

## Expert Weight Transmitter



### FEATURES

- Individual load cell measurement - 1 A/D channel per cell
- 750,000 count resolution per channel - 20 updates/sec
- Continuous shift, drift, and overload diagnostic testing
- Degrade mode operation eliminates downtime
- Dynamic digital filtering
- Multifunction setup and calibration display
- Encompass partnership program product
- FM and CSA certification

### DESCRIPTION

The DXp-40 digital transmitter individually digitizes each transducer in a multicell 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 DXp-40 is housed in a NEMA 4 or 4X enclosure and carries FM/CSA Approvals for Division 2 hazardous locations.

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.

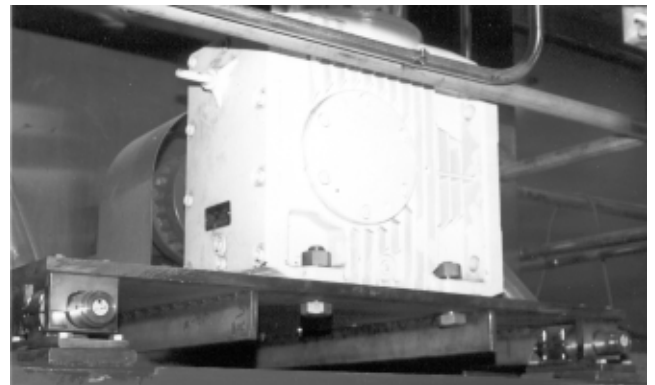
DXp-40 units provide designers with a wide range of communication and network options. Available 'Easy Digital Interfaces' include Allen-Bradley Remote I/O, Modbus RTU, and conventional ASCII.

### APPLICATIONS

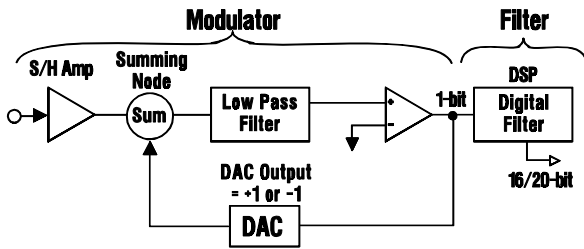
Reactor and Batch Processing Tanks



High Agitation Mixers and Blenders



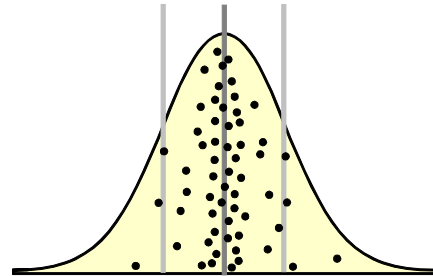
## SIGMA DELTA A-D CONVERSION TECHNOLOGY



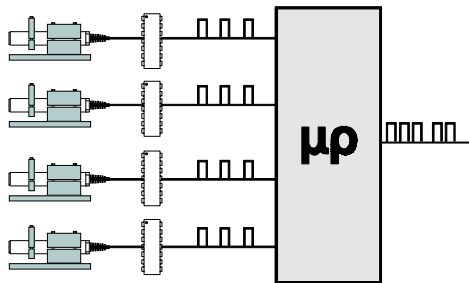
Very high-resolution weight data is obtained by using an individual Sigma Delta A-D converter for each transducer input. This new technology uses a high-speed integrator coupled with a digital signal processor to produce a precision of up to one part in 750,000.

## DYNAMIC DIGITAL FILTERING

Combining new A-D technologies with multichannel control produces 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 applied to filter averaging and filter cutoff bands to maximize data stability and response to true weight changes.



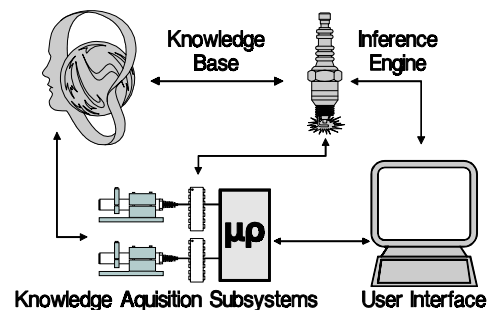
## MULTICHANNEL SYNCHRONOUS LOAD CELL MEASUREMENT



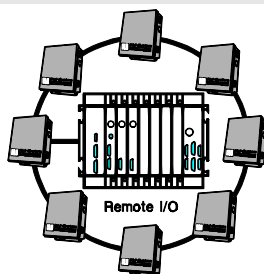
Software technology controls and coordinates the timing of several dependent A-D converters with a single microprocessor. Resultant weigh measurements reflect true individual transducer data without accumulated errors due to mass moving within a vessel. This capability allows individual digitization of each transducer in a multicell system and enhances 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. Expert systems identify piping influences, structural problems, transducer drift or overload, and the location and characteristics of process noise.



## ALLEN BRADLEY NETWORK

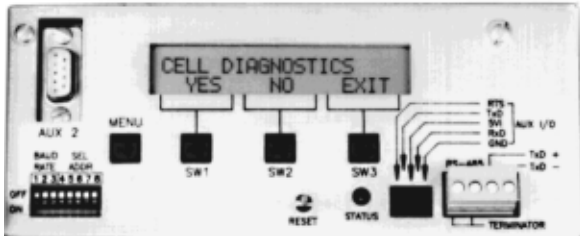


DXp-40 systems, equipped with Allen Bradley Remote I/O interface technology, provide a very simple way to communicate weight and diagnostic information to the PLC-5 series of programmable logic controllers. Also, the DXp-40 can communicate using MODBUS™ or other industry standard protocols.

**TECHNOLOGY FEATURES AND OPTIONS**

**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.

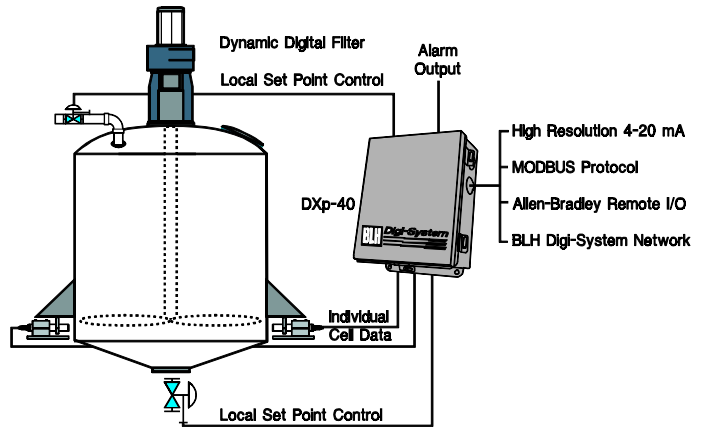


**Set-Up and Operation**

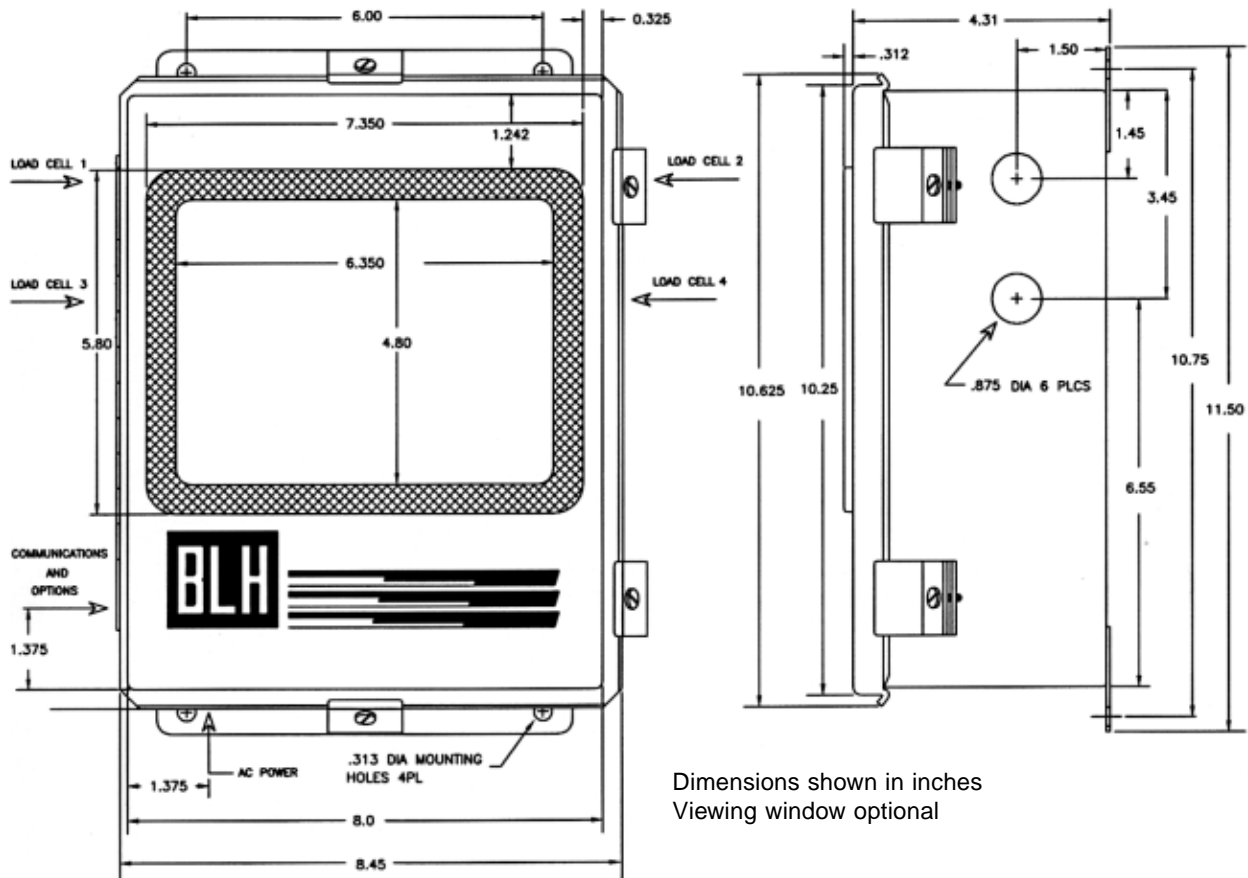
Setup, calibration, and operating parameters are easily entered using the two line 40-character LCD display and a series of 4 'soft' buttons. The display also allows the operator to view individual transducer data simultaneously during the normal operating mode.

**Optional I/O**

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.



**OUTLINE DIMENSIONS**



Dimensions shown in inches  
Viewing window optional



### 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% full scale (max $\pm 16$ counts w/o filter)
Full Scale Range	35 mV/channel
Dead Load Range	100%
Linearity	$\pm 0.0015\%$ of full scale
Load Cell Excitation	10 V (65 mA/channel max)
Software Filter (Std.)	50 to 10,000 msec
Optional Auto-Tune Filter	multivariable up to 10,000 msec
Input Impedance	10 M-ohms, min. per channel
Remote Sense	user configurable, each channel
Calibration Repeatability	0.3 pV per count

#### ELECTRICAL

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

#### 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'

#### TEMPERATURE COEFFICIENT

Span/Zero	$\pm 2$ ppm/°C
Step Response	one conversion
Common Mode Rej.	100 db @ 60 Hz
Normal Mode Rej.	100 db above 35Hz

#### 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)	less than 0.5 Vdc, sink 3 mA (min)
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
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#### SPECIAL INTERFACE (OPTIONAL)

Allen Bradley	Remote I/O - 1/4 logical rack
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#### ENCLOSURE

Dimensions (NEMA 4/4X)	11.5 x 8.0 x 4.3 HWD
Optional (Explosion Proof)	12.875 x 10.875 x 8.188 HWD
Parameter Storage	EEPROM
EMI/RFI	shielded from typical interference

#### WEIGHT

NEMA	4/4X 12.0 pounds
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#### 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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Vishay BLH is continually seeking to improve product quality and performance. Specifications may change accordingly.

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