CALECTRO®

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Calectro is a customer-orientated company with a wide range of products that offer our customers a unique combination of possibilities. We combine this with many years of experience in designing OEM products.

Our company is located in Gothenburg, Sweden, and we have agents and distributors all over the world. Our most famous product is the red UNIGUARD® one-pipe smoke detector for ventilation ducts, used by many of the largest Building & Automation companies in Europe. Due to the unique performance of our smoke detector housing, we are also a proud supplier to many of the leading smoke detector manufacturers in the world, who use our housing together with their own smoke detector.

Calectro was founded in 1969 as a private owned company and today over 40 years later, the same owner is still the majority share holder. So when you do business with Calectro, you can be sure that we will be there tomorrow as well!

Our main business is within the HVAC industry, where we develop, manufacture and sell different types of sensors: smoke detectors, air quality CO_2 sensors, air pressure sensors, temperature sensors and occupancy sensors.

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Contents

Product news 2012

Pressure regulator

CALAIR-PR-230V pressure regulator measures differential pressure and controls ventilation system fans via a 0-10V signal. It is easy to program via a clear OLED display, 2 digital inputs, alarm relay and Modbus RTU communication.

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Pressure sensors

Our new differential air pressure sensor for ventilation installations is available with and without display. They have 8 possible pressure range settings.
The display model CPS-D has Modbus RTU communication, illuminated display and adjustable K factor for volume measurement.

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Pt1000 Temperature sensors

Our new range includes a total of 18 new Pt1000 temperature sensors:

- Room sensors in different colors.
- Outdoor sensor.
- Duct sensor with housing or cable and sensor body with variable insertion length.
- Immersion sensor with housing or cable and sensor body with variable insertion length.
- Strap-on sensor.
- Bulb sensor.

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Multi thermostat

Our new electronic multifunction thermostat CMT has digital display and 10 selectable functions that are very easy to set.
CMT has multi-voltage: 24V AC/DC or 230V AC, 2 relays and can be used with 5 different types of sensors: Pt100, Pt1000, Ni1000, NTC and PTC.

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Selectable functions:
Appl. 1: 1-stage heating thermostat
Appl. 2: 1-stage cooling thermostat
Appl. 3: 2-stage heating thermostat
Appl. 4: 2-stage cooling thermostat
Appl. 5: 2-stage heating and cooling thermostat
Appl. 6: 1-stage cooling thermostat with low temperature alarm
Appl. 7: 1-stage heating thermostat with overheating alarm
Appl. 8: 2-stage overheating alarm
Appl. 9: High and low temperature alarm
Appl. 10: Gutter thermostat

High temperature alarm

CTA is a high temperature alarm with digital display and 2 adjustable alarm temperatures.

CTA is very easy to set up. It has multi-voltage: 24V AC / DC or 230V AC, 2 alarm relays and can be used with 5 different types of sensors: PT100, PT1000, Ni1000, NTC and PTC.

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Leakage alarm

CLA is a leakage alarm of electrically conductive fluids such as water. CLA is used as a moisture monitoring in areas that normally are dry, where you want to give an alarm when water leaks.

CLA has multi-voltage supply: 24V AC/DC or 230V AC, 2 alarm relays, Selectable reset: auto/manual and alarm repeated after 24 h when manually reset.

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Exhibition information 2012-2013

If you wish to visit us at an exhibition you will find us represented at e.g. the following exhibitions:

Date	Week	Exhibition	City
23-25 Jan 2012	4	AHR EXPO	Chicago, USA
20-23 Mars 2012	12	Nordbygg	Stockholm, Sweden
28-30 Jan 2013	5	AHR EXPO	Dallas, USA
12-16 Mars 2013	11	ISH	Frankfurt, Germany

Smoke detection

UG-3-A4O UNIGUARD SUPERFLOW STAND-ALONE-UNIT 24V

Optical smoke detector with service alarm for duct installation.

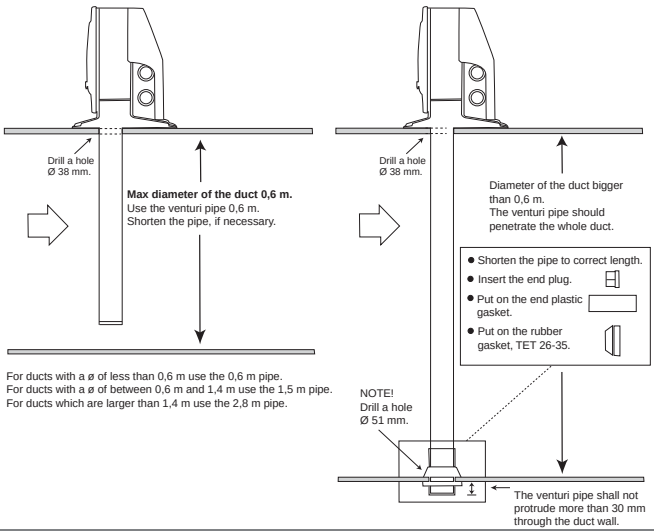
CE

TECHNICAL DATA

Voltage Supply:	24V AC/DC ±10%
Detector type:	Optical UG-3-A4O
Max. power consumption:	165 mA
Operating temperature:	-20°C to +50°C
Maximum humidity:	99% rH
Duct air velocity range:	Approx. 0,2 to 20 m/s
Approvals	
UG-3-A4O:	VdS (Germany)
Detector head:	EN-54-7
Relay output:	Potential free
Smoke alarm relays:	Two changing contacts 250V, 5A
Service alarm:	One breaking contact 250V, 5A
LED on smoke detector:	Green - service alarm Red - smoke alarm
LED on PCB:	Green - normal operation Yellow - service alarm Red - smoke alarm
Adaptor housing:	ABS
Protection:	IP54
Air sampling tube:	Aluminium.

Standard length 0,6 m. Hole diameter 38 mm.

The length of the venturi pipe shall be chosen based upon how wide the ventilation duct is. The venturi pipes are available in 3 lengths; 0,6, 1,5 and 2,8 m. When the ventilation duct is wider than 0,6 m (dia), the venturi pipe should penetrate the **whole** duct. Please see below sketch.



CHARACTERISTICS

- **Patented venturi pipe and duct housing**
- **One-pipe air sampling system Uniguard Superflow**
- **New cross-section (shape) of the venturi pipe gives an optimum of venturi effect**
- **Service alarm**
- **Test hole on cover**
- **Simple installation**
- **Sensitive flow indicator**
- **Simple service and maintenance**
- **Installer-friendly connection of cables**
- **Foolproof installation of venturi pipe**

FUNCTION

Uniguard has been developed to detect smoke in ventilation ducts and combines a smoke detector and an adaptor system where both tube and housing are specially designed for optimum airflow through the smoke detector.

There is a built-in **alarm relay** to control fire-safety dampers, to stop ventilation fans, or to activate accoustic and optical alarms etc.

There is a built-in **service alarm** relay to let you know when maintenance is needed, before a false alarm occurs.

The detector contains an intelligent controlling circuit. This circuit is adjusting the sensitivity to give an optimal function during the whole life time of the detector. When the controlling circuit can no longer compensate for contamination, a service alarm is indicated.

Uniguard Superflow has 4 premounted IP67 approved cable entries with built-in cable anchorage for diameter 4-11 mm, type Klikseal.

The detector has a bayonet fitting to simplify mounting and removal.

ACCESSORIES

Item code	**Designation**
UG-MB	Mounting bracket (for insulated/ circular ducts)
UG-COVER	Waterproof housing (for mounting outdoors, in cold attics etc.)
VR-0.6M	Venturi pipe (length 0,6 m)
VR-1.5M	Venturi pipe (length 1,5 m)
VR-2.8M	Venturi pipe (length 2,8 m)

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UG-3-A4O UNIGUARD SUPERFLOW STAND-ALONE-UNIT 24V

Optical smoke detector with service alarm for duct installation.

CE

BASIC PRINCIPLES FOR POSITIONING

For the airflow through the adaptor to be representative of the airflow in the ventilation duct, install the detector at a place where flow meters etc. normally are mounted, please see our installation instructions.
You can also use your national or local rules for mountage according to "Methods for measuring airflow in ventilation systems".

INSTALLATION

The venturi pipe is made of aluminium and can easily be shortened to suit the diameter of the duct. Hole diameter is 38 mm. For insulated or circular ducts - use the mounting bracket, hole diameter is then 51 mm.

MAINTAINANCE

When the detector becomes contaminated, sensitivity is increased, triggering the service alarm. This can be avoided for a considerable time by cleaning the detector once a year with a vacuum cleaner.

AIR FLOW MONITORING

The detector is fitted with a red plastic switch tongue. When the detector is correctly installed, the tongue is bent outwards by the air flow. The switch tongue provides a simple confirmation that there is no leakage and that the air flow from the duct is in fact flowing through the housing.

FUNCTION TEST

When installation is complete, the detector should be tested. This can be carried out with smoke or suitable testspray for example RDP-300 (from Calectro), use the test hole on cover. **Do not forget to refit the plastic plug after test.**

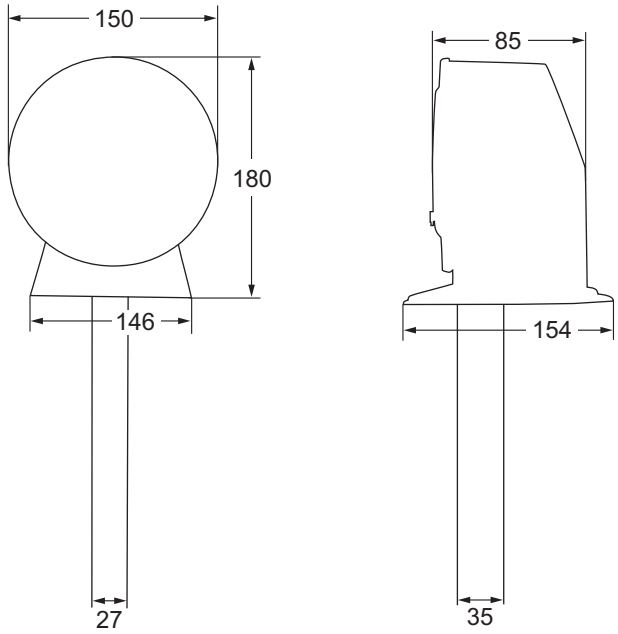
NB: When installing outdoors or in cold attics etc., where there is a risk for condensation, the detector should be insulated from the surrounding air with e.g. our weatherproof housing UG-COVER. In such cases it should be marked with a sign "Hidden Detector".

FUNCTION

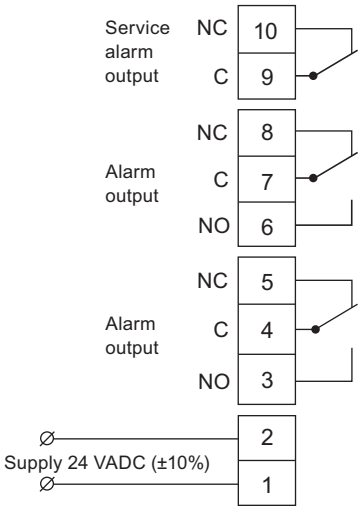
Normal operation:	In normal operation the alarm relay is energized, and the relay contacts are closed between C and NC.
Smoke alarm:	The LED of the detector is showing red light and the relay contacts are changing to C and NO.
Reset:	Press the reset button to reset the detector into normal operation.
Service alarm:	When the detector is sensing smoke or is dirty the LED of the detector will first show green colour before going into alarm with red light. If the detector is dirty, it will show green light. This is an optical indication (a pre-alarm or service-alarm) which means that the detector is contaminated and if it is not cleaned, it will give a false alarm later on.
Failure:	If there is something wrong with the detector, the alarm relay will change contacts: a) When the detector module is removed b) When the supply voltage is interrupted

DIMENSIONS

(mm)



WIRING DIAGRAM



Alarm relay:
TWO changing contacts, max 250V, 5A, each.

The relay outputs are shown in normal operation/power on condition.

UG-3-A5O UNIGUARD SUPERFLOW STAND-ALONE-UNIT 230V

Optical smoke detector with service alarm for duct installation.

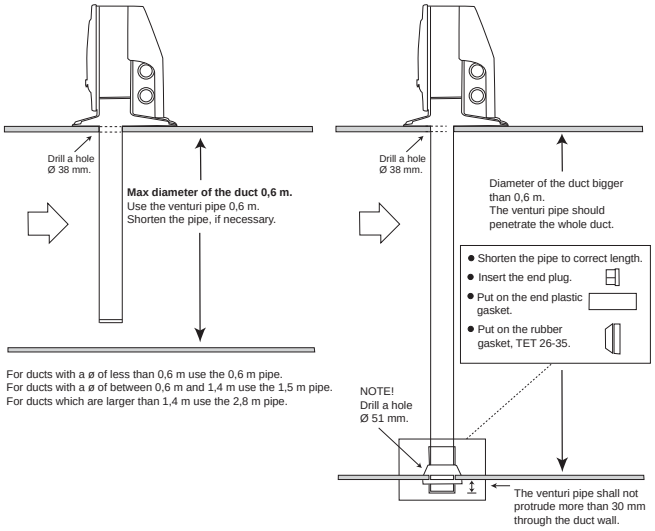
CE

TECHNICAL DATA

Voltage Supply:	230VAC ±20%
Detector type:	Optical UG-3-A5O
Max. power consumption:	18 mA
Operating temperature:	-20°C to +50°C
Maximum humidity:	99% rH
Duct air velocity range:	Approx. 0,2 to 20 m/s
Approvals	
UG-3-A5O:	VdS (Germany)
Detector head:	EN-54-7
Relay output:	Potential free
Smoke alarm relays:	Two changing contacts 250V, 5A
Service alarm:	One breaking contact 250V, 5A
LED on smoke detector:	Green - service alarm Red - smoke alarm
LED on PCB:	Green - normal operation Yellow - service alarm Red - smoke alarm
Adaptor housing:	ABS
Protection:	IP54
Air sampling tube:	Aluminium.

Standard length 0,6 m. Hole diameter 38 mm.

The length of the venturi pipe shall be chosen based upon how wide the ventilation duct is. The venturi pipes are available in 3 lengths; 0,6, 1,5 and 2,8 m. When the ventilation duct is wider than 0,6 m (dia), the venturi pipe should penetrate the **whole** duct. Please see below sketch.



CHARACTERISTICS

- **Patented venturi pipe and duct housing**
- **One-pipe air sampling system Uniguard Superflow**
- **New cross-section (shape) of the venturi pipe gives an optimum of venturi effect**
- **Service alarm**
- **Test hole on cover**
- **Simple installation**
- **Sensitive flow indicator**
- **Simple service and maintenance**
- **Installer-friendly connection of cables**
- **Foolproof installation of venturi pipe**

FUNCTION

Uniguard has been developed to detect smoke in ventilation ducts and combines a smoke detector and an adaptor system where both tube and housing are specially designed for optimum airflow through the smoke detector.

Uniguard has a built-in **alarm relay** to control fire-safety dampers, to stop ventilation fans, or to activate accoustic and optical alarms etc.

The built-in **service alarm** let you know when maintenance is needed, before a false alarm occurs.

The detector contains an intelligent controlling circuit. This circuit is adjusting the sensitivity to give an optimal function during the whole life time of the detector. When the controlling circuit can no longer compensate for contamination, a service alarm is indicated.

Uniguard Superflow has 4 premounted IP67 approved cable entries with built-in cable anchorage for diameter 4-11 mm, type Klikseal.

The detector has a bayonet fitting to simplify mounting and removal.

ACCESSORIES

Item code	Designation
UG-MB	Mounting bracket (for insulated/ circular ducts)
UG-COVER	Waterproof housing (for mounting outdoors, in cold attics etc.)
VR-0.6M	Venturi pipe (length 0,6 m)
VR-1.5M	Venturi pipe (length 1,5 m)
VR-2.8M	Venturi pipe (length 2,8 m)

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UG-3-A5O UNIGUARD SUPERFLOW STAND-ALONE-UNIT 230V

Optical smoke detector with service alarm for duct installation.

CE

BASIC PRINCIPLES FOR POSITIONING

For the airflow through the adaptor to be representative of the airflow in the ventilation duct, install the detector at a place where flow meters etc. normally are mounted, please see our installation instructions.
You can also use your national or local rules for mountage according to "Methods for measuring airflow in ventilation systems".

INSTALLATION

The venturi pipe is made of aluminium and can easily be shortened to suit the diameter of the duct. Hole diameter is 38 mm. For insulated or circular ducts - use the mounting bracket, hole diameter is then 51 mm.

MAINTAINANCE

When the detector becomes contaminated, sensitivity is increased, triggering the service alarm. This can be avoided for a considerable time by cleaning the detector once a year with a vacuum cleaner.

AIR FLOW MONITORING

The detector is fitted with a red plastic switch tongue. When the detector is correctly installed, the tongue is bent outwards by the air flow. The switch tongue provides a simple confirmation that there is no leakage and that the air flow from the duct is in fact flowing through the housing.

FUNCTION TEST

When installation is complete, the detector should be tested. This can be carried out with smoke or suitable testspray for example RDP-300 (from Calectro), use the test hole on cover.
Do not forget to refit the plastic plug after test.

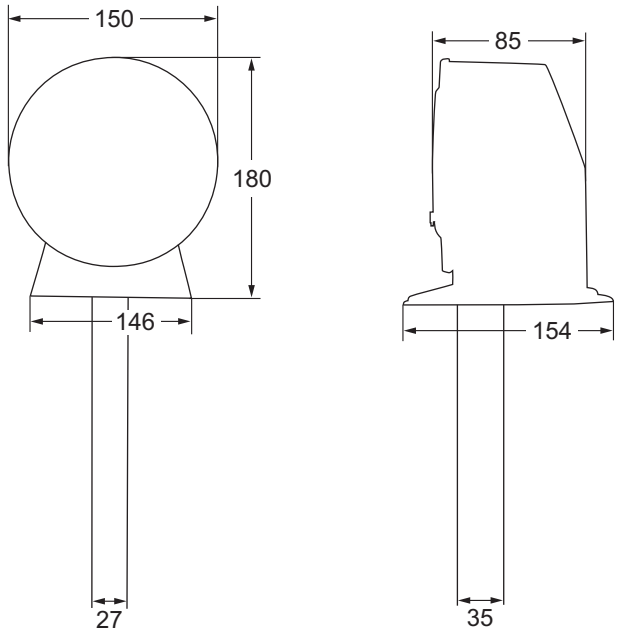
NB: When installing outdoors or in cold attics etc., where there is a risk for condensation, the detector should be insulated from the surrounding air with e.g. our weatherproof housing UG-COVER. In such cases it should be marked with a sign "Hidden Detector".

FUNCTION

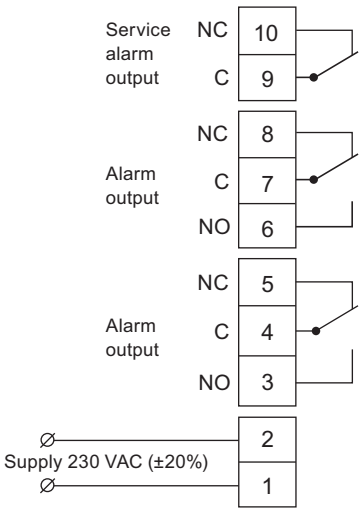
Normal operation:	In normal operation the alarm relay is energized, and the relay contacts are closed between C and NC.
Smoke alarm:	The LED of the detector is showing red light and the relay contacts are changing to C and NO.
Reset:	Press the reset button to reset the detector into normal operation.
Service alarm:	When the detector is sensing smoke or is dirty the LED of the detector will first show green colour before going into alarm with red light. If the detector is dirty, it will show green light. This is an optical indication (a pre-alarm or service-alarm) which means that the detector is contaminated and if it is not cleaned, it will give a false alarm later on.
Failure:	If there is something wrong with the detector, the alarm relay will change contacts: a) When the detector module is removed b) When the supply voltage is interrupted

DIMENSIONS

(mm)



WIRING DIAGRAM



Alarm relay:
TWO changing contacts, max 250V, 5A, each.

The relay outputs are shown in normal operation/power on condition.

UG-3-O UNIGUARD SUPERFLOW

Optical smoke detector with service alarm for duct installation.

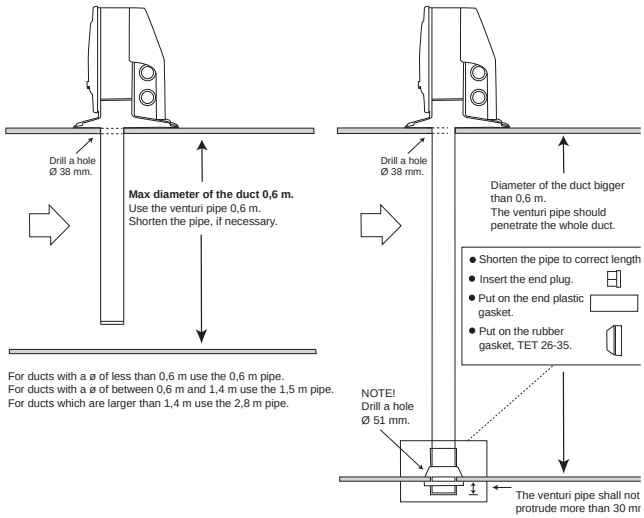
CE

TECHNICAL DATA

Detector type:	Optical UG-3-O
Operating Voltage	
Detector:	24VDC from control unit
Operating current:	~ 0,04 mA
Service alarm current:	~ 13 mA
Fire alarm current:	~ 48 mA
Operating temperature:	-20°C to +50°C
Maximum humidity:	99% rH
Duct air velocity range:	Approx. 0,2 to 20 m/s
Approvals	
UG-3-O:	VdS (Germany)
Detector head:	EN-54-7
LED on smoke detector:	Green - service alarm
	Red - smoke alarm
LED on PCB:	Yellow - service alarm
	Red - smoke alarm
Adaptor housing:	ABS
Weight:	800g
Protection:	IP54
Air sampling pipe:	Aluminium.

Standard length 0,6 m. Hole diameter 38 mm.

The length of the venturi pipe shall be chosen based upon how wide the ventilation duct is. The venturi pipes are available in 3 lengths; 0,6, 1,5 and 2,8 m. When the ventilation duct is wider than 0,6 m (dia), the venturi pipe should penetrate the **whole** duct.



CHARACTERISTICS

- **Patented venturi pipe and duct housing**
- **One-pipe air sampling system Uniguard Superflow**
- **New cross-section (shape) of the venturi pipe gives an optimum of venturi effect**
- **Service alarm**
- **Automatic sensitivity adjustment**
- **Test hole on cover**
- **Simple installation**
- **Sensitive flow indicator**
- **Simple service and maintenance**
- **Installer-friendly connection of cables**
- **Foolproof installation of venturi pipe**

FUNCTION

Uniguard has been developed to detect smoke in ventilation ducts and combines a smoke detector and an adaptor system where both venturi pipe and housing are specially designed for optimum airflow through the smoke detector.

Uniguard is used together with a control unit; e.g. ABAV-S3 to control fire-safety dampers, to stop ventilation fans, and to activate acoustic and optical alarms etc.

The detector UG-3-O contains an intelligent controlling circuit. This circuit is adjusting the sensitivity to give an optimal function during the whole life time of the detector. When the controlling circuit can no longer compensate for contamination, a service alarm is indicated.

Uniguard Superflow has 4 premounted IP67 approved cable entries with built-in cable anchorage for diameter 4-11 mm, type Klikseal.

The detector has a bayonet fitting to simplify mounting and removal.

ACCESSORIES

Item code	Designation
UG-MB	Mounting bracket (for insulated/ circular ducts)
UG-COVER	Waterproof housing (for mounting outdoors, in cold attics etc.)
VR-0.6M	Venturi pipe (length 0,6 m)
VR-1.5M	Venturi pipe (length 1,5 m)
VR-2.8M	Venturi pipe (length 2,8 m)

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UG-3-O UNIGUARD SUPERFLOW

Optical smoke detector with service alarm for duct installation.

CE

BASIC PRINCIPLES FOR POSITIONING

For the airflow through the adaptor to be representative of the airflow in the ventilation duct, install the detector at a place where flow meters etc. normally are mounted, please see our installation instructions.
You can also use your national or local rules for mountage according to ”Methods for measuring airflow in ventilation systems”.

INSTALLATION

The venturi pipe is made of aluminium and can easily be shortened to suit the diameter of the duct. Hole diameter is 38 mm. For insulated or circular ducts - use the mounting bracket, hole diameter is then 51 mm.

MAINTENANCE

When the detector becomes contaminated, sensitivity is increased, triggering the service alarm. This can be avoided for a considerable time by cleaning the detector once a year with a vacuum cleaner.

AIR FLOW MONITORING

The detector is fitted with a red plastic switch tongue. When the detector is correctly installed, the tongue is bent outwards by the air flow. The switch tongue provides a simple confirmation that there is no leakage and that the air flow from the duct is in fact flowing through the housing.

FUNCTION TEST

When installation is complete, the detector should be tested. This can be carried out with smoke or suitable testspray, for example RDP-300 (from Calectro), using the test hole on cover. **Do not forget to refit the plastic plug after test.**

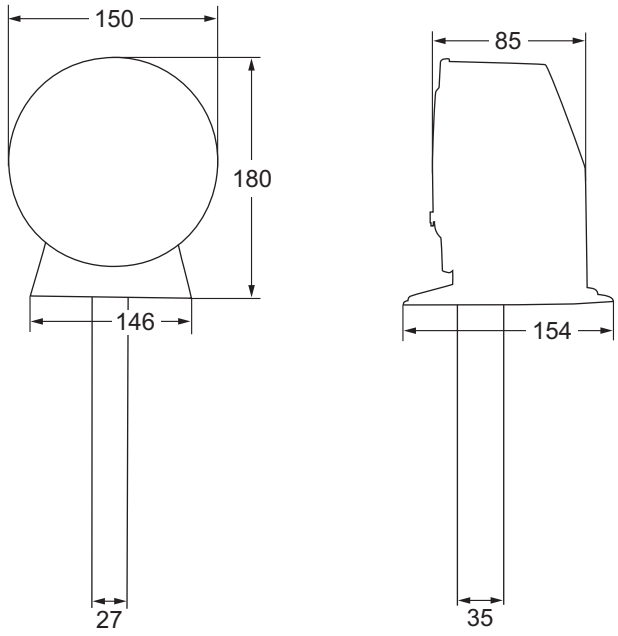
NB: When installing outdoors or in cold attics etc., where there is a risk for condensation, the detector should be insulated from the surrounding air with e.g. our weatherproof housing UG-COVER. In such cases it should also be marked with an extra indicator lamp, LED-03 and a sign marked "Hidden Detector".

VENTURI EFFECT

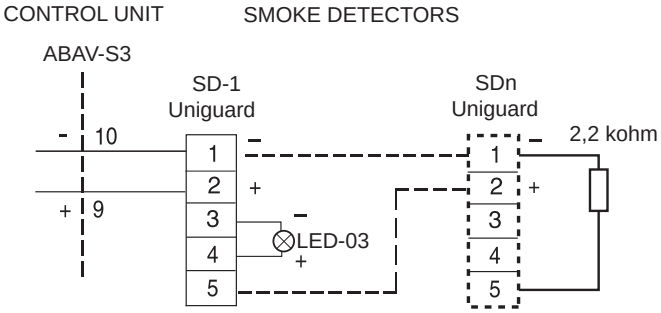
The new cross-section (shape) of the venturi pipe gives an optimum of venturi effect. The slots alongside the venturi pipe, for the inlet and the outlet of the venturi air stream, give maximum air flow and make the venturi pipe self-adjusting with a stable and uniform flow from the whole cross section of the ventilation duct.

DIMENSIONS

(mm)



WIRING DIAGRAM



UG-3-O-MB UNIGUARD SUPERFLOW WITH MODBUS

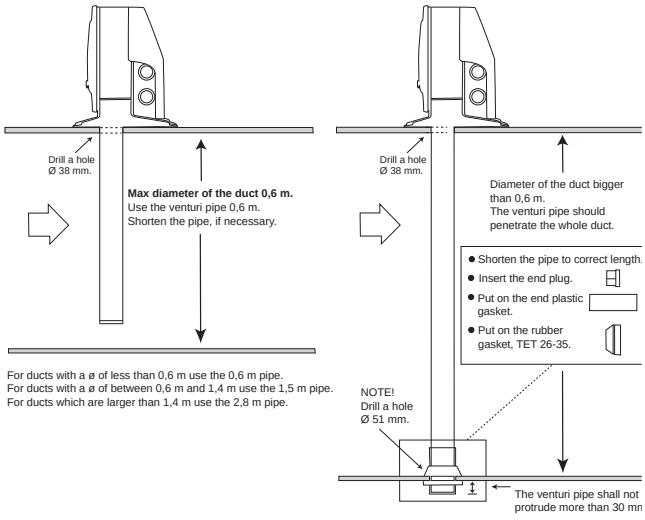
Smoke detector with Modbus communication and service alarm for duct installation.
Optical function.

CE

TECHNICAL DATA

Operating Voltage:	24V DC
Current consumption:	100 mA
Detector type:	Optical
Unit load:	24 kOhm (1/2 UL)
Operating temperature:	-10°C to +55°C
Maximum humidity:	99% rH
Duct air velocity range:	Approx. 0,2 to 20 m/s
Approvals:	Detector head EN-54-7
LED on smoke detector:	Green - service alarm Red - smoke alarm
LED on PCB:	Green - power on
Adaptor housing:	ABS
Weight:	800g
Protection:	IP-54
Air sampling pipe:	Aluminium.

Standard length 0,6 m. Hole diameter 38 mm.
The length of the venturi pipe shall be chosen based upon how wide the ventilation duct is. The venturi pipes are available in 3 lengths; 0,6, 1,5 and 2,8 m. When the ventilation duct is wider than 0,6 m (dia), the venturi pipe should penetrate the **whole** duct.



CHARACTERISTICS

- **Modbus RTU communication**
- **Patented venturi pipe and duct housing**
- **One-pipe air sampling system Uniguard Superflow**
- **New cross-section (shape) of the venturi pipe gives an optimum of venturi effect**
- **Service alarm**
- **Automatic sensitivity adjustment**
- **Test hole on cover**
- **Simple installation**
- **Sensitive flow indicator**
- **Simple service and maintenance**
- **Installer-friendly connection of cables**
- **Foolproof installation of venturi pipe**

FUNCTION

Uniguard has been developed to detect smoke in ventilation ducts and combines a smoke detector and an adaptor system where both venturi pipe and housing are specially designed for optimum airflow through the smoke detector.

The UG-3-O-MB connects to a Modbus master that scans the registers in the smoke detector. Through the Modbus communication the following can be indicated: smoke alarm, service alarm (contaminated smoke detector) and removed smoke detector. There are three jumpers on the PCB: 4,7 kOhm Pull-up, 4,7 kOhm Pull-down and 120 Ohm termination. Address, parity and baud-rate are set on the DIP-switch. Push the Reset-button to reset alarm condition.

The detector UG-3-O-MB contains an intelligent controlling circuit. This circuit is adjusting the sensitivity to give an optimal function during the whole life time of the detector. When the controlling circuit can no longer compensate for contamination, a service alarm is indicated.

Uniguard Superflow has 4 premounted IP67 approved cable entries with built-in cable anchorage for diameter 4-11 mm, type Klikseal.

The detector has a bayonet fitting to simplify mounting and removal.

BASIC PRINCIPLES FOR POSITIONING

For the airflow through the adaptor to be representative of the airflow in the ventilation duct, install the detector at a place where normally flow meters etc. should be mounted, please see our installation instructions.
You can also use your national or local rules for mountage according to ”Methods for measuring airflow in ventilation systems”.

INSTALLATION

The venturi pipe is made of aluminium and can easily be shortened to suit the diameter of the duct. Hole diameter is 38 mm. For insulated or circular ducts - use the mounting bracket, hole diameter is then 51 mm.

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UG-3-O-MB UNIGUARD SUPERFLOW WITH MODBUS

Smoke detector with Modbus communikation and service alarm for duct installation. Optical function.

CE

MAINTENANCE

When the detector becomes contaminated, sensitivity is increased, triggering the service alarm. This can be avoided for a considerable time by cleaning the detector once a year with a vacuum cleaner.

AIR FLOW MONITORING

The detector is fitted with a red plastic switch tongue. When the detector is correctly installed, the tongue is bent outwards by the air flow. The switch tongue provides a simple confirmation that there is no leakage and that the air flow from the duct is in fact flowing through the housing.

FUNCTION TEST

When installation is complete, the detector should be tested. This can be carried out with smoke or suitable testspray, for example RDP-300 (from Calectro), using the test hole on cover. **Do not forget to refit the plastic plug after test.**

NB: When installing outdoors or in cold attics etc., where there is a risk for condensation, the detector should be insulated from the surrounding air with e.g. our weatherproof housing UG-COVER. In such cases it should also be marked with a sign marked "Hidden Detector".

VENTURI EFFECT

The new cross-section (shape) of the venturi pipe gives an optimum of venturi effect. The slots alongside the venturi pipe, for the inlet and the outlet of the venturi air stream, gives maximum air flow and makes the venturi pipe self-adjusting with a stable and uniform flow from the whole cross section of the ventilation duct.

DIPSWITCH

Pos.	ON	OFF
1	Address 0=1 (binary)	Address 0=0 (binary)
2	Address 1=1 (binary)	Address 1=0 (binary)
3	Address 2=1 (binary)	Address 2=0 (binary)
4	Address 3=1 (binary)	Address 3=0 (binary)
5	Address 4=1 (binary)	Address 4=0 (binary)
6	Address 5=1 (binary)	Address 5=0 (binary)
7	Address 6=1 (binary)	Address 6=0 (binary)
8	Address 7=1 (binary)	Address 7=0 (binary)
9	1 startbit, 1 stop bit, Even parity*	1 startbit, 2 stop bits, No parity*
10	38400 baud rate*	9600 baud rate*

* Must be configured before power-on.

TERMINERING

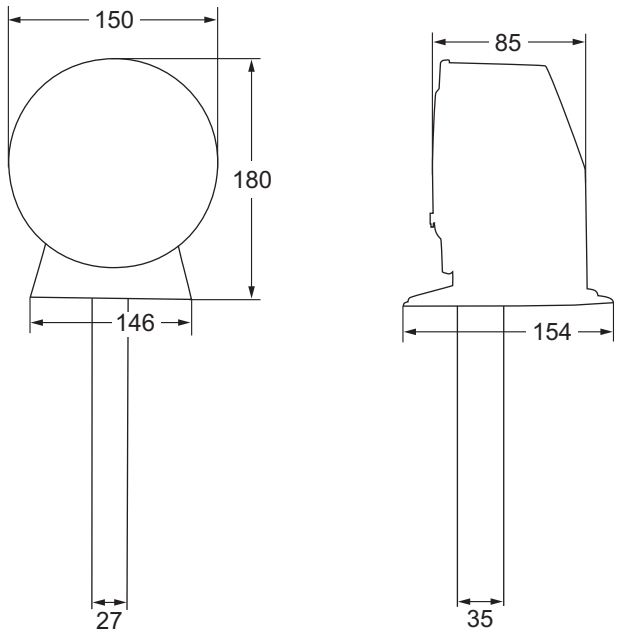
Jumper 1 ON	RS485+ 4.7 kOhm Pull-up
Jumper 2 ON	120 Ohm Termination
Jumper 3 ON	RS485- 4.7 kOhm Pull-down

MODBUSREGISTER

Discrete Inputs	Address	Comment	Min	Max
	1x0001	Detector mounted in base	0	1
	1x0002	Service alarm	0	1
	1x0003	Smoke alarm	0	1
Holding Registers	**Address**	**Comment**		
	4x0001	Reset smoke alarm	234 = reset alarm 1 = Set to normal	

DIMENSIONS

(mm)



NOTE!

To secure the smoke detection function, the Modbus-master must monitor the communication with all connected smoke detectors. If the communication with any of the smoke detectors is brooken, the Modbusmaster must go into High-Alarm-Status. The reason for lost communication can be: sabotage, cable fault, product fault etc.

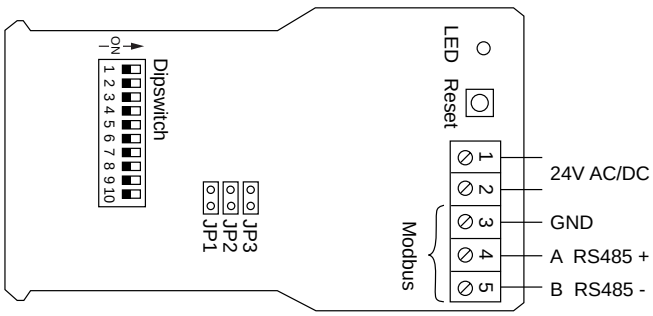
ORDERING EXAMPLE

Item code	Designation
UG-3-O-MB	Uniguard Superflow Optical with Modbus, incl. VR-0.6M

ACCESSORIES

Item code	Designation
UG-MB	Mounting bracket (for insulated/ circular ducts)
UG-COVER	Waterproof housing (for mounting outdoors, in cold attics etc.)
VR-0.6M	Venturi pipe (length 0,6 m)
VR-1.5M	Venturi pipe (length 1,5 m)
VR-2.8M	Venturi pipe (length 2,8 m)

WIRING DIAGRAM



ACCESSORIES FOR UNIGUARD SUPERFLOW UG-3

MOUNTING BRACKET, UG-MB

For mounting of duct smoke detector, Uniguard Superflow, on circular or insulated flat ducts.

VENTURI PIPE, VR-xM

VR-0.6M	Venturi pipe 0.6 meter to UG-3
VR-1.5M	Venturi pipe 1.5 meter to UG-3
VR-2.8M	Venturi pipe 2.8 meter to UG-3

For ducts smaller than 0,6 m use venturi pipe length 0,6 m.
For ducts between 0,6 and 1,3 m use venturi pipe length 1,5 m.
For ducts over 1,4 m use venturi pipe length 2,8 m.

LED INDICATION, LED-03

For showing the location of a hidden smoke detector, giving an alarm. For 24V-systems. Maximal cable length 3 m.

Height 280 mm
Width Ø 282 mm

PROTECTION COVER, UG-COVER

UG-COVER is used as a condensation protection for Uniguard Superflow smoke detector, installed outdoors or in cold attics.

Volume 250 ml

SMOKE DETECTOR TESTER, RDP-300

For function control of smoke detectors.
The unit is provided with a spray nozzle.
The spray bottle can be used for many tests.
The spray will work on ion- and optical smoke detectors.

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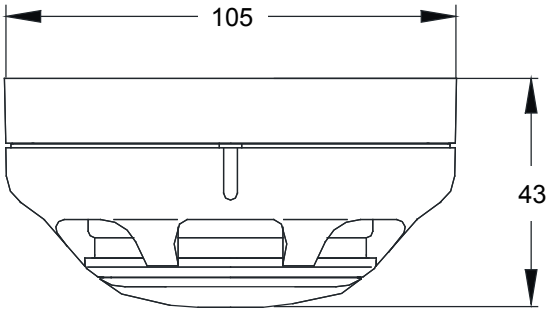
EVC-PY-DA OPTICAL SMOKE DETECTOR 24V
with automatic sensitivity adjustment and service alarm

TECHNICAL DATA

Rated voltage:	16-30V DC
Rated current:	Max 50 µA
Alarm current:	approx. 50 mA
Service alarm current:	approx. 13 mA
Detector head:	White PC with metal net around the chamber
Base:	White PC
Operating temperature:	-20°C to +50°C
Max humidity:	99% rH
Sensitivity:	According to EN-54-7
Tests according to EN-54:	VdS (Germany)
Weight:	ca 150g
Service alarm:	Green LED
Smoke alarm:	Red LED
Protection:	Base IP22

DIMENSIONS
(mm)



Mounting: 2 x M4 screws, 50 / 60 / 70 mm c/c

CHARACTERISTICS

- **Automatic sensitivity adjustment**
  - **longer lifespan**
  - **fewer false alarms**
- **Service alarm**

FUNCTION

Smoke detector EVC-PY-DA has been equipped with a new optical chamber and a new light source. Thanks to this, the detector's ability to detect even small particles from the starting phase of a fire has increased drastically. Thanks to this new design, EVC- PY-DA can replace ionising smoke detectors, which have previously been far superior.

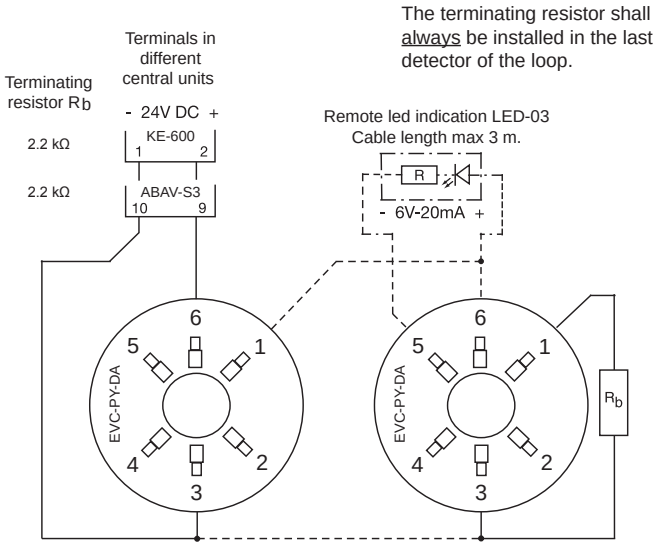
The detection chamber contains a LED and a photodiode. Normally, the light from the LED does not strike the photodiode, but when smoke enters the chamber it reflects the LED beam so that it strikes the photodiode. The current through the photodiode changes and an alarm is triggered.

EVC-PY-DA has an intelligent monitoring circuit that continuously checks and adjusts the sensitivity for optimum functionality during the entire life of the detector. When the detector can no longer compensate for environmental influences, a service alarm is generated.

The design of the detector makes it almost completely immune to high air speeds, dirt and radio frequency interference.

The detector is equipped with a bayonet mount, which makes it easy to fit and remove.

WIRING DIAGRAM



ORDERING EXAMPLE

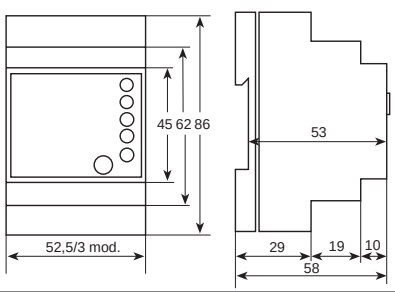
Article code	**Description**
EVC-PY-DA	Smoke detector optical service alarm

ABAV-S3 CONTROL UNIT
for smoke detectors with service alarm

TECHNICAL DATA

Operating voltage:	230V AC ± 10 % 50-60 Hz 24V AC ± 10 % 50-60 Hz alternatively 24-30V DC. When ordering, state voltage.
Energy consumption:	1,8 VA
Alarm relay:	One changing contact 250V 8A One breaking contact 250V 8A
Service alarm relay:	One closing contact 250V 5A
Failure alarm realy:	One changing contact 250V 5A
Terminating resistor:	2,2 kOhm
Indications:	
Normal operation:	green LED
Service alarm:	yellow LED
Short circuit in detector circuit:	yellow LED
Interruption in detector circuit:	yellow LED
Alarm:	red LED
Number of detectors that can be connected:	30 smoke detectors
Mounting:	DIN-Rail
Option:	ETUK-1, Housing IP-54 for wall mounting
Surrounding temp.:	0 to 50°C
The following values applies for the detector circuit:	
Normal operation:	4 to 21 mA
Broken Line:	< 4 mA
Short circuit:	> 100 mA
Service alarm (contaminated detector):	> 21 mA
Alarm (smoke):	> 38 mA
Weight:	230V = 280g, 24V = 150g
Protection:	IP20

DIMENSIONS (mm)

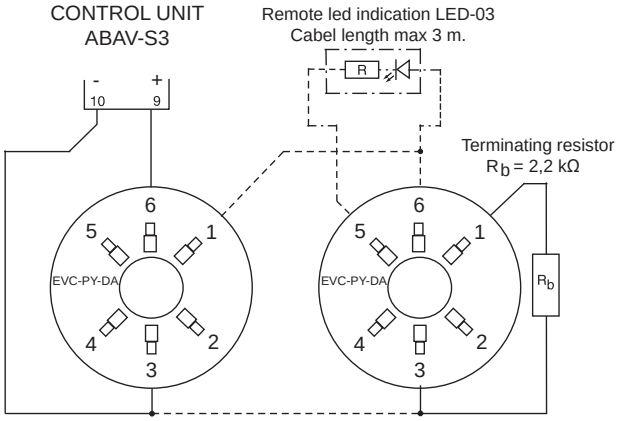


FUNCTION

The unit is designed for DIN-Rail mounting with LED/ indications on the front panel. When a smoke detector, connected to the ABAV-S3, indicates alarm for smoke, the ABAV-S3 unit will trigger alarm relays, which can be used to stop ventilation fans and to close fire dampers.
At alarm, a red LED is lit and at the same time the alarm relays drops. When a smoke detector indicates service alarm the yellow service alarm LED flashes quickly for one minute. After that, the relay is energized and the LED is showing fixed yellow light. If the service alarm of the smoke detector is remedied, the service alarm relay is de-energized and the yellow LED starts to blink slowly (alarm memory). Service alarm is an indication that the smoke detector is contaminated and should be replaced. Short circuit or interruption will energize the failure relay and at the same time a yellow LED is lit (for interruption there is a ten second delay).
If the short circuit or interruption is remedied, the failure relay is de-energized and the yellow LED starts to blink slowly (alarm memory).
Test of relays: Press the reset button during five seconds.

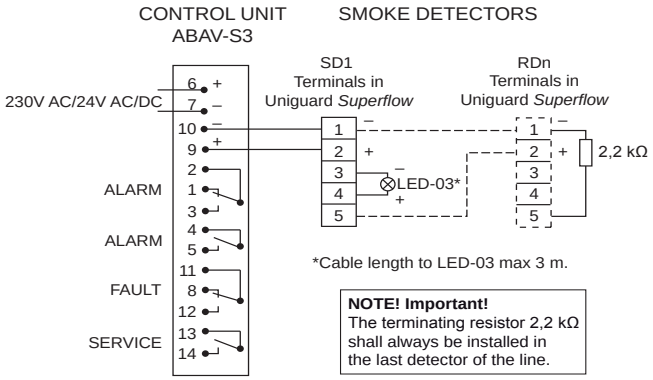
WIRING DIAGRAM

CEILING MOUNTED SMOKE DETECTORS



Base marking (relief No. in base = earlier No. on label):
5 = -R, 6 = 2□E, 1 = 5□0, 2 = -RS, 3 = -1

DUCT MOUNTED SMOKE DETECTORS



The alarm relay and the failure relay outputs are shown in alarm/no power on condition and the service alarm relay is shown in operative/no power on condition.

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On demand ventilation

CO_2/Occupancy sensors

A-SENSE AND UG-A-SENSE

Carbon dioxide and temperature sensor. Duct or room installation.

CE

TECHNICAL DATA

Power supply:	24 V AC/DC±20%, 50-60 Hz half-wave-rectified input)
Current drain:	< 3 W (120 mA) average
Linear outputs:	OUT1 and OUT2, 0/2-10V DC, max 2 mA or 0/4-20 mA, Rload < 500 Ohm. Outputs are configured with jumpers for voltage/current and 0-100% / 20-100%
Relay output (optional):	OUT3: NO. Contactless relay, min. load 1 mA/5 V, max. load 0.5 A/125V AC or 1A/24V DC
Operating temperature:	0 to + 50°C
Storage temperature:	-20 to + 70°C
Operating humidity:	0 to 95% RH (non-condensing)
Start time:	≤ 1 min. (@ full spec ≤ 15 minutes)
Sensor life expectancy:	> 15 years
Measurement principle:	Non-dispersive infrared (NDIR) with automatic baseline correction (ABC)
Gas collection:	Diffusion
Response time (T1/e):	2 min. diffusion time
Accuracy:	Normally ±1% of measuring range ±5% of measured value
Annual zero point drift:	< ±0.3% of measuring range
Temperature measurement principle:	Thermistor
Measuring range:	-20 to +60°C
Accuracy:	± 0,5°C
Dimensions (HxWxD):	Wall installation 287x150x110 mm Duct installation 120x82x30 mm
Protection:	Wall installation IP20 Duct installation IP54

FEATURES

- **Infrared technology (NDIR)**
- **Auto self-diagnostics**
- **Maintenance interval > 5 years**
- **Network communication via RS485 as an option**
- **LonWorks as an option**

FUNCTION

A-SENSE is a microprocessor-based temperature and carbon dioxide transmitter for installation in the climate zone. A-SENSE senses the surrounding air, converts the result into analog and digital signals, and sends them on to higher-level systems. A-SENSE is available with or without display and relay, and for room or duct installation. Auto-calibration (*ABC*-function) is the key to maintenance-free operation. The precondition for this is a normal indoor environment, or applications in which there is some type of ventilation (at least a few times a week.)

GENERAL INFORMATION

A-SENSE is designed to control ventilation by transmitting the measured carbon dioxide content and temperature to the system DUC (dataundercentral = data subcentre). According to the BBR 94 rules of The National Swedish Board of Housing, Building and Planning, the flow of outside air where people spend time more than occasionally, should amount to at least 7 litres per second per person. Assuming that the individuals in the room are adults doing sedentary work and that the outdoor concentration is 350 ppm, this flow corresponds to a carbon dioxide content of about 1040 ppm. According to The National Board of Health and Welfare (Socialstyrelsen) (SOSFS 1989:51) and The National Board of Occupational Safety and Health (Arbetarskyddsstyrelsen) (AFS 1993: 5) the carbon dioxide content can therefore be used as an indicator that the air flow, and therefore the air quality, is satisfactory. A carbon dioxide content below 1000 ppm should therefore be aimed at, according to both those official bodies.

INSTALLATION

See the installation instructions supplied with the sensor.

MAINTENANCE

In room installations, A-SENSE is normally maintenance-free if the auto-calibration function (ABC) is activated. A five-yearly check is recommended. Equipment for zero-calibration can be rented from Calectro AB. Note that this requires the programming cable: A232 CABLE and a PC.

ORDERING EXAMPLE

Item code	**Designation**
A-SENSE (-R)*	Wall mounting without display
A-SENSE-D (-R)*	Wall mounting with display
UG-A-SENSE (-R)*	Duct sensor without display
UG-A-SENSE-D (-R)*	Duct sensor with display

*(-R) with relay as an option

ACCESSORIES

Item code	**Designation**
A232 CABLE	Programming cable
2001M	Zero-calibration bag

For A-SENSE with relay output, IP54 industrial enclosure, RS485 or LonWorks, contact our sales department.

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A-SENSE AND UG-A-SENSE

Carbon dioxide and temperature sensor. Duct or room installation.

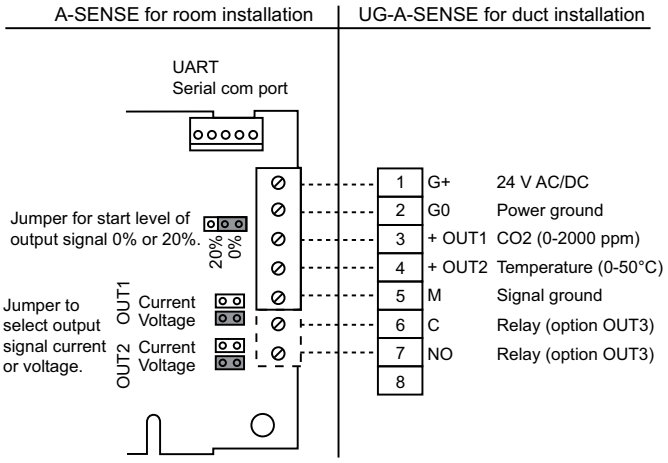
CE

CONFIGURATION

Standard configuration of A-SENSE transmitter outputs.

Terminal	Standard configuration	Standard configuration
OUT 1	0-10 V DC	0-2000 ppm CO_2
OUT 2	0-10 V DC	0-50°C

WIRING DIAGRAM



FAULT CODES AND SUGGESTED ACTIONS

Bit #	Fault	Description of the fault	Suggested actions
0	N/A	**Serious fault**	Attempt to restart the meter by disconnecting and reconnecting the power supply. Contact the reseller.
1	2	**Reserved**	
2	4	**Calculation error** Indicates incorrect EEPROM configuration.	Attempt to restart the meter by disconnecting and reconnecting the power supply. Check the setting and configuration with the UIP software, version 4.0 or higher. Contact the reseller.
3	8	**Output fault** Faults detected during signal generation and signal processing.	Check connections and the loads of the outputs. Check the status of the outputs with the UIP software, version 4.0 or higher.
4	16	**Fault during self-diagnosis** May indicate that zero-calibration is needed or the meter needs changing.	Check the detailed status of the self-diagnosis function with the UIP software, version 4.0 or higher. Contact the reseller.
5	32	**Outside the measuring range** Occurs together with most other faults. May indicate a short circuit or defective sensors and inputs. Corrected automatically when the cause of the fault is removed.	Test the meter in fresh air. Check the temperature sensor connections. Check the detailed status of the self-diagnosis function with the UIP software, version 4.0 or higher. See Note 1.
6	64	**Memory fault** A check during the save operation in the internal memory found a fault.	Check the detailed status of the self-diagnosis function with the UIP software, version 4.0 or higher.
7	128	**Temperature rise** Always set on start and on loss of power. Corrected after the startup sequence.	If the fault disappears within half a minute, check that the driving voltage is stable.

Note 1. A measurement probe is outside the measuring range. This happens if CO_2 values are very high, for example. In this case the fault code is acknowledged when the readings return to normal. May also indicate zero-calibration is required. If the CO_2 values are normal and the fault code persists, the temperature sensor may be faulty or have poor contact.

NB: If more than one fault code is detected at the same time, they are added together and become one single fault code!

A-SENSE-VAV and UG-A-SENSE-VAV

Carbon dioxide and temperature controller

TECHNICAL DATA

Power supply:	24V AC/DC ±20%, 50-60 Hz
Current drain:	< 3 W (120 mA) average
Linear outputs:	OUT1 and OUT2: 0-10 V DC, max 2 mA or 0-20 mA, Rload < 500 Ohm. Outputs are configured with jumpers for voltage/current. OUT4: 0-10V DC or open collector, configured with jumper. Max 0.5 A, 60V DC/40V AC
Relay output:	OUT3: NO. Contactless relay, min. load 1 mA/5 V, max. load 0.5 A/125V AC or 1A/24V DC
Operating temperature:	0 to +50°C
Storage temperature:	-20 to +70 °C
Operating humidity:	0 to 95% RH (non-condensing)
Start time:	1 min. (@ full spec ≤15 minutes)
Sensor life expectancy:	>15 years
Measurement principle:	Non-dispersive infrared (NDIR) with automatic baseline correction (ABC)
Gas collection:	Diffusion
Response time (T1/e):	2 min. diffusion time
Accuracy:	Normally ±1% of measuring range ±5% of measured value
Annual zero point drift:	< ±0.3% of measuring range
Temperature measurement principle:	Thermistor
Measuring range:	-20 to +60 °C
Accuracy:	±0,5°C
Dimensions (HxWxD):	Wall installation 120x82x30 mm Duct installation 287x150x110 mm
PC software:	UIP4
Protection:	Wall installation IP20 Duct installation IP54

FEATURES

- **Cost-optimised for direct control of damper or speed-controlled fans**
- **Alternative/additional control outputs**
- **Gives reduced energy costs with demand-controlled ventilation**
- **Automatic self-diagnostics**
- **Typical maintenance interval > 5 years**
- **Enclosure options, wall and duct**
- **Communication port for PC, GSM-module or local network**
- **LonWorks as an option**

FUNCTION

OUT1, OUT2 and OUT3 are pre-programmed outputs for demand-controlled ventilation. OUT4 is intended for connection to a linear heat activator, if requested.

- OUT1 = control signal according to demand for cooling and air quality (with flow reduction in extreme cold)
- OUT2 = control signal according to demand for air quality only
- OUT3 = ON/OFF according to demand for air quality only
- OUT4 = control signal according to heating demand

Set points for temperature (air cooling and additional heat) and air quality (CO_2) can be adapted individually via the unit's maintenance pushbuttons.

When a set point is changed, all control curves for this parameter are shifted parallel.

The standard configuration for A-SENSE-VAV**,** with associated settings, is typical for many VAV applications. Other control parameters and strategies can also be programmed from a PC with suitable software. For this purpose, eight freely programmable linear functions (P-band) and two timer functions controlled from the DI1 terminal are available.

Up to four of the twelve available functions can be addressed to each of the four outputs in such a way that the total, or alternatively the highest value, is transformed into an output signal. In addition, for OUT1 and OUT2, the outputs can be limited within defined MIN and MAX values. These MIN and MAX values can be set/updated from the pushbutton menu in service. The values of the outputs are updated every four seconds. This interval and other functions and settings can be changed with the UIP4 software.

USE

A-SENSE-VAV is intended to control the ventilation in rooms where people are present. The sensor is a basic component which is suitable for many different ventilation strategies.

INSTALLATION

See the installation instructions supplied with the sensor.

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MAINTENANCE

In room installations, A-SENSE is normally maintenance-free if the auto-calibration function (ABC) is activated. A five-yearly check is recommended. Equipment for zero-calibration can be rented from Calectro AB. Note that this requires the programming cable: A232 CABLE, the UIP4 software and a PC.

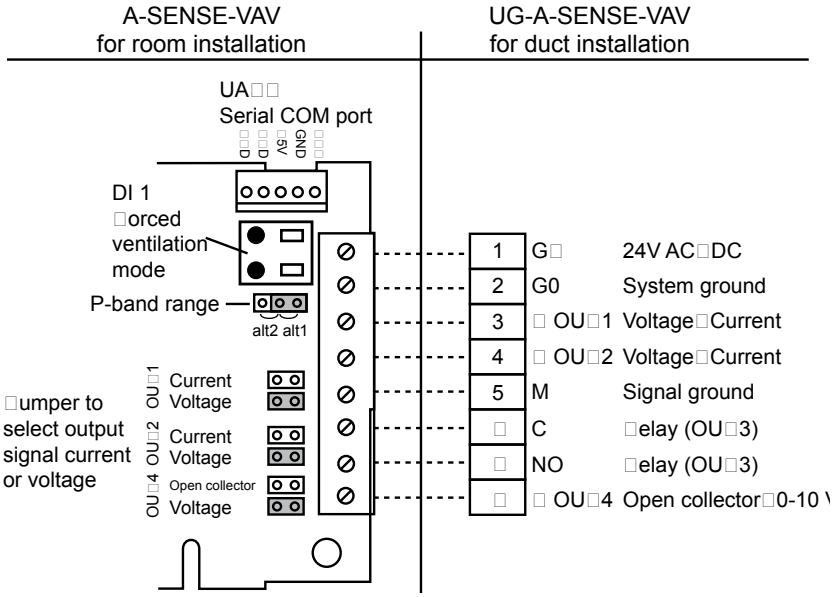
ORDERING EXAMPLE

Item code	Designation
A-SENSE-V	Without display window
A-SENSE-V-D	With display window
A-SENSE-V-IP54	IP54, without display window
A-SENSE-V-IP54-D	IP54, with display window
A-SENSE-V-LON	LonWorks without display window
A-SENSE-V-LON-D	LonWorks with display window
UG-A-SENSE-V-D	Duct sensor with display window

ACCESSORIES

Item code	Designation
A232 CABLE	Programming cable
2001M	Zero-calibration bag

WIRING DIAGRAM



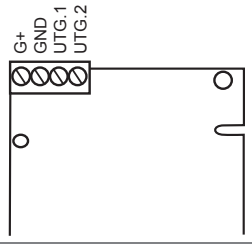
E-SENSE
CO_2 sensor for wall installation

TECHNICAL DATA

Power supply:	24 V AC/DC±20%, 50 Hz (half wave rectified input)
Power consumption:	< 1 Watt average
Termination, screw terminal A:	4 x 1.5 mm^2 for power supply (G+,G0) and outputs (UTG.1, UTG.2)
Termination, screw terminal B:	2 x 1.5 mm^2 for passive resistive output (Y,M), only on model–Tr
Measurement principle:	Non-dispersive infra red (NDIR) with Automatic Baseline Correction (ABC)
Response time ($T_{1/e}$):	< 10 sec. @ 30 cc/min. flow < 3 min. diffusion time
Repeatability:	± 20 ppm ± 1 % of value
Accuracy [2]:	± 30 ppm ± 2 % of value
Annual zero drift [2]:	< ± 10 ppm
Output OUT1:	0-10 V DC for 0-2000 ppm_{vol}
Output OUT2:	2-10 V DC for 0-2 000 ppm_{vol} with 1 V DC output signal as fault indication
Electrical parameters	R_{OUT} < 100 Ohm, R_{LOAD} >5 kOhm
Resistive connection [3]:	One thermistor output pin is connected to earth
Complies with standard:	EMC Directive 89/336/EEC
Operating temperature:	0 to +50 °C
Operating humidity:	0 to 95% humidity (non-condensing)
Operating environment:	residential, shops or industrial premises[1]
Starting time:	1 min. (@ full spec 15 minutes)
Expected sensor life:	>15 year
Maintenance requirement:	No maintenance needed [2]
Protection:	IP20

Note 1: Must not be used in environments with high SO_2 content (SO_2 concentration < 0.02 ppm)
Note 2: In normal indoor environment (@ NTP). Accuracy is defined at constant operation (minimum 3 weeks after installation).
Note 3: The resistive temperature sensor is installed by the user. Can be pre-installed at the factory by prior agreement.

WIRING DIAGRAM



Note!
Power supply must be connected to G+ and GND. GND is system earth. If the analogue output is connected to a control unit / DUC, the same earth reference must be used for the eSENSE and the control unit.

CHARACTERISTICS

- **Gold-plated infra-red (NDIR)**
- **Measurement range: 0 - 2000 ppm**
- **Two analogue outputs**
- **Internal automatic self-diagnosis**
- **Maintenance-free in normal applications / environments**
- **Model –TR is prepared for temperature measurement via the user's separately installed temperature sensor.**
- **RS485 / ModBus network communication (optional)**

FUNCTION

The E-SENSE is a cost effective and maintenance free CO_2 transmitter based on modern infra-red technology (NDIR).

A choice of encapsulations makes it available for both wall mounting and duct mounting.

The E-SENSE measures the CO_2 content of ambient air up to 2,000 ppm and converts the measurement data to analogue 0/2-10 V output signals.

APPLICATION

The E-SENSE is a cost optimised sensor / transmitter package for climate control of buildings and other processes where the measured CO_2 values are wanted in the form of voltages. By controlling the ventilation on the basis of true facts, you can reduce energy consumption and still maintain a healthy indoor climate.

A choice of encapsulations make the E-SENSE usable in a large number of applications and environments.

The E-SENSE TR is prepared for easy connection of a passive temperature sensor (option). This can easily be installed by the customer.

The E-SENSE-485 and E-SENSE-MB offer integrated RS485 communication with optional ModBus protocol (please contact Calectro for further information).

The E-SENSE helps you to save money by reducing your energy consumption at the same time as you maintain a healthy indoor climate.

INSTALLATION

Please refer to the enclosed installation manual.

MAINTENANCE

No maintenance is needed in a normal indoor environment.

ORDERING EXAMPLE

Item code	Designation
E-SENSE	CO_2 sensor for wall mounting, without display
E-SENSE-D	CO_2 sensor for wall mounting, with display

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M-SENSE III AND UG-M-SENSE III

CO_2 and CO sensors for monitoring and controlling ventilation in garages etc.

TECHNICAL DATA

Supply voltage:	24 V AC/V DC ±20% 50/60Hz (half-wave rectifying input)
Current consumption:	< 3 W average
Operating temperature[1]:	0 to 50°C
CO_2 measurement	
Measurement principle:	Infra-red (NDIR), Automatic baseline correction (ABC) [2]
Accuracy[3]:	±1% of measurement range, 5% of measured value
Measurement range:	0-3 000 ppm (measurement ranges of up to 20 $\%_{vol.}$ offered on request)
CO measurement:	Gas sensitive thick film material (MMOS) with active carbon filter, internally compensated for temperature and humidity variations, Automatic baseline correction (ABC) [2]
Accuracy [3]:	± 10 ppm
Measurement range:	0-100 ppm (standard)
Analogue outputs [4]:	
PTC Protection:	PTC fuse (automatic reset) on signal earth (ground) M, short-circuit proof
Dimensions:	Wall installation 150x110x46 mm Duct installation 287x150x110 mm
Linear outputs	
UTG.1 & UTG.2:	0/2-10 V DC $R_{UTG.}$ < 100 Ohm R_{load} > 5 kOhm (0/1-5 V DC optional) 0/4-20 mA R_{load} < 500 Ohm
UTG.4:	0-10 V DC $R_{UTG.}$ < 100 Ohm, R_{load} > 5 kOhm can be jumpered from open collector operation) ON/OFF outputs
Relay (UTG.3):	Insulated N.C., 1 mA/5 V-1 A to 50 V AC/24 V DC.
Open collector UTG.4:	In ON/OFF mode: max 0.5 A/ 55 V DC (half wave rectification for AC), connected to earth
Protection:	IP54

CHARACTERISTICS

- **Infra-red technology (NDIR) for carbon dioxide content**
- **Modern MMOS for carbon monoxide content**
- **Flexible control outputs for DUC or direct control of shutters and speed-regulated fans.**
- **Internal data logger for trend logging of the environment**
- **Contributes to reduced energy consumption for demand ventilation.**
- **Maintenance-free for over 5 years.**

FUNCTION

M-SENSE III is a regulator with built-in gas sensor for carbon monoxide and carbon dioxide. Using these parameters, the programmable unit can regulate the air change rate etc. and generate alarms for personnel safety. The M-SENSE III also considers ambient temperature and relative humidity, for high CO measurement accuracy.

APPLICATION

The M-SENSE III is intended for use in areas where combustion offers a potential danger from hazardous air, such as in vehicle garages, loading bays, tunnels and mines. It offers measurement of CO and CO_2 which does not just guarantee general safety, it also saves energy if correct requirement control of ventilation is ensured.

It is general knowledge that all engines produce CO, especially during a cold start, and that we need protection from this poisonous gas. A warm, modern engine with catalytic exhaust purification generates more than 140 times more CO_2 than CO, on average. In this situation, CO_2 is the potential danger, so both gases must be measured to guarantee personnel safety.

The M-SENSE III can be used for both local control/alarms and to form a component of a wider system.

INSTALLATION

Please refer to the separate installation instruction.

MAINTENANCE

Normally maintenance-free for 5 years.

ORDERING EXAMPLE

Item Code	Designation
M-SENSE III	CO/CO_2 sensor for wall installation
UG-M-SENSE III	CO/CO_2 sensor for duct installation

Note 1: The gauge can operate at lower temperatures if a heater is installed.

Note 2: The ABC function is the key to maintenance free operation. It assumes an operation environment where there is at least some sporadic basic ventilation. The ABC function automatically compensates for any zero point drift of the CO sensor and CO_2 sensor.

Note 3: In normal indoor climate (at least 3 weeks after installation). NOTE! The CO measurement will give an incorrect reading if near to certain chemicals such as silicone, so some types of environment are not suitable.

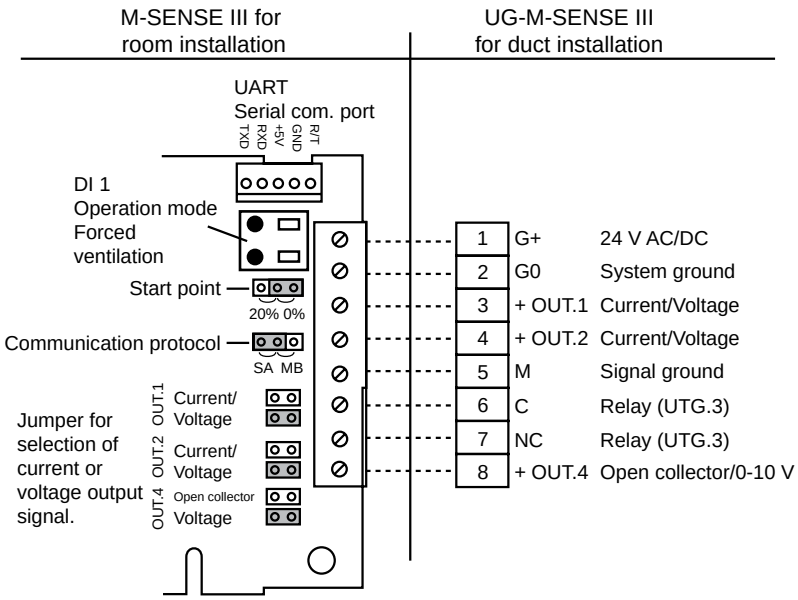
Note 4: The specifications apply when the outputs are connected to system ground G0 or a common signal ground, M.

TERMINALS

No.	Designation	Electric connection	Function*
1	G+	24 V AC/DC	
2	G0	System ground	
3	OUT 1	Linear signal (+) 0-10 V/4-20 mA	CO-transm. 0…100 ppm
4	OUT 2	Linear signal (+) 0-10 V/4-20 mA	CO_2-transm. 0…2000 ppm
5	M	Signal ground (-)	
6 7	OUT 3	ON/OFF relay (N.C.)	Gas alarm switch points CO = 35/30 ppm or CO_2 = 1500/1400 ppm
8	OUT 4	Open collector (N.O.) or control signal (+) 0-10V	Fault alarm or gas alarm (UTG.3-relay open circuit)
Extra terminal:spring-loaded pin			
9 10	DI 1	Circuit breaker input with delay timer (N.O.)	Test function

* Can be configured with UIP4

WIRING DIAGRAM



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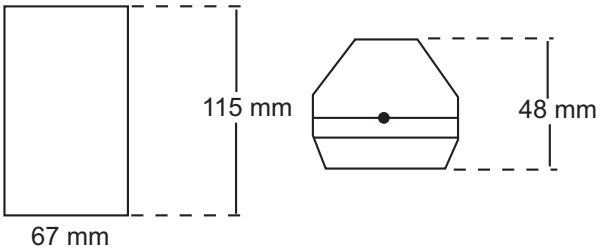
PIR-TFT-550-B Occupancy sensor
with high/low temperature limits and ON/OFF delay

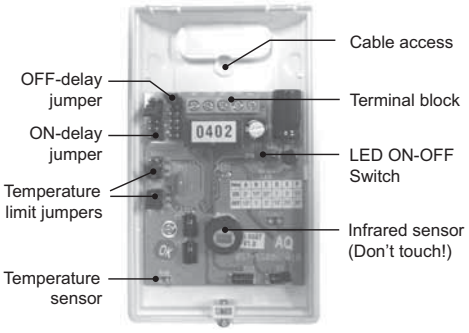
- **24V AC/DC supply**
- **OFF-delay 5 sec to 30 min**
- **ON-delay 0 to 10 min**
- **Alarm output: One changing contact**
- **Temperature limit settings**

TECHNICAL DATA

Power supply:	24V AC/DC ±2V AC/DC
Current consumption:	7mA
Alarm output:	1 changing contact, 24V AC/DC, 5A/NO, 3A/NC
High temperature:	24°/26°/28°C
Low temperature:	15°/17°/19°C
RFI immunity:	Av. 20V/m (10-1000MHz)
Ambient temperature:	-20°C to +50°C
Mountage height:	1,8-3,6m
Colour:	White
Humidity:	95%rH
Bracket:	MB-99
Protection:	IP20

DIMENSIONS





Red LED (fixed) is lit when the detector is activated.
Red LED (blinking) is lit if any of the jumpers for delay is taken away.

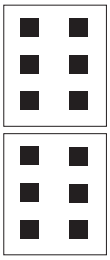
FUNCTION

PIR-TFT-550-B is an occupancy sensor specially designed for automatic operation control of HVAC system. It is housed in an elegant white enclosure. The lens has a detection angle of 110° in order to detect occupancy in a reliable way. With mountage bracket, MB-99, the sensor can be installed in the ceiling or on the wall. The ON-and OFF-delay can be set by means of jumpers.

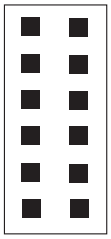
TEMPERATURE LIMIT SETTINGS

PIR-TFT-550-B allows user to set the high/low temperature limits. When room temperature goes higher than the high-temp limit or lower than the low-temp limit, the relay will be activated automatically. **To disable the setback, remove the jumper head from pin.**

TEMPERATURE SETTINGS



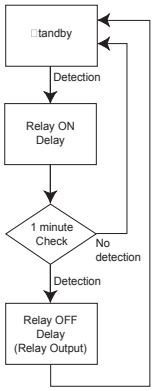
ON AND OFF DELAYS



	ON:	OFF:
A	0 sec	5 sec
B	10 sec	1 min
C	30 sec	5 min
D	1 min	10 min
E	5 min	20 min
F	10 min	30 min

Note! Before changing the delay settings, switch always off the supply voltage.

OPERATION DIAGRAM



Installation instruction
for occupancy sensor PIR-TFT-550-B

INSTALLATION HINTS

Do not install where the detector is exposed to direct sunlight or directly above strong sources of heat.
Make sure the detection area does not have obstruction (plants, large pieces of furniture, curtains etc.) which may block the pattern of coverage. PIR detector is more sensitive to the motion “across” the detection zones than “toward” the sensor.

INSTALLATION & WALK TEST

Installation

1. Open the front cover by loosing the locking screw. Remove the circuit board from the bottom case.
2. Punch out the adequate knockouts and mount the bottom case firmly with the screw provided at the selected position.
3. Replace the circuit board and connect the wires to the corresponding terminals.

   NC-C-NO: Detection output
   24 V: Power supply input, 24 V AC/DC
   AUX: For connection with auxiliary door/window switch.

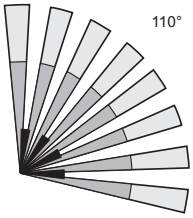
   If auxiliary switch is connected, the PIR-TFT-550-B will shut off the HVAC when the associated door/window is open for more than 5 minutes.
4. Remember to seal all unused cable entries and screw holes in order to stop false alarms which can be caused by insects, etc.
5. Replace front cover, then walk test can be proceeded.
6. Note! Before changing the delay settings, switch off the supply voltage.

Walk Test

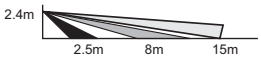
Apply the power supply to the sensor and wait for about 45 seconds for the unit to warm up. The LED will blink (long-short) during the warm up period. Ensure the jumper head connectors of ON and OFF delays are placed on “A” position (shortest delay). Walk across the detection zones (invisible) at normal speed. The LED will lit whenever the sensor detects the motion.

NOTE!
If any jumper head is not properly placed, the LED will blink.

DETECTION PATTERN



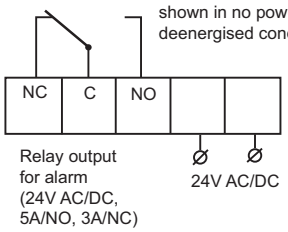
Top view



Side view

No. of detection zones:
15 m = 8 zones
8 m = 8 zones
2,5 m = 4 zones
Totalt = 20 zones

WIRING DIAGRAM

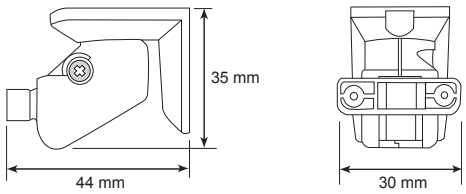


NOTE!
When room temperature goes higher or lower than the temp. limit, the relay will be activated automatically.

Before connecting the cables, remove the circuit board from the bottom case.

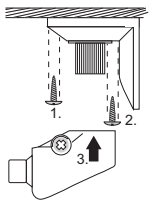
DIMENSIONS

Mounting bracket MB-99, for ceiling- and wall mounting

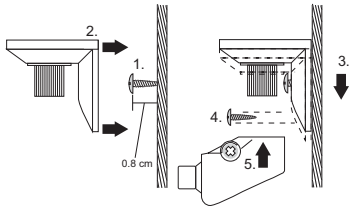


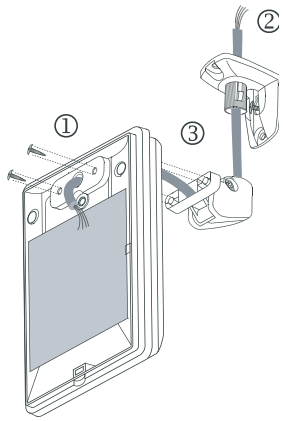
MOUNTING

Ceiling mount



Wall mount





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PIR-TF-25-360 OCCUPANCY SENSOR
for ceiling 360° mountage

- **24V AC/DC**
- **OFF-delay 10 sec to 30 min**
- **ON-delay 0 to 10 min**
- **Alarm output: One changing contact**

FUNCTION

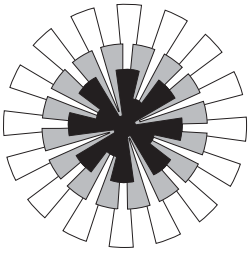
PIR-TF-25-360 is an occupancy sensor specially designed for the HVAC industry. It is housed in an elegant white enclosure. The lens has a detection angle of 360° in order to detect occupancy in a reliable way. The ON-and OFF-delay can be set by means of jumpers.

TECHNICAL DATA

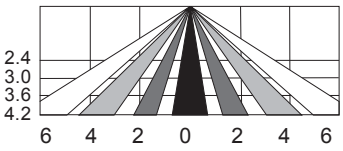
Power supply:	24V AC/DC ±2V
Current consumption:	5mA
Alarm output:	1 changing contact, 24V AC/DC, 0,2A
Ambient temperature:	-20°C to +60°C
Weight:	85g
Mountage height:	2,4 - 4,2 m
Colour:	white
Detectable speed:	Between 0,1~3,0 m/sek.
Protection:	IP20

DETECTION PATTERN

Top view 360°

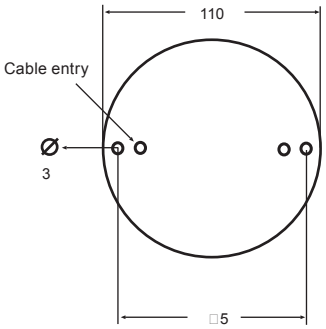


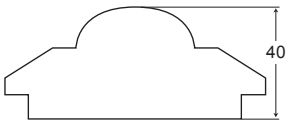
Side view



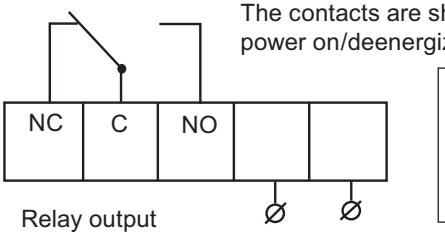
DIMENSIONS

(mm)





WIRING DIAGRAM



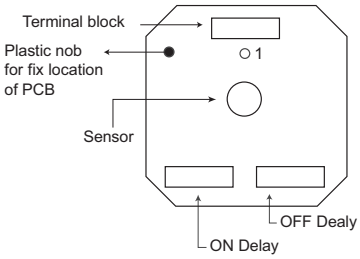
The contacts are shown in no power on/deenergized condition.

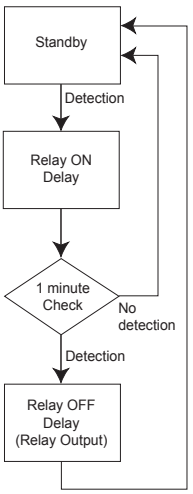
Before connecting the cables, remove the circuit board from the bottom case.

Relay output
Alarm
24V AC/DC, 0,2A

24V AC/DC

OPERATION DIAGRAM





1 = white LED is lit when the detector is activated.
Blinking LED is lit if any of the jumpers for delay is taken away.

ON AND OFF DELAYS

	ON	OFF
A	0 sec	10 sec
B	10 sec	1 min
C	30 sec	5 min
D	1 min	10 min
E	5 min	20 min
F	10 min	30 min

Note! Before changing the delay settings, switch always off the supply voltage.

Installation instruction
for occupancy sensor PIR-TF-25-360

CE

INSTALLATION HINTS

Do not install where the detector is exposed to direct sunlight or directly above strong sources of heat.
Make sure the detection area does not have obstruction (plants, large pieces of furniture, curtains etc.) which may block the pattern of coverage.

INSTALLATION & WALK TEST
Installation

1. Open the front cover by loosing the locking screw. Remove the circuit board from the bottom case.
2. Punch out the adequate knockouts and mount the bottom case firmly with the screw provided at the selected position in the ceiling.
3. Replace the circuit board and connect the wires to the corresponding terminals.
4. Remember to seal all unused cable entries and screw holes in order to stop false alarms which can be caused by insects, etc.
5. Replace front cover, then walk test can be proceeded.
6. Note! Before changing the delay settings, **switch off** the supply voltage.

Walk Test

Apply the power supply and wait 30 seconds for the unit to warm up.
The LED will blink (long and short) during warm up period. Ensure the jumper head connectors of ON & OFF delays are placed at ”A” position (shortest time). After the warm up expires, walk across the detection zones (invisible) at normal speed. The LED will lit whenever the sensor detects the motion.

Location of the sensor

Mounting heights	2.4m	3.0m	3.6m	4.2m
Coverage (dia)	6.0m	7.5m	9.0m	10.5m

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Pressure sensors

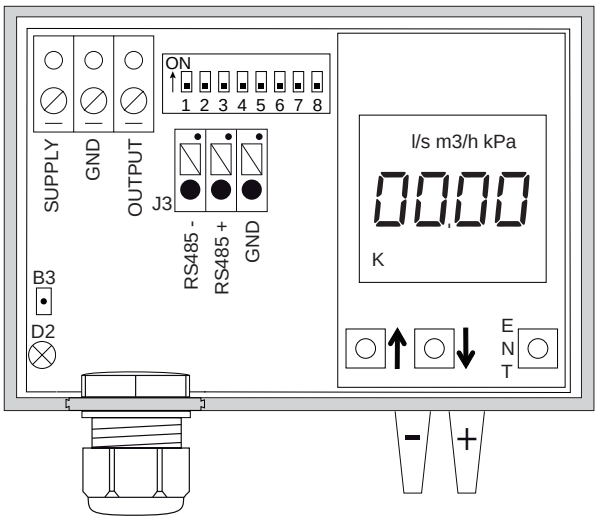
CPS-D-24V PRESSURE SENSOR WITH ILLUMINATED DISPLAY

Differential air pressure sensor for ventilation installations. 8 possible pressure range settings. 0-2100 Pa. Adjustable K factor for volume measurement. Modbus RTU.

TECHNICAL DATA

Supply voltage:	24V AC/DC ±10%
Power consumption:	Approx. 60 mA
Output signal:	0-10V/4-20 mA
Communication:	Modbus RTU via RS485
Pressure ranges:	0-50/100/300/500/700/1000/ 1500/2100 Pa
Volume ranges:	0-100/500/1000/5000/9999/ 20000/50000 l/s eller m^3/h
Accuracy:	Normally ±1% of measured pressure
Display:	LCD, backlit
LED green:	Fixed light: normal function Flashing: zero pressure calibration
Ambient temperature:	-20 to +50°C
Cable inputs:	1xM16, 5-10 mm cable
Dimensions (WxHxD):	74x91x36xmm
Weight:	Approx. 100 g
Protection:	IP54

WIRING DIAGRAM



PROPERTIES

- **8 possible pressure range settings**
- **Background lit display**
- **Output signal can be displayed**
- **Volume calculation with K factor**
- **Modbus RTU**
- **High accuracy**
- **Ambient temperature -20 to +50**°C
- **Easy to install enclosure**
- **Removable cable port and terminal block**
- **0-10V output signal**
- **4-20 mA output signal**
- **4 signal damping choices**
- **Supplied with 2 m hose and 2 nipples**

FUNCTION

The CPS-D-24V pressure sensor has an integrated differential pressure element that is temperature compensated for high accuracy and linearity. The required pressure range is set with a DIP switch. The output signal (0-10V or 4-20 mA) and required signal damping are also set with the DIP switch. Under the cover is a backlit display and 3 program buttons for display settings, Modbus communication and calculation of volume. The display can be programmed to show litres per second or m^3 per hour. The display can also be programmed to alternately show the current pressure and the current output signal as a percentage.

The terminal block and enclosure cable port (with mounted M16 cable fitting) are removable for easier installation. The enclosure cover is hinged at the top, has a snap fastener at the bottom and catches to keep the cover in raised position.

USE

CPS-D-24V is intended for measuring differential pressure in ventilation installations.

MOUNTING

CPS-D-24V is for wall mounting. See the installation instructions included with the product for more information.

MAINTENANCE

CPS-D-24V is maintenance free. Zero calibration can be carried out if necessary.

ORDERING EXAMPLE

Part code	**Name**
CPS-D-24V	Pressure sensor with display 0-2100 Pa, 24V

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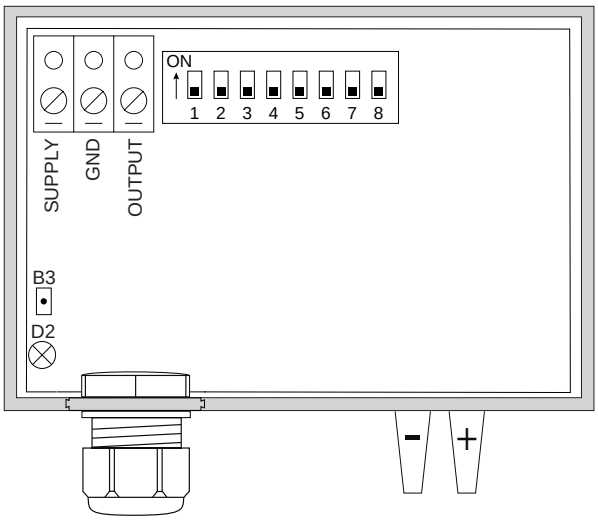
CPS-24V PRESSURE SENSOR

Differential air pressure sensor for ventilation installations.
8 possible pressure range settings. 0-2100 Pa.

TECHNICAL DATA

Supply voltage:	24V AC/DC ±10%
Power consumption:	Approx. 40 mA
Output signal:	0-10V/4-20 mA
Pressure ranges:	0-50/100/300/500/700/1000/ 1500/2100 Pa
Accuracy:	Normally ±1% of measured pressure
LED green:	Fixed light: normal function Flashing: zero pressure calibration
Ambient temperature:	-20 to +50°C
Cable inputs:	1xM16, 5-10 mm cable
Dimensions (WxHxD):	74x91x36xmm
Weight:	Approx. 90 g
Protection:	IP54

WIRING DIAGRAM



PROPERTIES

- **8 possible pressure range settings**
- **High accuracy**
- **Ambient temperature -20 to +50**°C
- **Easy to install enclosure**
- **Removable cable port and terminal block**
- **0-10V output signal**
- **4-20 mA output signal**
- **4 signal damping choices**
- **Supplied with 2 m hose and 2 nipples**

FUNCTION

The CPS-24V pressure sensor has an integrated differential pressure element that is temperature compensated for high accuracy and linearity. The required pressure range is set with a DIP switch. The output signal (0-10V or 4-20 mA) and required signal damping are also set with the DIP switch.

The terminal block and enclosure cable port (with mounted M16 cable fitting) are removable for easier installation. The enclosure cover is hinged at the top, has a snap fastener at the bottom and catches to keep the cover in raised position.

USE

CPS-24V is intended for measuring differential pressure in ventilation installations.

MOUNTING

CPS-24V is for wall mounting. See the installation instructions included with the product for more information.

MAINTENANCE

CPS-24V is maintenance free. Zero calibration can be carried out if necessary.

ORDERING EXAMPLE

Part code	**Name**
CPS-24V	Pressure sensor 0-2100 Pa, 24V

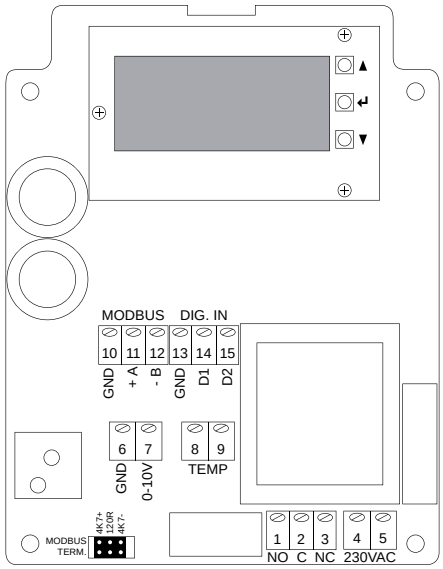
CALAIR-PR-230V PRESSURE REGULATOR

With Modbus RTU communication, alarm relay and digital inputs.
Complete with hose and hose nipples.

TECHNICAL DATA

Supply voltage:	230V AC ±10%, 50 Hz
Power consumption:	Max 6 W
Output signal:	0-10V, (minimum input impedance 10 kΩ)
Built in glass fuse 5x20 mm:	50 mA, delay action fuse
Alarm relay:	Change-over 5 A, 250V
Communication:	Modbus RTU via RS485
Digital inputs:	2 inputs
Pressure range:	0-2000 Pa
Display:	OLED, yellow text on black background
Outdoor temp. sensor:	Pt1000 and NTC (as for previous CALAIR-PR)
Ambient temperature:	-30 to +50°C
Cable inputs:	1xM20, 3xM12
- 'Knockouts':	1xM16, 1xM12
Dimensions (WxHxD):	114x195x52 mm
Weight:	Ca. 500 g
Protection:	IP54

WIRING DIAGRAM



CHARACTERISTICS

- **Clear OLED display**
- **Simple programming**
- **Modbus communication**
- **2 digital inputs**
- **Alarm relay – selectable settings**
- **Alarm log**
- **Control range: 0-2000 Pa**
- **Adjustable control rate**
- **Supplied complete with 2 m hose and 2 hose nipples**

FUNCTION

The CALAIR-PR-230V pressure regulator measures differential pressure and controls ventilation system fans via a 0-10V signal.

Compensation of the setpoint for outdoor temperatures requires the connection of an outdoor temperature sensor to the CALAIR-PR-230V. A Pt1000 sensor or a NTC sensor of the type used with our previous model, the CALAIR-PR, can be used. Outdoor temperature values can also be written to the CALAIR-PR-230V via Modbus.

CALAIR-PR-230V has two digital inputs (DI1 and DI2) which can be programmed for different functions: motor alarm via the motor's thermal cut-out or changed force setpoint.

CALAIR-PR-230V can be read and be programmed via Modbus RTU (RS485).

The control rate is adjustable to allow adaption to different pressure control applications such as roof fans. All settings/ programming are saved in the event of a power failure.

CALAIR-PR-230V is fitted with an alarm relay with potential-free change-over contacts which can be programmed for different alarm indications, such as high and low pressure alarms. The alarm relay is activated under normal operating conditions and de-energizes in the event of an alarm or power failure. The ten last alarms are recorded and saved in an alarm log.

The display, under normal operating conditions, shows a summary of relevant operational information such as setpoints and actual values, 0-10V output signal and outdoor temperature.

Three push buttons are used to change settings on and program the CALAIR-PR-230V. The buttons can also be operated when the cover has been removed. The top ▲ and bottom ▼ buttons are used to scroll through the menu system and change settings (such as setpoints). The middle button ↵ is used to confirm and execute.

USE

Pressure control of ventilation systems, roof fans etc.

ORDERING EXAMPLE

Item code	Designation
CALAIR-PR-230V	Pressure regulator 230V
CALAIR-PR-230V-PKT	Pressure regulator 230 incl. outdoor temperature sensor

ACCESSORIES

Item code	Designation
CTS-OW-PT1000	Outdoor temperature sensor Pt1000

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PRH CONSTANT PRESSURE CONTROLLER

Complete with controller unit and external pressure sensor PTH-3202

CE

MOUNTING AND PROGRAMMING

Please see separate instruction.

MAINTENANCE

PRH is maintenance-free.

INSTALLATION

PRH Installation

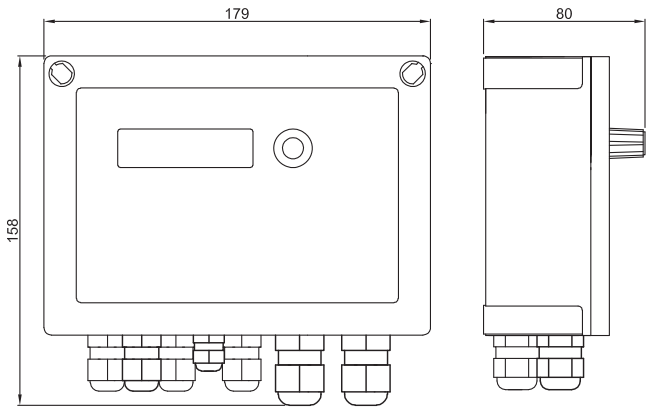
The PRH constant pressure controller should be mounted on a wall using screws in the corners of the unit. The surface on which the unit is mounted must be plane. The PTH pressure transducer should normally be installed nearby the most remote cooker hood and connected to the ventilation duct using the accompanying air tube and tube connector. To obtain the best possible results, pressure must be measured where there is least risk of turbulence, i.e. in the centre of the ventilation duct and at a distance of at least three times the width of the duct from bends and branches.

Control signal cable installation

The transducer cable and any other control signal cables may be up to 50 m in length. Control signal cables should not be run in parallel to mains carrying cables as voltage signals from these may affect the correct functioning of both the constant pressure controller and the pressure transducer.

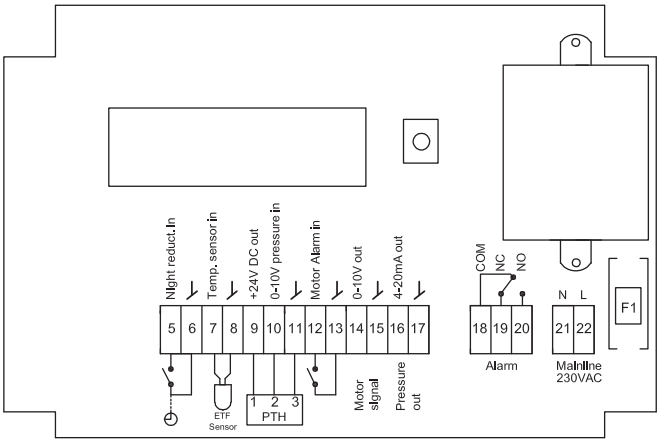
DIMENSIONS

(mm)

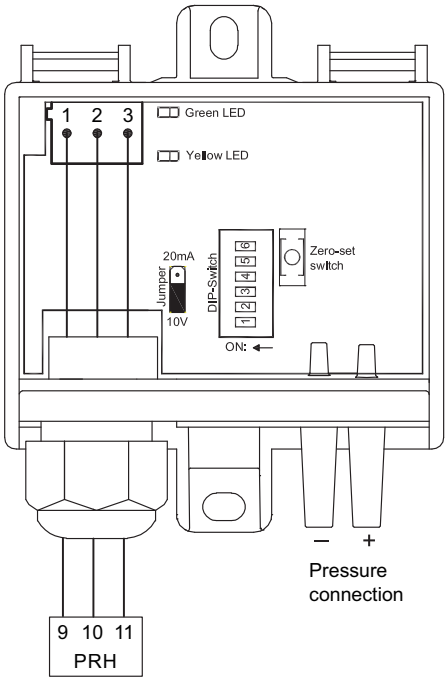


WIRING DIAGRAM

Regulator unit PRH



Pressure sensor PTH-3202



PSW DIFFERENTIAL PRESSURE SWITCHES

For several pressure ranges

TECHNICAL DATA

Maximum pressure:	50 kPa
Operating current/voltage	
PSW-200:	0,1 A / 250 VAC (PSW-200)
PSW-300:	3 A (2A inductive) / 250 VAC
PSW-600:	3 A (2A inductive) / 250 VAC
PSW-1500:	3 A (2A inductive) / 250 VAC
Admissible media:	Air and non-aggressive gases
Cabel entry:	1 x PG9
Pressure connections:	2 x Ø 5 mm
Operating temp.:	-20 to +60°C
Storage temp.:	-40 to +85°C
Service life:	> 1 000 000 switching operations
Material	
Housing:	ABS
Cover:	PC
Membrane:	Silikon
Duct connectors:	ABS
Tubing:	PVC, soft
Approval:	CE according to EC directive for low voltage 73/32/EEC
Dimensions (WxHxD):	73x105x63 mm
Weight:	150 g (350 g with accessories)
Protection:	IP54

CHARACTERISTICS

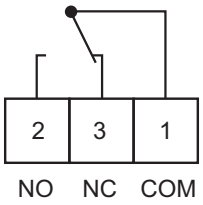
- **Easy to install with outside mounting brackets**
- **Complete delivered with tube, screws and duct connectors**

MOUNTING POSITION

The pressure switch is factory-calibrated in the vertical position. If installed horizontally, this will affect the switching pint as follows:

- with cover facing upwards, switching point is 15 Pa higher than scale.
- with cover facing downwards, switching point is 15 Pa lower than scale.

WIRING DIAGRAM



If the differential pressure is higher than set value, the relay contacts changes to 1 – 2

ORDERING EXAMPLE

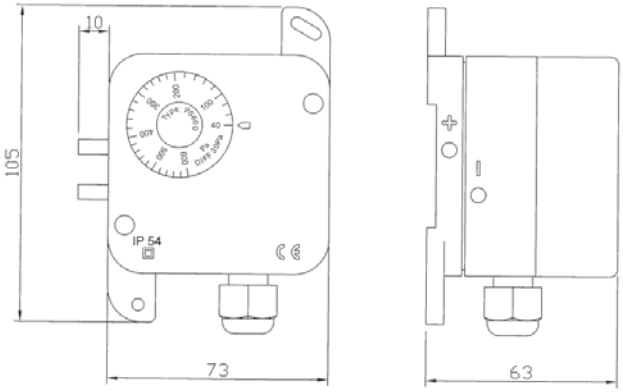
Item code	Pressure range	Switching differential
PSW-200	20-200 Pa	10 Pa
PSW-300	30-300 Pa	20 Pa
PSW-600	40-600 Pa	30 Pa
PSW-1500	100-1500 Pa	80 Pa

ACCESSORIES

2 fixing screws
2 plastic duct connectors
2 m tube Ø 4 / 7 mm

DIMENSIONS

(mm)



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Water leakage system

CLA-24/230V LEAKAGE ALARM

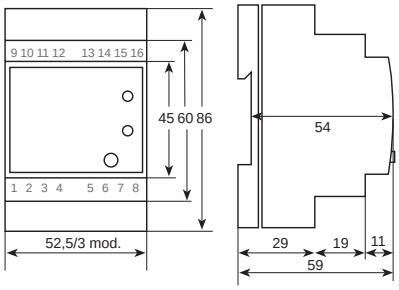
which activates an alarm for leakages of electrically conductive fluids such as water.

TECHNICAL DATA

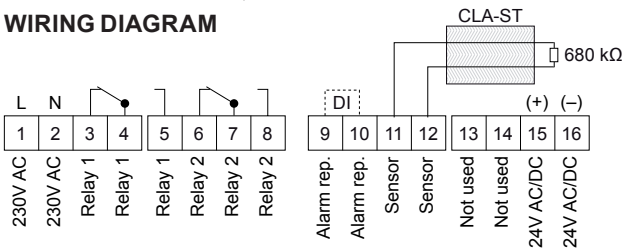
Supply voltage:	24V AC/DC or 230V AC
Power consumption:	4 W
Relay outputs:	2x5 A, 250V potential free switch-over contacts
Max. sensor tape length:	100 metres
End resistance:	680 kOhm
LED indications	
Normal state, in operation:	Green, steady light
Short circuit in sensor tape:	Green, flashing at 1 Hz
Interruption in sensor tape:	Green, flashing at 1 Hz
Alarm:	Red, steady light
Reset alarm, wet sensor tape:	Red, flashing at 1 Hz
Alarm repeated after 24h:	Red, flashing at 4 Hz
Ambient temperature:	0-50°C
Enclosure material:	ABS
Assembly:	DIN rail, standard enclosure
Weight:	220 gram
Protection:	IP20

DIMENSIONS

(mm)



WIRING DIAGRAM



The relay outputs are shown in alarm/no power on condition. Max 5A, 250V

CHARACTERISTICS

- **Multi-voltage: Supply voltage 24V AC/DC or 230V AC**
- **Selectable reset: auto/manual**
- **Alarm repeated after 24 h when manually reset**
- **2 alarm relays (energized in no-alarm condition)**

FUNCTION

CLA measures the resistance in a sensor tape (CLA-ST) which consists of 2 conductors weaved into a textile strip with an end resistance of 680 kOhm at the farthest end. The resistance changes when water comes into contact with the textile strip and the CLA activates an alarm.

The CLA relays activate alarms and the green LED flashes at 1 Hz when there is an interruption or short circuit in the sensor tape.

The sensor tape can be up to 100 metres long.

Two functions can be selected via the digital input DI:

Digital input (DI) open

Automatic Reset and optional manual Reset of alarm relays:

The alarm automatically resets when the sensor tape has dried. Press Reset to reset the relays before the sensor tape dries. The red LED flashes at 1 Hz until the sensor tape has dried. The LED then switches off. CLA is then reset to normal state.

Digital input (DI) short-circuited

Manual Reset with 24 hour alarm repetition:

Alarms activated on the CLA must be reset manually either via pressing Reset or by interrupting the supply voltage. Pressing Reset resets the relays and the red LED flashes at 1 Hz if the sensor tape still is wet. If the sensor tape is still wet 24 hours after Reset is pressed, then the alarm relays are re-activated and the red LED flashes at 4 Hz. If the sensor tape has dried within 24 hours after Reset is pressed, the Red LED switches off and CLA is reset to the normal state.

USE

Monitoring of electrically conductive fluid leakage, such as water. Application example: computer centres, archives, lofts, floor/ceiling structures.

MOUNTING

CLA is fitted to a DIN rail and adapted to ingress protection standards. The sensor tape is installed at the lowest point at the monitoring site.

MAINTENANCE

CLA is maintenance free.

ORDERING EXAMPLE

Item code	Designation
CLA-24/230V	Leakage alarm 24V AC/DC or 230V AC

ACCESSORIES

Item code	Designation
CLA-ST	Moisture sensor tape, sold by the metre
ETUK-1	IP54 enclosure for CLA-24/230V
PL400	Glue for moisture sensor tape

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Thermostats

CMT-24/230V UNIVERSAL THERMOSTAT

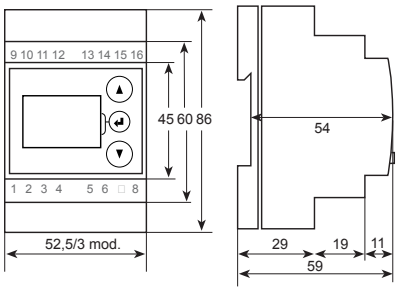
with 10 selectable functions and multi-voltage: 24V AC/DC and 230V AC.

TECHNICAL DATA

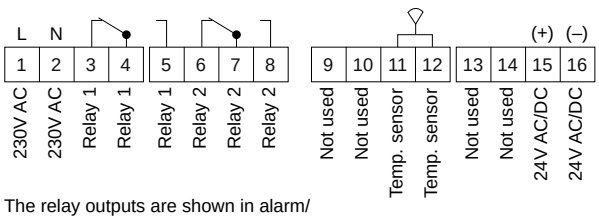
Supply voltage:	24V AC ±10%, 24V DC ±5% and 230V AC ±10% 50-60 Hz
Relay outputs:	250V ~ 5 A resistive loading, potential-free alternating
Power consumption:	4W
Temperature range:	-99 to +600°C
Ambient temperature:	0 to +40°C
Selectable temp.sensors:	Pt1000 (factory setting), Pt100, Ni1000, NTC (Calectro type: 22/33/44/55/99) and PTC (Calectro type: 95)
Switching differential:	0-15°C in stages of 0.2°C
Installation:	DIN rail, Norm-enclosure
Dimensions WxHxD:	52.5x86x59 mm
Weight:	240 g.
Enclosure class:	IP20

DIMENSIONS

(mm)



WIRING DIAGRAM



The relay outputs are shown in alarm/ no power on condition. Max 5A, 250V

FEATURES

- **Multi-voltage 24V AC/DC and 230V AC.**
- **10 different selectable functions.**
  - **1-stage heating thermostat**
  - **1-stage cooling thermostat**
  - **2-stage heating thermostat**
  - **2-stage cooling thermostat**
  - **2-stage heating and cooling thermostat**
  - **1-stage cooling thermostat with low temperature alarm**
  - **1-stage heating thermostat with overheating alarm**
  - **2-stage overheating alarm**
  - **High and low temperature alarm**
  - **Gutter thermostat**
- **Very easy configuration**
- **Backwards compatible with Calectro's other thermostats**
- **2 alternating potential-free relays**
- **Display**
- **Adjustable hysteresis 0-15°C**
- **Built-in timer function**
- **Fine-adjustment of the temperature measurement**

FUNCTION

CMT can be powered by 24V AC/DC via terminal 15-16 or 230V AC via terminal 1-2. CMT has two alternating potential-free relay outputs (5A, 250V) and has an adjustable hysteresis (switching differential) which is centred over the set point.

CMT carries out a self-test during start-up and following change of temperature sensor. Three bars blink at the lower part of the display. Once the self-test has finished the actual temperature will be displayed. In the case of temperature sensor interruption the code Er0 is displayed and in the case of short-circuit Er1 is displayed.

The set point for relay 1 is shown in the upper left-hand corner, and for relay 2 in the upper right-hand corner of the display. The 'less-than' symbol (<), to the left of the set point, indicates that the relay is calling for heat (or starts an alarm) when the temperature is lower than the set point. The 'greater-than' symbol (>) indicates that the relay is calling for cooling (or starts an alarm) when the temperature is higher than the set point.

CMT has an adjustable hysteresis (switching differential) which is centred over the set point. The factory setting for the heating thermostat is 0.6°C and for the cooling thermostat 1.0°C. No hysteresis is used in alarm functions.

If necessary the temperature measurement in the CMT can be adjusted. Range: -3.0°C to +3.0°C in steps of 0.1°C.

In the alarm applications (applications 6-9) it is possible to set a delayed alarm period (0-120 minutes). for example to be able to defrost without activating the alarm. In the application for the gutter thermostat (application 10) an after-running time can be set (0-120 minutes) to ensure de-icing.

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CMT-24/230V UNIVERSAL THERMOSTAT

with 10 selectable functions and multi-voltage: 24V AC/DC and 230V AC.

CMT has a monitor for the temperature sensor and disconnects from heating or cooling in the event of short-circuit or interruption in the sensor circuit. In the alarm applications (applications 6-9) the relays are deactivated (enters alarm condition) in the event of sensor failure. In application 10 (gutter thermostat) the relays call for heating in the event of sensor failure, to counteract the formation of icicles.

For further information and settings refer to the installation instructions accompanying the product.

USE

CMT is a universal thermostat with 10 built-in and selectable functions.

Appl. 1 1-stage heating thermostat

Appl. 2 1-stage cooling thermostat

Appl. 3 2-stage heating thermostat

Appl. 4 2-stage cooling thermostat

Appl. 5 2-stage heating and cooling thermostat

Appl. 6 1-stage cooling thermostat with low temperature alarm

Appl. 7 1-stage heating thermostat with overheating alarm

Appl. 8 2-stage high temperature alarm

Appl. 9 High and low temperature alarm

Appl. 10 Gutter thermostat

INSTALLATION

CMT is mounted on a DIN rail and is adapted to Norm enclosures.

MAINTENANCE

CMT is maintenance-free.

ORDERING EXAMPLE

Item code	Designation
CMT-24/230V	Multi-thermostat

ACCESSORIES

Item code	Designation
CTS-BC-50-PT1000	Temperature sensor, 50mm bulb 1.5m
CTS-RW-PT1000	Temperature sensor, room installation
CTS-OW-PT1000	Temperature sensor, outdoors/industry
ETUK-1	IP55 norm enclosure, 3 modules

CTA-24/230V HIGH TEMPERATURE ALARM

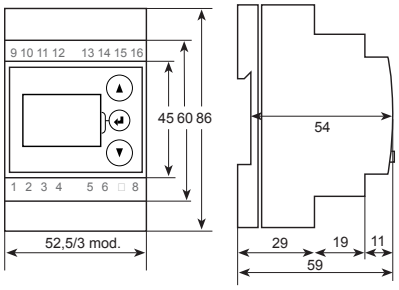
with 2 adjustable alarm temperatures and multi-voltage: 24V AC/DC and 230V AC.

TECHNICAL DATA

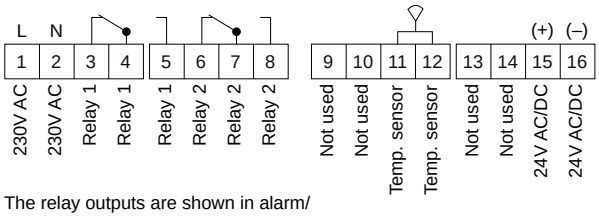
Supply voltage:	24V AC ±10%, 24V DC ±5% and 230V AC ±10% 50-60 Hz
Relay outputs:	250V ~ 5 A resistive loading, potential-free alternating
Power consumption:	4W
Temperature range:	-99 to +600°C
Ambient temperature:	0 to +40°C
Selectable temp.sensors:	Pt1000 (factory setting), Pt100, Ni1000, NTC (Calectro type: 22/33/44/55/99) and PTC (Calectro type: 95)
Installation:	DIN rail, Norm-enclosure
Dimensions WxHxD:	52.5 x 86 x 59 mm
Weight:	240 g.
Enclosure class:	IP20

DIMENSIONS

(mm)



WIRING DIAGRAM



The relay outputs are shown in alarm/ no power on condition. Max 5A, 250V

FEATURES

- **Multi-voltage 24V AC/DC and 230V AC.**
- **Very easy configuration**
- **Backwards-compatible with Calectro's high temperture alarms**
- **2 alternating potential-free relays**
- **Display**
- **Built-in timer function**
- **Fine-adjustment of the temperature measurement**

FUNCTION

CTA can be supplied with 24V AC/DC via terminal 15-16 or 230V AC via terminal 1-2. CTA has two alternating potential-free relay outputs (5A, 250V).

During start-up and when replacing a temperature sensor CTA conducts a self-test. Three bars blink at the lower part of the display. Once the self-test has finished the actual temperature will be displayed. In the case of temperature sensor interruption the code Er0 is displayed and in the case of short-circuit Er1 is displayed.

The alarm reference values for relay 1 are shown in the upper left-hand corner and for relay 2 in the upper right-hand corner of the display. The "greater than" symbol (>), to the left of the alarm reference values, indicates that the relays enter into an alarm condition when the temperature is higher than the alarm temperatures.

If necessary the temperature supply to the CTA can be adjusted. Range: -3.0°C to +3.0°C in steps of 0.1°C.

It is possible to set an alarm delay time (0-120 minutes, factory setting: 0 minutes).

CTA monitors the temperature sensor and deactivates the relays (enters alarm condition) in the event of a short-circuit or interruption in the sensor circuit. In the case of interruption the thermometer sensor shows Er0 and in the case of short-circuit Er1 is displayed.

USE

CTA is an overheating alarm for use in fire monitoring, industrial applications, etc.

INSTALLATION

CTA is designed for mounting on a DIN rail and is adapted for Norm enclosures.

MAINTENANCE

CTA is maintenance-free.

ORDERING EXAMPLE

Item code	**Designation**
CTA-24/230V	High temperature alarm

ACCESSORIES

Item code	**Designation**
ETUK-1	IP55 norm enclosure, 3 modules

Pt1000 Temperature sensors: please see data sheets of our temperature sensors for item codes.

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Temperature sensors

PRODUCT OVERVIEW PT1000 TEMPERATURE SENSORS

CE

Type of sensor	Item code	Temp. range	Pipe length	Cable	Housing	IP class	Info
Room sensor							
	CTS-RW-PT1000	-30 to +70°C			Yes	IP20	White
	CTS-RB-PT1000	-30 to +70°C			Yes	IP20	Black
	CTS-RG-PT1000	-30 to +70°C			Yes	IP20	Grey
Outdoor sensor with spacer bracket							
	CTS-OW-PT1000	-30 to +70°C			Yes	IP54	
Duct sensor with variable insertion length, Ø 4 mm							
	CTS-DC-100-PT1000	-30 to +80°C	Max. 100 mm	1,5 m		IP65	
	CTS-DC-200-PT1000	-30 to +80°C	Max. 200 mm	1,5 m		IP65	
	CTS-DC-300-PT1000	-30 to +80°C	Max. 300 mm	1,5 m		IP65	
	CTS-DH-100-PT1000	-30 to +100°C	Max. 100 mm		Yes	IP54	
	CTS-DH-200-PT1000	-30 to +100°C	Max. 200 mm		Yes	IP54	
	CTS-DH-300-PT1000	-30 to +100°C	Max. 300 mm		Yes	IP54	
	CTS-A-1/4-1/2 Adapter inv. ¼", utv. ½"						
Immersion sensor with variable insertion length, Ø 4 mm, ¼"							
	CTS-IC-100-PT1000	-30 to +80°C	Max. 100 mm	1,5 m		IP65	
	CTS-IC-200-PT1000	-30 to +80°C	Max. 200 mm	1,5 m		IP65	
	CTS-IC-300-PT1000	-30 to +80°C	Max. 300 mm	1,5 m		IP65	
	CTS-IH-100-PT1000	-30 to +100°C	Max. 100 mm		Yes	IP54	
	CTS-IH-200-PT1000	-30 to +100°C	Max. 200 mm		Yes	IP54	
	CTS-IH-300-PT1000	-30 to +100°C	Max. 300 mm		Yes	IP54	
Strap-on sensor incl. 2 tie straps & gap filler, Ø 4 mm							
	CTS-CC-PT1000	-30 to +80°C	50 mm	1,5 m		IP65	
Bulb sensor, Ø 4 mm							
	CTS-BC-50-PT1000	-30 to +80°C	50 mm	1,5 m		IP65	

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CTS-Rx-PT1000 TEMPERATURE SENSOR

for room installation, Pt1000 sensor element

PROPERTIES

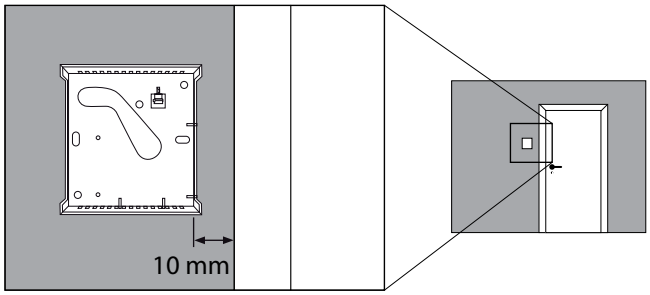
- **Pt1000 sensor element**
- **Simple installation**
- **Available in colours; white, black and grey**
- **Snap-on/off function on cover**

USE

CTS-R temperature sensor is used for measuring air temperatures.

INSTALLATION

CTS-R temperature sensor is fitted with the bars vertical to ensure the throughflow of air. The sensor is fitted approximately 10 mm from any doorframe or wall to ensure easy access to the cover.



The housing has a cable entry on the backside for connection cables coming from a wall terminal box.

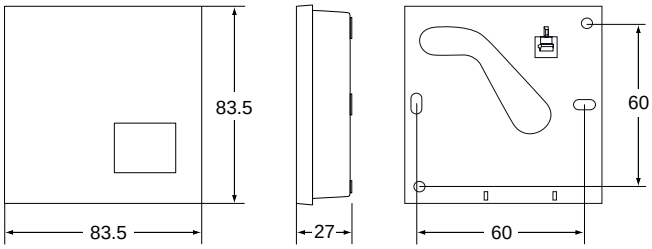
If the connection cable is installed on the outside of the wall, there are bosses on the backside of the housing that makes a space of approx. 1 mm between the wall and the housing for the conductors. When the conductors are thicker than 1 mm, use the space between the ventilation bars as cable entry. If needed, remove one bar for more space.

TECHNICAL DATA

Sensor element:	1000 Ohm at 0°C DIN EN 60751, class B
Temperature range:	-30 to 70°C
Casing materials:	ABS
Colour:	White, black and grey
Weight:	51 g
Protection class:	IP20

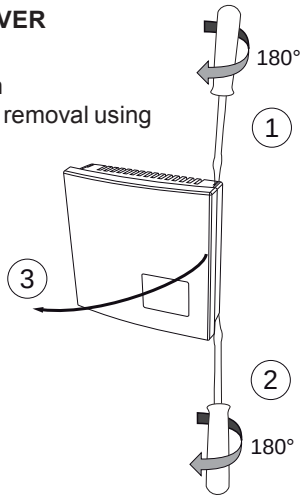
DIMENSIONS

(mm)



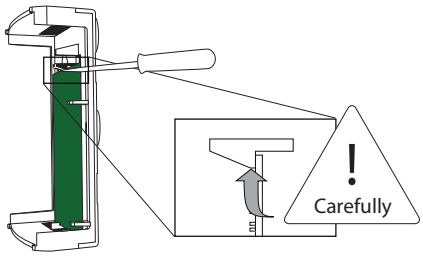
OPENING THE COVER

The cover has a snap-on/off function which ensures easy removal using a screwdriver.



REMOVAL OF PRINTED CIRCUIT CARD

Detach the sensor's printed circuit card by carefully loosening the lock catches.



ORDERING EXAMPLE

Item code	**Designation**
CTS-RW-PT1000	Room sensor, white
CTS-RB-PT1000	Room sensor, black
CTS-RG-PT1000	Room sensor, grey

CTS-OW-PT1000 TEMPERATURE SENSOR

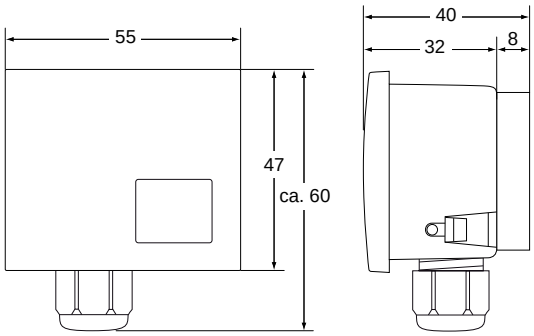
Outdoor temperature sensor with spacer bracket,
Pt1000 sensor element

TECHNICAL DATA

Sensor element:	1000 Ohm at 0°C DIN EN 60751, class B
Material housing:	PC/ABS
Temperature range:	-30°C to +70°C
Weight:	42 g
Protection class:	IP54

DIMENSIONS

(mm)



PROPERTIES

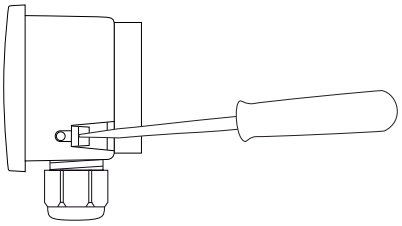
- **Pt1000 sensor element**
- **Simple installation**
- **Cover with snap locking**
- **Delivered with spacer bracket**

USE

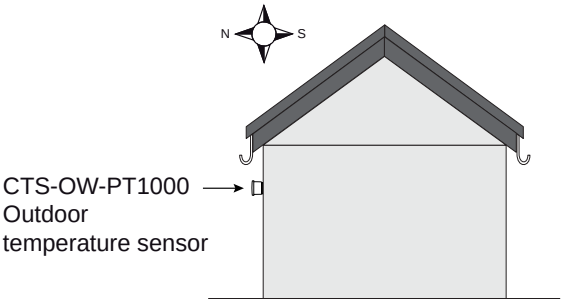
CTS-OW-PT1000 is a sensor for outdoor temperature measurement. It is delivered with a spacer bracket to minimize the temperature influence from the surface where the sensor is mounted, e.g. a buildning's exterior wall.

INSTALLATION

The housing's cover is removed by pressing in the lock catches on the side of the case.



Place the CTS-OW-PT1000 on the north side of the building where it is not exposed to direct sunlight.



ORDERING EXAMPLE

Item code	**Designation**
CTS-OW-PT1000	Outdoor temperature sensor with spacer bracket

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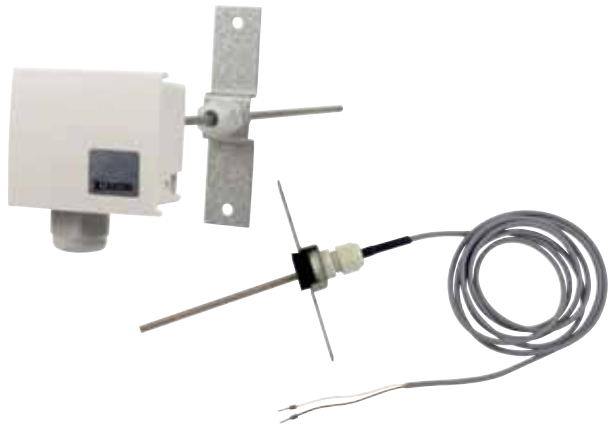
CTS-Dx-PT1000 TEMPERATURE SENSOR

for ventilation ducts, with variable insertion length and mounting bracket, Pt1000 sensor element



PROPERTIES

- **Pt1000 sensor element**
- **Simple installation**
- **Variable insertion length**

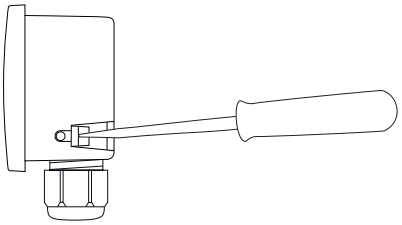
USE

CTS-D temperature sensor is used for measuring air temperatures in ventilation ducts.

INSTALLATION

The sensor body has a variable insertion length, max. 100, 200 or 300 mm depending on model.

The housing's cover is removed by pressing in the lock catches on the side of the case.



TECHNICAL DATA

Sensor element:	1000 Ohm at 0°C DIN EN 60751, class B
Insertion length:	Max. 100, 200 and 300 mm
Diameter, pipe:	4 mm
Materials:	
Pipe:	Acid proof steel
Fitting plate:	Aluzinc, M12 polyamide screw connectors

Variant with cable CTS-DC-x

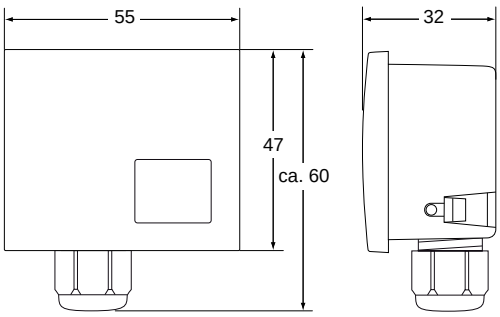
Temperature range:	-30°C to +80°C
Cable length:	1.5 m
Cable:	Halogen free Polyolefin
Protection class:	IP65

Variant with housing CTS-DH-x

Temperature range:	-30°C to +100°C
Cable gland M16:	5-10 mm
Housing:	PC/ABS
Protection class:	IP54

DIMENSIONS

(mm)



ORDERING EXAMPLE

Item code	Designation
CTS-DC-100-PT1000	Duct sensor 100mm, 1.5m cable
CTS-DC-200-PT1000	Duct sensor 200mm, 1.5m cable
CTS-DC-300-PT1000	Duct sensor 300mm, 1.5m cable
CTS-DH-100-PT1000	Duct sensor 100mm, housing
CTS-DH-200-PT1000	Duct sensor 200mm, housing
CTS-DH-300-PT1000	Duct sensor 300mm, housing

CTS-Ix-PT1000 TEMPERATURE SENSOR

Immersion sensor for fluids, with variable insertion length and clamp ring coupling, Pt1000 sensor element

TECHNICAL DATA

Sensor element:	1000 Ohm at 0°C DIN EN 60751, class B
Insertion lengths, max:	100, 200 and 300 mm
Diameter, pipe:	4 mm
Materials:	
Pipe:	Acid proof steel
Clamp ring coupling:	Nickel plated brass
Time constant:	Approx. 5 s
Pressure class:	PN 16
Connection:	1/4”RG

Variant with cable CTS-IC-x

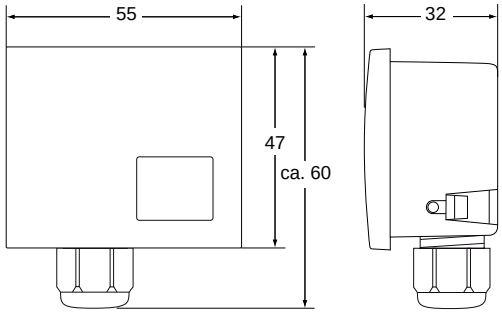
Temperature range:	-30°C to +80°C
Cable length:	1.5 m
Cable:	Halogen free Polyolefin
Protection class:	IP65

Variant with housing CTS-IH-x

Temperature range:	-30°C to +100°C
Cable gland M16:	5-10 mm
Housing:	PC/ABS
Protection class:	IP54

DIMENSIONS

(mm)



PROPERTIES

- **Pt1000 sensor element**
- **Simple installation**
- **Variable insertion length**

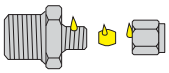
USE

CTS-I temperature sensor is used for measuring temperatures in fluids.

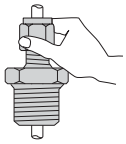
INSTALLATION

The sensor body has a variable insertion length, max. 100, 200 or 300 mm depending on model.

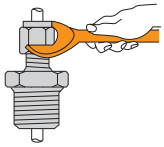
Installation instructions for clamp ring coupling:



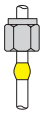
1. Lubricate nipple, clamp ring and pipe nut with a little oil.



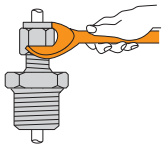
2. Tighten pipe nut by hand.



3. Tighten pipe nut one and a quarter of a turn using a 10 mm spanner.

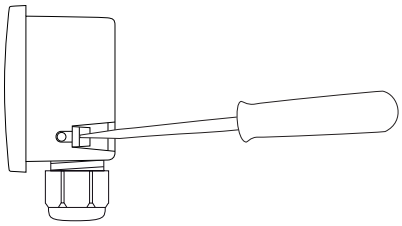


4. Unscrew the pipe nut to check that the clamp ring is straight on the pipe. The clamp ring track is to be evenly distributed around the pipe.



5. Reassemble the nut and tighten an additional quarter turn.

The coupling housing's cover is removed by pressing in the lock catches on the side of the case.



ORDERING EXAMPLE

Item code	Designation
CTS-IC-100-PT1000	Fluid immersion sensor 100mm, 1.5m cable
CTS-IC-200-PT1000	Fluid immersion sensor 200mm, 1.5m cable
CTS-IC-300-PT1000	Fluid immersion sensor 300mm, 1.5m cable
CTS-IH-100-PT1000	Fluid immersion sensor 100mm, housing
CTS-IH-200-PT1000	Fluid immersion sensor 200mm, housing
CTS-IH-300-PT1000	Fluid immersion sensor 300mm, housing
CTS-A-1/4-1/2	Adapter int. 1/4”, ext. 1/2”

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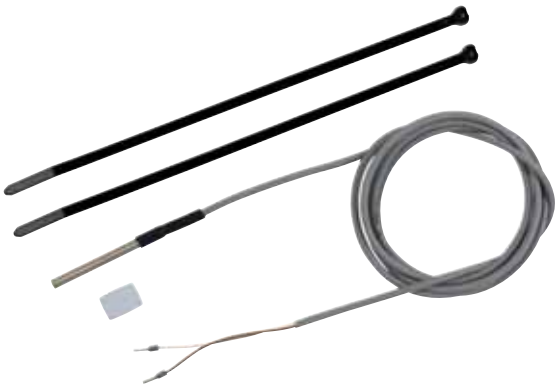
CTS-xC-PT1000 TEMPERATURE SENSOR

Bulb sensor and strap-on temperature sensor, Pt1000 sensor element



TECHNICAL DATA

Sensor element:	1000 Ohm at 0°C DIN EN 60751, class B
Length:	50 mm
Diameter, pipe:	4 mm
Materials:	
Pipe:	Acid proof steel
Cable:	Halogen free Polyolefin
Time constant:	Approx. 5 s
Pressure class:	PN 16
Temperature range:	-30°C to +80°C
Cable length:	1.5 m
Protection class:	IP65

Strap-on version CTS-CC-PT1000

Heat conducting material:	10x15 mm
Tie straps max. temp:	100°C

PROPERTIES

- **Pt1000 sensor element**
- **Simple installation**

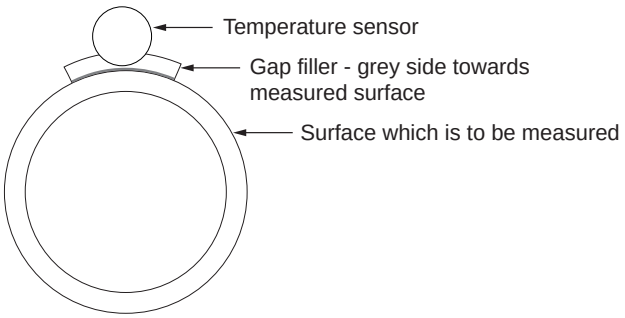
USE

CTS-BC-50-PT1000 is a universal temperature sensor with a 50 mm acid proof bulb.

CTS-CC-PT1000 temperature sensor is used for measuring surface temperatures.

INSTALLATION

CTS-CC-PT1000 is supplied with gap filler and high temperature tie straps for attachment. The grey side of the gap filler is to be towards the surface which is to be measured.



ORDERING EXAMPLE

Item code	Designation
CTS-BC-50-PT1000	Bulb sensor 50mm, 1.5m cable
CTS-CC-PT1000	Strap-on temperature sensor 50mm, 1.5m cable, 2 tie straps & gap filler

Product type list

Product type list

Smoke detection

Smoke detectors for duct and ceiling mounting

Item code	Designation	Supply	Page
UG-3-A4O	Stand-Alone duct smoke detector, optical, service alarm	24VAC/DC	8
UG-3-A5O	Stand-Alone duct smoke detector, optical, service alarm	230VAC	10
UG-3-O	Duct smoke detector, optical, service alarm	ABAV-S3	12
UG-3-O-MB	Duct smoke detector, optical, service alarm, Modbus	ABAV-S3	14
EVC-PY-DA	Smoke detector module, optical, service alarm		17
UB-6	Base for EVC-PY-DA		17

Control units for smoke detectors

Item code	Designation	Supply	Page
ABAV-S3 230V	Control unit with relay outputs for smoke, service and failure	230V AC	18
ABAV-S3 24V	Control unit with relay outputs for smoke, service and failure	24V AC/DC	18

Accessories for smoke detectors

Item code	Designation	Supply	Page
UG-MB	Mounting bracket for UG-3, incl. seal 26-35		16
RDP-300	Smoke detector aerosol tester (spray)		16
LED-03	Led indication for hidden smoke detector		16
UG-COVER	Protection cover for UG-3		16
VR-0.6M	Venturi pipe for UG-3, 0,6 meter		16
VR-1.5M	Venturi pipe for UG-3, 1,5 meter		16
VR-2.8M	Venturi pipe for UG-3, 2,8 meter		16

Product type list

On demand ventilation CO2

Item code	Designation	Supply	Page
A 232 CABLE	Communication cable RS 232 for CO/CO2 sensor		20-26
A-SENSE	CO2 and temperature sensor without display	24V AC/DC	20
A-SENSE-D	CO2 and temperature sensor with display	24V AC/DC	20
A-SENSE-R	CO2 and temperature sensor, relay, without display	24V AC/DC	20
A-SENSE-R-D	CO2 and temperature sensor, relay, with display	24V AC/DC	20
A-SENSE-VAV	CO2 and temperature controller, VAV with hidden display	24V AC/DC	22
A-SENSE-VAV-D	CO2 and temperature controller, VAV with visible display	24V AC/DC	22
E-SENSE	CO2 sensor without display	24V AC/DC	24
E-SENSE-D	CO2 sensor with display	24V AC/DC	24
M-SENSE III	CO/CO2 sensor for garage, room mounting	24V AC/DC	25
UG-A-SENSE	Duct CO2 and temperature sensor without display	24V AC/DC	20
UG-A-SENSE-D	Duct CO2 and temperature sensor with display	24V AC/DC	20
UG-A-SENSE-R	Duct CO2 and temperature sensor, relay, without display	24V AC/DC	20
UG-A-SENSE-R-D	Duct CO2 and temperature sensor, relay, with display	24V AC/DC	20
UG-A-SENSE-V-D	Duct CO2 and temperature controller, VAV model with display	24V AC/DC	22
UG-M-SENSE III	CO/CO2 sensor for garage, duct mounting	24V AC/DC	25

Occupancy Sensors

Item code	Designation	Supply	Page
PIR-TFT-550-B	Occupancy sensor for wall mounting, with temperature and ON- and OFF delay	24V AC/DC	27
PIR-TF-25-360	Occupancy sensor for ceiling mounting, ON- and OFF delay	24V AC/DC	29

Product type list

Pressure sensors and regulators

Item code	Designation	Supply	Page
CPS-24V	Pressure sensor, 8 selectable pressure ranges 0 to 2100Pa	24V AC/DC	33
CPS-D-24V	Pressure sensor, 8 selectable pressure ranges 0 to 2100Pa, , with display, flow and Modbus	24V AC/DC	32
CALAIR-PR-230V	Constant pressure regulator	230V AC	34
PSW-200	Differential pressure switch 20-200Pa	250V AC	36
PSW-300	Differential pressure switch 30-300Pa	250V AC	36
PSW-600	Differential pressure switch 60-600Pa	250V AC	36
PSW-1500	Differential pressure switch 100-1500Pa	250V AC	36

Water leakage system and Humidity sensors

Item code	Designation	Supply	Page
CLA-24/230V	Water leakage system	24V AC/DC or 230V AC	38
CLA-ST	Textile sensor for CLA		38
PL400	Glue, for approximately 25 m textile sensor		38
ETUK-1	Housing for CLA		38

Thermostats

Item code	Designation	Supply	Page
CMT-24/230V	Multi-thermostat with 10 selectable functions, multi-voltage Appl. 1 1-stage heating thermostat Appl. 2 1-stage cooling thermostat Appl. 3 2-stage heating thermostat Appl. 4 2-stage cooling thermostat Appl. 5 2-stage heating and cooling thermostat Appl. 6 1-stage cooling thermostat with low temp. alarm Appl. 7 1-stage heating thermostat with overheating alarm Appl. 8 2-stage high temperature alarm Appl. 9 High and low temperature alarm Appl. 10 Gutter thermostat	24V AC/DC or 230V AC	40
CTA-24/230V	2-stage High temperature alarm	24V AC/DC or 230V AC	42

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Product type list

Pt1000 temperature sensors

Item code	Designation	Supply	Page
CTS-A-1/4-1/2	Adapter int. 1/4", ext. 1/2"		44
CTS-BC-50-PT1000	Bulb temperature sensor 50mm, 1,5m cable		44
CTS-CC-PT1000	Strap-on temperature sensor 50mm, 1,5m cable, 2 tie straps and gap filler		44
CTS-DC-100-PT1000	Duct temperature sensor 100mm, 1,5m cable		44
CTS-DC-200-PT1000	Duct temperature sensor 200mm, 1,5m cable		44
CTS-DC-300-PT1000	Duct temperature sensor 300mm, 1,5m cable		44
CTS-DH-100-PT1000	Duct temperature sensor 100mm, housing		44
CTS-DH-200-PT1000	Duct temperature sensor 200mm, housing		44
CTS-DH-300-PT1000	Duct temperature sensor 300mm, housing		44
CTS-IC-100-PT1000	Immersion temperature sensor 100mm, 1/4”, 1,5m cable		44
CTS-IC-200-PT1000	Immersion temperature sensor 200mm, 1/4”, 1,5m cable		44
CTS-IC-300-PT1000	Immersion temperature sensor 300mm, 1/4”, 1,5m cable		44
CTS-IH-100-PT1000	Immersion temperature sensor 100mm, 1/4”, housing		44
CTS-IH-200-PT1000	Immersion temperature sensor 200mm, 1/4”, housing		44
CTS-IH-300-PT1000	Immersion temperature sensor 300mm, 1/4”, housing		44
CTS-OW-PT1000	Outdoor temperature sensor with spacer bracket		44
CTS-RB-PT1000	Room temperature sensor, black		44
CTS-RG-PT1000	Room temperature sensor, grey		44
CTS-RW-PT1000	Room temperature sensor, white		44

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