Instrumentation Amplifiers

WGA-900A
Instrumentation Amplifier

● **Display of waveform**
● **Confirmation of numeric data**

Models	Types
WGA-900A-0	Standard without option
WGA-900A-1	BCD output
WGA-900A-2	D/A output
WGA-900A-3	RS-485
WGA-900A-12	BCD and D/A output
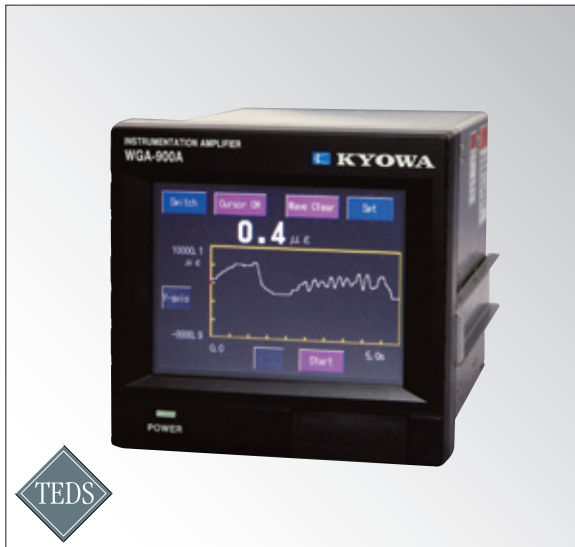
Enables Checking Waveform by Easy Operation

● Display of waveform
● Zoom in numeric data
● NDIS connector for sensor input
● Functions explanation by touch keys
● Data can be saved in SD card
● TEDS compatible
● High resolution and high speed sampling
● Kyowa original cursor functions
● Result of comparison will be showed in different colors
● Analog-hold circuit is used for detecting peak/bottom value
● Easy to see display numbers of 5 digits (±99999)
● Wide measuring range up to ±3.2 mV/V
● Comparator in 5 points enables delicate monitoring and controlling
● Easy operation using touch panels
● MONITOR – output, RS-232C and I/O port is equipped as standard.
● Optional BCD-output, D/A output or RS-485 card are available.

Specifications

■ **WGA-900A-0**

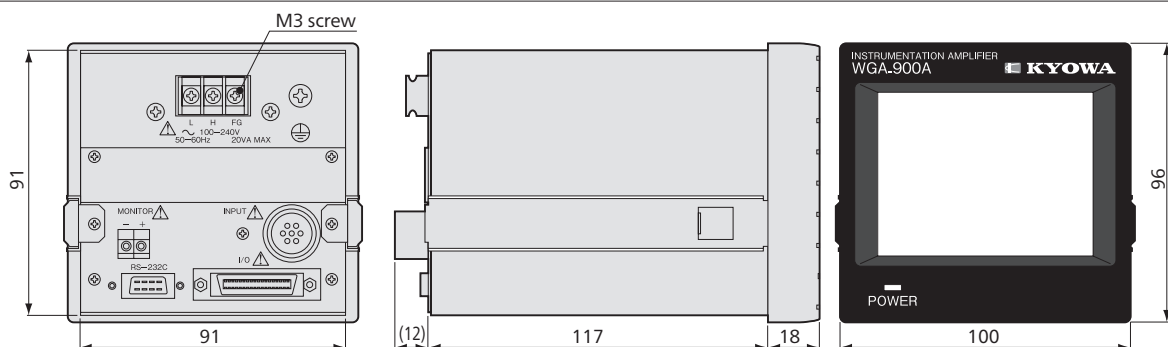|	
Channels	1
Applicable Transducers	Strain-gage transducers
Applicable Bridge Resistance	87.5 Ω to 1 KΩ
	(Up to four 350 Ω transducers can be connected in parallel.)
TEDS Compatible	Interface: Compatible to IEEE1451.4 Mixed Mode Transducer Interface Class 2.
	Applicable transducers: Should have the information according to IEEE template No. 33.
	(Cable length: 30 m or less)
Bridge Excitation	10 or 2 VDC, switchable
Input Range	±3.2 mV/V (Including zero adjustment range)
Nonlinearity	Within (±0.02%FS +1 digit)
Stability	Zero: Within ±0.25 μV_{RTI}/°C
	Sensitivity: Within ±0.005%/°C
Peak/Bottom Detection	Detecting Methods: Analog circuit and digital hold in combination, digital hold only, switchable
	Frequency response: DC to 1 kHz (+1 dB, -2 dB)
A/D Converter	Sampling speed: 4000 times/s
	Resolution: 24 bits
Analog Monitor	Voltage output: ±(5 V ±200 mV)
	(Load resistance 5 KΩ or more)
Indicators	3.5-inch STN color LCD, display area: 73.0 × 55.2 mm
	320 × 240 dots, touch panel
Indication	±99999
	Speed: 3 times/s
Calibration	
	Manual calibration: No-load zero calibration, sensitivity registering calibration, actual load calibration, engineering units
	TEDS-based automatic calibration
	Partial calibration based on TEDS calibration data: TEDS calibration items
	TEDS operation setting: TEDS reading operation, zero at TEDS calibration time, TEDS information display
Smoothing Functions	
	Analog filters: 1, 30, 300 Hz and None (1 kHz or more)
	Attenuation: -12 dB/oct.
	Minimum scale: 1, 2, 5, 10, 20, 50, and 100
	Moving average: None, 2, 4, 8, 16, 32, 64, 128, 256, 512, 1024, and 2048 times
Zero Compensation Functions	Zero tracking
	(Automatically conducts digital zero within the preset value)
	Determination Time: 0.00 to 9.99 s
	Compensation Range: 0 to 99999
	Least significant digit fixed at zero
	(Automatically changes the least significant digit number to zero.)
	Setting Range: 0 to 9
Additional Values	Setting range: ±99999
Original Values	±3.2 mV/V, at 0.5-second intervals
Measurement condition points	
	32 (16 for control input) of measurement condition file can be saved.
	Capable of switching by the key operation, control input, and communication command.
Comparator Setting	
	Points: 5
	Types: Extra high (HH), high (HI), OK, low (LO), extra low (LL)
	For [Interval peak/bottom] [Time peak/bottom] only,
	Peak values: Max. 1 (HI), min. 1 (LO)
	Bottom values: Max. 2 (HI), min. 2 (LO)
	Compared values: ±99999
	Hysteresis Width: 0 to 9999
	Using comparator can be set.
	Comparison speed: 4000 times/s (Normal comparison mode)
Measuring Modes	
	Operation modes: Normal, peak hold, block-specified peak hold, time-specified peak hold, bottom hold, block-specified bottom hold,

	time-specified bottom hold, arbitrary point hold,
	block peak-bottom, time peak-bottom,
	block average, time average
Detect time:	Delay time, comparison mode and display mode
	can be set.

Waveform Display

X axis setting	End points: 0.5, 1.0, 2.0, 5.0, and 10.0 s
Y axis setting	Start points: -99999 to 99999
	End points: 250, 500, 1 k, 2 k, 5 k, 10 k, 20 k, 50 k, 100 k,
	and 200 k
	Start mode of waveform, passed level, passed way,
	hold time of waveform
	Displays the waveform of the input variation regardless to the
	"Measure Mode Set" setting.

System Setting Key lock, setting value initialize,
backlight illumination time,
Contrast, clock, detection method

Self-check Memory, channel

Operation Check Display, touch panel, control I/O
communication, BCD output, D/A output, SD card

Control Input

Points: 9

Types: Zero command, hold command, reset command,
waveform command, TEDS command,
measurement condition select 0 to 3

Signal formats: Non-voltage contact signal or open collector signal
(12 VDC voltage and 5 mA current can be applied.)

Control Output

Points: 10

Types: HH, HI, OK, LO, LL, healthy, abnormal channel,
abnormal memory, communication error, SD

Output formats: Open collector

Load capacity: 30 VDC, 20 mA

Interfaces

Signal system: RS-232C full duplex system

Transmission system: Synchronous

Baud rates: 2400, 4800, 9600, and 19200 bps

Bit configuration: Data bits: 7

Stop bit 1

Party number: Odd

Flow control: None

Setting contents: Baud rates: 2400, 4800, 9600, 19200 bps.
Transmission mode: Repeat Output,
Output at Hold, Tx and Rx

SD Card

Saving set values: Saves the all setting values (Excluding the
calibration value) to the SD card.

Reading setting values: Reads the all setting value (Excluding the
calibration value) from the SD card and overwrite
those of the WGA-900A to the read one.

Saving set: ON/OFF data set to SD card

Waveform data editing: Browsing the waveform data,
changing the name of the data,
and deleting the data are available.

Format: Erase all data that are saved in the SD card (Quick format)
available

Update: Capable of updating the program version that is saved
in the SD card.

SD card types: Up to 4 GB; Non-SDXC-compliant

Power Supply 100 to 240 VAC, 20 VA or less

Dimensions 100 W × 96 H × 135 D mm

Weight Approx. 1.0 kg (Excluding options)

Operating Temperature 0 to 40 °C

Operating Humidity 20 to 85% RH (Non-condensing)

Pannel cut Dimensions 92×92 mm

Standard Accessories CD-ROM (Instruction manual, PC software
for SD card)

Optional Accessories AC power supply cable
P-23 for 100 VAC
P-28 for 200 VAC
SD card (2 GB)

OPTION

■BCD Output (Model: WGA-900A-1)

Output	BCD data: 20 bits (4-bit×5-digit)
	Binary data: 18 bits Offset binary)
	Minus code: 1 bit
	Over: 1 bit
	EOC (End Of Conversion): 1 bit
	Format: Open-collector
	Max. load capacity: 30 VDC, 20 mA (Load resistance)
Input	Points: 2
	Type: Open collector or non-voltage contact signal
	Voltage 12 VDC and current 10 mA can be applied.

Output Logic Settable

Transmission Speed Approx. 16, 32, 64, and 125 times/s

Data Form BCD, Binary, switchable

BCD Assignment Peak value, bottom value

■D/A Output (Model: WGA-900A-2)

Output Voltage	±10 V (Load resistance 2 k Ω or more),
	arbitrary scaling is available.
Output Current	4 to 20 mA (Load resistance 500 Ω or less)
	4 to 20 mA output is fixed when the voltage
	0 to 10 V is applied.
Isolation Voltage	250 VAC for 1 minute (Output voltage and output
	current are non-isolated)
Conversion Speed	4000 times/s
Nonlinearity	±0.1%FS
D/A Assignment	Peak value, bottom value

■RS-485 (Model: WGA-900A-3)

Signaling System	RS-485 Half duplex system
Baud Rate	2400, 4800, 9600, 19200 bps
Device ID	Setting range: 1 to 99
Bit Structure	Data bits: 7
	Stop bit: 1
	Parity: Odd number
	Flow control: None
Transfer mode	Continuation output, output at hold, send & receive
	(Common with RS-232C)

■BCD and D/A Output (Model: WGA-900A-12)

BCD/ Binary Output

Output	Details: BCD data: 20 bits, 5 digits (4x5)
	Binary data *: 18 bits (Offset binary)
	Minus symbol, over, EOC (End of conversion)
	Format: open connector 30 VDC
	20 mA (Resistive load)
Input	Points: 2
	Format: Non-voltage connect signal or
	open connector
	(12 VDC voltage can be applied,
	and 10 mA current flows)
Transfer speed	Approx. 16, 32, 64, 125 s
Code logic	EOC logic, data logic
Data logic	Negative logic, positive logic
Data type	BCD, binary switching possible.
BCD assignment	Peak value, bottom value

D/A Output

Voltage output	±10 V (Load 2 kΩ or more) Arbitrary scaling possible
Current output	4 to 20 mA (Load 500 Ω or less)
Isolation with mainframe	250 VAC 1 minute
	(Between voltage output and current
	output is non-isolated)
Conversion speed	2000/s
Nonlinearity	±0.1
D/A assignment	Peak value, bottom value

*Requires firmware version 1.14B.

■Dimensions