

Electricity Prepayment Meters
Cashpower Gem Lite
Technical Specification Sheet



The Cashpower Gem Lite is a single phase, two wire, 80 Amp, STS keypad prepayment meter in a compact British Standard housing,

The meter has specifically been developed to provide utilities with a quality, low cost, highly reliable STS keypad prepayment metering solution, while maintaining conformance to internationally standards such as IEC62055-31.

Version:.0.10
Date: 25th November 2010
Issued by Product Management: Dave Tarr
Filename: Specification Sheet Gem Lite (25112010).doc

Overview

The Cashpower Gem Lite is a compact single phase, two wire, 80 Amp, STS keypad prepayment meter in a British Standard (BS) housing.

The meter is suitable for new installations or retrofitting of existing bottom connected electromechanical or electronic watt-hour meters.

The meter is easy to install and boasts an easy to read, language independent Liquid Crystal Display (LCD) and a wide range of information registers which can be easily accessed by pressing the information button on the keypad and then entering the number of the register. (Refer to the User Guide for more information.)

The meter operates on Landis+Gyr's version 12.3 meter firmware, and therefore provides only for STS prepayment functionality mode.

Features

- Single phase, two wire, keypad prepayment meter
- Proven Cashpower keypad technology
- Maximum current: 80 Amps
- Compact meter in BS format
- Meter fitted with LCD and a keypad
- Clear language independent icons on the display and membrane of the meter
- Clear load switch status indicator
- Scrolling display for 11 digit STS meter serial number
- Displays last 50 vouchers entered. (Displays the 20 digit STS voucher and the date and time of the voucher)
- Mechanically sealed against tampering
- Significant Reverse Energy detection
- Programmable software power limit
- Advanced decommissioning and commissioning feature for easy installation process

- Tamper detection facility
- Meter enclosure manufactured with UV stable, flame-retardant plastic material
- Degree of protection, IP54
- Improved sealing against ingress of insects
- Supports short codes (refer to user guide)
- Conforms to IEC62055-31
- Exceeds IEC62055-31 requirements for voltage Impulse withstand
- Fully STS compliant (IEC62055-41/51)

Tamper Detection Facility

Cashpower Gem Lite is mechanically sealed against tampering through the use of a factory-sealed screw plug on the rear panel and a utility-sealed wire seal on the front of the meter. The use of these mechanical seals ensures that there are visible signs of tampering if unauthorised entry to the system is attempted.

In addition, the meter is equipped with a tamper sensor that will automatically disconnect the power to the load in the event of tampering.

The meter includes a Significant Reverse Energy (SRE) detection feature. If the line and load wires are swapped during installation, the meter will continue to operate and decrement credit, however, the meter can be factory-programmed to tamper and disconnect the load should SRE be detected.

Virtual Token Carrier (VTC) port

The Gem Lite is fitted with an industry standard VTC port at the rear of the meter. While this port is typically used to program the meter during the manufacturing process, it can also be used to extract vital meter information, such as remaining credit.

Surge Immunity

The meter exceeds the IEC62055-31 Voltage Impulse Withstand of 4kV.

Cashpower Gem Lite Technical specifications

General Information

Meter Format

Single phase, 2 wire (Line1, N, N, Load1) directly connected keypad prepayment meter

Meter Type Variants

Single Phase, 2 Wire	230V, 50 Hz
Single Phase, 2 Wire	220V, 50 Hz
Single Phase, 2 Wire	120V, 60 Hz

Operation

General

Prepayment Mode only

Credit Entry Mechanism

20 digit STS encrypted numbers, via the keypad of the meter

Token Encryption Mechanism

20 digit STS¹ according to IEC62055-41

Electrical Ratings

Nominal Voltage (U_n) – Rated Voltage

Refer to “Meter Type Variants”

Nominal Frequency

50 Hz and 60 Hz variants available

Operating Voltage Range

80% to 120% of U_n

Maximum Continuous Current (I_{max})

80 Amps (programmable to lower power limits)

Burden

Voltage circuit	<1.5W / <10VA @ 230V, 50Hz
Current circuit	<2.5 VA @ $I_b=10A$

Protective Class (according to IEC62052-11)

Class II (double insulated)

Disconnection Device

Type

1 (single pole) latching contactor 100 A

Terminals

Layout

According to British Standard, BS5685

Mains Terminals

Type	Double screw (M6) moving cage terminal
Material	Mild Steel, yellow passivated
Maximum cable size	25mm ²

Terminal Block Material

UV Stable Polycarbonate with flame-retardant

Resistance to heat & fire

Complies with 960°C glow wire (IEC60695-2-1)

Resistance to spread of fire

UL94-V0 rated @ 1.5mm. No toxic gases emitted: “Green Material”

Main Enclosure

Enclosure Details

Type Bottom connected according to BS5685

Enclosure Material

UV Stable Polycarbonate with flame-retardant

Resistance to heat & fire

Complies with 960°C glow wire (IEC60695-2-1)

Resistance to spread of fire

UL94-V0 rated @ 1.5mm. No toxic gases emitted: “Green Material”

Rating

Degree of protection IP54 (IEC60529)

Mounting Arrangements

Two mounting screws at the bottom (spacing according to BS5685). Top mounting bracket available as an option

Sealing

Terminal cover 1 sealing screw
Meter enclosure Factory sealed with screw sealing plugs inserted at the time of manufacture

¹ STS = Standard Transfer Specification (Industry standard according to IEC62055-41)

Weight and Dimensions

Weight
Approximately 536 grams

External Dimensions

Width 122 mm
Height (with long terminal cover) 168.5 mm
Depth 68 mm

Metrological Performance**Measurement Direction**

Forward and reverse power detection and metering²
(credit is decremented in both directions)

Metrological (General)

Meter constant (LED Flash rate) 1000 pulses/kWh
Basic reference current (I_b) 10A
Accurate metering range $0.05I_b$ to $1.25I_{max}$ ³
Starting current (Class 2) $0.005 I_b$ ⁴
Accuracy Class Index Class1 & Class2 available
Maximum error $< \pm 2\%$ (CI 2) and $< \pm 1\%$ (CI 1)⁵

Power Threshold (Creep)

Out of threshold 9.2W (approx 40mA @230V)⁶
Into threshold 6.4W (approx 28mA @230V)

Insulation and Overvoltage**Insulation & Overvoltage**

Insulation system classification Protective Class II⁷
Insulation level 4kV for 1 minute
Overvoltage withstand 440Vac for 48 hours
600Vdc for 1 minute

Surge Immunity**Voltage Impulse Withstand**

Differential In excess of 6kV, 1.2/50 μ S, with 2 Ω
source impedance (according to SANS1524-1)

Current Impulse Withstand

Service Rating 5kA 8/20 μ S⁸
Withstand Rating 30kA 4/10 μ S⁹

² Will accurately measure energy if Line and Load are reversed.

³ The meter is accurate within specified limits. Should a meter be momentarily operated outside its specified maximum current rating, it will meter up to $1.25 I_{max}$.

⁴ For Class 1 meter, starting current = $0.004I_b$

⁵ Over range $0.1 I_b$ to I_{max} ; $0.5 \leq \cos(\phi) \leq 1.0$ (lead or lag)

⁶ At $\cos \phi = 1$. The power threshold represents the minimum load power that the meter will register. The value is programmable, with the recommended level for a base 10A meter. Values shown are for Class 2 metering only

⁷ According to IEC 62052-11

⁸ With optional surge arrester fitted externally

Specification Compliance

SABS1524-1, IEC 62052-11

Electromagnetic Compatibility (EMC)**General EMC**

Radio Interference Complies with CISPR22
Immunity to fast transient bursts 4kV
Electrostatic discharge 15kV air discharge

Immunity to HF Fields

80Mhz to 2Ghz @10V/m with load, 80Mhz to 2Ghz
@30V/m no load

Specification Compliance

IEC 6100-4-2; IEC 61000-4-3; IEC 61000-4-4; IEC
61000-4-6, CISPR 22

Operating Environment

Area of application Indoor Meter
Operating temperature range -10°C to $+55^{\circ}\text{C}$
Storage temperature range -25°C to $+70^{\circ}\text{C}$
Relative humidity Max $\leq 95\%$; Annual mean 75%

Man-Machine Interface**Type**

Language independent

Components

Pictographic / numeric LCD display, keypad, LED
Rate of consumption indicator, audio feedback for
key press.

Liquid Crystal Display (LCD)

Size Area 5.5 mm^2 [39.6mm (W) x 14mm (H)]
LCD Icon information Happy face, Sad face,
Switch open, Switch closed, Information icon, Watts,
kWh, Alert Icon, 4 segment credit wedge.

Keypad

12-key international standard layout including
"Information" and "Backspace" keys

Buzzer

Audio feedback on key-press

Rate of consumption Indicator

Visual Red, 1000 pulses per kWh¹⁰

⁹ With optional surge arrester fitted externally

¹⁰ Can be used together with suitable test equipment, to verify meter's accuracy

Diagnostic Information

Additional meter parameters accessible via the information key.

External Interfaces

Virtual Token Carrier (VTC) Port

Rear programming port according to Eskom DISCAA9 and IEC62055-52

Specification Compliance & Approvals

IEC

IEC62055-31

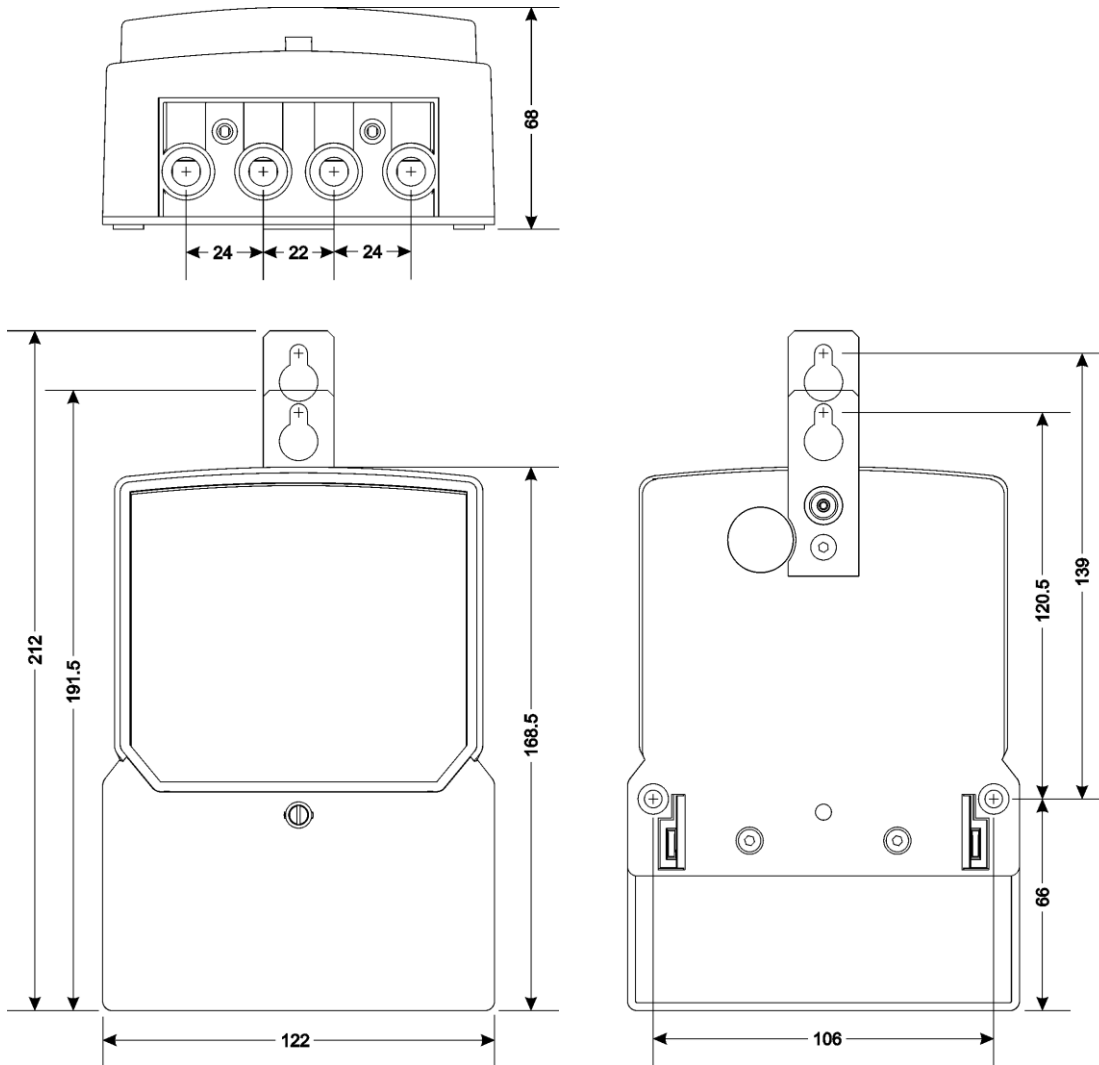
STS

IEC62055-41/51

BS

Conforms to BS5685:1979

Cashpower Gem Lite Dimensions



Copyright © 2005-2010 Landis+Gyr. All rights reserved. Subject to change without notice.

Landis+Gyr (Pty) Ltd
2 Slate Avenue, N1 Business Park
Old Johannesburg Road, Kosmosdal Ext. 7
Gauteng, South Africa
Tel: +12 645 3100
www.landisgyr.com/za

