

# Single-Phase / 3-Phase Digital Power Controllers



## DPU1 / DPU3 Series CATALOG

For your safety, read and follow the considerations written in the instruction manual, other manuals and Autonics website.

The specifications, dimensions, etc. are subject to change without notice for product improvement. Some models may be discontinued without notice.

### Features

- High speed and high accuracy by digital control using high speed CPU
- Various controls
  - Phase control, feedback control (constant voltage/constant current/constant power)
  - Zero crossing cycle control (fixed/variable cycles)
  - Zero crossing ON/OFF control
- Improved maintainability with built-in fast-acting fuse and easy fuse replacement
- Communication output model: RS485 (Modbus RTU)
- Various control inputs and DI inputs
  - Control input: analog (current, voltage), ON/OFF (voltage pulse, no voltage), communication (RS485), potentiometer
  - DI input: AUTO/MAN switching, RUN/STOP switching, Reset, output holding, SP designation (6 setting points can be customized)
- Various alarm output
  - Overcurrent, overvoltage, fuse break, heat sink overheat, device fault, heater break alarm (partial heater break detection)
- Improved convenience by separating operation part
- Applicable load
  - Supercantal, platinum, molybdenum, carbon, halogen lamps, chrome, nickel, etc.



### Ordering Information

This is only for reference, the actual product does not support all combinations. For selecting the specified model, follow the Autonics website.

DPU ① ② ③ - ④ ⑤

#### ① Control phase

- 1: Single-phase
- 3: 3-phase

#### ② Power supply

- 1: 110 VAC~
- 2: 220 VAC~
- 3: 380 VAC~
- 4: 440 VAC~

#### ④ Rated current capacity

Number: Rated current capacity (unit: A)

#### ⑤ Option

- R: RS485 communication
- D: Remote display
- A: Remote display + RS485 communication
- N: None

#### ③ Size (rated current capacity)

	Single-phase	3-phase
A	0 to 70 A	0 to 50 A
B	80 to 200 A	70 to 200 A
C	250 to 350 A	
D	400 to 600 A	
E	Option	

### Product Components

- Product
- Bolt × 4
- Instruction manual
- Terminal × 1

### Specifications

Series	DPU1	DPU3
Control phase	Single-phase	3-phase
Rated frequency	50 / 60 Hz (auto recognition), allowable frequency range: ± 2 Hz	
Min. load current	1 A	
Output range	Phase control: 0 to 98 %, Z.C. control: 0 to 100 %	
Control method	<ul style="list-style-type: none"> <li>• Phase control: normal / constant current feedback / constant voltage feedback / constant power feedback</li> <li>• Cycle control (Z.C.): fixed cycle / variable cycle<sup>01)</sup></li> <li>• ON / OFF control (Z.C.)</li> </ul>	
Load	<ul style="list-style-type: none"> <li>• Phase control: resistance load, inductive load</li> <li>• ON / OFF, cycle control : resistance load</li> </ul>	
Phase control output accuracy	<ul style="list-style-type: none"> <li>• Normal: within ± 10 % F.S. of rated load voltage</li> <li>• Constant voltage feedback: within ± 3 % F.S. of rated load voltage (within variable ± 10 % F.S. of rated voltage)</li> <li>• Constant current feedback: within ± 3 % F.S. of rated load current (within variable 1 to 10 times of rated resistance)</li> <li>• Constant power feedback: within ± 3 % F.S. of rated load power (within variable ± 10 % F.S. of rated power, within variable 1 to 10 times of rated resistance)</li> </ul>	
Control input	<ul style="list-style-type: none"> <li>• Auto : 4 - 20 mA / 0 - 20 mA / 0 - 5 VDC≐ / 1 - 5 VDC≐ / 0 - 10 VDC≐ / voltage pulse (0 / 12 VDC≐ (24 VDC≐)) / non-voltage input (ON / OFF) / communication input (RS485)</li> <li>• Manual : internal 10 kΩ adjuster, external 3 to 10 kΩ adjuster (≥ 2 W)</li> </ul>	
Digital input (DI)	AUTO / MAN selectable, RUN / STOP selectable, RESET, output holding, SP set (SP 1 to 6)	
Display type	Control input, load voltage, load current, load power, load resistance, power supply frequency	
Min. display output	Over 2.5 % of rated voltage / current	
RS485 comm.	Modbus RTU method	
Approval	CE EAC	

01) Only for single-phase

Power supply	110 / 220 / 380 / 440 VAC~ model (fan and control power 220 VACs~ 50 / 60 Hz separately)	
Allowable voltage range	Single-phase: 90 to 110 % of power supply 3-phase: 85 to 115 % of power supply	
Power consumption	Single-phase: ≤ 7 W (except fan power) 3-phase: ≤ 10 W (except fan power)	
Display method	<ul style="list-style-type: none"> <li>• Display value and setting value display: 7 segment 4-digit</li> <li>• State display: Single-phase LED × 4, 3-phase LED × 6</li> <li>• Display value percentage display: 11 LED bar</li> </ul>	
Dielectric strength	Between input terminal and power terminal: 2000 VAC~ 50 / 60 Hz for 1 min	
Vibration	0.75 mm double amplitude at frequency of 5 to 55 Hz (for 1 min) in each X, Y, Z direction for 2 hours	
Insulation resistance	≥ 200 MΩ (500 VDC≐ megger)	
Noise immunity	± 2 kV square wave noise (pulse width: 1 μs) by the noise simulator	
Ambient temp.	-10 to 50 °C, storage: -20 to 80 °C (no freezing or condensation)	
Ambient humidity	5 to 90 %RH, storage: 5 to 90 %RH (no freezing or condensation)	

Unit weight (packaged)	Single-phase	3-phase
A	≈ 3.0 kg (≈ 3.2 kg)	≈ 6.5 kg (≈ 7.6 kg)
B	≈ 3.0 kg (≈ 5.6 kg)	≈ 11.5 kg (≈ 13.0 kg)
C	≈ 11.0 kg (≈ 12.1 kg)	≈ 20.0 kg (≈ 21.1 kg)
D	≈ 11.0 kg (≈ 19.3 kg)	≈ 30.8 kg (≈ 35.7 kg)

Communication Interface

■ RS485

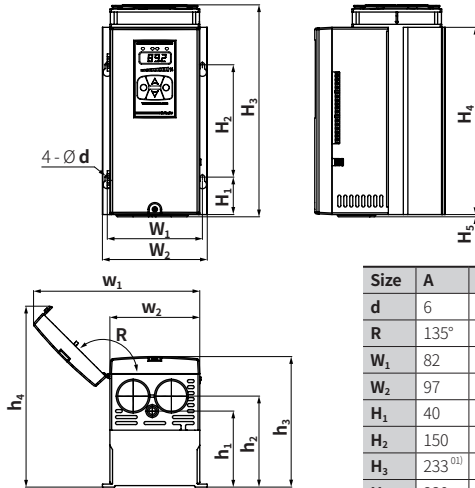
Comm. protocol	Modbus RTU
Application standard	Compliance with EIA RS485
Max. connection	31-unit (address: 01 to 64)
Comm. synchronous method	Asynchronous
Comm. method	2-wire half duplex
Comm. distance	≤ 800 m
Comm. speed	4,800 / 9,600 / 19,200 / 38,400 bps
Comm. response time	5 to 99 ms
Data bit	8-bit (fixed)
Parity bit	Even (fixed)
Stop bit	1-bit (fixed)

Dimensions

- Unit: mm, For the detailed drawings, follow the Autonics website.
- The figure is based on the B size of DPU1.
- The A size 25 / 40 / 50 A model of DPU1 does not have the fan.

Size	A	B	C	D
Allowable cable thickness	≥ AWG4	≥ AWG4/0	≥ AWG300MCM	≥ AWG500MCM

■ DPU1 Series

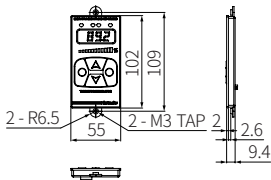


Size	A	B	C	D
d	6	6	7	7
R	135°	135°	160°	160°
W <sub>1</sub>	82	127	193	261
W <sub>2</sub>	97	140	213	278
H <sub>1</sub>	40	50	50	40
H <sub>2</sub>	150	150	200	200
H <sub>3</sub>	233 <sup>01)</sup>	283	342	422
H <sub>4</sub>	230	250	300	380
H <sub>5</sub>	3	3	4	4
w <sub>1</sub>	154	222	368	497
w <sub>2</sub>	80	120	185.6	252.7
h <sub>1</sub>	90	101.5	131	138
h <sub>2</sub>	110	121.5	132	156
h <sub>3</sub>	170.3	174	179	212
h <sub>4</sub>	209.5	241.5	244	296

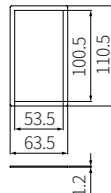
01) Rated current capacity 70 A model: 263

■ Remote display

- Unit



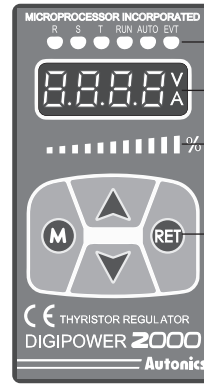
- Plate



- Panel cut-out



Unit Descriptions



01. Indicator

Indicator	Descriptions	Model
R / S / T	Turns ON by display value of display part E.g.) R, S ON → R-S line voltage display	DPU3
RUN	Turns ON for RUN, turns OFF of STOP	DPU1/3
AUTO	Turns ON for AUTO, turns OFF of MANUAL	
EVT	Turns ON for Digital input ON, flashes for alarm output ON	

02. Display part

RUN mode: Displays depending the front display setting  
Setting mode: Displays parameter and setting value

Indicator	Descriptions
V	Turns ON for voltage display
A	Turns ON for current display
V + A	Turns ON for power display, turns OFF for resistance and input value display

03. Bar graph indicator

Turns ON as 0 to 100 % ratio for selected display value.

04. Operation keys

Keys	Descriptions
[M]	To enter parameter mode, monitoring mode and to move between parameters
[▲/▼]	To move setting modes and to set parameters.
[RET]	To return to RUN mode from SET mode