General Specifications

Models UD310/UD320/UD350
Manual Setters

NEW GREEN SERIES

GS 05F01F12-01E

■ General

The UD300 series manual setters have PV display, and transmit 4 to 20mA DC by manual operation. It can be used as a remote setter for digital indicating controllers like GREEN 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 **UD320** **UD350**		UD310 Manual Setter 4 to 20 mADC output (48×48×100 mm) UD320 Manual Setter 4 to 20 mADC output (48×96×100 mm) UD350 Manual Setter 4 to 20 mADC output (96×96×100 mm)
Fixed code	**–0**	Always 0
Fixed code	**0**	Always 0
Option	**/V24**	Power Supply 24V DC / 24V 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 for UD310
  2 for UD320, UD350
- User's manual 1

■ Specifications

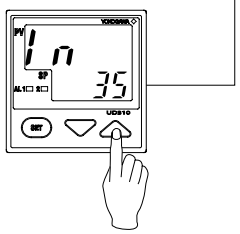
PV / SP display		4-digit PV / 4-digit SP
Input type		Universal inputs
	Thermocouple	K, J, T, E, R, S, B, N, L, U, Platinel 2
	RTD	Pt100, JPt100
	Voltage(mV, V)	0 to 100mV, 0 to 5V, 1 to 5V, 0 to 10V
Input accuracy	Thermocouple	±2°C±1digit
	RTD	±1°C±1digit
	Voltage(mV, V)	±0.3%±1digit
Sampling period for PV		500ms.
Number of manual setpoint (SP)		1
Manual setting output		4 to 20mA DC
PV Retransmission output, can be scaled		4 to 20mA DC
Alarm output	Number of outputs	2 relay contacts, COM terminal is common
	Types	22 types
Power supply		100 to 240 VAC or 24VAC/DC(option)
Safety and EMC standard		CSA, CE and UL
Construction (front protection)		IP65 (UD310), IP55(UD320/UD350)
Dimensions and weight	UD310	48(W)×48(H)×100(depth from panel face)mm, approx. 200g
	UD320	48(W)×96(H)×100(depth from panel face)mm, approx. 300g
	UD350	96(W)×96(H)×100(depth from panel face)mm, approx. 400g

■ Measured Value Input

The UD300 series allows you to freely change the input type by software.

● **UD310/UD320/UD350 Measured Input Type and Ranges**

Input type		Range (°C)		Range code (°C)	Range (°F)	Range code (°F)
Unspecifed				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 100mV	0.0 to 100.0	User-scalable	20		
	0 to 5V	0.000 to 5.000		21		
	1 to 5V	1.000 to 5.000		22		
	0 to 10V	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 –200 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: 500ms
- Burn-out detection: Functions for thermocouple or RTD input (burn-out upscale only; cannot be switched off)
- Input resistance: 1MΩ or greater for thermocouple or DC mV input. Approx. 1MΩ for DC V input
- Maximum allowable signal source resistance : 250Ω for thermocouple or DC mV input 2kΩ for DC V input
- Maximum allowable wiring resistance for RTD input: 10Ω/wire (The resistance values of three wires must be the same.)
- Allowable input voltage: ±10V DC for thermocouple or DC mV input ±20V DC for DC V input
- Noise rejection ratio: Normal mode noise: Min. 40dB (50/60Hz) 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 20mA current output
  Maximum load resistance: 600Ω
  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, De-energized on PV high limit, De-energized on PV low limit, Fault diagnosis output, FAIL output
- Alarm output: 2 relay contacts
  Relay contact capacity: 1A at 240V AC or 1A at 30V 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 4-20mA DC, can be scaled.
- Maximum load resistance: 600Ω
- Output accuracy: ±0.3% of span
  (at 23±2°C ambient temperature)

Safety and EMC Standards

- Safety: Compliant with IEC/EN61010-1: 2001, approved by
  CSA1010, approved by UL508.
  Installation category: CAT. Ⅱ (IEC/EN61010, CSA1010) Pollution degree: 2 (IEC/EN 61010, CSA1010)
  Measurement category: Ⅰ (CAT.1: IEC/EN61010)
  Rated measurement input voltage: 10V DC max. (across terminals), 300 V AC max. (across ground)
  Rated trasient overvoltage: 1500 V (Note)
  Note: It is a value on the safety standard which is assumed by IEC/EN61010-1 in measurement category Ⅰ, and is not the value which guarantees an apparatus performance.
- EMC standards: Complies with EN61326
  The UD300 series manual setters conform 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.

Power Supply and Isolation

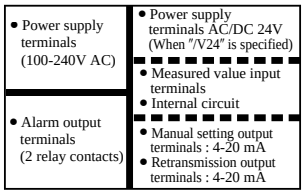
■ Power Supply

Power supply	Voltage	Rated at 100-240VAC (±10%) AC/DC 24V, 20 to 29V of allowable range when "/V24" is specified.
	Frequency	50 or 60Hz
Maximum power consumption		8VA 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.)	1500V AC for 1 minute (See Note 2.)
Insulation resistance	Between primary terminals and secondary terminals (See Notes 1 and 3.)	20MΩ or more at 500V 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 24V terminals are secondary terminals.

■ Isolation

The bold lines below indicate reinforced isolation, and the broken line indicates functional isolation.



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 [Model UD310] and IP55 [Models UD320 and 350]). Splash-proof construction is not available for side-by-side close mounting.
- Casing: ABS resin and polycarbonate
- Case color: Black
- Weight: UD310 - approx. 200g
  UD320 - approx. 300g
  UD350 - approx. 400g
- 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: 400A/m or less
- Continuous vibrations of 5 to 14Hz: Amplitude of 1.2mm or less
- Continuous vibrations of 14 to 150Hz: 4.9m/s² (0.5G) or less
- Short-period vibrations: 14.7m/s² (1.5G) for 15 seconds or less
- Shock: 98m/s² (10G) for 11 milliseconds or less
- Mounting angle: Upward incline of up to 30 degrees; downward incline is not allowed.
- Altitude: 2000m 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

PV display (red)

Indicates PV (measured value) and character information such as parameter codes and error codes. PV goes out when the setup parameter "PVD" is set to OFF.

AL1, AL2 lamps (red)

AL1 : Lit when alarm 1 is activated.
AL2 : Lit when alarm 2 is activated.

SET key (parameter data registering key)

- Registers the parameter setpoint changed using the data change keys.
- Switches between parameter setting displays sequentially.
- Pressing the key for 3 seconds or longer in the operating display retrieves the operating parameter setting display.
- Pressing the key for 3 seconds or longer in operating or setup parameter setting display transfers back to operating display.

SP display (green)

Indicates SP (target setpoint) and character information such as parameter setpoints.

Data change key

- Changes SP(target setpoint) and the parameter values. Pressing this key increases the data value. SP (target setpoint) will be output in 3 seconds after the change.
  Holding down the key will gradually increase the speed of changes.

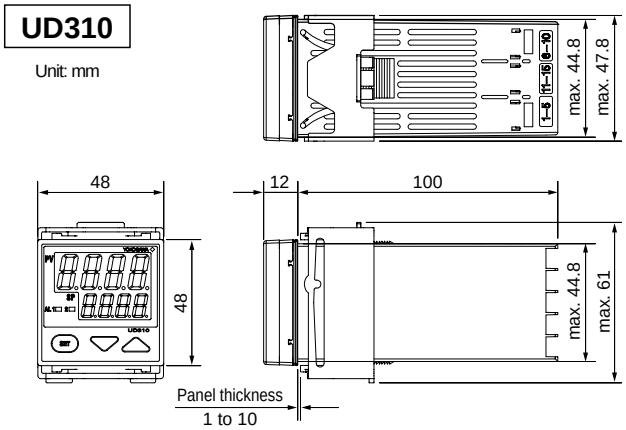
Data change key

- Changes SP(target setpoint) and the parameter setpoints. Pressing this key decreases the data value. SP (target setpoint) will be output in 3 seconds after the change.
  Holding down the key will gradually decrease the speed of changes.

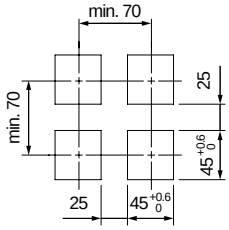
External Dimensions and Panel Cutout Dimensions

UD310

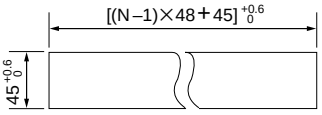
Unit: mm



1. General Mounting



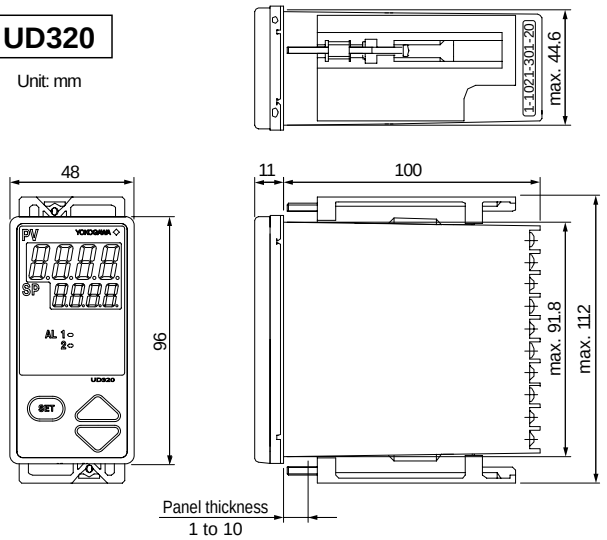
2. Side-by-side Close Mounting



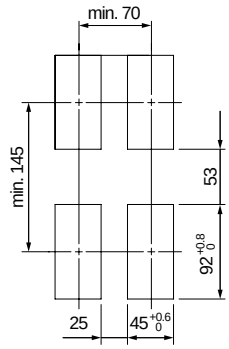
N is the number of manual setters.
If N≧5, then measure the actual length.

UD320

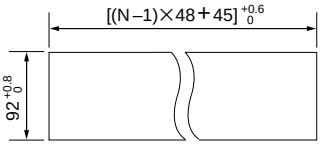
Unit: mm



1. General Mounting



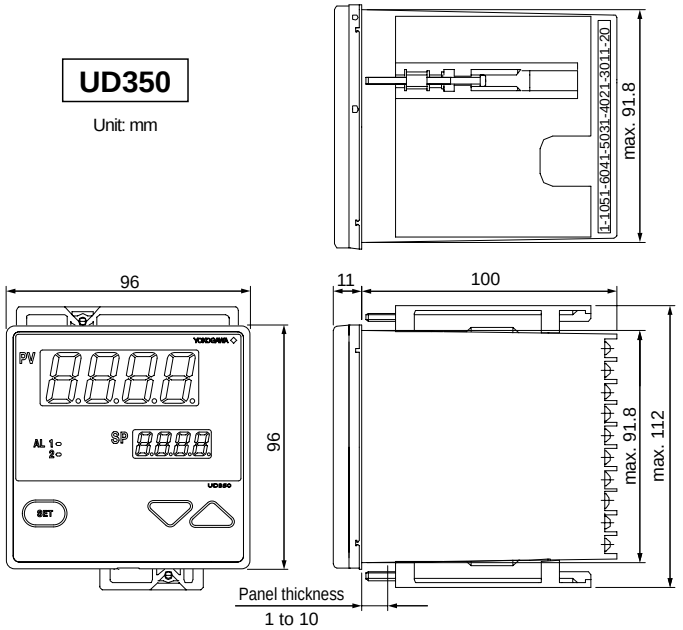
2. Side-by-side Close Mounting



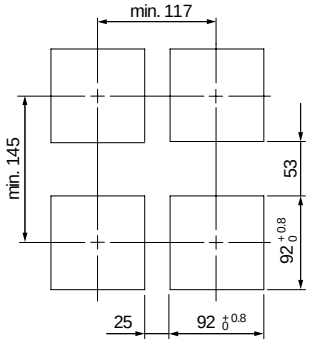
N is the number of manual setters.
If N≧5, then measure the actual length.

UD350

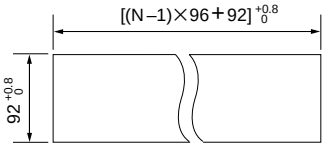
Unit: mm



1. General Mounting



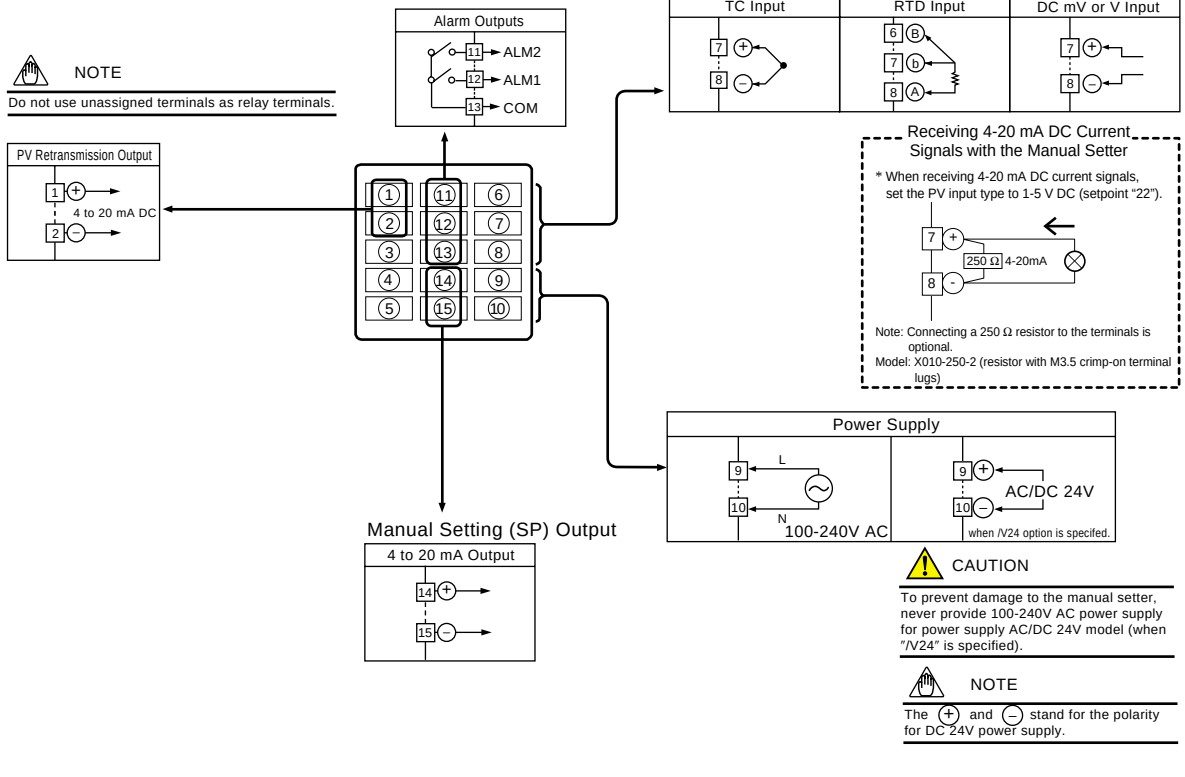
2. Side-by-side Close Mounting



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

■ Terminal Arrangements

■ Model UD310-00 Terminal Arrangement



■ Models UD320-00/UD350-00 Terminal Arrangement

Note:The terminal arrangements of the UD320 and UD350 are the same.