



MSA
The Safety Company



PrimaX™ Gas Monitor



Who We Are

Mission

...to see to it that men and women may work in safety and that they, their families and their communities may live in health throughout the world.

Vision

... to be the leading innovator and provider of quality products, related technologies and services that protect people's health, safety and the environment in all key markets that MSA serves.



John T. Ryan



George H. Deike

Established in 1914

- Bureau of Mines Search and Rescue Team Leaders
- Two mining engineers saw the dangers
- First major product: flameless electric cap lamp developed with Thomas Edison

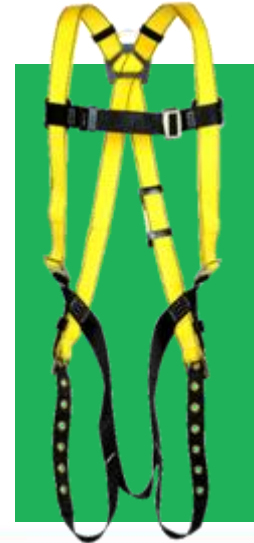




Focus on Safety Solutions

MSA's Product Lines

- Respiratory protection
- Head, eye & face protection
- Hearing & communications
- Gas detection instruments
- Fall protection
- Ballistics protection
- Thermal imaging



MSA products are built with integrated system capability.



Principal Operations

- 15 manufacturing locations
- More than 40 international locations



Protecting lives in more than 140 countries.



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	-

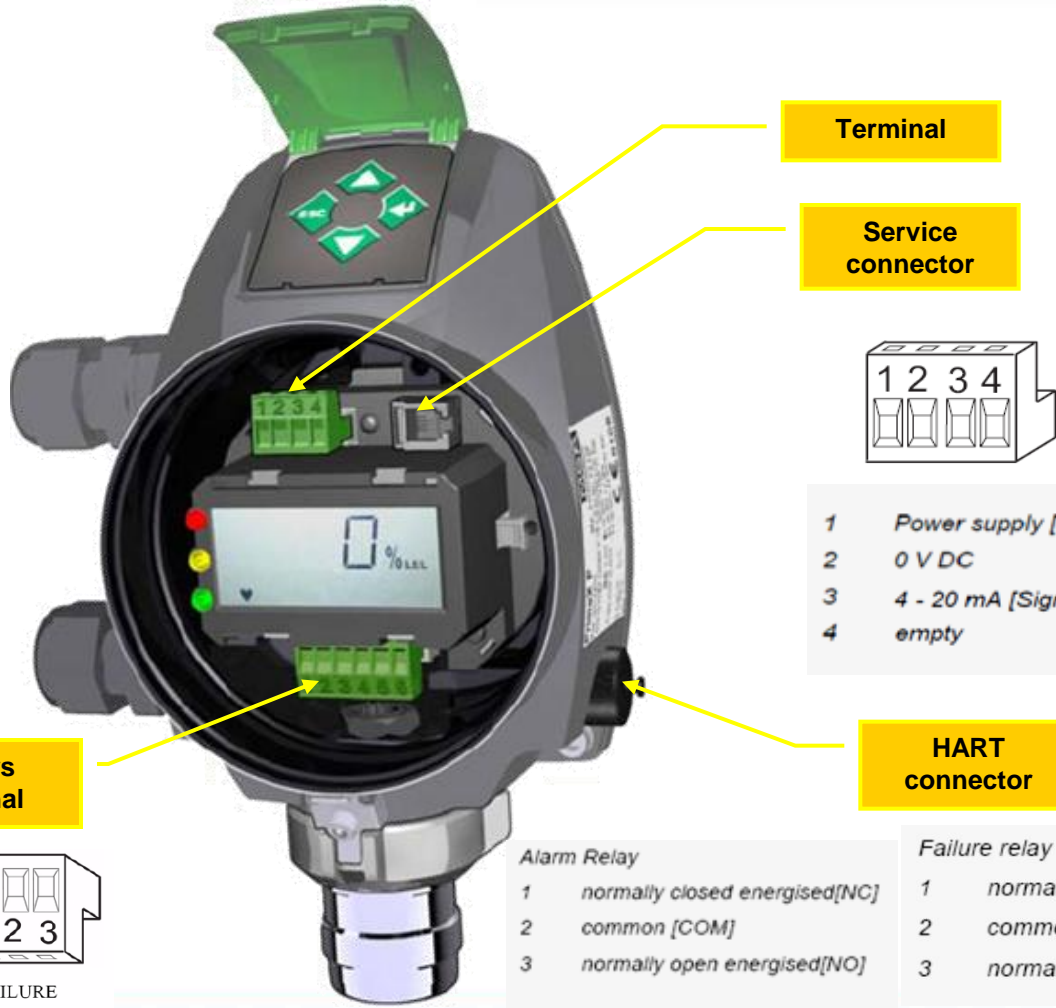


Description



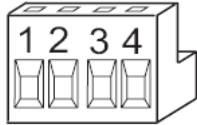


Description



Terminal

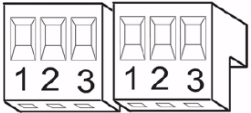
Service connector



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

Relays terminal

HART connector



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**



	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> <p>O₂: -30 – 55°C</p> <p>CO: -20 – 50°C</p> <p>H₂S: -40 – 50°C</p>	



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

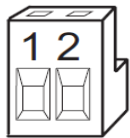
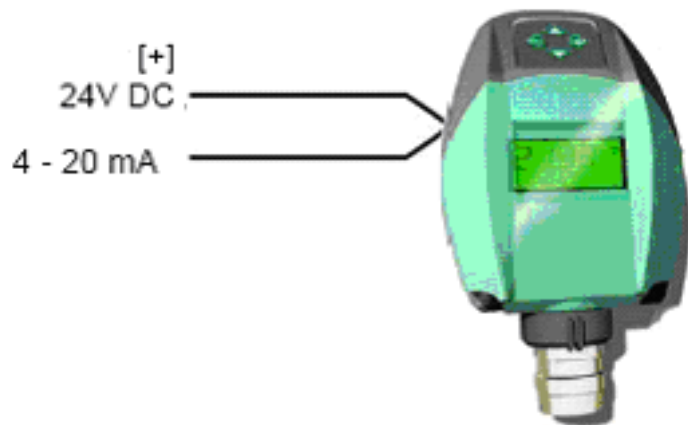




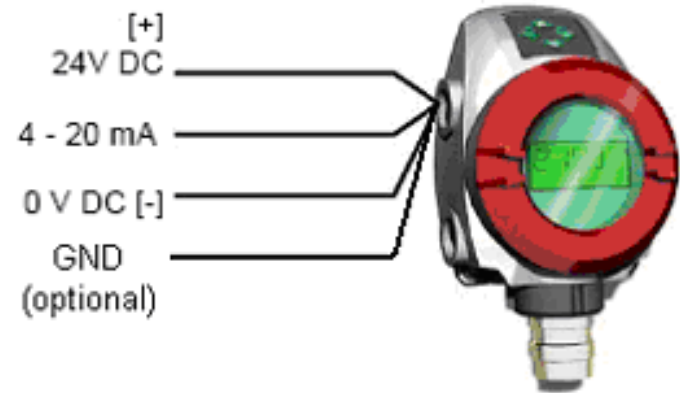
Installation

PrimaX I Gas Monitor

PrimaX P Gas Monitor



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

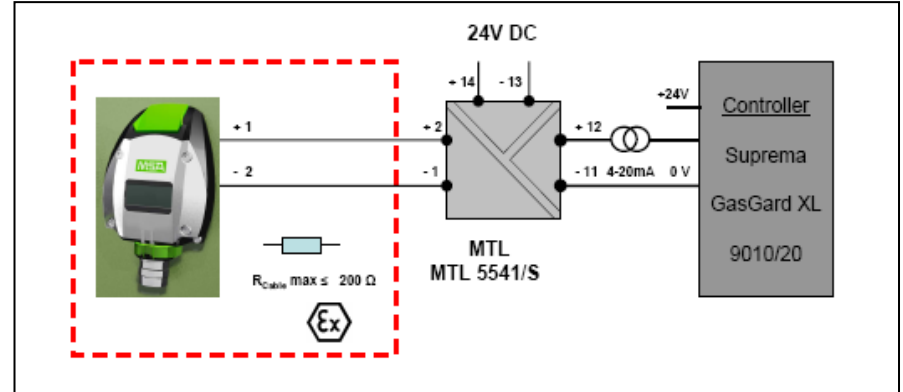
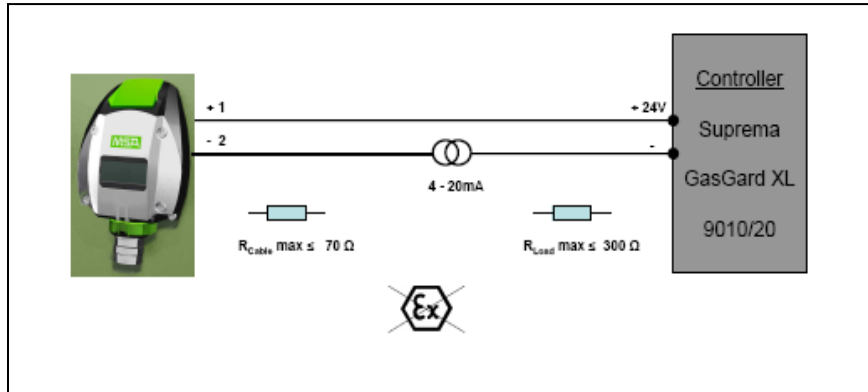


- 1 Power supply [+], 24V DC
- 2 0 V DC
- 3 4 - 20 mA [Signal]
- 4 empty



Installation

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



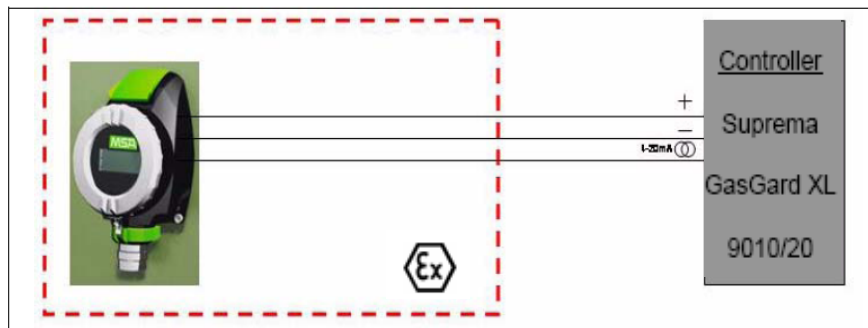
Wire gauge	Max. length at 24 V DC	Max. load resistance
18 AWG	2100 m	300 Ohm



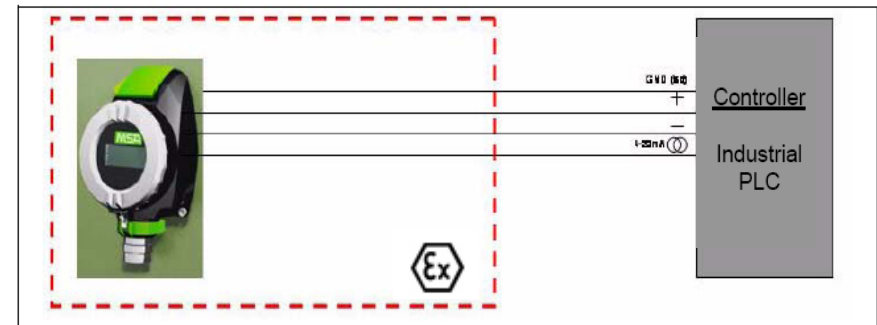
Installation

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

3-wire connection



4-wire connection

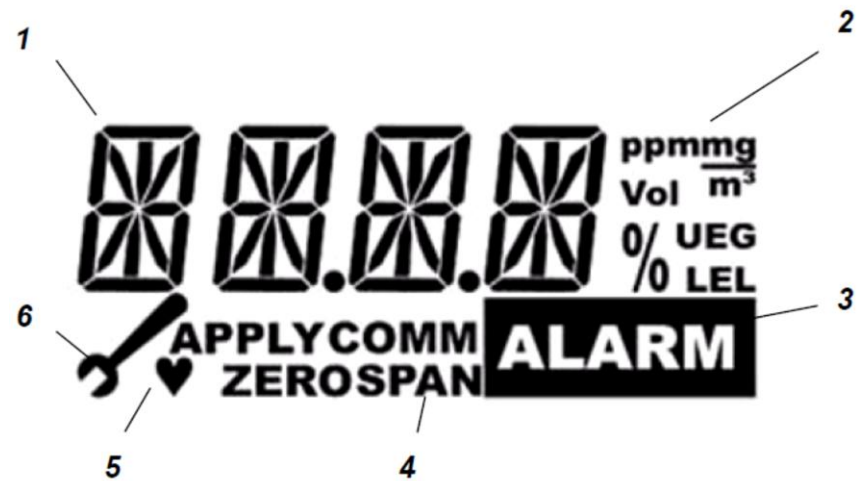




Operation – Display

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

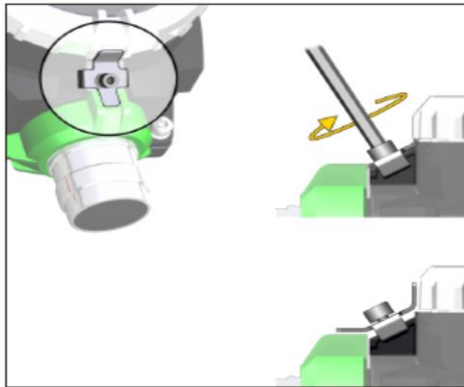




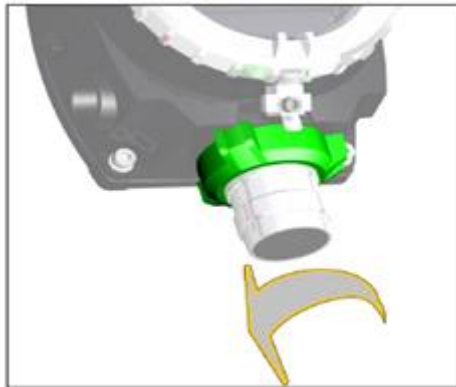
Sensor Replacement

Easy Sensor Replacement

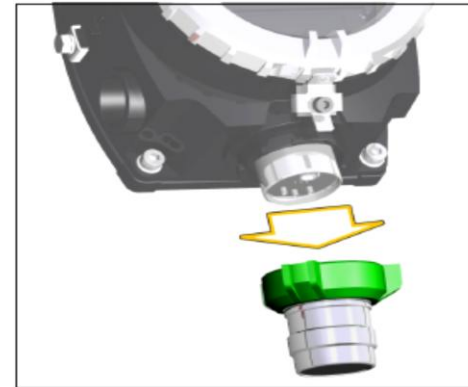
- Hot-swap function (PrimaX I Gas Monitor **only**)
- Only single tool is needed



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



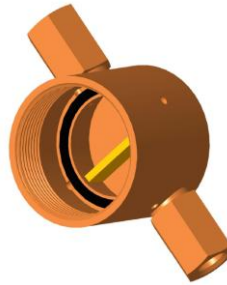


Accessories

- 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

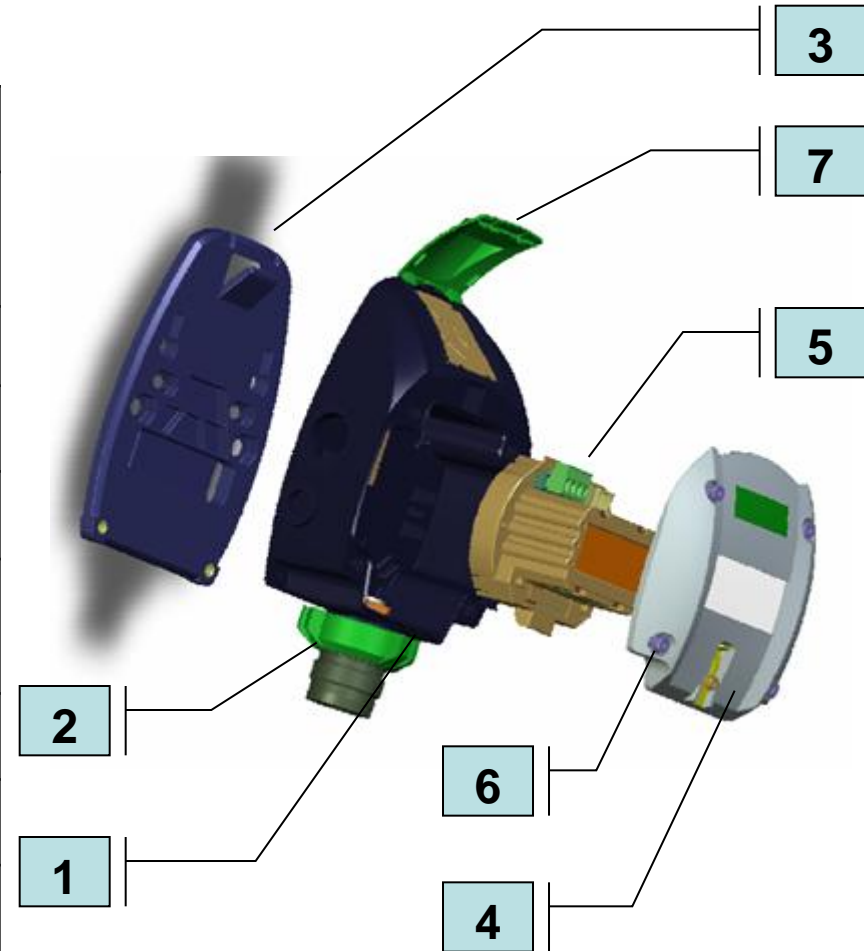




Spare Parts

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

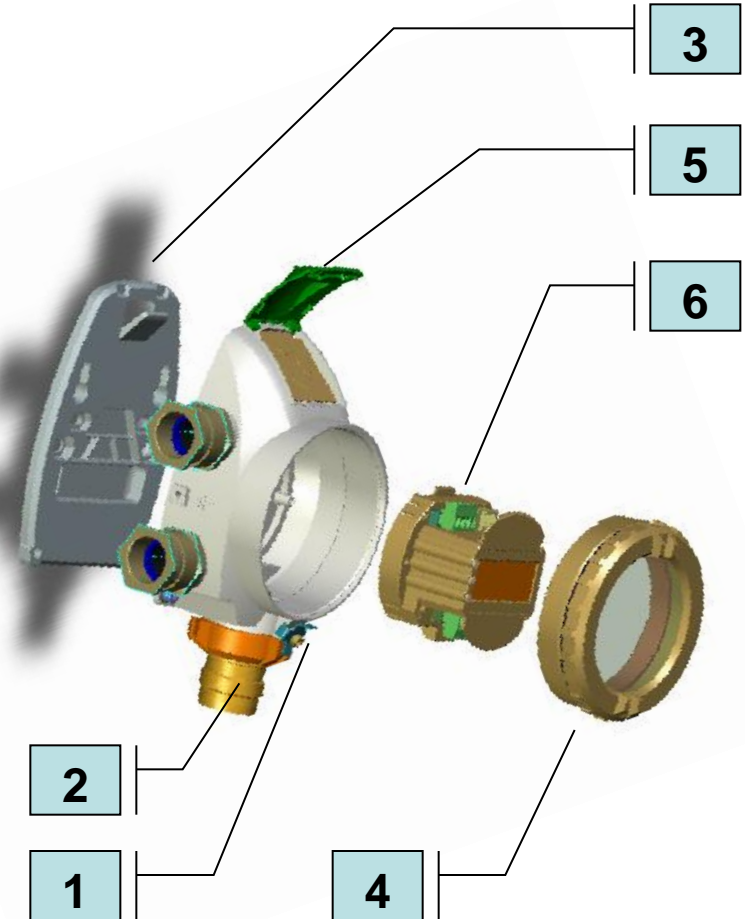




Spare Parts

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 3/4" NPT	10113037





PrimaX™ Gas Monitor

Questions?
Questions?

