FEATURES

- Patented synchronization techniques for digitized load cells
- Proactive diagnostics assure system performance
- Dynamic digital filtering
- 1 million count resolution per load cell

OPTIONAL FEATURES

- 8 process setpoints
- Up to 4 analog current outputs
- DeviceNet, A-B Remote I/O, Modbus Plus, or Profibus interface capability

DESCRIPTION

The LCp-104 System’s patented synchronous digital measurement of multi-cell systems establishes the new benchmark in scale technology. True parallel data processing, with each update, guarantees real-time continuous weight measurement unheralded in process weighing. Until now, inherent load shifting during weighing cycles, mixing, or reactions have restricted performance of independent load cell measurement systems. With synchronous measurement, each system update is correctly summed and the benefits of individual measurement are retained. LCp-104 Process Weighing Systems individually digitize each transducer in a multi-cell system and display the resultant weight signals, live, on the console display. Measuring each individual load cell provides greater system resolution and accuracy, while facilitating on-line dynamic diagnostics throughout the system process. Unique diagnostic ‘look-ahead’ profiles alert operating personnel to potential system malfunctions, before they happen. Dynamic Digital Filtering maximizes display stability and setpoint cutoff accuracy.

APPLICATIONS

- Quality critical batch and blend systems
- Reactor vessels
- High value ingredient/product processing
- Fault tolerant - no down time requirements

CONFIGURATION

Continual (Degradate) Mode of Operation

“Smart” Junction Box

LCP-104 Console

Available Protocols

DeviceNet
Profibus
Modbus
Remote I/O

PLC, DCS, PC Interface
L^4 TECHNOLOGY BASED DIGITAL WEIGHT PROCESSING

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 digital signal processing to produce a precision of up to one part in 1,000,000.

Intuitive Digital Filter

Combining new A-D technology with multi-channel control produces extremely precise internal weight information. Resultant data 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 Signal Processing

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 LCp-104 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 identifies piping influences, structural problems, transducer drift, cell overload, and the location and characteristics of process noise.

Individual Load Cell ‘LIVE’ Displays

Viewing individual load cells live, throughout the entire process, allows operating personnel to profile system trends or tendencies and adjust equipment for maximum performance. Although the total system may never overload, certain cells may experience overload or underload ‘moments’ which can affect cell integrity, longevity, and ultimately, product quality.
SPECFICATIONS

PERFORMANCE
Internal Resolution 4,194,304 total counts
Max. Display Resolution 3,000,000 total counts
Max. Res. Per Channel 1,000,000 counts
Conversion Speed 33 msec (30 updates/sec)
Sensitivity (Noise) 0.001 1% full scale (max)
Full Scale Range 35 mV/channel
Dead Load Range 100%
Linearity ±0.0015% of full scale
Load Cell Excitation 10 V (65 mA/channel max)
Software Filter (Std.) 50 to 10,000 msec
Temperature Effects:
Zero ±2 ppm/°C
Span ±7 ppm/°C
Remote Sense user configurable, each channel
Calibration Repeatability 0.3 µV per count

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

DISPLAY/OPERATOR INTERFACE
Type high intensity cobalt green vacuum fluorescent
Active Digits 7 digit alpha numeric .59” high
for weight: 8 digit alphanumeric .39” high for status

ELECTRICAL
Voltage 117/230 Vac +15% 50/60 Hz
Power 12 watts max
Input Impedance 10 M-Ohms, min. per channel
Step Response one conversion cycle
Common Mode Rej. 100 db @ 60 Hz

ISOLATED ANALOG OUTPUT (4 MAX, OPTIONAL)
Type 16 bit digital to analog
Current 4-20 mA (600 ohm max load)

DIGITAL INPUTS
Logic ‘0’ (Low) 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)

DC SETPOINT OUTPUTS - 8 (STANDARD)
Type open collector (current sinking)
Operating Voltage 5 - 35 Vdc
ON Voltage 1.2 Vdc @ 40 mA
OFF State Leakage 0.04 µA @ 40 Vdc
Power external supply required

AC SETPOINT OUTPUTS - 8 (OPTIONAL)
Type triac
Operating Voltage 12 -240 Vac
AC Frequency 20 - 500 Hz
ON State Voltage Drop 1.2 Vrms
Min - Max Load Current 5 mA - 1 A
Leakage Current 1 mA @ full rated load voltage
Power external supply required

NETWORK SERIAL COMMUNICATION (STANDARD)
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 (Selectabled) ASCII 7 data bits, even parity, stop bit

TERMINAL/COMPUTER INTERFACE (OPTIONAL)
Modbus RTU Protocol

SPECIAL PROTOCOLS (OPTIONAL)
Modbus Plus peer-to-peer (with global data)
Profinet slave
DeviceNet slave

ENCLOSURE
Dimensions (Console) 4.63 x 8.40 x 6.5 in. HxWxD
Weight (Console) 5.4 lb
Dimensions (J-Box) 9.5 x 11.5 x 3.2 in. HxWxD
Weight (J-Box) 5.6 lb

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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