

WGA-710B

Instrumentation Amplifiers

● Wide Applicable Range



Designed to measure physical quantities such as load in combination with a strain gage transducer, the WGA-710B series is compact, lightweight, multi-functional, and low-cost instrumentation amplifiers with digital indicator. Stable measurement is ensured by the excellent noise resistance. While the built-in CPU provides various functions, front panel keys facilitate setting and control of these functions. In addition, multiple models are available with BCD data output, RS-232C, analog amplifier, D-A converter and/or 8-step comparator, enabling selection of the most suitable one for the measurement purpose.

Since all setting conditions are stored in nonvolatile memory, they are backed against power failure. Besides production line control systems in various industries including machinery, vehicle, electrical equipment, foodstuff and chemical, the WGA-710B series can be applied as general-purpose measuring instruments using strain gage transducers.



Features

- Compact, lightweight, highly noise-resistant and suitable as industrial instrumentation amplifier.
- Various functions extend the application range.
- Key lock function prevents erroneous operation.
- LED illuminated keys for confirmation of the operating status at a glance.
- Bridge excitation voltage suitable for connected transducer is selectable from 10, 5 or 2.5 VDC by the switch
- Built-in remote sensing circuit enables highly accurate measurement.
- Built-in analog peak hold circuit enables measurement of quickly changing variables.
- Setting conditions are stored in nonvolatile memory against power failure.
- 9 models are available for selection according to the application.

Specifications

Standard Model WGA-710B-0

Number of Measuring Channels: 1

Applicable Transducers: Strain gage transducers

Applicable Bridge Resistance: 87.5 Ω to 10 k Ω (Up to 4 transducers with 350 Ω bridge resistance can be connected in parallel.)

Measuring Range: ± 3.2 mV/V (± 6400 $\mu\text{m/m}$)

Bridge Excitation: 10/5/2.5 VDC, selectable by the switch, remote sensing possible for 120 mA or less

Input Mode: Balanced differential

Input Impedance: 10 M Ω or more

Input Terminal Board: Cage clamp type

Zero and Sensitivity Adjustment: Automatic by internal calculation (accuracy within $\pm 0.1\%$ FS)

Display: ± 9999 (Decimal point can be put anywhere.)

Character height 10 mm, red LED

Lowest place digit can be fixed to 0.

Sampling Rate: Approx. 15 times/sec.

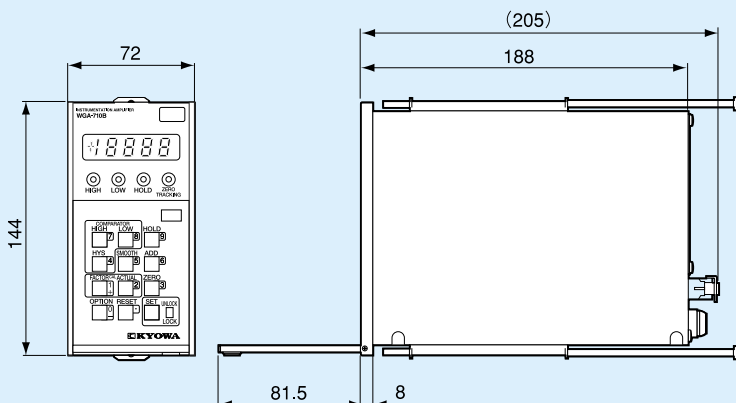
Nonlinearity: Within $\pm(0.03\%$ FS + 1 digit)

(with transducer output 0.5 mV/V)

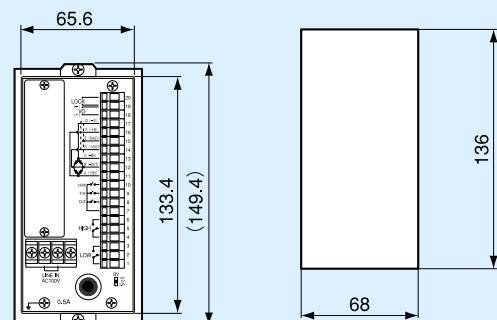
Zero Stability: ± 0.25 μV RTI/ $^{\circ}\text{C}$, $\pm 0.05\%$ FS/10% power fluctuation)

Sensitivity Stability: $\pm 0.01\%$ / $^{\circ}\text{C}$, $\pm 0.05\%$ FS/10% power fluctuation)

Dimensions



Panel Cut Dimensions



High/Low Limit Comparator

Number of setting points: 2 (high limit, low limit)
 Response time: 200 ms or less
 Setting range: 0000 to ± 9999
 Hysteresis width: Can be set in a range of 0 to 19999
 Output: Relay contact (1 transfer circuit/point)
 Contact capacity: 250 VAC, 0.5 A (resistive load)

Hold Function:

ON/OFF switchover by panel key or external contact signal
 Mode switchover by panel key
 No hold, point-based hold, peak hold, section-based peak hold, time-based peak hold
 Frequency response range: DC to 1 kHz

Digital Zero Adjustment: By panel key or external contact input

Adding Function: Setting range 0000 to ± 9999

Input Original Value Monitor: Accuracy within $\pm 0.1\%$ FS

Zero Tracking Function:

Zero can be tracked in changing quantities of ± 1 , 2 and 5 counts each for delays of 20, 10 and 5 seconds, 9 ranges in total. Setting is made by panel keys.

Digital Filter Function: The number of moving averaging times is 4, 8, 16, 32, 48 or 64, selected by panel key.

Operating Temperature/Humidity Range:

-10 to 40°C, 80% RH or less (noncondensing)

Power Supply: AC line, 50/60 Hz, 20 VA or less

11 to 30 VDC on request

Dimensions & Weight: 72(W) x 144(H) x 188(D) mm (excluding protrusions), approx. 1.7 kg

Panel Cut Dimensions: 136 x 68 mm

Standard Accessories

AC power cable P-23 for 100 VAC
 Spare fuse
 Miniature screwdriver for terminal board connection
 Unit seal
 Panel mounting fixture
 BCD output connector BCD-CONNE (57-30360 (DDK) or the equivalent; attached to WGA-710B-1/12/14 only)
 Instruction Manual

Optional Accessory AC power cable P-28 for 200 VAC

Models

Function Model	AC Power Voltage (V)	High/Low Limit Comparator	Peak Hold Function	BCD Data Output	EIA-232-D (RS-232C)	D-A Converter	Analog Amplifier	8-step Comparator
WGA-710B-0	100	●	●					
WGA-710B-0 A115	115	●	●					
WGA-710B-0 A200	200	●	●					
WGA-710B-0 A220	220	●	●					
WGA-710B-1	100	●	●	●				
WGA-710B-1 A115	115	●	●	●				
WGA-710B-1 A200	200	●	●	●				
WGA-710B-1 A220	220	●	●	●				
WGA-710B-2	100	●	●		●			
WGA-710B-2 A115	115	●	●		●			
WGA-710B-2 A200	200	●	●		●			
WGA-710B-2 A220	220	●	●		●			
WGA-710B-3	100	●	●				●	
WGA-710B-3 A115	115	●	●				●	
WGA-710B-3 A200	200	●	●				●	
WGA-710B-3 A220	220	●	●				●	
WGA-710B-4	100	●	●			●		
WGA-710B-4 A115	115	●	●			●		
WGA-710B-4 A200	200	●	●			●		
WGA-710B-4 A220	220	●	●			●		
WGA-710B-5	100	●	●				●	
WGA-710B-5 A115	115	●	●				●	
WGA-710B-5 A200	200	●	●				●	
WGA-710B-5 A220	220	●	●				●	
WGA-710B-6	100	●	●					●
WGA-710B-6 A115	115	●	●					●
WGA-710B-6 A200	200	●	●					●
WGA-710B-6 A220	220	●	●					●
WGA-710B-12	100	●	●	●	●			
WGA-710B-12 A115	115	●	●	●	●			
WGA-710B-12 A200	200	●	●	●	●			
WGA-710B-12 A220	220	●	●	●	●			
WGA-710B-14	100	●	●	●		●		
WGA-710B-14 A115	115	●	●	●		●		
WGA-710B-14 A200	200	●	●	●		●		
WGA-710B-14 A220	220	●	●	●		●		

To the standard model, the following functions can be added by mounting the optional cards. Specify the desired one when ordering.

WGA-710B-1 with BCD Data Output

This model can output the reading in binary coded decimal. The WGA-710B-1 should be selected for connection to the optional dedicated printer 442B-K01 (Refer to page 4-16).

BCD Data Output System: Isolated open collector

Drive Capacity: 30 VDC, 20 mA

Output Signals: 4-digit BCD data, minus sign, OVER signal, print command (EOC); positive or negative logic selected by the switch

Input Commands: BCD hold, output disable, negative logic

Connector: 57-40360 (DDK) or the equivalent

WGA-710B-2 with EIA-232-D (RS-232C)

EIA-232-D (RS-232C) enables this model to transmit data and status signals to external equipment and to receive setting conditions from it.

Signal System: RS-232C full duplex system

Transmission Mode: Start-stop system

Transmission Rate: 4800 bps

Bit structure:

7 data bits

1 stop bit

Odd parity bit

Connector: 17-13250-27(DDK) or the equivalent

WGA-710B-3 with Analog Amplifier

This model is designed to amplify and output the analog signal of a transducer to external equipment without digitizing.

Measuring Range: ± 3.2 mV/V

Zero Adjustment Range: ± 2.5 mV/V

Sensitivity Adjustment Range: 0.5 to 3.0 mV/V can be adjusted to 10 V.

Calibration: 1 mV/V $\pm 0.1\%$

Voltage Output: ± 10 V (load resistance 2 k Ω or more); nonlinearity within $\pm 0.03\%$ FS

Current Output: 4 to 20 mA, corresponding to voltage output of 0 to 10 V (load resistance 350 Ω or less); nonlinearity within $\pm 0.1\%$ FS

Frequency Response Range: DC to 1 kHz

WGA-710B-4 with D-A Converter

This model can output an analog signal linked with the digital indication. Digital zeroing, hold and smoothing functions are provided.

Output Analog Signal Level: +10 V, 20 mA for the full scale setting on the mainframe

Zero Adjustment Range: Within $\pm 10\%$ FS

Sensitivity Adjustment Range: Within $\pm 10\%$ FS

Nonlinearity: Within $\pm 0.1\%$ FS

Frequency Response: Depends on the sampling frequency (approx. 15 times/sec.) of the mainframe.

Withstand Voltage: 500 VAC for one minute between the analog amplifier card and the chassis

Voltage Output: 0 to 10 V (load resistance 2 k Ω or more)

Current Output: 4 to 20 mA, corresponding to voltage output of 0 to 10 V (load resistance 350 Ω or less)

WGA-710B-5 with Isolation Analog Amplifier

This model is designed to amplify and output the analog signal of a transducer to external equipment without digitizing.

Measuring Range: ± 3.2 mV/V

Zero Adjustment Range: ± 2.5 mV/V

Sensitivity Adjustment Range: 1.0 to 3.0 mV/V can be adjusted to 10 V.

Calibration: 1 mV/V $\pm 0.1\%$

Withstand Voltage: 500 VAC for one minute between the isolation analog amplifier card and the chassis

Voltage Output: ± 10 V (load resistance 2 k Ω or more), nonlinearity within $\pm 0.05\%$ FS

Current Output: 4 to 20 mA, corresponding to voltage output of 0 to 10 V (load resistance 350 Ω or less), nonlinearity within $\pm 0.1\%$ FS

Frequency Response Range: DC to 1 kHz

WGA-710B-6 with 8-step Comparator

This model provides 4 sets of high/low limits for comparison. The high/low limit relay (transfer contact) outputs the result of 1 set of high/low limits compared.

Number of Comparison Points: 8 (4 each high/low limits)

Setting Method: Select from external contact input and set by the panel keys

Setting Range: 0 to ± 9999

Output System: Isolated open collector

Drive Capacity: 30 VDC, 20 mA

Note: The relay contact output of the mainframe is selected from external contact input.

WGA-710B-12 with BCD Data Output/EIA-232-D (RS-232C)

This model enables simultaneous use of BCD data output and RS-232C.

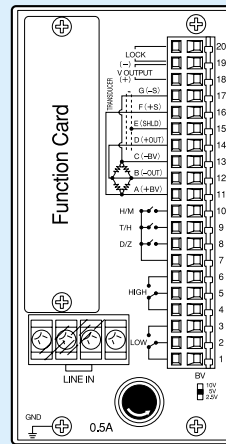
WGA-710B-14 with BCD Data Output/D-A Converter

This model enables simultaneous use of BCD data output and D-A converter.

Optional Accessories

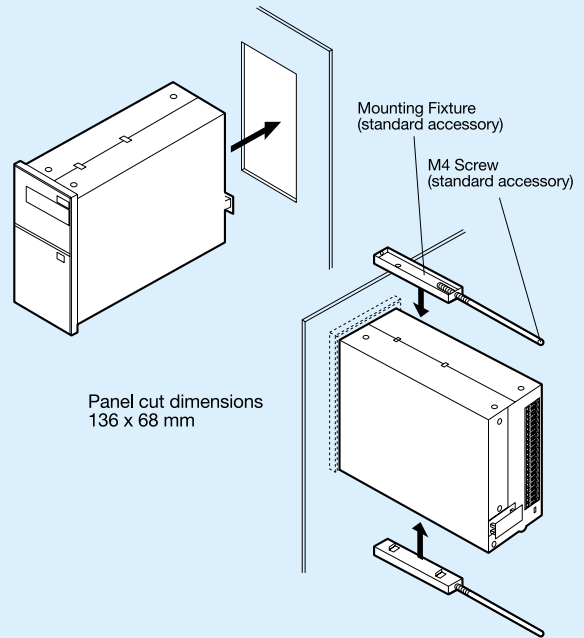
- Connection cables between WGA-710B and transducer with NDIS connector plug
4-conductor cables
U-17 50 cm long, U-28 1 m long, U-19 2 m long, U-20 5 m long; bared at the tip to the mainframe and NDIS connector to transducer
6-conductor cables
U-25 50 cm long, U-26 1 m long, U-27 2 m long, U-28 5 m long; bared at the tip to the mainframe and NDIS connector to transducer
- Dedicated printer 442B-K01 (refer to page 4-16.)

Rear Panel



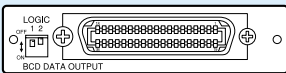
No.	Functions
20	Calibration lock terminal
19	Signal common of 18 & 20
18	Voltage output
17	BV remote sense (-)
16	BV remote sense (+)
15	Shield
14	BV output (+)
13	BV input (-)
12	BV output (-)
11	BV input (+)
10	Hold command (H/M)
9	Hold command (T/H)
8	Digital zero command (D/Z)
7	External signal common
6	High limit relay contact out. (a contact)
5	High limit relay contact out. (COM)
4	High limit relay contact out. (b contact)
3	Low limit relay contact out. (a contact)
2	Low limit relay contact out. (COM)
1	Low limit relay contact out. (b contact)

Installation Example

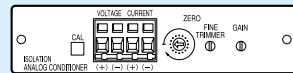


Card Panels by Functions

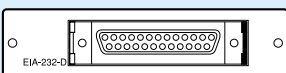
BCD Data Output (WGA-710B-1)



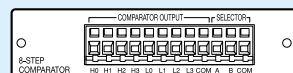
Isolation Analog Amplifier (WGA-710B-5)



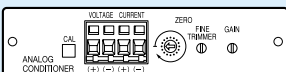
EIA-232-D (RS-232C) (WGA-710B-2)



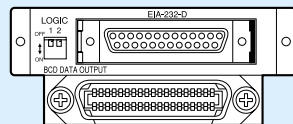
8-step Comparator (WGA-710B-6)



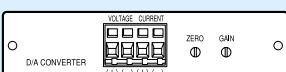
Analog Amplifier (WGA-710B-3)



BCD Data Output/EIA-232-D (WGA-710B-12)



D-A Converter (WGA-710B-4)



BCD Data Output/D-A Converter (WGA-710B-14)

