

Digital Multi-function Meter

Description

Dimension Unit: mm

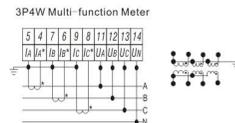
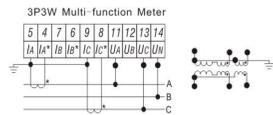
Picture	Technical Data	Model No	Dimension	Hole Size
 <p>Multi-function Harmonic Meter</p>	LCD Display Current & Voltage Input Transformation Ratio Adjustable Measurement: Three Phase (I3,U3,HZ,cosΦ,Kw,Kvar,Kwh,Kvarh) 2-31Harmonic Testing,Crest Factor, K Factor,Telephone waveform factor, etc.	WDY-2ET-□	120 × 120 - 93	111 × 111
		WDY-9ET-□	96 × 96 - 93	92 × 92
 <p>Multi Rated Energy Meter</p>	LCD Display Current & Voltage Input Transformation Ratio Adjustable Measurement: Three-Phase (I3,U3,HZ,cosΦ,Kw,Kvar,Kwh,Kvarh) 8 time interval, 4 Rates	WDY-2EF-□	120 × 120 - 93	111 × 111
		WDY-9EF-□	96 × 96 - 93	92 × 92
		WDY-3EF-□	80 × 80 - 93	76 × 76
		WDY-AEF-□	72 × 72 - 93	68 × 68

Power Supply: AC220V Or AC/DC 85-275V, DC24V,AC380V,440V,690V(Option)

□ Represent Optional Function As Follows:
 T: RS485 Communication
 A: Relay Alarm Output
 B2,B4: 2,4 Rows Analog Output (4-20mA/0-20mA Option)

Note: 48*48 Type: Maximum One Row Analog Output

Wiring connection & Terminal diagram



5	4	7	6	9	8	11	12	13	14			
Ia	Ia*	Ib	Ib*	Ic	Ic*	Ua	Ub	Uc	UN			
Current Input					Voltage Input							
Transducing					Relay Output							
COM	A01	A02	A03	A04	DO1	DO2	DO3	DO4				
30	31	32	33	34	15	16	17	18	19	20	21	22
Pulse Output		RS485		Relay Input		Power						
EQ-	EQ+	EP-	EP+	A	B	COM	D1	D2	D3	D14	N	L
50	49	48	47	58	59	70	71	72	73	74	2	1

120x120mm, 96x96mm Multi-function meter with option

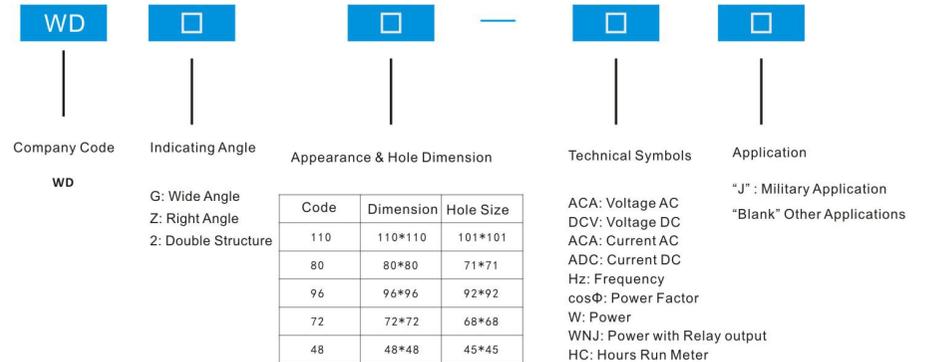
5	4	7	6	9	8	11	12	13	14	
IA	IA*	IB	IB*	IC	IC*	UA	UB	UC	UN	
Current Input					Voltage Input					
Relay Input					RS485		Relay Output		Power	
COM	D1	D2	D3	A	B	DO1	N	L		
70	71	72	73	58	59	15	16	2	1	

80x80mm, 72x72mm Multi-function Meter

Ordering Instruction

- Product Name & Model
- Power Supply
- Signal Input/ Transformation Ratio
- Technical Data of Optional Function

Analog Marine Meter Ordering Code



- Note
- 110, 80 type: Indicating angle 240 degree, others are 90 degree;
 - Double structure meter only to 96 & 72 type, technical symbol "D";
 - Alarm output meter, technical symbol: "B"
 B1 Single Row alarm;
 B2 Double Rows alarm(Upper & lower limit alarm)

Note: Optional Functions are available on requests

Standard: GB/T7676-98

Marine(Land) Type Meter

Summary

Applications

This type of meters are analog electric measuring instruments, widely used for measuring AC/DC current, voltage, frequency, power, power factor, insulation resistance and synchronous indicating in AC/DC transmitting & distributing power system, switchboard, other electric & non-electric instruments.

Our 96*96mm, 72*72mm square meter, 110*110mm, 80*80mm square round meter, improved in structure, material, seals according to environmental conditions & demands in marine industry, which let our meter have the ability of not only advanced technology, reasonable structure, good quality, but also good appearance, light weight, anti-mechanical force and different climate.

Technical Parameters:

- Moving coil taut bearing & shaft tip structure
Taut bearing: No friction in turning parts, reliable working, good performance in anti-mechanical force;
Shaft tip structure: Active parts use spring bearing base, shaft tip & bearing use hard cobalt tungsten alloy & corundum gemstone, with the ability of anti-vibrating, shocking and wearing, satisfy to acceleration less than 0.7g;
- Advanced converter & indicating integrated structure, which make high measuring accuracy and big corner.
frequency accuracy: 0.5, power factor meter : 2.5, others 1.5, indicating angle: 90°/240°-270°;
- Moving coil structure, good linear scale and undisturbed by outer magnetic fields.
- Working temperature: -45℃~+65℃;
- Shell consist of flame retardant material, withstand voltage of shell & circuit: AC2000V/1minute, protection class: IP52, oil mist, salt mist, dust, mould, condensation are acceptable;
- Appearance use universal structure, modulus is 12, square type, easy to scale and to satisfy other requirements.

Main Technical Parameters

Item	Technical Data	International Standard
Technical Standard	GB/T7676-1998	IEC60092-50
Environment Standard	GB8355-1987	IEC92-504-74
Safety Standard	GB4793-20	IEC61010
Working Temperature	-40℃-65℃	
Temperature Influence	13℃-33℃, 100% comply with accuracy class	
Indicating Angle	240°-270°(Synchroscope Meter: 360°)	
Color of Shell	Black/ White, Board Frame, terminal Plate: Black	
Color of Dial Plate	Black/ White(Other color are available on request)	
Mounting	Vertical Mounting	
Dimension	110*110mm, 80*80mm 96*96mm, 72*72mm, 48*48mm	
Overshoot	Less than 20% when scale reaches to 2/3	
Insulation Withstand	Circuit & Shell: AC2600V/1 minutes(Water Area)	
Vibration Resistance	24.5m/s ²	
Impact Resistance	147m/s ²	
Material	Shell/ Terminal Board: ABS; Cover: Transparent Glass	



Analog AC/DC Ammeter/ Voltmeter

Description

Dimension Unit: mm

Picture	Indicating Angle	Model No	Dimension	Hole Size	Measuring Range	Connection Way
	G(WideAngle) 240°-270°	WDG96-ACV	96X96-108	92X92	±500 μA 0~500mA 0~30A	Direct Connection
		WDG96-DCV				
		WDG96-ACA				
		WDG96-DCA	72X72-108	68X68		
		WDG72-ACV				
		WDG72-DCV				
	Z(Right Angle) 240°-270°	WDG72-ACA	96X96-65	92X92	0~1000A 1~10KA	By CP(Secondary current 5A, 1A, 0.5A)
		WDZ96-ACV				
		WDZ96-DCV				
		WDZ96-ACA	72X72-65	68X68		
		WDZ96-DCA				
		WDZ72-ACV				
	G(Wide Angle) 240°-270°	WDZ72-DCV	110X110-95	Fixed Hole Distance: 90	0~75mV 0~1000V	Direct Connection
		WDZ72-ACA				
		WDZ72-DCA				
		WDG110-ACV	80X80-105	Fixed hole distance: 64		
		WDG110-DCV				
		WDG110-ACA				
WDG110-DCA	φ101 Fixed hole size ø6					
WDG80-ACV						
WDG80-DCV						
WDG80-ACA	φ71 Fixed hole size ø5					
WDG80-DCA						

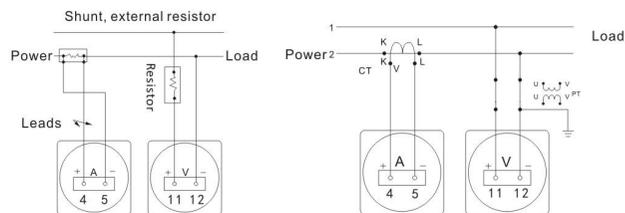
Using Instruction

1. Used for AC/DC current/voltage measuring
2. Please specify model, specification, and state while ordering..
3. With transducing output, accuracy class is 1%

Notice:

1. Non-electric units indicator are indicating instruments, receiving electronic signals from sensor or controlling instruments to operate. The indicating parameters are physical quantities, designated by user, such as temperature, pressure, flow, rotational speed, rudder angle, etc, scale could be °C, Pa(kPa),kg/m2,m3/S,r/min(rpm), etc.
- Also can act as power's secondary indicating meter, with scale: Hz, cosø, W, kW, MW, Var, Mvar, MΩ(JDB),etc.
2. Out of specification red pointer and dual structure meter, please specify.
3. External Shunt needs to be installed if DC Ammeter over 20A, which not belongs to accessories, and have to order separately.

Wiring Diagram



Analog Frequency Meter

Description

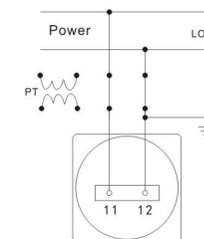
Dimension Unit: mm

Picture	Indicating Angle	Model No	Dimension	Hole Size	Measuring Range	Connection Way
	G(Wide Angle) 240°-270°	WDG96-Hz	96X96-108	92X92	45-55Hz 55-65Hz 45-65Hz 350-450Hz	100V, 220V 380V, 400V 440V 380/100V 400/100V 440/110V 690/100V
		WDG72-Hz	72X72-108	68X68		
	Z(Right Angle) 90°	WDZ96-Hz	96X96-65	92X92	45-55Hz 55-65Hz 45-65Hz 350-450Hz	100V, 220V 380V, 400V 440V 380/100V 400/100V 440/110V 690/100V
		WDZ72-Hz	72X72-65	68X68		
	G(Wide Angle) 240°-270°	WDG110-Hz	110X110-95	φ101	45-55Hz 55-65Hz 45-65Hz 350-450Hz	100V, 220V 380V, 400V 440V 380/100V 400/100V 440/110V 690/100V
		WDG80-Hz	80X80-105	φ71		

Using Instruction

1. Measuring frequency in power system;
2. Red pointer meter according to requests;
3. Black/ white surface with illuminating are available;
4. Transducing output are available, accuracy class: 1%

Wiring Diagram



Analog Ammeter/Voltmeter With Alarm Output

Description

Dimension Unit: mm

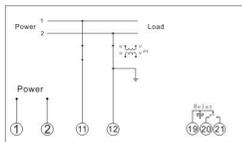
Picture	Indicating Angle	Model	Dimension	Hole Size	Measuring Range	Connection Way
	G(Wide angle) 240°-270°	WDG96B-ACV	96X96-108	92X92	0-30A	Direct connection
		WDG96B-DCV				
		WDG96B-ACA				
		WDG96B-DCA	72X72-108			
		WDG72B-ACV				
		WDG72B-DCV				
	Z(Right angle) 90°	WDG96B-ACV	96X96-65	92X92	0-1000KA	By CT(Secondary current 5A, 1A)
		WDZ96B-DCV				
		WDZ96B-ACA				
		WDZ96B-DCA	72X72-65			
		WDZ72B-ACV				
		WDZ72B-DCV				
	G(Wide angle) 240°-270°	WDG110B-ACV	110X110-95	φ 101 Fixed hole distance: 90	0-1000V	Direct connection
		WDG110B-DCV				
		WDG110B-ACA				
		WDG110B-DCA	80X80-105			
		WDG80B-ACV				
		WDG80B-DCV				
	G(Wide angle) 240°-270°	WDG80B-ACA	80X80-105	Fixed hole distance 64	0-1000KV	By CT
		WDG80B-DCV				
		WDG80B-DCA				

Notice: Alarm Output Marked “B”

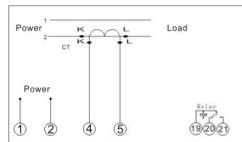
Using Instruction

1. Measuring AC/DC Current/Voltage, with alarm output
2. All meters have setting button, it is available to adjust according to requests.
3. Please specify model/specification while ordering.
4. Scale board can indicate temperature, pressure and other non-electric units (According to requests)
5. Power Supply: 24VDC±25%, 100VAC, 220VAC±20%
6. Power Consumption: ≤2VA
7. Contact Output Capacity: AC250V, 1A, DC28V, 1A

Wiring Diagram



AC Voltage Meter with alarm



AC Current Meter with alarm

Analog Non-electric Measuring Meter

Description

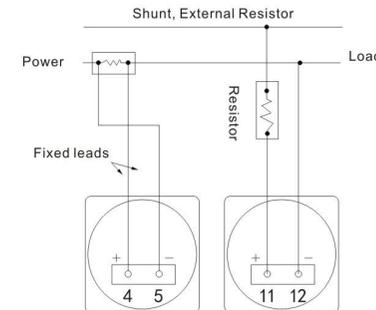
Dimension Unit: mm

Picture	Indicating Angle	Model No	Dimension	Hole Size	Measuring Range	Connection Way
	G(Wide angle) 240°-270°	WDG96-□	96X96-108	92X92	□ Represent as follows: ℃ Mpa rpm r/min kg/cm² m³/S Pa bar Customized is available	Direct connection DC10V or 4-20mA other signal according to requests
		WDG72-□	72X72-108	68X68		
	R(Right angle) 90°	WDZ96-□	96X96-65	92X92		
		WDZ72-□	72X72-65	68X68		
	G(Wide angle) 240°-270°	WDG110-□	110X110-95 Fixed hole size: 90	φ 101 Fixed hole size: Ø6		
		WDG80-□	80X80-105 Fixed hole size: 64	φ 71 Fixed hole size: Ø5		

Using Instruction

1. Used for DC10V or 4-20mA input, customized is available.
2. All meters have setting button, users are able to adjust according to requests.
3. Scale board indicate temperature, pressure or other meters.
4. Night visible function are available, normal power supply DC24V, customized is acceptable.

Wiring Diagram



Analog Power Factor Meter

Description

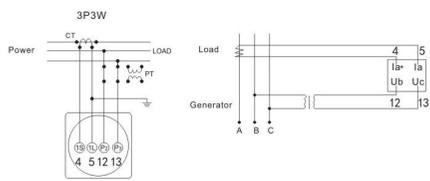
Dimension Unit: mm

Picture	Indicating Angle	Model No	Dimension	Hole size	Measuring Range	Connection Way
	G(Wide angle) 240°-270°	WDG96-COSφ	96X96-108	92X92	0.5C-1-0.5L 0C-1-0L	100V/5A 220V/5A 380V/5A 400V/5A 440V/5A
		WDG72-COSφ	72X72-108	68X68		
	Z(Right angle) 90°	WDZ96-COSφ	96X96-65	92X92		
		WDZ72-COSφ	72X72-65	68X68		
	G(Wide Angle) 240°-270°	WDG110-COSφ	110X110-95 Fixed hole distance: 90	φ101 Fixed hole size: Ø6		
		WDG80-COSφ	80X80-105 Fixed hole distance: 64	φ71 Fixed hole size: Ø5		

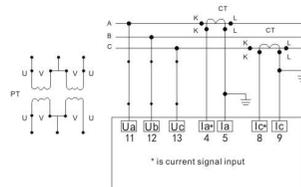
Using Instruction

1. Used for measuring power factor
2. Red line marked on preset value, or with red pointer according to users.

Wiring Diagram



Three-Phase Power factor meter with balanced load



3P3W Power factor meter with unbalanced load

Analog Power Meter

Description

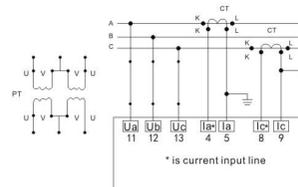
Dimension Unit: mm

Picture	Indicating Angle	Model No	Dimension	Hole Size	Measuring Range	Connection Way
	G(Wide angle) 240°-270°	WDG96-W	96X96-108	92X92	800-2000W	Direct connection
		WDG96-Var			0.8-3000KW	
	Z(Right angle) 90°	WDZ96-W	96X96-65	92X92	1-6000MW	By CT/PT (Secondary \ current/voltage 5A/100V)
		WDZ96-Var			600-1500Var	
	G(Wide angle) 240°-270°	WDG72-W	72X72-108	68X68	1-3000Kvar	By CT/PT (Secondary \ current/voltage 5A/100V)
		WDG72-Var			1-5000Kvar	
	G(Wide angle) 240°-270°	WDZ72-W	72X72-65	68X68	1-3000Kvar	By CT/PT (Secondary \ current/voltage 5A/100V)
		WDZ72-Var			1-5000Kvar	

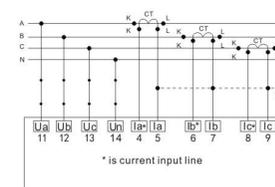
Using Instruction

1. Mark red line, or red pointer meter, according to users.
2. 10-20% reverse power scale is available
3. Used for measuring active & reactive power

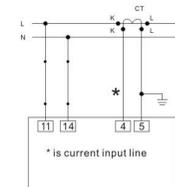
Wiring Diagram



3P3W Power Meter



3P4W Power meter



Single-phase power meter

Analog Power Meter With Transducing Output

Description

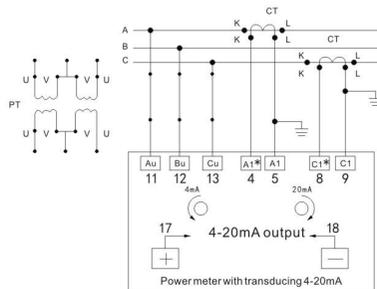
Dimension Unit: mm						
Picture	Indicating Angle	Model No	Dimension	Hole Size	Measuring Range	Connection Way
	G(Wide angle) 240°-270°	WDG96M-W	96X96-108	92X92	800-2000W	Direct connection
		WDG72M-W	72X72-108	68X68	0.8-3000KW	By CT/PT (Secondary current/voltage) 5A/100V
					1-6000MW	
	R(Right angle) 90°	WDZ96M-W	96X96-65	92X92	600-1500Var	Direct connection
		WDZ72M-W	72X72-65	68X68	1-3000Kvar	By CT/PT (Secondary current/voltage) 5A/200V)
					1-5000Kvar	

Note: Transducing Output technical symbol: "M"

Using Instruction

1. Measuring 3-phase active power meter, with standard analog output DC4-20mA
2. Transducing output capacity: 250Ω (up to 500Ω)
3. Accuracy class: 1%
4. Adjustable setting from back of meter, users can adjust output value according to requests.

Wiring Diagram



Power Meter With Relay Output

Description

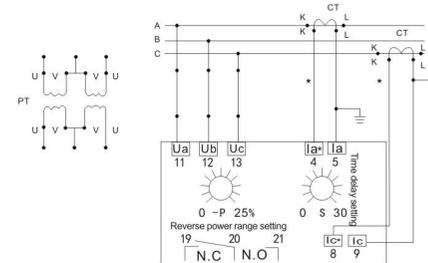
Dimension Unit: mm						
Picture	Indicating Angle	Model No	Dimension	Hole Size	Measuring Range	Connection Way
	G(Wide angle) 240°-270°	WDG96-WNJ	96X96-108	92X92	800-2000W	Direct Connection
					0.8-3000KW	By CT/PT (Secondary current voltage 5A/100V)
					1-6000MW	
	Z(Right angle) 90°	WDZ96-WNJ	96X96-65	92X92	600-1500Var	Direct connection
					1-3000Kvar	By CT/PT (Secondary current/voltage 5A/100V)
					1-5000Kvar	
	Z(Right angle) 90°	WDZ96B2-W	96X96-120	92X92	1-5000Kvar	By CT/PT (Secondary current/voltage 5A/100V)
		WDZ96B2-Var				

Technical symbol "B" reverse power relay output; "B2" reverse power & overload relay output

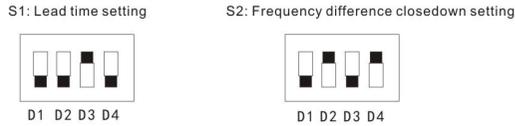
Using Instruction

1. Green light on, meter start to work.
2. Yellow light (-P) on means reverse power over preset point, if red light on, relay works to change the condition
3. Reverse power have the characteristic of inverse time limit.
- 4.2 potentiometers button on back of meter, left is upper limit, right is lower limit, It can adjust according to requests.
5. Multi-functional meter integrated 3-phase power measurement and reverse power relay function, used for measuring power in marine system, and protecting & controlling to generator.
6. Power consumption: ≤3VA, contact output capacity: AC400V/5A;DC28V/5A.

Wiring Diagram



Synchroscope Meter With Parallel Output



Picture 1: Setting switch

(Default setting: Lead time: 110ms). frequency difference closedown: 0.2Hz

Sheet1: Relationship between lead time and SW1

D4	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1
D3	0	0	1	1	0	0	1	1	0	0	1	1	0	0	1	1
D2	0	0	0	0	1	1	1	1	0	0	0	0	1	1	1	1
D1	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1
Lead time(ms)	50	80	110	140	170	200	230	260	290	320	350	380	410	440	470	500

Note: 1: off; 0: on

Sheet 2: Relationship between frequency difference closedown and SW2

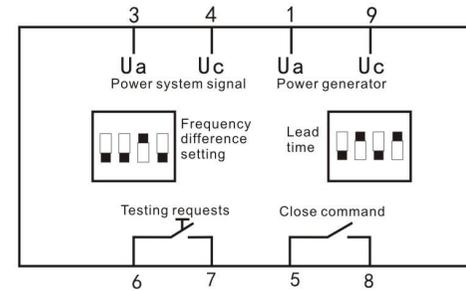
D4	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1
D3	0	0	1	1	0	0	1	1	0	0	1	1	0	0	1	1
D2	0	0	0	0	1	1	1	1	0	0	0	0	1	1	1	1
D1	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1
Frequency difference closedown(Hz)	0.05	0.08	0.11	0.14	0.17	0.20	0.23	0.26	0.29	0.32	0.35	0.38	0.41	0.44	0.47	0.50

Note: 1: off; 0: on

Back wiring(See picture 1)

- Terminal 3 & 4(from back of meter)connect power generator signal(power system),terminal 1,9 connect generator unit signal, the same phase sequence & polarity in terminal 3 & 1, 4 & 9.
- Terminal 6 & 7 are temporary testing requests, function: terminal 3 & 4 and 1 & 9 connect same power system signal, at this time red signal line in 12' clock is on, 2 lines signal phase difference is "0", signal light flash if short-circuit terminal 6 & 7, and send release commands each 5 seconds. Cancel the button of "Testing requests" after finishing.
- Terminal 5 & 8 are pulse output, which is normal open non source contact switch, it will change to normal close once close command sending.

Synchroscope Meter With Parallel Output



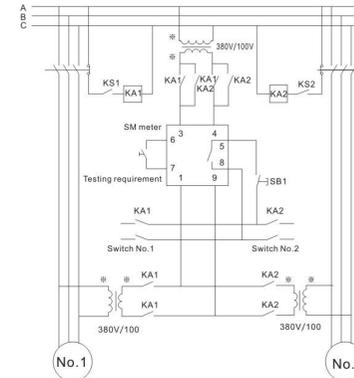
Using Instruction

External wiring of meter see picture 3(For reference)

- In order to avoid close pulse at first testing after correct connection, please do not press SB1
- To examine polarity, No.1 generator unit operate to rated rpm and put into power system, No.2 act as generator unit operate to rated rpm and set voltage, synchroscope meter switch transfer to No.2 generator unit, KS 2 close., KA2 power on. Check if SYNC meter phase difference LED is consistency with power board when frequency reach regulated range. (LED signal light off in 0°). Otherwise please check if there is mistake in wiring, each generator have to polarity inspection.
- Speed switch let generator unit and frequency approach to enter into frequency difference close value, and sequence close to "0", LED is on (close relay without function as SB1 break), meter works correctly at this time; correct pulse generated if press SB 1 button.
- It should be operate slowly if rpm let generator comes into frequency difference locking range;
- Same frequency transferring switch contact KS1,KS1 need interlock.

Storage Condition:

Environment temperature 0-40°, relative humidity no more than 85% in ventilating room, and no harmful impurity which leads to corrosive and rusty.



AC Net Insulation Monitor

Description

Dimension Unit: mm						
Picture	Indicating Angle	Model No	Dimension	Hole Size	Measuring Range	Connection Way
	G(Wide angle) 240°-270°	WDG96-BMΩ	96X96-108	92X92	100V	Direct connection or By PT
		WDG96-MΩ				
		WDG72-BMΩ	72X72-108	68X68		
		WDG72-MΩ				
	Z(Right Angel) 90°	WDZ96-BMΩ	96X96-65	92X92	220V	Direct connection or By PT
		WDZ96-MΩ				
		WDZ72-BMΩ	72X72-65	68X68		
		WDZ72-MΩ				
	G(Wide Angel) 240°-270°	WDZ96-2BMΩ	96X96-65	92X92	380V	Direct connection or By PT
		WDZ96-2MΩ				
	G(Wide Angel) 240°-270°	WDG110-BMΩ	110X110-95	Φ101 Fixed hole distance 90	440V	Direct connection or By PT
		WDG110-MΩ				
		WDG80-MΩ	80X80-105	Φ71 Fixed hole size 64		

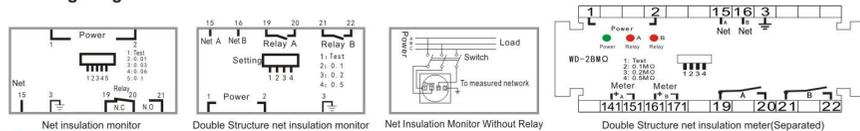
Using Instruction

Monitor imperfect grounding in vessel power system and alarm output.

- Used for continued monitor insulation resistance(less than 500V) in power system between vessel and electric circuit, and alarm release once insulation resistance lower than preset value.
- Valid measuring range: 0.005-5MΩ, alarm step: 0.01MΩ,0.03MΩ,0.06MΩ,0.1MΩ
- Alarm signal output: DC24V/3A or AC220V(max) 1A, terminal 4 & 5 is normal open, 5 & 6 is normal close.
- Power on after correct wiring, signal light is on, meter start to work, output data is network insulation resistance.
- Can set alarming & wave band value according to demands, When insulation resistance lower preset value, alarming signal output and light is on. Once insulation resistance number back to normal, light be off automatically.
- In the same network, it is forbidden to inspect insulation resistance by 2 units meter or other equipments.
- If want to check meter's working condition, turn wave band to self-inspection, self-inspection start, after finish, back to working condition.
- Include one-way & dual network insulation resistance meter, while one-way type with transducing output, signal: 4-20mA, class: 1%

Note: Measuring range: 0-5Ω, rated voltage: AC220V/380V, or other specification based on requirement, working environment same as 96 type.

Wiring Diagram



DC Insulation Monitor

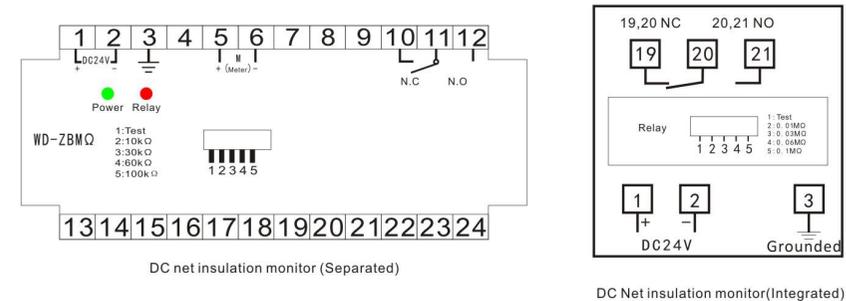
Description

Dimension Unit: mm						
Name & Picture	Indicating Angle	Model No	Dimension	Hole size	Measuring Range	Connection Way
	G(Wide angle) 240°-270°	WDG96-ZBMΩ	96X96-108	92X92	DC24 or DC220V	Direct connection
		WDZ96-ZBMΩ				
		WDG72-ZBMΩ	72X72-108	68X68		
		WDZ72-ZBMΩ				
	Separated DC Insulation Meter	WD-ZBMΩ	110X75X120	35mm rail mounting		

Using Instruction:

- DC network insulation monitor integrate indicating & monitoring
- Insulation resistance lower than preset value, alarm signal output
- Power is on after correct connection, make sure pointer is on mechanical zero(∞) while power is off, otherwise, it have to adjust. Green LED is on means meter start to work after connection.
- There are switches at back of meter, and alarming value be set as: 0.01MΩ,0.03MΩ,0.06MΩ,0.1MΩ.
- Power Supply: DC24±20%/DC220V±20%(Tested power network)
- Consumption power of alarming: 10VA
- Peak value of DC power insulation can measured by size of leakage current, so introduce a stable voltage E1 and tested the relevant earth current, can effective get earth insulation resistance value.

Wiring Diagram



Hours Run Meter/Double Structure Meter/Rudder Angle Meter

Description

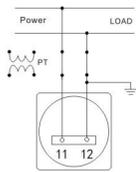
Dimension Unit: mm

Picture	Using Instruction
 Hours Run Meter	Accumulated hours run meter is to monitor operating time of distribution equipment, allowed function as follows: Production efficiency, costing evaluation, service cycle controlling in preventive maintenance, etc. When meter back to "Zero", can measure 0-9999.99 hour. Reset construction can prevent occasional setting. Model no: WD96-HC, WD72-HC Voltage: AC/DC 12V, 24V, 36V, 100V, 220V, AC:380V Frequency: 50-60Hz, display: 9999.99 Dimension: 96*96, 72*72
 Double Pointer Volt/ Frequency Meter	Used for voltage/frequency display in parallel monitor of vessel, mobile power station. Model no: WD96D-ACB Accuracy class: Hz: 0.5; V: 1.5; Indicating angle: 90° Dimension: V: AC600V direct connection or by PT secondary class 100V Hz: 45-55Hz, 55-65Hz, 100V, 220V, 380V, 440V Mounting size: 96*96
 Rudder Angle Meter	1. Power Supply: 12Vdc or 240Vdc±20% 2. ±0.5mA DC resistance 850Ω; 3. ±1A DC resistance 450Ω 4. Model no: WDG45, WDG63 5. Dimension: 110mm*110mm, 80mm*80mm

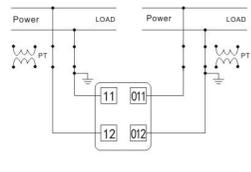
"D": Double structure meter

Using Instruction

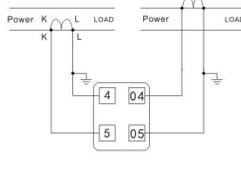
1. Accumulated hours run meter is to monitor operating time of distribution equipment, allowed function as follows: Production efficiency, costing evaluation, service cycle controlling in preventive maintenance, etc. When meter back to "Zero", can measure 0-9999.99 hour. Reset construction can prevent occasional setting.
2. Double structure meter: Used for voltage/frequency display in parallel monitor of vessel, mobile power station.
3. Rudder angle meter: For indicating rudder angle; Illuminated power: 12VDC or 24VDC±20%; ±0.5mA DC resistance 850Ω; ±1mA resistance 450Ω;



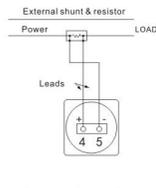
Hours run meter



Double structure voltmeter & Frequency



Double structure ammeter



Rudder Angle Meter

PT100 Thermocouple Temperature Meter

Description

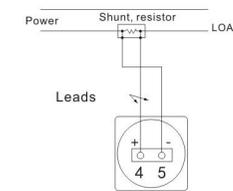
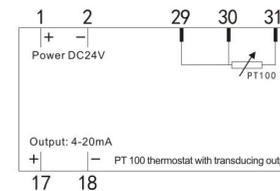
Dimension Unit: mm

Picture	Indicating Angle	Model No	Dimension	Hole Size	Measuring Range	Connection		
	G(Wide angle) 240°-270°	WDG96-C	96X96-108	92X92	0-100°C 0-250°C 0-500°C 0-800°C 0-1000°C	DT100 or K type thermocouple connection		
		WDG72-C	72X72-108	68X68				
	R(Right angle) 90°	WDZ96-C	96X96-65	92X92				
		WDZ72-C	72X72-65	68X68				
	G(Wide angle) 240°-270°	WDG110-C	110X110-95	φ101			0-5000Mpa	4-20mA connection
		WDG80-C	80X80-105	φ71				

Using Instruction:

1. Temperature meter measured by thermocouple directly, voltmeter input: 4-20mA, customized acceptable;
2. Transducing output available, output signal load: 600Ω;
3. With Alarm switch output, output load: 3A, 250VAC
4. Thermostat sensor connect indicator, 3 lines to connect.

Wiring Diagram



Phase Sequence Meter

Description

Dimension Unit: mm

Picture	Display Mode	Model No	Dimension	Hole Size	Voltage Range	Frequency Range
	LED	WD96-PS	96X96-108	92X92	AC100V~250V, AC250V~450V	45Hz~65Hz
		WD72-PS	72X72-108	68X68		

Summary:

Measuring status of phase sequence: Correct phase, incorrect and lack of phase, with the function of correct phase & incorrect phase output.

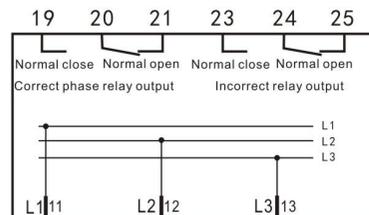
Main technical parameter:

1. Security class: CAT III 600V, Pollutionclass: 2.0
2. Working environment: Temperature: -10℃-55℃, humidity: 5%-95%RH, without condensation
3. Storage environment: Temperature: -25℃-75℃, humidity: 5%-95%RH, without condensation

Function Instruction

1. Correct LED(Green) on: Phase sequence is correct; "Wrong" LED(Red) on: Phase sequence is incorrect; L1, L2, L3 LED(Green) indicate condition of three-phase voltage.
2. Both correct & L1, L2, L3 LED on: Correct phase and don't lack of phase;
3. Both wrong & L1, L2, L3 LED on, Phase sequence is incorrect and don't lack of phase, incorrect phase relay work;
4. Both wrong & wrong LED lit, one of L1, L2, L3 off: Phase sequence is lack of phase, Correct/incorrect output reply do not work, the off LED indicate lacking of phase;
5. All LED do not on, Phase A, B, C may not power on, or only one phase power, take care if still have power in power circuit.

Wiring Diagram



SZT Type Automatic Synchroscope Meter

Description

Dimension Unit: mm

Picture	Display Mode	Model No	Dimension	Hole Size	Voltage Range	Frequency Range
	360°LED	WD96-SZT	96X96-108	92X92	AC100V~250V, AC250V~450V	45Hz~65Hz

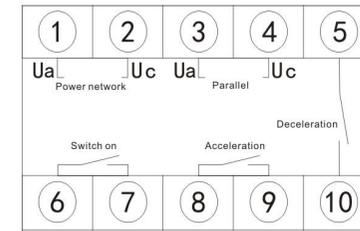
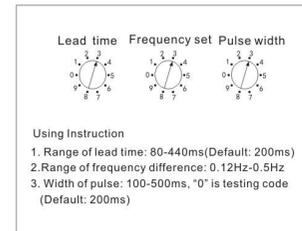
Summary:

SZT type synchroscope meter is the measuring instrument which integrate synchronized indicating, frequency adjusting and parallel command sending. Connect the meter while generator start to work and need parallel operation. It is able to measure generator frequency compared with system and adjust automatically. When frequency difference between generator and power system less than preset value, send closing commands before instant frequency difference "0". The instrument raise accuracy, reliability in generator parallel operation. Adopt digital controlling technology, with innovative design, compact structure, small volume, light weight, technical parameter comply with CCS standard, should be good choice to designing, manufacturing and other applications.

Technical Parameter:

1. Power supply: AC400V or AC100V 50/60Hz
2. Speed adjusting can work under absolute frequency less than 3Hz;
3. Pulse width of speed adjusting: 0.1-0.5S, level 0-9, "0" is testing code;
4. Range of frequency difference locking: 0.12-0.5Hz, default set: 0.3Hz
5. Lead time of close command: 80ms-440ms, default: 200ms
6. Power consumption: <5VA
7. Output load capacity: AC: 380V 3A; DC28V, 10A (resistance load)
8. Environment condition: Temperature: 0-50°; humidity: 95%.

Wiring Diagram



Using Instruction

1. There is 36pcs red LED to form a round type in the keyboard, interval of LED is 10°(Electric angel), middle top is 0°, green LED on middle top of LED, to send synchronous commands. Frequency difference between parallel generator group and power network ≤0.4Hz, phase difference ≤5°(electric angle), voltage difference is in rated voltage ±10%, green LED on, send parallel command, generator combine power system and operating.
2. Be make sure correct wiring according to picture, after power on, parallel generator start to work. When frequency difference between generator and power network at ±3Hz, red LED lit one by one, turn generator group frequency in clockwise direction till plus grid frequency at the same time, left green LED lit to send deceleration signal; Turning eastern, generator frequency lower than power system, right red LED lit to send acceleration signal. Frequency difference between generator group and power system less than 0.4Hz, and phase difference at ±5°, voltage difference ±10% for rating standard, green LED on to send parallel command, generator group combine to work.

SZT Type Full Automatic Synchroscope Meter

Notice

When testing, code of pulse width dial to "0", other 3 lines relay will not send command output signal, user can test under this condition. If changes to work, width code dial to others but not "0"

Please verify frequency difference is in accordance with turning & phase. Code of Leading time, frequency difference and pulse width code switch check the following diagram.

Attached List

1. Wiring terminal instruction

Wiring terminal code	Instruction
1	Generator voltage input UA
2	Generator voltage input UC
3	Parallel generator voltage input UA
4	Parallel generator voltage input UC
5	Deceleration pulse relay contact output
6	Closing reply output contact
7	Closing reply output contact
8	Acceleration pulse relay output contact
9	Acceleration pulse relay output contact
10	Deceleration pulse relay output contact

2. Dial-up Switch Instruction

Wiring terminal code	Instruction
1	Lead time
2	Frequency difference
3	Pulse width

No.1 Dial-up Switch: Lead Time

Lead time(80ms-440ms)	
Wiring terminal code	Instruction
1	80
2	120
3	160
4	200
5	240
6	280
7	320
8	360
9	400
10	440

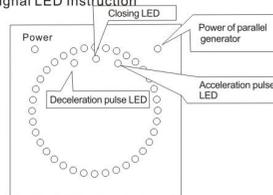
No.2 Dial-up switch: Frequency difference

Frequency difference(0.12Hz-0.5Hz)	
Dial-up Position	Instruction
0	0.12
1	0.16
2	0.22
3	0.26
4	0.30
5	0.34
6	0.38
7	0.42
8	0.46
9	0.50

No.2 Dial-up switch: Pulse width

Pulse width (100-500ms)	
Dial-up position	Instruction
0	Testing position
1	100
2	160
3	200
4	260
5	300
6	360
7	400
8	460
9	500

4. Signal LED Instruction



Current/Voltage/Frequency Relay

Description

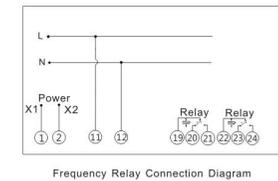
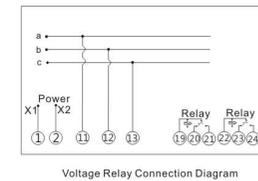
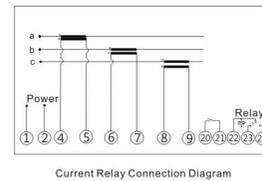
Dimension Unit: mm

Picture	Product Name	Model No	Dimension	Auxiliary Power	Measurement Range	Others
	Current Relay	WD-REA	110*75*120	AC220/DC24V AC85-600V	0-5A-10A	Working Frequency 50/60Hz
	Voltage Relay	WD-REV	110*75*120		0-600V	
	Frequency Relay	WD-REF	110*75*120		45-65Hz	

Instruction

1. Used for protecting and controlling to generator.
2. Power consumption: $\leq 3VA$
3. This relay is convenience to use and install. User should connect the wire at first in accordance with corresponding wiring scheme and provide auxiliary power supply for the relay module in line with the specification. Each relay is equipped with the function of time delay. when the signal input from the outside exceeds the preset value and effective, the timer start to work and signal light turns on. Relay start to work after reach preset time.
4. Parameter visible, user are able to set alarm value according to demands.

Wiring Diagram



Current/Voltage/Frequency Meter With Time Delayed Alarm Output

Description

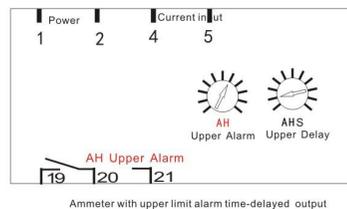
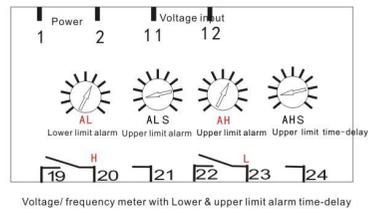
Dimension Unit: mm					
Picture	Model	Dimension	Installation	Measurement	Power
	Current	WDZ96B-ACA	96X96-120	0-5A-10A	AC220/DC24V AC65-600V
		WDG96B-ACA			
	Voltage	WDZ96B2-ACV	96X96-120	0-600V	AC220/DC24V AC65-600V
		WDG96B2-ACV			
	Frequency	WDZ96B2-Hz	96X96-120	45-65Hz	AC220/DC24V AC65-600V
		WDG96B2-Hz			

"B": Single alarm output; "B2": Double alarm output(Lower/upper limit alarm)

Using Instruction

- Used for measuring electric units such as current/voltage/frequency in power system;
- 2 groups of Relay output are workable, alarm point & time-delay can be set, when pointer comes to alarm area, alarm relay activate;
- 2 Rows of relay output(lower & upper limit alarm), one group normal close, the other normal open. Contact capacity: AC250V/5A, DC30/5A
- Ammeter: Default one Row out(please specify if two Rows), adjustment: 58%-110% of full measuring range, time-delay 0-20s be adjustable;
- Voltmeter & frequency meter: Two Rows of relay output(Lower & upper limit alarm);
Voltage lower limit range: 0-360V; Upper limit: : 400-550V;
Frequency lower limit alarm range: 45-51Hz, upper limit alarm range: 53-55Hz, time-delayed: 0-20S;

Wiring Diagram



Stern Shaft Tachometer

Description

Dimension Unit: mm					
Picture	Model	Dimension	Installation	Measurement	Power
	WD-96E1	Dimension: 96X96mm Mounting:Diagonal Bolt Fixed	92X92	0-999r/min	DC24V

Summary

WD-96E1stern shaft tachometer is the instruments which measure rotational speed & direction in vessel's main stern shaft automatically.

- Double color LED display, with correct, intuitionistic and stable indication. Ahead clockwise rotation: yellow LED is on; Astern counterclockwise rotation: Red LED on; Installing: Both yellow & red LED on;
- When rotation speed of vessel stern shaft equal or less than 20rpm/min, tachometer indicate stop rotating, technical symbol: -0 ahead, astern LED is on at the same time. Equipped function of auto-lightness adjustment, in order to reduce contrast between highlight and darkness;
- Use two-way passive transducer, non-contact magnetic induction measuring, with the characteristic of high sensibility, far sensing range, high temperature & pressure & humidity endurant, not afraid of oil pollution & mist, alnico induct to measure, no need heavy measuring gear and easy installation.

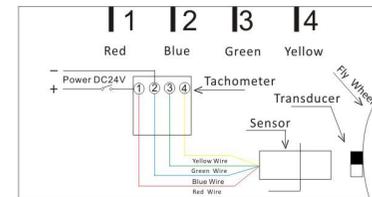
Technical Data

- Power Supply: DC24V ±20%
- Measurement: ±30-±900rpm/min
- Accuracy Class: 0. 5
- Temperature : -20°C-80°C
- Working Way: Continuous
- Parallel connection 2-5 pieces

How to use?

- Stern shaft tachometer and SZB-22-W tachometer sensor, power supply: DC24V;
- Alnico installation: Clean the surface of stern shaft, N pole of alnico paste on it by 504 agglutinant or epoxy resin;
- SZB-22-W tachometer sensor installation: See wiring connection, the distance of sensor and stern shaft S pole is 3-10mm (If no display on the meter, please turn alnico to let S pole to sensor, or distance between transducer and alnico is too far)Marked side of tachometer transducer up to same level as alnico surface, Central axis of sensor direct to stern shaft center 0, if there is reverse rotation, which means indicate oppositely to the fact, interchange No. 3 green wire and No. 4 yellow wire.

Wiring Connection



DB-A Type Multi-function Protection Unit

Description

Dimension Unit: mm					
Picture	Model No	Dimension-depth	Installation Dimension	Voltage Range	Frequency Range
	DB-A	110X75X120	140*95	AC100V AC220V AC380V AC440V	50/60Hz

Summary

Distribution board in middle/small vessel mainly use frame-type circuit breaker, as generator's protection switch, have shortage of expensive price, big volume, heavy and difficult to adjust etc. WD--DB-A is a multi-functional protection equipment for marine, widely used kinds of type/ power generator group, only need input generator's power and current's transformer, protection can set data of "pre-alarm", "long time-delay", "short time-delay" as requirement. Acting time also can be adjusted, LED indicate voltage, current and lasting time.

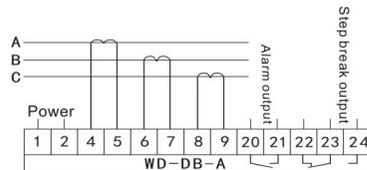
Technical Symbol:

- I Current: Display the biggest phase current, connect any phase to start to work;
- U Voltage: Display Phase voltage of generator;
- U< Under voltage: Phase voltage lower than preset;
- I≈ Pre-alarm LED: Load current over preset value;
- I> Long time-delay LED: Load current over preset value;
- I< Short time-delay LED: Load current over preset value.

Technical Function:

- Correct connection and power on, windows display.
- Press "Manu" 3s, word twinkle to enter into setting condition.
- Press "Manu" for times can change into "Power input", "Under voltage", "Pre-alariming", "Long time-delay", "Short time-delay". "U voltage" and "I current" lit the same time is generator power; Display "EU1.0" is voltage ratio setting(no voltage transformer connection display, voltage: EU1.0); "U" and "U voltage" lit the same time is under voltage, "U" lit is under voltage or over voltage time setting; "U voltage" display 440 is over voltage data setting; All light off and display "Exxx" is current data setting(change 30 -500A); "I-" & "I current" lit the same time is pre-alariming setting; "I-" lit is pre-alariming time setting; "I>" & "I current" lit the same time is long time-delay; "I" lit is time of time-delay setting; "I>>" & "I current" lit the same time is alarming time setting; "I>>" lit is short time-delay setting.
- In setting condition, press "Arrow" up and down from 0-9, press "Position moving" data can move in 1% circularly.
- After finished in changing, press "Confirm" 3s record the data and to exit the setting, don't press "confirm" after 20s exit to setting condition, and do not record to back to previous data.
- Voltage is on, "U voltage" lit, display to read the voltage value, press "testing", "I≈" pre-alariming light twinkle, alarming relay start to work, after time interval long time-delay twinkle, alarming/ step relay break, reset automatically after finish in testing. Alarming only have one normal open contact, while step relay have two, normal close and normal open.

Wiring Connection



Reverse Power Relay (With Unloading Function)

Description

Dimension Unit: mm					
Picture	Model No	Dimension	Mounting Size	Voltage Range	Measuring Range
	NGJ-1	151X106-80	140X95 4 φ 5	100V 380V 440V	50/60Hz

Summary:

NGI-1/S type reverse relay(with unloading) is function extensive relay, it has not only reverse power protective function, but also overload pre-alariming & unload secondary loading function, so it is more common, easy adjustment, light weight, small volume, quality more stable.

Technical function

- When power system voltage change in ±10% rated voltage, frequency changes in ±5%, it works normal;
- Reverse relay power: Voltage: 100V(400 as option), 50/60Hz, A: two phase, power consumption: <2VA; Rated current input: 5A, A, C two phase, power consumption <2VA
- When reverse power of parallel operation reach 3-15%(continuous adjustment) rated power, time delay 3-10s(continuous adjustment), reverse power appliance start to work (negative power on changes to off);
- When generator current reach 90-100%(adjustable), alarm signal instant output(negative power normal open contact), after time delay 10-30s(adjustable), unload signal output(negative power normal open contact).
- Contact output capacity: Alarming output contact, b. Reverse power output contact, unloading output contact; AC380V/3A, DC28V/10A(resistant load) AC250VJF 12A,DC24V/1A(constance load)
- This equipment have the function of reverse power and unload self-inspection.
- Environment: Temperature: 0-55°C, relative humidity: 95%,slashing, vibrating, oil mist, smoke mist occur during vessel operating.
- Dimension: Dimension: L*W*H=151*106*80mm, mounting: L*W=140*95mm

Using Instruction

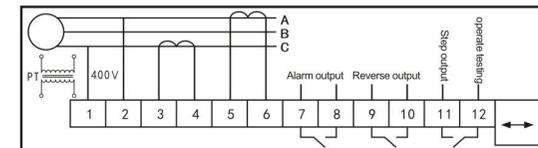
- Be make sure correct wiring, and note that voltage & current connection have to be A & C phase, current transformer connect the same polarity.
- Connect the power, "power" LED lit, turn the switch to "Testing" position, "over limit" LED of reverse & unloading lit, alarming signal input,LED "work" will lit after few seconds, reverse power & unloading output relay do not work, which means functional works well, delay time are mainly reverse power & unloading, the value pass "reverse time delay" to adjust potentiometer (lower left) and "unload time delay" adjust potentiometer, clockwise is acceleration, then turn the switch to "Operation" position.

Notice

Time interval of second testing should over 30s, otherwise, "time delay" will be short.

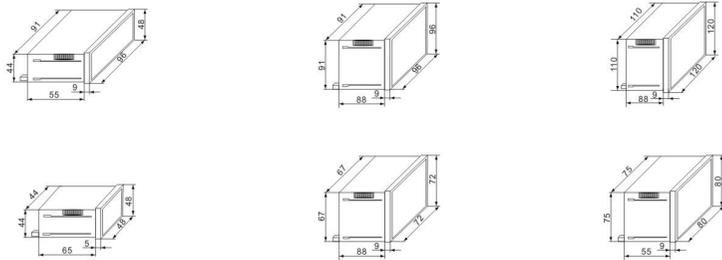
- When generator group operate, voltage stable, let one unit generator reverse, reach certain value reverse power"over limit" lit, "operation" LED lit after passed time delay, relay switch trip, reverse power generator entering, operation power can adjust by "Power adjustment potentiometer", clockwise is acceleration. If single generator operate, reverse power start to work, change terminal 1 and 2.
- Unloading value and time setting: "Acting current" adjust potentiometer(upper right) clockwise to the biggest, increase generator load current to value need unload, then turn in eastern slowly till "over limit" lit, start to timing til "Operation" LED lit to unload secondary load, this is the lasting time of unloading. Users can advise when order, we set as your requirement.

Wiring Diagram

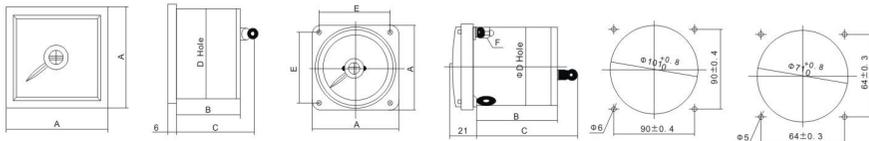


Appearance & Mounting Dimension Diagram

Digital Intelligent Meter appearance & Mounting Dimension Diagram



Marine Meter appearance & Mounting Dimension Diagram



Definition	Model	A	B	C	D Hole	E	F	Mounting
240°	Type 96	96	95	108	92×92			2 or 4 pcs diagonal bolts fixed
	Type 72	72	95	108	68×68			
	Type 45	110	80	95	101	90	M5 hole Ø	
Type 63	80	90	105	71	64	M4 hole Ø5		
90°	Type 96	96	45	65	92×92			
	Type 72	72	45	65	68×68			

Ordering Instruction

- Indicator meter all vertical assembling before shipment, marine indicator meter accuracy class only valid to mounting direction, if need difference direction & angle.
- Please specify product name, model no and specification when ordering;
- There might have some value adjustment, please forgive us not informing earlier.
- Special meter can contact us to customize producing.
- "WD" is our design code in ordering no.

CSD Marine Type Transformer

Summary:

Standard: CB/T1001-92, approved by CCS.
 Compared with old type, the new version 26-45% smaller on volume, 5-28% less in weight, lower power consumption to 13.8%, it will be your good choice.

Application & Using Condition

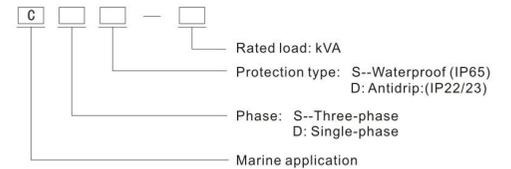
Used in Vessel, sea platform and other places's lighting, electricity, communication and power grid insulation in following conditions:
 Sea level: ≤1000M
 Environment temperature: ≤45℃
 Relative humidity: ≤95%
 Frost, oil mist, salt mist, mould's influence;
 Vibrating, slashing during vessel operating;
 Angel≤22.5% swing, ≤15% tilting.

Structure characteristic:

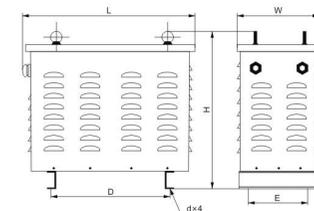
- Iron core is made of silicon steel sheets, can firmly fix winding, reduce the vibrating to the smallest.
- Winding is made of lacquered wire, double glass wire, composite insulated wire, insulation class: B/F/H
- Case body made of high quality steel plate, useful to air circulation and prevent drip & mouse.
- Wiring plate and wire changing in the inner of case body, can easily connect to the board by stuffing box in right or left hands.



Model Description



Appearance and mounting dimension



CSD Marine Type Transformer

Technical data

Rated Voltage Input		380V	400V	450V	Rated Power	50Hz/60Hz	Connection Group			Y, yn0;D, y11;D, yn11;Y, d11			
Rated Voltage Output		220V	230V		Insulation Class	3kV/min	Insulation Class		Class B, F H				
Model No	Rated Capacity (KVA)	No-load loss(W)	Load loss (W)	No-load Current %	Short-circuit Resistance %	Dimension(mm)			Weight KG	Mounting Dimension (mm)			Protection Grade
						L	W	H		D	E	D	
CSD (CSGD)	3	80	105	14	3.5	400	250	350	56	240	185	10	IP22 IP55
	5	110	165	12	3.5	480	305	440	72	280	240	10	
	7.5	130	200	11	3.5	540	360	520	90	280	270	10	
	10	160	288	11	3.5	540	360	520	110	280	270	12	
	16	210	370	10	3.5	660	380	555	150	420	290	12	
	20	230	480	8	3.5	690	395	585	170	460	305	12	
	25	250	528	7	3.5	770	410	655	183	480	320	12	
	30	280	600	6	3.5	790	430	670	210	480	340	12	
	35	290	680	6	3.5	790	430	700	236	480	340	12	
	40	290	680	5	3.5	810	440	700	257	550	350	12	
	50	300	1045	4	3.5	880	480	780	283	580	390	12	
	63	340	1250	4	3.5	895	500	840	335	670	410	12	
	80	420	1450	3	3.5	970	540	865	410	670	410	12	
	100	510	1840	3	3.5	1040	560	885	489	670	410	12	
	125	600	1950	2	3.5	1120	680	930	548	670	410	14	
	160	750	2250	2	3.5	1250	680	950	657	670	410	14	
	200	810	2670	2	3.5	1300	720	980	748	690	480	14	
	250	990	2910	1.5	3.5	1350	760	1010	890	690	480	14	
300	1090	3670	1.5	3.5	1390	810	1030	1062	1000	610	14		
400	1300	4220	1.3	3.5	1420	830	1070	1278	1000	610	14		
500	1510	5160	1.3	3.5	1500	850	1100	1520	1000	610	14		
630	1710	6210	1.2	3.5	1580	880	1130	1786	1000	610	14		
CDGD	5	100	100	12	2.5	470	330	520	75	350	210	10	IP22 IP55
	7.5	110	160	11	2.5	490	340	590	85	370	220	10	
	10	120	190	11	2.5	500	350	600	100	380	230	10	
	15	140	270	9	2.5	540	380	640	140	410	240	12	
	20	160	300	8	2.2	580	410	710	190	460	270	12	
	25	200	370	8	2.2	590	420	740	200	470	280	12	
	30	270	450	7	2.2	610	440	760	270	490	300	12	
	35	290	470	7	2	630	440	760	280	510	300	12	
	40	300	520	6	2	640	450	780	290	520	310	12	
	45	320	570	6	2	640	450	790	300	520	310	12	
	50	340	620	6	1.9	670	470	840	320	530	330	12	
	60	380	700	5	2.3	670	480	860	400	530	350	12	
75	400	820	4	2.4	670	480	920	450	530	350	12		

1. CDGB can combine to CSGD II (3 pieces single-phase transformer) or CSGD III(4 pieces single-phase transformer in one case), technical data can refer to CDGD, appearance & dimension according to times increasing.
2. Appearance & dimension is for reference, final version according to product picture.

Current Transformer

BH-0.66 I
Current transformer



BH-0.66 30 I



BH-0.66 30 IB



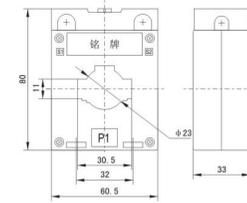
BH-0.66 40 I



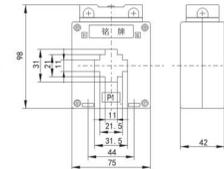
BH-0.66 50 I

Current Ratio	Rated load VA				Number of turns	Appearance & Mounting size
	0.5 grade	0.55 grade	0.2	0.2s grade		

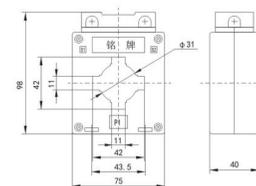
30/5	2.5				5
50/5	2.5				3
75/5	2.5				2
100/5	5				2
150/5	2.5				1
200/5	5				1
250/5	5				1
300/5	5				1
400/5	5				1



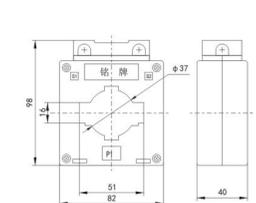
30/5	5	5	5	5	5
50/5	5	5	5	5	3
75/5	5	5	5	5	2
100/5	5	5	5	5	2
150/5	5	5	5	5	1
200/5	5	5	5	5	1
250/5	5	5	5	5	1
300/5	5	5	5	5	1



150/5	5	5	5	5	1
200/5	5	5	5	5	1
250/5	5	5	5	5	1
300/5	5	5	5	5	1
400/5	5	5	5	5	1
500/5	5	5	5	5	1
600/5	5	5	5	5	1



200/5	5	5	5	5	1
250/5	5	5	5	5	1
300/5	5	5	5	5	1
400/5	5	5	5	5	1
500/5	5	5	5	5	1
600/5	5	5	5	5	1
750/5	10	5	5	5	1
800/5	10	5	5	5	1
1000/5	10	5	5	5	1



Current Transformer

BH-0.66 I Type Current transformer



Current ratio	Rated Load VA				Number of turns	Appearance & Mounting size
	0.5	0.5s	0.2	0.2S		
300/5	5				1	
400/5	5				1	
500/5	5	5	5	5	1	
600/5	5	5	5	5	1	
750/5	10	5	5	5	1	
800/5	10	5	5	5	1	
1000/5	10	5	5	5	1	
1200/5	10	5	5	5	1	
1500/5	15	10	10	5	1	

BH-0.66 60 I



400/5	5	5	5	5	1
500/5	5	5	5	5	1
600/5	5	5	5	5	1
750/5	5	5	5	5	1
800/5	5	5	5	5	1
1000/5	5	5	5	5	1
1200/5	10	5	5	5	1
1500/5	15	10	10	5	1
2000/5	20	15	15	10	1

BH-0.66 80 I



750/5	10	5	5	5	1
800/5	10	5	5	5	1
1000/5	10	5	5	5	1
1200/5	10	5	5	5	1
1500/5	15	10	10	5	1
2000/5	20	15	15	10	1
2500/5	20	15	15	10	1

BH-0.66 100 I



1000/5	10	5	5	5	1
1200/5	10	5	5	5	1
1500/5	15	10	10	5	1
2000/5	20	15	15	10	1
2500/5	20	15	15	10	1
3000/5	20	15	15	10	1
4000/5	30	20	20	15	1

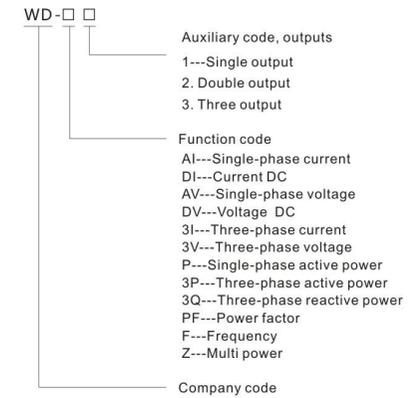
BH-0.66 125 I



Summary:

Transmit current, voltage, power, power factor in system into linear analog signal or digital signal.

Standard: GB/T13850-1998, IEC-688

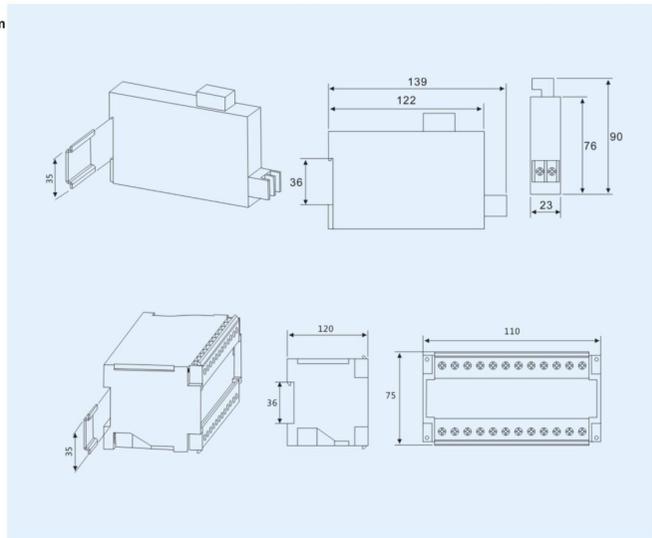


Power Transducer

Technical data

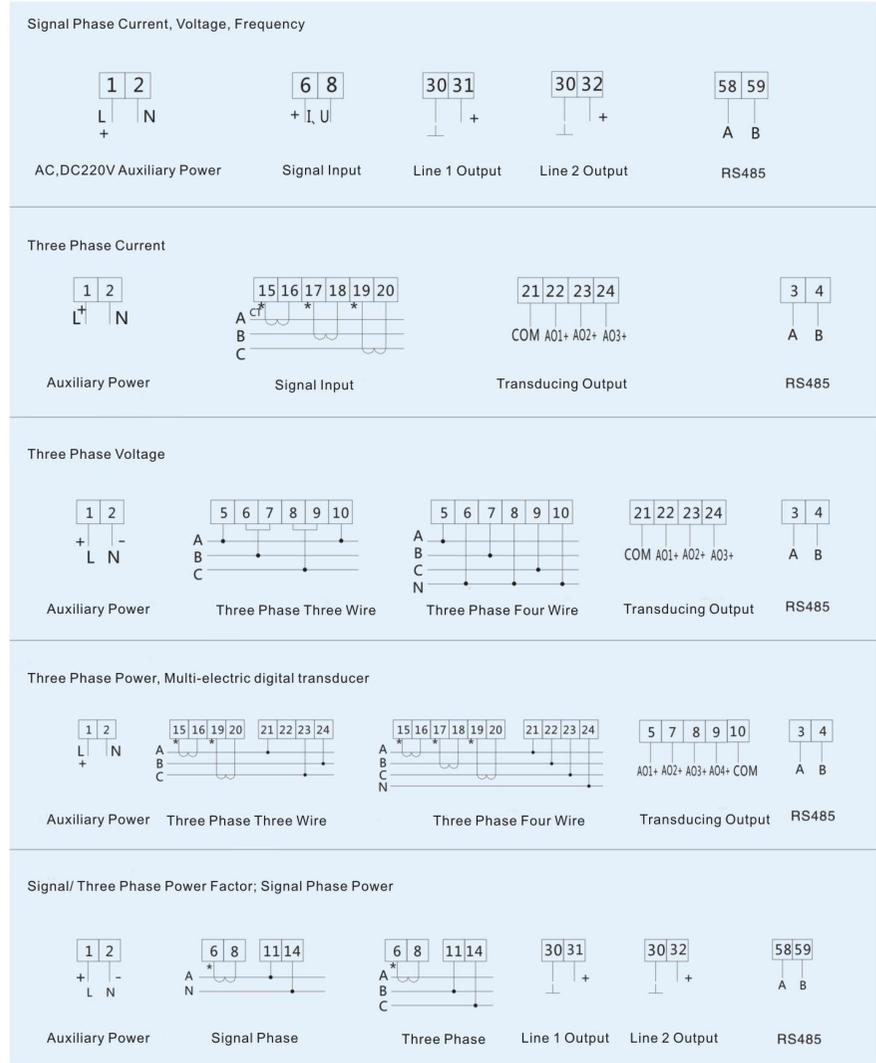
Technical data		Specification
Accuracy Class		0.5, 0.2
Input	Standard data	Current AC, DC 1A, 5A; Voltage AC, DC 100V, 300V, 500V, etc.
	Overload	Instant 1.2 times, instant current 10 times/5s; instant voltage 2 times/30s
	Absorb power	≤0.3VA(current input); Voltage input≤0.3VA(100V), ≤0.6VA(300V), ≤1VA(500V)
	Frequency	50±Hz, 60±5Hz
Output	Standard data	4-20mA, 0-20mA, 4-12-20mA, 0-5V, 0-10V, etc.
	Load resistance	Current output ≤600Ω; voltage output ≥1000Ω
	Ripple content	<0.5% peak data
Reaction time		≤400ms
Power Supply	Voltage	AC 110/220V±15%, AC, DC 85~270V
	Power consumption	AC current, voltage ≤3VA, Power ≤4VA
Insulation resistance		≥100MΩ
Pressure resistance		Input/output/power 2.0kV/1 min, 50 Hz
Temperature coefficient		≤100ppm/°C
Environment ratio	Temperature	Working -25-55°C Storage: -25-75°C
	Humidity	≤90%, no moisture, no corrosive place
	Sea level	≤2000m
Mounting		Ts35 rail, or fix by screw

Appearance & dimension diagram



Power Transducer

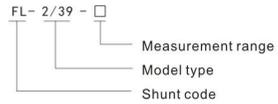
Wiring diagram



Shunt



Model & Ordering code



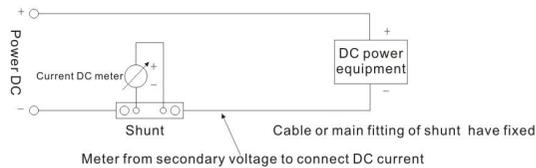
Summary

Used for measuring DC current lower 10KA to work for analog display equipment and enlarge measured voltage range diverter, standard resistance in current sampling, sampling voltage can act as sequent current analog signal.

Main technical data

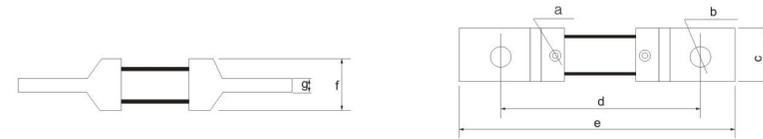
- 2.1: Accuracy class: 0.5
- 2.2: Rated current one time: 5A-10000A
- 2.3: Rated voltage two times: 75mV
- 2.4: Environment temperature: Change 10°C, diverter output
- 2.5: Changing volume no more than 25% rated value
- 2.6: Influence of thermoelectric force: Error from 80% current occur, because of self-heating by passing diverter, no more than 0.25% standard value.
- 2.7: Using condition: Group B according to JB/T9281(temperature -40°C~60°C). humidity: ≤95%
- 2.8: Overload ability: 120% rated current, lasting 2 hours.

Wiring Diagram

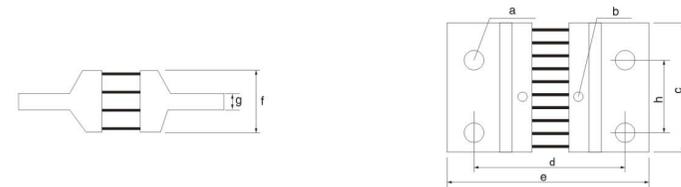


Shunt

Dimension



Model No	Current value	a	b	c	d	e	f	g
FL-2 Type Grade A	50A	2-M5	2-Φ8.5	22	85±0.5	109	11	11
	100A			23				
	200A		2-Φ10.5	26	100±0.5	127	22	6
	300A			36				
	400A			46				
	500A			55				
600A								



Model No	Current value	a	b	c	d	e	f	g	h
FL-39 type	1500A~2000A	4-Φ12.5	2-M5	85	115±0.5	150	46	13	50
	3000A			100					50
	4000A			160					100

Notice:

1. When diverter work, the connection of cable or copper line's sectional area & length should be accordance with JB/T9288-1999 diagram 2
2. Connection joint between cable and diverter can not touch resistance, sampling area of secondary can not get from non sampling area.
3. Internal resistance of current indicator DC current meter should much bigger than product by diverter value and 1/5 accuracy's reciprocal
4. Suggest Using current(long time) no more than 80% rated current.
5. When secondary DC voltage indicated by pointer current meter, wire resistance should no more than 1Ω
6. Mounting dimension according to JB/T9288-1999 Appendix C
7. Mention if any special requirement.

JDG4-0. 5TH Type Marine Voltage Transformer



Application

JDG4-0.5TH marine type voltage transformer used for measuring voltage, energy and relay protection in condition of frequency 50-60Hz, voltage less than 500V;

Material

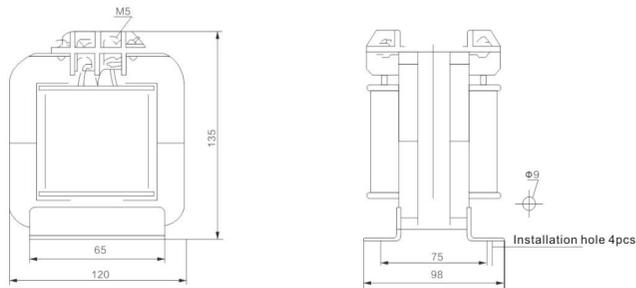
Iron core use cold rolling silicon steel sheet to C type, steel tape fasten base and wiring pillar, primary & secondary coil covered in the middle of steel core;

Main Parameter

Transformer can be middle-long term use in 110% rated voltage; coil temperature rise no less than 60°C when secondary load comes to max capacity , can bear primary coil to secondary and ground 3kV,secondary to ground 2kV, and insulation voltage withstand test in 1 minute;

Rated Voltage (V)		Rated Capacity (V-AH)			MaxCapacity (V-AH)	Weight(kg)
Primary Test	Secondary Test	0.5 Grade	1 Grade	3 Grade		
220	100	15	25	50	100	3.9
380						
500						
690						

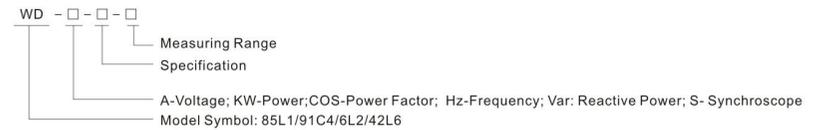
Appearance & Dimension



WD Series Analog Electric Meter



Description

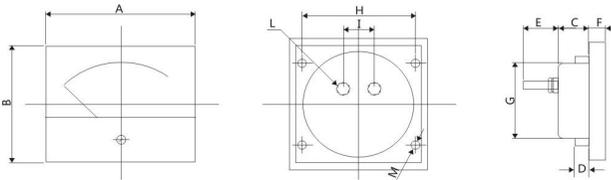


Technical Parameters

Product Name	Parameters	Remark	Accuracy Class
DC Ammeter	30-1000uA 1-1000mA 1-10A	Direct Connection	1.5
	15-800A 1K-10KA	External Shunt	
DC Voltmeter	40-1000mV 1-600V	Direct Connection	1.5
	700V-10KV	External Restistor	
AC Ammeter	1-1000mA 1-20A	Direct Connection	1.5
	25-1000A 1K-10KA	External Transformer	
AC Voltmeter	40-1000mV 1-600V	Direct Connection	1.5
	700V-10KV	External Transformer	
Frequency Meter	Voltage: 100V/220V/380V Frequency: 45-65Hz 45-55Hz		
Power Factor Meter	Voltage: 100V/220V/380V Specification: 0.5cap-1-0.5ind	External Transformer	2.5
Power Meter	Voltage: 100-380V Current: 0-.5A		

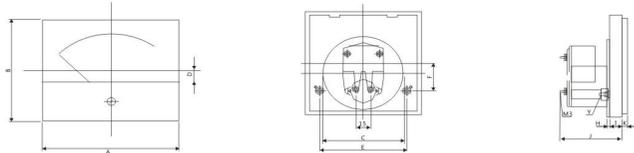
WD30 Series Analog Electric Meter

Appearance Installation Dimension



Technical Symbol	A	B	C	D	E	F	G	H	M	I	L	Hole
XY-50	50	50	23	10	12	12.5	45	38	M3	20	M4(5)	46
XY-60	60	60	23	10	12	11	52	48	M3	25	M4(5)	53
XY-70	60	70	23	10	12	12	52	48	M3	28	M4(5)	53
XY-80	80	80	23	10	12	13.5	63.5	65	M3	34	M4(5)	65

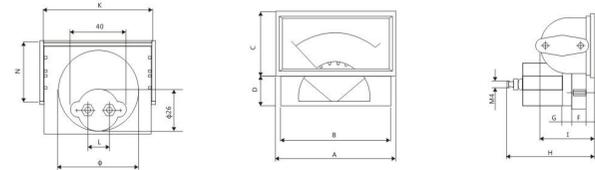
Installation Dimension



Specification Symbol	A	B	C	D	E	F	H	I	J	Y	Hole
91C4 91L4	45	45	φ39	0	34	17	8.3	9.5	39.8	M3	As attached
85C1 85L1	64	56	φ50	2	52	14.5	2.5	11	57	M3	-
84C1 84L1	65	65	φ50	5.3	50.7	17	2.5	11	57	M3	-
69C9 69L9	80	64	φ59	1	64	17.8	4	12	59.5	M3	-
69C13 69L13	80	65	φ59	1	68	0	4	10.5	58	M3	-
44C2 44L1	100	80	φ59	7.5	68.5	21.7	2.6	14	60	M4	-
59C2 59L1	120	100	φ79	7.5	90	35	3.5	15.5	62.5	M4	-

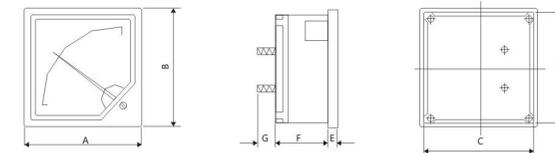
WD30 Series Pointer Electric Meter

Appearance Installation Dimension



Specification Symbol	A	B	C	D	E	F	G	H	I	J	K	L	N	Φ	Mounting
59L19 59C23	129	120	69	25	6	12	5	68	40	73	125	15	65	73	As Attached
44L17 44C17	108	100	60	24	6	13	2	66	37	58.5	104	15	57	59	-
69L17 69C17	87	80	47	21	7	10	7	64	29	60	83.5	15	44	60	-
85L17 85C17	70	64	40	20	6	10	3	64	34	49	67.5	15	37.5	49	-

Appearance Dimension



Specification Symbol	A	B	C	D	E	F	G	Hole
IT1, ID1, IC2, IL1	160	160	150	150	16	64	14	153X153
42L6, 42C8, 42L20, 42C20	120	120	115	115	13	63	13	113X113
6L2, 6C2	80	80	75.5	75.5	10	62	11	77X77
SQ-96, 51L4, CZ-96, 51C4 51T6, 51C6, XY-96	96	96	89.5	89.5	7	45	13	91X91
CZ-72, 89T2, SQ-72 89C2, XY-72	72	72	66.5	66.5	7	40	13	68X68
99T1, SQ-48, XY-48	48	48	43.5	43.5	7	40	13	45X45