

5. 배전반용 무효 전력계 (Panel & Switch-board var Meter)



TYPE : WY-R □ □R



TYPE : WY-S □ □R



TYPE : WY-SH96 □ □



TYPE : WY-W □ □R

Specifications

- 1 Phase 2 Wire var meter (1상 2선식 무효 전력계)

Type	Size(mm)	Input		Oper. Prin.	Class (%)	Burden(VA)		Weight (g)	Dimen.	Transducer	
		Volt	Curr.			Volt	Curr.				
WY-R06R1	60×60	110V or 220V	5A or 1A	[Symbol]	±2.5	0.5	0.5	630	Refer to Page 220	Ext.	
WY-R08R1	80×80							660			
WY-R10R1	100×80							670			
WY-S47R1	47×47							600			
WY-S72R1	72×72							610			
WY-S96R1	96×96			[Symbol]	±1.5	0.5	0.5	680		Refer to Page 221	Int.
WY-SH96R1T											Ext.
WY-W08R1											80×80
WY-W11R1	110×110			[Symbol]	±1.5	0.5	0.5	760		Refer to Page 221	Int.
WY-W11R1T											Ext.

※ Ext : 변환기 별도 외부형(External Transducer Type), Int : 변환기 내부 일체형(Internal Transducer Type)

- 1 Phase 3 Wire var meter (1상 3선식 무효 전력계)

Type	Size(mm)	Input		Oper. Prin.	Class (%)	Burden(VA)		Weight (g)	Dimen.	Transducer	
		Volt	Curr.			Volt	Curr.				
WY-R06R2	60×60	110V	5A or 1A	[Symbol]	±2.5	0.5	0.5	630	Refer to Page 220	Ext.	
WY-R08R2	80×80							660			
WY-R10R2	100×80							670			
WY-S47R2	47×47							600			
WY-S72R2	72×72							610			
WY-S96R2	96×96			[Symbol]	±1.5	0.5	0.5	680		Refer to Page 221	Int.
WY-SH96R2T											Ext.
WY-W08R2											80×80
WY-W11R2	110×110			[Symbol]	±1.5	0.5	0.5	760		Refer to Page 221	Int.
WY-W11R2T											Ext.

※ Ext : 변환기 별도 외부형(External Transducer Type), Int : 변환기 내부 일체형(Internal Transducer Type)

- 1P 2W 무효전력계 (var)

$$\text{Calibrating Watt} = \frac{\text{최대눈금치 (Max. scale)}}{(\text{P.T ratio}) \times (\text{C.T ratio})}$$

- Example

$$\text{Calibrating Watt} = \frac{6\text{kvar}}{110\text{V} \times 100/5\text{A}} = 0,3\text{kvar}$$

- 1P 3W 무효전력계 (var)

$$\text{Calibrating Watt} = \frac{\text{최대눈금치 (Max. scale)}}{(\text{P.T ratio}) \times (\text{C.T ratio})}$$

- Example

$$\text{Calibrating Watt} = \frac{10\text{kvar}}{110\text{V} \times 100/5\text{A}} = 0,5\text{kvar}$$

HV / CT
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HV / VT · MOF
고압변압기

LV / CT
저압변류기

LV / VT
저압변압기

RELA Y
보호계전기

ELD
누전경보기

GF R
지락계전기

ZCT
영상변류기

METER
지시전기계기

SPD
서지보호기

SHUNT
셴트

교류무효전력계 var Meter (var)



· 3 Phase 3 Wire var Meter (3상 3선식 무효 전력계)

Type	Size (mm)	Input		Oper. Prin.	Class (%)	Burden(VA)		Weight (g)	Dimen.	Transducer	Remarks			
		Volt	Curr.			Volt	Curr.				Volt.	Curr.		
WY-R06R3	60×60	110V or 220V	5A or 1A	[Symbol]	±2.5	0.5	0.5	730	Refer to Page 220	Ext.	Un	Un		
WY-R08R3	80×80							760						
WY-R10R3	100×80							770						
WY-S47R3	47×47							700						
WY-S72R3	72×72							710						
WY-S96R3	96×96			730	[Symbol]	±1.5	0.5	0.5		730			Refer to Page 221	Int.
WY-SH96R3														
WY-SH96R3T														
WY-W08R3	80×80			110×110	[Symbol]	±1.5	0.5	0.5		780			Refer to Page 221	Ext.
WY-W11R3														
WY-W11R3T														
WY-W11R3T														

※ Ext. : 변환기 별도 외부형(External Transducer Type), Int. : 변환기 내부 일체형(Internal Transducer Type)

· 3 Phase 4 Wire var Meter (3상 4선식 무효 전력계)

Type	Size(mm)	Input		Oper. Prin	Class(%)	Burden(VA)		weight (g)	Dimen.	Transducer	Remarks			
		Volt	Curr.			Volt	Curr.				Volt.	Curr.		
WY-R06R4	60×60	190/√3V or 380/√3V	5A or 1A	[Symbol]	±2.5	0.5	0.5	760	Refer to Page 220	Ext.	B	Un		
WY-R06R4U											Un			
WY-R08R4	B													
WY-R08R4U	Un													
WY-R10R4	B													
WY-R10R4U	Un													
WY-S47R4	B													
WY-S47R4U	Un													
WY-S72R4	72×72			±1.5	0.5	0.5	740	B						
WY-S72R4U										Un				
WY-S96R4	96×96			B										
WY-S96R4U					Un									
WY-SH96R4	96×96			830	[Symbol]	±1.5	0.5	0.5		830	Refer to Page 221		Int.	B
WY-SH96R4T														Ext.
WY-SH96R4U	96×96			Int.	Un									
WY-SH96R4UT						Ext.	Un							
WY-W08R4	80×80	Ext.	Un											
WY-W08R4U				Ext.	Un									
WY-W11R4	110×110	Int.	B											
WY-W11R4T				Ext.	B									
WY-W11R4U				Int.	Un									
WY-W11R4UT				Ext.	Un									

※ Ext. : 변환기 별도 외부형(External Transducer Type), Int. : 변환기 내부 일체형(Internal Transducer Type)

· 3P 3W 무효전력계 (var)

$$\text{Calibrating Watt} = \frac{\text{최대눈금치 (Max. scale)}}{(\text{P.T ratio}) \times (\text{C.T ratio})}$$

· Example

$$\text{Calibrating Watt} = \frac{600\text{kkvar}}{3300/110\text{V} \times 100/5\text{A}} = 1,0\text{kkvar}$$

· 3P 4W 무효전력계 (var)

$$\text{Calibrating Watt} = \frac{\text{최대눈금치 (Max. scale)}}{(\text{P.T ratio}) \times (\text{C.T ratio})}$$

· Example

$$\text{Calibrating Watt} = \frac{4000\text{kkvar}}{22900/190\text{V} \times 100/5\text{A}} = 1,66\text{kkvar}$$

PANEL BOARD METER

교류무효전력계 var Meter (var)



· Full Scale vars Table (Standard : 1/2var)

(Unit : kvar)

Phase x wire	1P2W	1P3W	3P3W								3P4W				
	110	110	220	380/110	440/110	3300/110	6600/110	22000/110	22900/110	154kv/110	208/√3/190/√3	380/√3/190/√3	380/√3	11400/√3/190/√3	22900/√3/190/√3
	callbra, C.T rat	0,3	0,5	1,0	0,579	0,5	0,5	0,5	0,5	0,48	0,5	1,0	1,0	2,0	0,833
5/5	0,3	0,5	1	2	2	15	30	100	100	700	1	2	2	50	100
10/5	0,6	1	2	4	4	30	60	200	200	1400	2	4	4	100	200
15/5	0,9	1,5	3	6	6	45	90	300	300	2100	3	6	6	150	300
20/5	1,2	2	4	8	8	60	120	400	400	2800	4	8	8	200	400
25/5	1,5	2,5	5	10	10	75	150	500	500	3500	5	10	10	250	500
30/5	1,8	3	6	12	12	90	180	600	600	4200	6	12	12	300	600
40/5	2,4	4	8	16	18	120	240	800	800	5600	8	16	16	400	800
50/5	3,0	5	10	20	20	150	300	1000	1000	7000	10	20	20	500	1000
60/5	3,6	6	12	24	24	180	360	1200	1200	8400	12	24	24	600	1200
75/5	4,5	7,5	15	30	30	225	450	1500	1500	10,5M	15	30	30	750	1500
80/5	4,8	8	16	32	32	240	480	1600	1600	11,2	18	32	32	800	1600
100/5	6,0	10	20	40	40	300	600	2000	2000	14	20	40	40	1000	2000
120/5	7,2	12	24	48	48	360	720	2400	2400	16,8	24	48	48	1200	2400
150/5	9,0	15	30	60	60	450	900	3000	3000	21	30	60	60	1500	3000
200/5	12,0	20	40	80	80	600	1200	4000	4000	28	40	80	80	2000	4000
250/5	15,0	250	50	100	100	750	1500	5000	5000	35	50	100	100	2500	5000
300/5	18,0	30	60	120	120	900	1800	6000	6000	42	60	120	120	3000	6000
400/5	24,0	40	80	180	180	1200	2400	2400	8000	56	80	160	160	4000	8000
500/5	30,0	50	100	200	200	1500	3000	10M	10M	70	100	200	200	5000	10M
600/5	36,0	60	120	240	240	1800	3600	12	12	84	120	240	240	6000	12
750/5	45,0	75	150	300	300	2250	4500	15	15	105	150	300	300	7500	15
800/5	48,0	80	160	320	320	2400	4800	16	16	112	160	320	320	8000	16
1000/5	60,0	100	200	400	400	3000	6000	20	20	140	200	400	400	10M	20
1200/5	72,0	120	240	480	480	3600	7200	24	24	168	240	480	480	12	24
1500/5	90,0	150	300	600	600	4500	9000	30	30	210	300	600	600	15	30
2000/5	120,0	200	400	800	800	6000	12M	40	40	280	400	800	800	20	40
2500/5	150,0	250	500	1000	1000	7500	15	50	50	350	50	1000	1000	25	50

· Option : Full Scale Calibrating vars

(Unit : kvar)

1 calibr. vars	0,6	1,0	2,0	1,158	1,0	1,0	1,0	1,0	0,961	1,0	2,0	2,0	4,0	1,666	1,666
1/3 calibr. vars	0,2	0,333	0,667	0,386	0,667	0,667	0,667	0,667	0,32	0,667	0,667	0,667	1,333	0,555	0,555
1/4 calibr. vars	0,15	0,25	0,5	0,290	0,25	0,25	0,25	0,25	0,24	0,25	0,5	0,5	1,0	0,416	0,416

H
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/
C
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고압
변류기

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변압기

R
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경보기

G
F
R
지락
계전기

Z
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영용
변류기

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R
지시
전기계기

S
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D
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선틀

교류무효전력계 var Meter (var)



● Description

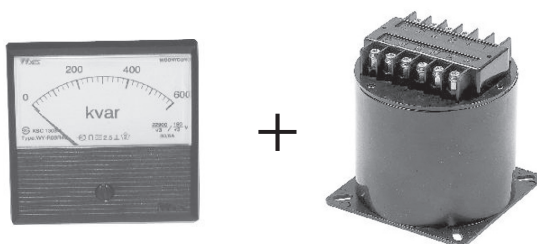
- 본 계측기는 Transducer 형으로 무효전력을 측정하는 계기로 변환기 (Transducer) 를 계측기 내부 또는 외부에 부착 사용한다.
- 동작 전압의 범위는 정격전압의 ±10% 이내입니다.
- SPECIFICATION 이외의 계측기는 정격 2차 전압 110V, 정격 2차 전류 5A인 VT 와 C.T 를 연결하여 사용하십시오. 그리고 주문시 VT 비, C.T 비와 최대 눈금치를 명시하여 주십시오.
- WY-W11R type 의 무효 전력계는 transducer box 를 내장하고 있으며, WY-R□□R, WY-S□□R, WY-W08R type 의 무효 전력계는 외부에 transducer box 를 연결하여 사용 하십시오.
- 3상 4선식의 정격전압은 선간전압 $\sqrt{3}$ 으로 표시합니다.
- 무효 전력계의 최대 눈금 계산시는 전부하 용량에 1/2, 1/3, 1/4로 하는 것이 적합하다.
- 정격2차전압 110V인 P.T 와 정격2차전류 5A인 C.T 를 사용할 경우의 Calibrating 1/2 var은 Calibrating var = 최대 눈금치 / (VT 비)×(C.T비)
- 3상 3선식 계기의 표준교정 무효전력은 0.5kvar 로 교정되어 있습니다.
- 무효전력 계기의 표준 위상 범위는 Lag로 교정되어 있습니다.

● Description

- The type of operating principle of these meters are the transducer type meters measure reactive power. Transducer is used with the transducer type attached inside or outside.
- Operating voltage range is $\pm 10\%$ of rated voltage.
- For other voltage and / or current ratings higher than listed on the SPECIFICATION. use external current transformer and / or external potential transformer with a 110V/ 5A instrument, when ordering, specify the full scale value desired, VT ratio and C.Tratio.
- In case of the WY-W11R type of var meters, transducer box is self-contained and the WY-R□□R, WY-S□□R, WY-W08R type of var meters are provided with on external transducer box,
- Rating voltage of 3phase 4wire is at phase voltage. ($\sqrt{3}$)
- The full scale of var meter is generally 1/2, 1/3, or 1/4 of load capacity.
- When using VT and C.T, on 110V/5A instrument, calibrating 1/2 var will be as follows, Calibrating var = Full scale var / (VT ratio) x(C.T ratio)
- The standard calibration var of the meter for 3phase 3wire is calibrated the 0,5kvar.
- The standard calibration var of the meter for 3phase 4wire is calibrated the 0,833kvar.
- The standard power factor of var meter is calibrated Lag area.

● External T/D Internal T/D 제품 구성도

External T/D



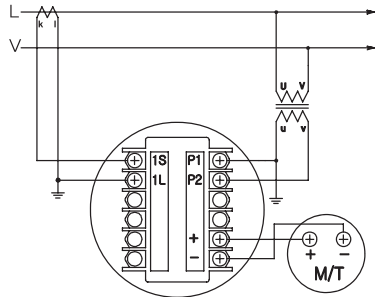
Internal T/D



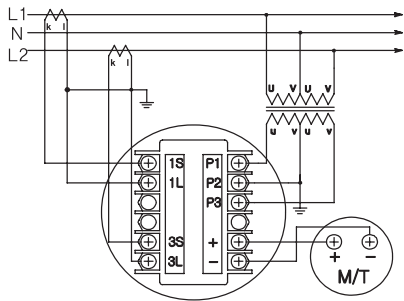
※ 계측기와 T/D는 제조 번호가 일치하도록 설치 하십시오.
Install the manufacture's serial number of meter and T/D unitedly.

● Outside Connection

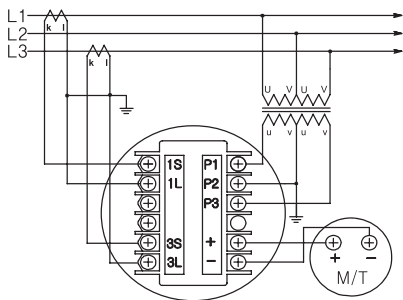
- With Ext. Transducer
(WY-R□□R, WY-S□□R, WY-W08R)



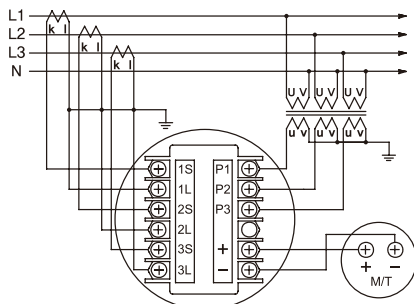
1상2선식
1 Phase 2Wire
var Meter



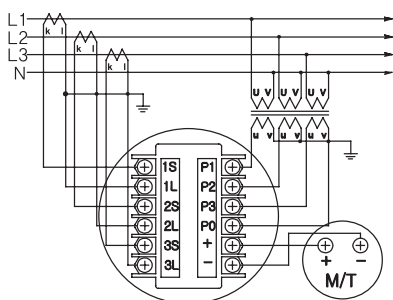
1상3선식
1 Phase 3Wire
var Meter



3상3선식
3 Phase 3Wire
var Meter

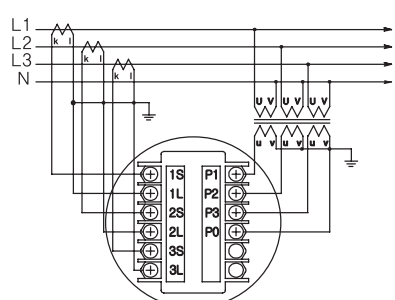
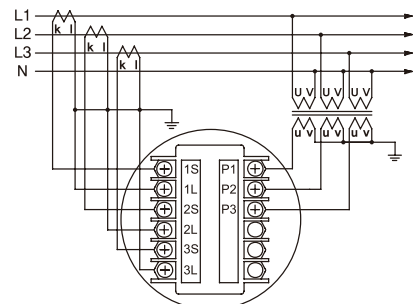
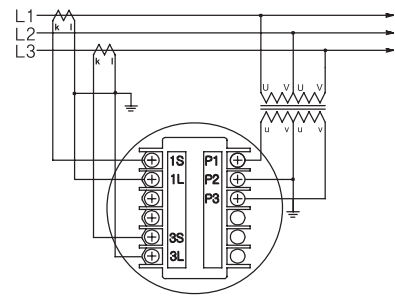
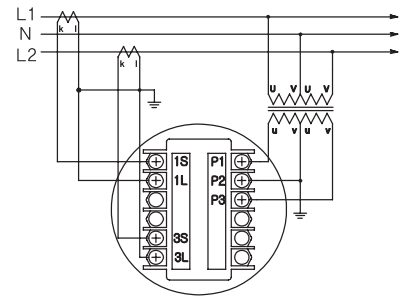
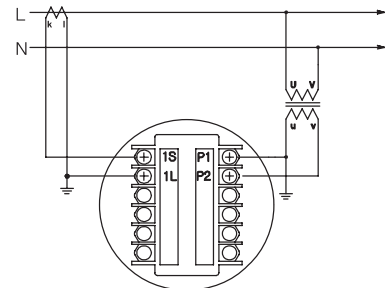


3상4선식
3 Phase 4Wire
var Meter
Voltage Balance



3상4선
3 Phase 4Wire
var Meter
Unbalance Type

- Int. Transducer
(WY-W11R, WY-SH96)



HV / CT
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HV / VT · MOF
고압변압기

LV / CT
저압변류기

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저압변압기

RELA Y
보호계전기

ELD
누전경보기

GFR
지락계전기

ZCT
영장변류기

METER
지시전기계기

SPD
서지보호기

SHUNT
셔트

● Dimension

· WY-R Type Dimension

(Unit = mm)

Front view									
Rear view									
	Type	W	H	D	A	B	C	E	Ø
	WY-R08	80	80	36	15	34	30	64	65
	WY-R10	100	80	36	15	36	28	80	65

· WY-R Type Dimension

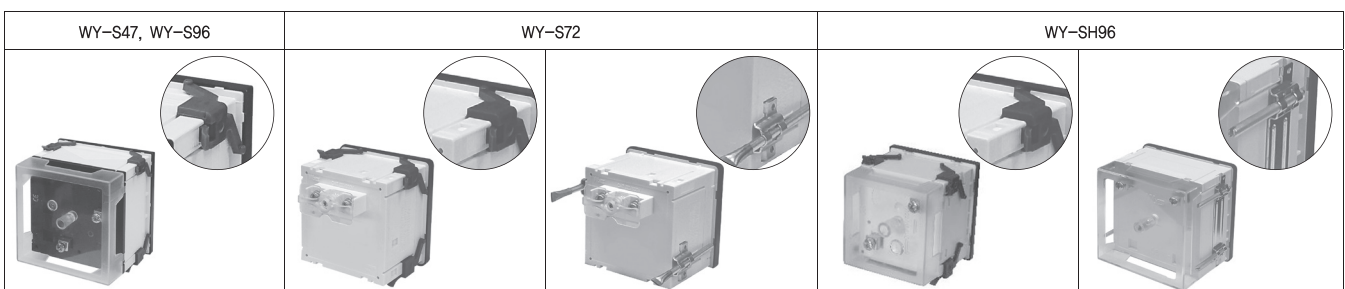
Front view									
Rear view									
	Type	W	H	D	A	B	C	E	Ø
	WY-R05	51	51	35	14	18	18	36	44
	WY-R06	60	60	35	14	24	24	48	54

· WY-S Type Dimension

(Unit = mm)

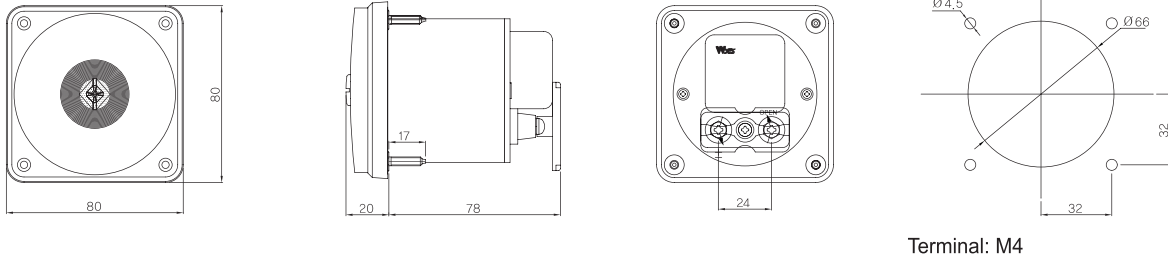
Front view									
Rear view									
	Type	W	H	D	A	B	C	X	Y
	WY-S47	48	48	44	5	44	12	44,5	44,5
	WY-S72	72	72	67	5	44	22	68	68
	WY-S96, SH96	96	96	91	5	44	22	92	92

· Mounting Introduction



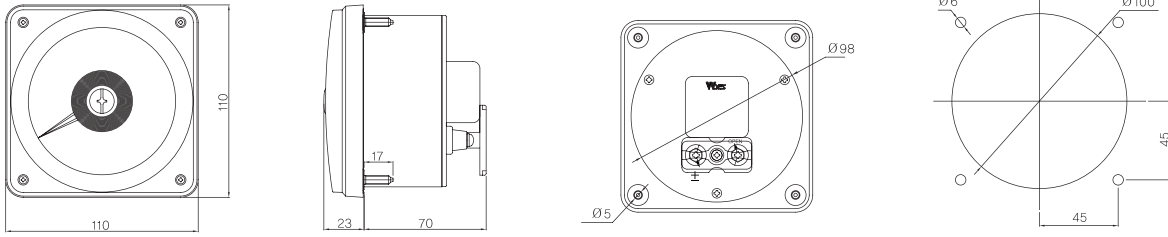
● Dimension

• WY-W08 Type Dimension



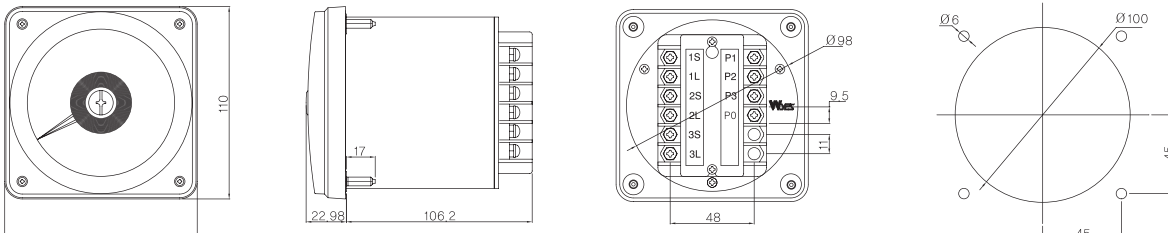
Terminal: M4

• WY-W11 A, V Type Dimension



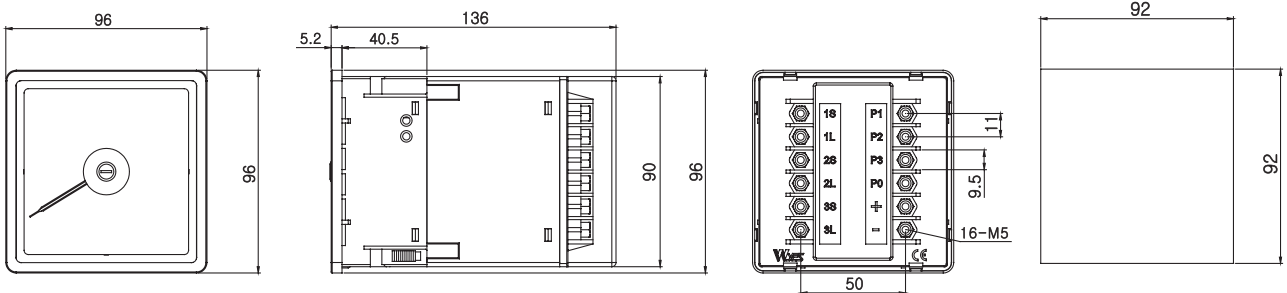
Terminal: M4

• WY-W11 KW, var, PF Type Dimension



Terminal: M4

• WY-SH96 KW, var PF Dimension

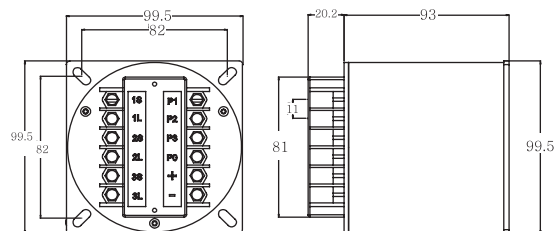


● 외부 변환기 사용

R, S, W08 타입의 Watt, var, Hz PF 계측기는 외부에 우측과 같은 변환기 (T/D) 를 사용합니다.

● External Transducers (For meter)

The Transducer for meter is used with the Watt, var and PF meter, etc., of the R type and S type or W08 type which it is external transducer.



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ZCT
영량변류기

METER
지시전기계기

SPD
서지보호기

SHUNT
설펀트