IC CARD PREPAID ELECTRICITY METERING SYSTEM

Single-Phase Series *With RS485*

Prepaid Meter / IC Card Reader / Value Loader

BAW-1A BAW-2A BAW-RL BAW-RA

Product Overview

The prepaid electricity meters BAW-1A and BAW-2A are single-phase electronic devices designed to work together with the IC Card Reader (BAW-RL) and the Value Loader (BAW-RA). This IC Card Prepaid Electricity Metering System operates on a pay-before-use mechanism, effectively preventing unbilled electricity consumption. Equipped with dual RS485 communication interfaces and a built-in control relay, the system can be integrated with a back-end management platform for remote credit top-up and electricity consumption monitoring. The meters support up to four tariff modes and automatically save power measurement data every 15 minutes. Widely used in rental apartments, EV charging stations, school air conditioning applications, and other use cases, the system provides accurate billing and convenient power management.

Features

- Four selectable tariff modes: single-rate, summer/non-summer two-tier rate, six-tier step rate, and TOU (Time-of-Use) rate
- Dual RS485 communication ports for connecting the IC Card Reader and management system, enabling credit top-up and remote monitoring
- Measurement and display functions for: active energy (kWh), voltage (V), current (A), frequency (Hz), active power (kW), apparent power (kVA), power factor (PF), tariff mode in use, communication status, and relay switch status
- Built-in memory stores power measurement data including instantaneous voltage, current, power, and cumulative total consumption. Data is saved automatically every 15 minutes; each record is retained for at least 14 days and can be retrieved via the RS485 interface
- Power data retention during power outages

All units are individually verified and lead-sealed in accordance with the regulations of the Bureau of Standards, Metrology and Inspection (BSMI), Ministry of Economic Affairs, Taiwan.

Example Applications

- Rental apartments
- EV charging station market
- School air conditioning systems

Technical Specifications

Standard	CNS 14607, IEC 62053-22
Accuracy Class	Class 0.5
Metering Display	Backlit LCD, 8-digit display
Metering Unit	0.01 kWh (6+2 digits)
Operating Temperature	-20 ~ +70 ℃
Operating Voltage Range	0.7 ~ 1.2 Un
Power Consumption	Less than 5 VA (including the IC Card Reader)
Surge Test	6 kV, 1.2/50 μs
Service Life	More than 10 years
Meter Constant	1600 imp/kWh
Starting Current	40 mA

Prepaid System Components

IC Card Reader (BAW-RL)

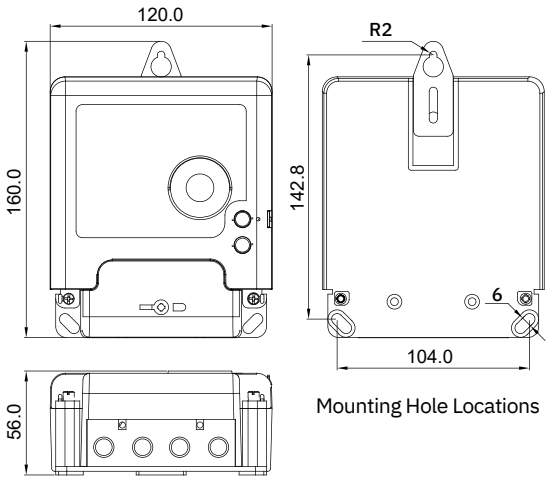
- Shares power supply with the meter; connects directly without an external power source
- RJ11 communication port for quick connection to the meter
- Numeric (0–9) and function keys for easy operation
- 2-line, 16-character backlit LCD display with Chinese/English switchable interface
- Audible alert when remaining balance is insufficient
- Wall-mount installation; can be lead-sealed
- Displays available balance, tariff rate, current month consumption, yesterday's consumption, today's consumption, and cumulative total deducted amount

Value Loader (BAW-RA)

- Activated by a management card; loads or deducts value on consumer cards
- Numeric (0–9) and function keys for easy operation
- 2-line, 16-character backlit LCD display with Chinese/English switchable interface
- Allows setting a PIN and expiration date on consumer cards
- Can modify the tariff rate stored on the tariff card (price per kWh)
- Optional value loader management software for printing receipts and top-up summary reports

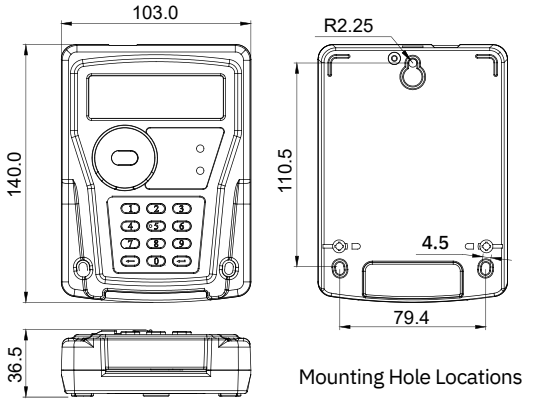
Outline Dimensions

BAW-1A / BAW-2A



Mounting Hole Locations

BAW-RL / BAW-RA



Mounting Hole Locations

(Unit: mm)

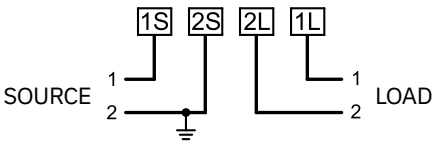
Model Specifications

Model	Specifications	Metering Code	Dimensions L × W × H (mm)	Terminal Hole Diameter (mm)	Net Weight (g)
BAW-1A	1P2W 110-220V 10(80)A 60Hz	BAW-1AHBA	160 × 120 × 56	∅ 9.0	590
BAW-2A	1P3W 110/220V 10(80)A 60Hz	BAW-2ACBA			589
BAW-RL	[IC Card Reader] 1-to-1 connection, Chinese/English interface	BAW-RL	140 × 103 × 36.5	-	215
BAW-RA	[Value Loader] Chinese/English interface	BAW-RA			230

Wiring Diagrams and Terminal Markings

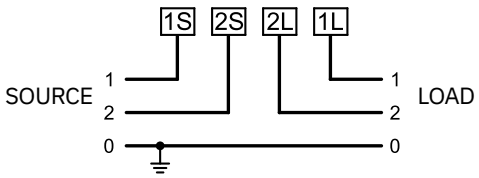
BAW-1A

(Single-Phase 2-Wire)

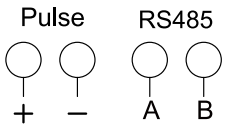


BAW-2A

(Single-Phase 3-Wire, 2-Wire Compatible)



Communication Port Terminals



CHALLENGE INDUSTRIAL CO., LTD.
1F, No. 46, Ln. 80, Sec. 3, Nangang Rd.,
Taipei City 115 , Taiwan (R.O.C.)
T: 886-2-2788-3368 ext. 2318

© 2026 CHALLENGE INDUSTRIAL CO., LTD.