General Specifications

Model UD310
Manual Setter

NEW GREEN SERIES

GS 05F01F12-01E

■ GENERAL

The UD310 manual setter has PV display, and transmit 4 to 20 mA DC by manual operation. It can be used as a remote setter for digital indicating controllers like UTAdvanced series controllers.

The SP (target setpoint) will be output in 3 seconds after the change.

The TC, RTD or Voltage input is possible as PV input. When the PV display is not necessary, it can be disappeared.

The two alarm outputs and a PV retransmission output are provided as standard.

The front panel has a splash-proof and dust-proof design (IP65), which enables the use in the dusty environment.

■ MODEL AND SUFFIX CODES

Model	Suffix code	Description
UD310	·····	Manual Setter 4 to 20 mA DC output (48×48×100 mm)
Fixed code	–0 ·····	Always 0
Fixed code	0 ·····	Always 0
Option	/V24	Power Supply 24 V DC / 24 V AC

* 2 Alarm outputs and PV retransmission output in 4 to 20 mA built in as standard.

Check the package contents against the list below.
- Manual Setter ····· 1
- Mounting bracket ····· 1
- User's manual ····· 1

■ SPECIFICATIONS

PV / SP display		4-digit PV / 4-digit SP
Input type		Universal inputs
	Thermocouple	K, J, T, E, R, S, B, N, L, U, Platinel 2
	RTD	Pt100, JPt100
	Voltage(mV, V)	0 to 100 mV, 0 to 5 V, 1 to 5 V, 0 to 10 V
Input accuracy	Thermocouple	±2°C±1digit
	RTD	±1°C±1digit
	Voltage(mV, V)	±0.3%±1digit
Sampling period for PV		500 ms.
Number of manual setpoint (SP)		1
Manual setting output		4 to 20 mA DC
PV Retransmission output, can be scaled		4 to 20 mA DC
Alarm output	Number of outputs	2 relay contacts, COM terminal is common
	Types	22 types
Power supply		100 to 240 V AC or 24 V AC/DC(option)
Safety and EMC standard		CSA, CE and UL
Construction (front protection)		IP65
Dimensions and weight		48(W)×48(H)×100(depth from panel face)mm, approx. 200g

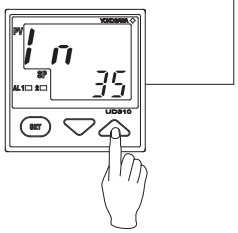
UD310

■ MEASURED VALUE INPUT

The UD310 allows you to freely change the input type by software.

● **UD310 Measured Input Type and Ranges**

Input type		Range (°C)		Range code (°C)	Range (°F)	Range code (°F)
Unspecified				OFF		
Thermocouple	K	–270 to 1370°C		1	–300 to 2500°F	31
		0.0 to 600.0°C		2	32.0 to 999.9°F	32
		0.0 to 400.0°C		3	32.0 to 750.0°F	33
		–199.9 to 200.0°C		4	–300 to 400°F	34
	J	–199.9 to 999.9°C		5	–300 to 2100°F	35
	T	–199.9 to 400.0°C		6	–300 to 750°F	36
	E	–199.9 to 999.9°C		7	–300 to 1800°F	37
	R	0 to 1700°C		8	32 to 3100°F	38
	S	0 to 1700°C		9	32 to 3100°F	39
	B	0 to 1800°C		10	32 to 3200°F	40
	N	–200 to 1300°C		11	–300 to 2400°F	41
	L	–199.9 to 900.0°C		12	–300 to 1600°F	42
	U	–199.9 to 400.0°C		13	–300 to 750°F	43
	Platinel 2	0 to 1390°C		14	32 to 2500°F	44
RTD	Pt100	–199.9 to 850.0°C		15	–199.9 to 999.9°F	45
		0.0 to 400.0°C		16	32.0 to 750.0°F	46
		–199.9 to 200.0°C		17	–300 to 400°F	47
		–19.9 to 99.9°C		18	–199.9 to 999.9°F	48
	JPt100	–199.9 to 500.0°C		19		
DC voltage	0 to 100 mV	0.0 to 100.0	User-scalable	20		
	0 to 5 V	0.000 to 5.000		21		
	1 to 5 V	1.000 to 5.000		22		
	0 to 10 V	0.00 to 10.00		23		



For example, to select thermocouple type J (°F), set the range code to 35.

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■ HARDWARE SPECIFICATIONS

Measured Value (PV) Input

Input: 1 point
Input type: Universal; can be selected by software
Input accuracy (at 23 ±2°C ambient temperature)
• Thermocouple: ±2°C ±1digit
However,
•±4°C for thermocouple input –270 to –100°C
•±3°C for thermocouple input –100 to 0°C
•±5°C for types R and S (±9°C for 0 to 500°C)
•±9°C for type B (accuracy is not guaranteed for 0 to 400°C)
• RTD: ±1°C ±1digit
• Voltage(mV, V) : ±0.3% ±1digit
Sampling period for measured value input: 500 ms
Burn-out detection: Functions for thermocouple or RTD input (burn-out upscale only; cannot be switched off)
Input resistance: 1 MΩ or greater for thermocouple or DC mV input. Approx. 1 MΩ for DC V input
Maximum allowable signal source resistance :
250 Ω for thermocouple or DC mV input
2 kΩ for DC V input
Maximum allowable wiring resistance for RTD input:
10 Ω/wire (The resistance values of three wires must be the same.)
Allowable input voltage:
±10 V DC for thermocouple or DC mV input
±20 V DC for DC V input
Noise rejection ratio (50/60Hz):
Normal mode noise: Min. 40dB
Common mode noise: Min. 120dB (Min. 90dB for DC V input)
Error of reference junction compensation:
±1.5°C (at 15-35°C)
±2.0°C (at 0-50°C)
The reference junction compensation cannot be switched off.
Applicable standards:
Thermocouple and resistance temperature detector(RTD)
JIS/IEC/DIN (ITS90)

Manual Setting (SP) Output

SP (target setpoint) will be output in 3 seconds after the change.
Output: 1 point
Output type: Current output
Output signal: 4 to 20 mA current output
Maximum load resistance: 600 Ω
Output accuracy: ±0.3% of span
(at 23±2°C ambient temperature)

Alarm Functions

● Alarm Functions
Alarm types: 22 types
(waiting action can be set by software):
PV high limit, PV low limit, Deviation high limit, Deviation low limit, De-energized on deviation high limit, De-energized on deviation low limit, Deviation high and low limits, Deviation within high and low limits, Deenergized on PV high limit, De-energized on PV low limit, Fault diagnosis output, FAIL output
Alarm output: 2 relay contacts
Relay contact capacity: 1 A at 240 V AC or 1 A at 30 V DC (with resistance load)
(COM terminal is common)
Note: The alarm output relays cannot be replaced by users

Retransmission Output

Output signal: Measured value in 4-20 mA DC, can be scaled.
Maximum load resistance: 600 Ω
Output accuracy: ±0.3% of span
(at 23±2°C ambient temperature)

Safety and EMC Standards

Safety: Compliant with IEC/EN61010-1 (CE), IEC/EN61010-2-030 (CE), approved by CAN/CSA C22.2 No.61010-1 (CSA), approved by UL61010-1.
Installation category: II, Pollution degree: 2
Measurement category: I (CAT I) (UL, CSA)
O (Other) (CE)
Rated measurement input voltage: Max. 10 V DC
Rated transient overvoltage: 1500 V (*)
* This is a reference safety standard value for measurement category I of IEC/EN/CSA/UL61010-1. This value is not necessarily a guarantee of instrument performance.
EMC standards: Complies with EN61326
The UD310 manual setter conforms to the standards specified under the following conditions.
All wires except those for the power supply and relay contact output terminals are shielded.
The controller does not fluctuate more than 20% even when noise is applied.
KC marking:
Electromagnetic wave interference prevention standard, electromagnetic wave protection standard compliance

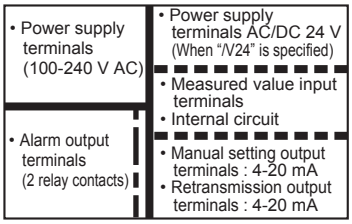
Power Supply and Isolation

● Power Supply

Power supply	Voltage	Rated at 100-240 V AC (±10%) AC/DC 24 V, 20 to 29 V of allowable range when "/V24" is specified.
	Frequency	50 or 60Hz
Maximum power consumption		8 V A max. (4W max.) 3W max. when "/V24" is specified.
Memory		Non-volatile memory
Withstanding voltage	Between primary terminals and secondary terminals (See Notes 1 and 3.)	CE: 3000 V AC for 1 minute (Between relay terminals and secondary terminals 1500 V AC for 1 minute) UL/CSA: 1500 V AC for 1 minute (Note 2)
Insulation resistance	Between primary terminals and secondary terminals (See Notes 1 and 3.)	20 MΩ or more at 500 V DC

Note 1: The primary terminals are the power supply terminals and alarm output terminals. The secondary terminals are the analog input and output terminals.
Note 2: The withstanding voltage is specified as 2300 V AC per minute to provide a margin of safety.
Note 3: AC/DC 24 V terminals are secondary terminals.

● Isolation
The bold lines below indicate reinforced insulation, and the broken line indicates functional insulation.
In case of CE conformity, alternate long and short dash line indicates basic insulation.



Note: The measured value input terminals is isolated from the internal circuit.

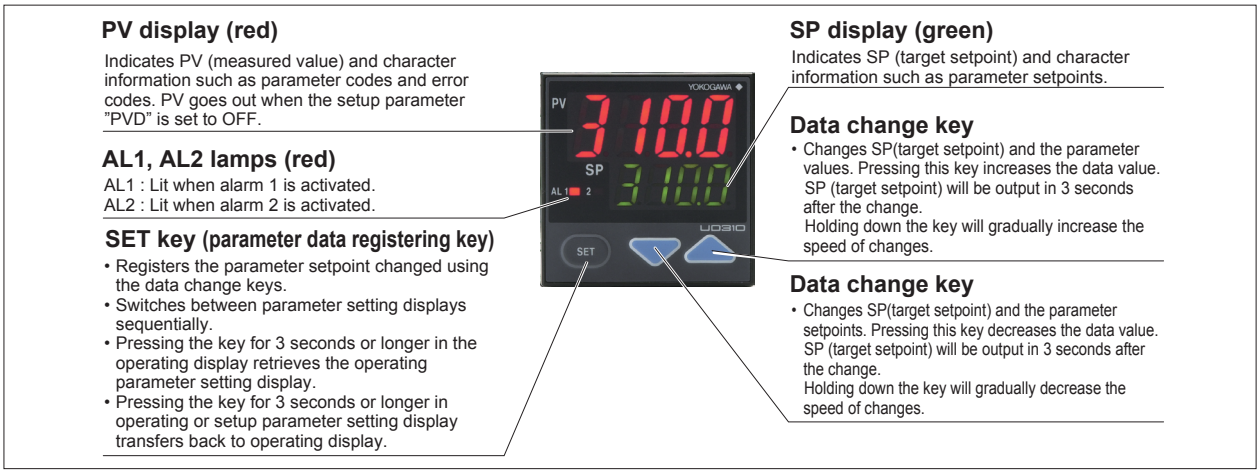
Construction, Mounting, and Wiring

Construction: Dust-proof and splash-proof front panel (compliant with IP65. Splash-proof construction is not available for side-by-side close mounting.
Casing: ABS resin and polycarbonate
Case color: Black
Weight: approx. 200g
Mounting: Flush panel mounting
Wiring: Screw terminals

Environmental Conditions

● Normal Operating Conditions
Warm-up time: At least 30 minutes
Ambient temperature:0-50°C (0-40°C when mounted side-by-side)
Rate of change of temperature: 10°C/h or less
Ambient humidity: 20-90% RH (no condensation allowed)
Magnetic field: 400 A/m or less
Continuous vibrations of 5 to 14Hz: Amplitude of 1.2 mm or less
Continuous vibrations of 14 to 150Hz: 4.9 m/s^2 (0.5G) or less
Short-period vibrations: 14.7 m/s^2 (1.5G) for 15 seconds or less
Shock: 98 m/s^2 (10G) for 11 milliseconds or less
Mounting angle: Upward incline of up to 30 degrees; downward incline is not allowed.
Altitude: 2000 m or less above sea level
● Maximum Effects from Operating Conditions
(1) Temperature effects
Thermocouple, DC mV and DC V input: ±2μV/°C or ±0.02% of F.S./°C, whichever is larger
Resistance temperature detector: ±0.05°C/°C
Analog output: ±0.05% of F.S./°C
(2) Effect from fluctuation of power supply voltage (within rated voltage range)
Analog input: ±0.2μV/V or ±0.002% of F.S./V, whichever is larger
Analog output: ±0.05% of F.S. /V
● Transportation and Storage Conditions
Temperature: –25 to 70°C
Humidity: 5 to 95% RH (no condensation allowed)
Shock: Package drop height 90cm (when packed in the dedicated package)

■ DISPLAY AND OPERATION FUNCTIONS



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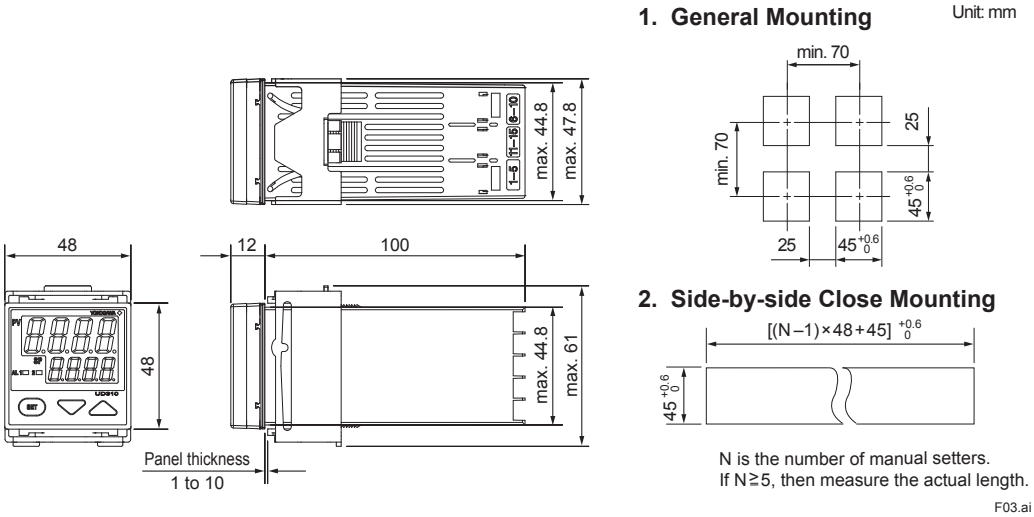
■ EXTERNAL DIMENSIONS AND PANEL CUTOUT DIMENSIONS

Unit: mm



N is the number of manual setters.
If N≥5, then measure the actual length.

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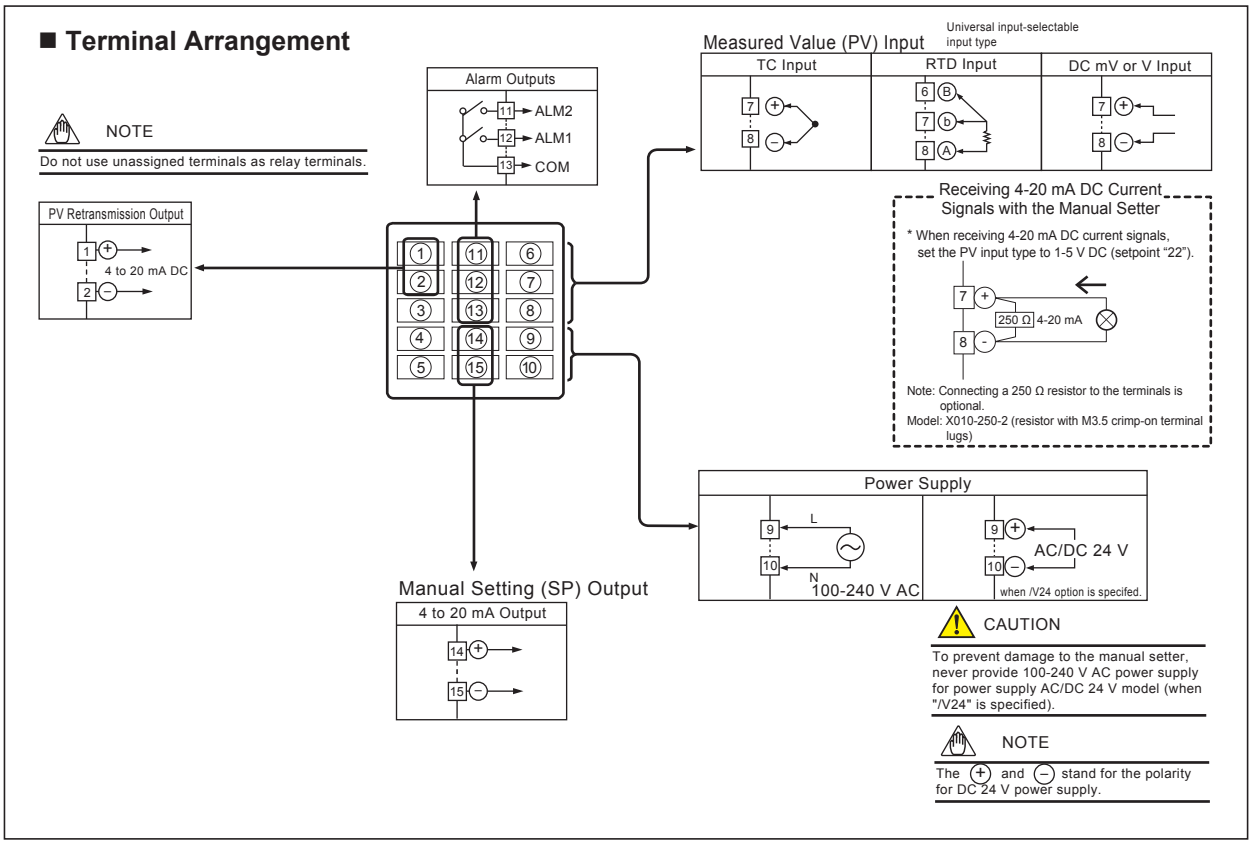
■ TERMINAL ARRANGEMENTS



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