

DIGITAL PANEL BOARD METER

Multifunctional-Power Total Meter (96 x 96mm)



- V, A, PF, Hz, THD, Watt, var, VA, Wh, varh, VAh



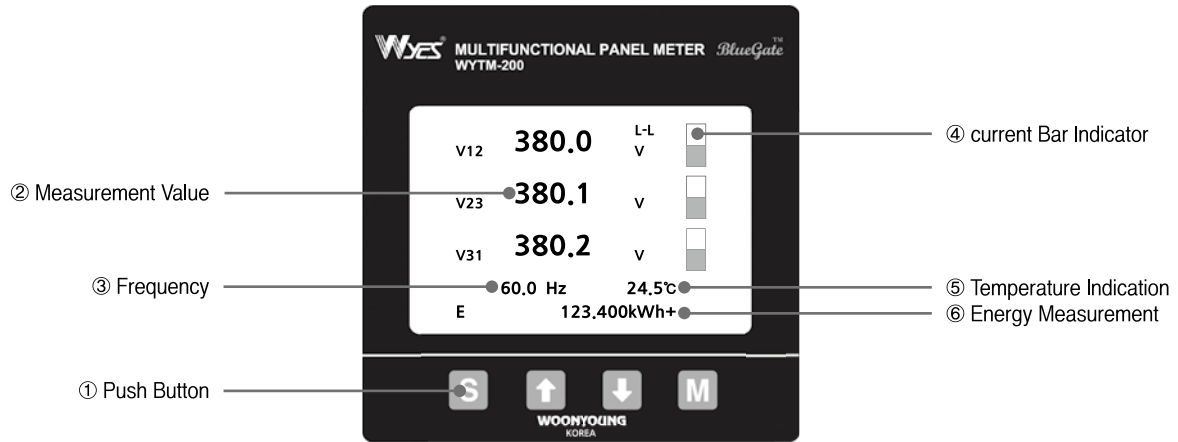
본 제품은 종합적인 전력 상태를 표시하여주는 계기로 전압(V), 전류(A), 유효전력(W), 유효전력량(Wh), 무효전력(var), 무효전력량(varh), 역률(PF/ COS), 주파수(Hz), 고주파(THD), 각종의 상태 감시가 가능한 통신 장착용 종합 계측 계기입니다.

This product could be showed with comprehensive power condition (A, V, W, Wh, var, varh, PF, COS, Hz, THD) and it is possible Multifunctional-Power Total Meter to observe each condition.

● Specifications

ITEM	WYTM-210	WYTM-210C	WYTM-210E
Communication port	NONE	RS485	Ethernet
Auxiliary supply voltage	AC, DC 100 ~ 240V, 3VA		
Wiring	1P2W, 3P3W, 3P4W		
Voltage input	Direct phase-phase : 34 ~ 520 Vac Direct phase-N : 20 ~ 300 Vac		
Current input	0.02 ~ 6 A (INOM = 5 A)		
Frequency	45 ~ 65Hz		
Operating temperature	-10 ~ 50°C		
Storage temperature	-20 ~ 80°C		
Protection rating	IP41 (IP54 with cover film), back panel : IP20		
Dimension	panel 96 x 96mm		
Weight	0.3Kg		

● Front panel (Operating and Indication Elements)



① Push Button

- 일반모드 : 측정모드 변경
- 설정모드 : 파라미터의 구성변경

② Measurement Value

- 선로의 계측 값을 표시

③ Frequency

- 선로의 주파수 표시

④ current Bar Indicator

- 현재 선로의 흐르는 전류의 정격 대비 %를 Level bar로 표시

⑤ Temperature Indication

- 제품 내부에 있는 온도센서로 판넬 내부 온도를 가늠할 수 있습니다.

⑥ Energy Measurement

- 누적 에너지를 적산하여 표시
 - 기기의 최대 적산량 999,999.999 M(mega)를 넘게 되면 '0'으로 초기화.
 - CT Ratio 변경 시 누적 에너지량 초기화.
- (사용설명서 5.3.3 Ratio(Parameter Setting 2) 참조)

① Push Button

- Normal Mode: Change the Measurement Mode
- Settings Mode: Changing the Configuration of Parameters

② Measurement Value

- Display the Measured Values of the Track

③ Frequency

- Frequency Indication of the Track

④ Current Bar Indicator

- Mark % of the Current line Flow Relative to the Current Rating as a Level Bar

⑤ Temperature Indication

- The Temperature Sensor Inside the Product can Measure the Temperature Inside the Panel.

⑥ Energy Measurement

- Show the Cumulative Amount of Energy Accumulated
 - Initialize to '0' when the Maximum Integrated Volume of the Device Exceeds 999,999.999 M (mega).
 - Initialize the Cumulative Amount of Energy when Changing the CT Ratio.
- (See User's Manual 5.3.3 Ratio (Parameter Setting 2))

트랜스포머
REACTOR
리액터
무접점릴레이
SSR
전력조정기
TPR
스위칭파워
SMP
노이즈 필터
N/F
하모닉 필터
H/F
서지보호기
SPD
보호계전기
RELAY
누전경보기
ELD=GF
R
영상변류기
ZCT
판넬메타
METER
계기용변성기
CT=VT
선트랜
SHUNT=FA
N

● 파라미터 설정표 Parameter Setting Table

NO	Parameter group	Range	Comment
1	Setup Lock	Unlock / Lock	파라미터 설정 값의 무단 변경에 대한 보호를 위해 (설정 불가) 잠글수 있습니다. It can be locked (can't setting) to protect against unauthorized changes in parameter setting values.
2	CT Ratio	5 ~ 10,000A / 5A,1A	기기에 연결된 변류기 (CT) 1차,2차 값을 설정 할 수 있습니다. You can set the primary and secondary values of the current transformer (CT) connected to the instrument.
3	VT Ratio	Direct	기기에 연결된 변압기 (VT) 1차, 2차 값을 설정 할 수 있습니다. You can set the transformer (VT) primary and secondary values connected to the instrument.
		500 ~ 1,000,000V / 50 ~ 500V	
4	Connection Type	3Y / 3D / 3A / 1P2W	기기에 연결된 변성기 (CT, VT)의 결선 방법을 설정 할 수 있습니다. You can set the connection method for the transformer (CT, VT) connected to the instrument.
5	Hz Setting	50Hz / 60Hz	VT 단자 입력 주파수를 설정 할 수 있습니다. You can set the VT terminal input frequency.
6	PF Display Format	cos / Pi	기기의 역률 표시 방법을 설정 할 수 있습니다. You can set the power factor display method for the instrument.
7	Averaging Period	1sec ~ 60min	기기에서 Min/Avg/Max 계산을 위한 적분 기준 시간을 설정 할 수 있습니다. You can set the integration reference time for Min/Avg/Max calculations on the instrument.
8	Power Display Select	$\Sigma EP+- / \Sigma ES / \Sigma EQL+- / \Sigma EQC+-$	적산 표시 요소별로 활성화 할 수 있으며 선택된 요소만 기기에 표시 됩니다. It can be enabled for each integrated display element and only selected elements are displayed on the device.
9	Communication Setting	RS-485 (WYTM-200C)	RS-485 통신기능을 설정 합니다. (Slave ID, 통신 속도) Set RS-485 communication capabilities (Slave ID, communication speed)
		Ethernet (WYTM-200E)	Ethernet 통신기능을 설정 합니다. (IP Address) Set up the Ethernet communication function. (IP Address)
10	Custom View Setting	Line1, Line2, Line3	설정하는 항목의 값이 LCD에 표시되도록 설정 할 수 있습니다. You can set the value of the item you set to be displayed on the LCD.
11	Contrast Setting	15단계의 밝기 조절 Adjust brightness at 15 levels	LCD의 밝기 값을 설정 할 수 있습니다. You can set the brightness value for the LCD.

● Measurement Elements

Current	I1, I2, I3
	MIN / AVG / MAX (I1, I2, I3)
	Harmonics(THD), Individual Harmonics(h1 ~ h48)
Voltage	V1, V2, V3 (L-N), V12, V23, V31(L-L)
	MIN / AVG / MAX (L-N V1, V2, V3)
	MIN / AVG / MAX (L-L V12, V23, V31)
	Harmonics(THD), Individual Harmonics(1 ~ 48th)
Frequency	Hz
Active, Reactive and Apparent Power	P1, P2, P3, Q1, Q2, Q3, S1, S2, S3
	$\Sigma P, \Sigma Q, \Sigma S$
	MIN / AVG / MAX $\Sigma P, \Sigma Q, \Sigma S$
Power Factor	PF1, PF2, PF3
	ΣPF
	MIN / AVG / MAX (PF1, PF2, PF3)
Energy (Power Meter)	$\Sigma EP+, \Sigma EP-, \Sigma QL+, \Sigma QL-, \Sigma QC+, \Sigma QC-, \Sigma ES,$
Harmonics	Total Harmonic Distortion of Currents ΣI
	Total Harmonic Distortion of Voltage $\Sigma V(L-L)$
	Total Harmonic Distortion of Voltage $\Sigma V(L-N)$
Temperature	°C Indicated by the Internal Sensor

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디지털판넬미터

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● Measurement Range

Current Measurement (TRMS)	Current Transformer Primary	10,000A
	Current Transformer Secondary	1 or 5 A
	Minimum Measured Current	11 mA
	Display	0 ~ 10.00 kA
	Intrinsic Consumption	< 0.3 VA
	Accuracy	0.2% rdg. ± 2 dgt.(10 ~ 110% In)
	Continuous Overload	6 A
Voltage Measurement (TRMS)+	Short-term Overload	5 x In for 1 s
	Direct Phase-Phase	34 ~ 520 V
	Direct Phase-N	20 ~ 300 V
	Voltage Transformer Primary	50 ~ 1,000,000 V
	Voltage Transformer Secondary	50 ~ 500 V
Power Measurement	Accuracy	0.2% rdg. ± 2 dgt.(50 ~ 500 Vac)
	Display	0.000 ~ 300.0 GW/Gvar/GVA
	Accuracy (W, VA)	0.5% rdg.
Power Factor Measurement	Accuracy (var)	1.5% rdg.
	Accuracy	0.5% rdg. ± 1 dgt.
Frequency Measurement	Measuring Range	45 ~ 65 Hz
	Accuracy	0.1% rdg. ± 1 dgt.
Measurement of Energy Amount	Display	0.000 ~ 999,999.999 M[mega]
	Real Energy (IEC 62053-22)	Class 0.5 S
	Reactive Energy (IEC 62053-23)	Class 2
Harmonic Measurement	Display	0 ~ 100%
	Measuring Range	1 ~ 48th
Rmonic Measurement	Measuring Range	1 ~ 48th

● Measurement Display Range

Current	0.000 ~ 60.00 kA	
Phase Voltage(L-N)	0.000 ~ 4200 kV	
Phase-Phase Voltage(L-L)	0.000 ~ 4200 kV	
Power Measurement	Active Power	0.000 ~ 300.0 GW
	Reactive Power	0.000 ~ 300.0 Gvar
	Apparent Power	0.000 ~ 300.0 GVA
Power Factor	-1.00 ~ 0.00 ~ 1.00	
	☐ : Capacitive	
	☐ : Reactive	
Frequency Measurement	☐ : Negative ΣW	
	45.0 ~ 65.0 Hz	
Measurement of Energy A mount	Total Active Power	0.000kWh ~ 999,999.999 MWh
	Total Reactive Power	0.000kWh ~ 999,999.999 Mvarh
	Total Apparent Power	0.000kWh ~ 999,999.999 MVAh

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판넬메타
METER
계기용변성기
CT=VT
션트팬
SHUNT=FA

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● Setup

• Configuration

WYTM-210은 다음에서 설명하는 버튼을 이용하여 파라미터 설정 또는 변경, 계측 확인 등을 할 수 있습니다.

The WYTM-210 can do parameter setting, changes, or measurement checks, using the buttons described below.

기기의 파라미터를 설정 하려면 각 예의 설명에 따라 버튼을 누르십시오.
해당하는 구성 메뉴가 표시 됩니다

To set a parameter of the device, push the button according to the description in each example.
The corresponding configuration menu is displayed

Button	Description
	<ul style="list-style-type: none"> · 계측모드 → 파라미터 설정 모드 (3초간 길게 누르십시오) · 파라미터 설정모드 → 계측 모드 (3초간 길게 누르십시오) · Measurement mode → Parameter setup mode (Push this long for 3 seconds) · Parameter setup mode → Measurement mode (Push this long for 3 seconds)
	<ul style="list-style-type: none"> · 계측모드 : 계측요소 변경 · 파라미터 설정모드 : 파라미터 값 증가 · Measurement mode : Measurement element change · Parameter setup mode: Parameter value increase
	<ul style="list-style-type: none"> · 계측모드 : 계측요소 변경 · 파라미터 설정모드 : 파라미터 값 감소 · Measurement mode : Measurement element change · Parameter setup mode: Parameter value decrease
	<ul style="list-style-type: none"> · 계측모드 : 각 계측 요소의 MIN → AVG → MAX · 파라미터 설정모드 : 파라미터 값 단위 변경 · Measurement mode : MIN → AVG → MAX of each measurement element · Parameter setup mode: Parameter value unit change

• Measurement mode navigation (Connection Type : 3Y)

L-L Voltage (Line to Line)				
	Button		x1	x2
L-N Voltage (Line to Neutral)				
	Button			
I				
	Button			
ΣP ΣQ ΣS				
	Button			

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	↓ ↑			
PF	<div style="border: 1px solid black; padding: 5px;"> PF1 0.98 PF <input type="checkbox"/> PF2 0.98 PF <input type="checkbox"/> PF3 0.96 PF <input type="checkbox"/> 60.0 Hz 24.5°C E 123.400kWh+ </div>	M → Min → Avg → Max		
P (Active Power)	<div style="border: 1px solid black; padding: 5px;"> P1 21.50 kW <input type="checkbox"/> P2 21.52 kW <input type="checkbox"/> P3 21.13 kW <input type="checkbox"/> 60.0 Hz 24.5°C E 123.400kWh+ </div>	M → Min → Avg → Max		
Q (Reactive Power)	<div style="border: 1px solid black; padding: 5px;"> Q1 4.365 kvar <input type="checkbox"/> Q2 4.371 kvar <input type="checkbox"/> Q3 6.164 kvar <input type="checkbox"/> 60.0 Hz 24.5°C E 123.400kWh+ </div>	M → Min → Avg → Max		
S (Apparent Power)	<div style="border: 1px solid black; padding: 5px;"> S1 21.93 kVA <input type="checkbox"/> S2 21.96 kVA <input type="checkbox"/> S3 22.01 kVA <input type="checkbox"/> 60.0 Hz 24.5°C E 123.400kWh+ </div>	M → Min → Avg → Max		
THDV	<div style="border: 1px solid black; padding: 5px;"> 1 th <input type="checkbox"/> 100.0 % <input type="checkbox"/> 9.85 VTHD % <input type="checkbox"/> 60.0 Hz 24.5°C E 123.400kWh+ </div>	<div style="border: 1px solid black; padding: 5px;"> S x n(dn) 3 th <input type="checkbox"/> 4.32 % <input type="checkbox"/> 9.85 VTHD % <input type="checkbox"/> 60.0 Hz 24.5°C E 123.400kWh+ </div>	<div style="border: 1px solid black; padding: 5px;"> M x n(up) 48 th <input type="checkbox"/> 0.94 % <input type="checkbox"/> 1.32 VTHD % <input type="checkbox"/> 60.0 Hz 24.5°C E 123.400kWh+ </div>	
THDI	<div style="border: 1px solid black; padding: 5px;"> 1 th <input type="checkbox"/> 100.0 IHD % <input type="checkbox"/> 9.85 ITHD % <input type="checkbox"/> 60.0 Hz 24.5°C E 123.400kWh+ </div>	<div style="border: 1px solid black; padding: 5px;"> S x n(dn) 3 th <input type="checkbox"/> 4.32 IHD % <input type="checkbox"/> 9.85 ITHD % <input type="checkbox"/> 60.0 Hz 24.5°C E 123.400kWh+ </div>	<div style="border: 1px solid black; padding: 5px;"> M x n(up) 49 th <input type="checkbox"/> 0.94 IHD % <input type="checkbox"/> 1.32 ITHD % <input type="checkbox"/> 60.0 Hz 24.5°C E 123.400kWh+ </div>	
Custom View	<div style="border: 1px solid black; padding: 5px;"> Σ 0.000 var <input type="checkbox"/> PF Avg <input type="checkbox"/> I Avg <input type="checkbox"/> 60.0 Hz 24.5°C E 123.400kWh+ </div>			
	↓ ↑			

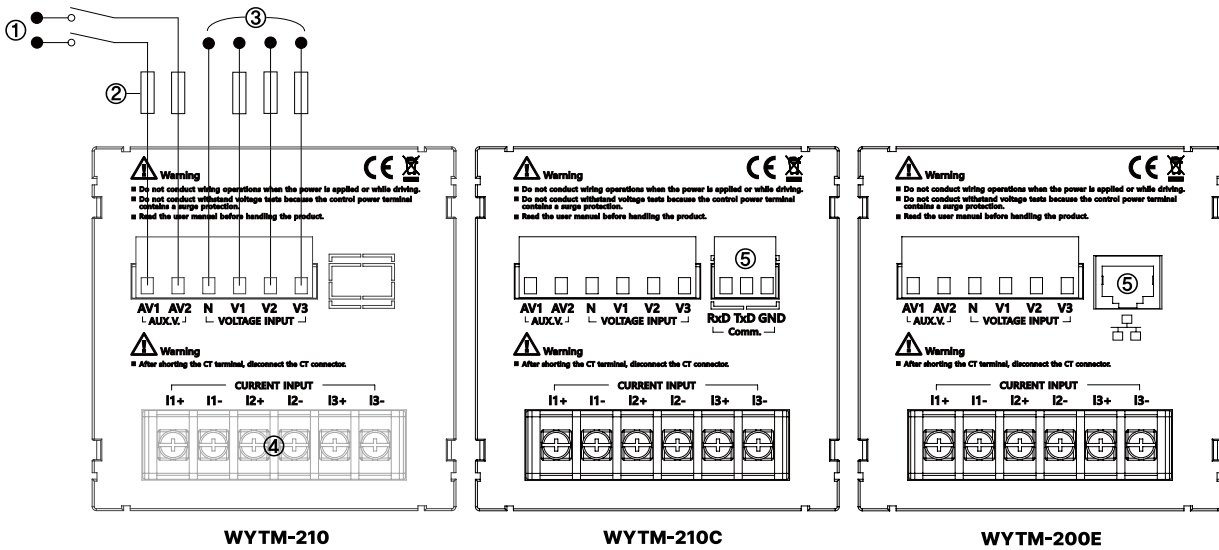
- * E(적산 에너지량) 표시변경시 **S** 버튼을 누르면 요소를 변경할 수 있습니다.
(THDV, DHDI 계측시에는 변경할 수 없습니다.)
- * To change an element of E(accumulated energy amount) display, push the **S** button.
(It is impossible during THDV or DHDI measurement to change the element.)

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● Pin assignment



① Supply voltage range (AUX V.) :

AC, DC 100~240V

② Fuse :

0.5A gG / BS88 2A gG / 0.5A class CC

③ N, V1, V2, V3

Measured voltage

④ I1+ -, I2+ -, I3+ -

Measured currents

+ : input

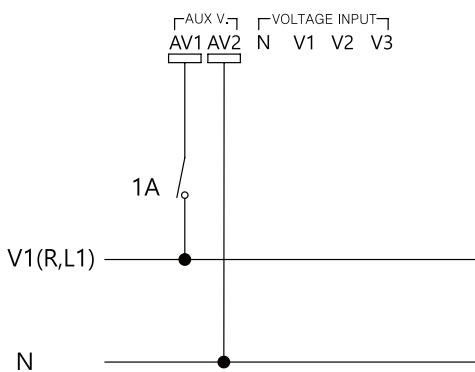
- : output

⑤ Communication

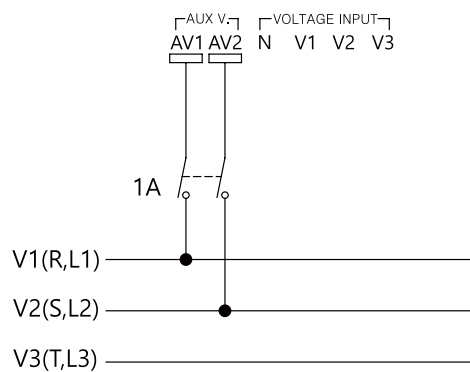
RxD, TxD, GND WYTM-210C : RS-485

WYTM-210E : Ethernet(RJ-45)

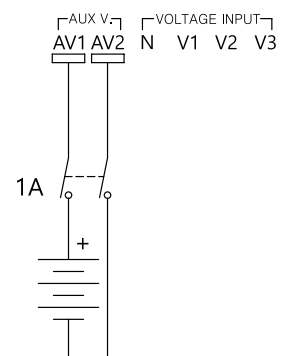
● Power Supply



Line-to-Neutral Voltage
AC Power Supply

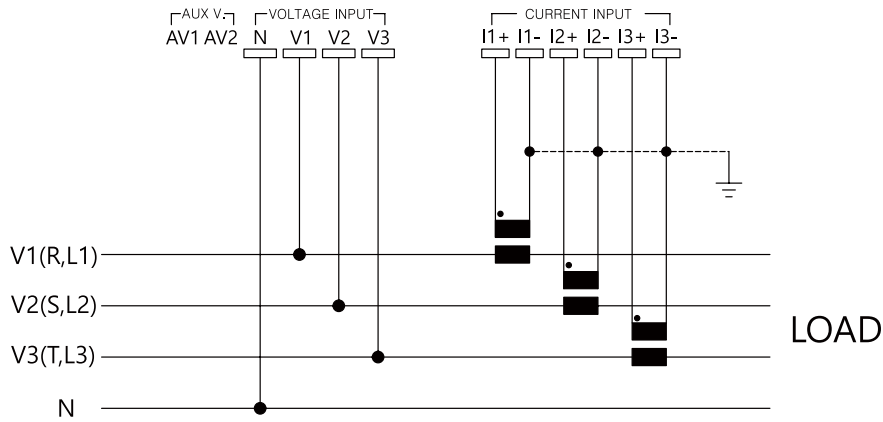


Line-to-Line Voltage
AC Power Supply

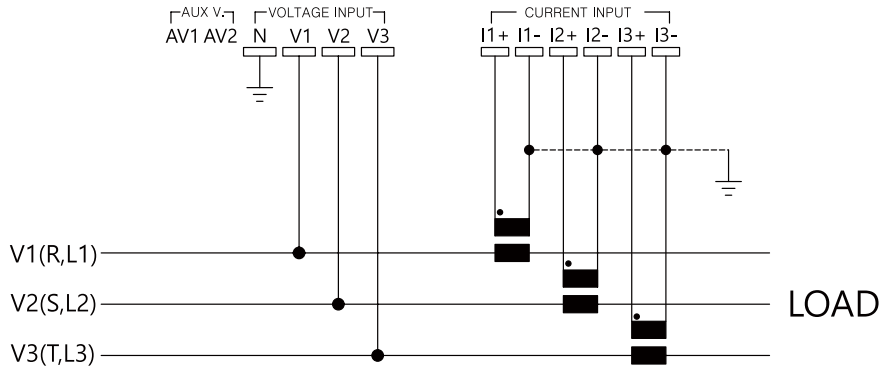


DC Power Supply

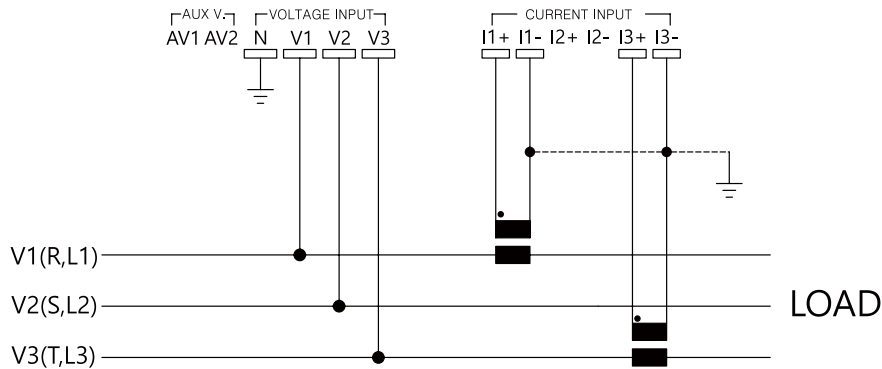
● TN Network Direct Star 3P4W ("3Y") Connection



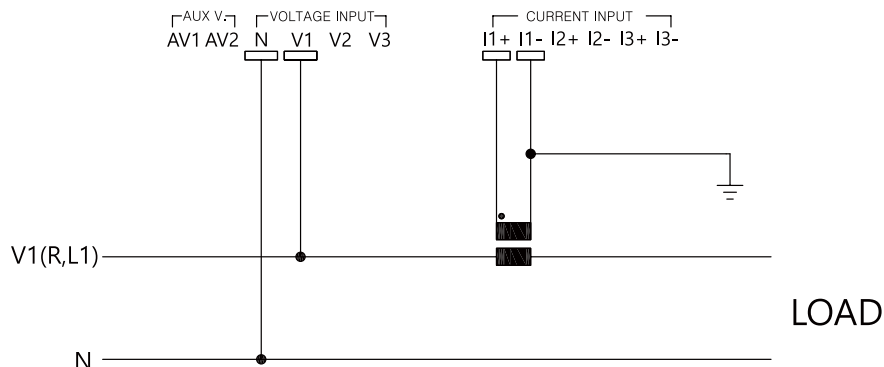
● IT Network Direct Delta 3P3W ("3D") Connection



● IT Network Direct Delta 1P3W ("3A") Connection

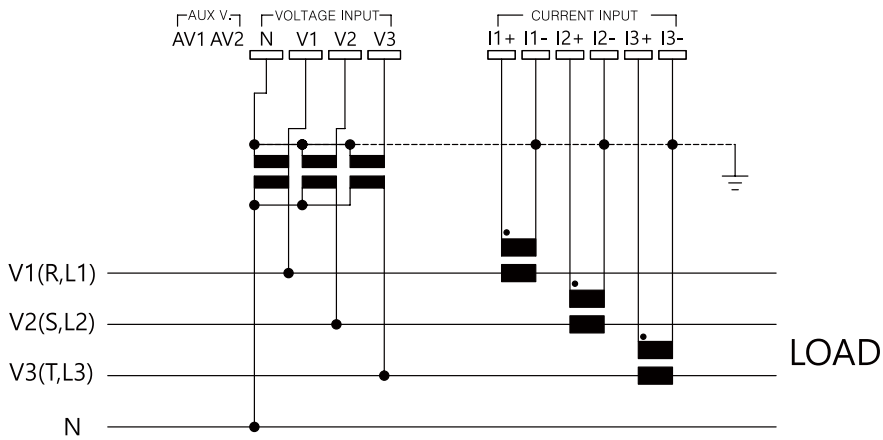


● Single-phase Network ("1P2W") Connection

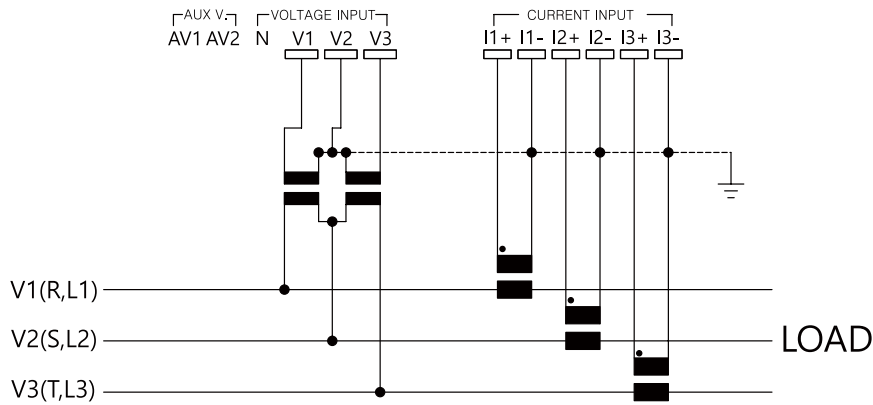


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계기용변성기
CT=VT
쇼트팬
SHUNT=FA

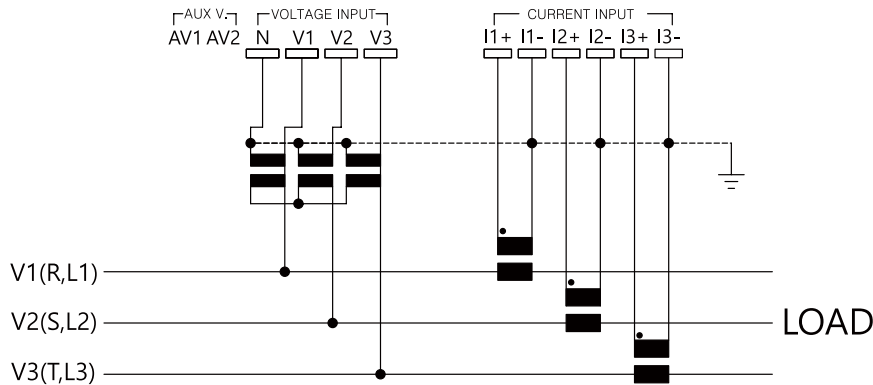
● TN Network Star 3P4W("3Y") Connection via VT



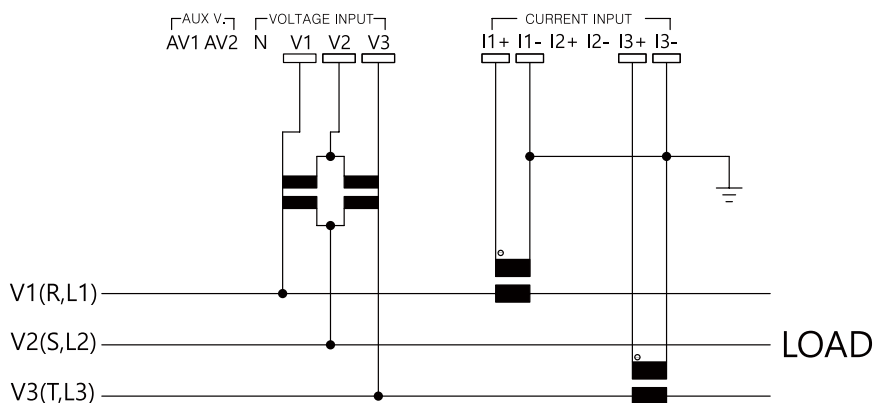
● IT Network Delta 3P3W("3D") Connection via VT



● IT Network Delta 3P3W("3D") Connection via VT



● IT Network Delta("3A") Connection via VT



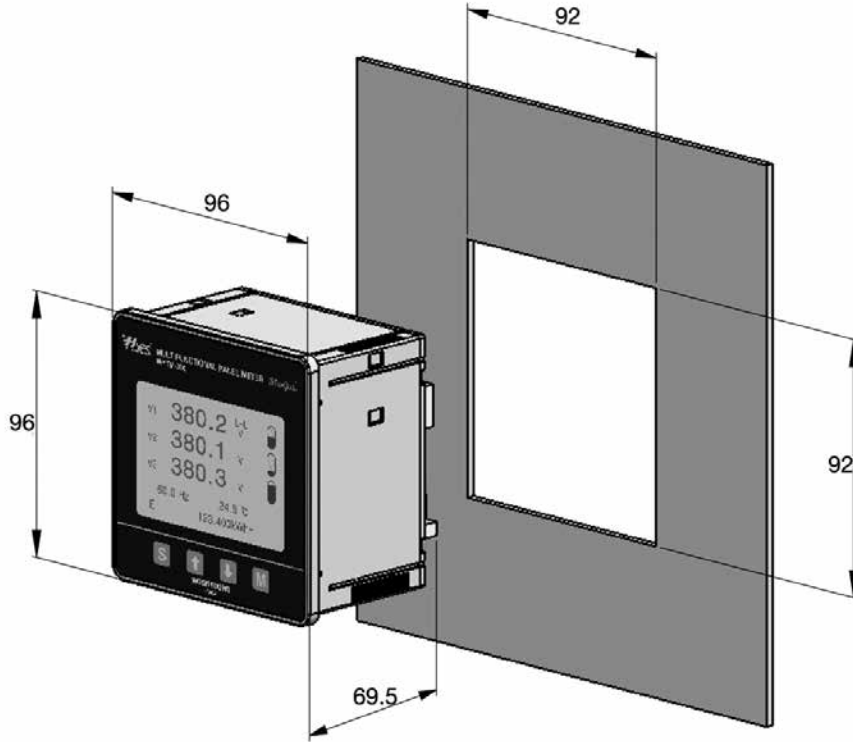
DIGITAL PANEL BOARD METER

Multifunctional-Power Total Meter (96 x 96mm)

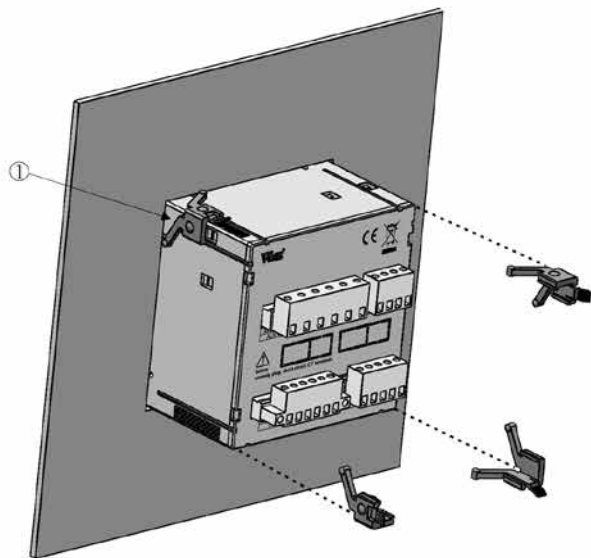


● 제품의 설치 Mounting and installation

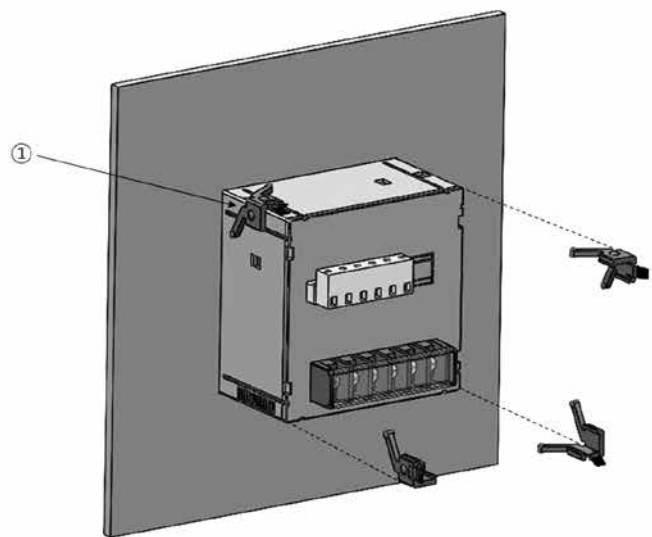
- Cut-out dimensions



• Mounting



WYTM-200/200C/200CP/200E



WYTM-210/210C/210E

트랜스포머
TRANSFORMER
리액터
REACTOR
무정전압블레이
SSR
전력조정기
TPR
스위칭파워
SMP
노이즈필터
N/F
하모닉필터
H/F
서지보호기
SPD
보호계전기
RELAY
누전경보기
ELD=GF
영상변류기
ZCT
판넬미터
METER
계기용변성기
CT=VT
선편
SHUNT=FA

