



Feature

- 48mm x 96mm DIN size panel
- Accuracy of $\pm 1.0\%$ fs

Model code

WLD-PA ① ② -2③-④ A⑤ 00

Series	Phase wire	Functions	Rated voltage	Rated Current	Equipment	Power supply	Test report	Numbering	Description
WLD-PA									Digital panel meter for power measurement
	12								Single-phase 2-wire
	13								Single-phase 3-wire
	33								3-phase 3-wire
		N							Standard model
		S							With log function (SD model)
		R							With communication function (RS-485 Modbus RTU)
			2						AC220V
				05U					5A (※Special split CT CTL-10-CLS9)
				15U					50A (※Special split CT CTL-10-CLS9)
				21M					100A (※Special split CT WCTF-100A-N)
				22M					200A (※Special split CT WCTF-200A-N)
				24M					400A (※Special split CT WCTF-400A-N)
				26M					600A (※Special split CT WCTF-600A-N)
					1				Equipment pattern 1 *Function "N" and "S" only
					2				Equipment pattern 2 *Function "N" and "S" only
					3				Equipment pattern 3 *Function "N" and "S" only
					4				Equipment pattern 4 *Function "R" only
					5				Equipment pattern 5 *Function "R" only
						A			AC100~240V $\pm 10\%$
							0		None
							1		With test report
								00	Standard

※Special split CT is sold separately.

Equipment code	Pulse input	Pulse integration alarm	Alarm output (HI・LO)	Power pulse (Power reception・Power transmission)
1	○	○	○	—
2	○	○	—	○
3	—	—	○	○
4	○	△※	○	—
5	○	○	△※	—

※Display function only, no open collector output

Input Specifications

Voltage input

Number of input	: AC current : 1ch (Up to 2 special CT (CTL-10 / WCTF)) AC voltage : 1 system (2-wire or 3-wire)
Measurement circuit	: Single-phase 2-wire/single-phase 3-wire/three-phase 3-wire
Input rating	: Current : AC5A/50A/100A/200A/400A/600A (Input with special CT (CTL-10 / WCTF)) Voltage: AC220V (Single-phase 3-wire: 220V between 1-2, 110V between 1-N, 2-N)
Measurement elements	: Active power (received and transmitted) / Reactive power (received and transmitted) / Active Electric energy (received and transmitted) / Reactive electric energy (received and transmitted) / Current / Voltage / Power factor / Pulse integration Maintains maximum and minimum values, except for the integrated value (excluding standard model)
Measurement range	: See table on next page
Allowable excessive input	: Current: 120%/continuous, 200%/10 seconds, 1000%/3 seconds Voltage: 110%/continuous, 150%/10 seconds
Shutdown	: Voltage: Less than 10% of rated value

Pulse Input (Code 1 2 4 5)

Input Signal	: 5V pulse or Opencollector
Control method	: Select from Pulse count / ON time accumulation
Input pulse ON time	: 12.5ms or more
Input pulse OFF time	: 12.5ms or more
Measurable frequency	: ON time accumulation : 20Hz or less Pulse count : 40Hz or less

Common Specifications

Display	: Red 7 segment LED (height 18mm) Alarm monitor : HI/LO/Pulse count/Pulse input Status monitor : Pulse detection/Pulse output (receiving power)/Pulse output(transmitting power) *Front sheet switch with Japanese characters only.
Polarity display	: " - " will display automatically at negative calculation result
Display range	: - 199999 ~ 999999
Displayable units	: V / A / kW / MW / h / cos θ * When displaying effective power, kW, MW, and "h" light up at the same time. * When ON time integration is installed with pulse input, "h" lights up. * When count integration is performed with pulse input, no units are displayed.
Display update cycle	: Can be set in the range of 100 to 1500 ms
Dimming function	: 3-step setting
Auto light-off func	: Can be set in the range of 00 to 99 minutes
Operating temperature & humidity range	: -5 ~ +55°C 90%RH or less (Non-condensing)
Power supply	: AC100 ~ 240V $\pm$ 10% (50/60Hz)
Power consumption	: Approx. 8VA (AC100V), Approx. 10VA (AC240V)
Dimensions	: 48 (H) $\times$ 96 (W) $\times$ 85.9 (D) mm
Weight	: Approx. 250g
Dielectric strength	: 2000VAC per 1 min. : Power supply terminal - Operation section / Input terminal / Pulse input terminal / Between each output terminals. 2000VAC per 1 min. : Input terminal - Pulse input terminal / Between each output terminals. 500VAC per 1 min. : Pulse input terminal - Between each output terminals.
Insulation resistance	: 500Vdc, 100M Ω or more on the above terminals
Applicable EN standard	: EN61326-1, EN61010-1 EN IEC 63000
Front protection	: IP66 (Front / SD card model : IP65), IP30 (Other than the front)
Sensor power supply	: None
Memory backup	: Each setting parameter/power integration value/ pulse integration value/calendar timer
Optional accessories	: Special split CT (CTL-10 / WCTF)

Option Specifications

Power pulse output (Code 2 3)

Output method	: Opencollector (NPN)
Number of outputs	: 2 points (Power receiving/transmitting)
Output pulse width	: 100ms
Unit pulse weight	: 0.01 ~ 100kWh/Pulse (Select from 3 patterns based on power rating)
Output rating	: DC30V 30mA
ON time residual voltage	: 1.5V or less
OFF time Leakage current	: 100 μ A or less

HI/LO Alarm output (Code 1 3 4)

Alarm monitoring elements	: Select from active power or representative phase current
Output method	: Open collector output (NPN)
Number of outputs	: 2 points (HI/LO)
Alarm setting value	: Set to any value
Logic inversion	: Can be set any value
Hysteresis	: Can be set any value
Output OFF delay	: Has a delay function when alarm goes from ON to OFF
Insulation method	: Photocoupler insulation
Output capacity	: 30mA/30VDC
Residual voltage when ON	: 1.5V or less
Leakage current when OFF	: 100 μ A or less

Pulse input alarm output (Code 1 2 5)

Alarm monitoring elements	: Select from pulse input ON time accumulation or pulse count
Number of outputs	: 1 point (HI)
Alarm setting value	: Set to any value
Logic inversion	: Can be set to any value
Insulation method	: Photocoupler insulation
Output method	: Open collector output (NPN)
Output capacity	: 30mA/30VDC
ON time Residual voltage	: 1.5V or less
OFF time Leakage current	: 100 μ A or less

Log (SD model)

Save location	: SD card
Save format	: CSV
Save contents	: All measurement data with time stamp *Detail at next page
Sampling	: Select from 1/5/10/30/60 minutes
Data storage period	: Approx. 20 years worth with 4GB *Refer next page When no SD card is inserted, 12 data points are stored in the unit's built-in memory
Data management software	: SD viewer software (free download from our website) *Japanese software only, No English software
Compatible SD cards	: SD or SDHC standard Recommended manufacturer: Panasonic (SDHC 4GB) Requirements: 128MB or more free space required

Real-time clock (SD model)

Retained data	: Year/month/day/hour/minute/second ※Year is the last two digits of the Gregorian calendar, and month to second are stored in two digits
Calendar function	: Until 2099
Backup during power outage	: Approximately 7 years without power (at 25°C)
Clock accuracy	: Within 60 seconds per month (at 25°C)
Time adjustment	: Adjustable using the front button

RS-485 Communication

Communication protocol	: Modbus (RTU) compatible
Synchronization method	: Start-stop synchronization
Communication method	: 2-wire half-duplex (polling selecting method)
Transmission speed	: 19200/9600bps
Start bit	: 1bit
Data length	: 8bit
Parity	: Even parity/odd parity/no parity
Stop bit	: 1bit
Transmission control procedure	: No procedure
Trusted signal name	: Non-inverted (+), inverted (-)
Number of connected devices	: Maximum 31 units
Wiring length	: Maximum 1.2km (total network)
Delimiter	: CR+LF/CR

Measurement elements and measurement range

Item	Rating		Measurement range	Display	Tolerance
Active power (Reactive power)	Single-phase 2-wire	$V \times A$	$\pm 144\%$ of power rating	Receiving : 0~999.999kW Transmitting : 0~199.999kW (For Rated 5/50/100/200A)	$\pm 1.0\%$ fs
	Single-phase 3-wire	$V \times A \times 2$		Receiving : 0~999.99kW Transmitting : 0~199.99kW (For Rated 400/600A)	
	Three-phase 3-wire	$V \times A \times \sqrt{3}$			
Active energy (Reactive energy)	0~999,999,999.999kWh (kVarh)		Accumulate within the rated value *When overflow occurs, accumulate again from 0	1/0~999.999kWh(Receiving) 0~199.999kWh(Transmitting) 2/0~999.999MWh(Receiving) 0~199.999MWh(Transmitting) 3/0~999.999MWh(Receiving) 0~199.999MWh(Transmitting)	$\pm 1.0\%$ fs
Current	AC5/50/100/ 200/400/600A		Low cut setting from 0 to 120% of rated	0~9.999A (Rated 5A) 0~99.99A (Rated 50A) 0~999.9A (Rated 100/200/400/600A)	$\pm 1.0\%$ fs
Voltage	Single-phase 2-wire	AC220V	10~120% of the rating *Less than 10% is 0	999.9V	$\pm 1.0\%$ fs
	Single-phase 3-wire	AC110V (1-2 : 220V)			
	Three-phase 3-wire	AC220V			
Power factor	-0.000~1.000~+0.000		-0.000~1.000~+0.000	0.000~1.000 cos θ	$\pm 2.0\%$ fs
Power frequency	44.2~65.8Hz		44.2~65.8Hz	None	$\pm 1.0\%$ fs
Pulse ON time accumulation	0~999,999 Count		0~999,999 Count	0~999,999h	—
Pulse count accumulation	0~999,999,999.999 Count		0~999,999,999.999 Count	0~999,999,999 (Coefficient 0.0001~100.000)	—

Unit pulse weight setting

Category/Settings	Single phase 2-wire/single phase 3-wire		
Rated current	Setting 1 (kWh/Pulse)	Setting 2 (kWh/Pulse)	Setting 3 (kWh/Pulse)
5A	0.01	0.1	1
50A	0.1	1	10
100A			
200A			
400A	1	10	100
600A			

Category/Settings	Three-phase, three-wire		
Rated current	Setting 1 (kWh/Pulse)	Setting 2 (kWh/Pulse)	Setting 3 (kWh/Pulse)
5A	0.01	0.1	1
50A	0.1	1	10
100A			
200A			
400A	1	10	100
600A			

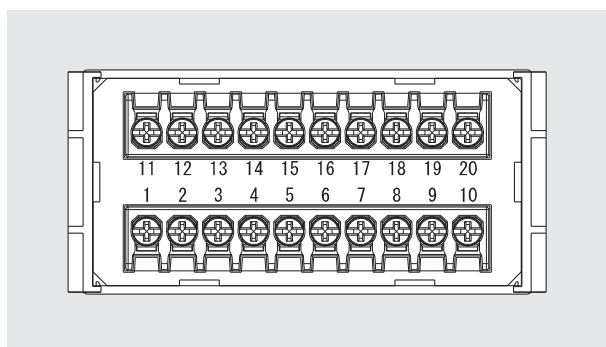
SD card storage period

Accumulation time	Memory capacity				
	256MB	512MB	1GB	2GB	4GB
1 min	Approx. 1 year	Approx. 2 year	Approx. 5 year	Approx. 10 year	20 year or more
5 min	Approx. 5 year	Approx. 10 year	20 year or more	20 year or more	
10 min	Approx. 10 year	20 year or more			
30 min	20 year or more				
60 min					

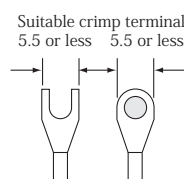
Save CSV format

Column	Header	Data name	Example A	Example B
1	DATE	Date	2011/01/01	2099/12/31
2	IME	Hour, min, sec(24 hours)	00:00:00	23:59:59
3	EE-J[kWh]	Active power (received)	0.000	999999999.999
4	EE-S[kWh]	Active energy (transmission)	0.000	999999999.999
5	P-TYP[kW]	Active power (instantaneous value)	0.000	-199.999
6	P-MAX[kW]	Active power (Max.)	0.000	-199.999
7	P-MIN[kW]	Active power (Min.)	0.000	-199.999
8	I-1/R-TYP[A]	1/R Phase current value (instantaneous value)	0.000	600.000
9	I-1R-MAX[A]	1/R Phase current value (Max.)	0.000	600.000
10	I-1/R-MIN[A]	1/R Phase current value (Min.)	0.000	600.000
11	I-2/S-TYP[A]	2/S Phase current value (instantaneous value)	0.000	600.000
12	I-2/S-MAX[A]	2/S Phase current value (Max.)	0.000	600.000
13	I-2/S-MIN[A]	2/S Phase current value (Min.)	0.000	600.000
14	I-N/T-TYP[A]	N/T Phase current value (instantaneous value)	0.000	600.000
15	I-N/T-MAX[A]	N/T Phase current value (Max.)	0.000	600.000
16	I-N/T-MIN[A]	N/T Phase current value (Min.)	0.000	600.000
17	E-1N/RS-TYP[V]	1-N/R-S Voltage value (instantaneous value)	0.000	220.000
18	E-1N/RS-MAX[V]	1-N/R-S Voltage value (Max.)	0.000	220.000
19	E-1N/RS-MIN[V]	1-N/R-S Voltage value (Min.)	0.000	220.000
20	E-2N/ST-TYP[V]	2-N/S-T Voltage value (instantaneous value)	0.000	220.000
21	E-2N/ST-MAX[V]	2-N/S-T Voltage value (Max.)	0.000	220.000
22	E-2N/ST-MIN[V]	2-N/S-T Voltage value (Min.)	0.000	220.000
23	E-12/TR-TYP[V]	1-2/T-R Voltage value (instantaneous value)	0.000	220.000
24	E-12/TR-MAX[V]	1-2/T-R Voltage value (Max.)	0.000	220.000
25	E-12/TR-MIN[V]	1-2/T-R Voltage value (Min.)	0.000	220.000
26	PF-TYP[cosPHI]	Power factor (instantaneous value)	0.000	-1.000
27	PF-MAX[cosPHI]	Power factor (Max.)	0.000	-1.000
28	PF-MIN[cosPHI]	Power factor (Min.)	0.000	-1.000
29	PC-DISP	Pulse input count display value	0.000	999999.999
30	PC-BASE	Pulse input count instantaneous value	0	999999999.999
31	PT-DISP[h]	Pulse input ON time display value	0	999999
32	OT-BASE[h]	Pulse input ON time instantaneous value	0	999999
33	FREQ[Hz]	Frequency	0.0	49.9
34	Q-TYP[kvar]	Reactive power (instantaneous value)	0.000	-199.999
35	Q-MAX[kvar]	Reactive power (Max.)	0.000	-199.999
36	Q-MIN[kvar]	Reactive power (Min.)	0.000	-199.999
37	QE-J-LAG[kvarh]	Reactive energy (Power receiving delay)	0.000	999999999.999
38	QE-J-LEAD[kvarh]	Reactive energy (Leading power receiving)	0.000	999999999.999
39	QE-S-LAG[kvarh]	Reactive energy (Power transmission delay)	0.000	999999999.999
40	QE-S-LEAD[kvarh]	Reactive energy (Leading power transmission)	0.000	999999999.999

Connection diagram



Lower terminal (Input)



Single-phase 2-wire Wire code 12

No.	Name	Descriptions
1	P1	Voltage input terminal
2	P2(N)	
3	NC	No connection
4	NC	
5	1S	Current input terminal
6	1L	
7	NC	No connection
8	NC	
9	NC	
10	NC	

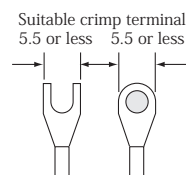
Single-phase 3-wire Wire code 13

No.	Name	Descriptions
1	P1	Voltage input terminal
2	P2(N)	
3	P3	No connection
4	NC	
5	1S	Current input terminal
6	1L	
7	3S	
8	3L	No connection
9	NC	
10	NC	

Three-phase 3-wire Wire code 33

No.	Name	Descriptions
1	R	Voltage input terminal
2	S	
3	T	
4	NC	No connection
5	1S	
6	1L	Current input terminal
7	3S	
8	3L	
9	NC	No connection
10	NC	

Upper terminal (Power / Options)



Pulser input + Pulse integration alarm + Alarm output Code 1

No.	Name	Descriptions
11	U(+)	Power terminal (Non-polarized)
12	V(-)	
13	FG	Ground terminal
14	HI	
15	COM	Alarm output terminal
16	LO	
17	ALM	Pulse input alarm terminal
18	COM	
19	+	Pulse input terminal
20	COM	

Pulser input + Pulse integration alarm + Power pulse Code 2

No.	Name	Descriptions
11	U(+)	Power terminal (Non-polarized)
12	V(-)	
13	FG	Ground terminal
14	HI	
15	COM	Power pulse output terminal
16	LO	
17	ALM	Pulse input alarm terminal
18	COM	
19	+	Pulse input terminal
20	COM	

Alarm output + Power pulse Code 3

No.	Name	Descriptions
11	U(+)	Power terminal (Non-polarized)
12	V(-)	
13	FG	Ground terminal
14	HI	
15	COM	Alarm output terminal
16	LO	
17	Receiving Power	Power pulse output terminal
18	COM	
19	Power transmission	
20	NC	No connection

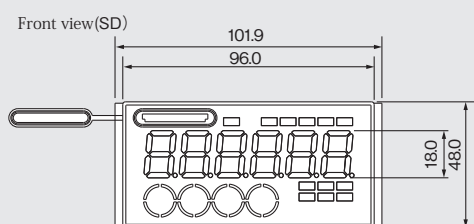
Pulse input + Effective power comparison output Code 4

No.	Name	Descriptions
11	U(+)	Power terminal (Non-polarized)
12	V(-)	
13	FG	Ground terminal
14	HI	
15	COM	Alarm output terminal
16	LO	
17	+	Pulse input terminal
18	COM	
19	+	RS-485 terminal
20	-	

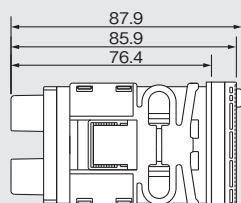
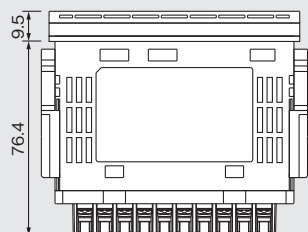
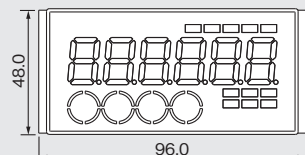
Pulse input + Pulse input alarm output Code 5

No.	Name	Descriptions
11	U(+)	Power terminal (Non-polarized)
12	V(-)	
13	FG	Ground terminal
14	HI	
15	COM	Pulse input alarm terminal
16	LO	
17	+	Pulse input terminal
18	COM	
19	+	RS-485 terminal
20	-	

Dimensions

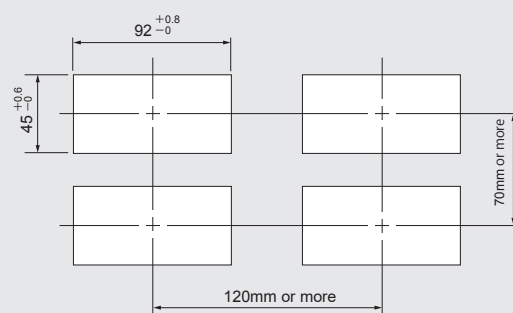


Front view (Standard, RS-485)



Unit : mm

Panel cut



※Recommended panel thickness : 0.8~5.0mm