

# WGA-680A

## Instrumentation Amplifier

● For building into equipment

3  
-110



### High performance instrumentation amplifier for strain-gage transducers

- High-performance processing (Sampling Speed: 4000 times/s, 24-bit AD converter)
- Substantial comparison and Judgment functions (Extra high, high, OK, low, and extra low)
- Analog output (DA)
- Various optional interfaces (BCD output, RS-232C, RS-485, and CC-Link)
- Numeric data and comparators' LED display in red, green, or orange.

The WGA-680A is compact, moderately priced instrumentation amplifiers which enables direct reading of physical quantities such as loads due to high-speed sampling.

Comparator, hold functions and DA converted signal output are standard equipped.

Suitable for measurement and control of quickly changing phenomena in press-fitting process or press machines.

### Models

Models	Types	Power Supply	TEDS	BCD	RS-232C	RS-485	CC-Link
WGA-680A-00		100 to 240 VAC					
WGA-680A-01			Yes	Yes			
WGA-680A-02			Yes		Yes		
WGA-680A-03			Yes			Yes	
WGA-680A-04							Yes
WGA-680A-10		10 to 30 VDC					
WGA-680A-11			Yes	Yes			
WGA-680A-12			Yes		Yes		
WGA-680A-13			Yes			Yes	
WGA-680A-14							Yes

### Specifications

Channels	1
Applicable Sensors	Strain-gage transducers (4-wire)
Compatible Bridge Resistance	87.5 to 1000 $\Omega$ (Up to four 350 $\Omega$ transducers connected in parallel.)
Bridge Excitation	10, 2 VDC, selectable
Measuring Range	$\pm 3.2$ mV/V (Input range including zero adjustment range)
Zero Adjustment Range	Within measurement range (Not retained when power supply interrupted.)
Nonlinearity	Within $\pm(0.02\% \text{ FS} + 1 \text{ digit})$
Stability	Zero point: Within $\pm 0.25 \mu\text{V}/\text{m}/^\circ\text{C}$ Sensitivity: Within $\pm 0.01\% / ^\circ\text{C}$
Sampling Speed	4000 times/s
AD Resolution	24 bits
Calibration	Actual load calibration, sensitivity registering calibration, and numeric value registering calibration
Smoothing Functions	Analog filters: 10, 30, 100, 300 Hz Attenuation: -12 dB/oct. Moving average: 0, 2, 4, 8, 16, 32, 64, 128, 256, 512, 1024, and 2048 times Min. scale: 1, 2, 5, 10, 20, 50, 100, 200, 500, and 1000 counts
Auto Zero Compensation	Zero Tracking (Auto digital zero in the preset range) Approximated zero compensation: Indication is made zero when the reading is in a preset range of 0 to 9.
Adding Functions	Setting range: $\pm 99999$
Original Value Display Functions	$\pm 3.2000$ mV/V Accuracy: Within $\pm 0.1\% \text{ FS}$
Comparator Functions	Points: 4 Patterns: Registers 4 groups of pattern files (comparative values) and enables switching through setting of functions Types: Extra high (HH), high (HI), low (LO), extra low (LL) Setting range: $\pm 99999$ Hysteresis: 0 to 99999 Comparison modes: Normal, at hold High low assignment: Enables assigning high or low to each comparator.
Judgment Function	Point: 1 Type: OK
Hold Functions	Digital peak/bottom hold (Without analog peak/bottom hold) Types: Arbitrary point hold, peak hold, bottom hold, peak to peak hold, interval definition peak hold, time specification peak hold, interval definition peak hold, time specification peak hold, interval definition peak to peak hold, time specification peak to peak hold Delay time: 0.00 to 9.99 s Detect time: 0.01 to 9.99 s
Display	Range: $\pm 99999$ (Decimal point to be put anywhere.) Indicator: 7-segment LED, character height: 14 mm, colors: Red, green, and orange Update: 0.12, 0.24, 0.49, 0.98, 1.95, 3.90, 7.80, and 15.6 times/s (In normal mode) Modes: Normal/hold Comparators: 5 points (HH, HI, OK, LO, LL) Status: 2 points (HOLD, LOCK)



Instrumentation Amplifiers

Outline

Amplifier

Checker

Other

<b>Analog (DA) Output</b>	
Voltage output: $\pm 10$ V (Load resistance 2 k $\Omega$ or more)	
Arbitrary scaling possible	
Current output: 4 to 20 mA (Load resistance 500 $\Omega$ or less)	
Corresponds to voltage output of 0 to 10 V.	
Conversion speed: 4000 times/s	
Nonlinearity: Within $\pm 0.1\%$ FS	
Setting contents: Display value of zero, display value of full scale	
<b>Control Input</b>	Points: 3
	Types: Zero command, hold command, and reset command
	Signal formats: Non-voltage contact signal or open collector (NPN)
	(Capacity: 12 VDC, 5 mA or more)
<b>Control Output</b>	Points: 5
	Types: HH, HI, OK, LO, and LL
	Formats: Open collector (NPN)
<b>Level Test Functions</b>	(30 VDC, 20 mA max.)
	Display of arbitrary values possible
	Display additional functions: Disabled, enabled
	Setting range: $\pm 99999$
<b>Power Supply</b>	Level test: ON, OFF
	See the table.
<b>Dimensions</b>	96 W $\times$ 96 H $\times$ 126 D mm (Excluding protrusions)
<b>Weight</b>	Approx. 750 g (Without option)
<b>Operating Temperature</b> -10 to 50°C	
<b>Operating Humidity</b> 20 to 80% (Non-condensing)	
<b>Compliance</b>	Directive 2014/30/EU (EMC)
	Directive 2014/35/EU (LVD) (AC model only)
	Directive 2011/65/EU, (EU)2015/863
	(10 restricted substances) (RoHS)

**Standard Accessories**

Instruction manual (CD-R)

Unit seal

Screwdriver (-)

**Optional Accessories**

AC power cable P-23 (For 100 VAC)

AC power cable P-28 (For 200 VAC)

Input cable for NDIS4102 (7 pins) connector (6 conductors)

U-29 (50 cm)

U-30 (1 m)

U-31 (2 m)

U-32 (5 m)

Input cable for NDIS4102 (7 pins) connector (4 conductors)

U-33 (50 cm)

U-34 (1 m)

U-35 (2 m)

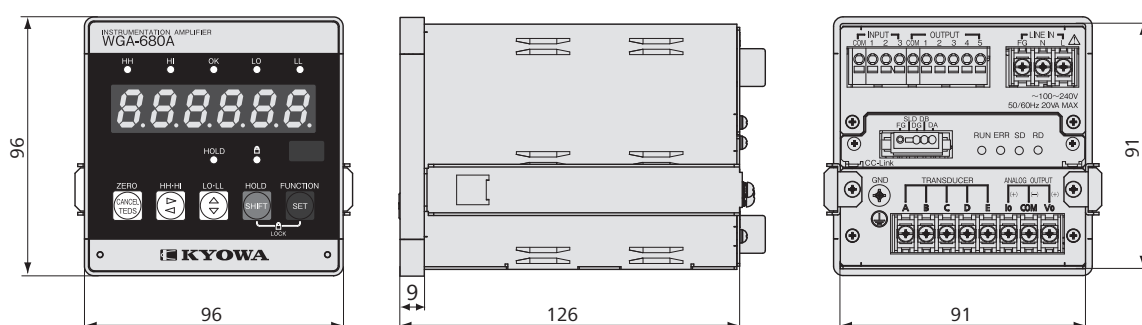
U-36 (5 m)

Wire mount socket 35505-6000-BOM GF (WGA-680A-04/14)

Branch connector (type-Y) 35715-L010-B00 AK (WGA-680A-04/14)

Termination connector 35T05-6M00-BOM GF (WGA-680A-04/14)

<b>Option: BCD Output (Model: WGA-680A-01, WGA-680A-11)</b>	
<b>Output</b>	Data: 20 bits (4-bit $\times$ 5), POL (Minus polarity), over,
	EOC (End of Conversion), holding section, detecting section
	Output format: Open collector (NPN) (30 VDC, 20 mA max.)
<b>Input</b>	Points: 2 (Hold, Output prohibited)
	Format: Open collector (NPN) or non-voltage contact signal
	(Capacity: 12 VDC, 5 mA)
<b>Output Rate</b>	Approx. 15.6, 31.3, 62.5, and 125 times/s
<b>Output Logic</b>	Data logic: Positive logic, negative logic
	EOC logic: Positive logic, negative logic
	Polarity logic: Positive logic, negative logic
<b>Option: RS-232C (Model: WGA-680A-02, WGA-680A-12)</b>	
<b>Signal System</b>	RS-232C full duplex system
<b>Communication Methods</b>	Synchronous
<b>Baud Rate</b>	2400, 4800, 9600, 19200 bps
<b>Bit Configuration</b>	Data bits: 7
	Stop bit: 1
	Parity bit: Odd number
<b>Flow Control</b>	None
<b>Option: RS-485 (Model: WGA-680A-03, WGA-680A-13)</b>	
<b>Signal System</b>	RS-485 half duplex system
<b>Baud Rate</b>	2400, 4800, 9600, 19200 bps
<b>Bit Configuration</b>	Data bits: 7
	Stop bit: 1
	Parity bit: Odd number
<b>Flow Control</b>	None
<b>Device ID</b>	1 to 99
<b>Option: TEDS</b>	
(Model: WGA-680A-01, WGA-680A-02, WGA-680A-03, WGA-680A-11, WGA-680A-12, WGA-680A-13)	
<b>Applicable Transducer</b>	Should have the information according to IEEE
	template No. 33 (Cable length should be 30 m
	or less.)
<b>Interfaces</b>	Compatible with IEEE1451.4 Mixed Mode Transducer
	Interface Class 2
<b>Calibration Function</b>	Automatic sensitivity registration by reading
	TEDS data
<b>Option: CC-Link (Model: WGA-680A-04, WGA-680A-14)</b>	
<b>Version</b>	1.10
<b>Station Types</b>	Remote device station
<b>Occupied Stations</b>	1, 2, 4
<b>Baud Rate</b>	10 M, 5 M, 2.5 M, 625 k, and 156 k bps
<b>Slave Stations</b>	1 to 64
<b>Connection Cable</b>	CC-Link version 1.10 compliant cables
	(3-conductor twisted pair shielded cable)

**Dimensions**

WGA-680A-04