



MSA
The Safety Company



PrimaX™ Gas Monitor



Introduction

PrimaX Gas Monitor



- Stand-alone, permanent gas detector
- Combustible gases, oxygen, toxic gases
- OGP
- Chemical industry
- General industry



Applications



- Refineries
- Drilling rigs & platforms
- Gas collection/distribution facilities
- Oil & gas production platforms
- Chemical plants
- Wastewater treatment facilities



Introduction

PrimaX I Gas Monitor

General purpose version

Intrinsically-safe version



PrimaX P Gas Monitor

Flame-proof version





PrimaX Gas Monitor vs. Ultima[®] X Gas Monitor

PrimaX I Gas Monitor



Plug-in sensor; oxygen, toxic versions
No relays
Nylon housing

PrimaX P Gas Monitor



Plug-in sensor; combustible, oxygen, toxic versions
1 alarm, 1 fault relay
Relays rated @1A/ 30 VDC
Powder-coated aluminum housing

Ultima X Gas Monitor



Pre-calibrated sensors (catalytic, E-chem, IR)
3 alarms, 1 fault,
Relays rated @5A / 250 VAC
Stainless steel housing



Features

- Introduction
- Features
- Installation
- Operation
- Maintenance
- Accessories
- Spare Parts





Features

- Combustible (XP only), O₂, toxic detection
- Field-selectable range
- 4 – 20 mA transmitter
- HART (optional)
- 24 VDC
- Ingress protection - IP66
- LCD
- Integral calibration keypad





Features

- SIL 2 (TUV)
- Plug-in sensor
- Global branding
- Integrated mounting plate
- LEDs (PrimaX P Gas Monitor)
- Relays (PrimaX P Gas Monitor)





Configurations

PrimaX Gas Monitor - Saleable Configurations

Description	PrimaX I	PrimaX P
Basic version (4-20 mA)	Yes	Yes
HART version	Yes	Yes
HART + relays version	No	Yes



Detectable Gases List

Gas	Default Range	User-selectable Range(s)
Methane 5.0 (4.4)	100% LEL	-
Propane 2.1 (1.7)	100% LEL	-
Oxygen (O ₂)	25% vol.	10% vol.
Hydrogen sulfide (H ₂ S)	50 ppm	20, 100 ppm
Carbon monoxide (CO)	100 ppm	200, 500, 1000 ppm
Ammonia (NH ₃)	500 ppm	
Ammonia (NH ₃)	100 ppm	
Chlorine (Cl ₂)	10 ppm	5 ppm
Sulphur dioxide (SO ₂)	10 ppm	100 ppm
Hydrogen cyanide (HCN)	50 ppm	20 ppm
Hydrogen chloride (HCl)	20 ppm	-
Hydrogen (H ₂)	1000 ppm	-
Nitrogen dioxide (NO ₂)	100 ppm	-

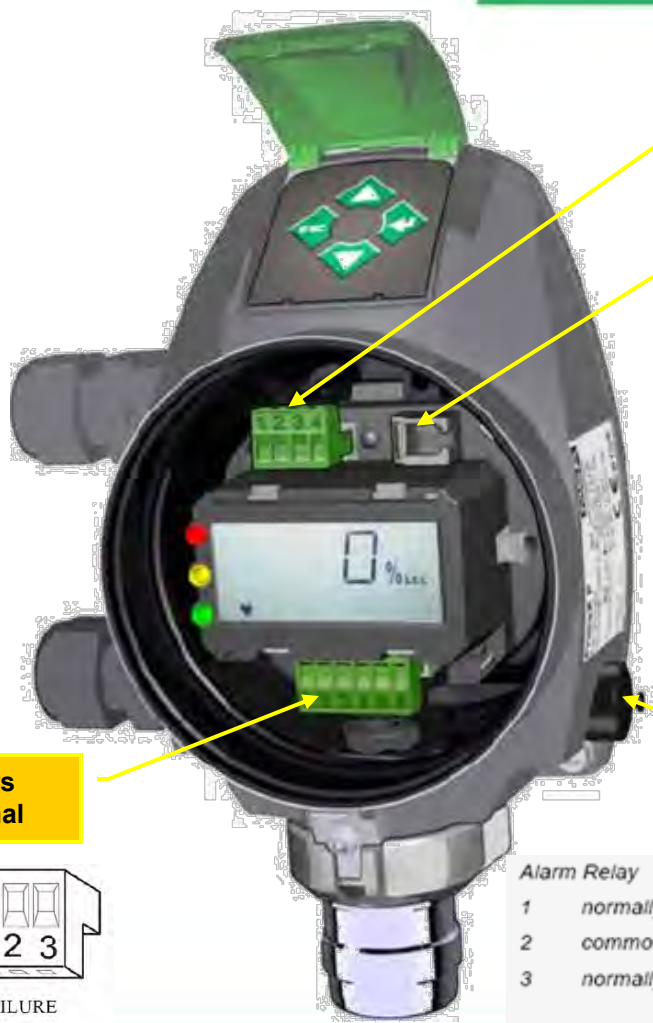


Description



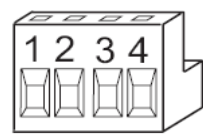


Description



Terminal

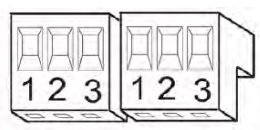
Service connector



- 1 Power supply [+], 24V DC
- 2 0 V DC
- 3 4 - 20 mA [Signal]
- 4 empty

HART connector

Relays terminal



ALARM FAILURE

- Alarm Relay**
- 1 normally closed energised[NC]
 - 2 common [COM]
 - 3 normally open energised[NO]

- Failure relay**
- 1 normally closed energised[NC]
 - 2 common [COM]
 - 3 normally open energised[NO]



Description

**PrimaX I
Gas Monitor**



**PrimaX P
Gas Monitor**



	PrimaX I Gas Monitor	PrimaX P Gas Monitor
Sensor	Toxic or oxygen	Combustible, toxic or oxygen
Housing	Anti-static nylon	Powder-coated aluminum
Connection	2-wire	3- or 4-wire



Description

**PrimaX I
Gas Monitor**



**PrimaX P
Gas Monitor**



**Approval –
IECEX / EU**

Gas - Ex ia IIC Ga T4
Dust - Ex ib IIIC Tx Db

Gas - Ex d IIC Gb T4
Dust - Ex ib IIIC Tx Db

Approval - NA

UL - Class I, Div 1, Group A, B, C, D
CSA - Class I, Div 1, Group A, B, C, D

**Approval -
China**

CCCF, CMC



Description

**PrimaX I
Gas Monitor**





**PrimaX P
Gas Monitor**



LEDs	—	Power, failure, alarm
HART	Yes	Yes
Alarm Relay	—	1 x SPDT
Failure Relay	—	1 x SPDT



Description

	<p>PrimaX I Gas Monitor</p> 	<p>PrimaX P Gas Monitor</p> 
<p>Temperature Range [catalytic sensor]</p>	<p>—</p>	<p>-40 – 70°C</p>
<p>Temperature Range [e-chem sensor]</p>	<p>Depends upon sensor used:</p> <ul style="list-style-type: none"> O₂: -30 – 55°C CO: -20 – 50°C H₂S: -40 – 50°C 	



Installation

- Introduction
- Features
- **Installation**
- Operation
- Maintenance
- Accessories
- Spare Parts





Installation

- Use mounting plate as template for drilling holes
- Fix mounting plate with two screws
- Attach PrimaX Gas Monitor to mounting plate
- Fold down device until it closes to mounting plate
- Secure PrimaX Gas Monitor to mounting plate with two captive socket-head screws

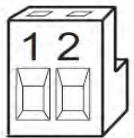
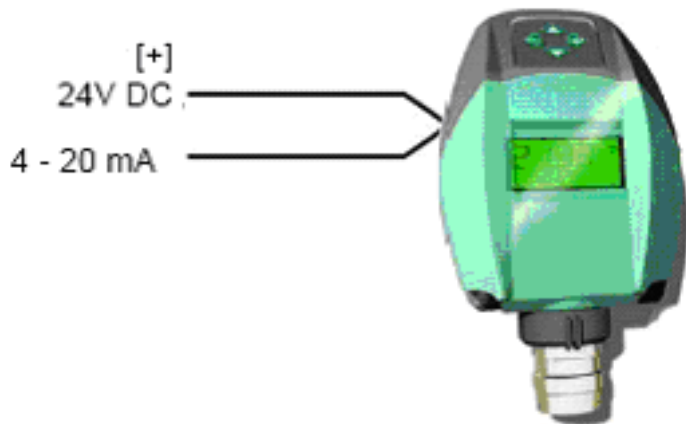




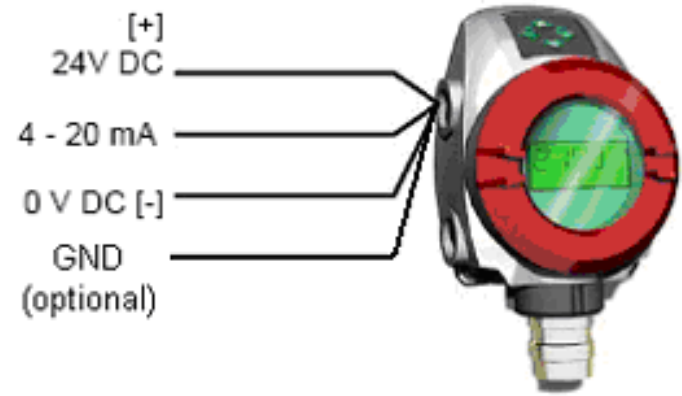
Installation

PrimaX I Gas Monitor

PrimaX P Gas Monitor



- 1 Power supply [+], 24V DC
- 2 4 - 20 mA [Signal]

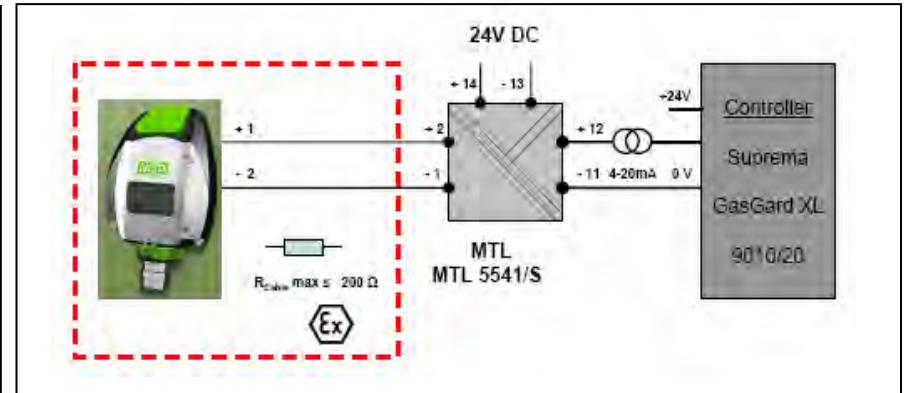
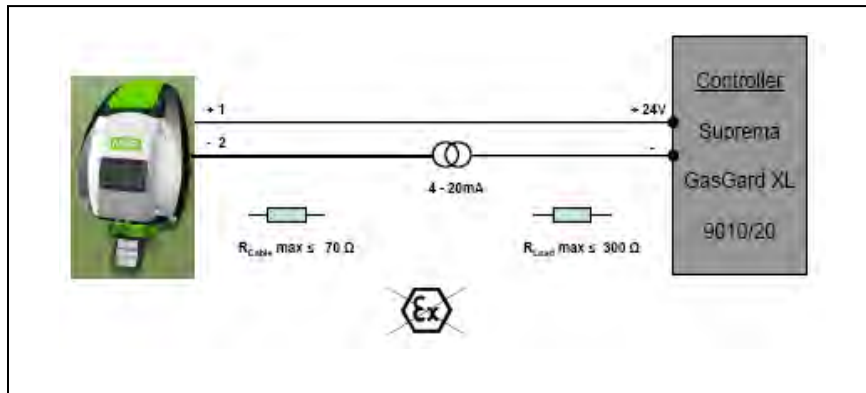


- 1 Power supply [+], 24V DC
- 2 0 V DC
- 3 4 - 20 mA [Signal]
- 4 empty



Installation

- **PrimaX I Gas Monitor**
- **Intrinsically-safe circuits**



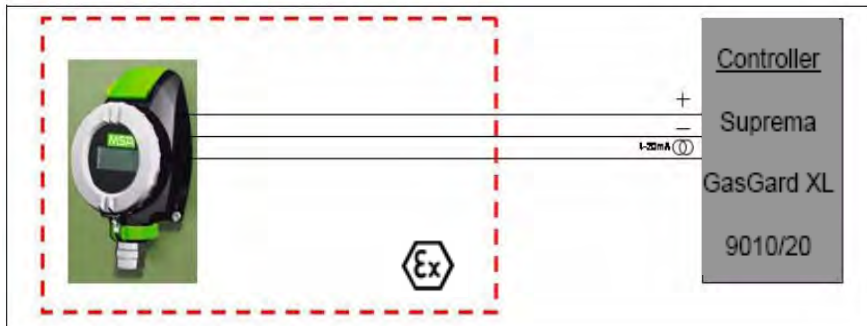
Wire gauge	Max. length at 24 V DC	Max. load resistance
18 AWG	2100 m	300 Ohm



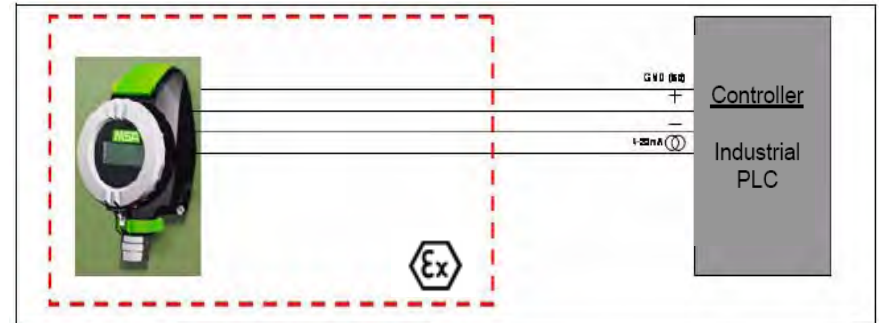
Installation

- **PrimaX P Gas Monitor**
- **Flame-proof design**

3-wire connection



4-wire connection

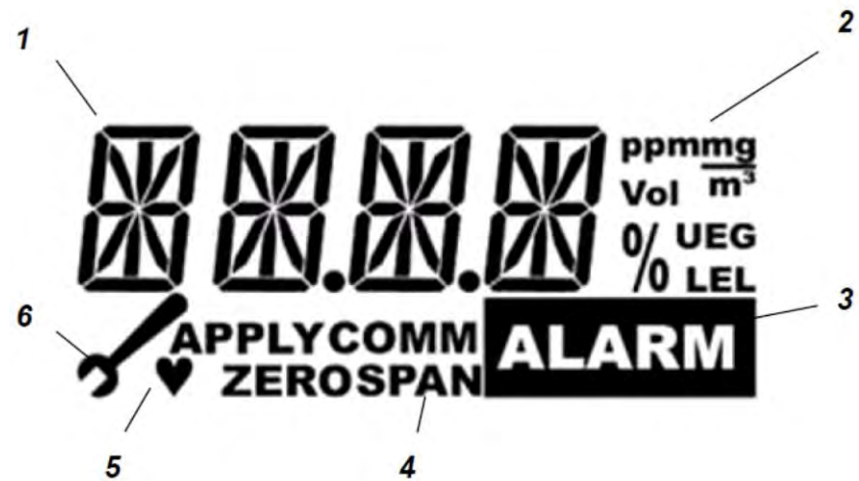




Operation – Display

Alpha-numeric Display

- 3 Digits
- LEL or UEG
- % vol. for oxygen
- Ppm or mg/m³
- Heartbeat



- | | | | |
|---|---------------------------------------|---|-------------------------|
| 1 | Measuring value/Menu//Text dimensions | 4 | Calibration |
| 2 | Units | 5 | Alive signal (flashing) |
| 3 | LOC, alarm indication (optional) | 6 | Maintenance |



Operation – Start Up

Startup Procedure

- LCD test
- FW version
- Gas
- Range
- Warmup time (30 seconds)





Operation – Keypad

Menu Navigation

- Press **ENTER** button to access menu sequence.
- Press **UP** or **DOWN** button until desired menu displays.
- Press **ENTER** button to select menu.
- Press **ESC** button to cancel process.





Operation – Password

- Some operations and menus have a 4-digit password (calibration, setup, output test).
- Default password is 0000 and can be changed.





Operation – Menu

Menu item	Text	Password?
M-01	Calibration	Yes
	Oxygen Calibration	Yes
M-02	ZERO Calibration	Yes
M-03	Show Test Gas Concentration	No
M-04	Setup Calibration	Yes
M-05	Sensor Exchange	Yes
M-06	LCD and LED Test	No
M-07	Loop Test	Yes
M-08	Device Info	No
M-09	Sensor Info	No
M-10	Changing the Range	Yes
M-00	Reset Alarm	Yes



Operation – Menu

PrimaX P Gas Monitor **ONLY**:

Menu item	Text	Password?
M-11	Relay Info	No
M-12	Relay Setup	Yes
M-13	RelayTest	Yes



Maintenance

- Overview
- Mechanical Installation
- Electrical Installation
- Operation
- **Maintenance**
- Accessories
- Spare Parts

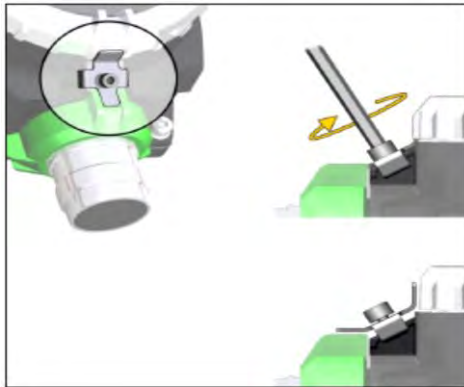




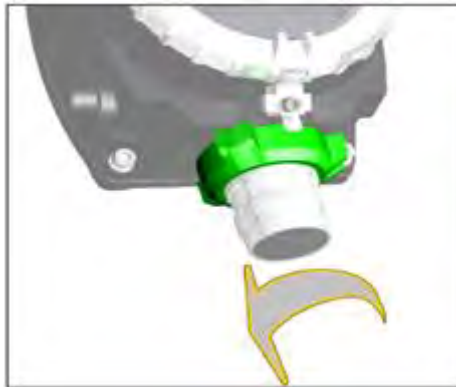
Sensor Replacement

Easy Sensor Replacement

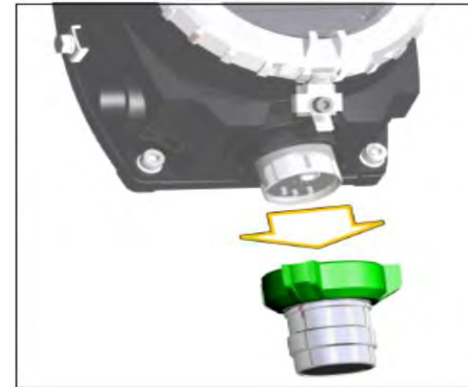
- Hot-swap function (PrimaX I Gas Monitor **only**)
- Only single tool is needed



Remove interlock



Remove bayonet ring



Replace sensor

Perform calibration after each sensor replacement!



Operation – Calibration

User-selectable Calibration:

1. Automatic:

- As with Ultima X Gas Monitor, countdown time to apply test gas.
- After countdown, PrimaX Gas Monitor waits for stable signal.

2. Manual:

- Instead of countdown, press enter when calibration signal stabilizes.



Accessories

- Overview
- Mechanical Installation
- Electrical Installation
- Operation
- Maintenance
- **Accessories**
- Spare Parts



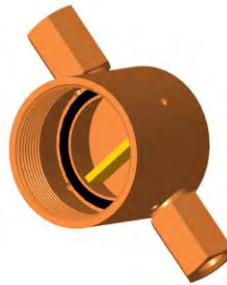


Accessories

- Sensor Guard



- Flow Adapter



- Duct-mount Kit



- Pipe-mount Kit
(1" – 6")





Accessories

Description	Material	Part No
Sensor Guard	Plastic	10113033
Flow Adapter	SS 316	10113031
Duct-mount Kit	SS 316	10112790
Pipe-mount Kit	SS 316	10113032
Sensor Tag	SS 316	10113034
Sun Shield	SS 316	10113035
Calibration Cap	Plastic	10112789
Universal HART Cable		10113036



Spare Parts

- Overview
- Mechanical Installation
- Electrical Installation
- Operation
- Maintenance
- Accessories
- Spare Parts

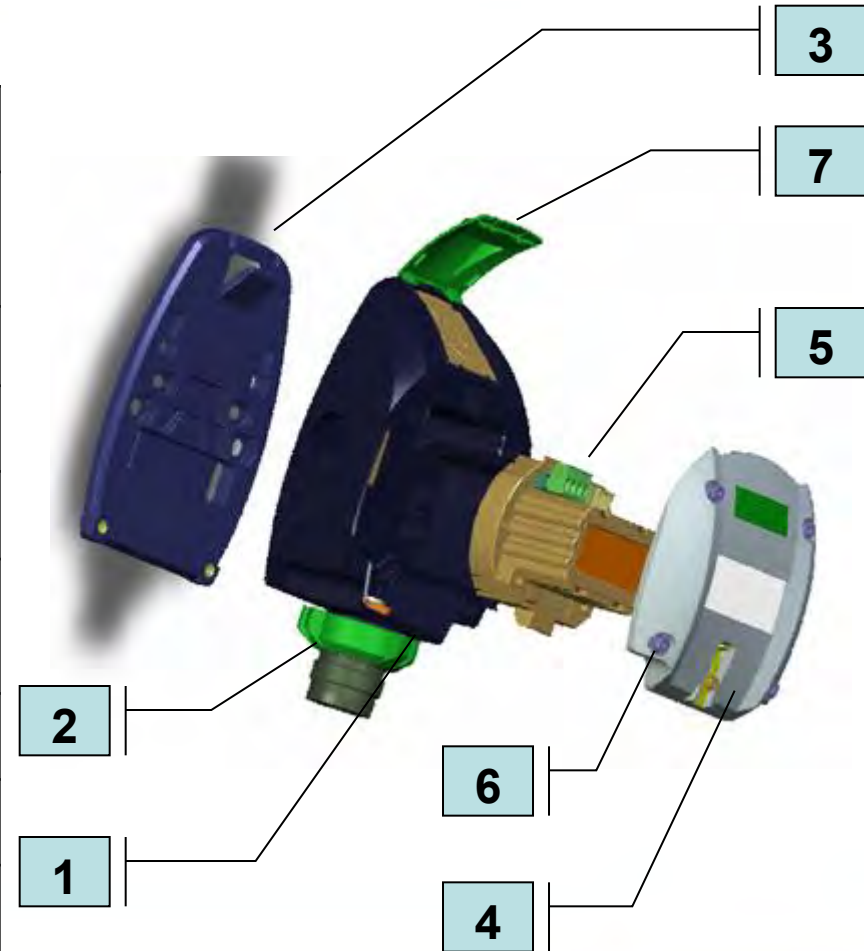




Spare Parts

PrimaX I Gas Monitor Spare Parts

	Description	Part No
1	Bayonet lock plate & screw	10113042
2	Sensor bayonet & cap	10113048
3	Mounting plate	10113041
4	Lid	10113045
5	Electronic module	Depends upon type
6	Lid screws (set of 4)	10113046
7	Keyboard cover	10113040
	Cable gland M25	10113039

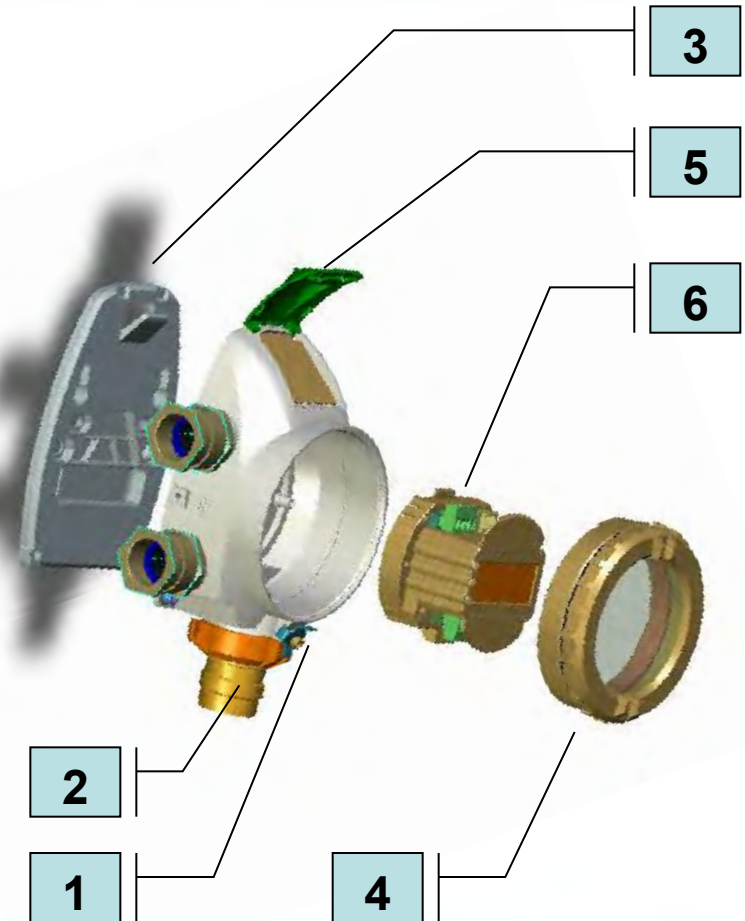




Spare Parts

PrimaX P Gas Monitor Spare Parts

	Description	Part No
1	Bayonet lock plate & screw	10113050
2	Sensor bayonet & cap	10113058
3	Mounting plate	10113041
4	Lid	10113056
5	Keyboard cover	10113040
6	Electronic module	Depends upon type
	Cable gland M25 x1.5	10113038
	Cable gland ¾" NPT	10113037





PrimaX™ Gas Monitor

Questions?
Questions?

