8 kW Type Specifications

Item			PAT20-400T	PAT30-266T	PAT40-200T	PAT60-133T	PAT80-100T	PAT160-50T	PAT250-32T
Input	Nominal input rated voltage		Three-phase 200 V to 240 V, 50 Hz to 60 Hz						
	Input voltage range/Input frequency range		180 V to 250 V / 47Hz to 63 Hz						
	Efficiency		85% (TYP) [at input voltage of 200 VAC and rated load]						
	Power factor		0.95 (TYP) [at input voltage of 200 VAC and rated load]						
	Input current		32 A (MAX) [rated load]						
	Inrush current		100 A peak (MAX)						
	Input power		10 kVA (MAX)						
Output	Rating	Rated output power	8 kW						
		Rated output voltage	20.00 V	30.00 V	40.00 V	60.0 V	80.0 V	160.0 V	250.0 V
		Rated output current	400.0 A	266.0 A	200.0 A	133.0 A	100.0 A	50.0 A	32.00 A
	Constant voltage	Setting accuracy	± (0.2% of rating +50 mV)						
		Max setting voltage	105% of rating						
		Line regulation	± (0.05% of rating +5 mV)						
		Load regulation	± (0.1% of rating +5 mV)						
		Transient response time	5 ms (with sensing at external output, at an instantaneous change in the load current from 50% to 100%)						
		Ripple noise	100 mVp-p	300 mVp-p	300 mVp-p	350 mVp-p			450 mVp-p
			When the measurement frequency band is 10 Hz to 20 MHz						
			10 mVrms	20 mVrms	30 mVrms	30 mVrms			50 mVrms
			When the measurement frequency band is 5 Hz to 1 MHz						
		Raise time	100 ms (rated load)/100 ms (no load)						
		Fall time	100 ms (rated load)/2000 ms (no load)						
		Temperature coefficient	100 ppm/˚C (max) [with external analog control]						
	Constant current*	Setting accuracy	± (0.5% of rating +50 mA)						
		Max setting current	105% of rating						
		Line regulation	± (0.1% of rating +30 mA)						
		Load regulation	± (0.2% of rating +30 mA)						
		Ripple noise	500 mArms	400 mArms	400 mArms	350 mArms	300 mArms	200 mArms	200 mArms
			Output voltage is 10 % to 100 % of the rating when the measurement frequency bandwidth is 5 Hz to 1 MHz.						
		Temperature coefficient	200 ppm/˚C (typ) [with external analog control]						
	OUTPUT ON/OFF delay		OFF. 0.1 to 10.0 s (resolution: 0.1 s)						
Voltage display		Maximum display	99.99					999.9	
		Error	± (0.2% of reading +5 digits) at 23˚C ±5˚C						
Current display		Maximum display	999.9						99.99
		Error	± (0.5% of reading +5 digits) at 23˚C ±5˚C						
Protection function			Overvoltage protection (OVP) / Overcurrent protection (OCP) / Overheat protection (OHP) / Input open phase protection (PHASE) / Fan error protection (FAN) / Mis-connection protection (SENSE) / Breeder circuit overheat protection (BOHP) / Shutdown (SD)						
External analog control		OUTPUT ON/OFF control, etc.	OUTPUT ON/OFF, SHUTDOWN						
		Constant voltage, external voltage control	0% to 100% of the rated output voltage at 0 to 10 V						
		Constant voltage, external resistance control	0% to 100% or 100% to 0% of the rated output voltage at 0 Ω to 10 kΩ						
		Constant current, external voltage control	0% to 100% of tared output current at 0 to 10 V						
		Constant current, external resistance control	0% to 100% or 100% to 0% of rated output currenn at 0 Ω to 10 kΩ						
Monitor output		Output voltage	10.00 V ±0.25 V at rated voltage output						
			0.00 V ±0.25 V at 0 V output						
		Output current	10.00 V ±0.25 V at rated current output						
			0.00 V ±0.25 V at 0 A current						
Status output			OUT ON, CV, CC, ALARM, POWER ON, POWER OFF, insulated open collector						
Remote control			Equipped with RS232C interface as standard. SCPI commands, up to 38,400 bps						
Operating temperature/humidity range			0˚C to 50˚C, 20% to 85% rh						
Storage temperature/humidity range			-25˚C to 70˚C, 90% rh or less (non-condensing)						
Dimensions (maximum)			430 (440)(16.93''(17.32'')) W × 129.2 (155)(5.09''(6.10'')) H × 550 (620)(21.65''(24.41'')) D mm(inch)						
Weight			Approx. 26 kg (57.32 lb)	Approx. 27 kg (59.52 lb)	Approx. 25 kg (55.12 lb)	Approx. 24 kg (52.91 lb)			Approx. 23 kg (50.71 lb)

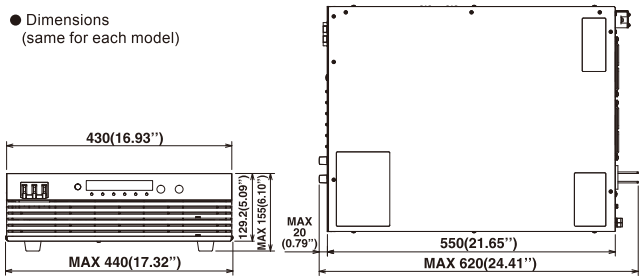
*During constant current operation (set the output voltage at the rated output current greater than equal to the rated output voltage)
Rated load: Refers to a load with a resistance that makes the voltage drop when the rated output current is supplied to be 95 % to 100 % of the maximum output voltage at the rated output current. The output voltage of the PAT including the voltage drop in the load cable must not exceed the maximum output voltage at the rated output current.
No load: Refers to a load with a resistance that makes the voltage drop when the rated output current is supplied to be 10 % of the maximum output voltage or 1 V, whichever is greater, at the rated output current.

8 kW Type Specifications

Item			PAT350-22.8T	PAT500-16T	PAT650-12.3T	PAT850-9.4T	PAT1000-8T	PAT1500-5.3T
Input	Nominal input rated voltage		Three-phase 200 V to 240 V, 50 Hz to 60 Hz					
	Input voltage range/Input frequency range		180 V to 250 V / 47Hz to 63 Hz					
	Efficiency		85% (min) [at input voltage of 200 VAC and rated load]					
	Power factor		0.95 (typical) [at input voltage of 200 VAC and rated load]					
	Input current		32 A (max) [rated load]					
	Inrush current		100 A peak (max)					
	Input power		10 kVA (max)					
Output	Rating	Rated output power	8 kW					
		Rated output voltage	350.0 V	500.0 V	650.0 V	850.0 V	1000.0 V	1500.0 V
		Rated output current	22.80 A	16.00 A	12.30 A	9.40 A	8.00 A	5.30 A
	Constant voltage	Setting accuracy	± (0.2% of rating +50 mV)					
		Max setting voltage	105% of rating					
		Line regulation	± (0.05% of rating +5 mV)					
		Load regulation	± (0.1% of rating +5 mV)					
		Transient response time	5 ms (with sensing at external output, at an instantaneous change in the load current from 50% to 100%)					
		Ripple noise	450 mVp-p	600 mVp-p	600 mVp-p	600 mVp-p	800 mVp-p	1200 mVp-p
			When the measurement frequency band is 10 Hz to 20 MHz					
			50 mVrms	100 mVrms	100 mVrms	100 mVrms	150 mVrms	200 mVrms
			When the measurement frequency band is 5 Hz to 1 MHz					
		Raise time	100 ms (rated load)/100 ms (no load)					
		Fall time	200 ms (rated load)/ 4000 ms (no load)				200 ms (rated load)/ 5000 ms (no load)	200 ms (rated load)/ 6000 ms (no load)
		Temperature coefficient	100 ppm/˚C (max) [with external analog control]					
	Constant current*	Setting accuracy	± (0.5% of rating +50 mA)		± (1% of rating +100 mA)			
		Max setting current	105% of rating					
		Line regulation	± (0.1% of rating +30 mA)					
		Load regulation	± (0.2% of rating +30 mA)					
		Ripple noise	200 mArms	200 mArms	150 mArms	120 mArms		
			Output voltage is 10 % to 100 % of the rating when the measurement frequency bandwidth is 5 Hz to 1 MHz.					
		Temperature coefficient	200 ppm/˚C (typ) [with external analog control]					
	OUTPUT ON/OFF delay		OFF. 0.1 to 10.0 s (resolution: 0.1 s)					
Voltage display		Maximum display	999.9				9999	
		Error	± (0.2% of reading +5 digits) at 23˚C ±5˚C					
Current display		Maximum display	99.99					
		Error	± (0.5% of reading +5 digits) at 23˚C ±5˚C					
Protection function			Overvoltage protection (OVP) / Overcurrent protection (OCP) / Overheat protection (OHP) / Input open phase protection (PHASE) / Fan error protection (FAN) / Mis-connection protection (SENSE) / Breeder circuit overheat protection (BOHP) / Shutdown (SD)					
External analog control		OUTPUT ON/OFF control, etc.	OUTPUT ON/OFF, SHUTDOWN					
		Constant voltage, external voltage control	0% to 100% of the rated output voltage at 0 to 10 V					
		Constant voltage, external resistance control	0% to 100% or 100% to 0% of the rated output voltage at 0 Ω to 10 kΩ					
		Constant current, external voltage control	0% to 100% of tared output current at 0 to 10 V					
		Constant current, external resistance control	0% to 100% or 100% to 0% of rated output currenn at 0 Ω to 10 kΩ					
Monitor output		Output voltage	10.00 V ±0.25 V at rated voltage output					
			0.00 V ±0.25 V at 0 V output					
		Output current	10.00 V ±0.25 V at rated current output					
			0.00 V ±0.25 V at 0 A current					
Status output			OUT ON, CV, CC, ALARM, POWER ON, POWER OFF, insulated open collector					
Remote control			Equipped with RS232C interface as standard. SCPI commands, up to 38,400 bps					
Operating temperature/humidity range			0˚C to 50˚C, 20% to 85% rh					
Storage temperature/humidity range			-25˚C to 70˚C, 90% rh or less (non-condensing)					
Dimensions (maximum)			430 (440)(16.93"(17.32")) W × 129.2 (155)(5.09"(6.10")) H × 550 (620)(21.65"(24.41")) D mm(inch)					
Weight			Approx. 23 kg (50.71 lb)		Approx. 22 kg (48.50 lb)	Approx. 23 kg (50.71 lb)		

● Rear panel (8 kW type PAT40-200T rear panel)

● Dimensions
(same for each model)



4 kW Type Specifications

Item			PAT20-200T	PAT40-100T	PAT60-67T	PAT160-25T
Input	Nominal input rated voltage		Single-phase/three-phase 200 to 240 VAC, 50-60 Hz			
	Input voltage range/Input frequency range		180 V to 250 V / 47 Hz to 63 Hz			
	Efficiency		84% (min)	85% (min) [at input voltage of 200 VAC and rated load]		
	Power factor		0.95 (typical) [at input voltage of 200 VAC and rated load]			
	Input current		Single-phase 22 A (max) [at 3 kW load]/three-phase 17 A (max) [at rated load]			
	Inrush current		50 A peak (max)			
	Input power		Single-phase 4 kVA (max) [at 3 kW load]/three-phase 5 kVA (max) [at rated load]			
Output	Rating	Rated output power	4 kW(three-phase input mode) / 3 kW(single-phase input mode)			
		Rated output voltage	20.00 V	40.00 V	60.00 V	160.0 V
		Rated output current	200.0 A	100.0 A	67.00 A	25.00 A
	Constant voltage	Setting accuracy	± (0.2% of rating +50 mV)			
		Max setting voltage	105% of rating			
		Line regulation	± (0.05% of rating +5 mV)			
		Load regulation	± (0.1% of rating +5 mV)			
		Transient response time	5 ms (at instantaneous change in load current from 50% to 100%)			
		Ripple noise	100 mVp-p	300m Vp-p	350 mVp-p	350 mVp-p
			When the measurement frequency band is 10 Hz to 20 MHz			
			10 mVrms	30 mVrms	30 mVrms	30 mVrms
			When the measurement frequency band is 5 Hz to 1 MHz			
		Raise time	100 ms (rated load)/100 ms (no load)			
		Fall time	100 ms (rated load)/2000 ms (no load)			
		Temperature coefficient	100 ppm/˚C (max) [with external analog control]			
	Constant current*	Setting accuracy	± (0.5% of rating +50 mA)			
		Max setting current	105% of rating × 75% (with single-phase input) / 105% of rating (with three-phase input)			
		Line regulation	± (0.1% of rating +30 mA)			
		Load regulation	± (0.2% of rating +30 mA)			
		Ripple noise	400 mArms	300 mArms	250 mArms	200 mArms
			When the measurement frequency band is 5 Hz to 1 MHz			
		Temperature coefficient	200 ppm/˚C (typ) [with external analog control]			
	OUTPUT ON/OFF delay		OFF. 0.1 to 10.0 s (resolution: 0.1 s)			
Voltage display		Maximum display	99.99			999.9
		Error	± (0.2% of reading +5 digits) at 23˚C ±5˚C			
Current display		Maximum display	999.9		99.99	
		Error	± (0.5% of reading +5 digits) at 23˚C ±5˚C			
Protection function			Overvoltage protection (OVP) / Overcurrent protection (OCP) / Overheat protection (OHP) / Input open phase protection (PHASE) / Fan error protection (FAN) / Mis-connection protection (SENSE) / Breeder circuit overheat protection (BOHP) / Shutdown (SD)			
External analog control		OUTPUT ON/OFF control, etc.	OUTPUT ON/OFF, SHUTDOWN			
		Constant voltage, external voltage control	0% to 100% of the rated output voltage at 0 to 10 V			
		Constant voltage, external resistance control	0% to 100% or 100% to 0% of the rated output voltage at 0 Ω to 10 kΩ			
		Constant current, external voltage control	0% to 100% of tared output current at 0 to 10 V			
		Constant current, external resistance control	0% to 100% or 100% to 0% of rated output currenn at 0 Ω to 10 kΩ			
Monitor output		Output voltage	10.00 V ±0.25 V at rated voltage output			
			0.00 V ±0.25 V at 0 V output			
		Output current	10.00 V ±0.25 V at rated current output			
			0.00 V ±0.25 V at 0 A current			
Status output			OUT ON, CV, CC, ALARM, POWER ON, POWER OFF, insulated open collector			
Remote control			Equipped with RS232C interface as standard. SCPI commands, up to 38,400 bps			
Operating temperature/humidity range			0˚C to 50˚C, 20% to 85% rh			
Storage temperature/humidity range			-25˚C to 70˚C, 90% rh or less (non-condensing)			
Dimensions (maximum)			430 (440)(16.93"(17.32")) W × 129.2 (155)(5.09"(6.10")) H × 550 (620)(21.65"(24.41")) D mm			
Weight			Approx. 20 kg(44.09 lb)	Approx. 19 kg(41.89 lb)	Approx. 18 kg(39.68 lb)	

4 kW type can operate with single-phase 200 volt input.
However, current is limited to about 75% of rated value.

*During constant current operation (set the output voltage at the rated output current greater than equal to the rated output voltage)
Rated load: Refers to a load with a resistance that makes the voltage drop when the rated output current is supplied to be 95 % to 100 % of the maximum output voltage at the rated output current. The output voltage of the PAT including the voltage drop in the load cable must not exceed the maximum output voltage at the rated output current.
No load: Refers to a load with a resistance that makes the voltage drop when the rated output current is supplied to be 10 % of the maximum output voltage or 1 V, whichever is greater, at the rated output current.

Communication Interface (Each Model is the Same)	
RS232C	Conforms to EIA232D specifications. D-SUB 9-pin connector Baud rate: 1200, 2400, 4800, 9600, 19200, 38400 bps Data length: 7 or 8 bits, Stop bit length: 1 or 2 bits, Parity: None, flow control
GPIB*	Conforms to IEEE Std 488.1-1987 specifications. SH1, AH1, T6, L4, SR1, RL1, PP0, DC1, DT1, C0, E1
USB*	Conforms to USB2.0 specifications. Communication speed: 12 Mbps (full speed) Conforms to USBTMC-USB488 device class specifications.
LAN*	Conforms to the protocol VXI-11 IEEE 802.3 100Base-TX/10Base-T Ethernet IPv4, RJ-45 connector
Common	Conforms to the messaging protocol IEEE Std 488.2-1992, SCPI Specification 1999.0

*Only one of these can be built in the power supply unit optionally.

Note: An input power cable is not included with the PAT-T series. Customers should either provide an input cable themselves or request an input cable (AC8-4P4M-M6C) sold optionally by Kikusui.

Smart Rack Model Specifications*

*The specifications table below applies to typical models.
For other models, please refer to our web site.

Unless otherwise stated, the specifications shall conform to the settings and conditions indicated hereinafter. ■Loads shall be purely resistance.
■Warm-up time shall be 30 minutes (condition with current flowing). ■After warm-up is completed, it will be necessary to calibrate correctly in a 23°C±5°C environment and in accordance with instruction manual procedures."Typ" values or standard values do not guarantee performance.
■**% of rating" indicates **% of the rated output voltage or rated output current. ■**% of reading" indicates **% of the output voltage or output current reading.

Specifications	Output		Input						Weight *2
Model Name *1	CV	CC	Voltage/Frequency	Current	Inrush Current	Power	Power Factor	Efficiency	
	V	A		A (max.)	A (max.)	kVA (max.)	typ.	%(min.)	kg(Approx.)
PAT20-800TM (X)	0 to 20	0 to 800	Three-phase AC200 V to AC240 V (AC180 V to AC250 V) 50 Hz to 60 Hz (47 Hz to 63 Hz)	62	200	20	0.95	85	80(90)
PAT20-1200TM (X)		0 to 1200		96	300	30			120(130)
PAT20-1600TM (X)		0 to 1600		128	400	40			150(160)
PAT20-2000TM (X)		0 to 2000		160	500	50			180(200)
PAT40-400TM (X)	0 to 40	0 to 400		62	200	20			80(90)
PAT40-600TM (X)		0 to 600		96	300	30			120(130)
PAT40-800TM (X)		0 to 800		128	400	40			150(160)
PAT40-1000TM (X)		0 to 1000		160	500	50			180(200)
PAT60-266TM (X)	0 to 60	0 to 266		62	200	20			80(90)
PAT60-399TM (X)		0 to 399		96	300	30			120(130)
PAT60-532TM (X)		0 to 532		128	400	40			150(160)
PAT60-655TM (X)		0 to 665		160	500	50			180(200)
PAT160-100TM (X)	0 to 160	0 to 100		62	200	20			80(90)
PAT160-150TM (X)		0 to 150		96	300	30			120(130)
PAT160-200TM (X)		0 to 200		128	400	40			150(160)
PAT160-250TM (X)		0 to 250		160	500	50			180(200)

*1: Breaker-equipped models have an "X" attached at the end of the model name. *2: Models appearing in ( ) are breaker-equipped models.

●Common specifications and general specifications

Voltage display ..... Maximum display: 99.99(model with less than 100 V rating)
: 999.9(model with at least 100 V rating)
Display error : ±(0.2% of reading+5 digits)
Current display..... Maximum display: 999.9(model with less than 1000 A rating)
: 9999(model with at least 1000 A rating)
Display error : 16 kW type: ±(0.6% of reading+5 digits)
: 24 kW, 32 kW type: ±(0.6% of reading+10 digits)
: 40 kW type: ±(0.6% of reading+15 digits)
Monitor signal output..... VMON(voltage) : At rated voltage output: 10.00 V ±0.25 V
: At 0 V output: 0.00 V ±0.25 V
IMON(current) : At rated current output: 10.00 V ±0.25 V
: At 0 A output: 0.00 V ±0.25 V
Digital control..... RS232C : Conforms to EIA232D specifications
GPIB(option) : Conforms to IEEE STD.488.1-1978 specifications
USB(option) : Conforms to USB2.0 specifications
External analog control ..... OUTPUT ON/OFF, SHUTDOWN
Constant voltage, external voltage control: 0% to 100% of rated output voltage at 0 to 10 V
Constant voltage, external resistance control: 0% to 100% or 100% to 0% of rated output voltage at 0 Ω to 10 kΩ
Constant current, external voltage control: 0% to 100% of rated output current at 0 to 10 V
Constant current, external resistance control: 0% to 100% or 100% to 0% of rated output current at 0 Ω to 10 kΩ
Environment specifications.... Operating temperature: 0 °C to 40 °C
Operating humidity: 20% to 85% rh (no condensation)
Storage temperature: -25 °C to 70 °C
Storage humidity: 90% rh or less (no condensation)
Cooling system: Forced air cooling with fan
Ground polarity: Negative or positive ground possible
Ground voltage: +250 Vmax (models less than 100 V)
+500 Vmax (models from 100 V to less than 500 V)

Dimensions (mm)..... Model without breaker
16 kW type: W433(445)×H337(425)×D765(945)
24 kW type: W433(445)×H470(555)×D765(945)
32 kW type: W433(445)×H602(705)×D765(945)
40 kW type: W433(445)×H735(835)×D765(945)
Model with breaker
16 kW type: W433(445)×H487(575)×D765(945)
24 kW type: W433(445)×H620(705)×D765(945)
32 kW type: W433(445)×H752(855)×D765(945)
40kW type: W433(445)×H975(1075)×D765(945)
Value appearing in ( ) is maximum that includes protruding portion.
Accessories ..... Instruction manual, protective cover, connecting screws

●Rear panel (24 kW example) *Protective cover was removed for photograph.


Breaker not included


Breaker included