

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	 	±2,5	0,5	0,5	630	Refer to Page 679	Ext.						
WY-R08R1	80×80				1,5			660								
WY-R10R1	100×80							670								
WY-S47R1	47×47							600								
WY-S72R1	72×72							610								
WY-S96R1	96×96			 	±1,0 ±1,5			680	Refer to Page 680	Int.						
WY-SH96R1										Ext.						
WY-SH96R1T	80×80			 				750		Ext.						
WY-W08R1								110×110		 	760			Int.		
WY-W11R1														Ext.		
WY-W11R1T																

※ 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.	Trans- ducer		
		Volt	Curr.			Volt	Curr.					
WY-R06R2	60×60	110V	5A or 1A		±2,5	0,5	0,5	630	Refer to Page 679	Ext.		
WY-R08R2	80×80				1,5			660				
WY-R10R2	100×80							670				
WY-S47R2	47×47							600				
WY-S72R2	72×72							610				
WY-S96R2	96×96								±1,0 ±1,5	680		
WY-SH96R2												
WY-SH96R2T										Refer to Page 680	Int.	
WY-W08R2	80×80							750	Ext.			
WY-W11R2	110×110							760	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

$$\text{Calibrating Watt} = \frac{10\text{kvar}}{110\text{V} \times 100/5\text{A}} = 0.5\text{kvar}$$

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		±2,5	0,5	0,5	730	Refer to Page 679	Ext.	Un	Un		
WY-R08R3	80×80				1,5			760						
WY-R10R3	100×80							770						
WY-S47R3	47×47							700						
WY-S72R3	72×72							710						
WY-S96R3	96×96			730				Refer to Page 680	Int.					
WY-SH96R3									Ext.					
WY-SH96R3T					Ext.									
WY-W08R3	80×80				±1,0 ±1,5			780	Refer to Page 680	Ext.				
WY-W11R3				800				Int.						
WY-W11R3T								Ext.						

※ 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.	Trans-ducer	Remarks	
		Volt	Curr.			Volt	Curr.				Volt.	Curr.
WY-R06R4	60×60	190/ $\sqrt{3}$ V or 380/ $\sqrt{3}$ V	5A or 1A	 	±2,5	0,5	0,5	760	Refer to Page 679	Ext	B	Un
WY-R06R4U								Un				
WY-R08R4	80×80							790			B	
WY-R08R4U								Un				
WY-R10R4	80×100							800			B	
WY-R10R4U								Un				
WY-S47R4	47×47			1,5	730			B				
WY-S47R4U					Un							
WY-S72R4	72×72			±1,0 ±1,5	740			B				
WY-S72R4U					Un							
WY-S96R4	96×96				830			B				
WY-S96R4U								Un				
WY-SH96R4	96×96	Refer to Page 680	Int.			B						
WY-SH96R4T			Ext			B						
WY-SH96R4U	Int.		Un									
WY-SH96R4UT	Ext		Un									
WY-W08R4	80×80		 		900	Ext	B					
WY-W08R4U							Un					
WY-W11R4	110×110	 	920		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



지시전기계기

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/ $\sqrt{3}$ 190/ $\sqrt{3}$	380/ $\sqrt{3}$ 190/ $\sqrt{3}$	380/ $\sqrt{3}$	11400/ $\sqrt{3}$ 190/ $\sqrt{3}$	22900/ $\sqrt{3}$ 190/ $\sqrt{3}$
	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	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

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● Description

- 본 계측기는 Transducer 형으로 무효전력을 측정하는 계기로 변환기 (Transducer) 를 계측기 내부 또는 외부에 부착 사용한다.
- 동작 전압의 범위는 정격전압의 $\pm 10\%$ 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



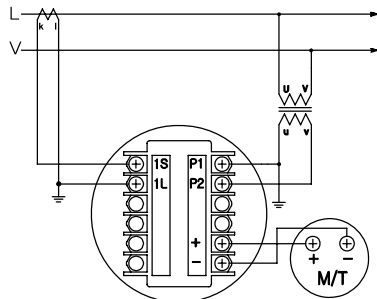
※ 계측기와 T/D는 제조 번호가 일치하도록 설치 하십시오.

Install the manufacture's serial number of meter and T/D unitedly.

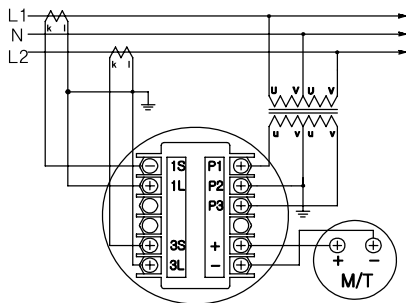
● Outside Connection

· With Ext. Transducer

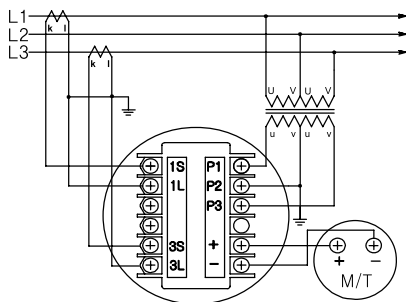
(WY-R□□R, WY-S□□R, WY-W08R)



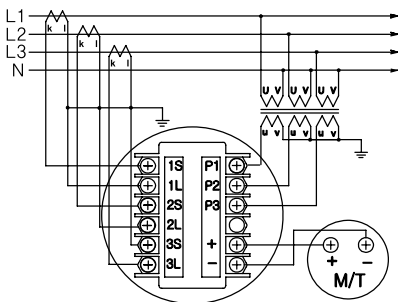
1상2선식
1 Phase 2Wire
var Meter



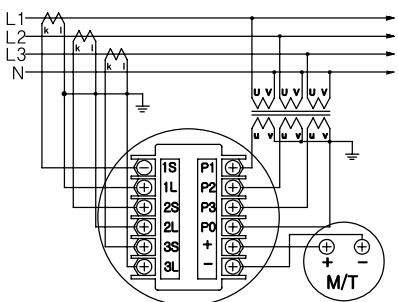
1상3선식
1 Phase 3Wire
var Meter



3상3선식
3 Phase 3Wire
var Meter



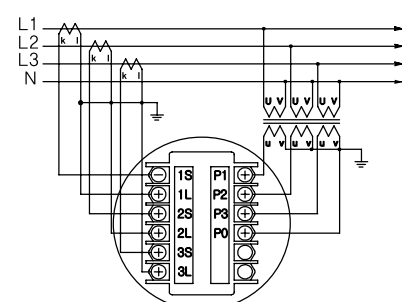
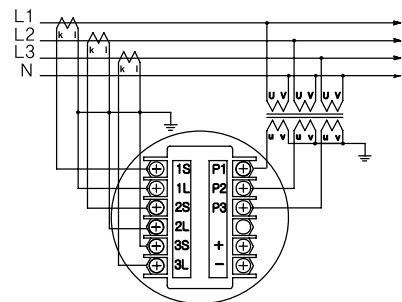
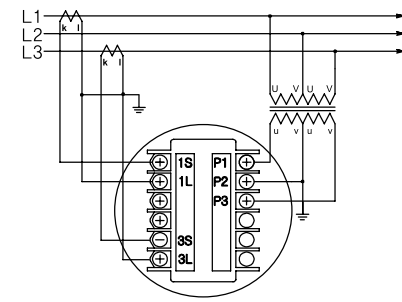
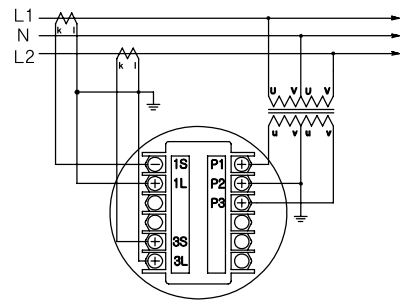
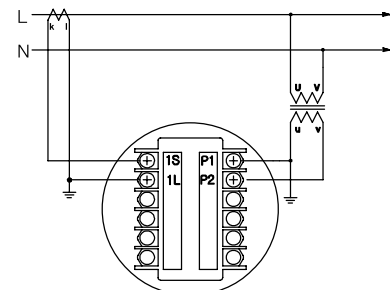
3상4선식
3 Phase 4Wire
var Meter
Voltage Balance



3상4선
3 Phase 4Wire
var Meter
Unbalance Type

· Int. Transducer

(WY-W11R, WY-SH96)



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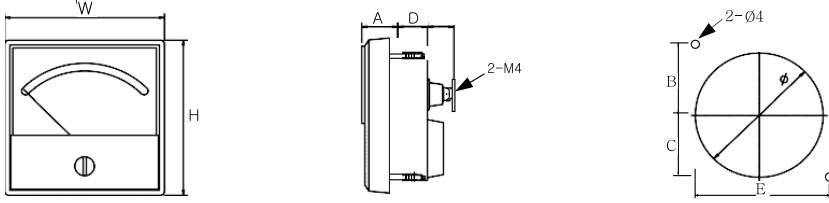
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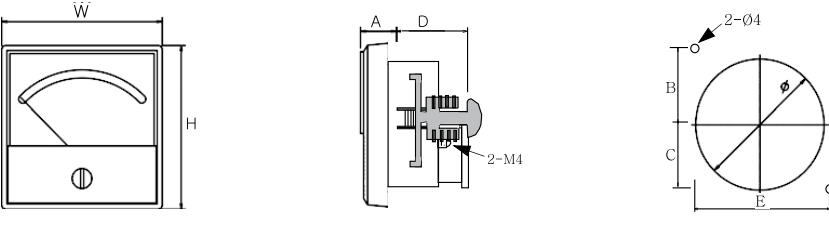
● Dimension

· WY-R Type Dimension

(Unit = mm)

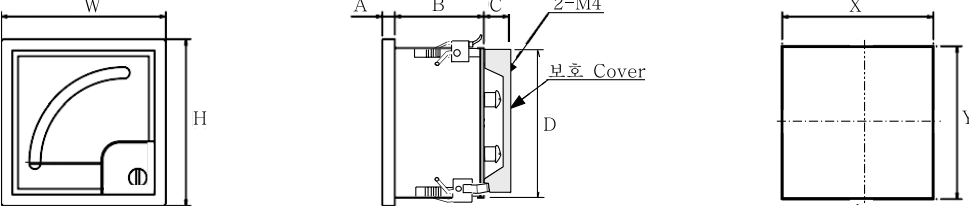
Front view 									
Rear view 	Type	W	H	D	A	B	C	E	Ø
	WY-R08	80	80	36	15	34	30	64	65
	WY-R10	100	80	36	15	36	28	80	65

· 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)

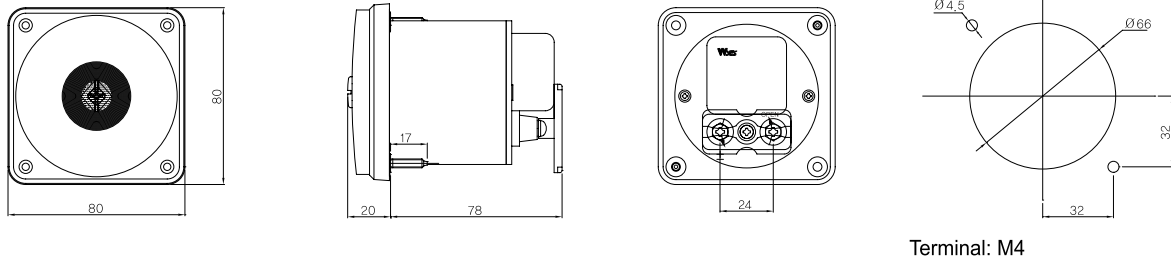
Front view 									
Rear view 	Type	W	H	D	A	B	C	X	Y
	WY-S47	48	48	44	5	44	12	44,5	44,5
	WY-S72	72	72	67	5	44	22	68	68
	WY-S96, SH96	96	96	91	5	44	22	92	92

· Mounting Introduction

WY-S47, WY-S96		WY-S72		WY-SH96	
					

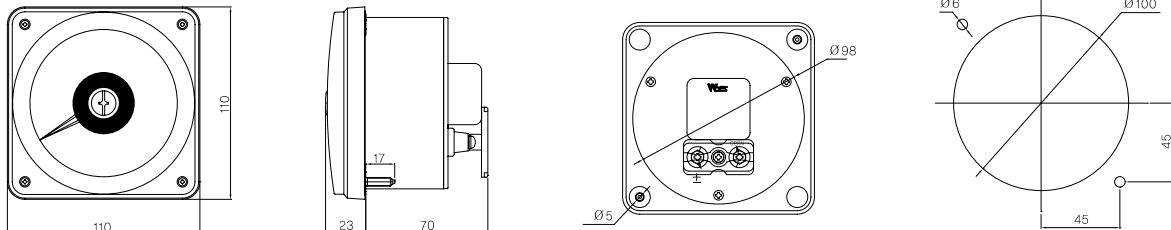
● Dimension

· WY-W08 Type Dimension



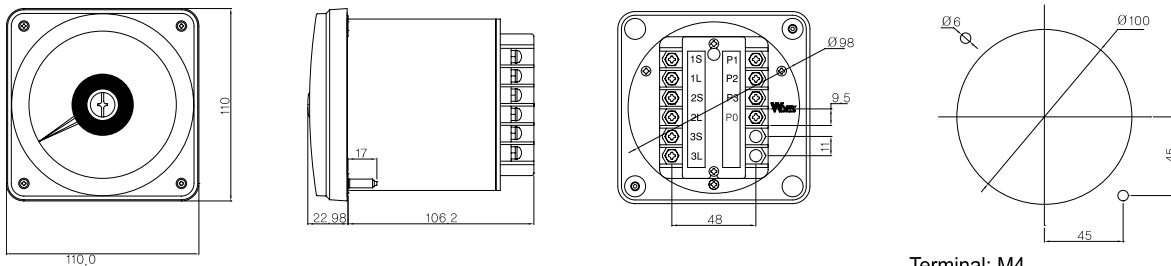
Terminal: M4

· WY-W11 A, V Type Dimension



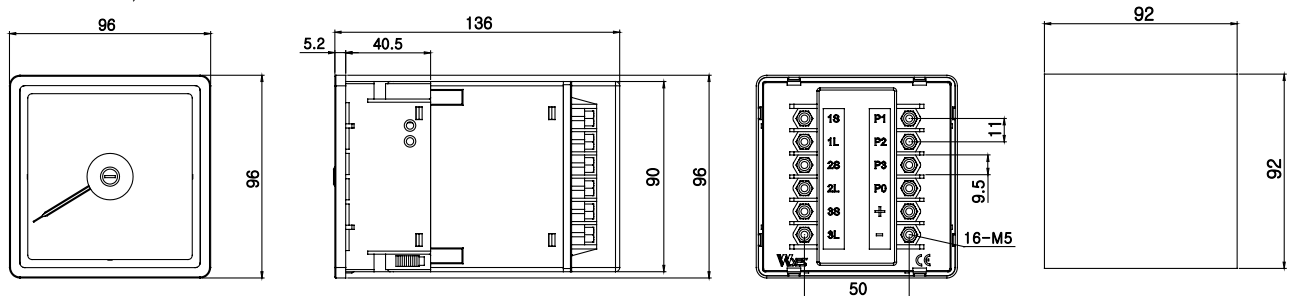
Terminal: M4

· 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 is external transducer.

