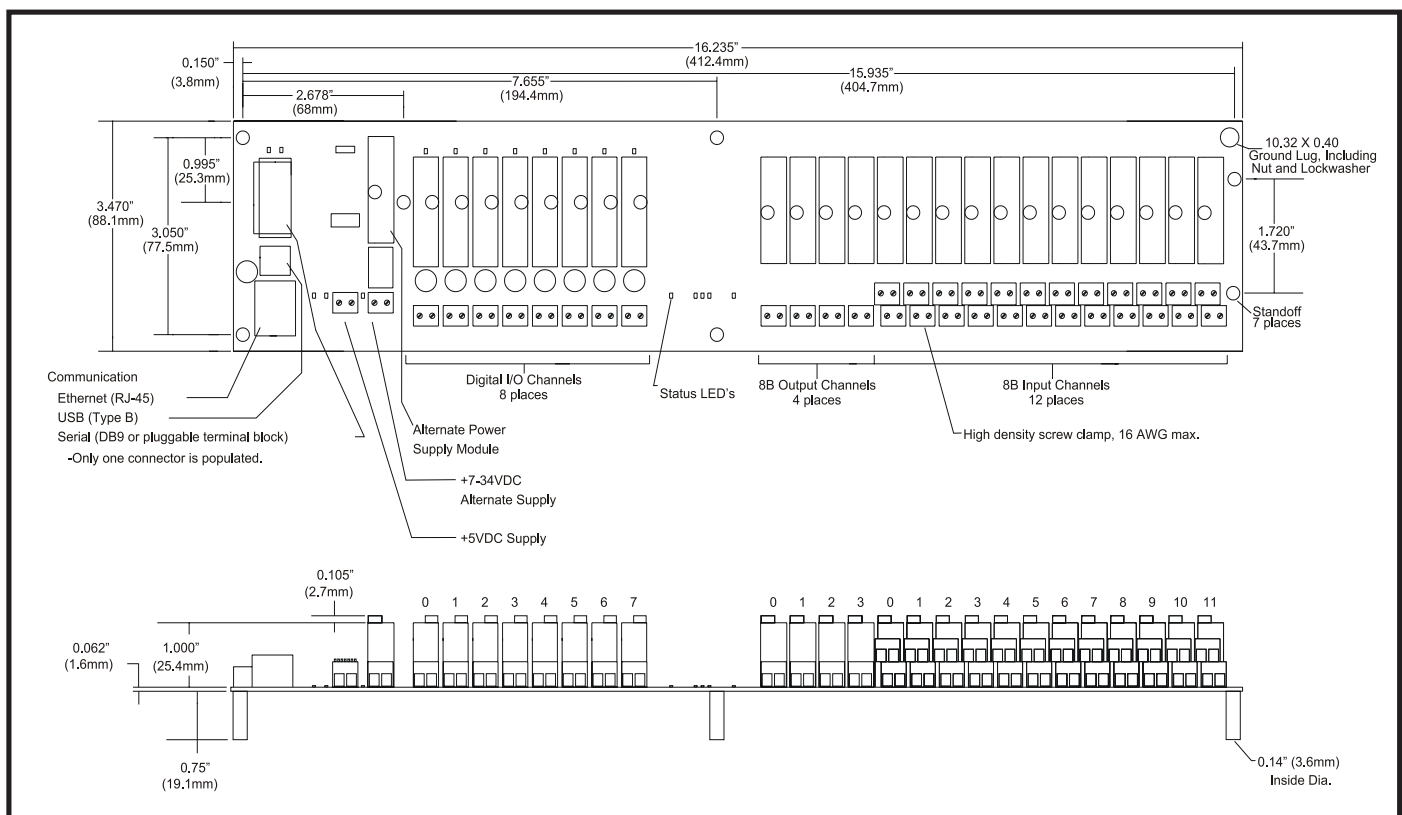


Figure 3: 8B isoLynx® SLX300 Block Diagram