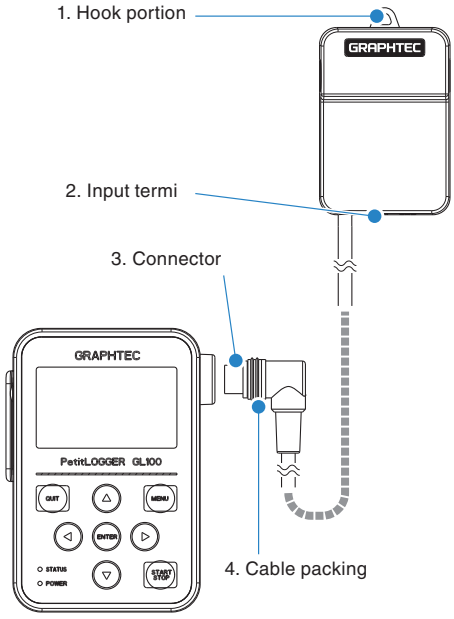
Adapter for AC Current Sensor (GS-DPA-AC): Optional

This section describes the name and function of each part.



1. Hook portion ..... Used to mount to a wall.
2. Input terminal ..... Terminal that connects to the AC Current Sensor (sold separately).
3. Connector ..... Used to connect to the connector on the GL100 module
4. Cable packing ..... This packing is used when connecting the connector.

CHECKPOINT **After connecting the GL100 to modules or sensors, please always check/set the time and date.**

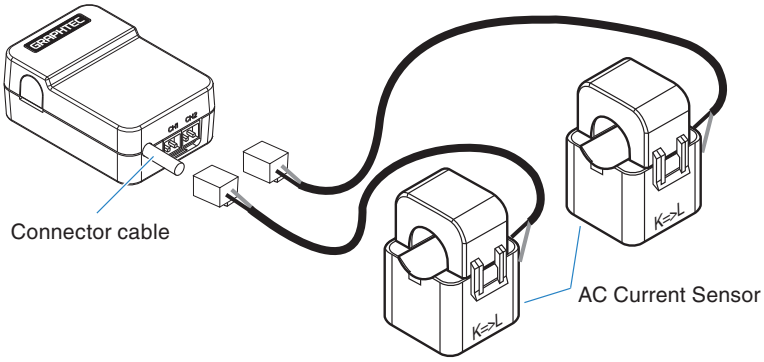
CHECKPOINT **< Extension cable >**
The module can be used approx. 1.5 m away from the GL100 by using an extension cable for GS (GS-EXC). However, you cannot connect and use multiple extension cables.

Tip of the sensor mounting

1. Connect the AC Current Sensor (GS-ACA, sold separately) (1) Recording to the module.**

Connecting : Push the connector in until it locks in.

Disconnecting : Pull the connector out while pressing down on the lock on the bottom with your finger.

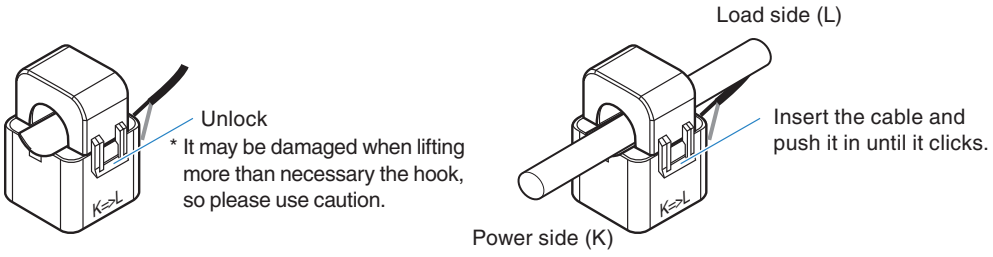


WARNING **The connector is exclusively to be used to connect the AC Current Sensor. Do not connect it to voltages, other electrical currents, etc. It will damage the module.**

CAUTION **Pulling the AC Current Sensor's cable and holding the sensor by the cable will damage the cable's wires.**

2. How to measure with AC Current Sensor

Remove the AC Current Sensor's lock, insert the measurement cable and push it in until it locks (putting the cable in the wrong way will cause the module to measure incorrectly).



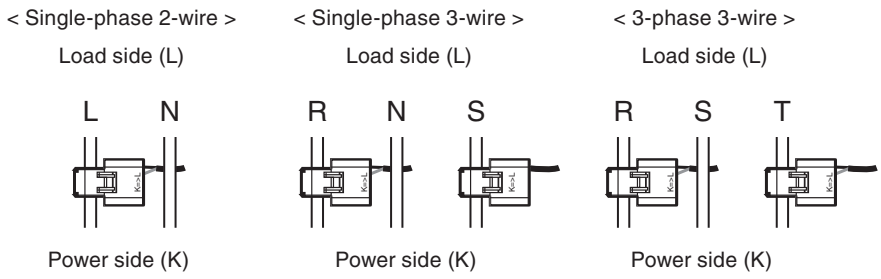
CHECKPOINT

Clamp ch1 or ch2 to L-phase when using single-phase 2-wire

Clamp ch1 and ch2 to R-phase and S-phase respectively when using single-phase 3-wire.

Clamp ch1 and ch2 to R-phase and T-phase respectively when using 3-phase 3-wire.

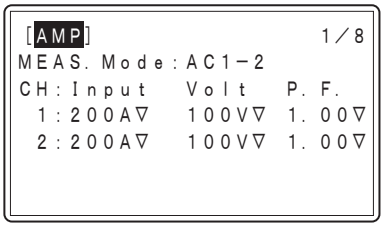
Example of wiring



Tip of Settings

1. Various settings

In AMP setting screen, select the measurement mode. Next select the sensor type to be used and then set the measurement voltage and power factor.



MEAS. Mode

AC1ϕ2W (2ch)	
Input	Off, 50, 100, 200A
DC-V	90 to 264V
Power factor	0.30 to 1.00
AC1ϕ3W, AC3ϕ3W	
Input	50, 100, 200A
DC-V	90 to 264V
Power factor	0.30 to 1.00

Input: : Be sure to match to the AC current sensor type to be used.

DC-V : Set the effective voltage to be measured. Since it is used to internally convert the current value, be sure to set to the correct value.

Power factor : Specify the power factor to be measured.

The power factor is ratio of active power to (apparent) power, depends on the measuring object.

Since the power factor is used to internally convert the current value to the power value, it is required to adjust according to the measuring object.

Formula used internally

Actually the current value is measured. The power value is converted by multiplying the AMP setting voltage by the current value measured with the power factor (ratio of active power). (See the following formula.)

AC1ϕ2W : Measurement setting when single-phase 2-wire is used
2ch measurement is possible.
* Power = Measured current x Voltage x Power factor

AC1ϕ3W : Measurement setting when single-phase 3-wire is used
* Power = (Measured current (ch1) + Measured current (ch2)) x Voltage x Power factor

AC3ϕ3W : Measurement setting when three-phase 3-wire is used
* Power = ((Measured current (ch1) + Measured current (ch2)) ÷ 2) x Voltage x √3 x Power factor

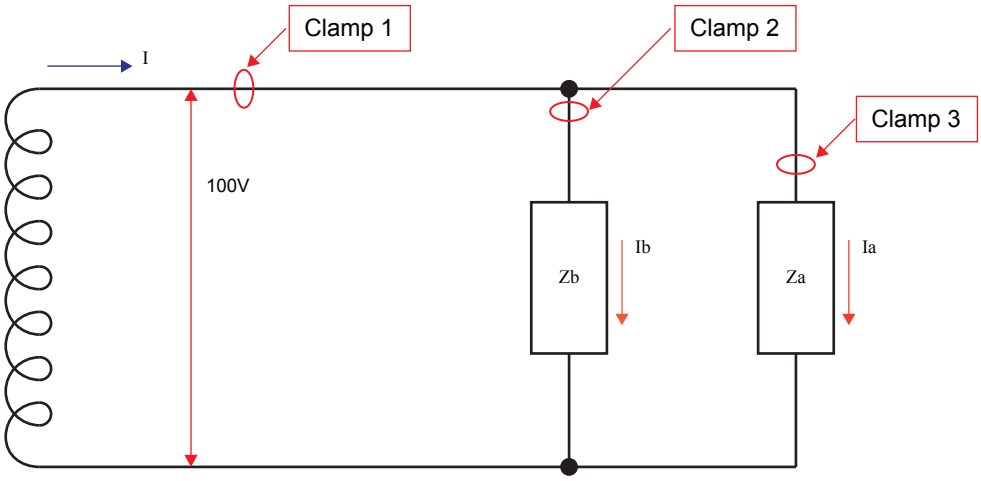
2. Example of measurement

(1) Measurement with single-phase 100V, 2 loads

When the following connection is established, each current measurement for I, Ia, and Ib is possible.

(The clamp in the following figure indicates the measurement point of AC current sensor.)

However, when measured by the GL100, it is not necessarily I = Ia + Ib (Since it is calculated in vector quantity.).

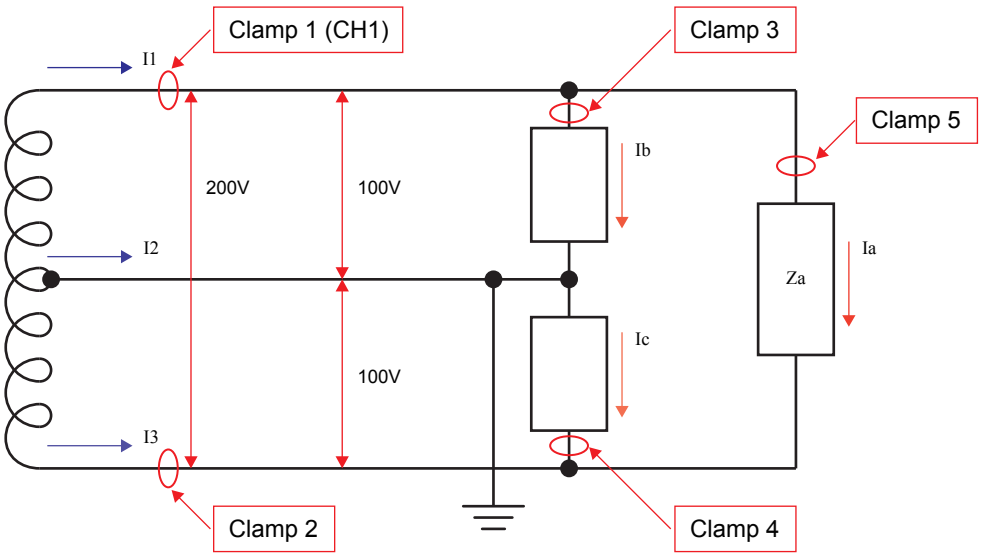


(2) Single-phase 3-wire (100V and 200V)

(The clamp in the following figure indicates the measurement point of AC current sensor.)

1) Single-phase 3-wire (AC1ϕ3W): Measured at the clamp 1 (CH1) and clamp 2 (CH2).
Current effective value of I1 = Ia + Ib is measured at the clamp 1 (CH1).
Current effective value of I3 = -Ia - Ic is measured at the clamp 2 (CH2).
Note: Positive value is displayed regardless of the current direction because it is effective value.
Total power is calculated in accordance with the set voltage 100V and power factor.

2) Single-phase 2-wire (AC1ϕ2W): Measured at the clamp 3, clamp 4 and clamp 5 in single-phase 2-wire mode.
Current effective value of Ib is measured at the clamp 3.
Current effective value of -Ic is measured at the clamp 4.
Note: Positive value is displayed regardless of the current direction because it is effective value.
Crrent effective value of Ia is measured at the clamp 5.
Each power is calculated in accordance with the set voltage 100V and power factor at the clamp 3 and clamp 4.
Power is calculated in accordance with the set voltage 200V and power factor at the clamp 5.



I1-I2-I3=0
I1=Ia+Ib
I2=Ic-Ib
I3=Ia-Ic

3) How to measure with three-phase 3-wire

(The clamp in the following figure indicates the measurement point of AC current sensor.)

Blondel's theorem: “When the number of electrical conductors is n, the multi-phase power can be measured by the watt-meter (n-1)”. The Δ-connection and Y-connection are described below. The current effective value of R and T power line are measured at the clamp 1 and 2.

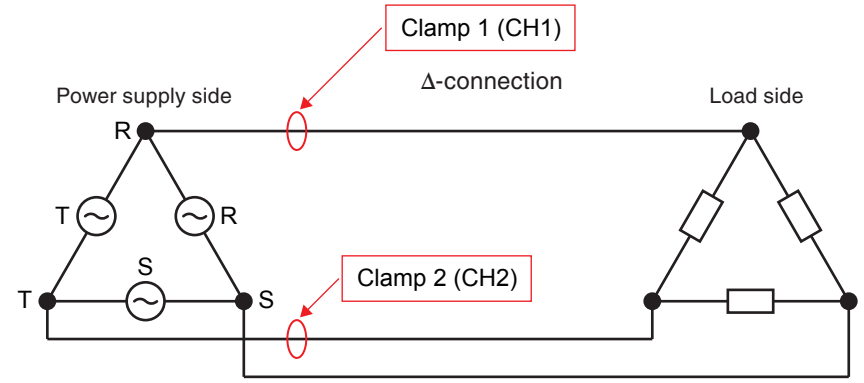
Using the Blondel's theorem, the GL100 calculates the power with the following formula.

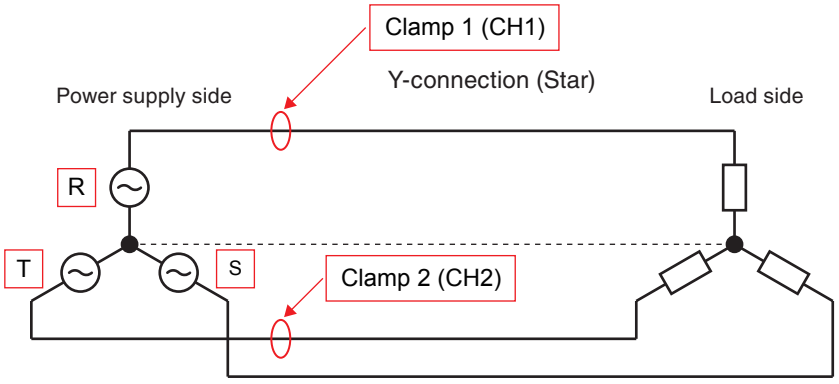
Power = ((Measured current (CH1) + Measured current (CH2))÷2) x Set voltage x √3 x Set power factor

Measurement method: Measured at the clamp 1 (CH1) and clamp 2 (CH2) in three-phase 3-wire (AC3φ3W) mode.

The current effective value of R (U) phase is measured at the clamp 1 (CH1), and the current effective value of T (W) phase is measured at the clamp 2 (CH2).

The power is calculated in accordance with the set voltage and power factor.

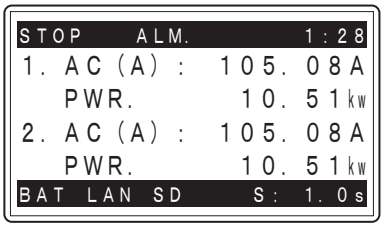




Note: If the current flows in the neutral conductor in the Y-connection, the measurement error occurs because the sum of the three phase currents is not zero.

(3) Display screen

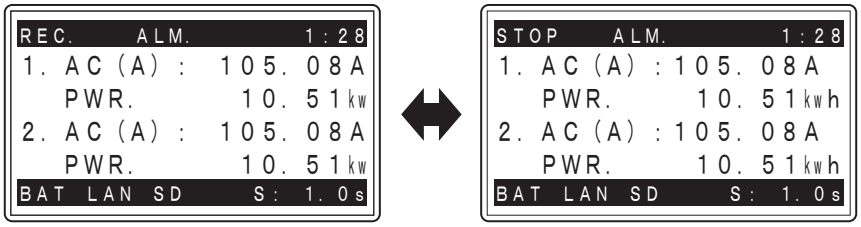
In display screen



• The instantaneous power only is displayed during free-running.

Accumulated Value

During recording, you can switch to the accumulation screen by operating [◁] and [▷] keys.



Normal display　　Accumulated value display

How to clear the accumulated value

To clear the accumulated value, follow the following procedure.

• When you start, the accumulated value is cleared and the accumulation operation is performed.

The accumulation operation is performed even in trigger waiting state.