



FUNCTIONAL SPECIFICATION

SINGLE PHASE, SINGLE RATE,
CREDIT METER

TYPES: 5193A

Document No: CSD076


Date: 29/07/98

Issue: 1

CUSTOMER SPECIFICATION
DOCUMENT


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	Functional Specification	DATE: 29/07/98
	Single Phase, Single Rate Credit Meter. Types: 5193A & F	ISSUE: 2
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Introduction

Purpose


This document describes the operation and specification for the Single Phase, Single Rate, Credit Meter to be called, "Reporter".

Definitions

BS: British Standard
 IEC: International Electrotechnical Commission
 SI: Statutory Instruments
 KWh: Kilo Watt Hours
 RTC: Real Time Clock
 LCD: Liquid Crystal Display
 LED: Light Emitting Diode
 HHU: Hand-Held Unit
 CMI: Common Modular Interface
 mS : Milli-Second

References

1. IEC1036: 1996: Alternating current static watt-hour meters for active energy. (Classes 1 & 2)
2. BS5685: 1979: Part 1: Specification class 0.5, 1.0 and 2.0 Single phase and Polyphase, single rate and multi-rate watt-hour meters.
3. IEC1038: 1993: Time switches for tariff and load control.
4. IEC1107: Data Exchange for Meter Reading, Tariff and Load Control. Direct Local Exchange.
5. SI 792: The Meters (Certification) Regulations 1990
6. 6.AS12845: 1992 Alternating current static watt hour meters for active energy (class 1) – Australian Standard

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Meter Overview

The meter is a whole current credit meter, capable of measuring kWh and is the type approved to BS EN61036: 1996 class 1.0 and 2.0. A LCD will display all the meter's data.

Operational Requirements

Measurement

The Meter is a 220 Vac - 240 Vac, 50 and 60 Hz, 20 - 100 Amp Single Phase Credit Meter. It contains an independent measuring element allowing consumed energy to be measured. The meter measures and registers kWh to class 1.0. There is a red LED mounted on the front panel of the meter, pulsing at a rate of 1,000 pulses per kWh for energy registration.

Total kWh Register

The total kWhs measured are stored internally to 3 decimal places. The total kWhs are displayed on the meter to a maximum of 2 decimal places unless programmed via the Flag Port (see User Interfaces) to 3 decimal places for testing purposes.

- The Total kWh register range is 0 - 99999.999 kWh


Reverse Energy Register

The reverse kWhs consumed by the meter is stored internally to 3 decimal places, but only displayed to a maximum of 2 decimal places.

- The Reverse kWh register range is 0 - 99999.999 kWh

Reverse Energy Indication

If reverse energy is detected, the display alternates between a Reverse Energy Detected message and the default display.

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User Interfaces

Optical Interface

The meter has a FLAG optical interface based upon the IEC 1107 protocol.

If the meter is to be programmed using a third party HHU, the HHU will possibly require modification to work with the meter. This is because the meter uses a masked processor.

Inductive Serial Data Port

The meter incorporates an Inductive Serial Data Port that will transmit all the information within the meter through the meter case. The data transmitted is generally in accordance with the CMI specification and can be received by any module fitted with a suitable receiver placed adjacent to the transmitter outside the case. (There is no physical connection)


Functional Requirements

General Facilities

The default display is always the Total kWh's consumed.

Installation

The meter is designed to fit onto a standard meter board. Special care should be taken to ensure that the meter is installed in such away as to allow easy access for meter reading.

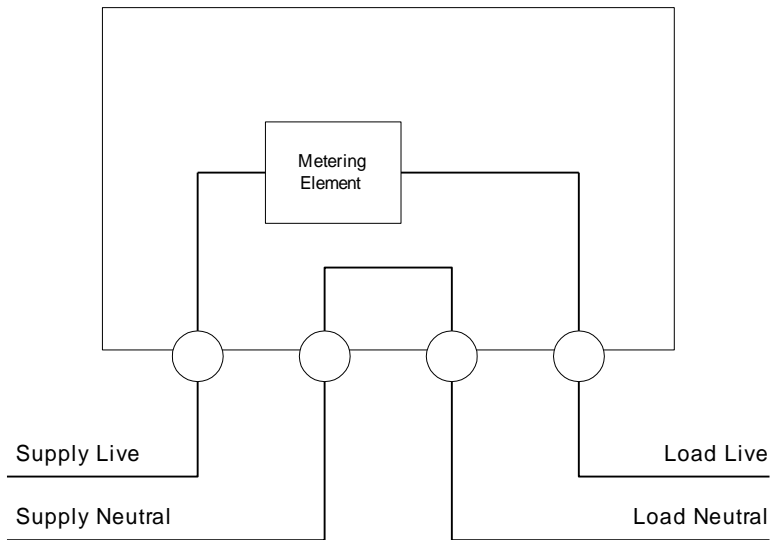
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Mounting the meter


Using 2 off No 8 × 1", screw the meter to the board via the two fixing holes either side of the terminal housing.

Connections

As per wiring diagram shown in figure 1. Terminal arrangement conforms to BS5685, Part 1, 1979.




The DIN specification wiring layout is available on request

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Technical Summary

System Voltage:-	Single element meters	240Vac Phase to Neutral 230Vac Phase to Neutral 220Vac Phase to Neutral
	Supply variation	+15% to -20%
Current:-	Direct connection	15/20 - 100A Ib/Imax
Burdens:-	Voltage Circuit @ 230Vac Current Circuit @ Ib @ Imax	<2W <10VA <0.5VA <1VA
Supply Frequency:-	Nominal Frequency Variation	50Hz +/- 5%
Temperature Range:-	Limit operating range Storage range Service life	-20°C to 55°C -25°C to 70°C 20 Years
Case:- Current Rating:		100A
Material:	Base Facia Top Terminal Cover	Flame Retardant Polycarbonate Polycarbonate UV Stabilised Polycarbonate Polycarbonate
Dimensions (mm):	Standard Terminal Cover Extended Terminal Cover	H 109 x W 126 x D 45 H 142 x W 126 x D 45

Meter Variants for the 5193 Meter – All with 20 years certification.

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- 5193A: Single Rate Standard Credit Meter
- 5193B: Single Rate Credit Meter – Pulse Output
- 5193D: Multi Rate Credit Meter – External Time switch
- 5193K: Single Rate Credit Meter – Isolation Switch
- 5193M: Multi-Rate Credit Meter – External Time Switch – Isolation Switch
- 5193N: Single Rate Credit Meter – Pulse Output – Isolation Switch

Related Variants

Meter Variants for the 5194 Meter – All with 15 years certification.

- 5194E: Multi Rate Credit Meter – Internal Time Switch
- 5194L: Multi-Rate Credit Meter – Internal Time Switch – Isolation Switch
- 5194P: Multi Rate Credit Meter – Internal Time Switch – Pulse Output