AMETEK®
DIXSON

Nuclear Qualified Bargraphs

TWO-YEAR WARRANTY
ISO 9001 CERTIFIED

SA101P/202P replaces GE180, Westinghouse VX252, Sigma 1251

SN101P/202P replaces Sigma 9262 and 9270 DIN

SH101P/202P replaces Bailey RY

ST033P replaces Sigma 9223 and 9263

SS101P/202P replaces Sigma 9264

SL101P/202P replaces Sigma 9270 non-DIN and Lumigraph™

AMETEK Dixson "PRO" (PROgrammable) Series bargraphs are the preferred choice for new applications or to retrofit switchboard meters, other common size indicators and set point controllers. The "PRO" Series is feature-enhanced, and options are available to solve most common application problems. These models are easily configurable for maximum flexibility, and carry Class I (1E) or Class II (seismic only) levels of qualification for all control room applications.

Application

AMETEK Dixson nuclear-qualified bargraphs are appropriate in a wide range of applications where moving pointer meters have been used in the past. Solid state microprocessor-based design provides greatly increased accuracy where loop degradation is a problem, and eliminates problems caused by shock, vibration, and static electricity.

The software has been verified and validated (V&V) to IEEE-7.4.3.2, 1993, and our 10CFR50 Quality program has been audited by a member of NUPIC. EMI/RFI testing has been performed to current Nuclear Utility requirements. AMETEK Dixson's total generic qualification program eliminates industry concerns about dedicated qualification of commercial equipment. The bargraphs' forms, fits, and functions allow for simple replacement without panel modifications or changes to seismic considerations.

Class I (1E): Includes all safety-related control loops and their various components (series SA, SH, SL, SN, SS, and ST).

Class II: Includes all instruments mounted in close proximity to any Class I component. If a component becomes detached from its mounting in a manner that it could fall onto Class I components, then that component must meet the requirements of a Class II component (series BA, BH, AL, BN, AS, and AT).

Features

- Mild-environment qualification to IEEE-323-1983 and IEEE-344-1987
- QA programs include 10CFR50, Appendix B, audited by a member of NUPIC
- Brilliant red LED display for excellent visibility
- Minimum 88,000-hour MTBF
- Rugged—high resistance to vibration and shock
- Programmable configuration using front panel switches or PC serial link using DIXPRO software
- Available with or without program switches on front*
- Input signal ranges switch-selectable
- Auto-calibration algorithm
- Linearization of input signals
- Accurate square root extraction
- Min/max signal memory
- Front panel mounting (except SH)
- Underrange/overrange indication

Options

- Digital display, reading to 10% over/underrange
- Green or amber LEDs
- On/off control using set point relays
- Direct temperature measurement*
- Auxiliary transducer power supply*
- Two-wire, isolated retransmission, 4 to 20mA*
- RS-422 serial communication*

* Not available on all models

General Specifications

Note: for ISA S67.04 and RP67.04 Part II, consult factory for models and assistance.

PHYSICAL CHARACTERISTICS

Number of segments in each bargraph channel	Varies by model
Resolution	1.0%

ENCLOSURE MATERIALS:

SA models	Non-glare black Noryl or ABS case complying with UL94 V-0 or V-1
SH, SL, SN, SS, ST models	Metal

DIGITAL DISPLAY (True minus sign) –9999 to 9999

Number of digits in each digital display	4
Resolution	0.01% ± 1 count*

ENVIRONMENTAL PERFORMANCE

Operating temperature range (MIL-E16400G, Class 4)	0 to +60° C
Storage temperature range	–40 to +85° C

POWER REQUIREMENTS Either 115/230 VAC at 50, 60, 400 Hz or 5, 12, 24 or 48 VDC

Line regulation	±10%
Power consumption (typical, depends upon options)	
Single-channel models (101)	3.5 VA
Dual-channel models (202)	7.0 VA

SENSITIVITY RANGES (Reference ANSI C39.1 Std. Sensitivities)

STANDARD FULL SCALE INPUTS FROM ZERO (DIP-switch selectable):	
DC currents	500 μA to 50 mA
DC voltages	1 V to 250 V
OPTIONAL FULL SCALE INPUTS FROM ZERO	
DC currents – factory configured	50 μA to 250 mA
Plug-in modules (except SH models):	
RS-422	Serial Data Comm.
DC voltages	50 mV to <1000 mV
AC currents	1 mA to 1000 mA; 5 A
AC voltages	250 mV to 250 V
Thermocouple - Type E	–100 to +1000° C
Thermocouple - Type J	–18 to +760° C
Thermocouple - Type K	–18 to +1370° C
Thermocouple - Type T	–160 to +400° C
RTD (100-ohm platinum)	–200 to +850° C

DC INPUT PARAMETERS

Linearity	0.02% of span ± 1 count*
Accuracy	0.04% of span ± 1 count*†
Zero stability	<0.01% per °C
Gain stability	<0.02% per °C
Input impedance:	
For voltage inputs	>200 k ohms
For 4 to 20 mADC current inputs	100-ohm compliance resistor
For 10 to 50 mADC current inputs	40-ohm compliance resistor
For all other current inputs	Consult factory
Response time (typical)	175 ms
Overload (signal)	200% or 250 VDC maximum

AC INPUT PARAMETERS (true RMS-reading)

Linearity	0.4% of span **
Accuracy	0.5% of span **
Zero stability	<0.04% per °C
Gain stability	<0.04% per °C
Input impedance for voltage inputs	>200 k ohms
Response time (typical)	325 ms
Overload (signal)	200% or 250 VDC maximum

SET POINT OPTION (internal module)

Standard set points	LO and HI
Configurable alarm	HI/HI (default) or LO/LO
Setability	0.1%
Hysteresis	1.0%
Relay response time (typical):	
For DC inputs	350 ms
For AC inputs	650 ms
Relay contact ratings (three Form C):	
For SA and ST models	0.4 A at 125 VAC 2 A at 30 VDC
For SL, SN, and SS models	3 A at 120 VAC 0.6 A at 125 VDC
For SH models	not available

RETRANSMISSION ACCURACY (4 to 20 mA) ± 0.1%

LINEARIZATION

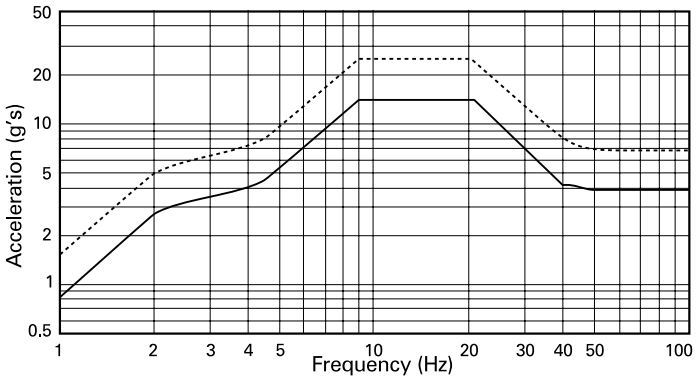
8th-order polynomial (nine terms). Refer to "PRO" Series Interface Kit.

* 1 count is defined as a ± unit value change of the right-most digit.
† Call factory for thermocouple, RTD, and square root input accuracy information.
** Except for first 5% of span.

Retrofit Considerations

Base Model	Class I/ Class II	Weight in Pounds (kg)	Panel Cutout
BB101P	SA/BA	<0.9 (0.4)	1.77″ × 5.70″
BB202P	SA/BA	<1.5 (0.7)	1.77″ × 5.70″
BG101P	SH/BH	<5.7 (2.6)	1.44″ × 6.66″
BG202P	SH/BH	<6.1 (2.8)	1.44″ × 6.66″
BL101P	SL/AL	<3.1 (1.4)	2.62″ × 5.40″
BL202P	SL/AL	<4.2 (1.9)	2.62″ × 5.40″
BJ101P	SN/BN	<2.4 (1.1)	2.62″ × 5.37″
BJ202P	SN/BN	<4.6 (2.1)	2.62″ × 5.37″
BS101P	SS/AS	<2.1 (0.6)	2.65″ × 5.40″
BS202P	SS/AS	<3.1 (1.4)	2.65″ × 5.40″
BT033P	ST/AT	<1.8 (0.8)	1.75″ × 3.56″

Note - Weights are approximate and can vary slightly depending upon installed options.



Seismic Envelope with 5% Dampening

Safe Shutdown Earthquake (SSE)
Operating Base Earthquake (OBE)

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