

Beyond™

GIMAC1000

Digital Power Measuring Device



LS ELECTRIC



BeyondX™ GIMAC1000

An advanced Digital Power Measuring Device capable of high-precision measurement such as harmonics and THD measurement of various electricity quantities of the power distribution system.

BeyondX™ GIMAC1000

Digital Power Measuring Device

- Various measurement elements and high precision measurement
 - Voltage, current : $\pm 0.3\%$
 - Power : Class0.5
- Extended harmonic measurement range (31th harmonic)
- Wide range of PT inputs (AC 20~452V)
- Incorrect wiring check function
- Compact appearance design
- Free Voltage Control Power
- Automatic Scroll Display of Measured Items
- RS-485, Ethernet communication support
- Provide rapid spanning tree protocol function
- Digital Input 2 channel support

Contents

- 04 Features
- 05 Rated specifications
- 07 Configuration
- 08 Operation & Settings
- 10 Communication
- 11 Wiring
- 14 Dimensions & Ordering



Features



Various measurement elements and high precision measurement

The NO models can measure 14 measurement elements, while the EX models can measure 38 elements. The voltage satisfies $\pm 0.3\%$ (real scale) at rated voltage AC 20~452V, current is $\pm 0.3\%$ (full scale) at 0.05 ~ 6A, and power is class0.5. In particular, it ensures high reliability by maintaining precision even in the frequency fluctuating site.



Extended harmonic measurement range (31th harmonic)

Basic power quality measurement such as fundamental wave, harmonic and THD of electricity quantity is possible



Wide range of PT inputs (AC 20~452V)

It is economical and easy to wire because you can input AC 20~452V directly without any PT.



Incorrect wiring check function

By detecting the direction of voltage rotation and judging whether there is an error in the wiring, the user can be notified of the PT wiring by notifying the user. Only three-phase four-wire and three-phase three-wire connections.



Compact appearance design

The basic model has an outline of 110 (W) x 110 (H) x 84.6 (D) mm and the panel cutting size is suitable for DIN 96 and ANSI 4.



Free Voltage Control Power

Control power can be used in various power environments.



Automatic Scroll Display of Measured Items

When you press the [DOWN] KEY (V) and [ENTER] KEY (↵) at the same time, the displayed item will automatically scroll every 10 seconds.



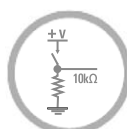
RS-485, Ethernet communication support

It supports MODBUS and TCP / IP protocol of RS-485 and Ethernet communication method.



Provide rapid spanning tree protocol function

Ethernet supports port redundancy and Rapid Spanning Tree Protocol for fast switching performance.



Digital Input 2 channel support

By providing 2 channels of digital input of dry type, the status information of circuit breaker or other module can be read by contact point and displayed on the device or transmitted to the upper level through communication and displayed on the monitoring panel.

Rated specifications

Ratings

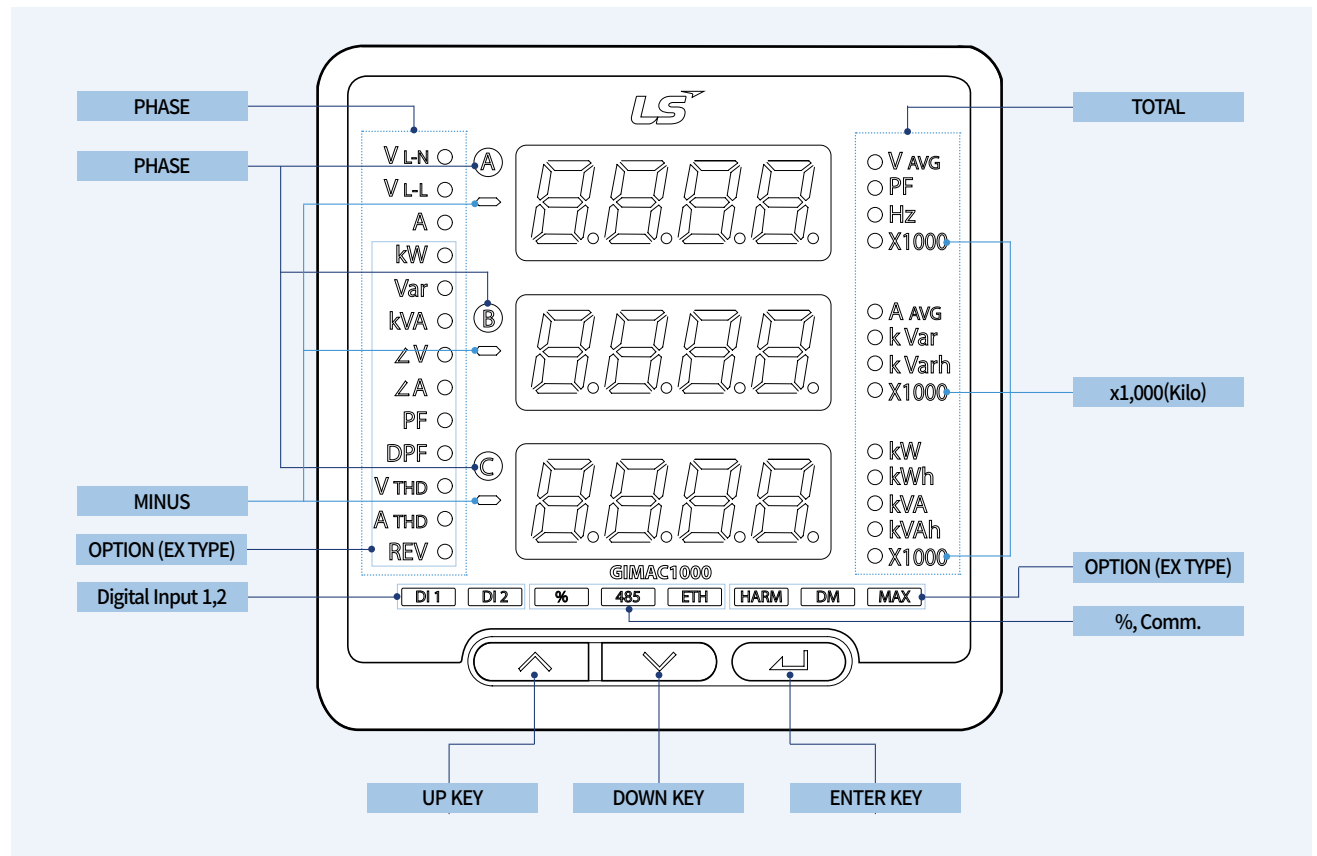
Type		Specification
Wiring		1P2W, 1P3W, 3P3W(Y), 3P3W(Delta), 3P4W
Voltage	Frequency	60Hz, 50Hz
	Voltage PT	AC20~452V(PT 2 nd 110V)
	Current CT	0.05~6A(5A), 0.01~1.2A(1A)
	Power	AC/DC 100~240V±10%, Free Voltage
	Power consumption	4.5W or less : Standby
	Burden	0.1VA or less : PT 0.5VA or less : CT
Insulation Resistance		DC 500V 10MΩ or more
Insulation Voltage		AC 2kV(1kV)/1min
Lightning impulse voltage		AC 5kV(3kV) or more, 1.2x50μs standard waveform supplied
Overload withstand	Current circuit	Withstand 1.2 times of rated voltage for 3 hours. Withstand 8 times of rated current for 2 seconds.
	Voltage circuit	Withstand 1.15 times of rated voltage for 3 hours.
Fast Transient Disturbance		4kV : power input
Electrostatic Discharge(ESD)		8kV : Air, 6kV : Contact
Temperature	Operation	-20°C ~ +60°C
	Storage	-25°C ~ +70°C
Humidity		RH 80% or less (non-condensing)
Applied Standards		IEC60255, IEC61000-4
Dimension(mm)		110×110×84.6, 110×110×106.6(Ethernet)
Weight		0.5kg
Communication		RS485 : Modbus Ethernet : Modbus

Rated specifications

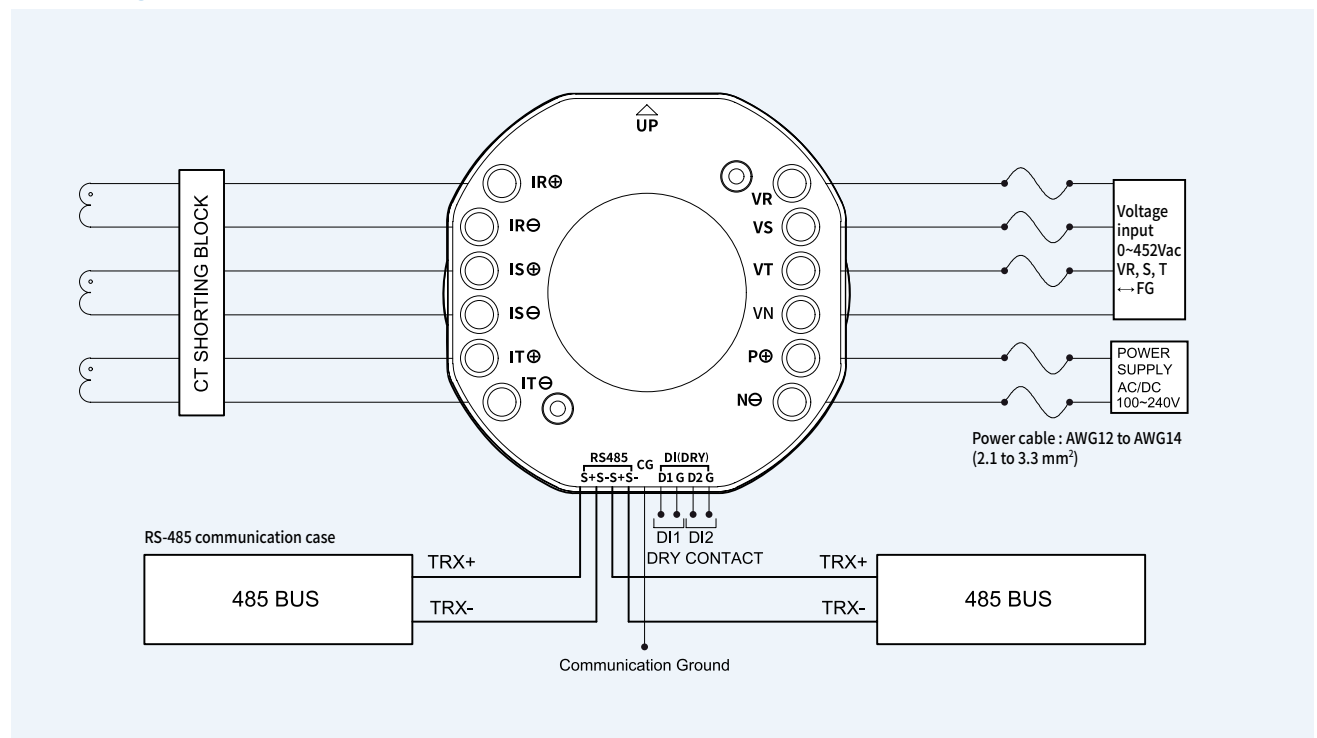
Measurement

Item		Description	Range	NO	EX	Accuracy (%)	Remarks
Voltage	Phase voltage	V_a, V_b, V_c	0.000V ~ 999.9kV	■	■	±0.3%	-
	Line voltage	V_{ab}, V_{bc}, V_{ca}	0.000V ~ 999.9kV	■	■	±0.3%	-
	Average voltage	V_{avg}	0.000V ~ 999.9kV	■	■	±0.3%	-
Current	Current	I_a, I_b, I_c	0.000A ~ 99.99kA	■	■	±0.3%	-
	Average current	I_{avg}	0.000A ~ 99.99kA	■	■	±0.3%	-
Phase	Line voltage	$\angle V_{ab}V_{bc}, \angle V_{ab}V_{ca}$	0.000 ~ 359.9°	-	■	±0.5°	3P 3W
	Line voltage-current	$\angle V_{ab}I_a, \angle V_{ab}I_b, \angle V_{ab}I_c$	0.000 ~ 359.9°	-	■	±0.5°	3P 3W
	Phase voltage	$\angle V_aV_b, \angle V_aV_c$	0.000 ~ 359.9°	-	■	±0.5°	3P 4W
	Phase voltage-current	$\angle V_aI_a, \angle V_bI_b, \angle V_cI_c$	0.000~360.00°	-	■	±0.5°	3P 4W
Power	Total Active power(Reverse)	P	0.000W ~ 999.9GW	■	■	Class0.5	IEC1036
	Phase Active power(Reverse)	P_a, P_b, P_c	0.000W ~ 999.9GW	-	■	Class0.5	IEC1036
	Total Reactive power(Reverse)	Q	0.000Var ~ 999.9GVar	■	■	Class0.5	IEC1036
	Phase Reactive power(Reverse)	Q_a, Q_b, Q_c	0.000Var ~ 999.9GVar	-	■	Class0.5	IEC1036
	Total Apparent power	S	0.000VA ~ 999.9GVA	■	■	Class0.5	IEC1036
	Phase Apparent power	S_a, S_b, S_c	0.000VA ~ 999.9GVA	-	■	Class0.5	IEC1036
Energy	Active energy	Wh	0.000Wh ~ 999.9GWh	■	■	Class0.5	IEC1036
	Reactive energy	Varh	0.000Varh ~ 999.9GVarh	■	■	Class0.5	IEC1036
	Reverse active energy	rWh	0.000Wh ~ 999.9GWh	-	■	Class0.5	IEC1036
	Reverse reactive energy	rVarh	0.000Varh ~ 999.9GVarh	-	■	Class0.5	IEC1036
	Apparent energy	VAh	0.000VAh ~ 999.9GVAh	■	■	Class0.5	IEC1036
Frequency		F	45.00 ~ 70.00Hz	■	■	±0.05Hz	-
Power Factor	Power Factor(PF)	PF	-1.000~1.000	■	■	Based on phase error	+: Lag -: Lead
	Phase Power Factor	PF_a, PF_b, PF_c	-1.000~1.000	-	■	Based on phase error	
	1 st harmonic power factor (DPF)	DPF_a, DPF_b, DPF_c	-1.000~1.000	-	■	Based on phase error	
Harmonics	Voltage	$V_{a(ac)}, V_{b(bc)}, V_{c(ca)}$ ~31 th Harmonics	0.000~999.9kV	-	■	-	-
	Current	I_a, I_b, I_c ~31 th Harmonics	0.000A ~ 99.99kA	-	■	-	-
	Voltage THD	$V_{a(ac)}, V_{b(bc)}, V_{c(ca)}$ THD	0.000 ~ 100.0%	-	■	-	-
	Current THD	I_a, I_b, I_c THD	0.000 ~ 100.0%	-	■	-	-
	Current TDD	I_a, I_b, I_c TDD	0.000 ~ 100.0%	-	■	-	-
DEMAND	Active power demand	Demand W	0.000Wh ~ 999.9GWh	-	■	-	-
	Current demand	Demand I_a, I_b, I_c, I_{avg}	0.000A ~ 99.99kA	-	■	-	-
Load factor		Load factor I_a, I_b, I_c	0.000 ~ 120.0%	■	■	-	-
MAX	Max. current	max I_a , max I_b , max I_c , max I_{avg}	-	-	■	-	-
	Max. voltage THD	max $V_{a(ab)}$ THD, max $V_{b(bc)}$ THD max $V_{c(ca)}$ THD	-	-	■	-	-
	Max. current THD	max I_a THD, max I_b THD, max I_c THD	-	-	■	-	-
	Max. active power	max W	-	-	■	-	-
	Max. reactive power	max VAR	-	-	■	-	-
	Max. apparent power	max VA	-	-	■	-	-
	DEMAND	max Demand I_{avg}, I_a, I_b, I_c	-	-	■	-	-
		max Demand W	-	-	■	-	-

Front configuration



Rear configuration



Operation & Settings

The GIMAC1000 have a display mode and a setting mode.

Display Mode

- Move between pages is  key, Move between factor is   key
- See the measurement table on page 7 for details on pages and measurement items.

[Page]

1page total measurement factor : voltage, current, phase, power, frequency, power factor

2page THD : voltage, current 1st~31th

3page DEMAND : active power, current

4page MAX : current, voltage/current THD, active/reactive power, DEMAND

Setup Mode

- If you press   keys at the same time in the 'display mode', you will move to the 'setup mode'.
- The initial screen of 'setup mode' displays 'CONN' which indicates the wiring method.
- Move between setting items using   key.
- Change the value using   key and press  to save.
- When all settings are completed, press the   keys at the same time to return to the 'display mode'.

* If there is no operation for more than 3 minutes in 'setup mode', it automatically returns to 'display mode'.



Setup parameter

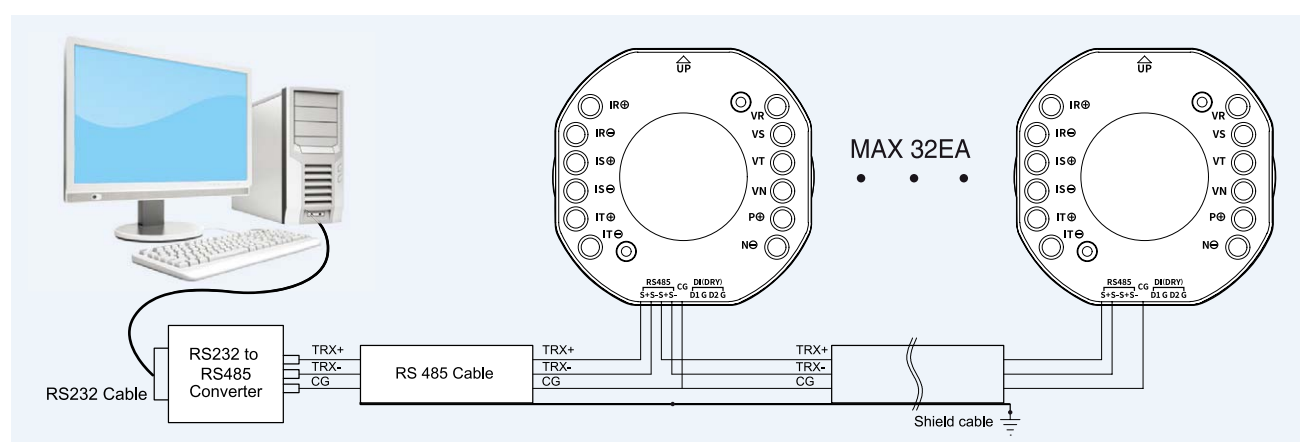
Order of display	Setup menu	Display	Value	Default	Remarks
1	Wiring	'CONN'	1 : 1P 2W 2 : 1P 3W 3 : 3P 3W-D 4 : 3P 3W-Y 5 : 3P 4W	5	
2	PT Ratio	'Pt'	1.0000~1400.0000	1	1 st / 2 nd Magnification Input 1 input for direct connection
3	CT Ratio	'Ct'	1~2000(5A) or 1~9999(1A)		
4	DEMAND time	'dE.t'	1~60	15	Step 5(1~5 Step 1)
5	Communication Address	'Addr'	1~247	1	
6	Communication speed	'bPS'	1 : 9600 bps 2 : 19200 bps 3 : 38400 bps	3	
	Float variable & swap	'S'	On : Yes Off : No	On	
7	Tx delay time	'tX.t'	10~200 msec	20	
8	IP Address	'tCP' 'Adr.'	1.0.0.0~233.255.255.255	192.168.0.100	
9	Subnet Mask	'tCP' 'Sub.'	0.0.0.0~255.255.255.255	255.255.255.0	
10	Gateway	'tCP' 'GAt.'	1.0.0.0~223.255.255.255	192.168.0.1	
11	Mac Address	'C-Ad'	00-00-00-FF-FF-FF	-	Not Available
12	TCP Idle Time	'id.t'	10~60 sec	10	
13	TCP SWAP	'tCP' 'S'	On : Yes Off : No	On	
14	DI1 Debounce time	'dEb' '1'	10~200	10	
15	DI2 Debounce time	'dEb' '2'	10~200	10	
16	RS485 Termination Switch	'tEr'	On : Yes Off : No	Off	
17	Data Reset	'rSt.'	0 : All Data Reset 1 : Wh Reset 2 : Varh Reset 3 : VAh Reset 4 : rWh Reset 5 : rVarh Reset 6 : Demand A Reset 7 : Demand W Reset 8 : Max A Reset 9 : Max W Reset 10 : Max Var Reset 11 : Max VA Reset 12 : Max V THD Reset 13 : Max A THD Reset 14 : Max Demand A Reset 15 : Max Demand W Reset 16 : DI1 Counter Reset 17 : DI2 Counter Reset	-	4~15: EX type only
18	LED TEST	'LEd' 'tEst'	On : Yes Off : No	Off	When setting value 'On', then all LEDs light for 2 seconds
19	Version display	'vEr.'	XX.XX / X.X	-	Not Available

Communication

1) Protocol

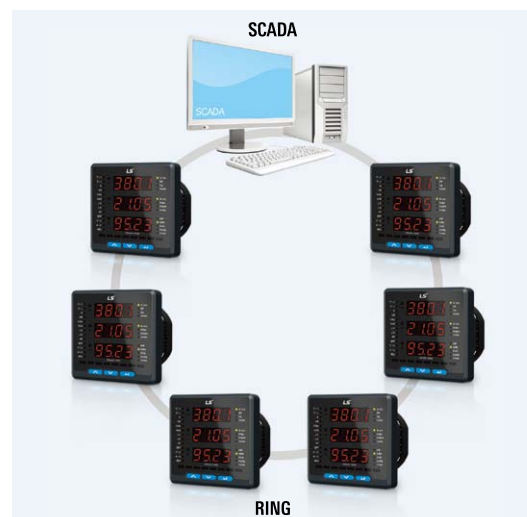
Type	Item	Specifications	Remarks
MODBUS/RS485	Operation mode	Differential	
	Baud rate	9600, 19200, 38400bps	
	Distance	Max. 1.2km	
	Cable spec.	Standard RS485 Shielded twisted pair cable	
	Transmission	Half-Duplex	
	Max. number of connections	Max. 32ea	
MODBUS/Ethernet	Topology	RSTP (Star, Daisy-Chain, Ring)	
	Communication speed	10/100Mbps	
	Distance	Max. 100m (between HUB to Terminal)	
	Cable spec.	UTP(CAT.3, CAT.5)	

2) MODBUS/RS485



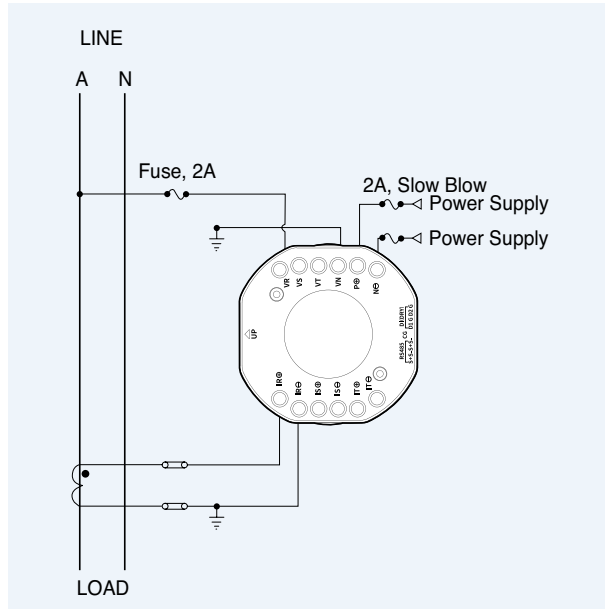
- VN terminal of the product must be grounded.
※ CAUTION) If the VN terminal is not grounded, the internal communication driver may be damaged.
- Shield of communication cable must be connected to each other and grounded.
- The CG terminals of the products must be connected to each other for the same potential and never connect the CG terminal to earth ground.
※ CAUTION) if the CG of communication cable be grounded, Internal components may be damaged.
- For the product connected at the end of communication, turn on the RS485 termination switch setting.
- 485 LED blinks in response to communication.

3) MODBUS/Ethernet

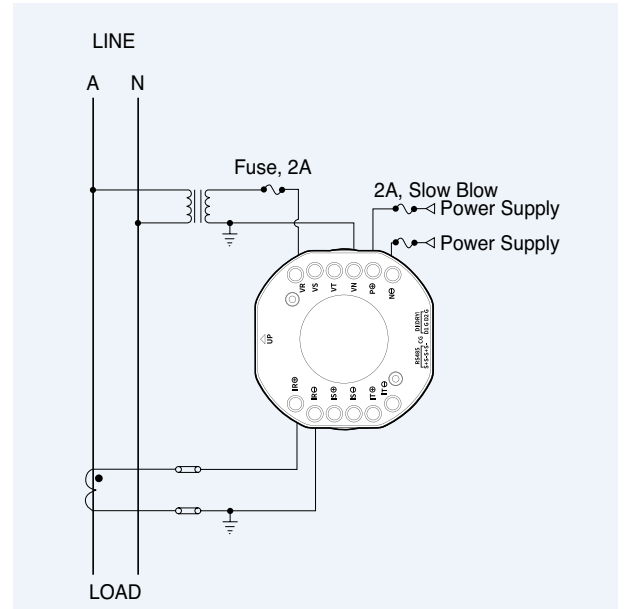


1P 2W

The range of voltage that can be directly connected without PT is 20~380V(+120%) based on phase voltage.
The value of 1-phase 2-wire setting value in the wiring setting mode is "1".



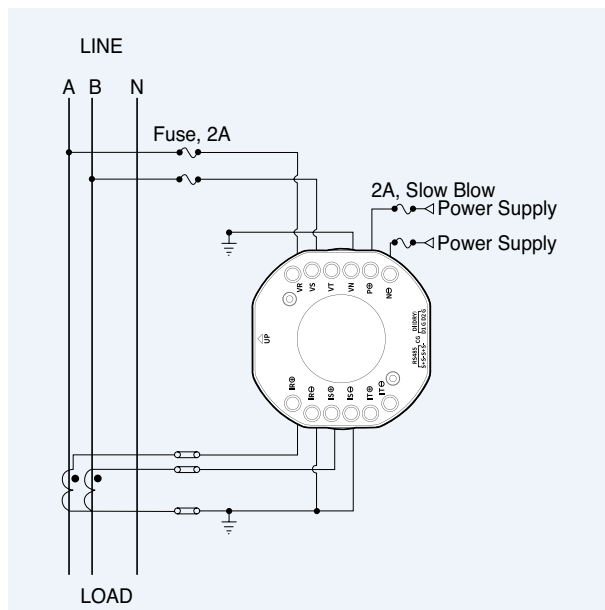
1-phase 2-wire direct connection



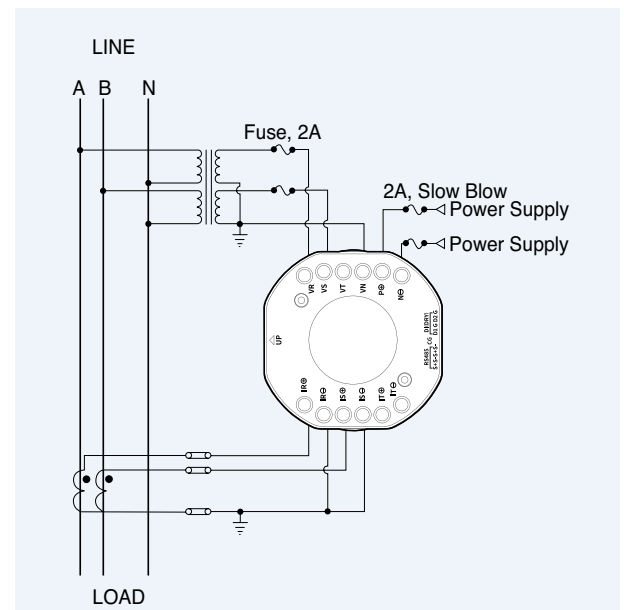
1-phase 2-wire connection with PT

1P 3W

The range of voltage that can be directly connected without PT is 20~380V(+120%) based on phase voltage.
The value of 1-phase 3-wire setting value in the wiring setting mode is "2".



1-phase 3-wire direct connection



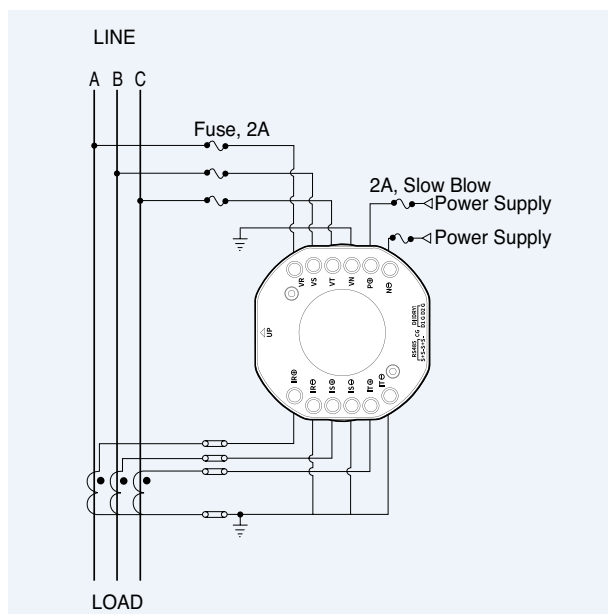
1-phase 3-wire connection with PT

Wiring

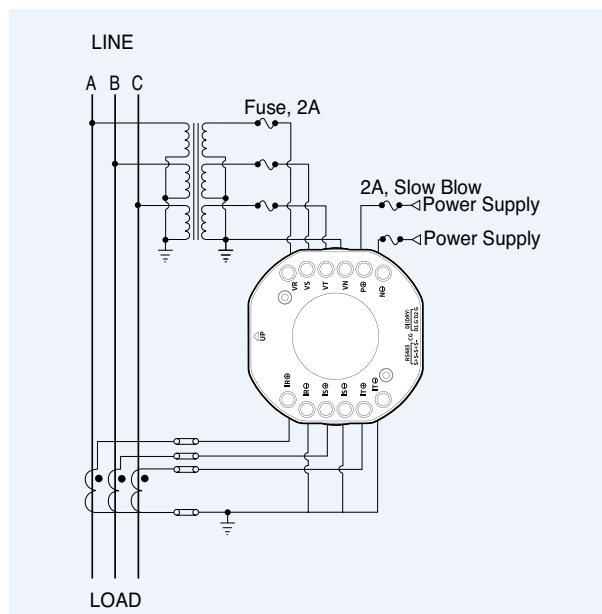
3P 3W-Y

The range of voltage that can be directly connected without PT is 34.6-658.2V based on line voltage.

The value of 3-phase 3-wire Y type setting value in the wiring setting mode is "4".



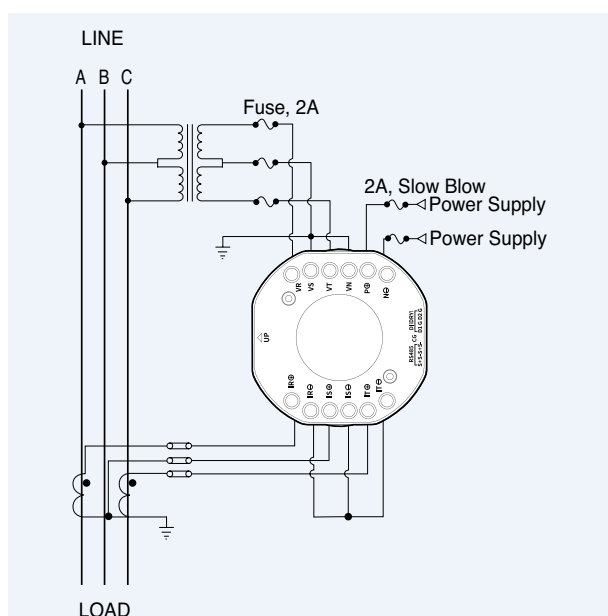
3-phase 3-wire direct connection



3-phase 3-wire Y connection with 3PT

3P 3W-Open Delta

The value of 3-phase 3-wire Delta type setting value in the wiring setting mode is "3".

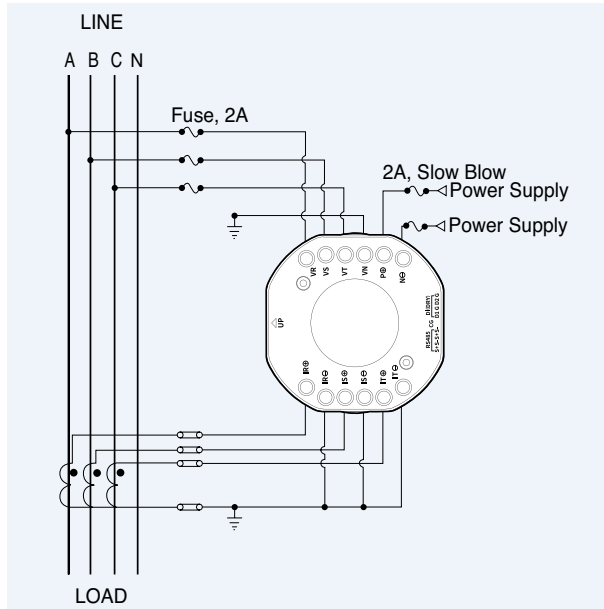


3-phase 3-wire Delta connection with 2PT and 2CT

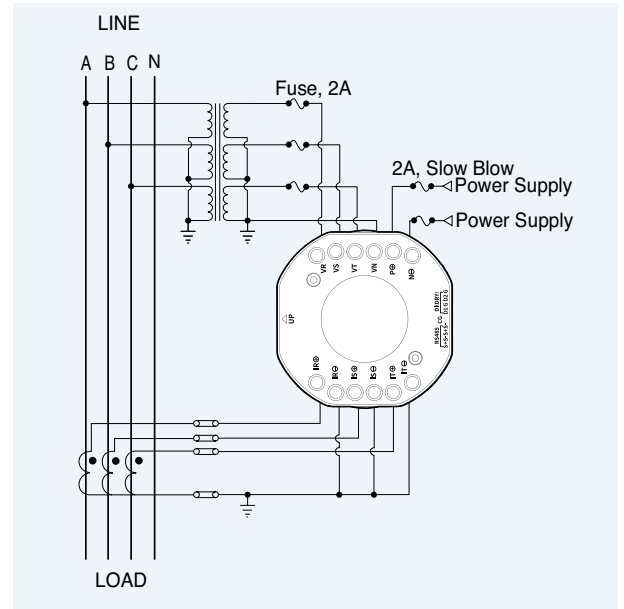
- When 2PT is used, the V_{ca} voltage is obtained by the combination of V_{ab} and V_{bc} . Therefore, if the voltage is unbalanced, the voltage of V_{ca} causes an error.
- When 2CT is used, the IS current is obtained by the combination of I_a and I_c . Therefore, if the current is unbalanced, the current of I_b causes an error.
- In case of unbalanced load, error occurs in power, so use it in case of balanced load.
- Each phase power (active, reactive, apparent), voltage/current phase, each phase power factor, and each phase fundamental power factor cannot be measured or displayed.

3P 4W Wiring

The range of voltage that can be directly connected without PT is 20~380V(+120%) based on phase voltage.
The value of 3-phase 4-wire setting value in the wiring setting mode is "5".

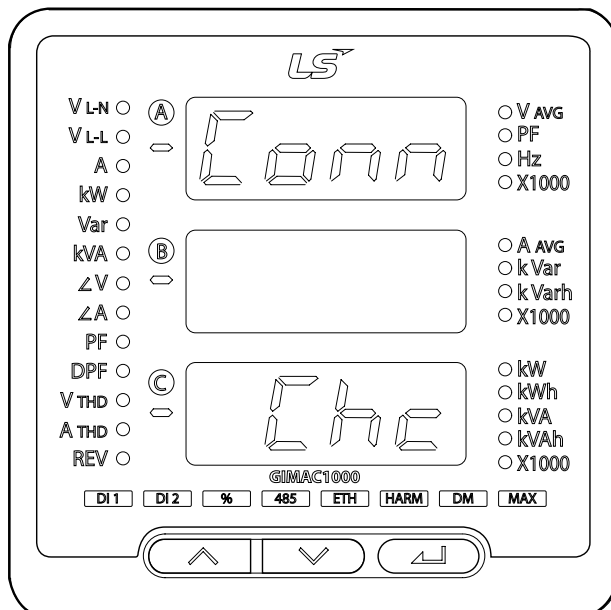


3-phase 4-wire direct connection



3-phase 4-wire connection with 3PT

Incorrect wiring



<Wiring Check>

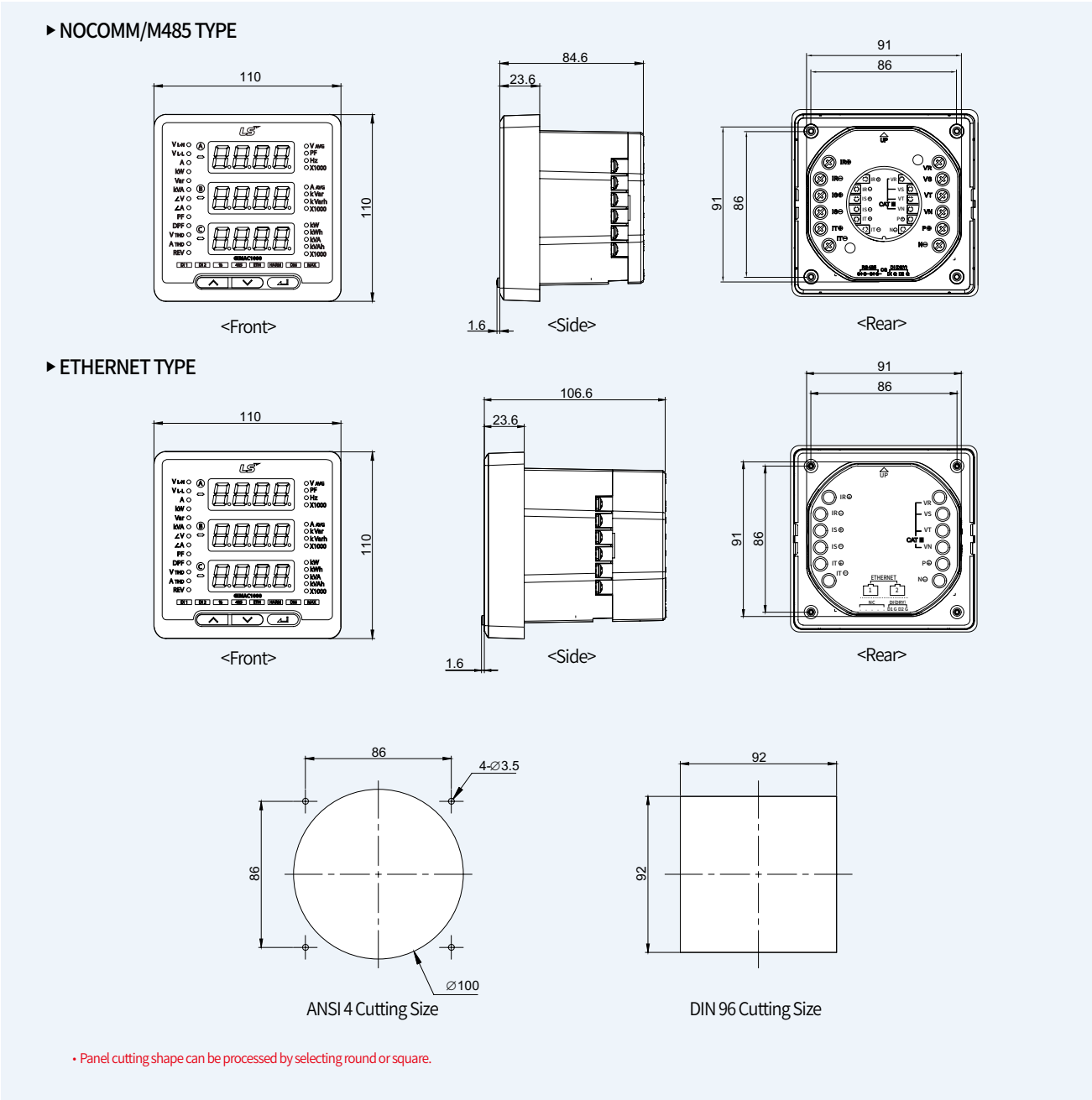
The following message occurs in 3-phase 4-wire and 3-phase 3-wire-Y.
Press the [ENTER] key to return to the measurement display mode.
In case of [Conn Chc] message, check the wiring status.

Self diagnosis function & LCD display

ERROR	FND display
MEMORY	ERROR 1
OPTION	ERROR 3
Setting Data	ERROR 4

Dimensions & Ordering

Dimensions



Ordering

GIMAC1000		NO	M485	5A	60HZ	AC/DC 100~240V
Model	input contact	Frequency		CT Rating	Frequency	Control Power
NO Basic	DI 2CH.	-	N/A	5A	60Hz	AC/DC 100~240V
EX Expansion		M485	MOD/RS485	1A	50Hz	
		ETH	MOD / Ethernet			

DIGITAL SUPPORT HUB

SCAN THE QR CODE FOR INSTANT PRODUCT
INFORMATION AND EXPERT SUPPORT

BeyondX™
Beyond Expectations



Download Center

Download with
Ease and Speed
Instantly access datasheets,
manuals, and CAD files



Tech Hub-YouTube

Expert Guidance,
Now on YouTube
Watch trusted tutorials and
product guides from real experts



Headquarter

127 LS-ro (Hogye-dong) Dongan-gu, Anyang-si, Gyeonggi-Do, 14119, Korea

Seoul Office

LS Yongsan Tower, 92, Hangang-daero, Yongsan-gu, Seoul, 04386, Korea
TEL: 82-2-2034-4916, 4684, 4429

China

LS ELECTRIC (Dalian) Co., Ltd.
+86-411-8730-5872
china.dalian@lselectric.com.cn

LS ELECTRIC (Wuxi) Co., Ltd.
+86-510-6851-6666
china.wuxi@lselectric.com.cn

LS ELECTRIC (Lishui) Co., Ltd.
+86-578-6866-780
china.lishui@lselectric.com.cn

Shanghai Office

+86-21-5237-9977
china@lselectric.com.cn

Beijing Office

+86-10-5095-1631
china@lselectric.com.cn

Guangzhou Office

+86-20-3818-2883
china@lselectric.com.cn

Qingdao Office

+86-532-8501-2065
china@lselectric.com.cn

Chengdu Office

+86-28-8670-3201
china@lselectric.com.cn

Nanjing Office

+86-25-84 67-0005
china@lselectric.com.cn

India

India Office

+91-80-6142-9108
info_india@ls-electric.com

Indonesia

PT. LS ELECTRIC INDONESIA

+62-21-2933-7614
indonesia@ls-electric.com

PT SYMPHOS ELECTRIC

+62-81-1900-1474
marketing@sympbos-weltraf.com

Italy

Italy office

+39-030-8081-833
italia@ls-electric.com

Japan

LS ELECTRIC Japan Co., Ltd.

+81-3-6268-8241
japan@ls-electric.com

Tokyo Office

+81-3-6268-8241
tokyo@ls-electric.com

Netherlands

LS ELECTRIC Europe B.V.

+31-20-654-1424
europartner@ls-electric.com

Russia

Moscow Office

+7-499-682-6130
info@lselectric-ru.com

Singapore

Singapore Office

+65-6958-8162
singapore@ls-electric.com

Spain

LS ELECTRIC IBERIA S.L.U.

+34-910-28-02-74
iberia@ls-electric.com

Thailand

Bangkok Office

+66-2-128-0295
thailand@ls-electric.com

Türkiye

LS ELECTRIC Türkiye Co., Ltd.

+90-212-806-1252
turkiye@ls-electric.com

U.A.E

LS ELECTRIC Middle East FZE (Dubai)

+971-4-886-5360
middleeast@ls-electric.com

USA

LS ELECTRIC America Inc.

+1-800-891-2941
sales.us@lselectricamerica.com

LS ENERGY SOLUTIONS LLC

+1-980-221-0654
info@ls-es.com

MCM Engineering II

+1-435-865-0125
sales.us@lselectricamerica.com

America Western Office

+1-949-333-3140
america@ls-electric.com

America Bastrop Campus

+1-800-891-2941 EXT 2
power_support.us@lselectricamerica.com

Vietnam

LS ELECTRIC Vietnam Co., Ltd.

+84-222-2221-110
vietnam@ls-electric.com

Hanoi Office

+84-24-6275-8054
vietnam@ls-electric.com

Ho Chi Minh Office

+84-3823-7890
vietnam@ls-electric.com