

INSTRUCTION MANUAL

WGA-910A

INSTRUMENTATION AMPLIFIER

(FOR CC-Link OPTION)

WGA-910A-4: CC-Link

Thank you for purchasing KYOWA's product WGA-910A Instrumentation Amplifier.

Read this Instruction Manual carefully in order to make full use of the high performance capabilities of the product.

Do not use the product in methods other than described in this Manual.

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The contents of the Instruction Manual are subjected to change without prior notice.

Please follow the safety precautions and other precautions described in this manual.

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STANDARD ACCESSORIES

The following accessories are packed with the WGA-910A-4.

When unpacking, check the contents to ensure that all accessories are enclosed.

Instruction Manual	1 (CD-R) *1
Product Warranty	1
Software License Agreement	1

*1. Including a PC software and a setting file for wave comparison mode.

OPTIONAL ACCESSORIES

<CC-Link connector>

Wire mount socket (3M Japan Limited)	35505-6000-B0M GF
Branch connector (type-Y, 3M Japan Limited)	35715-L010-B00 AK
Termination connector (3M Japan Limited)	35T05-6M00-B0M GF

SAFETY PRECAUTIONS (Do not forget to read the safety precautions prior to use.)

The WGA-910A-4 is designed to be used according to "3. CC-Link SPECIFICATIONS."

Do not use the product in an environment exceeding the specifications.

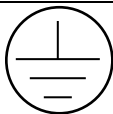
Or, it may cause troubles.

PRIOR TO USE

For safe use of the product, do not forget to read the "Safety Precautions" prior to use.

Kyowa Electronic Instruments Co., Ltd. assumes no liability for any damage resulting from the user's failure to comply with the safety precautions.

For safety operation of the product, the following symbol marks are used in the Instruction Manual.

	Indicates "PROTECTIVE GROUND TERMINAL." Be sure to connect the GND terminal to the ground. Excluding when using a 3P AC power cable for grounding.
---	--

SAFETY SYMBOLS

For safety operation of the product, the following symbol marks are used in the Instruction Manual.

	WARNING	Improper operation of the system may result in death or severe injury of the operator.
	CAUTION	Improper operation of the system may result in injury of the operator and physical damage of the system.

WARNING

●Warning

Be sure to observe the safety precautions described in the WGA-910A Instruction Manual.

●Power Supply

To prevent a fire hazard, before connecting the power cable, be sure to check the local line voltage is matched with the operating voltage specified for the WGA-910A.

The power supply voltage is described in following.

100 to 240 VAC 50/60 Hz Power consumption : 20 VA or less

●Power Cable and Power Outlet

To prevent an electric shock or fire hazard, connect a power cable and 3P-2P conversion adapter to a plug with protective ground terminal.

When using 3P power cable, use a 3P power plug with protective ground terminal.

Operators must be cautioned that use of an extension power cable with no ground conductor disables the protective ground function.

Check the Instruction Manual in advance, connect the power cable to the WGA-910A and connect the power plug to an outlet.

●Protective Ground

To prevent an electric shock hazard, be sure to ensure protective ground before connecting the power cable.

When using the 3P-2P conversion adapter, be sure to ground the grounding wire of the adapter to the GND terminal.

When using a plastic 2P power cable, be sure to connect an optional grounding wire to the protective grounding terminal.

●For Electrical Operator Safety

To prevent an electric shock hazard, operators must be cautioned not to cut the protective grounding conductor or disconnect the GND terminal.

●Confirmation of Protective Ground

To prevent an electric shock hazard, be sure to check safe protective ground function before operating the WGA-910A. If any abnormal matters are found in the protective ground function, fuse holder, etc., do not operate the WGA-910A.

●External Connection

To prevent an electric shock hazard, ensure the safe protective ground of all concerned instrument and then, connect the WGA-910A to the measuring object and external devices, PC, etc.

●Fuse

Used for preventing a fire hazard.

If you want to replace fuses, contact KYOWA or our representatives.

●Inflammable Gaseous Environment

To prevent fire and explosion hazards, do not operate the WGA-910A where it is exposed to inflammable gases, inflammable vapors or inflammable dust.

●If Any Trouble Occurs

To prevent a fire hazard, if smoke is emitted from the WGA-910A, immediately disconnect the AC adaptor from the receptacle and stop using the WGA-910A.

●Maximum Input Voltage Range

The WGA-910A is a measuring instrument specified for strain gage transducers and strain gages. Do not input high voltage. Or, deteriorated performance and damage of the product may result.

●About built-in lithium battery

Do not short-circuit the battery terminals after disassembling. Or, it may cause an overheating and fire.

Never throw the battery into a fire or put it near a fire.

It may cause an overheating, fire, and explosion.

Do not charge the using battery since it is not rechargeable.

Or, it may explode.

CAUTION

● **Caution**

Be sure to observe the safety precautions described in the WGA-910A Instruction Manual.

● **Do not use the product outdoors**

Or, it may cause electric shock, fire hazard, lower the performance and cause troubles.

● **Do not turn ON the power switch immediately after turning it OFF**

After turning OFF the power switch, wait (5 seconds) until the power supply is shut OFF before turning ON the power switch again.

If the power is repeatedly turned ON and OFF within 5 seconds, rush current generated by switching the power ON may damage the product.

● **Use the product within temperature ranging from -10 to +40 °C**

Use at temperatures exceeding the specified range may lower the performance and cause trouble.

If use under direct sunlight or in a cold place is inevitable, prepare a sunscreen or take proper measures to keep it warm.

● **Use the product in the specified operating humidity of 20 to 85 %**

Use in a humid place exceeding the specified range or where it is exposed to splashing water may lower the performance and cause trouble.

● **Do not use the product immediately after the change in the environment**

Leave the product as it is until it becomes adaptable to the environment.

Abrupt change in ambient temperature due to transportation, etc. may cause dew condensation, which may result in lower performance and troubles.

● **Use the product under environment without excessive vibration or high impact**

Vibration resistance: 19.6 m/s² (2 G), 10 to 200 Hz (when in operation)

Use the product in an area where vibration and impact can be kept within the scope of specifications.

Continuous vibration or severe impact may cause deteriorated performance and system failure.

● **Do not use the product in strong electromagnetic field**

Use the product in a magnetic field environment where the PC may be used.

Performance may be lowered and erroneous operation and troubles may result if it is used near a telemetry system, microwave oven, electronic furnace or any other equipment generating a strong magnetic field.

● **Do not use the product under poor conditions**

Use a power source that is free from momentary power outages and noise.

Make sure that fluctuations in the power supply to the device do not exceed $\pm 10\%$ of the nominal voltage.

Operate the product within the range 50/60 Hz.

● **Do not pull cords and cables**

Lay cords and cables with a certain allowance so that unreasonable force is not applied to the connections.

Or, it may interrupt the measurements, break the cables, and damage the connectors.

● **Avoid installing sensors and products near a welding machine**

Failure to do so will pose the risk of erroneous data, malfunction and failure.

● **Do not disassemble or remodel the product**

Or, it may cause electric shock hazards or damage the product. This warranty does not cover any damaged or defective parts that results from disassembling or remodeling.

● **Do not use or store the product under dusty or fine particles or corrosive gas environment**

Use or store under these environment, may result in lower performance and troubles.

● **Do not expose the product to the air if it is used and stored nearby sea**

Air exposure nearby sea may cause lower performance and products failure.

● **Take care when handling the CD-R**

Do not expose the CD-R to direct sun light, high temperature, or high humidity.

Do not apply pressure to the CD-R by laying object or bending.

Dust, scratches, and fingerprints on either side of the CD-R can cause write errors.

● **Preheat the product before use**

After the power ON, always preheat the product for approximately 30 minutes.

● **Cleaning**

When the product gets dirty, clean the product with a dry soft cloth. When dust exists inside the WGA-910A, clean it by using an air blow gun. Do not touch electronic parts.

PRECAUTIONS ON CE MARKING

NOTE

When satisfying the following conditions, we evaluated the compatibility against the requirements of the EU Directives and confirmed that the product satisfied the requirements.

- To connect products, be sure to use the following cables.
Cables compatible to the CC-Link Ver.1.10 (3-conductor shielded twisted-pair cable)
- Be sure to wrap the CC-Link cable around the clamp-on ferrite core two turns near the connector.
Recommended ferrite core RFC-20 (KITAGAWA INDUSTRIES CO., LTD.)
- Be sure to mount the product on the control panel, etc. Before turning ON the power, make sure the terminal block on the back panel is covered to avoid contact with hands.
- The product connection should be executed by experts in electrical work.
- To immediately turn OFF the product, place switches or circuit breakers inside the building and near the product and display the functions as well.
Use switches and circuit breakers conforming to the IEC60947-1 and IEC60947-3.
- Use the product in area where elevation is 2000 m or below.
- When mounting the product in your system, approaches to satisfy the CE marking requirements vary with the configuration of the control panel to be used, the other devices to be connected, and wirings. Therefore, customers are required to check whether the CE marking requirements on the product are satisfied or not.
- Be sure to connect the protective grounding terminal to the ground by using the optional ground wire.

NOTATIONS USED IN THE INSTRUCTION MANUAL

The following notations are used in the Instruction Manual for convenience.

- Names described on the panel surface

Names described on the panel surface are expressed in double quotation mark " ".

- Informational notes

Certain notations are used as necessary to attract your attention to information that requires special care when handling the product, and to information provided for reference purposes.

Examples of Notations

NOTE

Essential precautions required when handling the product.

MEMO

Reference items required when handling the product.

IMPORTANT PRECAUTIONS WHEN USING WGA-910A AND OPTIONAL CC-LINK UNITS

NOTE

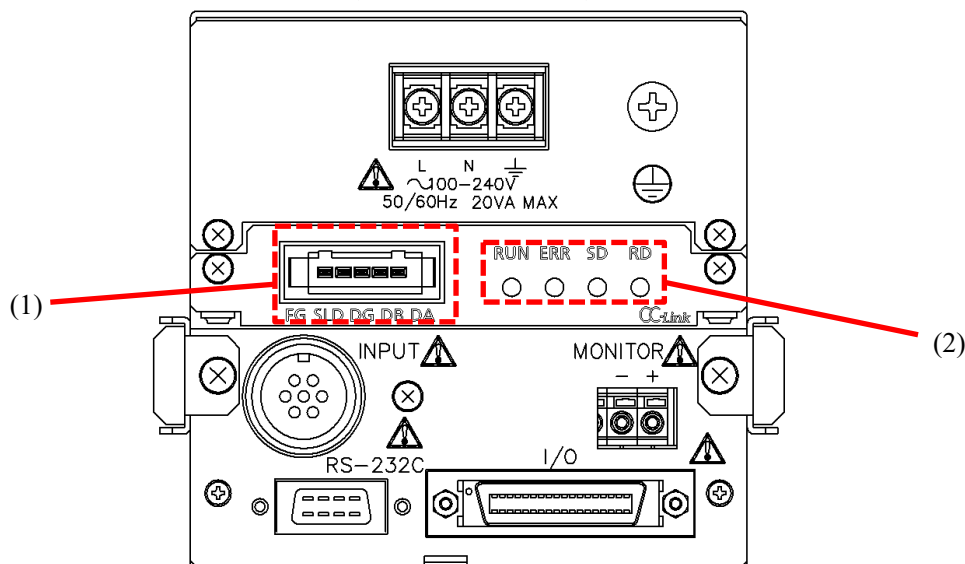
- The communication
RS-232C communication is not available.

1. OUTLINE OF PRODUCT

The WGA-910A-4 is instrumentation amplifier with the CC-Link options.

This product is able to control devices and able to load indicated values by using a PLC (or sequencer).

2. CONTROLS AND INDICATORS (REAR PANEL)



(1) Communication connectors Connects the CC-Link cable for the PLC.
For details, see "4. COMMUNICATION CONNECTORS."

(2) Status LEDs Indicates the communication status. For details, see "5. STATUS LED."

3. CC-Link SPECIFICATIONS

	Specifications	Initial values
Version	Ver.1.10	
Station type	Remote device station	
Number of occupied stations	1 station, 2 stations, 4 stations	4 stations
Communication speed	10 Mbps, 5 Mbps, 2.5 Mbps, 625 kbps, 156 kbps	10 Mbps
Station number	1 to 64	1 stations
Connection cable	CC-Link Ver.1.10-compliant cable (Shielded, 3-core twisted-pair cable)	

4. COMMUNICATION CONNECTORS

- The pins and signals are as follows.

Pin No.	Signal name	Signal content	Remarks
1	DA	Signal conductor DA	
2	DB	Signal conductor DB	
3	DG	Signal conductor ground	
4	SLD	Shield	The SLD and FG are connected internally.
5	FG	Frame ground	

The compatible connector of the CC-Link cables is as follows. (Optional accessories)

Name	Model	Manufacture
Wire mount socket	35505-6000-BOM GF	3M Japan Limited
Branch connector (type-Y)	35715-L010-B00 AK	3M Japan Limited
Termination connector	35T05-6M00-BOM GF	3M Japan Limited

NOTE

- To locate the products at both ends of the CC-Link network, be sure to mount the termination connectors.
- The branch connector (type-Y) requires the wire mount socket.

- Connect cables as follows.
 - 1) Strip the coating of the wire for approx. 30 to 35 mm.
Twist the wires together tightly.
The available wires are as follows.

Conductor size:	0.5 mm ² (AWG20)
Insulated jacket O.D.:	φ2.2 to φ3.0 mm
 - 2) Insert the wires into the drain hole on the connector cover.
Push the connector cover into the body.

5. STATUS LED

Indicate the communication status as follows.

LED name	ON	OFF	Flickering
RUN	Working properly	Resetting..., communication error	———
SD	Sending...	———	———
RD	Receiving...	———	———
ERR	CRC error	Working properly	———

6. CC-Link SETTINGS

6-1. Number of occupied stations

Sets the number of occupied stations as the remote device station.

<Setting Range>

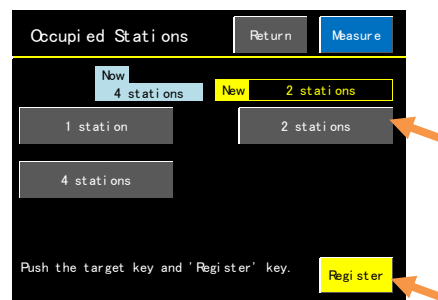
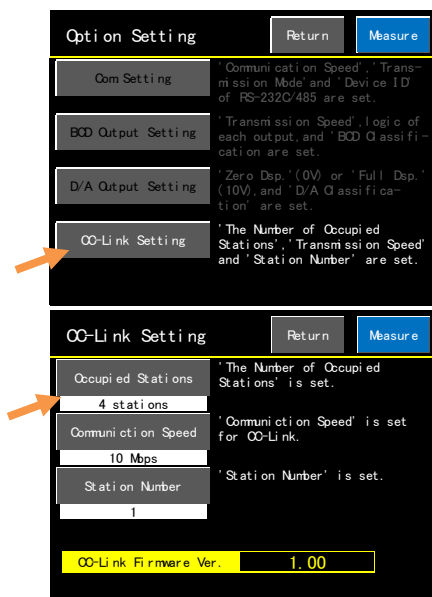
1 station, 2 stations, 4 stations.

<How to operate>

1) Press the **CC-Link Setting** key on the “**Option Setting**” window.

2) Press the **Occupied Stations** key on the “**CC-Link Setting**” window.

3) Press the target key and **Register** key to register the target value.



6-2. Communication speed

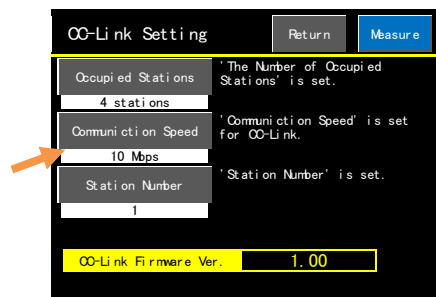
Sets the Communication speed of the CC-Link.

<Setting Range>

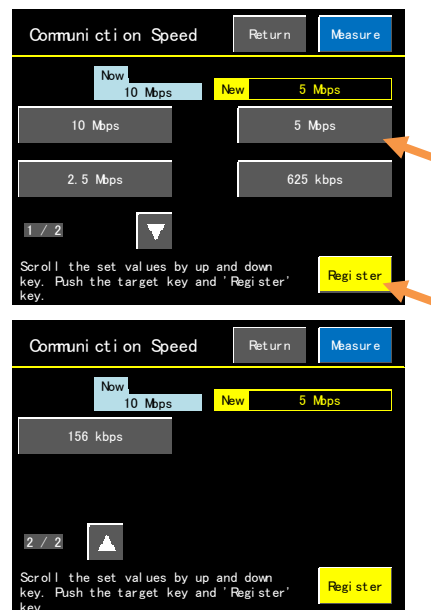
10 Mbps, 5 Mbps, 2.5 Mbps, 625 kbps, 156 kbps

<How to operate>

- 1) Press the **Communication Speed** key on the “CC-Link Setting” window.



- 2) Press the target key and **Register** key to register the target value.



6-3. Station number

Sets the Station number of the CC-Link.

The range of the Station number varies with the Number of occupied stations.

<Setting Range>

01 to 64 Number of occupied stations: 1

01 to 63 Number of occupied stations: 2

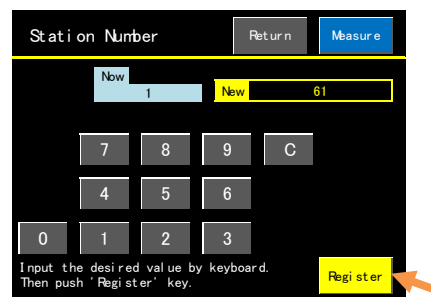
01 to 61 Number of occupied stations: 4

<How to operate>

- 1) Press the **Station Number** key on the “CC-Link Setting” window.



- 2) Input a setting value with the numeric keyboard and press the **Register** key to register the setting value.



7. BUFFER ADDRESS OF PLC

When the Number of occupied stations is "2" or "4", make sure each PLC (master) has unique address.

The buffer address, assigned to the remote device (WGA-910A), varies with the Station number as follows.

Station number	Remote input: RX		Remote output: RY		Remote register: M → R		Remote register: R → M	
	Address	Input RX	Address	Output RY	Address	Resistor M→R	Address	Resistor R→M
1	00E0 _H	RX0000	0160 _H	RY0000	01E0 _H	RW _w 0000	02E0 _H	RW _r 0000
2	00E2 _H	RX0020	0162 _H	RY0020	01E4 _H	RW _w 0004	02E4 _H	RW _r 0004
3	00E4 _H	RX0040	0164 _H	RY0040	01E8 _H	RW _w 0008	02E8 _H	RW _r 0008
4	00E6 _H	RX0060	0166 _H	RY0060	01EC _H	RW _w 000C	02EC _H	RW _r 000C

M: Master (PLC)

R: Remote (WGA-910A)

8. ADDRESS MAP

8-1. REMOTE REGISTER: M → R

8-1-1. Address map of the remote register M → R

M: Master (PLC) → R: Remote (WGA-910A)

NOTE

The buffer address is the value, when the Station number is "1".

● Number of occupied stations: 4 stations

Station No.	Buffer address	Remote register	Name		Bit configuration	Remarks	
			MSB	LSB			
1	01E0 _H	RWw0000	[HI] comparator value_L		32 bits BCD	Measuring Condition	
	01E1 _H	RWw0001	[HI] comparator value_H				
	01E2 _H	RWw0002	[LO] comparator value_L		32 bits BCD		
	01E3 _H	RWw0003	[LO] comparator value_H				
2	01E4 _H	RWw0004	[HH] comparator value_L		32 bits BCD		Measuring Condition
	01E5 _H	RWw0005	[HH] comparator value_H				
	01E6 _H	RWw0006	[LL] comparator value_L		32 bits BCD		
	01E7 _H	RWw0007	[LL] comparator value_H				
3	01E8 _H	RWw0008	Not in use				
	01E9 _H	RWw0009					
	01EA _H	RWw000A	Not in use				
	01EB _H	RWw000B					
4	01EC _H	RWw000C	Command data_L		32 bits BCD	Commands	
	01ED _H	RWw000D	Command data_H				
	01EE _H	RWw000E	Command No.		16 bits BCD		
	01EF _H	RWw000F	"0" (8 bits)	Measuring Condition	8 bits BCD		

● Number of occupied stations: 2 stations

Station No.	Buffer address	Remote register	Name		Bit configuration	Remarks
			MSB	LSB		
1	01E0 _H	RWw0000	[HI] comparator value_L		32 bits BCD	Measuring Condition
	01E1 _H	RWw0001	[HI] comparator value_H			
	01E2 _H	RWw0002	[LO] comparator value_L		32 bits BCD	
	01E3 _H	RWw0003	[LO] comparator value_H			
2	01E4 _H	RWw0004	Command data_L		32 bits BCD	Commands
	01E5 _H	RWw0005	Command data_H			
	01E6 _H	RWw0006	Command No.		16 bits BCD	
	01E7 _H	RWw0007	"0" (8 bits)	Measuring Condition	8 bits BCD	

● Number of occupied stations: 1 station

Station No.	Buffer address	Remote register	Name		Bit configuration	Remarks
			MSB	LSB		
1	01E0 _H	RWw0000	Not in use			
	01E1 _H	RWw0001				
	01E2 _H	RWw0002				
	01E3 _H	RWw0003				

8-1-2. Format of the remote register M → R

- Measuring Condition limited data: 32 bits BCD

Buffer address (Station number: 1, Number of occupied stations: 4 stations): 01E0_H to 01E7_H

Writes the pre-set values of the Measuring Condition (operation pattern) limited data by using the [Command processing request 1].

Pre-set values: [HH] comparator value_H/L, [HI] comparator value_H/L. [LO] comparator value_H/L. [LL] comparator value_H/L

MSB						LSB		
L	10 ³ th digit	4 bits	10 ² th digit	4 bits	10 ¹ th digit	4 bits	10 ⁰ th digit	4 bits
H	Sign	4 bits	All "0"	4 bits	All "0"	4 bits	10 ⁴ th digit	4 bits

Store the numerical values of each digit as the BCD data.

Example: 9 (Decimal) = $2^3 \times 1 + 2^2 \times 0 + 2^1 \times 0 + 2^0 \times 1 = 1001$

When a numerical value of each digit is larger than 9, the product treats the numerical value as "9."

You cannot set the decimal point position since it is based on the calibration data.

Indicate the sign as follows.

0000: Positive (+), 0001: Negative (-)

Example: Pre-set data of the [LO] comparator value: "-56789" →

0110 0111 1000 1001 (Upper row: 16 bits BCD of the L)

0001 0000 0000 0101 (Lower row: 16 bits BCD of the H)

- Command data (numerical values): 32 bits BCD

Buffer address (Station number: 1, Number of occupied stations: 4 stations): 01EC_H to 01ED_H

Write the pre-set values of the numerical values by using the [Command processing request 2].

MSB						LSB		
L	10 ³ th digit	4 bits	10 ² th digit	4 bits	10 ¹ th digit	4 bits	10 ⁰ th digit	4 bits
H	Sign	4 bits	All "0"	4 bits	All "0"	4 bits	10 ⁴ th digit	4 bits

Indicates the digits and signs in the same manner as that of the above Measuring Condition limited data.

Example: Pre-set data of the rated capacity: "06400" →

0110 0100 0000 0000 (Upper row: 16 bits BCD of the L)

0000 0000 0000 0000 (Lower row: 16 bits BCD of the H)

- Command data (assigned values): 32 bits BCD

Buffer address (Station number: 1, Number of occupied stations: 4 stations): 01EC_H to 01ED_H

Write the pre-set values of the assigned values by using the [Command processing request 2].

MSB						LSB		
L	All "0"	4 bits	All "0"	4 bits	10 ¹ th digit	4 bits	10 ⁰ th digit	4 bits
H	All "0"	4 bits	All "0"	4 bits	All "0"	4 bits	All "0"	4 bits

Indicate the digits in the same manner as that of the BCD data.

Example: Pre-set data of the number of moving averaging times: "11" (2048 times) →

0000 0000 0001 0001 (16 bits BCD of the upper row)

- Command data (Clock 1): 32 bits BCD

Buffer address (Station number: 1, Number of occupied stations: 4 stations): 01EC_H to 01ED_H

Write the pre-set values of the Clock 1 (Year, Month, Day) by using the [Command processing request 2].

MSB				LSB			
L	Month (10 ¹ th digit) 4 bits	Month (10 ⁰ th digit) 4 bits	Day (10 ¹ th digit) 4 bits	Day (10 ⁰ th digit) 4 bits	Year (10 ¹ th digit) 4 bits	Year (10 ⁰ th digit) 4 bits	
H	All "0"	4 bits	All "0"	4 bits	All "0"	4 bits	

Indicate the digits in the same manner as that of the BCD data.

Example: Pre-set data of Clock 1 (Year, Month, Day): "160129" →

0000 0001 0010 1001 (Upper row: 16 bits BCD of the L)

0000 0000 0001 0110 (Lower row: 16 bits BCD of the H)

- Command data (Clock 2): 32 bits BCD

Buffer address (Station number: 1, Number of occupied stations: 4 stations): 01EC_H to 01ED_H

Write the pre-set values of the Clock 2 (Hour, Minute, Second) by using the [Command processing request 2].

MSB			LSB	
L	Minute (10 ¹ th digit) 4 bits	Minute (10 ⁰ th digit) 4 bits	Second (10 ¹ th digit) 4 bits	Second (10 ⁰ th digit) 4 bits
H	All "0" 4 bits	All "0" 4 bits	Hour (10 ¹ th digit) 4 bits	Hour (10 ⁰ th digit) 4bits

Indicate the digits in the same manner as that of the BCD data.

Example: Pre-set data of Clock 2 (Hour, Minute, Second): "231459" →

0001 0100 0101 1001 (Upper row: 16 bits BCD of the L)

0000 0000 0010 0011 (Lower row: 16 bits BCD of the H)

- Command No. 16 bits BCD

Buffer address (Station number: 1, Number of occupied stations: 4 stations): 01EE_H

Selects the command No. The [Command processing response 2 flag] does not appear when the command is invalid.

MSB						LSB	
10 ³ th digit	4 bits	10 ² th digit	4 bits	10 ¹ th digit	4 bits	10 ⁰ th digit	4 bits

Example: Command Number of the sensitivity registering calibration: "2003" →

0010 0000 0000 0011 (16 bits BCD)

- Measuring Condition (Operation pattern): 4 bits BCD

Buffer address (Station number: 1, Number of occupied stations: 4 stations): 01EF_H

Selects the Measuring Condition (operation pattern) No.

MSB						LSB	
All "0"	4 bits	All "0"	4 bits	10 ¹ th digit	4 bits	10 ⁰ th digit	4 bits

Indicate the digits in the same manner as that of the BCD data.

Example: Pre-set data: "32" (Measuring Condition No. 32) →

0000 0000 0011 0010 (16 bits BCD of the upper row)

8-2. REMOTE REGISTER: R → M

8-2-1. Address map of the remote register R → M

R: Remote (WGA-910A) → M: Master (PLC)

NOTE

The buffer address is the value, when the Station number is "1".

● Number of occupied stations: 4 stations

Station No.	Buffer address	Remote register	Name		Bit configuration	Remarks
			MSB	LSB		
1	02E0 _H	RWr0000	Indicated value_Selection_L		32 bits BCD	
	02E1 _H	RWr0001	Indicated value_Selectioh_H			
	02E2 _H	RWr0002	Undefined			
	02E3 _H	RWr0003				
2	02E4 _H	RWr0004	Undefined			
	02E5 _H	RWr0005				
	02E6 _H	RWr0006	"0" (12 bits)	Error code	4 bits BCD	
	02E7 _H	RWr0007	"0" (12 bits)	Error auxiliary code	4 bits BCD	
3	02E8 _H	RWr0008	Holding value_L		32 bits BCD	
	02E9 _H	RWr0009	Holding value_H			
	02EA _H	RWr000A	Measured value_L		32 bits BCD	
	02EB _H	RWr000B	Measured value_H			
4	02EC _H	RWr000C	Command data response_L		32 bits BCD	Command response
	02ED _H	RWr000D	Command data response_H			
	02EE _H	RWr000E	Command No. response		16 bits BCD	
	02EF _H	RWr000F	"0" (8 bits)	Measuring Condition response	8 bits BCD	

● Number of occupied stations: 2 stations

Station No.	Buffer address	Remote register	Name		Bit configuration	Remarks
			MSB	LSB		
1	02E0 _H	RWr0000	Indicated value_Selection_L *1		32 bits BCD	
	02E1 _H	RWr0001	Indicated value_Selection_H *1			
	02E2 _H	RWr0002	"0" (12 bits)	Error code	4 bits BCD	
	02E3 _H	RWr0003	"0" (12 bits)	Error auxiliary code	4 bits BCD	
2	02E4 _H	RWr0004	Command data response_L		32 bits BCD	Command response
	02E5 _H	RWr0005	Command data response_H			
	02E6 _H	RWr0006	Command No. response		16 bits BCD	
	02E7 _H	RWr0007	"0" (8 bits)	Measuring Condition response	8 bits BCD	

● Number of occupied stations: 1 station

Station No.	Buffer address	Remote register	Name		Bit configuration	Remarks
			MSB	LSB		
1	02E0 _H	RWr0000	Indicated value_Selection_L *1		32 bits BCD	
	02E1 _H	RWr0001	Indicated value_Selection_H *1			
	02E2 _H	RWr0002	"0" (12 bits)	Error code	4 bits BCD	
	02E3 _H	RWr0003	"0" (12 bits)	Error auxiliary code	4 bits BCD	

MEMO

*1. The "Indicated value_Selection" (holding value / measured value) varies with the remote output [Value selection 1].

For details, see "8-3-2. Contents of the remote output RY (M → R) ."

8-2-2. Format of the remote register R → M

- Indicated value_Selection: 32 bits BCD

Buffer address (Station number: 1, Number of occupied stations: 4 stations): 02E0_H to 02E1_H

The data varies with the remote output [Value selection 1].

MSB						LSB		
L	10 ³ th digit	4 bits	10 ² th digit	4 bits	10 ¹ th digit	4 bits	10 ⁰ th digit	4 bits
H	Sign	4 bits	All "0"	4 bits	All "0"	4 bits	10 ⁴ th digit	4 bits

Indicate the same format with the command data (numerical values).

- Holding value: 32 bits BCD

Buffer address (Station number: 1, Number of occupied stations: 4 stations): 02E8_H to 02E9_H

Store the indicated values (when in operation) during the Hold mode.

The data varies Peak or Bottom with the remote output [Value selection 2].

MSB						LSB		
L	10 ³ th digit	4 bits	10 ² th digit	4 bits	10 ¹ th digit	4 bits	10 ⁰ th digit	4 bits
H	Sign	4 bits	All "0"	4 bits	All "0"	4 bits	10 ⁴ th digit	4 bits

Indicate the digits (BCD data) and signs in the same manner as that of the above.

MEMO

Store the holding values (indicated values) in the remote register, based on the following conditions.

- The updating rate is approx. 4 times/sec (= Display (Numeric Value) updating rate).
- When the "Display Mode" is "Hold display mode" in the "Measure Mode Setting", the holding value (indicated value), immediately after turning ON the HOLD command, appears during the Detecting interval.
- The holding value (indicated value), set the decimal point position in the "Calibration" window, appears.

- Measured value: 32 bits BCD

Buffer address (Station number: 1, Number of occupied stations: 4 stations): 02EA_H to 02EB_H

Store the scaled calibration data (the same data during the tracking) of the sensor inputs, irrespective of the Hold mode.

MSB						LSB		
L	10 ³ th digit	4 bits	10 ² th digit	4 bits	10 ¹ th digit	4 bits	10 ⁰ th digit	4 bits
H	Sign	4 bits	All "0"	4 bits	All "0"	4 bits	10 ⁴ th digit	4 bits

Indicate the digits (BCD data) and signs in the same manner as that of the above.

MEMO

Store the measured values (tracking values) in the remote register, based on the following conditions.

- The updating rate is 4000 times/sec (= sampling rate).
- Not affected by the settings of the "Display Mode" in the "Measure Mode Setting",
- Not affected by the decimal point position of the "Smoothing".

- Error code: 4 bits BCD

Buffer address (Station number: 1, Number of occupied stations: 4 stations): 02E6_H

Store the WGA-910A error codes.

MSB						LSB	
All "0"	4 bits	All "0"	4 bits	All "0"	4 bits	Error code	4 bits

Indicate the error codes as follows.

0000: None (Healthy), 0001: OVER error (input), 0010: Over error (indicated value)
 0011: Calibration error, 0100: Memory error, 0101: Bridge voltage error

8-3. REMOTE INPUT AND REMOTE OUTPUT

8-3-1. Address map

NOTE

The buffer address is the value, when the Station number is "1".

- Number of occupied stations: 4 stations

Station No.	M: Master (PLC) → R: Remote (WGA-910A)			R: Remote (WGA-910A) → M: Master (PLC)		
	Buffer address	Remote output	Name	Buffer address	Remote input	Name
1	0160 _H	RY0000	Command processing request 1	00E0 _H	RX0000	Command processing response 1
		RY0001	(Reserved)		RX0001	(Reserved)
		RY0002	Command processing request 2		RX0002	Command processing response 2
		RY0003	WRITE/READ		RX0003	WRITE/READ response
		RY0004	(Reserved)		RX0004	(Reserved)
		RY0005	(Reserved)		RX0005	(Reserved)
		RY0006	(Reserved)		RX0006	CPU normal operation
		RY0007	Measuring Condition 0		RX0007	Measuring Condition 0 response
		RY0008	Measuring Condition 1		RX0008	Measuring Condition 1 response
		RY0009	Measuring Condition 2		RX0009	Measuring Condition 2 response
		RY000A	Measuring Condition 3		RX000A	Measuring Condition 3 response
		RY000B	(Reserved)		RX000B	Decimal point position 10^0
		RY000C	Value selection 1		RX000C	Decimal point position 10^1
		RY000D	Value selection 2		RX000D	Decimal point position 10^2
		RY000E	(Reserved)		RX000E	Decimal point position 10^3
		RY000F	(Reserved)		RX000F	Decimal point position 10^4
	0161 _H	RY0010	ZERO command	00E1 _H	RX0010	[HH] comparator
		RY0011	RESET command		RX0011	[HI] comparator
		RY0012	HOLD command		RX0012	Working properly (Passed)
		RY0013	Waveform command		RX0013	[LO] comparator
		RY0014	TEDS command		RX0014	[LL] comparator
		RY0015 to RY001F	(Reserved)		RX0015	(Reserved)
					RX0016	(Reserved)
					RX0017	Detecting
					RX0018	Holding
					RX0019	Inflection point/Extreme value
					RX001A	SD Error
					RX001B	SD
					RX001C	OVER error (input)
					RX001D	OVER error (indicated value)
					RX001E	Calibration error
					RX001F	Memory error

Station No.	M: Master (PLC) → R: Remote (WGA-910A)			R: Remote (WGA-910A) → M: Master (PLC)		
	Buffer address	Remote output	Name	Buffer address	Remote input	Name
2	0162 _H	RY0020 to RY002F	(Reserved)	00E2 _H	RX0020	Wave comparator HI output
					RX0021	Wave comparator OK output
					RX0022	Wave comparator LO output
					RX0023	Motion detect output
					RX0024 to RX002F	(Reserved)
	0163 _H	RY0030 to RY003F	(Reserved)	00E3 _H	RX0030 to RX003F	(Reserved)
3	0164 _H to 0165 _H	RY0060 to RY006F	(Reserved)	00E4 _H to 00E5 _H	RX0040 to RX005F	(Reserved)
4	0166 _H to 0167 _H	RY0060 to RY0079	(Reserved)	00E6 _H to 00E7 _H	RX0060 to RX0079	(Reserved)
		RY007A	Error reset request flag		RX007A	Error status flag
		RY007B to RY007F			RX007B	Remote READY
					RX007C to RX007F	(Reserved)

- Number of occupied stations: 2 stations

Station No.	M: Master (PLC) → R: Remote (WGA-910A)			R: Remote (WGA-910A) → M: Master (PLC)		
	Buffer address	Remote output	Name	Buffer address	Remote input	Name
1	0160 _H	RY0000	Command processing request 1	00E0 _H	RX0000	Command processing response 1
		RY0001	(Reserved)		RX0001	(Reserved)
		RY0002	Command processing request 2		RX0002	Command processing response 2
		RY0003	WRITE/READ		RX0003	WRITE/READ response
		RY0004	(Reserved)		RX0004	(Reserved)
		RY0005	(Reserved)		RX0005	(Reserved)
		RY0006	(Reserved)		RX0006	CPU normal operation
		RY0007	Measuring Condition 0		RX0007	Measuring Condition 0 response
		RY0008	Measuring Condition 1		RX0008	Measuring Condition 1 response
		RY0009	Measuring Condition 2		RX0009	Measuring Condition 2 response
		RY000A	Measuring Condition 3		RX000A	Measuring Condition 3 response
		RY000B	(Reserved)		RX000B	Decimal point position 10 ⁰
		RY000C	Value selection 1		RX000C	Decimal point position 10 ¹
		RY000D	Value selection 2		RX000D	Decimal point position 10 ²
		RY000E	(Reserved)		RX000E	Decimal point position 10 ³
		RY000F	(Reserved)		RX000F	Decimal point position 10 ⁴
	0161 _H	RY0010	ZERO command	00E1 _H	RX0010	[HH] comparator
		RY0011	RESET command		RX0011	[HI] comparator
		RY0012	HOLD command		RX0012	Working properly. (Passed)
		RY0013	Waveform command		RX0013	[LO] comparator
		RY0014	TEDS command		RX0014	[LL] comparator
		RY0015 to RY001F	(Reserved)		RX0015	(Reserved)
					RX0016	(Reserved)
					RX0017	Detecting
					RX0018	Holding
					RX0019	Inflection point/Extreme value
RX001A	SD Error					
2	0162 _H	RY0020 to RY002F	(Reserved)	00E2 _H	RX0020 to RX002F	(Reserved)
3	0163 _H	RY0030 to RY0039	(Reserved)	00E3 _H	RX0030 to RX0039	(Reserved)
		RY003A	Error reset request flag		RX003A	Error status flag
		RY003B to RY003F	(Reserved)		RX003B	Remote READY
					RX003C to RX003F	(Reserved)

MEMO

Suppose the [Command processing request 1], [Command processing request 2], [Command processing response 1], and [Command processing response 2] are all OFF.

You are able to valid them by turning ON the [Command processing request 1] or [Command processing request 2].

- Number of occupied stations: 1 station

Station No.	M: Master (PLC) → R: Remote (WGA-910A)			R: Remote (WGA-910A) → M: Master (PLC)			
	Buffer address	Remote output	Name	Buffer address	Remote input	Name	
1	0160 _H	RY0000	ZERO command	00E0 _H	RX0000	[HH] comparator	
		RY0001	RESET command		RX0001	[HI] comparator	
		RY0002	HOLD command		RX0002	Working properly (Passed)	
		RY0003	(Reserved)		RX0003	[LO] comparator	
		RY0004	(Reserved)		RX0004	[LL] comparator	
		RY0005	Waveform command		RX0005	(Reserved)	
		RY0006	TEDS command		RX0006	CPU normal operation	
		RY0007	Measuring Condition 0		RX0007	Measuring Condition 0 response	
		RY0008	Measuring Condition 1		RX0008	Measuring Condition 1 response	
		RY0009	Measuring Condition 2		RX0009	Measuring Condition 2 response	
		RY000A	Measuring Condition 3		RX000A	Measuring Condition 3 response	
		RY000B	(Reserved)		RX000B	Detecting	
		RY000C	Value selection 1		RX000C	Holding	
		RY000D	Value selection 2		RX000D	OVER error (input)	
		RY000E	(Reserved)		RX000E	OVER error (indicated value)	
		RY000F	(Reserved)		RX000F	Calibration error	
	0161 _H	RY0010 to RY0019	(Reserved)	00E1 _H	RX0010 to RX0014		(Reserved)
					RX0015		(Reserved)
					RX0016		(Reserved)
					RX0017		(Reserved)
					RX0018		(Reserved)
		RX0019			(Reserved)		
		RY001A	Error reset request flag		RX001A		Error status flag
		RY001B to RY001F	(Reserved)		RX001B		Remote READY
					RX001C		(Reserved)
					RX001D		(Reserved)
					RX001E		(Reserved)
					RX001F		(Reserved)

8-3-2. Contents of the remote output RY (M → R)

Name	Contents
Command processing request 1	Turn ON when writing the pre-set values of the Measuring Condition (operation pattern) limited data. Before turning OFF, make sure the [Command processing response 1] is ON. Corresponding to the [/M] command. It is the same function as "/ M command" (Setting save command) of RS communication.
Command processing request 2	Turn ON when writing the normal configuration commands. Before turning OFF, make sure the [Command processing response 2] is ON. It is the same function as "/ M command" (Setting save command) of RS communication.
WRITE_READ	Select the WRITE/READ of the normal configuration commands. OFF: WRITE, ON: READ
Measuring Condition 0 to 3	Change the Measuring Condition with the combination of ON/OFF setting from the "Measuring condition 0" to "Measuring condition 3."
ZERO command	Execute the DIGITAL ZERO function at the rising edge only once. Cancel the DIGITAL ZERO function at the falling edge.
RESET command	Reset the Hold mode at the rising edge. During ON, Keep executing the Reset function. Cancel the Hold mode reset at the falling edge.
HOLD command	Control the Hold mode at the rising edge and falling edge. When the Hold mode is "Interval-specified peak hold", in the same manner as the control input signals, the product operates as follows. Rising edge: Starts detecting data. During ON: Detecting interval Falling edge: Starts Holding interval
Waveform command	Waveform display starts at ON edge. (= Start key) Waveform display continues while ON. Acquisition of the waveform ends at the OFF edge. (= Stop key)
TEDS command	TEDS auto calibration starts on ON edge. When the "TEDS calibration in progress" message disappears, please turn it off.
Value selection 1	Change the value to be output, into the [Indicated value_Selection] data area of the Remote register: R → M. OFF: Measured value (tracking value) ON: Holding value (indicated value)
Value selection 2	Change hold data to Hold Value 1 or Hold Value 2. For the Hold value 1/2, refer to the instruction manual. OFF: Hold Value 1 ON: Hold Value 2
Error reset request flag	Error state flag was turned ON by any error occurred. Turn ON the error reset request flag when the error state flag is turned OFF.

8-3-3. Contents of the remote input RX (R → M)

Name	Contents
Command processing response 1	Turn ON when the writing of the pre-set values finished. Before turning OFF, make sure the [Command processing request 1] is OFF. It is the same function as "/ M command" of RS communication.
Command processing response 2	Turn ON when the writing of the normal configuration commands finished. Before turning OFF, make sure the [Command processing request 2] is OFF.
WRITE_READ response	Become the same status as that of the READ/WRITE signal, at the same timing when the [Command processing response 2] turns ON.
CPU normal operation	You are able to check whether the product CPU is working properly by using the normal operation signal. The CPU normal operation turns ON and OFF every second when the product is working properly.
Measuring Condition 0 to 3 response	Indicate the current Measuring Condition No in base 16.
Decimal point position 10 ⁰ to 10 ⁴	Indicate the decimal point position.
[HH]_Comparator	Turn ON when satisfying the setting conditions of the [HH] comparator.
[HI]_Comparator	Turn ON when satisfying the setting conditions of the [HI] comparator.
Working properly_Passed	Turn ON when not satisfying the setting conditions of all comparators.
[LO]_Comparator	Turn ON when satisfying the setting conditions of the [LO] comparator.
[LL]_Comparator	Turn ON when satisfying the setting conditions of the [LL] comparator.
Detecting	Turn ON during the detecting interval.
Holding	Turn ON during the holding interval.
Inflection point / Extreme value	Turn ON when inflection point or extreme value is detected.
SD Error	Turn ON when SD card can not read / write. When "Waveform comparison *** mode" is selected, SD error is turned ON even if comparison waveform is not registered.
SD	Turn ON while accessing the SD card.
OVER error (input)	Turn ON when the sensor input is exceeding the input range.
OVER error (indicated value)	Turn ON when the indicated value is lower than -99999 or is exceeding +99999.
Calibration error	Turn ON under the following conditions. ● The sensitivity registering value is exceeding the specified range. ● TEDS Error occurs by "TEDS Auto Cal." or "TEDS Part Cal." .
Memory error	Turn ON when the RAM error or EEPROM error was occurred.
Error status flag	Turn ON when any of the above error was occurred.
Remote READY	Turn ON when the initialization is finished and the [Error status flag] was OFF. Turn OFF when the [Error status flag] turns ON.
Wave comparator HI output	Turn ON when the measured value satisfies the condition of waveform HI.
Wave comparator OK output	Turn ON when the measured value satisfies the condition of waveform OK.
Wave comparator LO output	Turn ON when the measured value satisfies the condition of waveform LO.
Motion detect output	Turn ON when satisfying the Motion detect conditions.

9. LIST OF COMMANDS

All commands are compatible to the [Command processing request 2] / [Command processing response 2].

9-1. COMMANDS FOR THE MEASUREING CONDITION (OPERATION PATTERN)

Function	Item	Command				Pre-set value
Comparison Setting	[HH]_Comparator	0	5	1	1	-99999 to +99999
	[HI]_Comparator	0	5	2	1	-99999 to +99999
	[LO]_Comparator	0	5	3	1	-99999 to +99999
	[LL]_Comparator	0	5	4	1	-99999 to +99999

9-2. COMMANDS FOR THE GENERAL SETTINGS

Function	Item	Command				Pre-set value
Comparison Setting	Using Comparator	0	4	1	1	0: Use, 1: Not use
	[HH]_Comparator					
	Using Comparator	0	4	1	2	0: Use, 1: Not use
	[HI]_Comparator					
	Using Comparator	0	4	1	3	0: Use, 1: Not use
	[LO]_Comparator					
	Using Comparator	0	4	1	4	0: Use, 1: Not use
	[LL]_Comparator					
Measure Mode Setting	Comparator Output Logic	0	4	1	5	0: Negative Logic, 1: Positive Logic
	Hysteresis Width	0	4	1	6	0 to 9999
	Operation Mode	0	7	0	1	0: Normal, 1: Peak Hold, 2: Block Peak, 3: Time Peak, 4: Bottom Hold 5: Block Bottom, 6: Time Bottom, 7: Arbitrary Hold, 8: Block Peak-Bottom, 9: Time Peak-Bottom, 10: Block Average, 11: Time Average 12: Block Inflection Hold 13: Time Inflection Hold 14: Block Maximal / minimal Hold 15: Time Maximal / minimal Hold 16: Block Peak / Average Hold 17: Time Peak / Average Hold 18: Block Bottom / Average Hold 19: Time Bottom / Average Hold 20: Block Peak / Arbitrary Hold 21: Time Peak / Arbitrary Hold 22: Block bottom / Arbitrary Hold 23: Time bottom / Arbitrary Hold 24: Previous Value Comparison Peak Hold 25: Block Previous Value Comparison Peak Hold 26: Time Previous Value Comparison Peak Hold 27: Previous Value Comparison Bottom Hold 28: Block Previous Value Comparison Bottom Hold 29: Time Previous Value Comparison Bottom Hold

Function	Item	Command				Pre-set value
Measure Mode Setting	Display Mode	0	7	0	2	0: Normal Disp. 1: Hold Disp.
	Comparison Mode	0	7	0	3	0: Normal Comp. 1: Hold Comp.
	Delay Time	0	7	0	4	0.00 to 9.99 sec.
	Detect Time	0	7	0	5	0.00 to 9.99 sec.
	Detection trigger level	0	7	1	1	-99999 to 99999
	Detection trigger way	0	7	1	2	0: Rising 1: Falling 2: Both
	Inflection point discrimination time (Time:1)	0	7	2	1	0.01 to 1.00 sec.
	Inflection point discrimination time (Time:2)	0	7	2	2	0.01 to 1.00 sec.
	Inflection point discrimination value	0	7	2	3	1 to 99999
	Extreme value discrimination setting Width	0	7	3	1	1 to 99999
	Extreme value discrimination setting Magnitude	0	7	3	2	0.1 to 5.0 times.
	Initial value for compare with measuring value in previous value comparing mode	0	7	4	1	-99999 to 99999
Motion Detect	Motion Detect Function	0	8	0	1	0: Enable 1: Disable
	Motion Detect Width	0	8	1	1	0 to 99999
	Motion Detect Time	0	8	1	2	0.01 to 9.99 sec.
	Comparator Motion Detect Logic	0	8	2	1	0: Negative Logic, 1: Positive Logic
Sensitivity Registering Calibration	Rated output	2	1	0	1	-3.2000 to +3.2000 mV/V (Sensitivity registering calibration only)
	Rated display	2	1	0	2	-99999 to +99999
	Decimal point position	2	1	0	3	0:None 1:0.0 2:0.00 3:0.000 4:0.0000
	No-Load Zero	2	1	0	4	(No set value.)
	Unit	2	1	0	5	1 to 79 (Refer to “9-4 UNIT LIST.”)
Actual Load Calibration.	Rated display	2	1	0	6	-99999 to 99999
Numeric Registering Calibration	Initial value of transducer	2	1	1	1	-3.2000 to +3.2000 mV/V
BV selection		2	1	2	1	0: 10 V, 1: 2 V

Function	Item	Command				Pre-set value
Smoothing	The number of moving averaging times	2	2	0	1	0:None 1:2 times 2:4 times 3:8 times 4:16 times 5:32 times 6:64 times 7:128 times 8:256 times 9:512 times 10:1024 times 11:2048 times
	Minimum scale	2	2	0	2	0:1 1:2 2:5 3:10 4:20 5:50 6:100
	Analog filter	2	2	0	3	0:1 Hz 1:30 Hz 2:300 Hz 3:None (1 kHz or more)
Additional value	Additional value	2	3	0	1	-99999 to +99999
ZERO compensation	Compensation range	0	9	0	1	0 to +99999
	Judging time	0	9	0	2	0.0 to 9.9 sec
	Zero nearly zero	0	9	0	3	0 to 9
Waveform Display Setting 1	Y-axis Setting End Point	1	3	0	1	0:250, 1:500, 2:1000 3:2000 4:5000 5:10000 6:20000 7:50000 8:100000 9: 200000
	X-axis Setting End Point	1	3	0	2	0: 0.5 sec, 1: 1.0 sec, 2: 2.0 sec, 3: 5.0 sec, 4: 10.0 sec, 5: 20.0 sec, 6: 50.0 sec, 7: 100.0 sec
	Y-axis Setting Start Point	1	3	0	3	-99999 to +99999
Waveform Display Setting 2	Start Mode of Wave	1	3	1	1	0: External Trigger Mode, 1: Trigger Mode, 2: Single Trigger Mode, 3: Wave Comp. External Trigger Mode, 4: Wave Comp. Trigger Mode, 5: Wave Comp. Single Mode
	Level Passed Way	1	3	2	2	0: Rising, 1: Falling, 2: Both
	Passed Level	1	3	3	3	-99999 to 99999
	Hold Time of Wave	1	3	4	4	0.0 to 99.9 sec.
System	Key Lock	1	1	0	1	0: Release, 1: Lock (When restarting, the setting is not memorized.)
	Measuring Condition Selecting Signal	1	5	0	2	0: Key Operation, 1: Control Input, 2: Command
	Backlight Time	1	5	1	1	0 to 99 minute
	Language	1	5	2	1	0: Japanese, 1: English
	Clock 1 (Year, Month, Day)	1	5	3	1	Year:00 to 99(Last 2 digits), Month:01 to 12, Day:01 to 31
	Clock 2 (Hour, Minute, Second)	1	5	3	2	Hour:00 to 23, Minute:00 to 59, Second:00 to 59
	Comparator Display Color	1	5	5	1	0: Normal 1: All Red 2: All White 3: All Yellow

9-3. COMMANDS FOR THE CONTROL INPUT SIGNALS

Function	Item	Command				Pre-set value
Control input signals	ZERO command ON	0	0	0	0	11
	RESET command ON	0	0	0	0	13
	HOLD command ON	0	0	0	0	15
	Waveform command ON	0	0	0	0	17
	TEDS command ON	0	0	0	0	19

9-4. UNIT LIST

The left numbers are command parameters or return value format of the communication (CC-Link).

Force and Mass		Pressure		Torque		Displacement		Others			
01	mN	14	Pa	30	mN · m	39	μm	45	(None)	64	°C
02	N	15	hPa	31	N · m	40	mm	46	μV	65	K
03	kN	16	kPa	32	kN · m	41	cm	47	mV	66	m/s ²
04	MN	17	MPa	33	MN · m	42	m	48	V	67	G
05	mgf	18	gf/mm ²	34	gf · cm	43	km	49	kV	68	Gal
06	gf	19	kgf/mm ²	35	kgf · cm	44	inch	50	μA	69	No.
07	kgf	20	tf/mm ²	36	gf · m			51	mA	70	m ³
08	tf	21	gf/cm ²	37	kgf · m			52	A	71	ml
09	mg	22	kgf/cm ²	38	tf · m			53	kA	72	l
10	g	23	tf/cm ²					54	mΩ	73	kl
11	kg	24	atm					55	Ω	74	%
12	t	25	mmHg					56	kΩ	75	‰
13	ton	26	mmH ₂ O					57	W	76	ppm
		27	mmAq					58	kW	77	/s
		28	mbar					59	VA	78	/min
		29	psi					60	με	79	/h
								61	μm/m		
								62	μV/V		
								63	mV/V		

10. SETTING PROCEDURES

MEMO

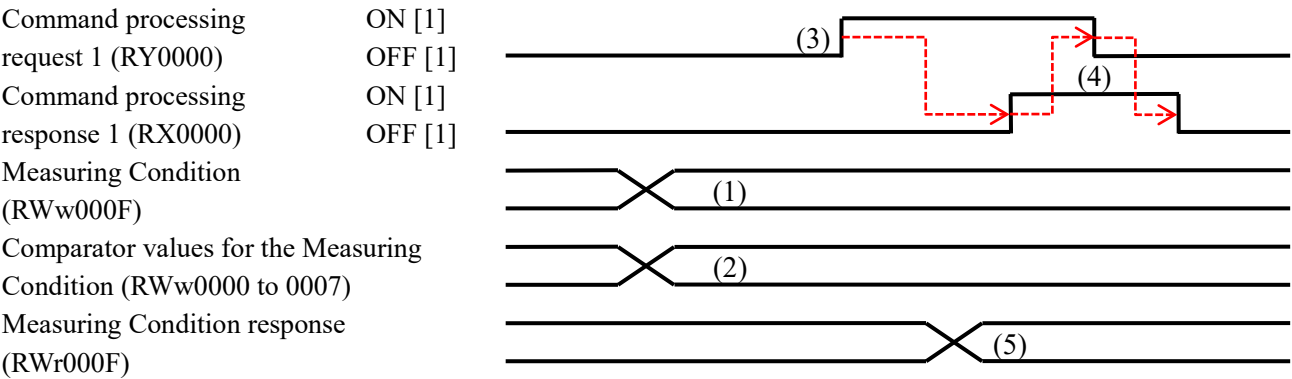
Indicate the buffer address when the No. of occupied stations is "4."

10-1. TO WRITE THE PRE-SET VALUES OF THE MEASUREING CONDITION (OPERATION PATTERN) LIMITED DATA (BY USING THE REQUEST 1)

The [command processing request 1] writes the pre-set values (comparator values) of the Measuring Condition limited data.

When the product turns ON the [Command processing request 1] with the [Command processing request 1], [Command processing request 2], [Command processing response 1], and [Command processing response 2] are all OFF, the command writes the pre-set values in the product. The [command processing request 1] saves the comparator values in the specified Measuring Condition No.

- (1) Enter the Measuring Condition No. in the [Measuring Condition] of the Remote register M → R.
- (2) Enter the comparator values in the [[HH] comparator value_H/L, [HI] comparator value_H/L. [LO] comparator value_H/L. [LL] comparator value_H/L] of the Remote register M → R.
- (3) Change the [Command processing request 1] of the remote output. OFF [0] → ON [1]
- (4) Make sure the change of the [Command processing response 1] of the remote input. OFF [0] → ON [1]
Then change the [Command processing request 1] of the remote output. ON [1] → OFF [0]
Please execute as soon as [command processing response 1] turns from OFF[0] to ON[1].
- (5) The product stores the response in the [Measuring Condition response] of the remote register R → M.

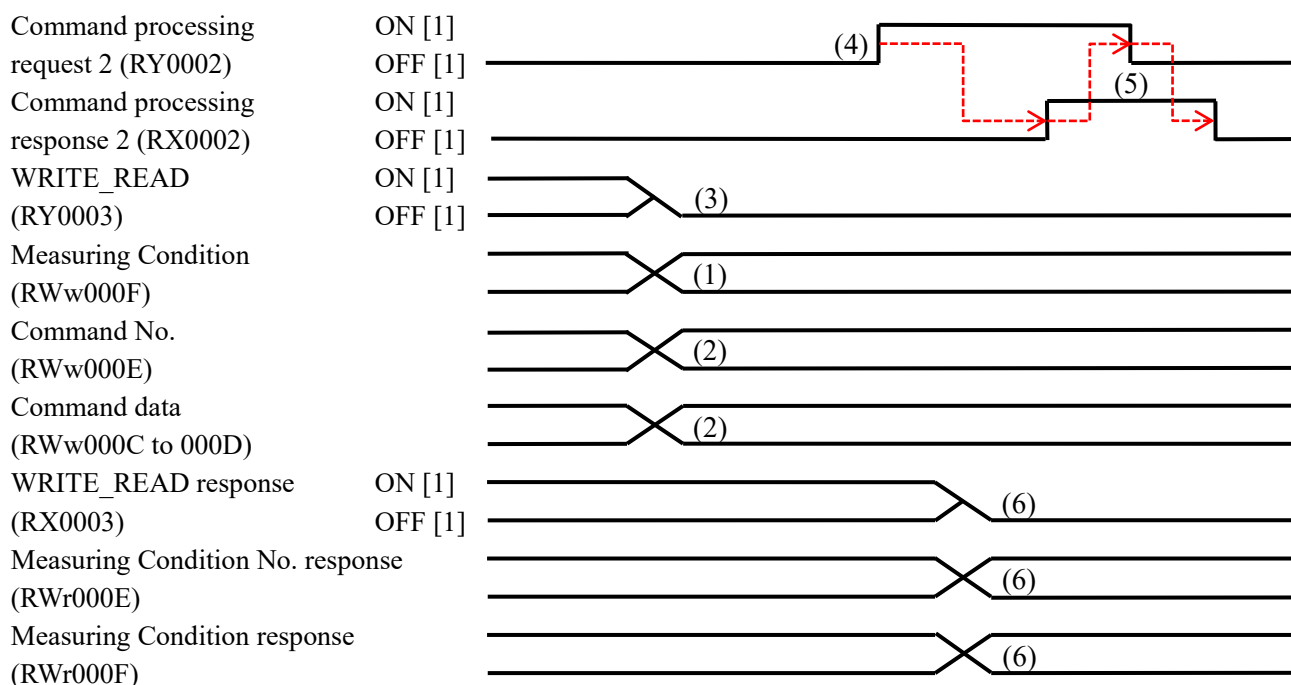


10-2. TO WRITE THE PRE-SET VALUES OF THE COMMANDS (BY USING THE REQUEST 2)

To write the pre-set value in the product, set the [WRITE_READ] to "OFF."

When the product turns ON the [Command processing request 2] with the [Command processing request 1], [Command processing request 2], [Command processing response 1], and [Command processing response 2] are all OFF, the command writes the pre-set values in the product

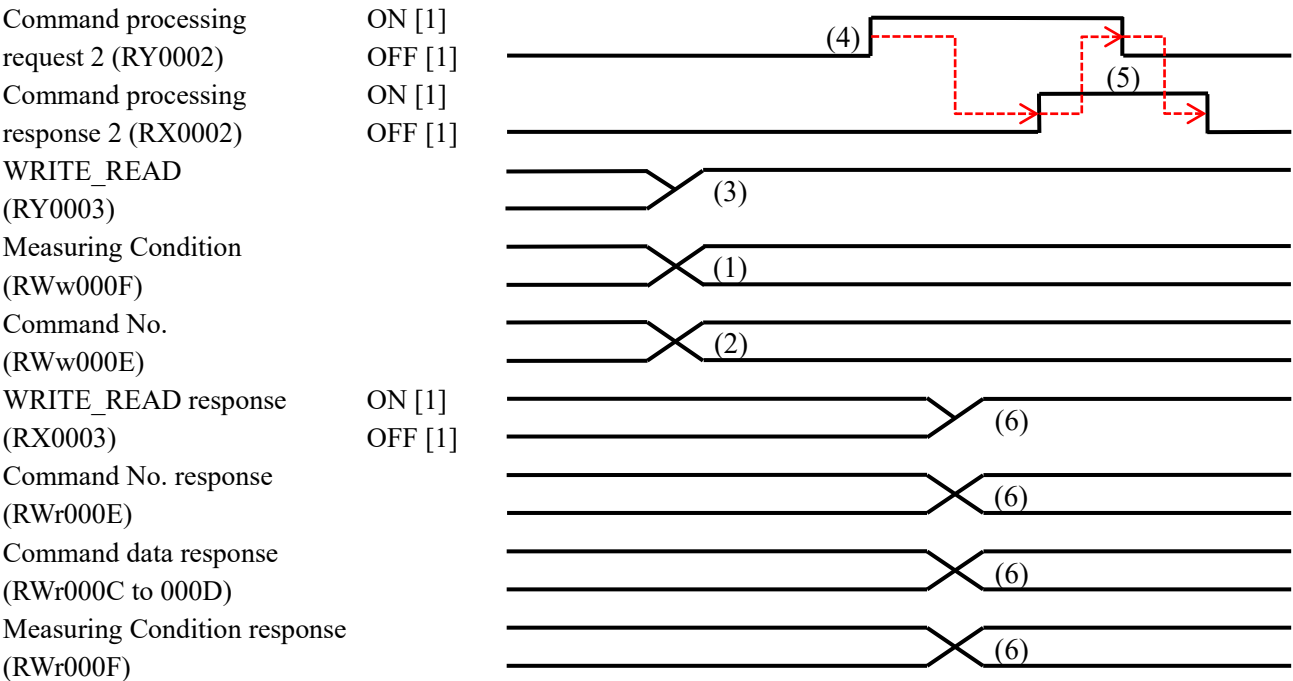
- (1) With the commands for the Measuring Condition (for details, see "10-1. TO WRITE THE PRE-SET VALUES OF THE MEASUREING CONDITION (OPERATION PATTERN) LIMITED DATA (BY USING THE REQUEST 1)"), enter the measuring condition in the [Measuring Condition] of the remote register M → R. You are not required to set the item with the commands for the general settings and commands for the control input signals.
- (2) Enter values in the [Command No.] and [Command data] of the remote register M → R.
- (3) Change the [WRITE_READ] of the remote output is OFF.
- (4) Change the [Command processing request 2] of the remote output. OFF [0] → ON [1]
- (5) Make sure the change of the [Command processing response 2] of the remote input. OFF [0] → ON [1]
Then change the [Command processing request 1] of the remote output. ON [1] → OFF [0]
Please execute as soon as [command processing response 2] turns from OFF[0] to ON[1].
- (6) The product stores the response in the [WRITE_READ response] of the remote input and in the [Command No. response] and [Measuring Condition response] of the remote register R → M.



10-3. TO READ THE PRE-SET VALUES OF THE COMMANDS (BY USING THE REQUEST 2)

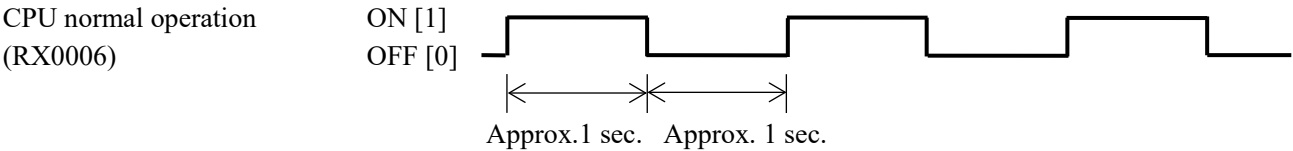
To read the pre-set values from the product, set the [WRITE/READ] to "ON." The product outputs the pre-set values. Before reading the [Command data response], make sure the [Command processing response 2] is "ON."

- (1) With the commands for the Measuring Condition (for details, see "10-1. TO WRITE THE PRE-SET VALUES OF THE MEASUREING CONDITION (OPERATION PATTERN) LIMITED DATA (BY USING THE REQUEST 1)"), enter the measuring condition in the [Measuring Condition] of the remote register M → R. You are not required to set the item with the commands for the general settings and commands for the control input signals.
- (2) Enter the commands in the [Command No.] of the remote register M → R.
- (3) Make sure the [WRITE/READ] of the remote output is ON.
- (4) Change the [Command processing request 2] of the remote output. OFF [0] → ON [1]
- (5) Make sure the change of the [Command processing response 2] of the remote input. OFF [0] → ON [2]
Then change the [Command processing request 2] of the remote output. ON [1] → OFF [0]
Please execute as soon as [command processing response 2] turns from OFF[0] to ON[1].
- (6) The product stores the response in the [WRITE/READ response] of the remote input and in the [Command No. response], [Command data response], and [Measuring Condition response] of the remote register R → M. Check the contents of the [Command data response].



10-4. CPU NORMAL OPERATION

You are able to check whether the product is working properly by using the CPU normal operation. The product turns ON and OFF the CPU normal operation every second when the product is working properly.



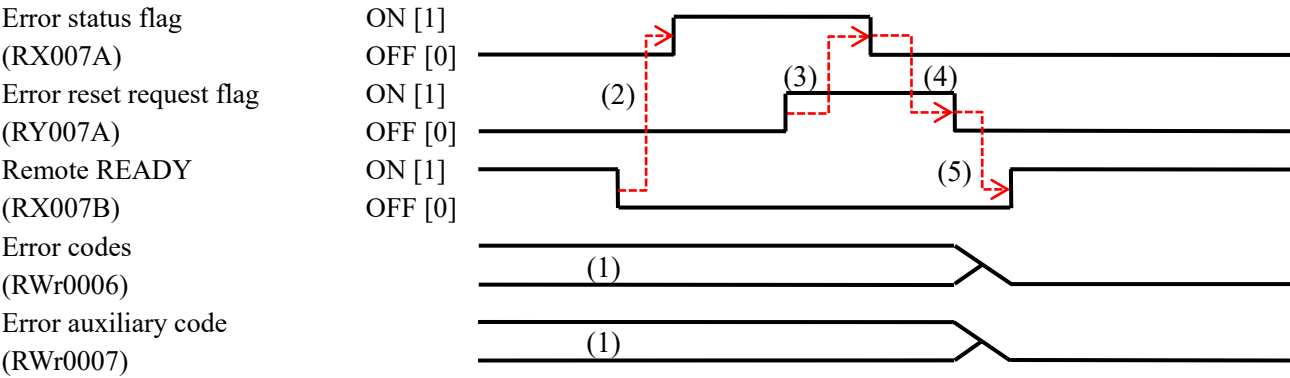
NOTE

“CPU normal operation” may temporarily stop when various settings are in progress.

10-5. ERROR STATUS FLAG

When an error occurs ((1)) on the product, the product turns OFF the [Remote READY] and turns ON the [Error status flag] ((2)).

Turn ON the [Error reset request flag] ((3)) from the master, to turn OFF the [Error status flag] ((4)) and to turn ON the [Remote READY] ((5)).



11. TROUBLE SHOOTING

In the event that the product would not operate as expected or in a stable manner, you should trace the factor(s) that may be causing such a condition before concluding that the system has failed.

Items to be checked and countermeasure against various phenomena are described in the following table.

If troubles are not solved despite countermeasures, contact KYOWA or our representative.

If the product is damaged due to any causes other than as written in the Instruction Manual or if the user has disassembled or remodeled the product, Kyowa Electronic Instruments Co., Ltd. may not be able to offer repair service.

For troubles and countermeasures relating to the main unit, see WGA-910A INSTRUCTION MANUAL.

11-1. The setting isn't changed by the commands

- Make sure the value of the command are correct.
⇒ The [Command processing response 2 flag] does not appear when the command is invalid.
See the "9" in this manual and make sure the setting value.
- Make sure the error code in the buffer address.
⇒ See "8-2-2" and make sure the error code.
See "8-3-3" and make sure the error content to make the countermeasure.

11-2. Displaying Errors

- For details, see "9" in the INSTRUCTION MANUAL.
- Make sure the error code in the buffer address.
⇒ See "8-2-2" and make sure the error code.
See "8-3-3" and make sure the error content to make the countermeasure.

11-3. The measured value does not change

- For details, see "9" in the INSTRUCTION MANUAL.
- Make sure the CC-Link cable connection method are correct.
⇒ Correctly connect them based on the connector or PLC (sequencer).

11-4. The measured value varies

- For details, see "9" in the INSTRUCTION MANUAL.
- Make sure the CC-Link cable connection method are correct.
⇒ Correctly connect them based on the connector or PLC (sequencer).

11-5. Operation stops and accepts no instruction at all

- The operation failed due to noise.
⇒ Turn OFF the power and turn ON again. If the same phenomenon still generates due to noise, take appropriate countermeasures for removing the noise from operating environment, power supply, etc. For details, see the following "Noisy" part.

11-6 Noisy

- For details, see "9" in the INSTRUCTION MANUAL.
- Connect the shield of CC-Link cable to the GND terminal.

12. MAINTENANCE

For the product, the following items should be serviced for scheduled maintenance.
Maintenance service should be performed at the intervals specified below.

(1) Calibration of apparatus

An annual maintenance inspection is recommended to ensure the operation and measuring accuracy of the product.

Must be returned to KYOWA for the scheduled maintenance inspection.

(2) Replacement of limited life parts

Item	Content	Frequency
Aluminum electrolytic capacitor	The signal-noise ratio will lower due to capacity shortage or smoke will be emitted due to liquid leak, resulting in a malfunction of the product. Service life, depends on the frequency of use and ambient temperature, is approximately 5 years at 25 °C. Overhaul the product every 5 years.	Every 5 years
Lithium battery	When the battery is died, the clock function is reset to the default settings after turning ON the power. The startup window is also reset to the default settings. Service life, depends on the frequency of use and ambient temperature, is approximately 5 years. Replace the product every 5 years.	Every 5 years

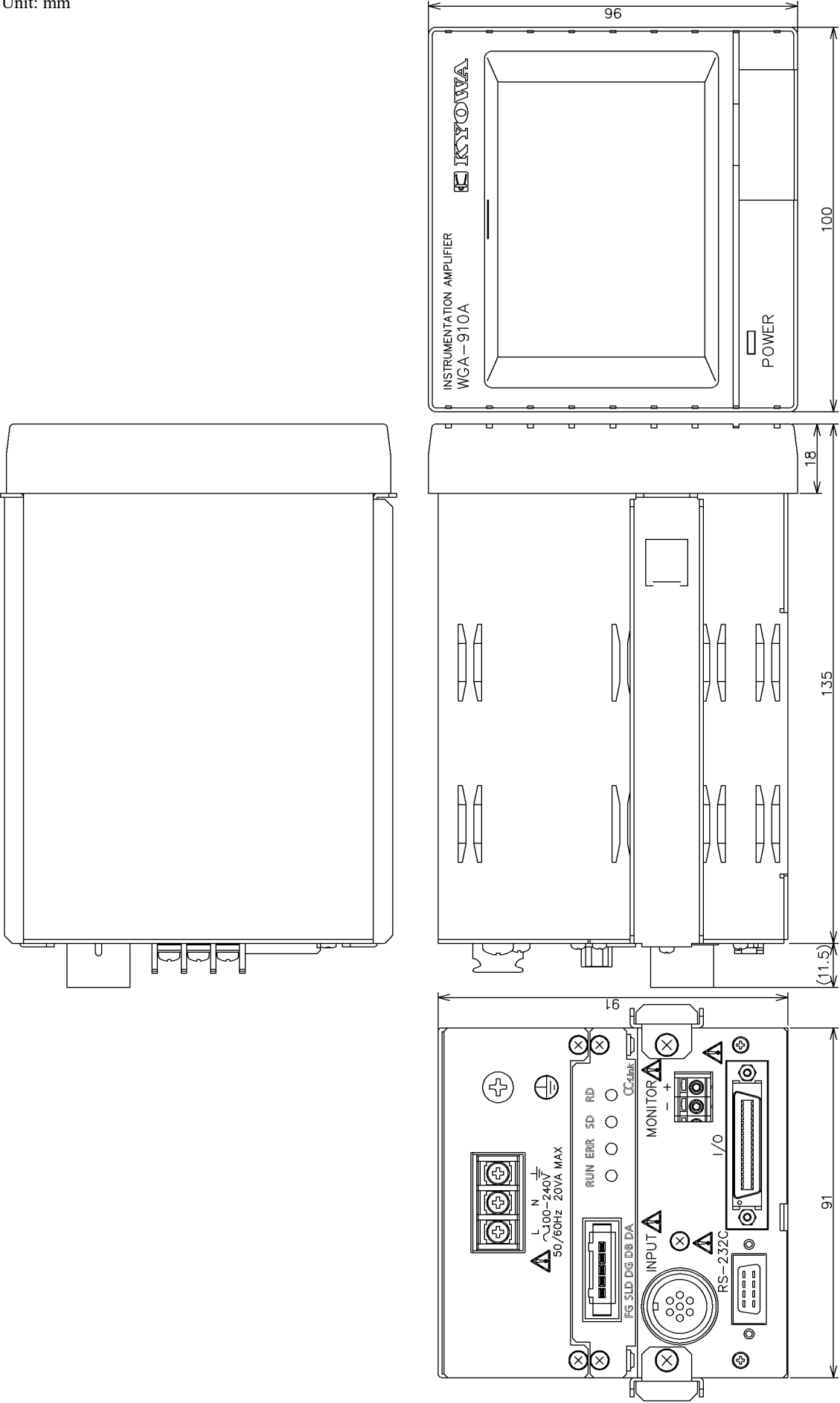
The above figure is only a rough indication. We do not promise or guarantee that the product is error-free or will be repaired at no additional cost during the above period.

To operate the product normally, finding a sign of the product failure early by daily/periodic inspections and taking the corrective action are required.

We do not guarantee any damage resulting from the user's failure to comply with the safety precautions. Replacement will be charged within the warranty period.

13. OUTSIDE DRAWING

Unit: mm





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