"Expert" Weight Transmitter

FEATURES

- Individually digitized transducer data
- Continuous "Expert System" diagnostics
- Dynamic digital filtering
- 750,000 count resolution psr channel – 20 updates/sec.
- Multi-function set-up and calibration display
- Fault protected transducer excitation

APPLICATIONS

- High value product batching
- Chemical process
- Weighing
- Fault tolerant weigh systems

DESCRIPTION

The DXp-40 digital transmitter individually digitizes each transducer in a multi-cell weigh system for the purposes of greater system resolution and accuracy, and continuous diagnostics of system and transducer performance. In addition to the benefits of operational security, keypad calibration of each transducer eliminates the need for on-site deadweight calibration on many systems. Optional Dynamic Digital Filtering maximizes stability and dynamic response by continuously analyzing system noise characteristics and automatically adjusting software filtering parameters.

The optional 16 bit analog output provides a high-resolution weight data interface for non-digital process control equipment. Available discrete I/O points (4 inputs and 4 outputs) offer local setpoint control or diagnostic alarm status annunciation.

DXp-40 units provide designers with a wide range of communication and network options. Available "Easy Digital Interfaces" include Allen-Bradley Remote I/O, Modbus RTU, and conventional ASCII.

The DXp-40 is housed in a NEMA 4 or 4X enclosure and carries FM/CSA Approvals for Division 2 hazardous locations.

CONFIGURATION

BLH NOBEL
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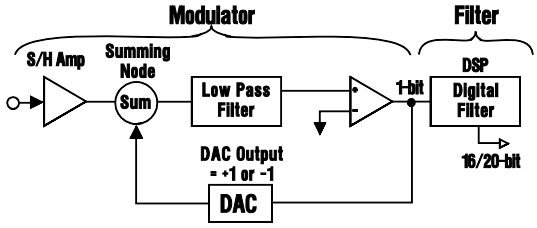
"Expert" Weight Transmitter

OPERATING MODE DESCRIPTION

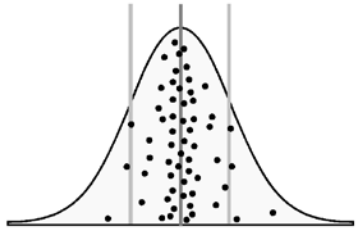
Sigma Delta A-D Conversion

Very high-resolution weight data is obtained by using an individual Sigma Delta A-D converter for each transducer input. This new technology uses a high-speed integrator coupled with a digital signal processor to produce a precision of up to one part in 750,000.



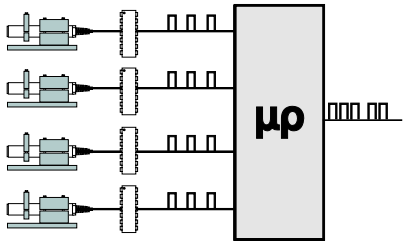
Dynamic Digital Filter

The combination of new A-D technologies and multi-channel control produce large quantities of internal weight information that is sampled and evaluated statistically to determine the sample mean and standard deviation. This vital information is then used to optimize filter averaging and filter cutoff bands to maximize both data stab ility and response to true weight changes.



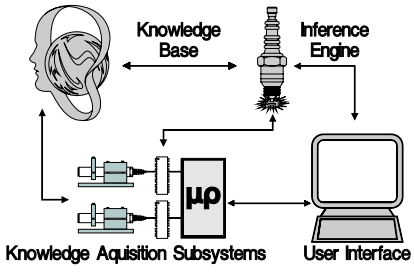
Multi-Channel Synchronous

A patented method to control the timing of several dependent A-D converters with a single microprocessor allows for the use of individual transducer data without accumulated errors due to mass moving within a vessel. This capability makes it possible to individually digitize each transducer in a multi-cell system and achieve the benefits of additive resolution and system redundancy.



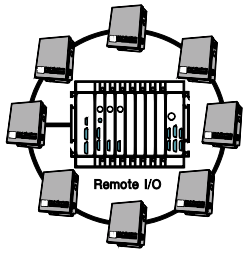
Expert System Diagnostics

The DXp-40 uses the expert system concept to compare various measurements against known standards of acceptable performance and uses that relative comparison to identify and diagnose both transducer and system performance problems. The BLH Nobel expert system can identify piping influences, structural problems, transducer drift and overload, and the location and characteristics of process noise.



Allen Bradley Network

The DXp-40 is also available with the Allen Bradley Remote I/O interface technology, which provides a very simple way to communicate weight and diagnostics information to the PLC-5 series of programmable logic controllers. Also, the DXp-40 can communicate using MODBUS™ or other industry standard protocols.



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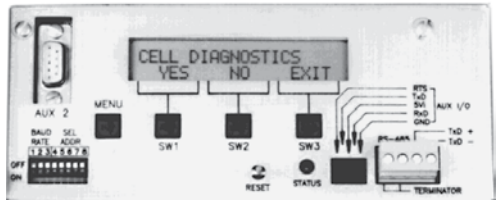
PERFORMANCE ENHANCEMENT

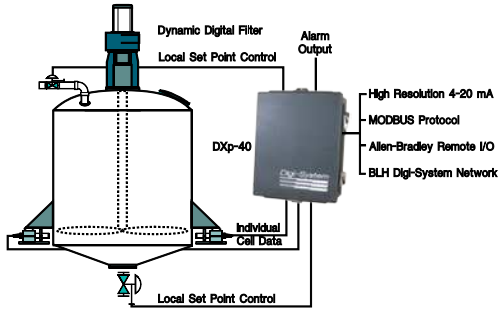
Maximum Performance

The DXp-40 combines true on-line transducer and system diagnostics, fault tolerance, and very high performance measurement capabilities. It is designed for applications involving the manufacture of high value product where downtime, undetected errors, and limited precision cannot be tolerated.



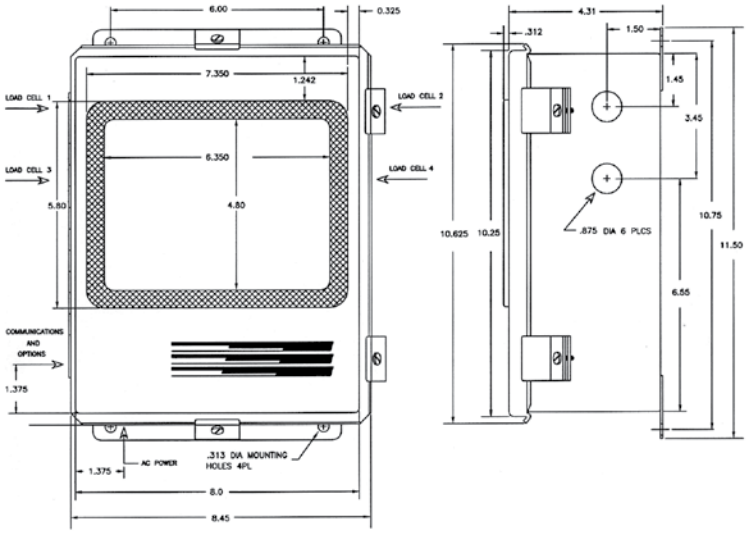
Optional I/0

The optional discrete and analog I/O can be used for local process control thereby reducing operating functions from the host computer. The Analog output is based on a high-resolution 16-bit D/A conversion. The four discrete inputs control remote gross/net, tare and selection of two preset filters. The four relay outputs can be mapped to either set point or diagnostic alarm functions.



Set-Up and Operation

Set-up, calibration, and operating parameters are easily entered using the two line 40-character LCD display and a series of 4 "soft buttons". The display also allows the operator to view individual transducer data simultaneously during the normal operating mode.



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SPECIFICATIONS

PARAMETER	VALUE
PERFORMANCE	
Internal Resolution	4,194,304 total counts
Max. Display Resolution	3,000,000 total counts
Max. Res. Per Channel	750,000 counts
Conversion Speed	50 ms (20 updates/s)
Sensitivity (Noise)	0.001 1% full scale (max ±16 counts w/o filter)
Full Scale Range	±35 mV/channel
Dead Load Range	100%
Input Impedance	10 MΩ, min. per channel
Load Cell Excitation	10 V (65 mA/channel max)
Remote Sense	User configurable, each channel
Linearity	±0.0015% of full scale
Calibration Repeatability	0.3 pV per count
Software Filter (Std.)	50 to 10,000 ms
TEMPERATURE COEFFICIENT	
Span/Zero	±2 ppm/°C
Step Response	one conversion
Common Mode Rej.	100 db @ 60 Hz
Normal Mode Rej.	100 db above 35Hz
ENVIRONMENT	
Operating Temperature	–10 to 55°C (12 to 131°F)
Storage Temperature	–20 to 85°C (–4 to 185°F)
Humidity	5 to 90% rh, non-condensing
Voltage	117/230 + 15% 50/60 Hz
Power	12 W max
ENCLOSURE	
Dimensions (NEMA 4/4X)	11.5 × 8.0 × 4.3 in H × W × D
Optional (Explosion Proof)	12.875 × 10.875 × 8.188 in H × W × D
Parameter Storage	EEPROM
EMI/RFI	Shielded from typical interference
INTERNAL DISPLAY / OPERATOR INTERFACE	
Standard	LCD Display 2 columns of 20 characters each
Optional VFD Display	High visibility, vacuum fluorescent same columns/characters as std.
Interface	4 "soft buttons"

PARAMETER	VALUE
ISOLATED ANALOG OUTPUT	
Type	16 bit digital to analog
Voltage	0–10 V (25 kΩ min load)
Current	4–20 mA (600 Ω max load)
RELAY OUTPUTS (OPTIONAL)	
Closed Contact	28 VAC/DC at 0.4 A (max)
Solid State	110/220 VAC at 1.0 A
DIGITAL INPUTS	
Logic"0" (Low) (min)	Less than 0.5 VDC, sink 3 mA
Logic"1" (High)	10 to 28 VDC (TTL open collector)
Mechanical Relay"0"	Closed (one side = digital common, the other side = input)
Mechanical Relay"1"	Open (input internally pulled up)
NETWORK SERIAL COMMUNICATION (STD)	
Type	RS-485 Half Duplex (Multi-Drop)
Baud	9,600, 28,800 and 56,700
Data Format	Proprietary
SIMPLEX DATA OUTPUT (STANDARD)	
Type	RS-485 (Simplex)
Baud	1,200 or 9,600
Data Format (Selectable), ASCII	7 data bits, even parity, stop bit
TERMINAL/COMPUTER INTERFACE (OPTIONAL)	
Interface Type	RS-485 half duplex (standard)
Baud	9,600 or 12,200
Protocol	Duplex command/ response format
ASCII	7 data bits, even parity, stop bit
SPECIAL PROTOCOLS (OPTIONAL)	
Modbus	RTU Protocol
SPECIAL INTERFACE (OPTIONAL)	
Allen Bradley	Remote I/O – ¼ logical rack
WEIGHT	
NEMA	4/4X 12.0 pounds
APPROVALS	
FM (Factory Mutual)	3611 (Class I, II, III; Div.1,2; Groups A–G)
CSA	C22.2 (Class I, II,III; Div.1,2; Groups A–G)

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2904_MC-00568
Rev 01-Nov-2019

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