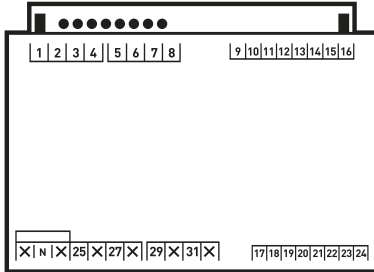
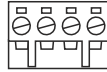




1x



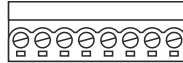
4x



1x



2x



4x



1 DEVICE DESCRIPTION

1.1 Key features

- a** OPTI-ENER was designed and manufactured to optimize consumption of electric power. Device helps user to manage amount of electric power that was produced by renewable energy sources. What is more customer has full control of AC/DC parameters.
- b** Controller is adjusted to be installed in electrical switchgear directly to DIN rails.
- c** Due to measurements OPTI-ENER does accounts of electric power that is produced by e.g. PV installation, used by household and transferred to energy company or accumulators.
- d** Thanks to modem EKOLAN user has remote access to various energy meters, real-time parameters and control of electrical devices.
- e** All data is captured and saved in cloud solution at external servers.
- f** User is able to control electrical circuit or specific devices manually or automatically. Management of energy surplus is realized by website: <https://opti-ener.com/>.
- g** OPTI-ENER capabilities:
 - Voltage, current and power measure at 4 channels,
 - Balance of phases energy consumption,
 - Power supply administration of 4 electrical circuits or specific devices,
 - Ability to control electrical circuits and devices according to energy surplus,
 - Ability to control electrical circuits and devices automatically by time schedule,
 - Ability to control electrical circuits and devices automatically by mobile application.

1.2 Input and output:

Controller has inputs that provide voltage and current value measure. OPTI-ENER contain also a communication port - RS 485. Specific placement of electric contacts was pictured at figure number 1. Additionally at the cover of a device there are configuration buttons and signal diodes.

Fig. 1. Sterownik OPTI-ENER – front view

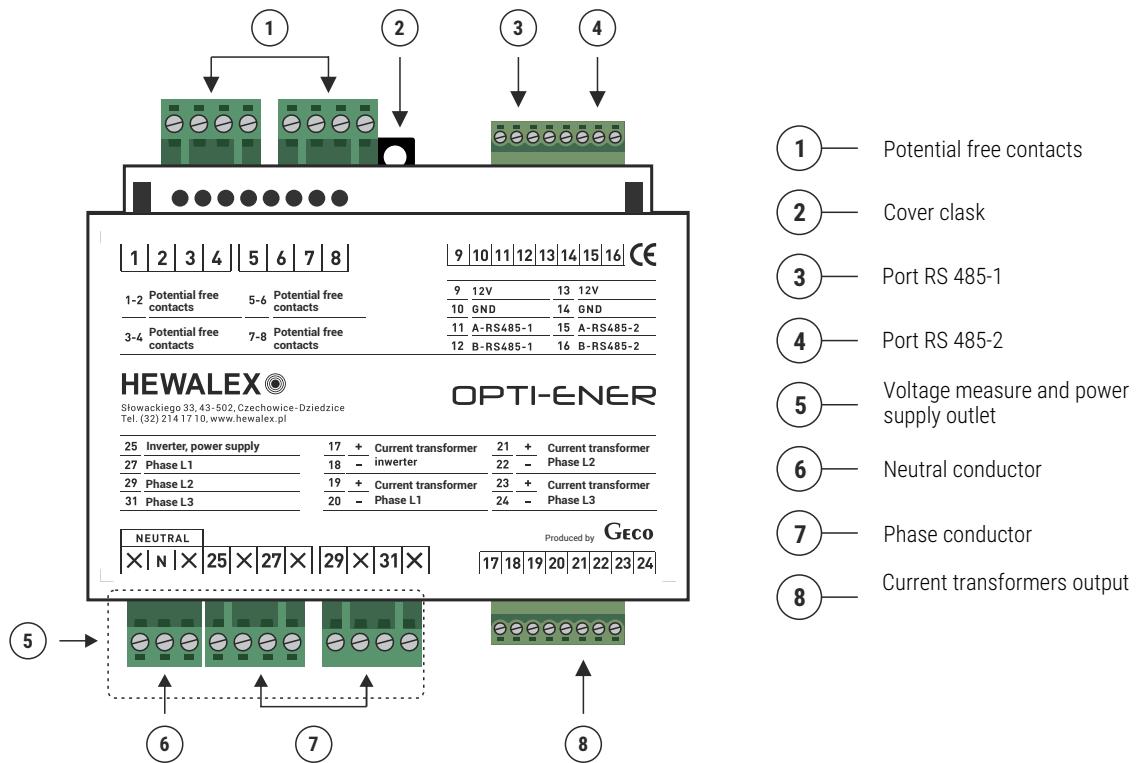
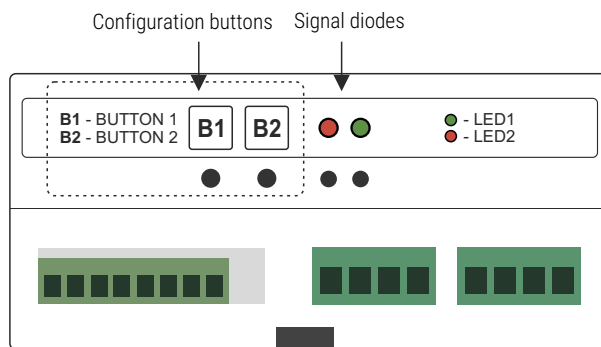


Fig. 2. OPTI-ENER overhead view



1.3 Measure elements instalation

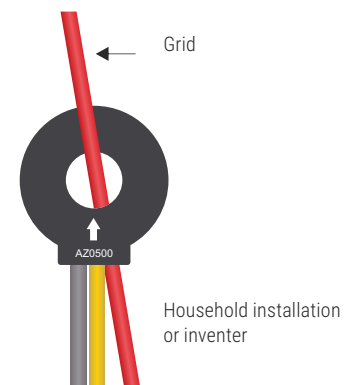
Integral part of OPTI-ENER system are current transformers that allow to measure current in electrical circuits. They are mounted at outlets number 17-24. All phase conductors including one from inverter should be dragged through current transformer.

Correct installation of current transformers was pictured at figure number 3. Current wires from AZ and ACX series are closely related with output numbers. Connection should be compliance with electrical scheme.

Phase conductors should be plugged in outlets number 25-31. As a result OPTI-ENER will measure voltage which is necessary to evaluate power value for each electrical circuit.

Output details are gathered in table number 1.

Fig. 3. Proper location of current transformers



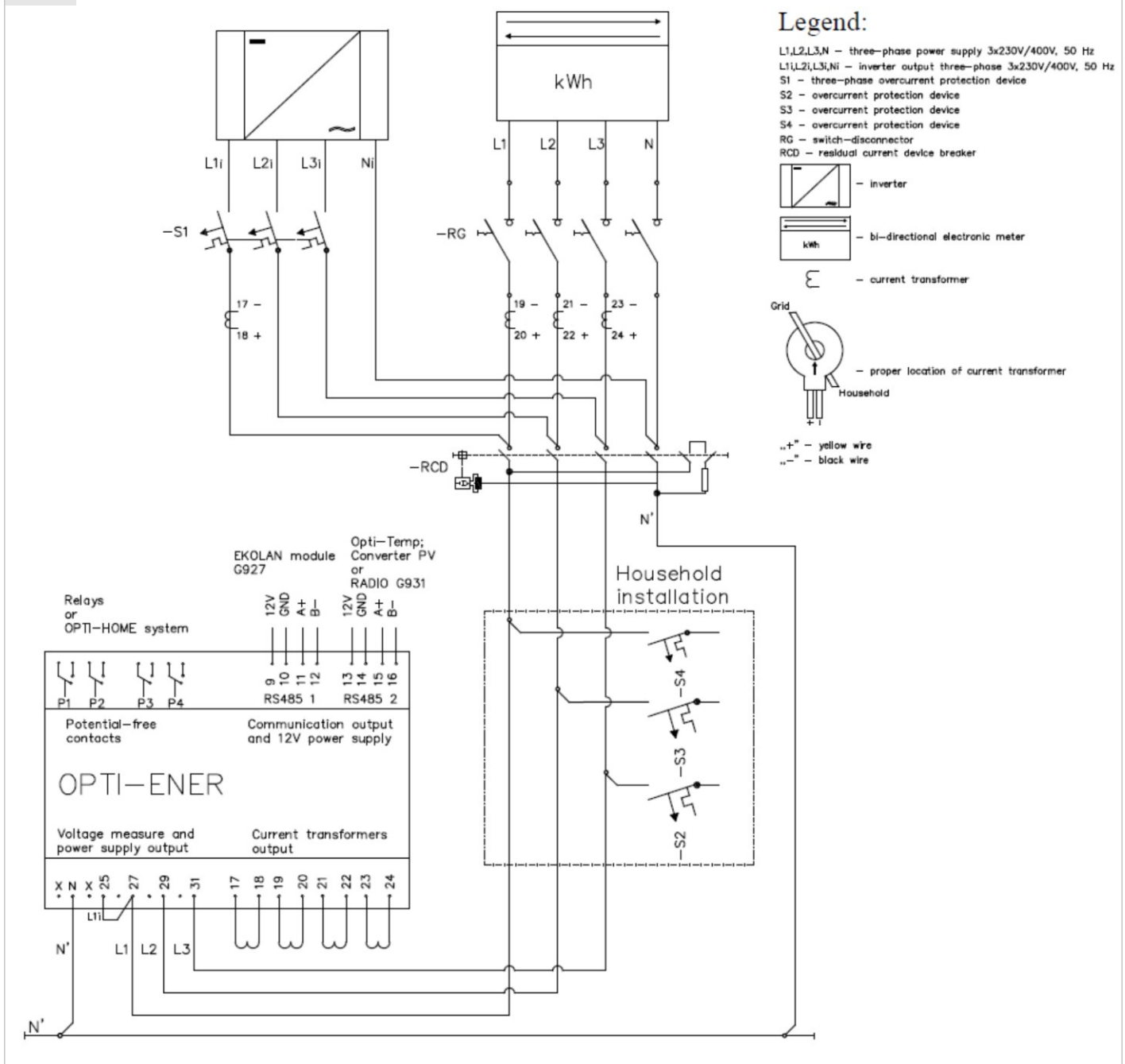
CAUTION: Direction of current flowing is crucial to measured values. Make sure that current transformer has been installed properly.

Table 1. Outputs number description.

Measure circuit number	Output number		Phase
	Voltage measure	Current measure	
1	25	17, 18	L1i
2	27	19, 20	L1
3	29	21, 22	L2
4	31	23, 24	L3

ATTENTION!
Period when PV installation wasn't covered by monitoring system is not taken into the account of measured parameters. Maximum tolerance of measurement is up to +/- 2,5%.

Fig. 4. Electrical scheme



1.4 Electrical consumers connection

OPTI-ENER has been equipped with 4 potential-free contacts with following parameters:

- Nominal voltage: 270 V AC
- Nominal Current: 8 A

If overcurrent protection device mounted at separate electrical circuit has bigger permissible current range than addition contactors should be installed. Current range of contactors must be at least equal (or bigger) to overcurrent protection device.

Fig. 5. Converter module installation scheme

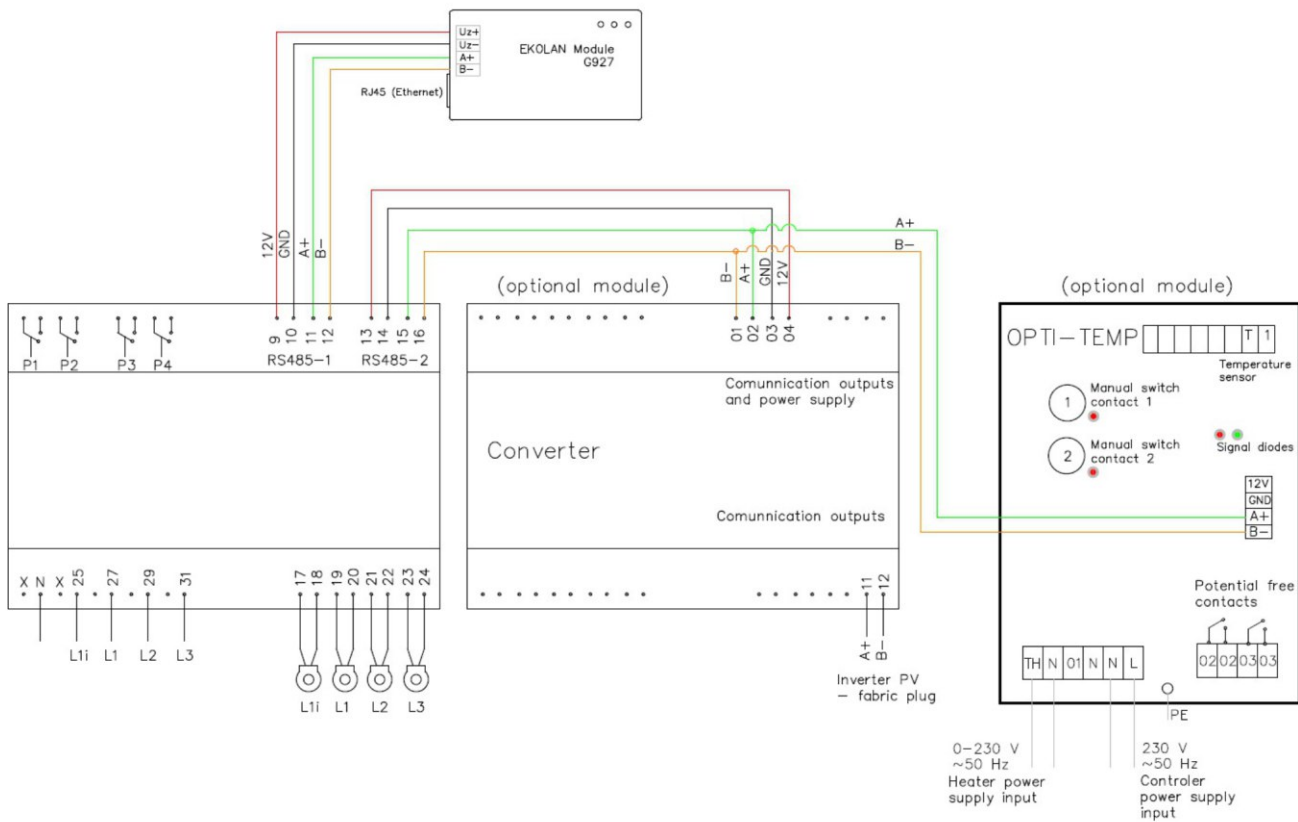


Fig. 6. OPTI-ENER and OPTI-TEMP installation scheme

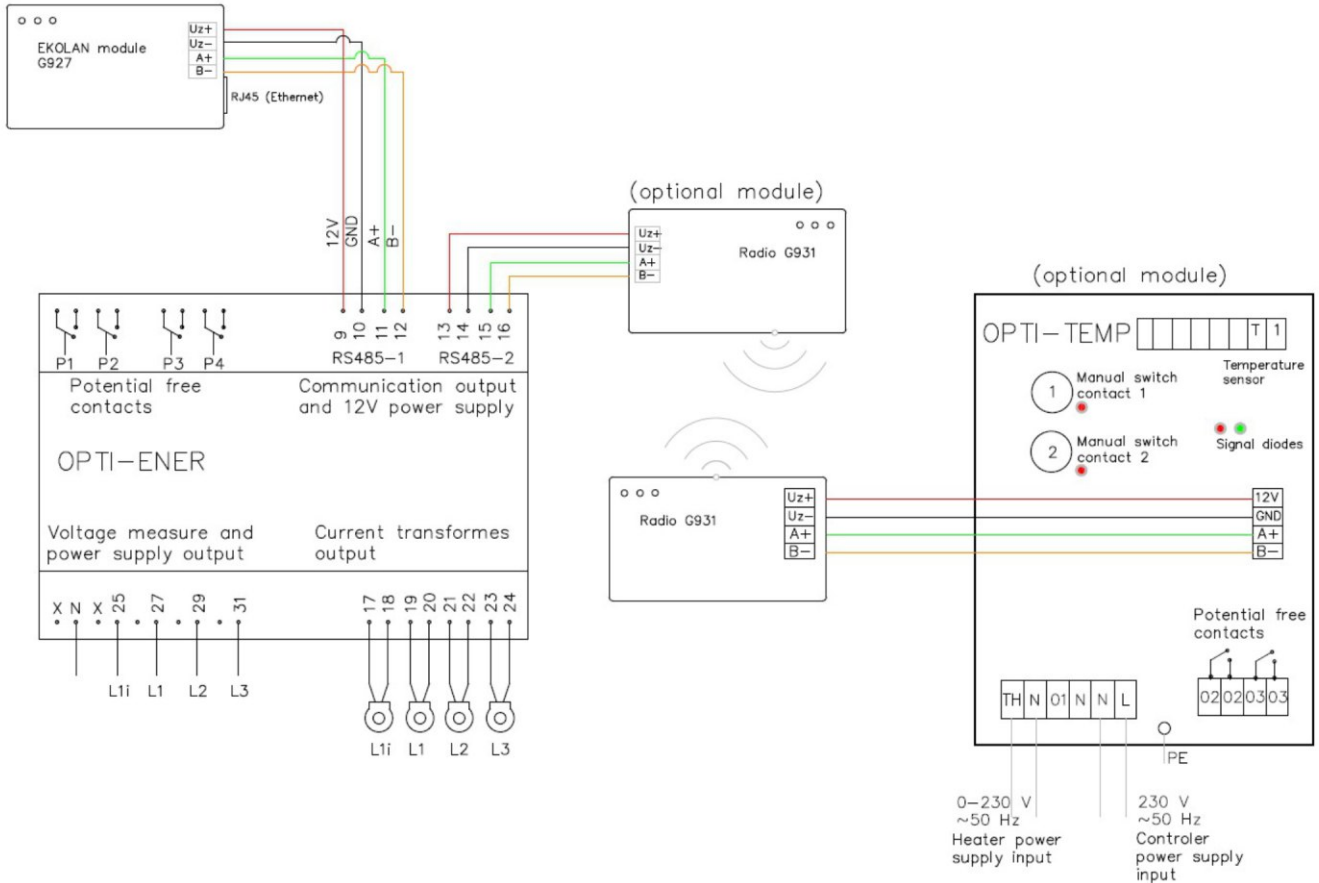
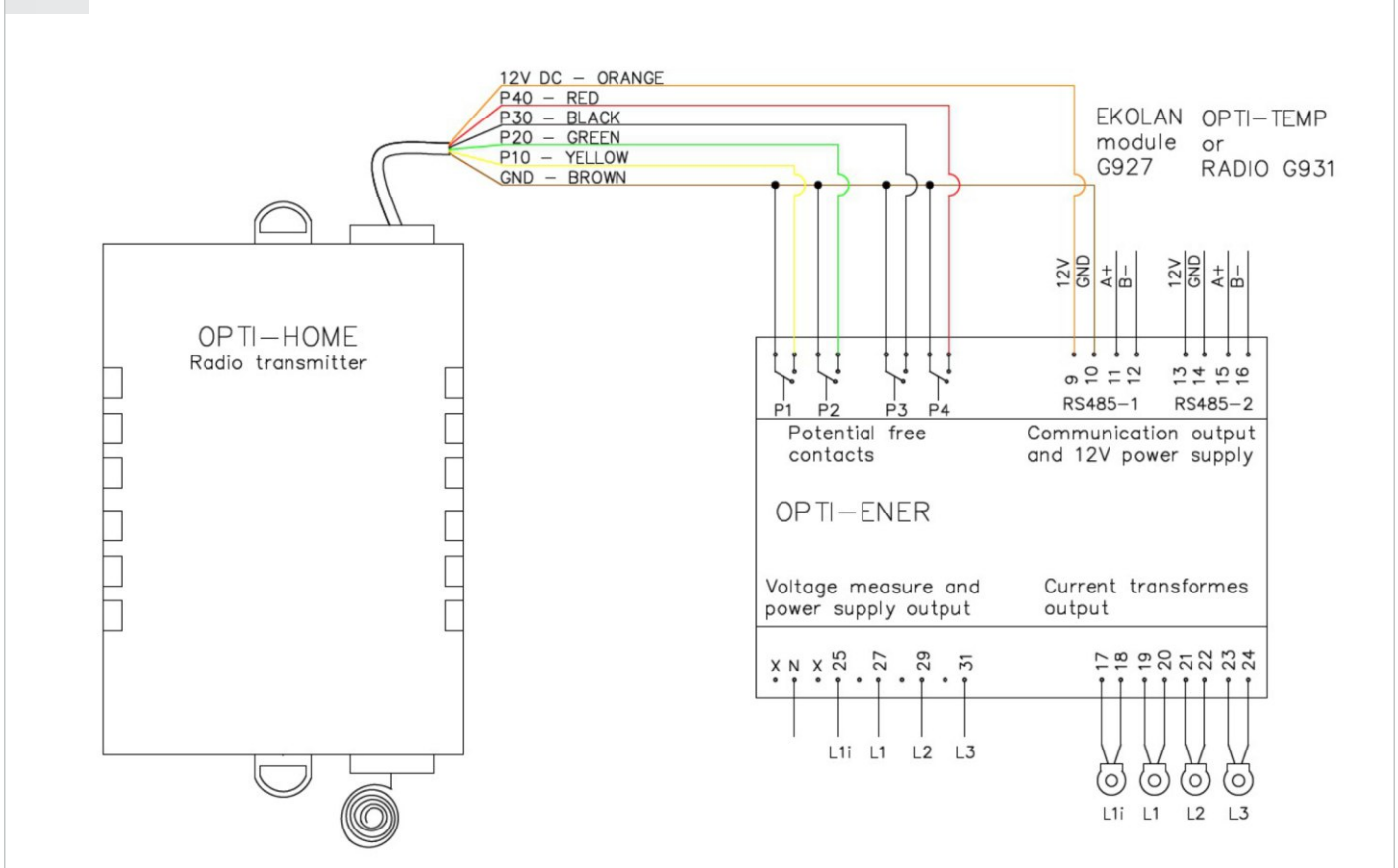


Fig. 7. Opti-Ener and Opti-Home installation scheme



3 Information on marking and collecting used electrical and electronic equipment.



A symbol found on the product or its packaging points to the necessity of separate collection of used electronic equipment. This means that the product must not be thrown away together with other household waste. Correct disposal of old and used electrical equipment may help to avoid potential damage to the environment and human health.

A user who should give the used equipment to a collector should be responsible for separate collection of used electronic equipment.

CAUTION!

Device is not destined to be used by children and people with limited physical abilities, physical feeling or psychological disorders. It should not also be used by people who do not have proper experience or knowledge unless they were instructed or supervised by qualified personnel.

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