

Outline

This device meets the needs of power control for its high speed response. By connecting to only one circuit of electric power system, analog outputs of current (average of each phase current), voltage (for 3 3W: average value of each voltage between line; 3 4W: average value of each phase voltage), active power, reactive power and frequency are possible.

Features

1. Small and light, only 120×120×130mm, 800g.
2. Compatible with DIN rail mounting
3. Switchable measurement range selection for active power, reactive power and frequency.
4. High response time (current, voltage, power, reactive power: input 1 cycle + 10ms or less/99%; frequency: 1 second or less/99%).
5. Voltage measuring is by fundamental wave RMS value operation.
6. Anti-H₂S gas is manufacturing by option.
7. Auxiliary supply DC24V is CE marking compliant (not for AC85-253V and DC80-143V).
8. RoHS-compliant.



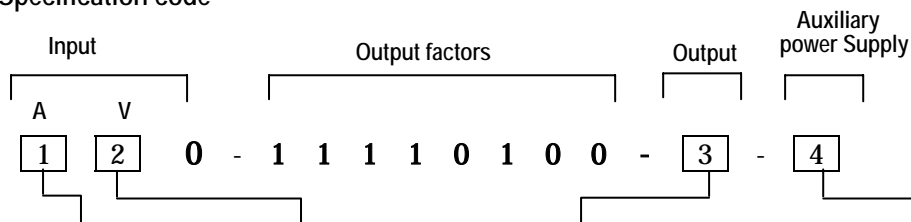
CE HSQT2-93A
(120×120×130mm/800g)

Type name

HSQT2-93A-5-33-1 (for three phase three wire, 3 3W)

HSQT2-93A-5-34-1 (for three phase four wire, 3 4W)

Specification code



No.	1. Current Input	No.	2. Voltage Input () is for 3-phase 4-wire.	No.	3. A, V, W, var, Hz output signal	No.	4. Auxiliary Supply
1	0-5A (50/60Hz)	1	0-150V (0-150/ 3V) (50/60Hz) (1)	3	0-5V (600 or more)	1	AC85-253V (50/60Hz) (rating voltage 100/110V, 200/220V) DC80-143V (rating voltage 100/110V) Both use for AC and DC
2	0-1A (50/60Hz)			4	0-10V (2k or more)		
		5	1-5V (600 or more)				
		8	±5V (600 or more)				
		9	±10V (2k or more)				
		B	4-20mA (550 or less)	2	DC24V±15% CE marking compliant		

Note (1) Rating voltage is 110V (110/√3V).

Output factors: Specification code is fixed as above.

This product's output factors are the following five:

(1) Current (average value of each phase),

(2) Voltage (average value of each line voltage for 3-phase 3-wire;

average value of each phase voltage for 3-phase 4-wire,

(3) Active power, (4) Reactive power, (5) Frequency.

Rating

Item	Rating	
Input	Voltage	3φ3W: AC100V, 110V, 115V, 120V, 50/60Hz Designation. 3φ4W: AC100/√3V, 110/√3V, 115/√3V, 120/√3V, 50/60Hz. Designation.
	Current	AC5V, or 1A, 50/60Hz Designation.
Auxiliary supply	AC100/110V, 200/220V (AC85-253V) 50/60Hz 13VA; DC100/110V (DC80-143V) 10W or less. For both AC and DC use, and DC24V (±15%) 10W or less, please specify.	
Output	5 analogue output (current, voltage, active power, reactive power, frequency), non-isolated between outputs.	

Specifications and functions

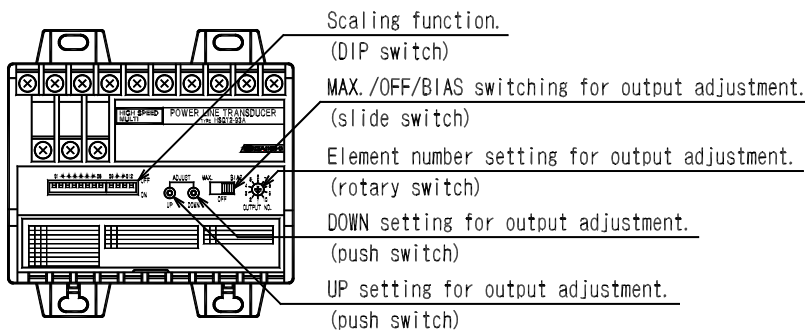
items	Specifications	
Compliant standards	AC input transducer JIS C 1111: 2006 (IEC 60688: 1992, Amendment 1 (1997), Amendment 2 (2001))	
CE Compliant directive	Electromagnetic Compatibility Directive (EMC Directive) 2004/108/EC (only auxiliary supply DC24V specification conforms.) Low Voltage Directive 73/23/EEC (only auxiliary supply DC24V specification conforms.)	
Safety	JIS C 1010-1: 2005 (IEC 61010-01:2001) Measuring Category CAT (Measurement in building installations.) max. voltage :300V Pollution Degree 2 (Only nonconductive pollution occurs in most cases. Occasionally, however, a temporary conductivity caused by condensation must be expected.)	
Tolerance	±0.5% (percentage error against output span)	
Influence of temperature	Use Group (for indoor use. in the place where equipment is installed and dealt with under the general conditions. 10-35 within class index; 0-45 within 2 times of class index; -10-+55 within 3 times of class index.	
Update time for measurement value	5ms	
Response time	Time within ±1% of final constant value when step input is applied. (A, V, W, var) With no moving average: input one cycle + 10ms or less. (Hz) One second or less. 2-time of moving average: input one cycle + 15ms or less. 3-time of moving average: input one cycle + 20ms or less.	
Ripple of output	1% P-P or less against output span	
Power supply temporary blackout allowed time	20ms	
Power inrush current	AC110V: 5.5A or less (time constant: 10ms or less) AC220V: 11.0A or less (time constant: 10ms or less) DC110V: 4.0A or less (time constant: 10ms or less) DC24V : 6.5A or less (time constant: 10ms or less)	
External adjustment of output	BIAS, MAX adjustable by front switch. Adjustment range: ±5% against output span	
Count setting of moving average	The count of moving average of A, V, W, var can be altered. It can be changed from 1 to 3. It can be changed by front DIP switches of S10 and S11.	
Insulation resistance	Between electric circuit and outer case (earth)	50MΩ or more at DC500V
	Between input, output and auxiliary supply	
	Between analog outputs non-insulation (minus common)	
Commercial frequency withstand voltage	Between electric circuit and outer case (earth)	AC2210V (50/60Hz) 5 sec.
	Between input, output and auxiliary supply	
	Between analog outputs non-insulation (minus common)	
Lightning impulse withstand voltage	Between electric circuit (except analogue output) and outer case (earth):	5kV 1.2/50μs positive and negative polarity 3 times each
	Between input and auxiliary supply (output is earth connection)	
Vibration	According to JIS C 60068-2-6: 1999 (IEC 60068-2-6: 1995) Frequency range: 10-55Hz, vibration amplitude: 0.15mm (half amplitude) , number of sweep cycle: 10 times	
Shock	According to JIS C 60068-2-27: 1995 (IEC 60068-2-27: 1972) Peak acceleration: 500m/s ²	
Overload capacity	Input	2 times 10 sec. and 1.2 times continuous of rated voltage. 40 times 1 sec., 20 times 4 sec., 10 times 16 sec. and 1.2 times continuous of rated current.
	Auxiliary supply	1.5 times 10 sec. and 1.2 times continuous of rated voltage (AC100/110V, AC200/220V, and DC24V). 1.5 times 10 sec. and 1.3 times of rated voltage (DC110V).
	Output	Voltage output: 1-sec. short circuit for 10 times at 10-sec. and once at 5-sec. interval, 70% of rated-output load continuation. Current output: open continuation, 130% of rated-output load continuation.
Output line surge	1250A 8/20μs, positive and negative polarity	
Noise withstand ANSI C37.90a B-402 IEC801-2	(1)Oscillatory surge voltage: If applying repeatedly an attenuated oscillatory waveform of 1-1.5MHz, peak voltage 2.5-3kV, Output error within ±10% (power source, voltage circuit, current circuit) (2)Square-wave impulse noise: Error within ± 10% when applying repeatedly a spike noise of 100ns, 1μs for 5 min.. power source, voltage circuit (normal/common) 1.5kV or more current circuit (common) 1.5kV or more analogue output (induction) 1.0kV or more (3)Radio noise: Error within ±10% when continuously irradiating a radio wave of 150MHz, 430MHz, 900MHz band at 5W 1m. Radio wave of a cellular phone of 2GH is irradiated by 0.5m, error within ± 10%. (4)Electrostatic noise: Error ± 10% at 8kV under energized. No damage at 10kV at non-energized. Condenser charge form.	
Structure	Outline dimension	120mm*120mm*130mm (width*length*depth)
	Material	Case box: fire-retardant ABS (V - 0); Terminal cover: polycarbonate
	Appearance color	black (Munsell N1.5)
	Terminal screw	Input, auxiliary supply, earth terminal: M4 screw; Output terminal: M3 screw
	Mass	Approx. 800g
Operating temperature/humidity range	-10-+55 , 20-95%RH no condensation	
Storage temperature range	-25-+70	

CE marking items (only for auxiliary supply of DC 24V spec.)

Compliant standard

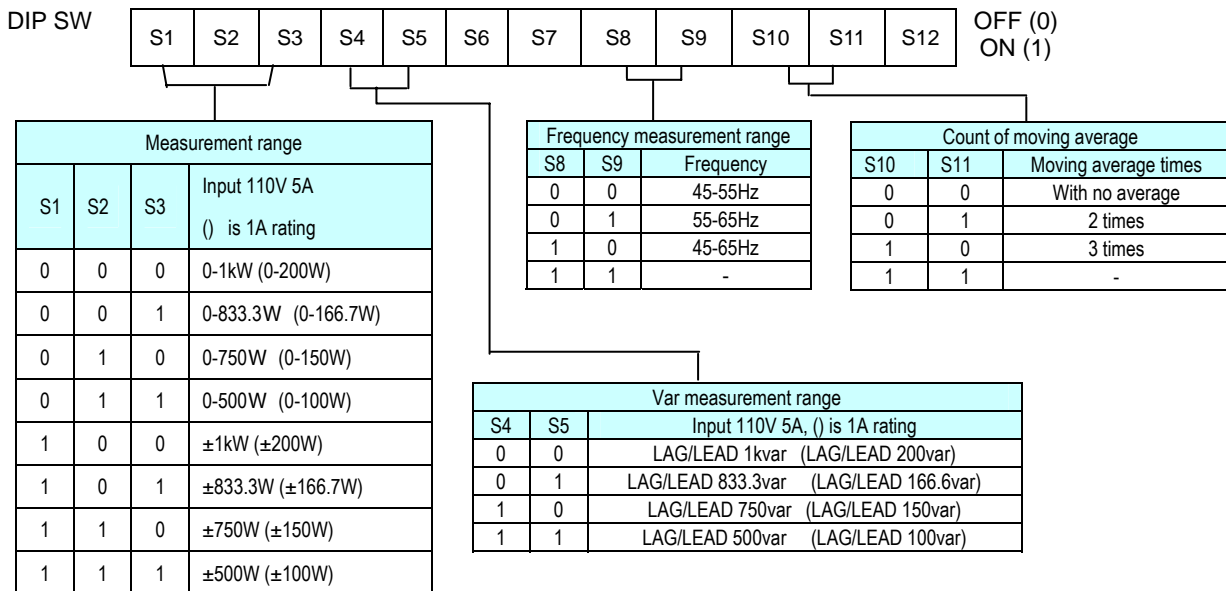
- EMC compliant standard
 - EMI (emission) EN61000-6-4
 - EMS (immunity) EN61000-6-2
- SAFE standard
 - EN61010-1 CAT (max. circuit voltage: 300V); Pollution lever: 2

Descriptions of front switches



Measurement range setting

Measurement range setting of active power, reactive power and frequency can be changed by front DIP switches.



● Count of moving average setting:

The count of moving average of current, voltage, active power, and reactive power can be changed by DIP (S10, S11) switches at the front.
<Note> The setting change of DIP switch becomes effective by applying the auxiliary power supply again.

Factory preset (standard) (if not being specified)

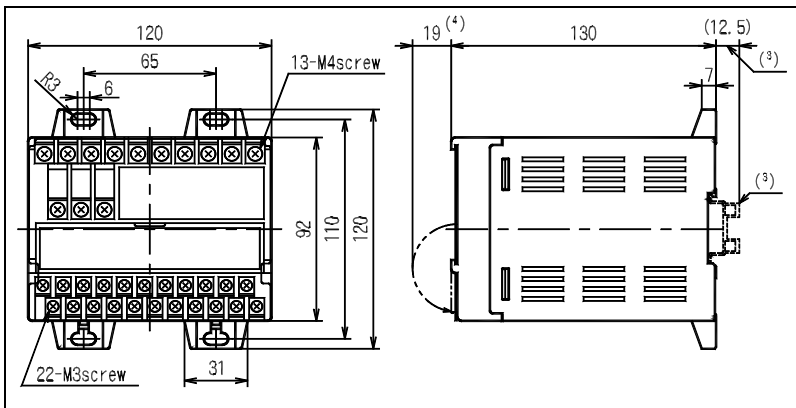
DIP Switch



In case of input rating 110V, 5A
 W measurement range: 0-1kW
 var measurement range: LEAD 1-0-LAG 1kvar
 Hz measurement range: 45-55Hz
 Count of moving average: with no average

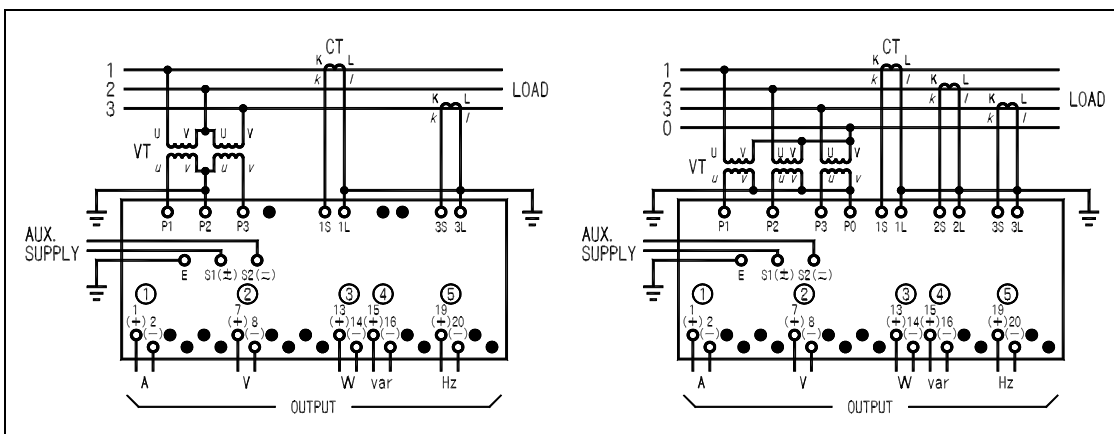
* DIP switch S12: please keep the factory shipping status.

Dimensions



(3) In case of DIN rail (height 15mm) installation. (Please use DIN standard 35mm rail)
 (4) Dimensions when switch cover is open.

Connection diagram



The secondary side earthing of VT and CT is unnecessary in case of low-voltage circuit.
 And, VT is unnecessary in case it used direct 110V.