‘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

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.

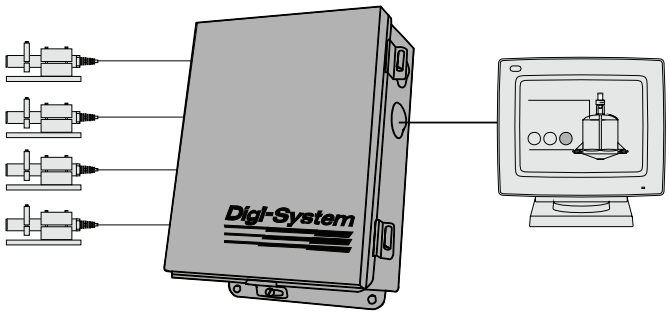
DXp-40 units provide designers with a wide range of communication and network options. Available ‘Easy Digital Interfaces’ include Allen-Bradley Remote I/O, Modbus RTU, and conventional ASCII.

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

APPLICATIONS

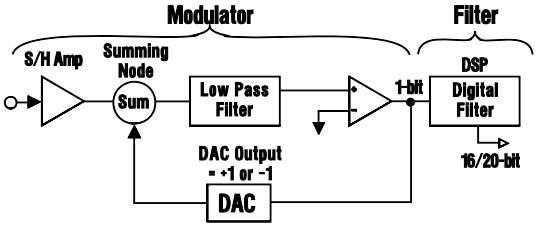
- High value product batching
- Pharmaceutical process
- Weighing
- Fault tolerant weigh systems

CONFIGURATION



OPERATING MODE DESCRIPTION

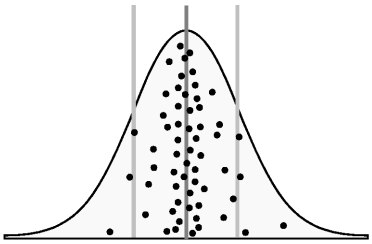
Sigma Delta A-D Conversion



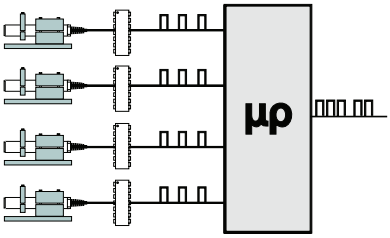
Very high-resolution weight data is obtained by using an individual Sigma Delta A-D converter for each transducer input. This new technology uses a high-speed integrator coupled with a digital signal processor to produce a precision of up to one part in 750,000.

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 stability and response to true weight changes.



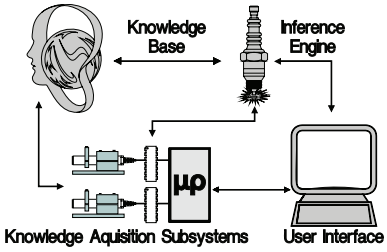
Multi-Channel Synchronous



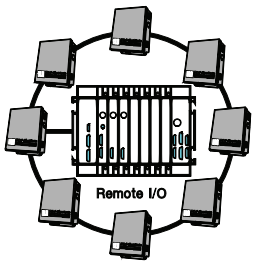
A patented method to control the timing of several dependent A-D converters with a single microprocessor allows for the use of individual transducer data without accumulated errors due to mass moving within a vessel. This capability makes it possible to individually digitize each transducer in a multi-cell 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 expert system can identify piping influences, structural problems, transducer drift and overload, and the location and characteristics of process noise.



Allen Bradley Network

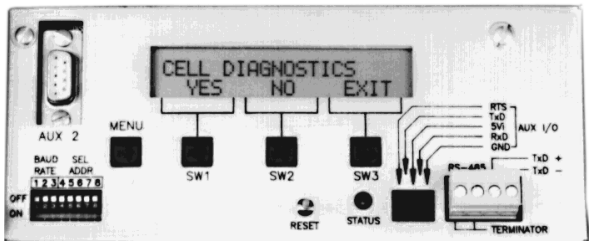


The DXp-40 is also available with the Allen Bradley Remote I/O interface technology, which provides a very simple way to communicate weight and diagnostics information to the PLC-5 series of programmable logic controllers. Also, the DXp-40 can communicate using MODBUS™ or other industry standard protocols.

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.

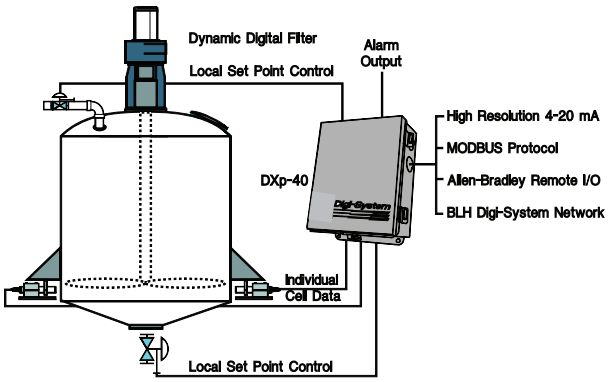


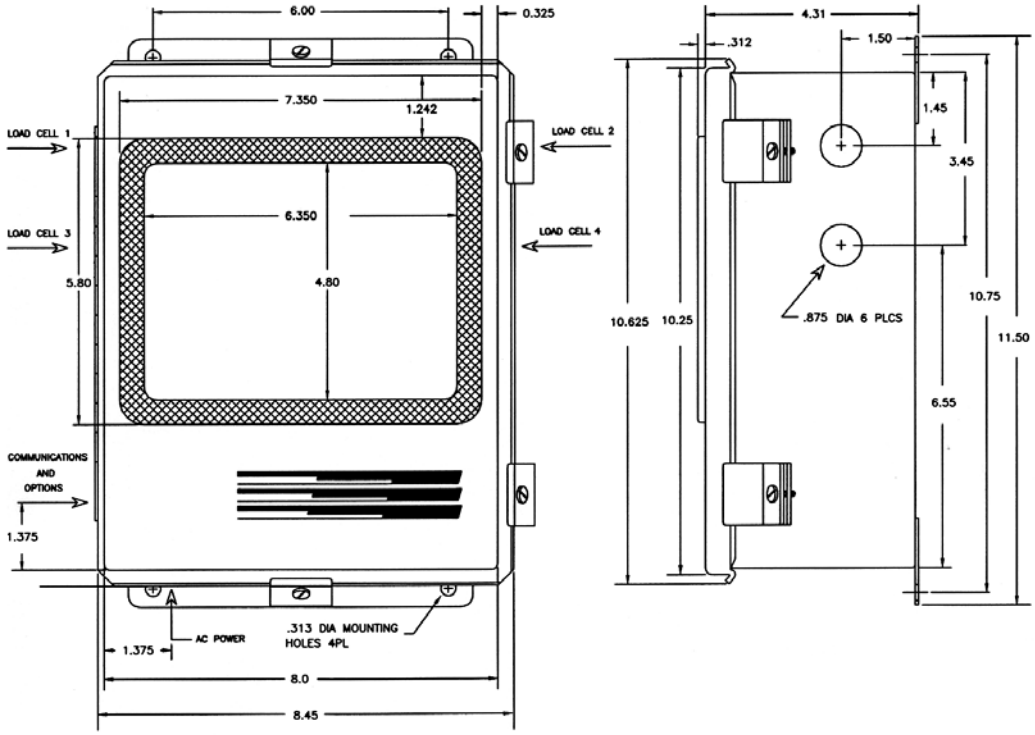
Set-Up and Operation

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.

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.





DXP-40

BLH — Low Capacity Platform Cell

VISHAY PRECISION GROUP

SPECIFICATIONS

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 msec (20 updates/sec)
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 M-ohms, 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 msec
Optional Auto-Tune Filter	multi-variable up to 10,000 msec

Temperature Coefficient

Span/Zero	+/-2ppm/°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 watts max

Enclosure

Dimensions (NEMA 4/4X)	11.5x 8.0 x4.3 HWD
Optional (Explosion Proof)	12.875 x 10.875 x 8.188 HWD
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’

Isolated Analog Output

Type	16 bit digital to analog
Voltage	0-10 V (25k ohm min load)
Current	4-20 mA (600 ohm max load)

Relay Outputs (Optional)

Closed Contact	28V ac/dc at 0.4 amps (max)
Solid State	110/220 Vac at 1.0 amp

Digital Inputs

Logic’0' (Low) (min)	less than 0.5Vdc, sink 3mA
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	9.6K, 28.8K’ and 56.7k
Data Format	proprietary

Simplex Data Output (Standard)

Type	RS-485 (Simplex)
Baud	1200 or 9600
Data Format (Selectable)	
ASCII	7 data bits, even parity, stop bit

Terminal/Computer Interface (Optional)

Interface Type	RS-485 half duplex (standard)
Baud	1200 or 9600
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 - 1/4 logical rack

Weight

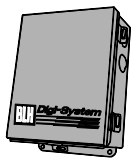
NEMA	4/4X 12.0 pounds

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)

Ordering Specification Code

DXP-40- [M]-[C]-[P]-[S]-[O] Multi-Channel Expert Weigh Transmitter



[M] MOUNTING

- **[1]** NEMA 4 PAINTED STEEL ENCLOSURE
- **[2]** NEMA 4X STAINLESS STEEL ENCLOSURE
- **[3]** NEMA 7/9 EX ENCLOSURE [Class I II, Div 1 2, Group BCDEFG]
- **[5]** #2 WITH POLYCARBONATE WINDOW & INTEGRAL VFD DISPLAY
- **[8]** #1 & FM/CSA Approved [Class I II III, Div 2, Group ABCD FG]
- **[9]** #2 & FM/CSA Approved [Class I II III, Div 2, Group ABCD FG]
- **[11]** # 9 WITH POLYCARBONATE WINDOW & INTEGRAL VFD DISPLAY

[C] COMMUNICATION

- **[1]** RS-485 DIGI-SYTEM ENABLED
- **[2]** #1 & RS-485 ASCII PROTOCOL
- **[4]** ALLEN-BRADLEY REMOTE I/O **(NOTE: [1] & [2] DELETED)**
- **[5]** #1 AND MODBUS RTU PROTOCOL *****

[P] PROCESS OUTPUTS

- **[1]** NO PROCESS OUTPUT
- **[2]** 0-10V/4-20mA ANALOG (INCLUDES SWITCHABLE FILTER) & 4 INPUTS/OUTPUTS WITH DRY CONTACT RELAYS (Not Available for M8 & M9)
- **[3]** 0-10V/4-20mA ANALOG (INCLUDES SWITCHABLE FILTER) & 4 INPUTS/OUTPUTS WITH SOLID STATE RELAYS

[S] SOFTWARE

- **[7]** STANDARD [KeyPad Calibration, Dynamic Digital Filters, Local/Remote (On-line) Diagnostics, Degrade Mode Software]

[O] CALIBRATION

- **[1]** DEFAULT CALIBRATION

ACCESSORIES:

Conduit Fitting Kit (6 connectors) P/N 465231
Cable Fitting Kit (6 connectors) P/N 465232

***** *May Require RS-485 to RS-232 Serial Converter. See Section VI*