SF6 P2

Instrument User Manual V1.2

Register your instrument online to receive your extended Warranty.

Unrivalled Gas Detection.

ionscience.com

Unrivalled Gas Detection.

ionscience.com

Register your instrument online for extended warranty

Thank you for purchasing your Ion Science instrument.

The standard warranty of your instrument can be extended to up to two years.

To receive your extended warranty, you must register your instrument online within one month of purchase (terms and conditions apply.)

Visit www.ionscience.com/instrument-registration

Declaration of conformity

Name und Adresse des Herstellers / Manufacture´s name and address /
ISM Deutschland GmbH, Laubach 30,

Die ISM Deutschland GmbH bescheinigt die Konformität für das Produkt the product / ISM Deutschland GmbH dérclare la conformite du produit

Bezeichnung / Product name :
SF6-Raumluftmonitor / SF6-Roommonitor

Typ / Type / Type:
SF6 AREACHECK P2

Mit den folgenden Bestimmungen / with applicable regulations / avec les directives suivantes

EMV Richtlinie 89/336/EWG ergänzt durch 91/263/EWG, 92/31/EWG
EMC Drective 89/336/EEC amended by 91/263/EWG, 92/31/EEC
Directive EMC 89/336/CEE amendée par 91/263/EWG, 92/31/CEE
Niederspannungsrichtlinie 73/23/EWG ergänzt durch 93/68/EWG
Low-Voltage Equipment Directive 73/23/EEC amended by 93/68/EEC
Directive des equipements basse tension 73/23/CEE amendée par 93/68/CEE

Angewendete harmonisierte Normen / Harmonized standards applied / Normes harmonisées utilisáes
Sicherheit / Safety / Sécurité

EN 61010-1 : 1993 / IEC (CEI) 1010-

Überspannungskategorie / Overvoltage category / Catégorie de surtension: II

Verschmutzungsgrad / Degree of pollution / Degré de pollution: 2

Elektromagnetische Verträglichkeit / Electromagnetic compatibility / Compatibilité electromagnétique

EN 50082-2: 1995 / VDE 0839 T82-2
ENV 50140 : 1993 / IEC (CEI) 1001-4
ENV 50141 : 1993 / IEC (CEI) 1000-4
ENV 61000-4,2 : 1995 / IEC (CEI) 1000

Prüfschärfe /Level / Niveau = 2
EN 61000-4-4: 1995 / IEC (CEI) 1000

Prüfschärfe /Level / Niveau = 3
EN 50081-1 : 1992 / EN 55011 : 1991 / CISPR11

Gruppe / group / groupe = 1, Klasse / Class / Classe = B

Datum / Date / Date
01.08.2005

Unterschrift / Signature / Signatur

Hr. Becker – *Technical Director*

Contents

Installation

Location

SF6 AREACHECK P2 is designed for indoor wall mounting. Since SF6 tends to sink towards the ground in undisturbed air, we suggest to place it approx. 50 … 60 cm above ground level.

Wiring

Mains power connects to the orange clamp block, according to the designation printed on the PCB near each clamp.

For an optional audible and/or visible alarm device, a voltage free switchover relay output is supplied. It is available on the blue 3 position clamp block in the middle. Contacts are, from left to right: N.O. / COM / N.C.

During normal operation, COM connects to N.O. During an alarm or error condition, COM disconnects from N.O. and switches over to N.C. The same applies in case of power failure, and whenever the instrument is taken into setup mode via the host computer interface via the RS232 connector.

The leftmost 6 position clamp block is provided for network operation. Physically, the network follows RS485 standards and hence has three wires named A, B, and GND. Their positions are marked on the PCB next to the clamps. They must be wired to the corresponding pins on the SF6 NETWORKCONTROLLER P2NC. Double clamps are provided for each wire for easy "daisy chaining" of several instrument.
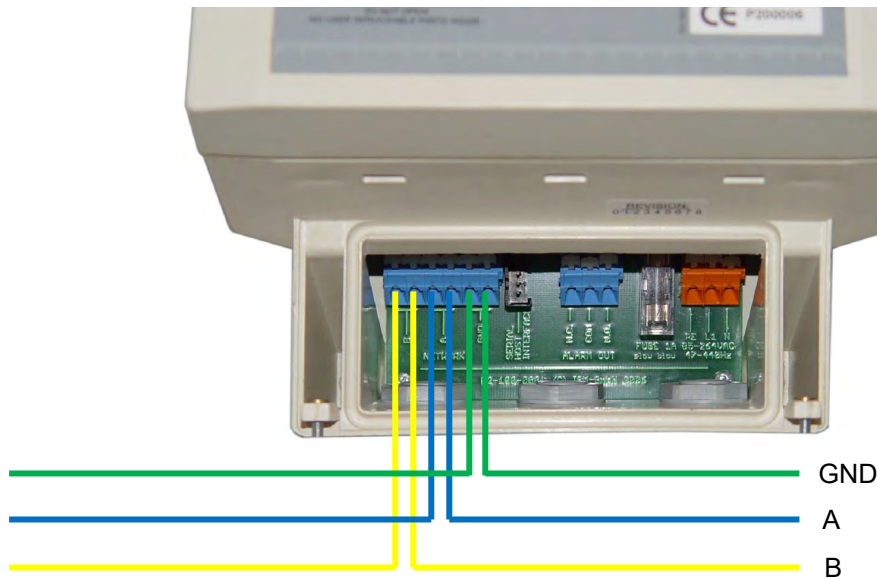

RS 485 daisy chain PIN B

RS 485 daisy chain PIN A

RS 485 daisy chain PIN GND

RS 232 Connector

Alarm Relay PIN "Normally Closed"

Alarm Relay PIN "Common"

Alarm Relay PIN "Normally Open"

Supply Voltage "N"

Supply Voltage "L1"

Supply Voltage "EARTH"

Network diagram
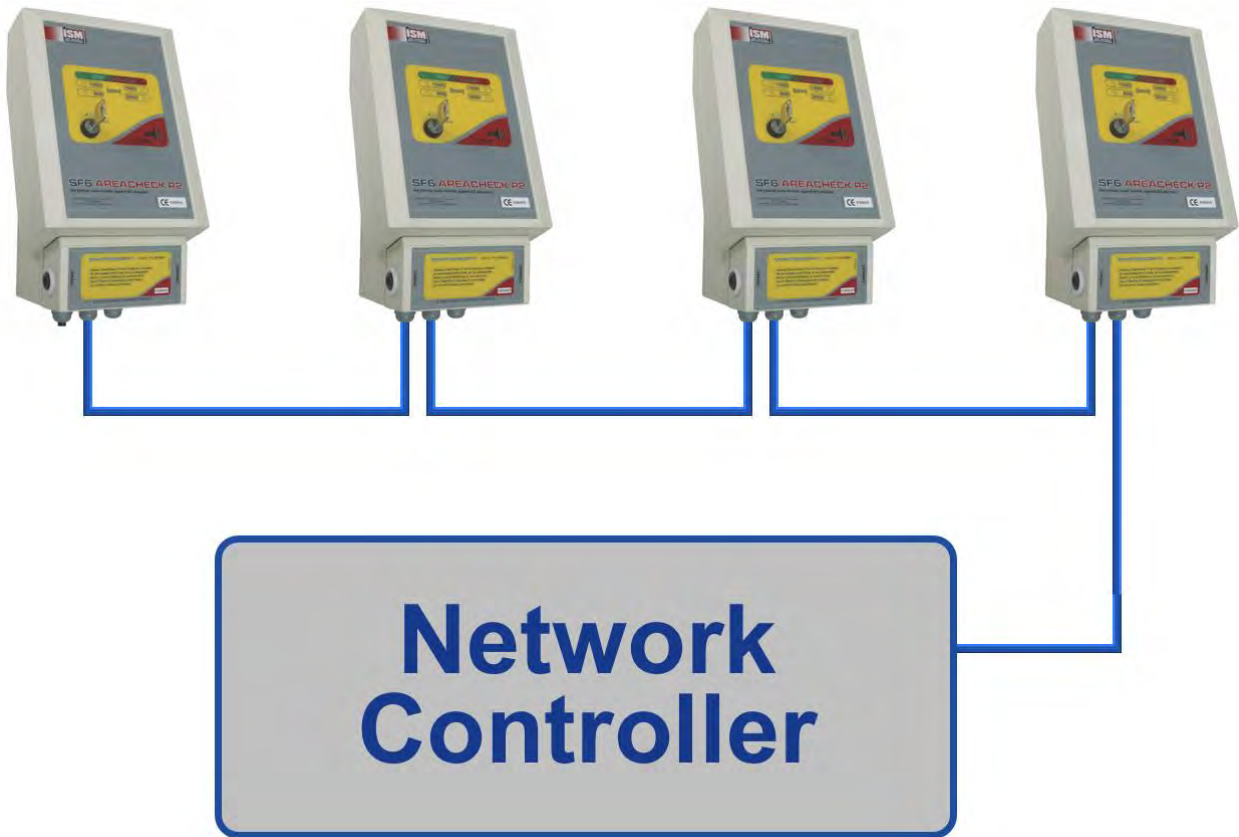
Wiring details

Operation

Auto-zero at startup

To precisely determine SF6 concentration, SF6 AREACHECK P2 requires a reference value representing clean air. This reference value is taken and stored whenever the instrument is powered up or reset. You should therefore make sure that power up takes place under clean air conditions.

A fresh reference value is also taken after manual reset via the key switch. Therefore, after each manual reset, the instrument will temporarily only respond to SF6 concentrations exceeding the level that was present at the time of manual reset. This will avoid the next measuring cycle to trigger an undesired, new alarm. The reference value will auto-adapt to falling SF6 concentrations, so after once meeting a clean air condition, SF6 AREACHECK P2 will automatically return to full sensitivity.

Since a reset is also performed when the instrument is taken into setup mode via the host computer interface, the above also applies in this case.

After Power up or reset, the first measuring cycle starts immediately, beginning with the fan run time.

Measuring interval

Since SF6 AREACHECK P2 is designed to determine slowly changing concentrations, it samples the air at a fixed time interval rather than measuring continuously. This feature minimizes the amount of air per time that passes the instrument's intake system, thus extending its service life.

Via the measuring time interval, it is possible to perfectly adapt the instrument to the actual application. For monitoring generally unattended spaces, a long time interval should be selected, while in the working area a shorter interval is suggested.

SF6 AREACHECK P2 comes with a factory set measuring interval of 30 minutes, which is the suggested starting point for most applications.

Indicator lights

6 LEDs on the instrument's front panel represent its state as follows:

Placement of LEDs:

RUN
This light acts as a life sign to confirm the SF6 AREACHECK P2 is in operation. As long as no internal
error condition is met, it will blink at all times. During the actual SF6 measurement (normally, this phase
is very short), it will blink at a faster rate.
Should this lamp stop blinking, an internal error has occurred.

ALARM
This light will be permanently on if the last measuring cycle has determined a SF6 concentration above the selected alarm threshold.

In case of an internal error state, it will blink quickly.

The instrument's internal audible alarm works in parallel with this lamp.

500 / 1000 / 1500 / 2000 [ppm]
These 4 yellow lamps reflect the last sampling period's result in terms of alarm levels as designated.

On instruments equipped with the optional oxygen sensor, these lights have the following additional functions:
> • The two leftmost LEDs (500+1000ppm) will blink when an oxygen concentration below the lower alarm threshold of 16% is present.
> • The two rightmost LEDs (1500+2000ppm) will blink when an oxygen concentration above the upper alarm threshold of 25% is present.

Lamp test and manual reset

When the key switch is turned to the spring return "TEST" position, all lamps, the internal audible alarm and the optional external alarm device will turn on until the key switch is released.

When released, a pending alarm condition is cleared.

NOTE: An error condition will NOT be cleared!

When the key switch is turned and released twice within 2 seconds, a system reset is performed which also clears any pending alarm and error conditions, and logs a fresh reference value.

Configuration via the PC interface

Connecting to the host computer

Parameter modification in stand-alone operation is done exclusively through the host computer interface. This has the clear advantage that any unintended or unauthorised fiddling is discouraged.

The user parameters described in the following are relevant for stand alone operation only. In network operation, parameters received from the network base unit will take precedence.

The host computer interface follows RS232 standards. A special interface cable connects to the 3 position plug, which is found between the two blue clamp blocks.

The lamp next to the plug indicates the presence of valid RS232 levels from the host. It will be lit when the host is on and correctly connected.

On the host computer, a standard terminal program is used to talk to the SF6 AREACHECK P2. A suitable program called "Hyper Terminal" is a standard Microsoft Windows component and by default present in most installations. Optionally, any other terminal software will work.

Set up the terminal program for the following parameters: 9600 baud, 8 data bits, no parity, 1 stop bit. This is a standard configuration also known as "9600-8-N-1". Further, select "none" for the handshake protocol, and "TTY" as emulation if available. The option "append CR" for received lines should be checked for a more readable screen output. For your convenience, we will be pleased to send you a predefined configuration file for "Hyper Terminal" which will perform all relevant settings for you.

NOTE: While the PC interface is connected, the instrument will talk to the host computer only and no longer communicate over the network. When present, an SF6 NETWORK CONTROLLER P2NC will see this station as "OFFLINE" and issue an alarm accordingly.

User parameters

User adjustable parameters are the time interval between each two samples ("Scan period") and the alarm level. To activate the setup, from the terminal first send a line feed, then the instruction "TtS", followed by another carriage return. A choice menu with the following options will then be presented:

<1> Scan period
<2> Alarm level
<3> Exit and resume operation

Just type the corresponding number to invoke the desired option. Any other inputs will be discarded.

After selecting "<1> Scan period", enter the desired time interval in minutes, followed by a carriage return. The allowed range is 1-99 minutes.

Upon selecting "<2> Alarm level", enter the number corresponding to the desired alarm level.

Option <3> will finish the setup and return the instrument to normal operation. Since it will now perform a restart.

Changing the sensor unit

For changing the sensor unit, carry out the following Steps:

- • Power down the P2 (remove the fuse, observing the hints below)
- • Remove screws
- • Take off SmartSensor as indicated below
- • Pull the connector off the SmartSensor
- • Fit the replacement SmartSensor
- • Power up the P2 (insert fuse observing the hints below)
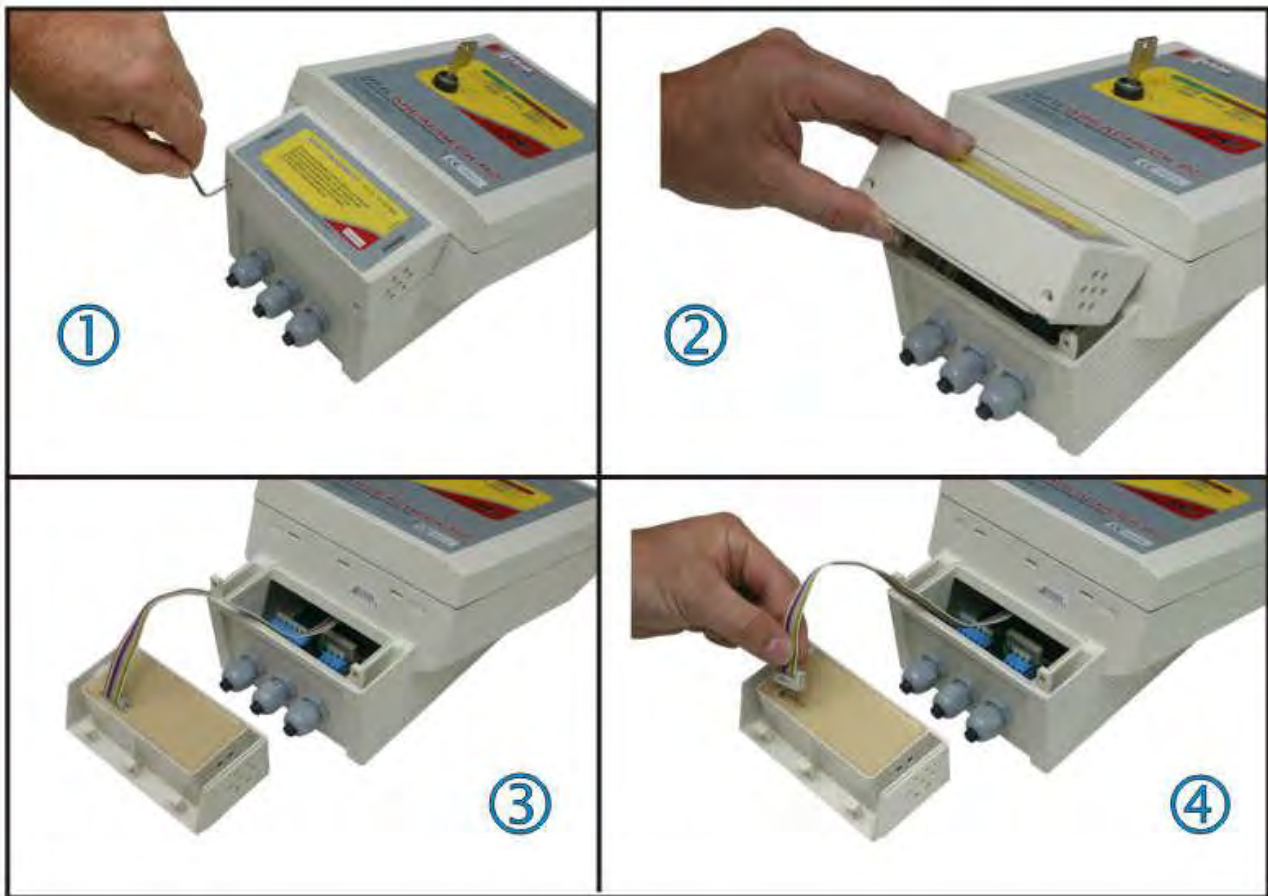
NOTE: To precisely determine SF6 concentration, SF6 AREACHECK P2 requires a reference value representing clean air. This reference value is taken and stored whenever the instrument is powered up or reset.
You should therefore make sure that power up takes place under clean air conditions.

ATTENTION: The fuse (T1A) is at mains voltage. All works on it are to be carried out by qualified personnel only, observing appropriate precautions!

O2 sensor

Functionality

The optionally available O2 sensor continuously measures the O2 content in the ambient air, and reports it to the network controller if present.

An alarm condition on both the measuring station and network controller is raised whenever the oxygen level is outside the allowed range of 16…25%.

Physical location

The O2 sensor is part of the SmartSensor, it is found protruding downwards from it.

Sensor Type

The O2 sensor is of galvanic cell type. It exhibits low cross sensitivity to CO_2 and other gases, good stability and linearity over its range.

Sensor Lifetime

With a reasonable safety margin, sensor life is fixed at one year, no matter if shelfed or used – this is due to the nature of galvanic cells, in which the chemical reaction goes on at all times as long as oxygen is present.
When lifetime is over, the SmartSensor must be replaced against a fresh, readily calibrated one.

User Interface

When a low oxygen condition is encountered, the measuring station will issue an alarm, involving the built in alarm buzzer, the red alarm lamp, and the alarm relay. The low oxygen condition will be reflected by the yellow "500" and "1000" ppm lamps flashing.
In case of a high oxygen condition, the same applies, except that the "1500" and "2000" ppm lamps will flash.
On the SF6 NETWORK CONTROLLER P2NC, the O2 status will be marked as "OK", "HI", or "LO", respectively, for each measuring station.

Safety

Should the O2 sensor fail, be missing or spent, a low oxygen alarm will be issued.

Technical data

Detection principle	SF6: NIC©®
Range	0 ... 2000 ppmv SF_6 0 ... 30% O_2
Resolution	SF_6: 500 ppm O_2: 1%
Mains power	100-240VAC, 50/60Hz
Power consumption	18 VA
Operating temperature range	- 5°C ... 45°C
Storage temperature range	- 20°C ... 60°C
Operating humidity range	10 ... 90% non-condensing
Max load, relay output	2,5 A / 230 VAC
Size	H 280 x B 165 x T 125 mm
Protection class	IP 52
Noise level of audible alarm	> 75 dbA, 1m
Weight	1,5 kg (w/o wall mounting bracket)
Fuse	T 1A (Slow Blow)

Instrument warranty and service

Warranty

Standard Warranty can be extended to up to 2 years on the SF6 P1 & P1:p when registering your instrument via our website: www.ionscience.com/instrument-registration

To receive your Extended Warranty, you need to register within one month of purchase (Terms and Conditions apply). You will then receive a confirmation email that your Extended Warranty Period has been activated and processed.

Full details, along with a copy of our Warranty Statement can be found by visiting: www.ionscience.com/instrument-registration

Service

Ion Science is pleased to offer a number of service options on our SF6 P1 & P1:p product range that allow you to choose the instrument cover that best suits your needs.

At Ion Science we recommend that all of our gas detection instruments be returned for service and factory calibration once every 12 months.

Contact Ion Science or your local distributor for service options in your area.

Find your local distributor by visiting: www.ionscience.com

Contact details

UK and Head Office

ION Science Ltd
The Way, Fowlmere
Cambridge
SG8 7UJ
UK
Tel: +44 (0)1763 208503
Fax: +44 (0) 1763 208814
Web: www.ionscience.com
Email: info@ionscience.com

German Office

ISM ION Science Messtechnik
Laubach 30
Metmann-Neandertal
D-40822
GERMANY
Tel: +49 2104 14480
Fax: +49 2104 144825
Web: www.ism-d.de
Email: info@ism-d.de

French Office

ION Science France
41 Rue de Etoiles,
83240 Cavalaire-sur-Mer,
FRANCE
Tel: +33 6 13 50 55 35
Email: info@ionscience.fr

India Office

ION Science India
#1-90/B/B/3/1, Charmy
Vittal Rao Nagar
Image Hospital Lane, Madhapur,
Hyderabad – 500 081
Telangana State - India
Tel: +91 40 4853 6129
Web: www.ionscience-india.com

USA Office

ION Science Inc
4153 Bluebonnet Drive
Stafford
TX 77477
USA
Tel: +1 877 864 7710
Web: www.ionscience-usa.com
Email: info@ionscienceusa.com

Italian Office

ION Science Italia
Via Emilia 51/c
40011 Anzola Emilia
Bologna
ITALY
Tel: +39 051 0561850
Fax: +39 051 0561851
Web: www.ionscience.it
Email: info@ionscience.it

Chinese Office

ION Science China Ltd
1101 Bldg B, Far East International Plaza
No. 317,
Xianxia Road, Shanghai
P.R. CHINA
Tel: +86 21 52545988
Fax: +86 21 52545986
Web: www.ionscience.cn
Email: info@ionscience.cn

Manual log

Manual Version	Amendment	Date updated	Instrument Firmware	PC Software
SF6 P2 V1.1	Layout and font update	28/01/13		
SF6 P2 V1.1R	Logo only	01/08/2017		
SF6 P2 V1.2	Design update	05/05/2020		

Disclaimer: Information in this [manual, document…] is subject to change without notice and does not represent a commitment on the part of Ion Science. No claims, promises or guarantees are made about the accuracy, completeness, or adequacy of the information contained herein.