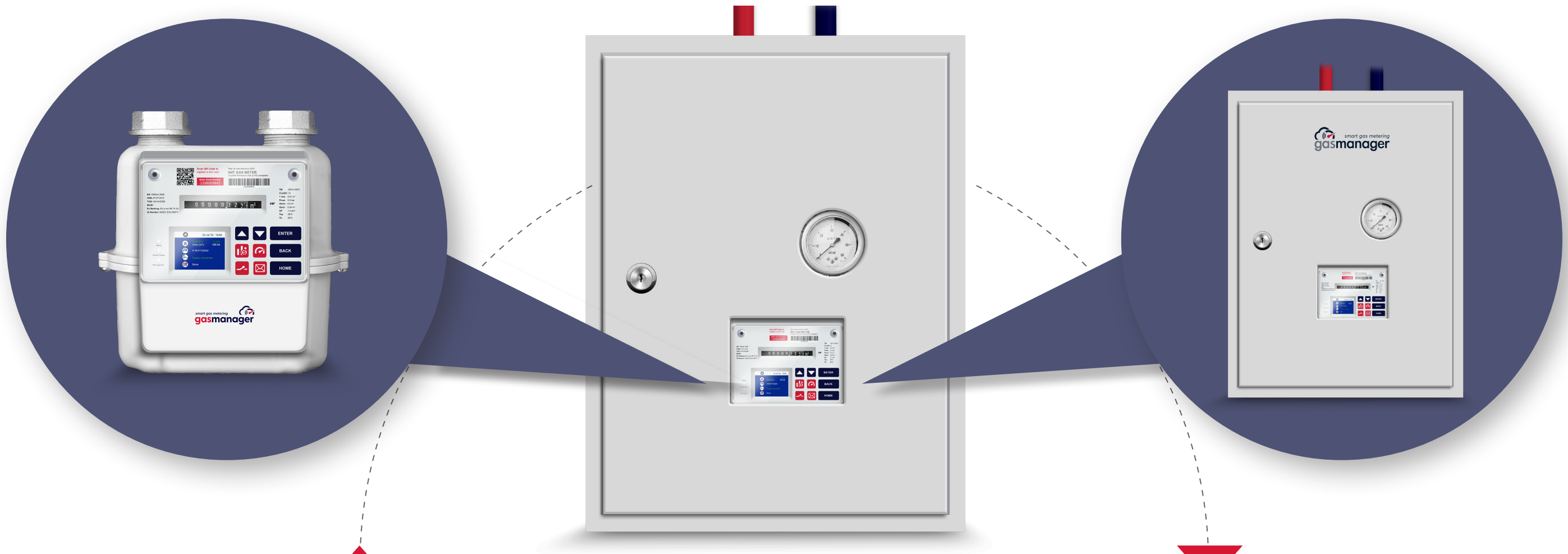




An intelligent cloud-based smart metering solution

[www.gasmanager.co.za](http://www.gasmanager.co.za) | 087 057 2561



A **smart** full-circle  
gas metering solution



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# HARDWARE

## 1. GAS METER



## Get ready to experience business intelligence at your fingertips!

### The most future-proof smart gas meter available on the market!

This multi-functional gas meter is designed to address the needs of small and medium gas users (commercial and domestic). The convenient size, and look and feel of this meter make it “easy on the eye”, extremely user-friendly and easy to install.

It is fully adaptable and can meet ever-changing requirements with minimal cost and interruption. The robust communication module makes it suitable for various real-time gas monitoring, seamless interaction between customers and the service provider and also the reporting of tampering events.

### The excellent user experience design can display amongst many others:

- available balance;
- total gas consumption for the month;
- usage history in units and currency billing;
- current tariff information;
- supply status and reason for disconnection; and
- notifications.

### Unique features of the GasManager meter are:

- Integrated GPS module for real-time location reporting of the meter.
- The lithium batteries installed on the meter ensure intermittent communication between the meter and cloud server, even when the meter is in an in-active mode.
- All firmware on the meter can be updated remotely, ensuring that the meter stays current with the latest requirements from the service provider or regulatory authorities.
- The tamper detection features send alarm messages to the cloud server in the event of meter interference and can also automatically disconnect gas supply.

The meters are pre-programmed to automatically integrate and report metering data into the GasManager Meter Management System (“GMMMS”) which is offered to clients as a Smart Metering-as-a-service (“SMaaS”).

### Key highlights

- **Standard integrated supply control valve** for remote disconnection of the gas supply.
- **Suitable for retro-fitment** on all existing out-dated analog “manual” meters.
- **User-orientated button design** for the ultimate user experience.
- Robust **all-weather-proof** design.
- The separate battery compartment allows for **in-service replacement of batteries and sim cards**.
- **Quick** and self-explanatory **registration process**.

### Measurement (Class 1.5 accuracy)

- Class 1.5 accuracy – Refers to the standard requirements of the measuring instrument. A class 1.5 accuracy means this meter’s measuring errors will never stray beyond 1.5% of the actual consumption.

### Metering mode

- Prepaid / post-paid mode settings
- Post-paid mode setting disables the prepaid functionality but still enables:
  - Manual remote disconnection on demand.
  - Tamper detection protection with disconnection of supply safeguard actions.

The meter’s design promotes the quality of the user’s interaction with the meter through a visual and audible low balance alarm function, and optional notifications via mobile App, email or SMS.

The meter hardware is also fully compliant with international technical requirements of EN1359:1998/A1:2006 and OIML R137 standard for Class 1.5 gas meters.

# Prepaid metering features

The meter provides unparalleled billing accuracy and reporting, with a perfect balance between instant relevant information for users that would like to have access to the information on-demand as well as detailed historical information for data analysts.

When in pre-paid mode, the meter will automatically disconnect the gas supply when the consumer's available credit balance becomes zero. Some advanced features such as emergency credit limits and friendly credit mode configurations can be set up directly on the meter.

The prepaid meter can be set to either operate in "Unit" (m<sup>3</sup>) or "Currency" mode and support all global currencies. No traditional transfer mediums such as a RF meter card is needed to load credit.

GasManager makes use of Cloud-based recharge methods where recharging of credit is done effortlessly through any cellular network, or manually via the Customer Interface Unit "CIU".

## Standard features

- Option of "Currency" or "Units" mode.
- Once credits are depleted, the supply valve will disconnect the supply automatically.
- Low credit LED notification and buzzer alarm on the meter.
- Credit recharge via manual entry of a credit token on the meter itself.

## 1. GAS METER

### 1.1 Introduction & Features

## Advanced features

"Friendly mode" enables a service provider to customise "Friendly, do not disconnect supply" parameters. Do not disconnect settings include:

- |                  |                            |
|------------------|----------------------------|
| - Weekends       | On / Off                   |
| - Public Holiday | On / Off                   |
| - Daily Start    | e.g. 17:00 (24 hour clock) |
| - Daily End      | e.g. 08:00 (24 hour clock) |

The above will enable the service provider to align supply disconnection periods with Customer Care standard office hours and eliminate the need for after-hours service assistance requests. Up to 100 holiday & special days can be set up remotely on the meter.

- Emergency Credit Limit setting allows a user to action a temporary overdraft to avoid supply disconnection.
- Remote credit recharge through an automatic reload through the cloud system to the meter.
- Gas supply reconnection option to select "Auto-reconnect" or "Manual Authorisation" mode. The Manual Authorisation mode only reconnects once the supplier has authorised the reconnection via the cloud platform. This process has a full audit history and is tailored per supplier's safety standards.
- In-active mode reporting of the GPS location of the meter every 72 hours to the cloud server when the meter does not register any gas consumption for 7 days or has no tampering events.

# GasManager patented features

## 1. SPECIALIST FEATURES

### Future-proofing

- Remotely upgradeable firmware.
- IoT data sim card with 30 years preloaded data connectivity via any 4G cellular network globally. (Not network specific)

### Customer interface display

- Large 2" TFT display for brilliant image quality and contrast.
- Easy viewing even when there is limited light available or in direct sunlight.
- Supplier logos and details can be remotely updated to the screen.
- Customisable display menu configuration tailored according to the utility supplier and their users' needs.

### Tamper detection

Warning alert will display on screen and event log reported to the cloud server when:

- Battery terminal cover is opened / closed.
- Gyro sensor detects any vibration or movement of the meter.

Tamper alert display on screen with automatic disconnection of supply when:

- The main cover is removed.
- Hall-effect sensor detects magnetic interferences.
- Both exchangeable batteries have been removed — the internal fixed battery will power the communication module to report on the tampering event.

### Events & alarms logging

Notification and logging of all events with an individual time-stamp relating to:

- Supply valve control events
- Tampering events

All events are logged and transferred to the cloud server automatically. The last 200 events are stored on the meter.

### Meter tracking and stock control

- Built-in GPS module that provides GPS location of the meter and automatically transmits this to the cloud server.
- In-active mode report GPS location of meter every 72 hours to the cloud server once the meter does not register any gas consumption for 7 days.
- Meter tracking automated via Gas Manager's Inventory control module.

## 1. GAS METER

### 1.1 Introduction & Features

## 2. BILLING FEATURES

### Billing of consumption

- Instantaneous billing information based on consumption.
- 12-month billing history retained on the meter.
- All billing history retained on cloud server "from day 1" billing.

### Tariff Setup

- Up to 4 different tariffs with starting dates.
- Future tariffs can be set up to enable new tariffs to be effective on a pre-set date.

### Internal clock

- Accuracy  $\leq 0.5s$  (23°C)
- Quartz crystal time resource
- Gregorian calendar
- DST (Daylight saving time)
- Remote & local synchronisation

## 3. ROBUST FEATURES

### Communication between the meter and the cloud server

- Plug-and-play 4G communication module.
- IoT data sim card with 30 years preloaded data connectivity via 4G cellular network globally (not network specific).
- Encrypted communication between the meter and the cloud server.

### Battery capacity

- One 3.6v 2700 mAh built-in lithium battery inside the meter.
- Two 3.6v 9000 mAh exchangeable lithium batteries.
- 10-year expected battery life (depending on meter communication setup and frequency of valve control events).

### Open Source

- End-to-end message encryption activated as standard.
- Communication to and from the meter is open source and not limited to one service provider.

2.1 User Interface Layout

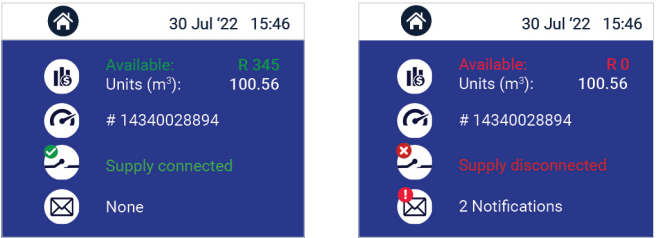


Front view

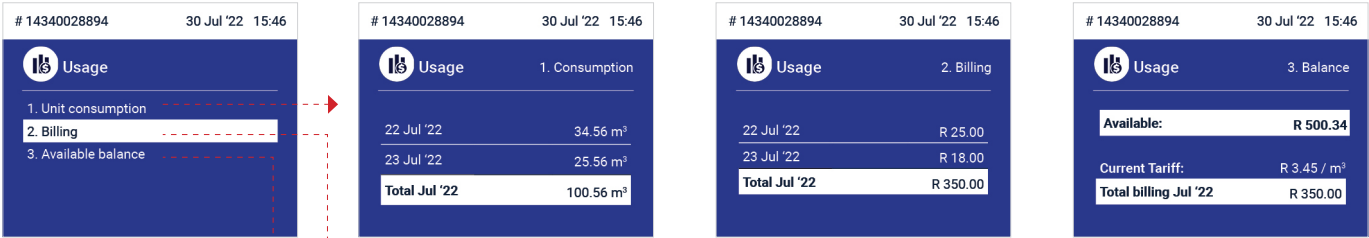


2.2 User Interface Menu & Navigation

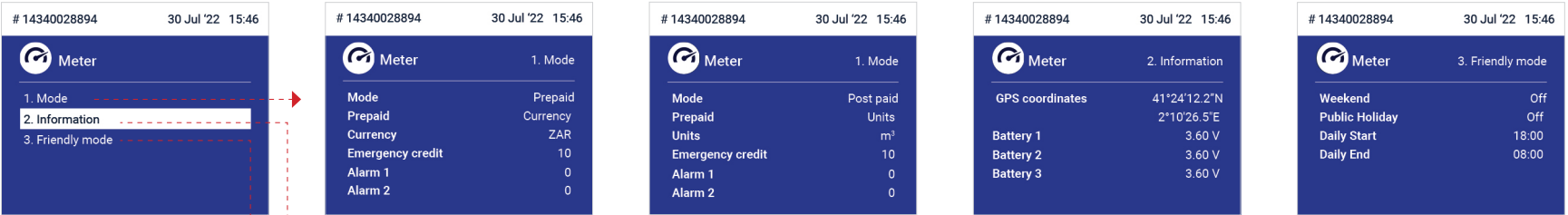
HOME PAGE



USAGE SECTION



METER SECTION



SUPPLY STATUS



NOTIFICATIONS





## 3.1 Technical Specifications &amp; Dimensions

## Meter hardware technical specifications

Items		Unit	G2.5	G4
Nominal flow-rate		m <sup>3</sup> /h	2.5	4.0
Max flow-rate (Q <sub>max</sub> )		m <sup>3</sup> /h	4.0	6.0
Min flow-rate (Q <sub>min</sub> )		m <sup>3</sup> /h	0.0025	0.04
Cyclic volume		dm <sup>3</sup>	1.2	
Accuracy			Class 1.5	
Casing materials			Steel or aluminium	
Metrology			EN1359:1998/A1:2006 and OIML R137	
Max pressure loss		mbar	≤2.0	
Max working pressure		bar	0.5	
Error	Q <sub>min</sub> ≤Q<0.1Q <sub>max</sub>	%	±3	
	0.1Q <sub>max</sub> ≤Q≤Q <sub>max</sub>	%	±1.5	
Display range minimum		m <sup>3</sup>	0.0002	
Display range maximum		m <sup>3</sup>	99999.999	
Operation temperature		°C	-25 to +55	
Motor valve life		Frequency	≥10000	
Temperature compensation			20°C	

## Customer interface unit (CIU) specifications

Items	Unit	G2.5	G4
Data acquisition		Pulse (Reed or Hall sampling counting)	
Explosion proof grade		EXib IIBT3 Gb (Pending – Expected date of issue October '22)	
Degree of protection		IP67	
Battery type	C	<b>1x</b> 3.6v 2700 mAh built-in lithium battery	
		<b>2x</b> 3.6v 9000 mAh exchangeable lithium batteries	
Static working current	μA	≤10	

## Meter dimensions

Model	H	L	D	B	S	M	Weight
Steel body	220mm	195mm	67mm	169mm	110mm	G5/4"	2.1kg
Aluminium	220mm	205mm	73mm	178mm	130mm	M30*2	2.0kg

# BUSINESS INTELLIGENCE

4. NEXT GENERATION **GAS METERING ENVIRONMENT**

## Business intelligence now becomes possible through our certified **New Generation Gas Metering Environment (NGME)**

NGME is a certified gas meter, which is available as a complete unit. The NGME replaces the existing gas meter without the need to do any modifications to the LPG supply piping.

The NGME provides certainty and peace of mind that the calibrated pressure is correct. How? Through a regulator, which is installed with the meter. The regulator provides visual confirmation of the exact pressure measured via the pressure gauge.

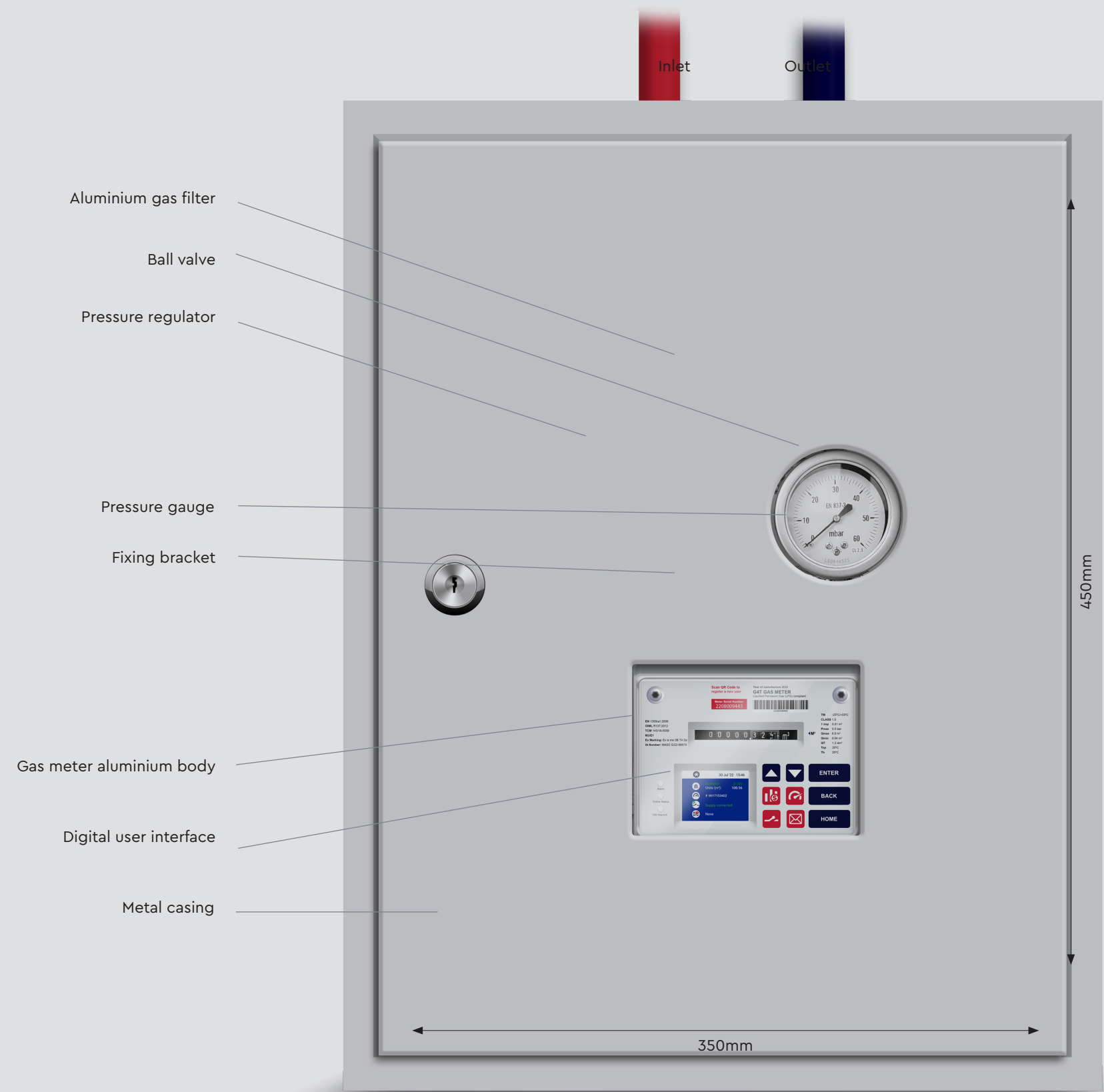
The regulator provides certified confirmation of the exact pressure before meter inlet, and the pressure gauge's visual confirmation of pressure after the meter outlet.

The complete NGME is packaged in a lockable steel box to restrict access to authorised users only. Through the box's openings, the end-user will have access the user interface, pressure readings and the emergency cut off switch.

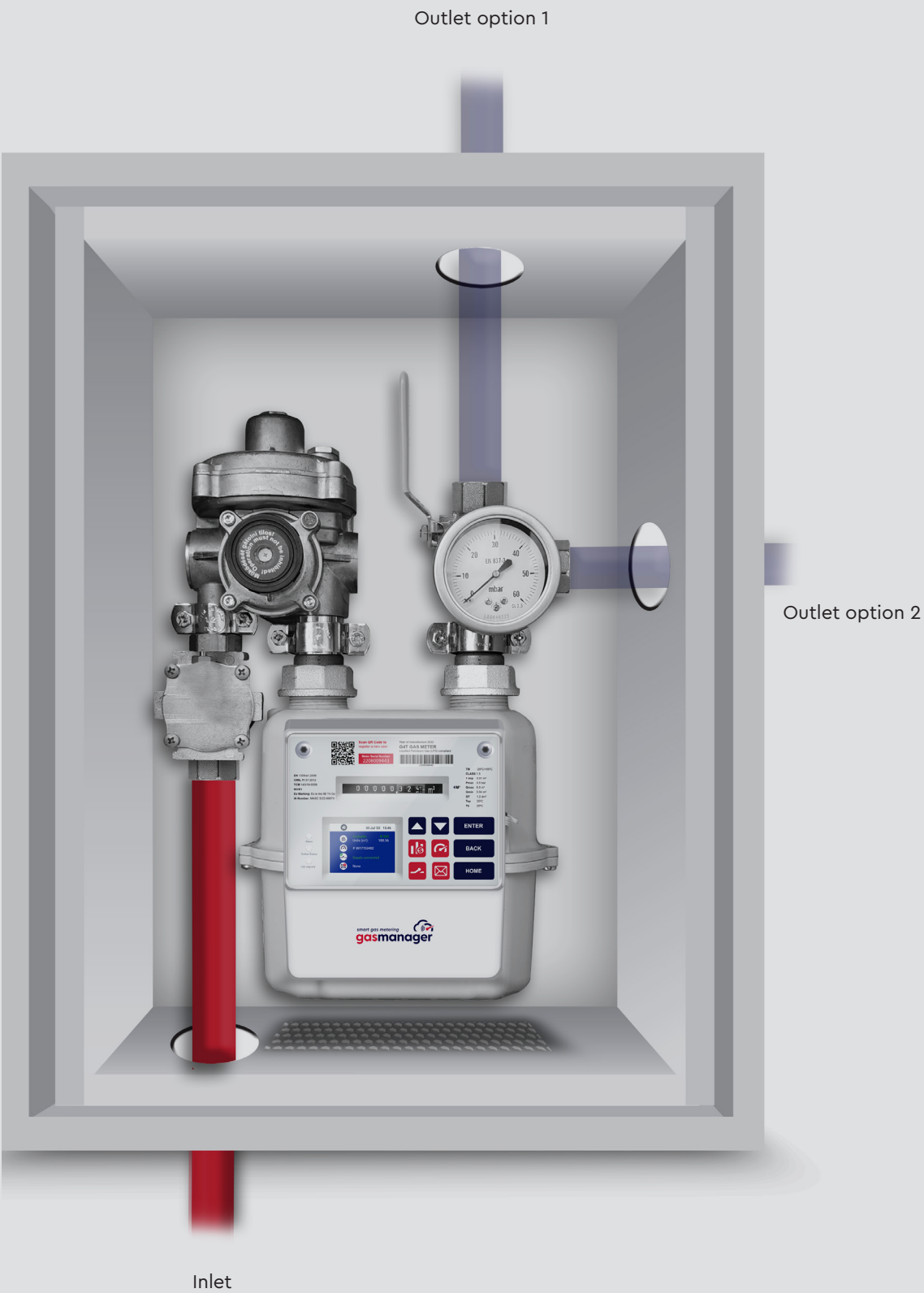
The NGME is the most cost-effective way of replacing the outdated gas meters available in South Africa. Furthermore, due to its full-circle metering capabilities, it enables the technician to replace more units per day.

The complete unit calibrated and certified as a whole and is issued with a Certificate of Compliance ("CoC"), which also reduces the cost and time of the installation significantly.

4. NEXT GENERATION GAS METERING ENVIRONMENT



Option A  
Retro fit for existing meters



Option B  
New installation – Customisable outlet options

4. NEXT GENERATION GAS METERING ENVIRONMENT



Meter Unit HP	2,8 kPa	Serial Number	NIC123
Manufacturing Date	01/01/22	Temperature:	-20 to +60°C
Meter Type	UG T G4 AL	P Max	200 kPa
Q_Max	6m³/h	Q_Min	0,04m³/h
Size	450mm x 350mm x 220mm		

Manufactured in South Africa      [www.gasmanager.co.za](http://www.gasmanager.co.za)

Meter specification sticker – Inside box

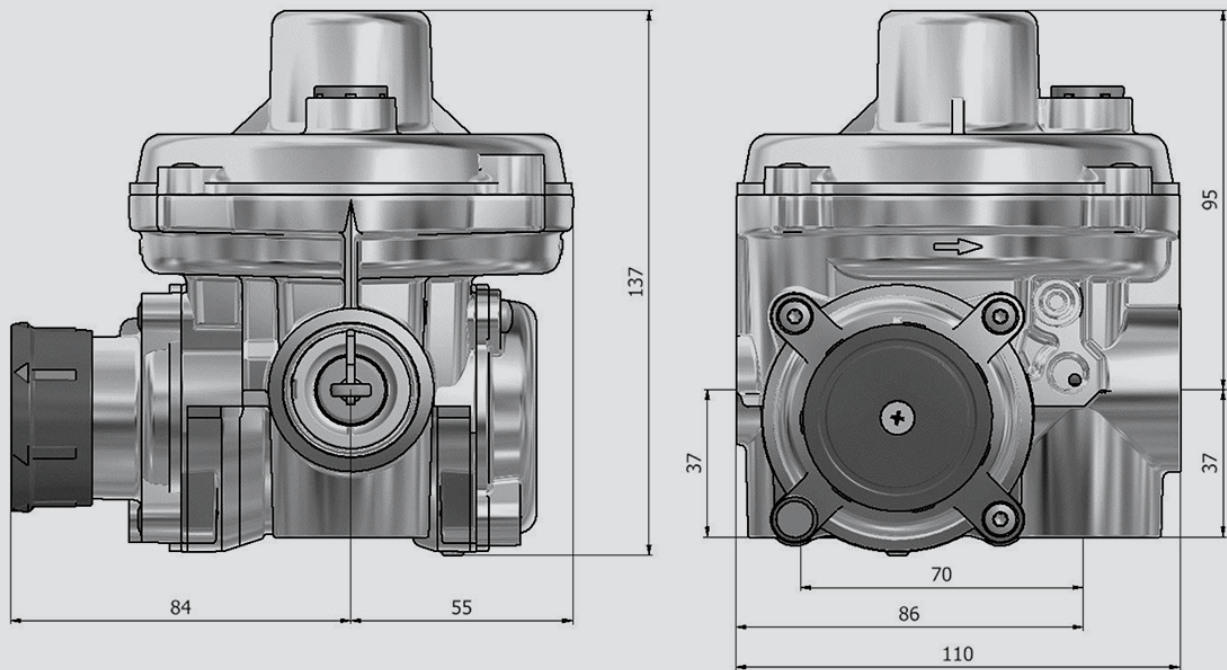
In case of emergency

Optional sticker – On the front



4.1 EKB-Smart Flow 40/50/75 EKB-SF  
Two Stage Gas Pressure Regulator

Dimensions

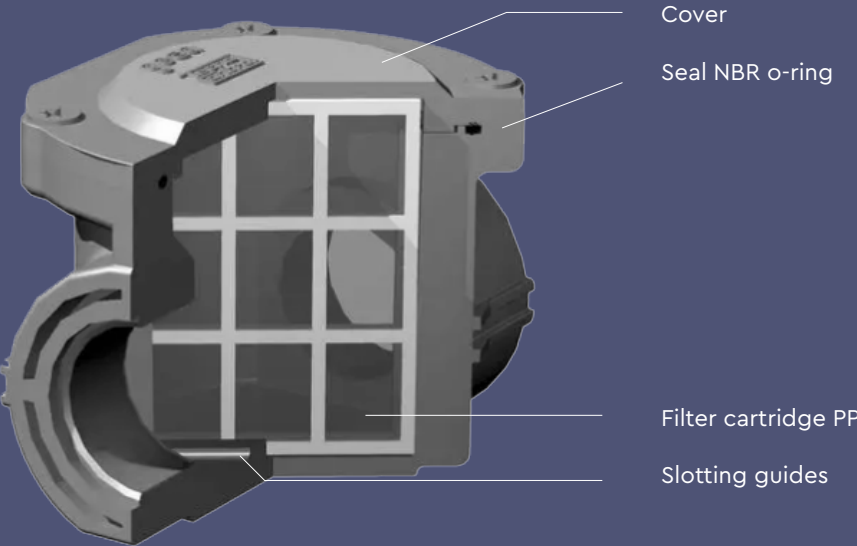
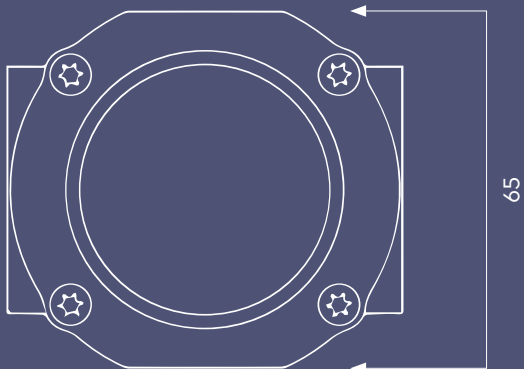
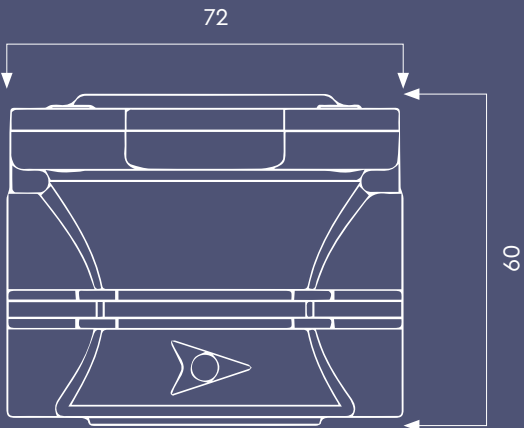


Specifications

2-stage Gags Pressure Regulator	
Producer	Heat energy
Design Conditions:	
Medium	Natural gas
Ambient temperature	-20°C — +60°C
Medium temperature	0°C — +30°C
Design pressure	6 bar
Flow rate max.	10 Nm³/h
Operating Conditions:	
Inlet pressure (p1)	0,3 — 6,0 bar
Outlet pressure (p2)	28 mbar
Layout	Straight
Connection 1	G3/4" swivel
Connection 2	G5/4" swivel
Built-in dimension	160 mm
Accuracy	AC10
Closing pressure group	SG20

4.2 Gas Filter (3/4" Small Capacity Pmax 6 bar)

Dimensions

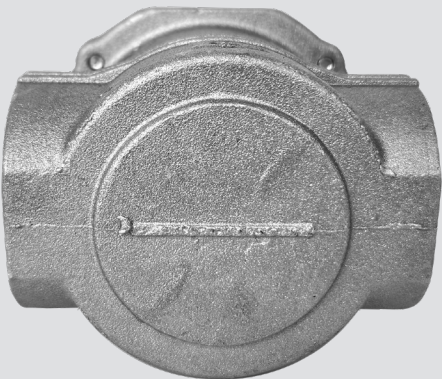
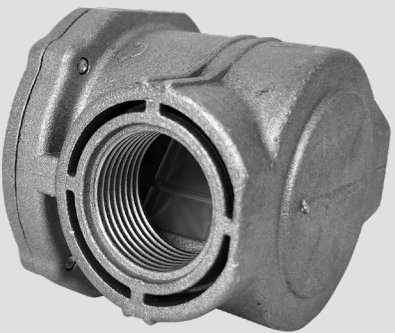


Gas filters designed in accordance with the provisions of DIN.3386 standards can be used for all the types of natural gas, LPG or not corrosive gases. These filters are widely used for protection of control devices, pressure regulators, meters and on systems that requires a high degree of filtration. All the filter covers are filled with connections for test points both at the filter inlet and outlet.

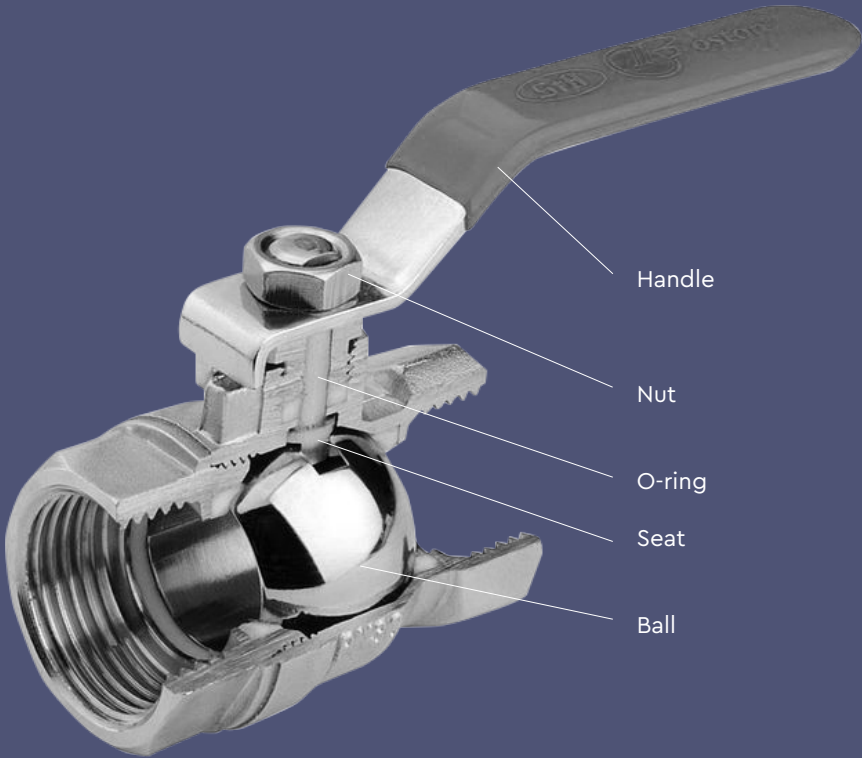
Technical features

Operation	Maximum pressure 6 bar
Working temperature	-20 °C + 60 °C
Filtration	50 Micron
Use	Non- aggressive gas: Family 1- 2- 3 and air special version for Biogas
Cartridge element	Plastic cartridge PP
Connection	3/4" Wall boiler- ISO 228
Complete body	Die cast aluminium Gd AlSi12Cu-EN AB 46100
Seals	NBR
Approval	PED

Information taken from: [www.directindustry.com](http://www.directindustry.com)



4.3 Manual Ball Valve



BALL VALVE (MANUAL)

Easy-to-use valve for end-users to close the supply of gas in case of an emergency.

Technical data

Working pressure	20 Bar
Working temperature	-20 °C + 60 °C
Threaded ends	UNI ISO 7/1 Rp

Information taken from: [www.directindustry.com](http://www.directindustry.com)

# SOFTWARE

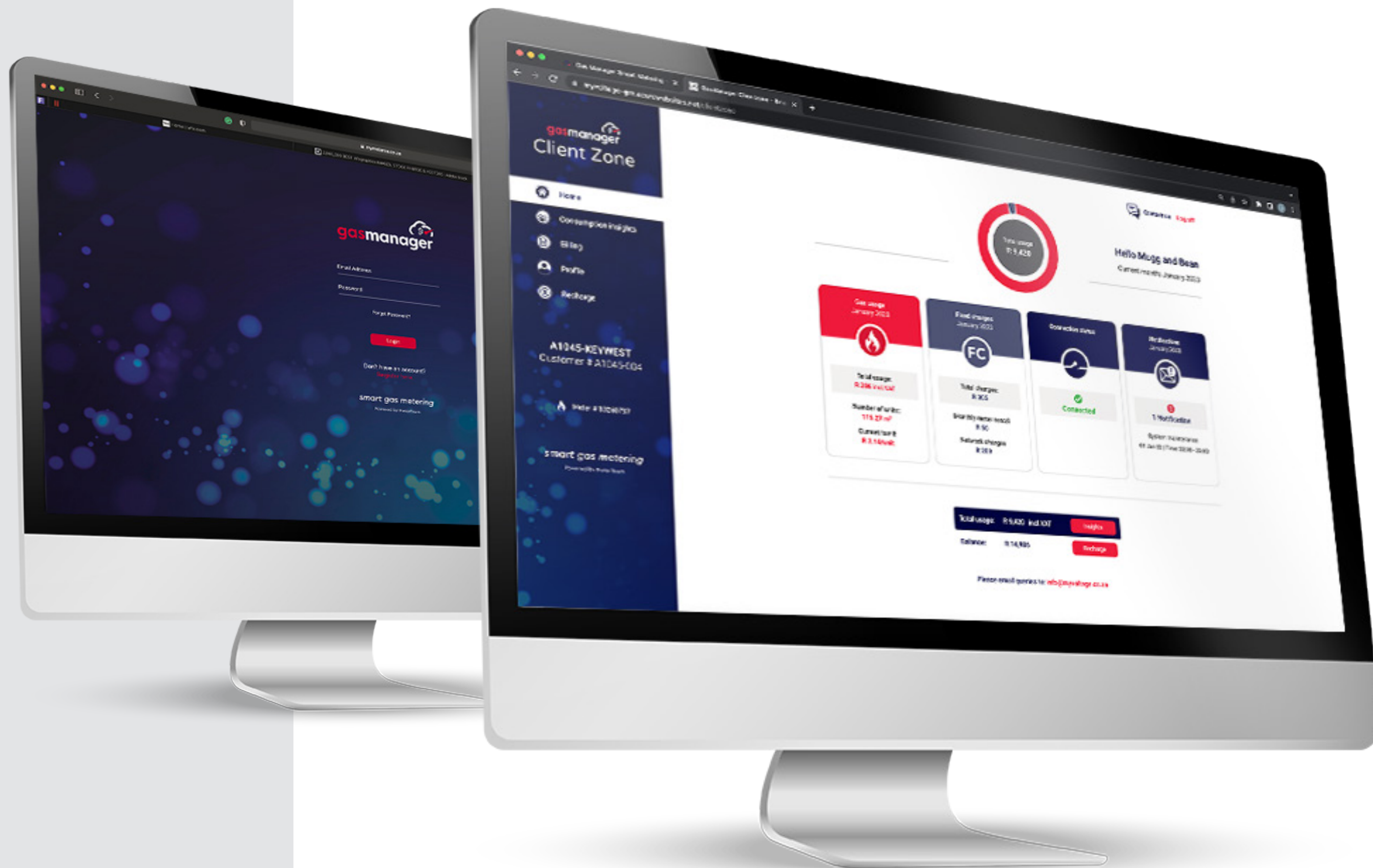
## 5. MOBILE APPLICATION

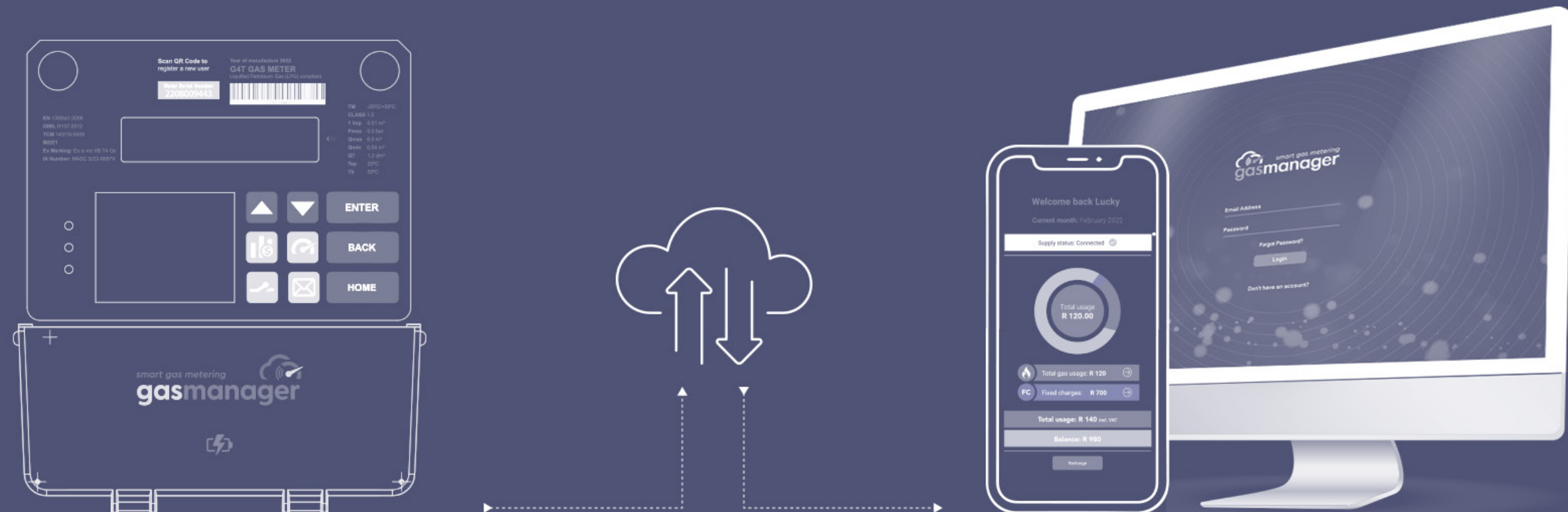




# SOFTWARE

## 6. DESKTOP APPLICATION





**An intelligent cloud-based smart metering solution**

smart gas metering

gasmanager

Consumption insights

LUCKY NDLOVU

Customer # YEL063A

15 Wheel Street 324 Yellow Wood  
Moreleta Park Pretoria 0081  
082 345 6789

Meter # 143 266 5955

Daily consumption insights

February 2022

● Gas Consumptions

● Units

Previous months' consumption insights

Month	Units	Unit Price	Total Incl. Vat
2021 May	727	R 2.36	R 1,715
2021 Jun	757	R 2.37	R 1,796
2021 Jul	821	R 2.75	R 2,254
2021 Aug	727	R 2.70	R 1,964
2021 Sep	881	R 2.68	R 2,382
2021 Oct	610	R 2.64	R 1,613
2021 Nov	561	R 2.63	R 1,471
2021 Dec	124	R 2.32	R 287
2022 Jan	569	R 2.63	R 1,495
2022 Feb	498	R 2.60	R 1,292
2022 Mar	548	R 2.62	R 1,436
2022 Apr	388	R 2.53	R 979
2022 May	577	R 2.63	R 1,518
Total	7,587	R 2.57	R 19,646

Director: NH Bernard | Registration No.: 2018/550879/ 07

909 Rubenstein Road Moreleta Park Pretoria Gauteng 0081  
P.O. Box 39700 Moreleta Park 0044 | 087 057 2561

Intelligent cloud-based  
smart gas metering solutions

smart gas metering

gasmanager

Tax invoice

LUCKY NDLOVU

YEL063A\_2021\_01

15 Wheel Street 324 Yellow Wood  
Moreleta Park Pretoria 0081  
082 345 6789

Invoice Date: 2022-01-31  
Generated Date: 2022-02-31  
Recipient VAT #:   
Recipient Reference:   
Customer #: YEL063A

Billing Period: 01 Jan '22 - 31 Jan '22

Item	Meter serial #	Initial reading	Final reading	# Of units	Units type	Unit price	Sub-total
xxxx	423221565 1431432337 1469	xxxx	xxxx	xxxx	per	xxxx	xxxx
xxxx	KCW-C-VKC4219	xxxx	xxxx	xxxx	per	xxxx	xxxx
xxxx	KCW-C-VKC4219	xxxx	xxxx	xxxx	per	xxxx	xxxx
xxxx	Other Charges	xxxx	xxxx	xxxx	per	xxxx	xxxx
xxxx	Other Charges	xxxx	xxxx	xxxx	per	xxxx	xxxx
xxxx	Other Charges	xxxx	xxxx	xxxx	per	xxxx	xxxx

TOTAL (EXCL. VAT) R x xxx.xx

VAT R xxx.xx

TOTAL (INCL. VAT) R x xxx.x

GasManager

Suite F73 Parkview Shopping Centre 149 Woodhill Rd  
Moreleta Park Pretoria 0044  
P.O. Box 39700 Moreleta Park 0044  
087 057 2561 www.gasmanager.co.za

Intelligent cloud-based  
smart gas metering solutions

Banking Details

Netcash Bank Name: Mercantile Bank  
Bank Account Type: Current  
Bank Account No: 9950109825  
Bank Branch Code: 450105  
Reference: YEL063A\_2021\_01

smart gas metering

gasmanager

Account statement

LUCKY NDLOVU

YEL063A\_2021\_01

15 Wheel Street 324 Yellow Wood  
Moreleta Park Pretoria 0081  
082 345 6789

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xxxx	KCW-C-VKC4219	xxxx	xxxx	xxxx	per	xxxx	xxxx
xxxx	KCW-C-VKC4219	xxxx	xxxx	xxxx	per	xxxx	xxxx
xxxx	Other Charges	xxxx	xxxx	xxxx	per	xxxx	xxxx
xxxx	Other Charges	xxxx	xxxx	xxxx	per	xxxx	xxxx
xxxx	Other Charges	xxxx	xxxx	xxxx	per	xxxx	xxxx

TOTAL (EXCL. VAT) R x xx.xx

VAT R xxx.xx

TOTAL (INCL. VAT) R x xxx.xx

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