Operating Manual

MultiTox Detector

DMi-TT6-E

DMi-TT6-O

DM-TT6-S

SIMTRONICS
Fire & Gas

Note

This manual must be carefully read by those who are or will be responsible for the operation or maintenance of this product. The product may not perform as designed if not used or maintained in accordance with the manufacturer's instructions.

The warranty made by Simtronics with respect to the product is voided if the product is not used and maintained as described in this manual.

Please read the general warnings in chapter 9.

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1. PRODUCT DESCRIPTION

The DMi-TT6-E is designed to monitor poisoning risk induced by the presence of toxic gases or vapours (hydrogen sulphide, carbon monoxide, ammonia…).

The DMi-TT6-O is designed to monitor the oxygen concentration in %vol either for inerting (scales 1 or 5%vol.) or in breathable atmosphere control (Scale 0-25%vol).

Both versions are equipped with electrochemical cells.

The DMi-TT6-S is designed to monitor poisoning risk induced by the presence of toxic gases or vapours, such as hydrogen sulphide. This version is equipped with semiconductor cells.

Detectors can be connected to a large range of controllers or PLC.

These detectors may be configured using the portable communication terminal (TLU600), providing flexibility to the user.

Thus, calibration and maintenance operations can be undertaken by a single operator.

MultiTox are also available for use in an addressable network system with distributed intelligence SYNTEL. For more information, please refer to the Syntel module interface operating manual.

1.1. Application

The DMi-TT6 and DM-TT5 are suitable for indoor or outdoor uses and offer a fast response time. Typical applications include:

- Storage of toxic products
- Monitoring of processes with toxic products
- Oxygen detection in inert atmosphere (DM-TT6-O)
- Chemical and petrochemical plants
- Drilling platforms
- Refineries

1.2. DMi-TT6-E

The DMi-TT6-E is a MultiTox detector based on a transducer with electrochemical cell, which requires oxygen to function properly.

The measuring principle is based on a redox reaction.

In the event of a long period without oxygen, the measurement will not be representative of gases or vapours concentration.

The characteristics of the device can also be altered by exposures to high concentrations or by extended periods in hot and dry atmosphere.

1.3. DMi-TT6-O

The DMi-TT6-O is a MultiTox detector based on a transducer with electrochemical cell. The measurement range is expressed in %vol O_2.

The measuring principle is based on one of the principle of the « oxygen cell ».

Characteristics of the device can also be altered by exposures to extended periods in hot and dry atmosphere.

1.4. DM-TT6-S

Le DM-TT6-S is a MultiTox detector based on a transducer with semi-conductor cells, which requires oxygen to function properly.

The measuring principle is based on oxidation and adsorbing reactions on films surface of heated semi-conductor.

The measurement will not be representative anymore of the concentration of gases or vapours if the detector is exposed too long time without oxygen or in a very dry atmosphere (RH<10%).

Characteristics of the device can also be altered by the presence of some poisons, such as silicon vapours.

1.5. Heating

In hard environmental conditions, with condensation or frost, gases and vapours may not reach the sensor. The device takes into account this difficulty and keep its temperature slightly above that of the ambient atmosphere.

1.6. Technical specifications

Each detector is constructed as follows:

- A wall-mounted support secured by two screws, allows assembly of a cable gland (M20) (optional) and up to three plugs. This definition may change depending on chosen options.
- An explosion-proof housing (epoxy coated aluminium or 316 SS) containing:
    - A set of tropicalized electronic cards
    - An infrared communication head, located on the detector's housing. It allows communication with the remote control (TLU600).

- A colour coded cartridge. A green one for the toxic gas detectors with electrochemical cell (DMi-TT6-E), a blue one for the oxygen deficiency gas detectors with electrochemical cell (DMi-TT6-O) and an orange one for semi-conductor toxic gas detectors (DM-TT6-S). The cartridge is located in the lower part of the detector, and it is connected to the detector body by an open ring leaving the label visible.
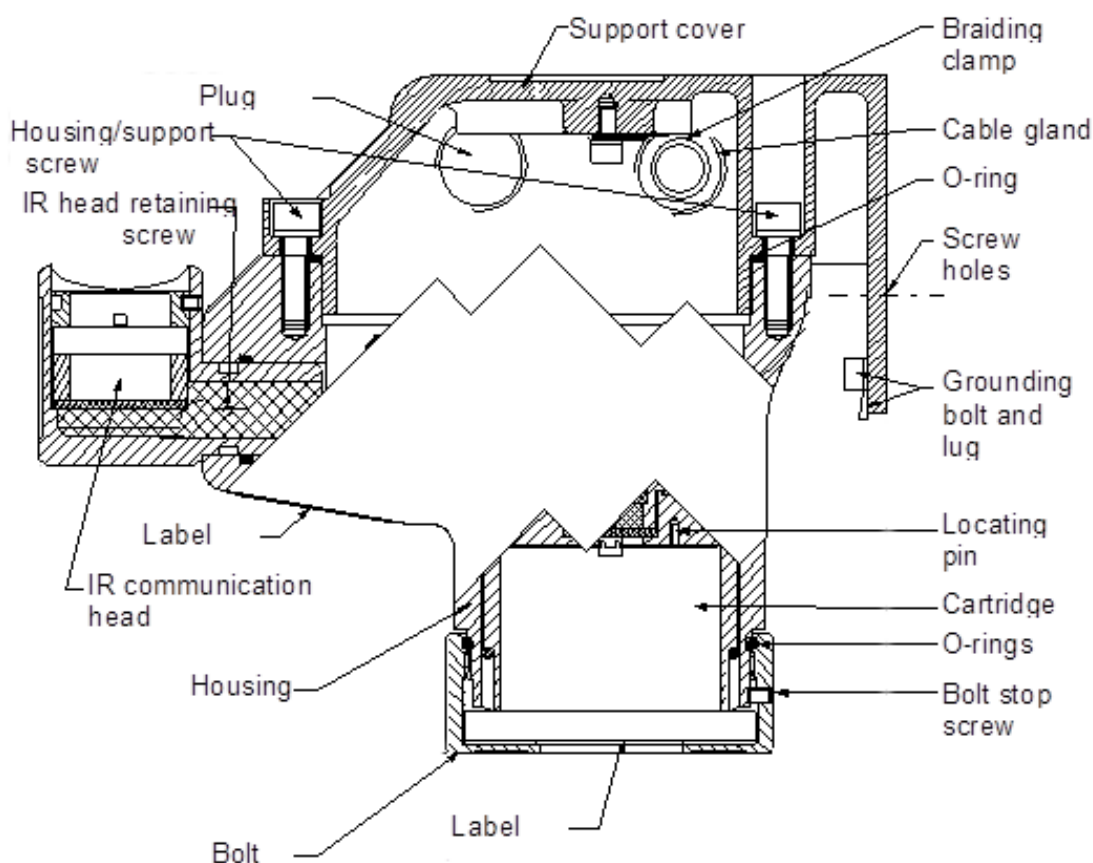

Figure 1 : Layout Drawing
(Congestion see Figure 2

1.7. Detection cartridge

Detection cartridges are:

- Intrinsic safety "ia" for the DMi-TT6-E- and DMi-TT6-O versions. They can be removed when the detector is powered.

- Explosion proof "d" for the DM-TT6-S versions. They cannot be removed when the detector is powered.

They are common to all Simtronics MultiTox products in order to reduce the number of spare parts.

- DMi-RT6-E / DMi-RT6-O et DM-RT6-S: Line Network remote detectors « Telecaptors »,

- DMi-TT6-E / DMi-TT6-O et DM-TT6-S: Remote detectors « Telecaptors »,

Storing electrochemical cartridges (green or blue label) for long periods is not recommended, as their shelf-life is short. Cartridges should be used:

- Within 6 months (from the date of purchase) for the blue label

- Within 1 year (from the date of purchase) for the green one

In order to guarantee the metrological characteristics of the device, the cartridges must be stored in their original packaging until commissioning. For a long-term storage, cartridges will be stored in a dry place, between 0°C and 20°C.

After a long storage period, more than one month, the cartridge will be stabilized for several hours, in order to perform the nominal characteristics.

1.8. Wireless Configuration Tool

Information and status of the detector are available via the wireless configuration tool TLU600/610.

Configuration and tests are performed using this wireless configuration tool (IrDA protocol). This tool is common for all Simtronics MultiFlame, MultiXplo and MultiTox products.

The TLU600/610 provides access to devices that, otherwise, would require major logistic operations for maintenance or for configuration (calibration ...).

For more details, please refer to the wireless configuration tool operating manual.

Some versions are equipped with the HART communication protocol, enabling the use of all functions available with the TLU (see §7)

1.9. Product Code

Product codes are created from functional codes defined as below:
DMi-*T6-****-***-**-***-*-*-* et **DM**-*T6-****-***-**-***-*-*-*

Type of detector														
T	T	6	-31	AF	-E	X	H	-Y	0	-000	-0	-C	-0	

C*	Compact sensor
T*	Remotesensor
R*	Network version
S*	Cellule seule
X*	Accessoire

Family	
T	Toxic
V	Flame
X	Flamable gas detector
0	None

Version	
**6	BT606 housing
**7	BT10 housing

Gas type	
**	Please refer to gas matric
Measurement scale	
**	Please refer to gas matrix

tYPE	
XV	UVIR2
XT	IR3
Detection range	
A0	Standard range
B0	Long range

DMi-TT6-E & DMi-TT6-O
DM-TT6-S

Type	
0**	Not used
E**	Electrochemical
S**	Semi-conductor
K**	Catharometer
X**	Catalytic
M**	MECH
R**	TOR input
C	Current input 0/22 mA

Variant	
A	Aluminium
X	SS316

Interface	
**M	1-2 mA protocol
**A	0-22mA protocol (fault signalling in 0-4mA range)
**E	4-20 mA protocol (Commun fault signal 2 mA)
**H	4 – 20 mA / 0-22 mA configurable & HART protocol
**C	4 – 20 mA / 0-22 mA configurable
**W	Wheatstone
**L	LON
**X	4-24 mA for Compact explosimeters line of product

T	T	6	-31	AF	-E	X	H	-Y	0	-000	-0	-C	-0

Cartridges

0*	No cartridge
M*	Electrochemical type M
Y*	Electrochemical type Y
N*	Electrochemical type N
G*	Electrochemical type G
X*	Catalytic
S*	Semi-conductor
K*	Catharometer
E*	Ex05 (external)

DMi-TT6-O
DMi-TT6-E
DMi-TT6-O
DM-TT6-S

Semicond. Sensor type & special configurations

*0	Not specified
*A	20
*B	23
*C	24
*D	25
*E	27
*F	30
*G	
*H	
*J	
*K	
*M	Special version MarED (TX and TV)
*N	Special version with ALRM LED not memorized (not in compliance with EN 54-10) (flame version only)

DM-TT6-S

Applicable to version other than –S type

Configuration

000	Standard
00A	Absolutely no grease
00B	MED version
00C	Not CE DPC version (not memorized ALRM)
00D	IRDA cap instead of display
00E	0V connected to housing ground on Tox type C
00F	TCM02 instead of IRDA cap

Language

0	Fr / GB
F	French
E	English

Hardware version

A	Type 63
B	Type 65
C	Type 67 (HART)

Software version

0	Standard

2.   TECHICAL FEATURES

GENERAL

Type	Gas detector
DMi-TT6-E	MultiTox (electrochemical for toxic components)
DMi-TT6-O	MultiTox (electrochemical for measurement of hydrogen)
DM-TT6-S	MultiTox (semi-conductor for toxic components)
DMi-RT6 / DM-RT6	Network detector
Calibration*	Factory set. A test is recommended every 3-4 months on DMi –TT6-E and DMi-TT6 and every 6 months on DM-TT6-S.

OUTPUT SIGNALS

Loop 4-20mA signal   Type active (source) maximum load impedance 700Ω

E version - « 4-20mA »   4-20mA with one fault level

(Factory set)
- 0% full scale   4 mA
- 100% full scale   20 mA
- 105% full scale   20.8 mA
- Fault or inhibition   2 mA

Version A- « 0-22mA »   4-20mA with several fault levels, for PLC and some recent control units
- 0% full scale   4 mA
- 100% full scale   20 mA
- >105% full scale   20.8 mA
- Inhibition   3.4 mA
- Fault measure   2.6 mA
- Device fault (HW/SW)   2.0 mA

Output relays   2 x configurable relays max 1A / 30V AC/DC

ELECTRICAL

Power supply   24VDC,   (18 – 28 V DC on versions DMi-T#6 or DM-TT6)
                          (18 – 30 V DC on versions DMi-R#6 or DM-RT6)

Consumption
DMi-TT6-O and DMi-TT6-E   Type : < 1.5W, < 2W (I = 20mA)
5,8W maximum heating, output 20mA

DM-TT6-S (A or F models)   Type : < 2.0W
Heating (1e minute) : < 2,2W

DM-TT6-S (other models)   Type : < 2,7W
Heating : < 3,1W

Add 0,7W for network versions

Wiring	0,3mm² (22AWG)-1,5mm² (16AWG).
MTBF	116 000 h (Version DMi-T#6-E/O out of the EC cell)
	128 000 h (Version DM-T#6-S out of the MOS cell)

* These frequencies of calibration control are provided for information purposes only. The frequency depends on the operating conditions, the experience and safety requirements.

ENVIRONMENT

Storage temperature	-30°C to +70°C without cartridges
	-10°C to +50°C (recommended between 0°C - 20°C) with the cartridges type -E or –O
	-20°C to +60°C with the cartridges type –S Please refer to comments on storage conditions - §1.7
Operating	Please refer to table §3
Pressure	1013 Hpa ± 10%
Humidity	15 - 90% HR (non condensing)
Protection	IP66
RFI/EMI	EN 50270
Heating time*	60 sec to 120 sec depending on the version
Stabilization time	stabilization time 1st implementation or up to 24h after being powered off:
	- DMi-TT6-E : 2 hours
	- DMi-TT6-O : 10 min
	- DM-TT6-S : 12 hours

EXPLOSION PROOF HOUSING

Material	Stainless steel 316 L
Weight	4.0 kg
ATEX/IECEx : DMi-TT6	⟨Ex⟩ II 2 G / Ex d ia II C T6 Gb
	-20°C < Ta < + 60°C
ATEX/IECEx : DM-TT6	⟨Ex⟩ II 2 G / Ex d II C T6 Gb
	-20°C < Ta < + 65°C
Dimensions	Please refer to Figure 2 : Outline Drawing

* The indicated warm-up time corresponds to the duration of inhibition measurement when powered on. It prevents from triggering alarms while signal is reaching its stabilised level. Nominal performances might be reached only after a stabilisation period.
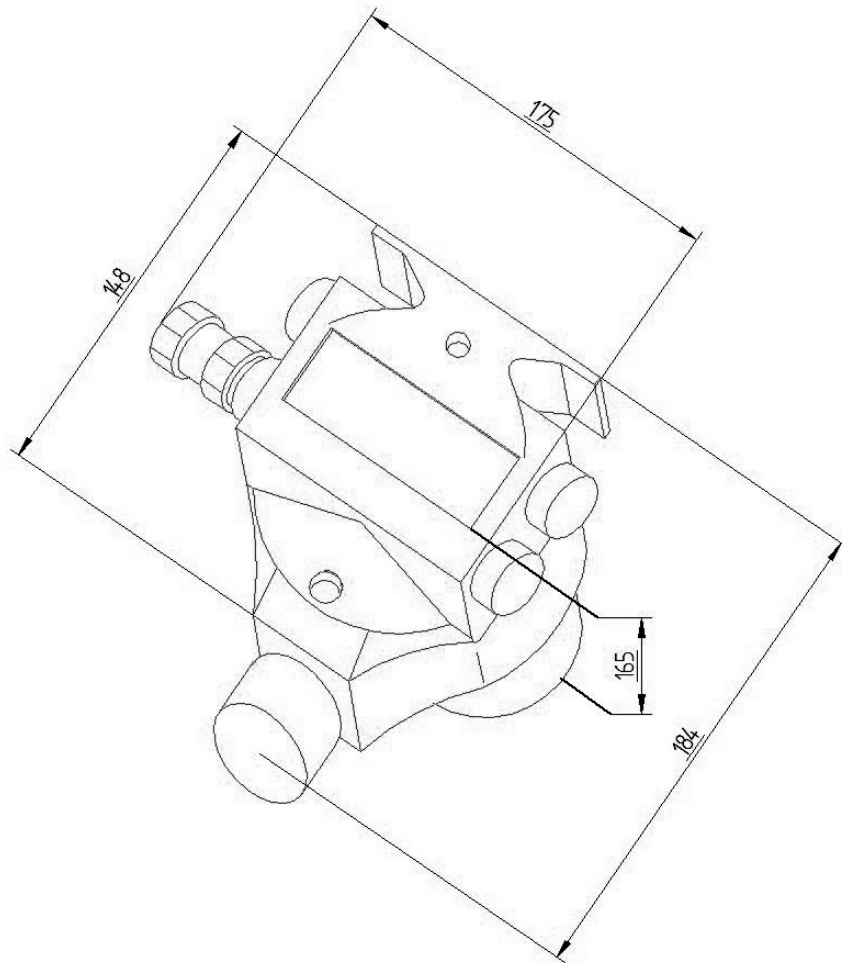
Figure 2 : Outline Drawing

3. SCALES AND TECHNICAL DATA

	O₂ DGi-TT7-O	H₂S DGi-TT7-E	H₂S DGi-TT7-S	NH₃ DGi-TT7-E	CO	NO	NO₂	H₂	SO₂	Cl₂	HCl	HCN
Measurement Range ❶	0-5 %vol	0-20 0-50	0-50 0-100	0-50 0-100	0-100 0-200	0-100	0-20	0-2000	0-20	0-10	0-50 0-100	0-50
	0-25 %vol	0-100 0-200		0-1000	0-500 0-1000			0-10000		0-50		
τ (0-50%) (sec)	< 8	<15	<30									
τ (0-90%) (sec)	< 25	< 60	< 120	< 120	< 35	< 20	< 45	< 70	< 30	< 30 ❹	< 150	< 60
Zero point stability ❷	< 0.1 %vol	± 1 ppm	± 2 ppm	± 2 ppm	± 4 ppm	± 3 ppm	±0.5ppm	±40 ppm	±0.5ppm	±0.5ppm	± 3 ppm	± 1 ppm
		± 2 ppm		±20 ppm	± 10ppm			±200 ppm				
T° range (°C)	-10/+40	-20/+50	-20/+60	-20/+40	-20/+50	-20/+50	-20/+50	-20/+50	-20/+50	-20/+40	-20/+50	-20/+40
Accuracy ❸ ❺ ❻	5 % Ech.	± 2 ppm ± 10 % reading	± 4 ppm ± 15 % reading	± 4 ppm ± 10 % reading	± 4 ppm ± 10 % reading	± 4 ppm ± 10 % reading	± 2 ppm ± 10 % reading	± 50 ppm ± 5 % reading	± 2 ppm ± 10 % reading	± 2 ppm ± 10 % reading	± 4 ppm ± 10 % reading	± 2 ppm ± 10 % reading
	4 % Ech	± 4 ppm ± 10 % reading		± 25 ppm ± 10 % reading	± 15 ppm ± 10 % reading			± 50 ppm ± 5 % reading				
Shelf-life (months)	12 à 18	24	60	24	36	36	24	24	24	24	24	18
Warming-up time or polarisation ❼	< 10 min	< 10 min	< 60 min	< 10 min	< 10 min	< 60 min	< 10 min	< 10 min	< 10 min	< 10 min	< 60 min	< 10 min
Gas injection time (ref)	1'	3'	4'	4'	2'	1'	2'	4'	2'	2'	4'	3'

Table 1 : Performances

❶ In ppm unless otherwise indicated.

❷ Long term stability (21 days) under stable environmental conditions.

❸ On the range: 0°C to 40 °C.

❹ < 120 seconds at the 1st exposure.

❺ The accuracy is estimated based on replication, linearity and temperature parameters.

❻ Select the higher value where two tolerances are proposed.

❼ For a 6 hours powered-off time

> ⚠️ **DM-TT6-S detectors:** The silicone compounds are known to have poisoning effects on the semi-conductor element.
> **DM-TT6-O detectors:** High CO₂ concentration (several %vol.) is known to have poisoning effect on the cell. In a similar way, solvents higher than 1000 ppm will gradually damage the cell.

> ⚠️ **DM-TT6-O detectors:** The measure is proportional to the partial pressure of oxygen in the measured mixture.

4. INSTALLATION

The detectors described in this manual are safety instruments intended to be installed in explosive atmospheres and have been designed in compliance with standards EN60079-0, EN60079-1, EN60079-11, CEI 60079-0, CEI 60079-1 and CEI 60079-11.

Intervention in some sites may be subject to restrictions that we invite you to follow for your own safety and those of others.

4.1. Positioning

The remote sensor must be positioned as close as possible to sources of potential leakages, taking into account airflows (e.g. upper and lower ventilation). The height is determined by the density of gas to detect.

Generally speaking, a detector will not be placed in front of an air inlet which brings clean air

This height may be adjust to take into account the specific conditions which may interfere on the risk level (gas density, ambient temperature....)

4.2. Assembly

Use two 6 mm diameter screws to secure the support.

It is highly recommended to install the support with cable-gland downward in order to avoid water infiltrations. In case of horizontal position, it is advised to make one or two loops with the cable at the entry of the cable-gland.

On stainless steel housings, plugs are sealed with Loctite. If the plugs are moved or removed, it must be sealed again, using Loctite or equivalent.

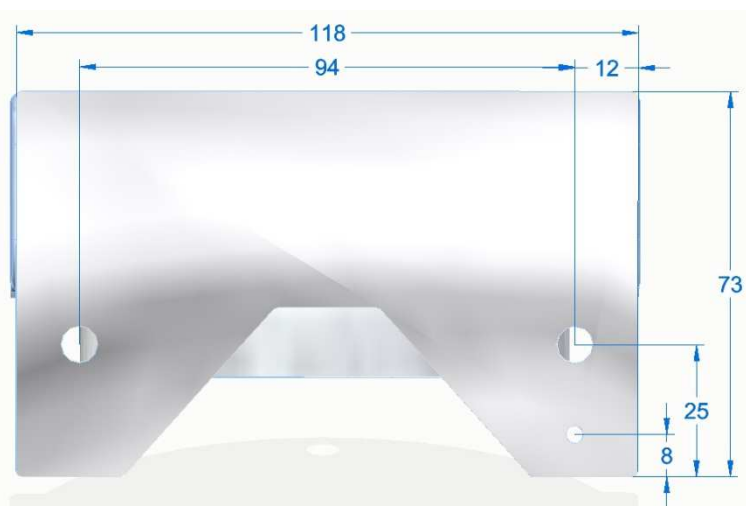On aluminium housings, plugs are equipped with seals.

Figure 3 : Drilling dimensions for support fixing.

4.2.1.   Detector's assembly

Check the presence of the O-ring on the explosion proof seal, make sure that it is correctly greased and has no visible damage.

Plug the connectors to the base, as described in paragraph "Electric connection".

Fit the main housing on the base, placing the excess of cable in the base.

> ⚠️ **Make sure to correctly tighten the 2 fixing screws once the correct position has been obtained.**

Housing on support at -90°
IR head to the left

Housing on support at 0°
IR head straight

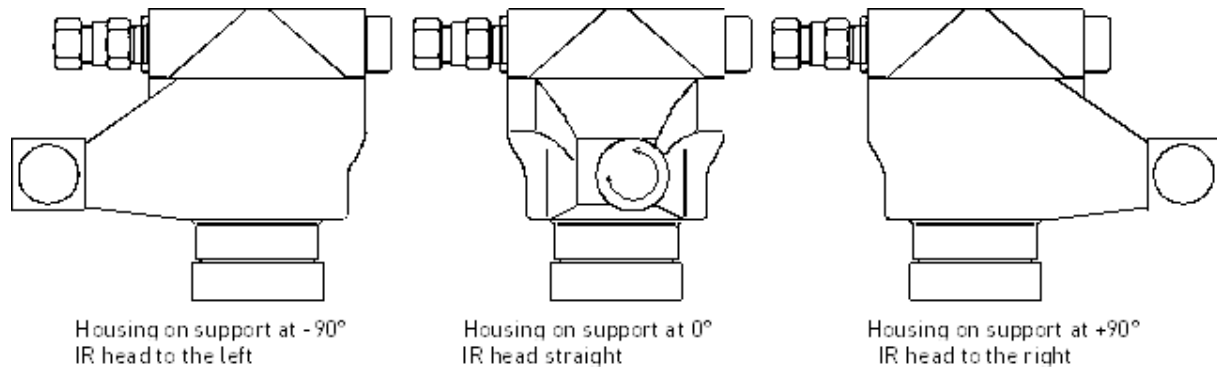Housing on support at +90°
IR head to the right

Figure 4 : Housing orientation

4.2.2.   Orientation of the communication head

The IR communication head can be rotated from top to bottom in order to optimize the connection with the wireless communication tool. Avoid direct sunlight on head.

Once the correct position has been obtained, tighten the stopping screw to set the adjustment.

A 1.5 mm Allen wrench is required for this operation.

> ⚠️ **Do not touch the anti-removal screw of the IR communication head which is masked by the label "Do not retire".**

4.2.3.   Cable's inputs (as an option)

> ⚠️ **Connection cables must pass through a cable gland (Explosion Proof certified)**

For installation details, refer to the instructions provided by the manufacturer of the cable gland used.

> ⚠️ **The unassigned cable glands entries must be blanked with explosion proof certified plugs (M20).They are glued with Loctite (like tubétanche 577) or equivalent compound. If a plug is moved or removed, it must be glued again with Loctite or an equivalent.**

4.3. Electric Connection

Never adjust electric connections when detectors are powered. Maintenance must be undertaken by qualified staff. Observe safety site rules.

MultiTox are sensors with standard current output 4-20mA or 0-22mA. The connection can be on 3 or 4 wires. The 4 wires configuration allows insulation between the signal and power loops.

In addition, two independent relays outputs can be connected directly to a controller or signal device.

We recommend using an armoured and shielded cable, type NF M 87 202, in accordance with the requirements for hazardous areas and NF C 15 100. Other cables can be used if they are compliant with the local regulations and standards.

The table below shows the maximum cable lengths (2-wires) based on a minimum supply voltage.

Min. single wire cross area mm²/AWG	0.5 (20)	0.9 (18)	1.5 (16)
Supply voltage 20VDC, max. cable length in m/ft.*	250/820	400/1310	700/2296
Supply voltage 24VDC, max. cable length in m/ft.*	650/2132	1100/3610	2000/6560

* Those values are indicative ones, for a considered consumption power about 3.5 W

4.3.1. Installation recommendation

This detector version is supplied in an electronic version **Type-C**. The terminal V- is isolated from the electric ground of the housing

The detector is supplied with a configurable current output type C (4-20 mA, factory configuration). But it can be modified in format 0-22 mA by the user, using one of the menus of the TLU 600.

DMi-TT6-E
DMi-TT6-O

Example: **DMi**-**6-****-**C-**-***-*-C-*
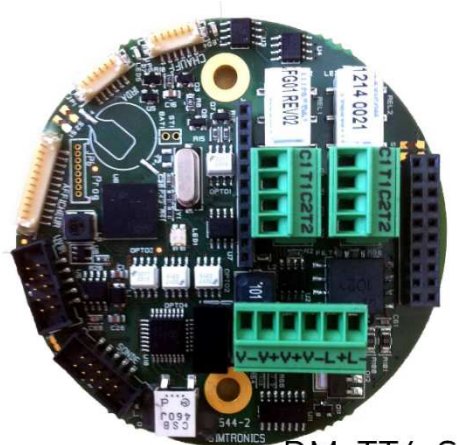
DM-TT6-S

This electronic Type C also allows the detector to get a HART output (as an option) superimposed to the output current. The current output format follows the same logic as the one described above but the product code contains an H:

Example: **DMi**-**6-****-**H-**-***-*-C-*

The DM-TT6-S version embeds two parallel connectors for the two relays while DMi-TT6-E and DMi-TT6-O versions embed only one connector.

Terminal blocks

Point	JP12 & JP13	Description
1	T2	Relay 2
2	C2	Relay 2
3	T1	Relay 1
4	C1	Relay 1

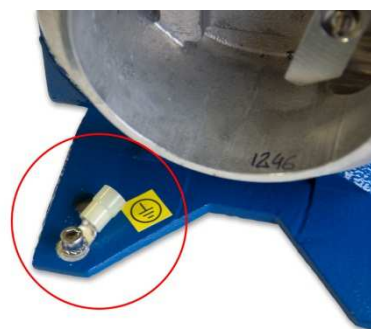| Point	JP11	Description
1	V-	0 V
2	V+	+24VDC power supply
3	V+	+24VDC power supply loop (connected to point 2)
4	V-	0 V, Connected to point 1
5	L+	20mA Current loop: entry
6	L-	20mA Current loop: output

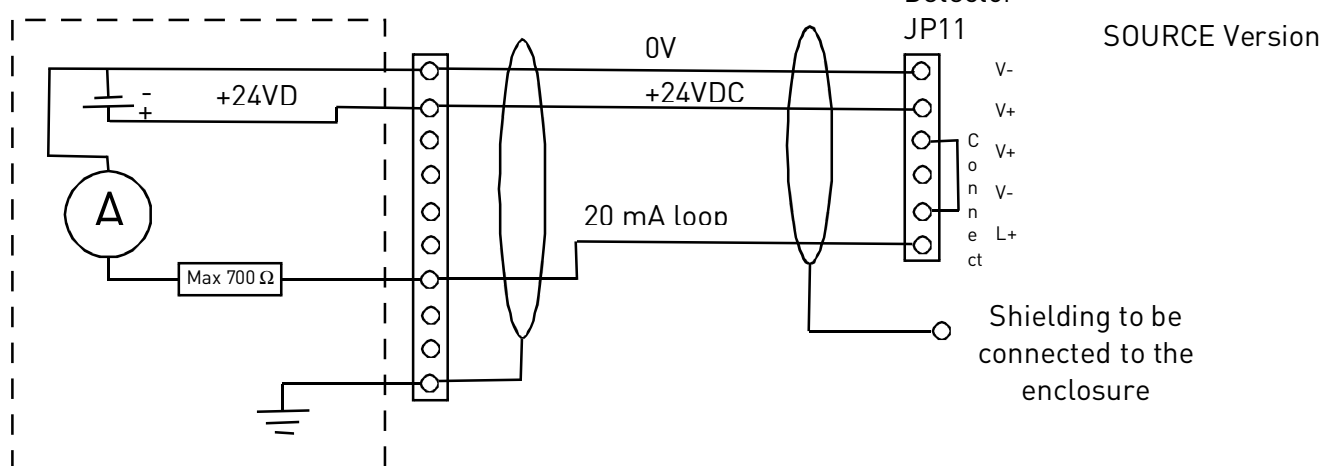### 4.3.2. Connection of the electrical ground braid

The braid is wrapped around the sheath. The mechanical bridge retains the cable and makes the electrical contact.

4.3.3. Grounding

Local ground connection is located on the base of the detector. It is recommended to use a yellow / green wires with a ring lug (minimum diameter 1.5 mm). The armour of the power cable is normally connected to the ground of the detector, but it may depend on site practices.

4.3.4. 3-wires connection(source)

Detector JP11

SOURCE Version

0V
+24VDC
+24VD
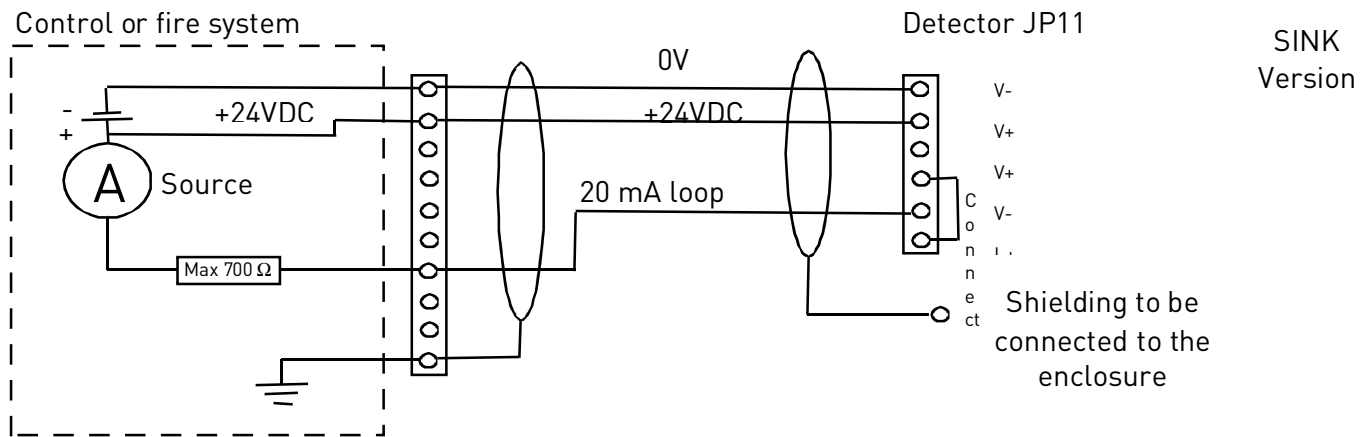V-
V+
V+
V-
L+
Connect
20 mA loop
Max 700 Ω
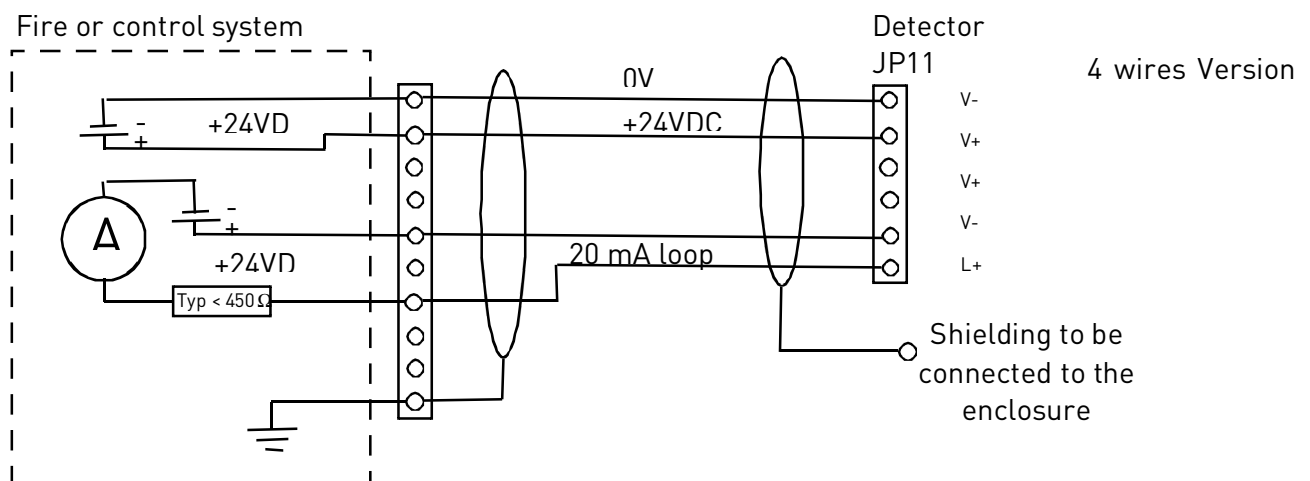A

Shielding to be connected to the enclosure

For a standard 3-wires connection, the 20mA current loop must be supplied with 24 V at terminal L+. To proceed, connect the 3 (V +) and 5 (L +) terminals at the terminal block level of the device

4.3.5.   3-wires connection (Sink)

Control or fire system

Detector JP11

SINK Version

+24VDC

0V

+24VDC

Source

20 mA loop

Max 700 Ω

V-
V+
V+
V-
L-

Connect

Shielding to be connected to the enclosure

For a standard 3-wires connection in sink mode, the 20mA current loop must be supplied with a PLC. The current return must be connected to the 0V at the level of the L- terminal. To proceed, please connect the 4 (V-) and 6 (L-) terminals at the terminal block level of the devise.

4.3.6.   4-wires connection (isolated power)

Fire or control system

Detector JP11

4 wires Version

+24VD

0V

+24VDC

+24VD

20 mA loop

Typ < 450 Ω

V-
V+
V+
V-
L+

Shielding to be connected to the enclosure

When using a 4 wires connection, the current loop is provided by the input module or PLC. The loop (L + and L-) is optically isolated from the detector. 4-20mA or 0-22mA input module of the PLC has to power up the current loop with, at least 8V at the terminal level, for 22 mA. This reduces the resistance of the loop as defined in the relationship below.

$$R\,maxi = \frac{Power supply\ voltage - 8V}{22mA}$$

In practice, the total loop resistance should not exceed 450 Ω with a voltage >18Vdc

4.3.7. Relay
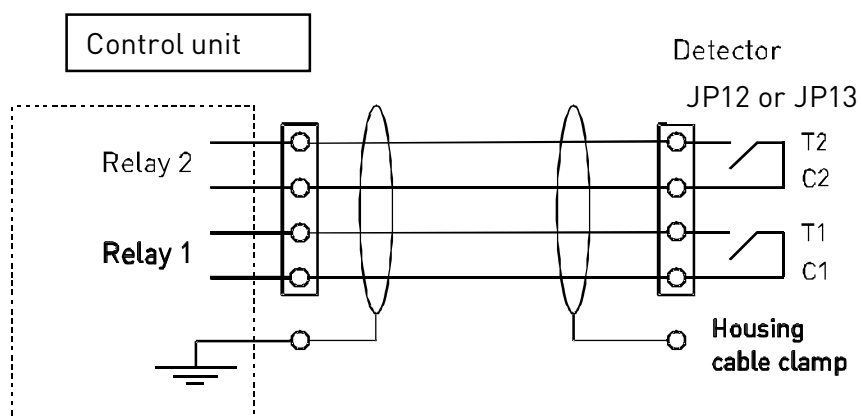
The two relays can be configured normally closed or normally open. If normally open, the relays are opened when they are not powered (power loss).

The circuits' relays are isolated from each other and from other parts of the detector. The two relays can be activated on one or more states of the detector, as shown below:

Activated on	Relay 1 "Alarm"	Relay 2 "Fault"	Comments
Alarm	Normally Open		4 possible levels
Fault		Normally closed	2 types of fault
Inhibition		Normally closed	2 types of inhibition

For DM-TT6-S version, two terminal blocks are available per relay. The pins are connected to each other, from a terminal to the other one.

4.3.8. Syntel connection
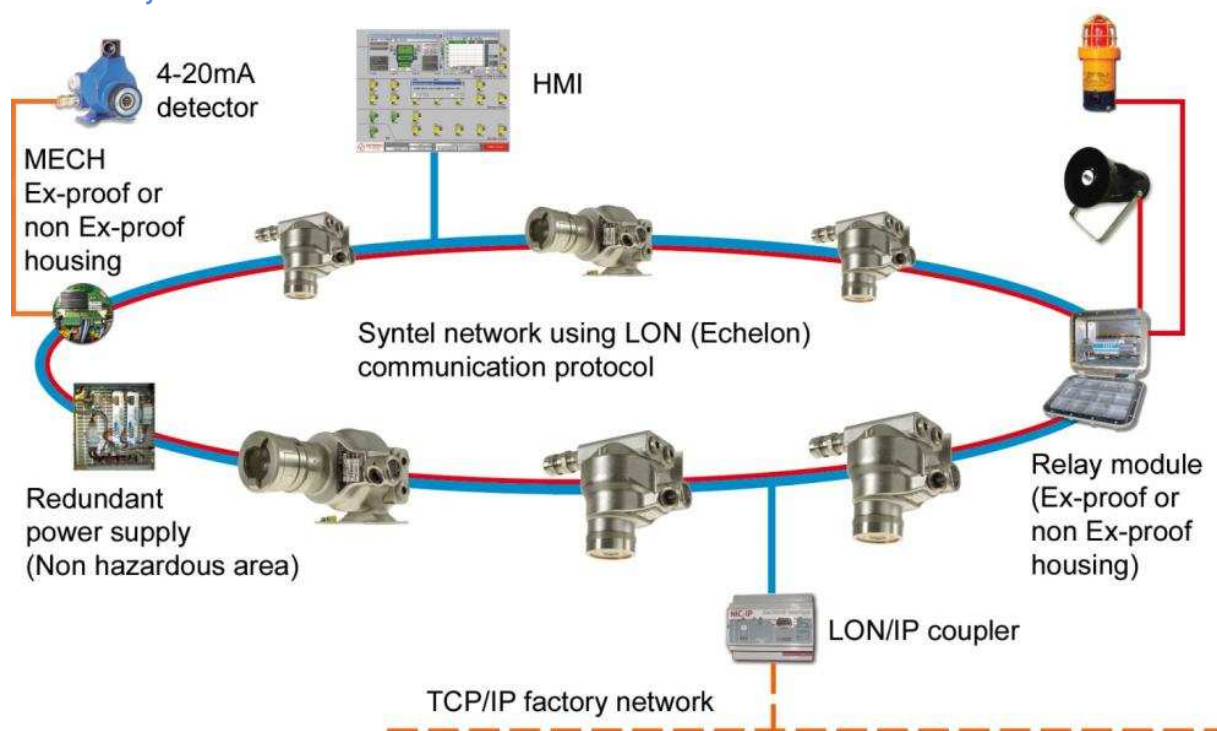
In this network version, an electronic board is inserted in the detector body and is used for electric connection.

Connecting the ground terminal should be performed thanks to 3-wires shielded cables.

The connection of power supply wires (4 on side A and 4 on side B).

- Two red wires on V +: +24 V
- Two white wires on V-: 0 V

Connection of the media wires (2 on side A and 2 on side B)

- A red wire on one of the N
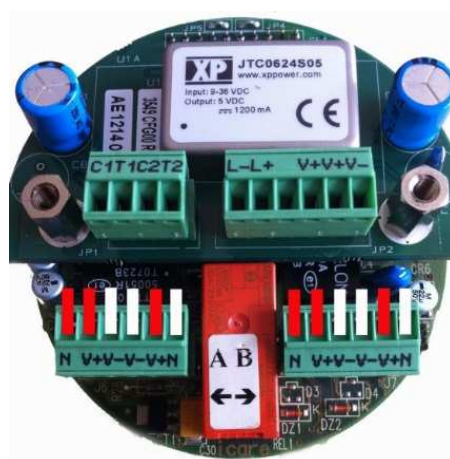- A white wire on the other N (no specific edge)

Figure 1 :   Connecting drawing of the network versions

 For more detail, thanks to refer to the operating manual NOSP 15251

4.4. Detection cartridge

The cartridge is separated from the detector to enable its replacement. Its dismantling is extremely easy and does not need to touch the rest of the unit.

⚠️ **Caution during the assembly and the disassembly of the cartridge on the detector:**

- Slide the positioning pin of the cartridge into the corresponding hole in the housing (at the bottom of the receiver).
- Take care to not damage the cartridge connector when tightening the two parts.
- On DMi-TT6-E and DMi-TT6-O versions, these operations can be performed when powered.
- On DM-TT6-S version, these operations imperatively require power to be off

Loosen the locking screw on the side of the nut (see Figure 1), then unscrew the nut, along the first part of the thread. With the nut, pull on the cartridge to remove it and then unscrew the cartridge from the nut.

Cartridges have an identification colour ring (see §1.6).

Insert a new cartridge of the same colour into the case respecting the position defined by the centring pin, screw the nut until it stops ensuring the presence of O-ring. Then, tighten the locking screw.

Switch on the device in order to make the calibration of the new cartridge and the zero adjustment.

5.   COMMISSIONING

5.1. Visual inspection

Make certain that all the operations of the "Installation" chapter have been achieved correctly.

Pay particular attention on installation conformity, check the cables entry, the presence of O-rings, and the connection of the cartridge.

- The label on the smart sensor indicates the type of detector, the type of gas and the range for which the instrument has been calibrated,
- The cartridge colour must correspond to the type of detector:

    - Green for toxic gas detectors with electrochemical cell
    - Blue for oxygen deficiency gas detector
    - Orange for toxic gas detector with semi-conductor cell

5.2. Power-up

The smart sensor is powered through the multichannel detection unit or the Programmable Logic Controller. It results in the flashing of the green LED in the communication head.

5.3. Operational tests

All MultiTox detectors are delivered set and tested. Some additional tests are necessary to check the good working of the loop. Please make sure to have all authorizations needed before running the following operations:

- Check the states/information using the wireless configuration tool (TLU),

- Check the alarm levels

- Zero point:

    If there are no polluting gases or, if necessary, by injecting clean air at 30 l/h using the calibration kit equipped with an air cylinder

- Sensitivity:

    By injecting a suitable gas mixture at 30 l/h using the calibration kit

- Check the servo controls

6. OPERATION

6.1. Environmental conditions

The lifetime of the electrochemical cartridges for toxic gas detector depends on the operating environment related to temperature, humidity and high exposures.

One will take care to avoid long exposures to a hot and dry atmosphere (T°> 30°C and RH<10%), and gas exposures 4 times higher to the scale.

The lifetime of the cartridges for semi-conductor toxic gas detector depends on the operating environment related to certain compounds.

One will take care to avoid exposures to some vapored products as silicone. Moreover, an exposure in area with a low rate of hygrometry (RH < 10% for several hours) can temporarily damage the sensitivity.

In general, a dusty and humid atmosphere must be avoided. Indeed, a clogging of the gas barriers is then possible, slowing down or stopping the detection process.

6.2. Inhibition

Maintenance Inhibition is temporary. It appears during power up and maintenance.

Inhibition stops automatically when the operator gets out of the maintenance menus or after 10 minutes if communication with the TLU has been interrupted.

Maintenance inhibition can be configured in "frozen" mode(factory setting) or in"free" mode.

- In "frozen" mode, outputs (current and relay) remain in their previous state.
  For example, if the device indicated a failure (2.0 mA), this state would be maintained during the inhibition.

- If the unit is configured in "free" inhibition mode, the output current will be on the same level as for the permanent inhibition.

The permanent inhibition is activated by an order issued by the TLU when an operation is performed at/or around the device, or when the operator wants to inhibit a faulty device. The permanent inhibition must be removed by an operator with the TLU.

6.3. Signal current loop

State	"4-20" [mA]	"0-22" [mA]	TLU state
Line fault	0.0	0.0	
Configuration fault	2.0	2.0	DEF
Detector fault (electronic)	2.0	2.0	DEF
Measure fault	2.0	2.6	DEF
Start inhibition	2.0	3.4	Warming-up remaining time including power up
Permanent inhibition	2.0	3.4	INH
Maintenance inhibition Fixed configuration (fault) / ("free mode") *	Previous value / (2.0)	Previous value/ (3.4)	INH
0% of full scale	4.0	4.0	No detection No alarm
25% of full scale	8.0	8.0	Alarm if level exceeded
50% of full scale	12.0	12.0	Alarm if level exceeded
75% of full scale	16.0	16.0	Alarm if level exceeded
100% of full scale	20.0	20.0	Alarm
105% of full scale	20.8	20.8	Alarm

(*) Maintenance inhibition may be available in frozen or free mode.
(**) The cycle is the display sequence of the concentration, unit of measure and target gas.

6.4. Alarm indication (LED)

A red LED located in the head of communication flashes in case of confirmed alarm status.

- Flashing 1 Hz: Level 1
- Flashing 3 Hz: Level 2

If the alarm memorization is activated, the LED continues to flash until the alarm is acknowledged with the TLU or until the detector is powered off, then powered on again.

If the alarm memorization is disabled, the LED stops flashing when the alarm fades.

6.5. Wireless communication tool TLU600

All settings and tests of detectors can be done by the wireless communication tool TLU600. This communication tool and its software are compatible with all Simtronics detectors: MultiFlame, MultiTox and MultiXplo. Communication is made via infrared link (IrDA), similar but more efficient than infrared links for computers. IrDA head should not be placed facing the sun as it significantly reduces the communication with the TLU600.

Please refer to the wireless communication tool operating manual for more details.

When a device is in communication mode with the TLU, its background light flashes. It enables the user to ensure he communicates with the requested device.

The TLU600 menu is composed of 2 access levels allowing both settings and obtaining information about detector's status.

- level 1 : exploitation
- level 2 : Maintenance

6.5.1. Main screen

The main screen is composed into several data fields.

C 1		C 2		C 3	C
C 4					1
C 5					0
C 6	I	C 7	I	C 8	I	C 9	

- *C1: Detector name field*
- *C2: Field blank if normal operation; INH- if inhibited*
- *C3: Field blank if normal operation; FLT- if at least one fault has occurred*
- *C4: State of detection: no detection, cartridge fault*
- *C5: State of alarm: alarm, no alarm*
- *C6, C7, C8 and C9: Name of keys F1, F2, F3 and F4*
- *C10: Wireless communication tool pictograms*

Main screen displays identity and state of the detector.

```
DMi-TT6
     0 ppm H2S
[0 --------- 100%]
INFO|ADJT|MAIN|FCNX
```

6.5.2. General operation

The user can navigate through the menu with the F1 to F4 keys, whose functions change depending on the fields displayed above each key. Standard functions:

- >>>>   Scroll function / next screen.
- ESC   Exit the current menu and return to the previous one.
- CHG   Changing displayed value.
- VAL   Validation and Check-in of the changed value.

The changed value must be confirmed by pressing key [VAL], otherwise the old value will be kept when leaving the menu.
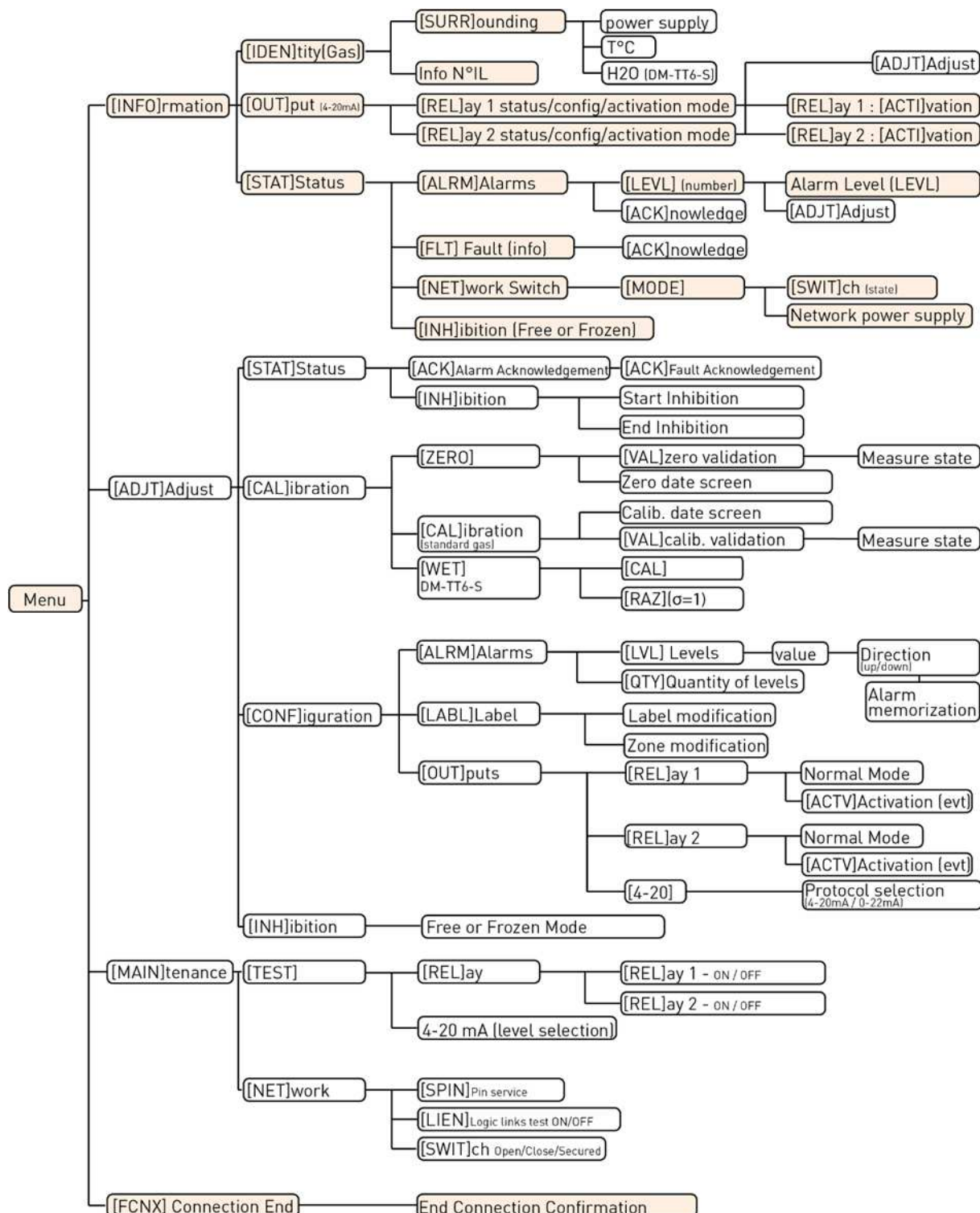
6.5.3. Menu structure

- **Exploitation :**
  This level enables access to the information and the status of the detectors. It does not allow the configuration operations or write access.

- **Maintenance** (unshaded menus)
  The access to the parameters and other maintenance operations is protected by a password. Default password (6 digits which can be changed): 012345.

  Backcoloured boxes are accessible without password

Menu
- [INFO]rmation
  - [IDEN]tity(Gas)
    - [SURR]ounding
      - power supply
      - T°C
      - H2O (DM-TT6-S)
    - Info N°IL
  - [OUT]put (4-20mA)
    - [REL]ay 1 status/config/activation mode
      - [ADJT]Adjust
      - [REL]ay 1 : [ACTI]vation
    - [REL]ay 2 status/config/activation mode
      - [REL]ay 2 : [ACTI]vation
  - [STAT]Status
    - [ALRM]Alarms
      - [LEVL] (number)
        - Alarm Level (LEVL)
      - [ACK]nowledge
        - [ADJT]Adjust
    - [FLT] Fault (info)
      - [ACK]nowledge
    - [NET]work Switch
      - [MODE]
        - [SWIT]ch (state)
        - Network power supply
    - [INH]ibition (Free or Frozen)
- [ADJT]Adjust
  - [STAT]Status
    - [ACK]Alarm Acknowledgement
      - [ACK]Fault Acknowledgement
    - [INH]ibition
      - Start Inhibition
      - End Inhibition
  - [CAL]ibration
    - [ZERO]
      - [VAL]zero validation
        - Measure state
      - Zero date screen
    - [CAL]ibration (standard gas)
      - Calib. date screen
      - [VAL]calib. validation
        - Measure state
    - [WET] DM-TT6-S
      - [CAL]
      - [RAZ](σ=1)
  - [CONF]iguration
    - [ALRM]Alarms
      - [LVL] Levels
        - value
          - Direction (up/down)
          - Alarm memorization
      - [QTY]Quantity of levels
    - [LABL]Label
      - Label modification
      - Zone modification
    - [OUT]puts
      - [REL]ay 1
        - Normal Mode
        - [ACTV]Activation (evt)
      - [REL]ay 2
        - Normal Mode
        - [ACTV]Activation (evt)
      - [4-20]
        - Protocol selection (4-20mA / 0-22mA)
  - [INH]ibition
    - Free or Frozen Mode
- [MAIN]tenance
  - [TEST]
    - [REL]ay
      - [REL]ay 1 - ON / OFF
      - [REL]ay 2 - ON / OFF
    - 4-20 mA (level selection)
  - [NET]work
    - [SPIN]Pin service
    - [LIEN]Logic links test ON/OFF
    - [SWIT]ch Open/Close/Secured
- [FCNX] Connection End
  - End Connection Confirmation

6.6. Information menu [INFO]

The information menu contains all information concerning the identity and settings of the detector. The first screen gives the detector's reference and its serial number.

6.6.1. [IDEN]tity submenu
Presentation of:

- The serial number
- The device reference
- The scale and the targeted gas

Sub-menus present the board software version, the power supply voltage and the temperature read in the cartridge.

6.6.2. [OUT]put submenu
Presentation of:

- Analogue output current protocol (0-20 mA or 4-20 mA).
- Normal state of the relays (normally open or normally closed).
- Condition of relays activation.

Relays can be set with a level 2 access.

6.6.3. [STAT]e Information submenu
Presentation of:

- Number and value of activated alarm levels.
- List of eventual faults (press F1 key to scroll through the list)
- Possibility to acknowledge alarms

6.6.3.1. [ALRM] Alarm screen
Allows setting of levels and alarms acknowledgement.

6.6.3.2. [FLT.] Fault screen
Displays a list of eventual faults (press F1 key to scroll through the list) and allows their acknowledgment.

6.6.3.3. Network screen: switch state
This menu and its sub-menus are used for the network detector settings. For any further details, please refer to the Syntel system operating manuals.

MODE SCREEN
The first line shows the operating mode of the sensor in the network (logic link test / out of order / emulation).
The second line shows if the network part of the detector is "operating" or "out of order". For any further details, please refer to the Syntel system operating manuals.

NETWORK SCREEN: ALIM
Information displayed:

- Voltage A: ON / OFF
- Voltage B: ON / OFF

For any further details, please refer to the Syntel system operating manuals

6.6.3.4. The INH screen

This screen is dedicated to verify the inhibition mode configuration (frozen or free). If the access level permits it, it is possible to change this setting.

6.7. Adjustment menu [ADJT]

This menu presents all the detector settings. All the functionalities, except alarm level acknowledgment, request access level 2.

6.7.1. [STAT]us sub-menu

6.7.1.1. Alarm Acknowledgement

This menu enables the acknowledgement of the stored alarms. The alarm can be acknowledged only if the alarm condition has disappeared.

6.7.1.2. Inhibition / End of inhibition

The inhibition (called permanent inhibition) is activated or deactivated manually using the menu. This function is used for deactivating the detector outputs (example: during maintenance).

The « inhibition » menu is available if the sensor is not in inhibition, maintenance inhibition or simulation.

Selecting the inhibition mode will switch the detector in inhibition mode.

The message "End of inhibition" is displayed on the TLU.

Press on "End of inhibition" to get the detector back to normal operating mode.

6.7.2. CALIBRATION sub-menu

6.7.2.1. Zero point setting

The operator can set the zero point with the wireless communication tool TLU600/610.

The detector is in maintenance inhibition mode for 10 minutes after it goes back to main screen. Use the setting menu and validate the INH command for acknowledgement.

Press F4 key to stop communication between TLU600/610 and the detector.

The zero point setting is ignored and the previous value is retained

```
DMi-TT6
   0 ppm H2S
[0 ---------- 100%]
INFO|ADJT|MAIN|FCNX
```

```
ADJUSTMENT



STAT|CAL.|      |>>
```

```
ADJUSTMENT



ZERO|CAL.|WET |ESC
```

Zero point is correct

Detector goes into maintenance inhibition mode

Sigma-calibration (DM-TT6-S only)

```
ZERO ADJUSTMENT
   3 ppm H2S
Validation?
ZERO|[%] |DATE|ESC
```

Please refer to next chapter

Wait until measurement stabilizes
Zero point is NOT correct (out of scale)

```
ZERO ADJUSTMENT
Fault
Sensor in fault?
YES | NO |      |
```

```
ZERO SETTING DATE
Current:06/08/2011
Next   :07/09/2011
--  | ++ | >> |VAL.
```

Zero date screen*:
Used to set a date for the zero point and suggest the next zero point scheduled date

```
ZERO ZONE

[0 000000---- 100%]
   |      | << |ESC
```

Zero positionning screen :
Indicates current deviation from initial factory setting

The detector switches to fault state
4-20 mA: = 2 mA
0-22 mA: = 2.6mA

* The device doesn't embed battery, it is then not able to keep real time. The date indication for zero or calibration points, as well as the next expected date for similar operations, are entered manually by the operator. Those data are for information only and their update is optional.mise à jour est facultative.

6.7.2.2. Calibration

Calibration must be made with the gas the detector is set to detect, with the SET menu (F2 key) of the wireless communication tool TLU600/610 and a calibration kit.

The calibration gas should be injected at a flow rate between 30 l/h and 60 l/h. For the DGi-TT7-O version, on a 25%vol scale, ambient air at 21%vol O_2 generally fits.

The detector is in maintenance inhibition mode for 10 minutes after it goes back to main screen. Use the setting menu and validate the INH command for acknowledgement.

To end of communication between the TLU600/610 and the detector is done by pressing F4 key on main menu.

```
DMi-TT6
   0 ppm H2S
[0 ---------- 100%]
INFO|ADJT|MAIN|FCNX
```

```
      ADJUSTMENT


STAT|CAL.|      | >>
```

The calibration point setting is ignored and the previous value is retained

```
      ADJUSTMENT


ZERO|CAL.|WET.|ESC
```

Detector goes into maintenance inhibition mode

Calibration is correct

```
  CALIBRATION GAS
    50 ppm H2S
value: [10 - 100]
VAL.|      | << |ESC
```

Modify the cylinder gas concentration on the keypad (if necessary) and [VAL]idate

```
  CALIBRATION GAS
    41 ppm H2S
Validation?
CAL.|[%] |DATE|ESC
```

Inject the reference gas at a flow rate between 30l/h and 60l/h. Wait until the measurement is stabilized

```
CALIB. SETTING DATE
Current:06/08/2011
Next   :07/09/2011
-- | ++ | >> |VAL.
```
Calibration date screen*:
Used to set a date for the calibration point and suggest the next calibration point scheduled date

Wait until measurement is stabilized
Calibration is NOT correct (out of range)

```
    CALIBRATION
Fault
Sensor in fault?
YES | NO |      |
```

```
  CALIBRATION ZONE

[0 000000---- 100%]
      |    | << |ESC
```
Calibration positionning screen :
Indicates current deviation from initial factory setting

The detector switches to fault state
    4-20 mA: = 2 mA
    0-22 mA: = 2.6mA

* The device doesn't embed battery, it is then not able to keep real time. The date indication for zero or calibration points, as well as the next expected date for similar operations, are entered manually by the operator. Those data are for information only and their update is optional.mise à jour est facultative.

6.7.2.3. Humidity

Only for DM-TT6-S versions.

This menu allows the operator to calibrate a coefficient (sigma: σ) to take into account the influence of hygrometry on the cell sensibility.

This parameter is used only when a cartridge needs to be replaced. Otherwise, it is factory set from initial range and don't have to be corrected.

Procedure to calibrate a new cartridge:

- Use the ADJT/CAL/WET/CLR menu to reset the parameter of humidity

- Inject dry air as long as necessary until the H_2O concentration (from the INFO/IDEN/SURR/H_2O menu) gets below 4000ppm

- Adjust zero point in dry air (ADJT/CAL/ZERO menu)

- Inject reference dry gas during 4 minutes

- Calibrate (ADJT/CAL/CAL menu)

- Allow the device to stabilize itself to room temperature (with humidity) for 20 to 30 minutes

- Inject reference gas for 4 minutes (humidity must remain above 4000 ppm)

- Parameter the sensibility to humidity (ADJT/CAL/WET/CAL menu)

- Expose the device to ambient air.

This parameter cannot be changed again until the replacement of the cartridge, even during control and maintenance calibration phases.

The « CLR » sub-menu enables to set the default value (σ = 1), either before replacement of the cartridge, or in case of mishandling on this parameter.

6.7.3.   [CONF]iguration sub-menu
6.7.3.1.   Alarm sub-menu

The menu gives access to:

- The number of alarms levels used (0 to 4)
- The trigger's value of the alarm (levels values)
- The alarm's trigger sense (up or down)
- The alarm's memorization (yes/no)

On one hand, the alarm memorization maintains relays and alarm information on the wireless communication tool. On the other hand, the current output and the concentration displayed on the wireless communication tool are always updated with the real concentration

6.7.3.2.   Label and zone sub-menu

This menu allows label and zone's modification. After selecting a label or a zone, the modification function operates in the same manner.

The numeric keys correspond to different alphanumeric characters. For each displayed page, the numeric keys have a different assignment.

Both ˝Label˝ and ˝Zone˝ fields are free text type for identification of the detector (name and position of the detector).

To edit fields select [label] or [zone].

- Press on the corresponding numeric key to select a figure
- Press [>>] to go to the next figure in the field
- Press [PAGE] to go next page

The label or zone modification must be confirmed by pressing the key VALID, otherwise the modification is not taken into account

6.7.3.3.   Output configuration sub-menu
[Adjust] / [Config] / [Outputs]

This menu gives access to the configuration of the relay operating mode and to conditions of activations.

State of the relays:
Each relay can be configured:

- Normally open (not energized)
- Normally closed (energized)

Activation of the relays:
Each relay can be activated on one or several following conditions:

- Alarm
- Fault
- Inhibition

Factory setting:

- Relay 1:   normally open (not energized) activated on alarm levels
- Relay 2:   normally closed (energised) activated by any fault or inhibition

This menu allows you to switch the format of the output current between 4-20 mA and 0-22 mA.

6.7.4.   [INH]ibition submenu

Maintenance inhibition can be configured in « frozen » mode (factory setting) or « free » mode.

- In « frozen» mode, the outputs (current and relay) remain in their previous state.
  For example, if the device displays a fault (2.0 mA), it will remain in this mode during the inhibition.
- If the device is configured in « free » mode, the current output will remain at the same level than the permanent inhibition

6.8. Maintenance menu [MAIN]

The maintenance menu allows the user to check if the detector is in normal operation conditions

- (Test of the relay and current outputs).

6.8.1.   [TEST] sub-menu

6.8.1.1.   Relay menu

This menu gives access to activation or deactivation of the relays.

The detector switches to inhibition mode. The detector will stay in inhibition mode if the user goes back through the steps to the main menu. Otherwise, the detector will return to its "current" state.

6.8.1.2.   The 4-20 mA screen

This menu allows the output current to be set at a chosen value. The possible output values are:

2mA, 4mA, 8mA, 12mA, 16mA, 20mA or 22mA.

During this phase, the detector switches automatically to inhibition mode. The detector will stay in inhibition mode if the user goes back through the steps to the main menu. Otherwise, the detector will return to its "current" state.

6.8.2.   NETWORK sub-menu

This menu gives direct access to different tests for the network. For any further details, please refer to the additional network operating manual:

- SPIN sends the detectors network identification.
- LIEN switches from normal mode to logic link mode.
- SWITCH enables the switches to go on mode open/closed/open secured.

7.   HART COMMUNICATION

The HART communication authorizes an addressing of devices, allowing the communication in read/write mode.

It consists in getting connection on the current loop on which the numerical data are superimposed.

Most of the HART terminal can read these information and send commands

The use of a DD (Device Descriptor) facilitates the interface Man-Device. It can be uploaded on our website.
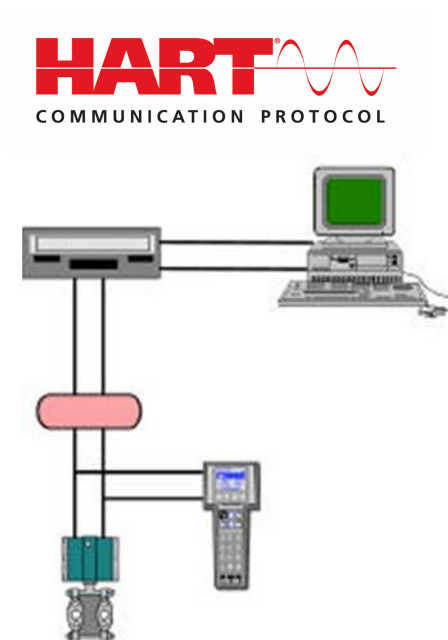
The HART output is an option. It is available only on the devices equipped with an electronic type C, in HART configuration (H):
DMi-**6-****-**H-**-***-*-C-*

SIMTRONICS devices under HART protocol enables the use of all the functions available with the TLU600 via the HART terminal

You will find the description of the commands in a separate document (NOSP16092)

8.   MAINTENANCE

The interventions described in this chapter must be performed by competent and qualified staff. Device performances may be affected if the present instructions are not respected.
Cartridge replacement (DM-TT6 only) and any other operation, imperatively require power to be off.
Cartridges on DMi-TT6 can be unplugged while the power is on.

8.1. Periodic maintenance

We recommend re-calibration of the smart sensor every three months. Correct the zero point if needed.

8.1.1.   Preventive maintenance

Zero point & Calibration check:
A test is recommended every four months for the DMi-TT6-E or DMi-TT6-O versions, and every six months for the DM-TT6-S version.

Run a calibration if necessary. A zero point calibration with clean air (nitrogen for the DMi-TT6-O versions) has to be done first.

We recommend to use a mixture of the target gas with a 50% of the measuring range concentration. The complement of the mixture should, preferably, be Air.

8.1.2.   Corrective maintenance

If the detection unit or the PLC signals a detector fault, the detector must be tested directly with the wireless communication tool to determine the type of fault.

If the detector is configured in 0-22 mA output, it is possible to have a pre-diagnostic of the fault.

8.2. List of main faults

In addition of the current loop faults, other information are available from the wireless communication tool TLU600/610 (refer to §6.5). If the detector does not work properly, the following table can help you to determine the causes and effects of different possible troubles.

FAULTS	CAUSES	SOLUTIONS
The green LED is OFF	Power supply failure	Check that there is a voltage between 18 and 28 V_{DC} at the detection unit or the PLC output
		Check line continuity
No 4-20 / 0-22 mA signal (3 wires)	Power supply failure	Check that there is a voltage between 18 and 28 V_{DC} at the detection unit or the PLC output
		Check line continuity
	No shunt between V+ and L+ on 3-wires connections	Fit shunt
No 4-20 / 0-22 mA signal (4 wires)	Power supply failure in current loop	Connect a milliamp meter to the current loop and check
No remote control connection	Remote sensor power supply failure	Check whether green LED is flashing
	Dialogue problem	Check the remote control by using it on another remote sensor
Zero point or zero point drift	Incorrect setting (adjustment carried out with gas present)	Reset zero point
	Wrong setting of the humidity parameter : s	Clear this parameter and set it again
	Faulty cartridge	Replace cartridge
	Remote sensor malfunction	Replace remote sensor
Calibration	Incorrect setting	Re-calibrate and check the validity of the reference gas
	Wrong setting of the humidity parameter : s	Set this parameter to its default value and make the adjustment again
	Faulty cartridge	Replace cartridge
	Incorrect reference gas entered	Check the reference gas entered. Check cylinder concentration
	Remote sensor malfunction	Replace remote sensor
Hardware	Faulty cartridge	Replace cartridge
	Remote sensor malfunction	Replace remote sensor
Configuration	Remote sensor malfunction	Replace remote sensor
Temperature or humidity	Faulty cartridge	Replace cartridge
	Remote sensor malfunction	Replace remote sensor

8.3. Replacing the cartridge

Follow the instruction in §4.4.

8.4. Replacing the complete detector

If the operator needs to replace the complete detector, the easiest way is to take off the main housing from the base of the detector (for more details, refer to §4.2.1).

As the base of the detector remains in place, cable glands do not need to be dismantled. If the detector is not replaced immediately, the "open" base must be protected against humidity, dust and shocks

No intervention should be performed when the detector is powered.

9. WARNINGS

This document is not contractual. The product characteristics may be modified without prior notice for improvement purposes or for upgrading to meet applicable standards.

9.1. Safety

These devices are certified to be used in hazardous areas. Install and use the detectors in accordance with local and national regulations.

The detector must be properly grounded for protection against electric shocks and minimize electrical interference.

The detector must be installed and handled only by qualified personnel.

There is no part that can be changed or repaired by the user. Calibration is done at the factory, it must be checked periodically. Return the product to the factory for any maintenance or repair outside the scope of calibration.

9.2. Ownership and confidentiality

The information, design data, drawings and diagrams contained in this document remain the property of SIMTRONICS and are confidential.

The information contained in this document cannot be used, either partially or wholly, nor divulged or reproduced without the prior agreement of SIMTRONICS.

10. WARRANTY

MultiTox are waranted 1 year. Application of the equipment warranty is subject to compliance with the state of the art and the operating instructions contained in this manual.

The SIMTRONICS warranty shall not apply; furthermore SIMTRONICS declines all liability, for damage to equipment or harmful accidents caused by negligence, failure to supervise the equipment or failure to use the equipment in compliance with the applicable recommendations, standards and regulations stipulated in the present manual.

The SIMTRONICS warranty shall not apply to faults resulting either, from materials supplied by the Purchaser, from design imposed by the Purchaser, from servicing or maintenance carried out on SIMTRONICS equipment by a third party not explicitly authorized, or from the use of unsuitable storage conditions.

In order to guarantee correct operation of the system, any addition of equipment to the system or any modification of the installation must be validated by SIMTRONICS.

11.   DECLARATION OF CONFORMITY

11.1. Product standards

MultiXplo and MultiTox detectors have been certified according to ATEX directive 94/9/CE, EMC Directive 2004/108/CE and requirements lay down by the following standards:

EN 60079-0 / IEC 60079-0	Electrical apparatus for potentially explosive atmospheres. General requirements
EN 60079-1 / IEC 60079-1	Electrical apparatus for potentially explosive atmospheres. Flameproof enclosure "d"
EN 60079-11 / IEC 60079-11	Electrical apparatus for potentially explosive atmospheres. Equipment protection by intrinsic safety « i ».
EN 50270	Electromagnetic compatibility. Electrical apparatus for the detection and measurement of combustible gases, toxic gases or oxygen

11.2. Approvals

11.2.1. DM Sensors
Protection mode « d »

ATEX	LCIE 03 ATEX 6263, LCIE 03 ATEX 6257
IECEx	LCI 09.0018, LCI 09.0019

11.2.2. DMi Sensors
Protection mode « d ia »

ATEX	LCIE 03 ATEX 6262x, LCIE 03 ATEX 6257
IECEx	LCIE 12.0012x, LCI 09.0019

11.3. Marking

11.3.1. ATEX / IECEx versions

The detector identification label is placed on the main housing, according to directives ATEX 94/9/CE

- Manufacturer	SIMTRONICS
- Model	DMi-TT6...
	DM-TT6...
- Serial Number	S/N: xxxxxxxxx (xxxxaamm)

DMi-TT6
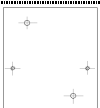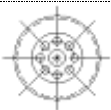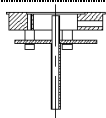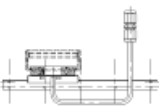
- Type of certification   CE0081 ⟨Ex⟩ II 2 G / Ex d ia II C T6 Gb
-20°C < Ta < + 60°C

- Certificate number   ATEX: LCIE 03 ATEX 6262x, LCIE 03 ATEX 6257

IECEx: LCIE 12.0012x, LCI 09.0019

DM-TT6

- Type of certification   CE0081 ⟨Ex⟩ II 2 G / Ex d II C T6 Gb
-20°C < Ta < + 65°C

- Certificate number   ATEX: LCIE 03 ATEX 6263, LCIE 03 ATEX 6257

IECEx: LCI 09.0018, LCI 09.0019

- Warnings	Warning - Do not open when energized.
- Ingress rate	IP66
- Power supply voltage	VDC: 24 V
- Consumption	W: 5 W

12. ACCESSORIES AND SPARE PARTS

12.1. Accessories

Accessories	Designation	Description	Part Number
	Remote control unit	Required for adjustments and maintenance	TLU 600/610
	Remote control unit HART	Avalaible for adjustments and maintenance	TLH 700
	Adapting Plate	Used to adapt old detector attachments to fit new generation detectors	AS006
	Calibration cup	Fits all cartridges	AS005 ❶
	Tag plate	For on-site identification of detectors	AS215
	Calibration kit	The kit comprises: • One air cylinder and one pressurized cylinder containing a mixture of air and a gas of titrated concentration, • A 30 l/H flow rate pressure reducing and regulating valve, • A 3 meter pipe. The calibrating cup is not included in the calibrati except for H_2 DM-TX6-X	ACKEX
	Filter support	For use in certain situations with molecular filters in order to block out interfering gases.	AS015 ❷
	Remote calibration connection	Accessory enabling a gas supply tube to be attached near the cartridge.	AS016 ❶
	Stainless steel sample flow 2 ways	For use with gas circuit systems.	AS011-2X ❶
	Duct mounting	A series of accessories for installing detectors on different types of ducts	AS02x ❶
	Water, sand and dust protection	Adaptation to all cartridges, the assembly is directly in front of cartridge thanks to the nut of maintain (black on version -A).	AS019 ❸

	Suspension cable enclosure/body	Enables to connect the enclosure with the body during the maintenance operations	AS052
	Tube mounting adapter	Enables DM-T#6, DMi-TT6, DG-T#7, DGi-TT7 et GD10P lines to be mounted on a 2 inch to 2.5 inch diameter tube	AS053
	Weather protection (wall or tube mounting)	Dedicated to protect apparatus from sun / rain / snow.	AS056-250

❶ Detector sensitivity is not modified, response time depend on the flow rate used for injection. A flow rate between 0.5 L/min and 1 L/min should comply with "standard" response time.

❷ Detector sensitivity is not modified; response time can increase depending on the molecular filter used.

❸ Detector sensitivity is not modified, response time (T90) (natural diffusion condition) is increased by 50%.

12.2. Spare parts

- O-ring spare parts
  For the base (All models) - Joint kit BT606   Ref: 04000284

- Lubricant for explosion proof seal and thread: MOLYKOTE Brand, reference P40.

- Cartridges toxic gas detectors type -E: DMi-ST6-F1F2-EX0-ww(inox)
                                                                      DMi-ST6-F1F2-EA0-ww(aluminium)

  (F1&F2 to be specified, ww to be specified).

- Cartridges toxic gas detectors type -O: DMi-ST6-F1F2-EX0–ww(inox)
                                                                      DMi-ST6-F1F2-EA0–ww(aluminium)

  (F1&F2 to be specified, ww=G0 or M0).

- Cartridges toxic gas detectors type -S: DM-ST6-F1F2-SX0-ww(inox)
                                                                      DM-ST6-F1F2-SA0-ww(aluminium)

  (F1&F2 to be specified, ww=SF or SA).

12.3. Gas table codes & range table codes

According to the new references: **DMi-TT6-F1F2**-X☐☐-☐☐-☐☐☐-☐-☐-☐
DM-TT6-F1F2-X☐☐-☐☐-☐☐☐-☐-☐-☐

F1	Formula	Gas name	Comment	F2	Range
01	AsH3	Arsine		00	Pas
02	C2H2	Acetylene		AA	1 ppm
03	C2H4	Ethylene		AB	2 ppm
04	C2H4O	Ethylene oxide		AC	5 ppm
05	C2H6O	Ethanol		AD	10 ppm
06	C2H6O	Dimethylene		AE	20 ppm
07	C3H6	Propene		AF	50 ppm
08	C3H6O	Acetone		AG	100 ppm
09	C3H8	Propane		AH	200 ppm
10	i-C4H10	i-Butane		AJ	500 ppm
11	C5H12	Pentane		AK	1000
12	C6H14	Hexane		AL	2000
13	C6H6	Benzene		AM	5000
14	C7H8	Toluene		AN	10000
15	C8H8	Styrene		AP	3000
16	CH2Cl2	Dichloromethane		BA	1 %Vol
17	CH4	Methane		BB	2 %Vol
18	CG4	Methane	(Biogas)	BC	5 %Vol
19	CH4O	Methanol		BD	10 %Vol
20	Cl2	Chlorine		BE	20 %Vol
21	CO	Carbon monoxide	(H2S comp)	BF	50 %Vol
22	CO	Carbon monoxide		BG	100 %Vol
23	CO2	Carbon dioxide		BH	3 %Vol
24	CO2	Carbon dioxide	(CH4 immune)	BJ	25 %Vol
25	COCl2	Phosgene		BK	4 %Vol
26	X	All gases		DE	20 %LIE
27	CTFE	CTFE		DF	50 %LIE
28	CVM	Vinylchloride		DG	100
29	F2	Fluorine		EE	20 %LIE
30	H2	Hydrogen		EF	50 %LIE
31	H2S	Hydrogen sulphide		EG	100
32	HCl	Hydrogen chloride		GC	5 LELm
33	HCN	Hydrogen cyanide		KA	1 ppm*m
34	He	Helium		JB	2 ppm*m
35	HF	Hydrogen fluoride		KC	5 ppm*m
36	MCPE	MCPE		KD	10
37	N2	Nitrogen		KE	20
38	n-C4H10	n-Butane		KF	50
39	NH3	Ammonia		KG	100
40	NO	Nitric oxide		KH	200
41	NO2	Nitrogen dioxide		KJ	500
42	O2	Oxygen		KK	1000
43	O3	Ozone		KL	2000
44	PFBA	PFBA		KM	5000
45	R22	Chlorodifluoromethane		KN	10000
46	R23	Trifluoromethane		ZZ	Autres
47	SO2	Sulphur dioxide		DP	125% LE
48	C5H10	Cyclopentane			
49	VC2	VC2			

F1	Formula	Gas name	Comment
50	D40	White Spirit	
51	/	Gasoil	
52	/	Super 95	
53	/	Super 98	
54	/	LPG	
55	C2H5Cl	Ethyl chloride	
56	C2H6	Ethane	
57	C3H3N	Acrylonitrile/Vinyl cyanide	
58	C3H6Cl2	Dichloroethane	
59	C3H6O	Propylene oxide	
60	C3H8O	Isopropyl alcohol	
61	C3H8O	Propyl alcohol	
62	C4H10O	Butanol	
63	C4H6	Butadiene	
64	C4H8	Butene	
65	C4H8O	Butanal	
66	C4H8O	Methyl-ethyl-ketone(MEK)	
67	C4H9O2	Ethyl acetate	
68	C5H10O	Methyl-isopropyl-ketone	
69	C5H10O2	Propyl acetate	
70	C5H12O	Isopentanol	
71	C5H8	Isoprene	
72	C6H10	D-limonene	
73	C6H12	Cyclohexane	
74	C6H12	Hexene-1	
75	C6H12O2	Butyl acetate	
76	C6H16	Heptane	
77	C6H4(CH3)2	Xylene	
78	C7H12O2	N-butyacrylate	
79	C2H4	Ethylene	(special)
80	C3H8	Propane	
81	CH4	Methane	
82	C8H18	Octane	
83	CF3-CFH2	R134a	
84	/	Kerosene	
85	C2Cl4	Tetrachloroethene	
86	C2H4	Ethylene	
SA	Xs	Special combustible gas	App SA
CS	H2	Hydrogen in Argon	Complement Argon
CU	H2	Hydrogen in Azote	Complement Azote

13. DECLARATION OF CONFORMITY

![SIMTRONICS Fire & Gas]	**DECLARATION OF EC CONFORMITY**	Réf : **+NOSP0014788** *Rév. : 5*

SIMTRONICS
792, Avenue de la Fleuride
13400 AUBAGNE - FRANCE

We, SIMTRONICS , declare that the following equipment :

DETECTOR MULTIGAZ DM

bearing the following marking : CE 0081 ⟨Ex⟩ II 2 G/ Ex d IIC T6 Gb
-20°C ≤ Ta ≤ +65°C

Is designed and manufactured in compliance with the following applicable Directives :

- ATEX Directive 94/9/EC

Compliance has been obtained by application of the following standards :

EN 60079-0:2009
EN 60079-1:2007

For which an EC-Type Certificate **LCIE 03 ATEX 6263**, and a notification **LCIE 03 ATEX Q 8046** according to Annexe IV have been obtained.

Low Voltage Directive 2006/95/EC is not applicable to this equipment.

- EMC Directive 2004/108/EC

Compliance has been obtained by application of the following standards :

EN 50270 (2007) or EN 54-10 (2002)

For which an evaluation report has been issued.

The notified body in charge of monitoring the ATEX Directive is :

LCIE
33, Avenue du Général Leclerc
92260 FONTENAY AUX ROSES
France

Identification Number : 0081

This equipment shall be used for the purpose for which it has been designed and be installed in accordance with relevant standards and with manufacturer's recommendations.

We, undersigned SIMTRONICS, declare that the product specified above conforms to the listed Directives and standards.

Aubagne, November 27th, 2012

Salvator LA PIANA
Plant Manager

Jean-Pierre RUSSIER
Quality Manager

SIMTRONICS Fire & Gas	**DECLARATION OF EC CONFORMITY**	
		Réf : **+NOSP0014790** Rév. : 4

SIMTRONICS
792, Avenue de la Fleuride
13400 AUBAGNE - FRANCE

We, SIMTRONICS, declare that the following equipment :

DETECTOR MULTIGAZ DMI

bearing the following marking : CE 0081 ⟨Ex⟩ II 2 G/ Ex d ia IIC T6 Gb
-20°C ≤ Ta ≤ +60°C

Is designed and manufactured in compliance with the following applicable Directives :

- ATEX Directive 94/9/EC

Compliance has been obtained by application of the following standards:

EN 60079-0:2009
EN 60079-1:2007
EN 60079-11:2007
For which an EC-Type Certificate **LCIE 03 ATEX 6262X**, and a notification **LCIE 03 ATEX Q 8046** according to Annexe IV have been obtained.

Low Voltage Directive 2006/95/EC is not applicable to this equipment.

- EMC Directive 2004/108/EC

Compliance has been obtained by application of the following standards :

EN 50270 (2000)

For which an evaluation report has been issued.

The notified body in charge of monitoring the ATEX Directive is :

LCIE
33, Avenue du Général Leclerc
92260 FONTENAY AUX ROSES
France

Identification Number : 0081

This equipment shall be used for the purpose for which it has been designed and be installed in accordance with relevant standards and with manufacturer's recommendations.

We, undersigned SIMTRONICS, declare that the product specified above conforms to the listed Directives and standards.

Aubagne, November 27th, 2012

Salvator LA PIANA
Plant Manager

Jean-Pierre RUSSIER
Quality Manager

SIMTRONICS
Fire & Gas

DECLARATION
OF EC CONFORMITY

Réf : +**NOSP0014802**
Rév. : 6

SIMTRONICS
792, Avenue de la Fleuride
13400 AUBAGNE - FRANCE

We, SIMTRONICS, declare that the following equipment :

TELECAPTOR TCM 02

bearing the following marking : CE 0081 ⟨Ex⟩ **II 2 G/ Ex d IIC T6 Gb**
-20°C ≤ Ta ≤ +65°C

Is designed and manufactured in compliance with the following applicable Directives :

- ATEX Directive 94/9/EC
Compliance has been obtained by application of the following standards :

EN 60079-0 : 2009
EN 60079-1 : 2007

For which an EC- Type Certificate **LCIE 03 ATEX 6257** and a notification **LCIE 03 ATEX Q 8046** according to Annexe IV have been obtained.

Low Voltage Directive 2006/95/EC is not applicable to this equipment.

- EMC Directive 2004/108/EC
Compliance has been obtained by application of the following standards :

EN 50270 : 2006

For which an evaluation report has been issued.

The notified body in charge of monitoring the ATEX Directive is :

LCIE
33, Avenue du Général Leclerc
92260 FONTENAY AUX ROSES
France

Identification Number : 0081

This equipment shall be used for the purpose for which it has been designed and be installed in accordance with relevant standards and with manufacturer's recommendations.

We, undersigned SIMTRONICS, declare that the product specified above conforms to the listed Directives and standards.

Aubagne, May 14th, 2013

Salvator LA PIANA
Plant Manager

Jean-Pierre RUSSIER
Quality Manager

14.   CONTACT DETAILS

You will find an updated list of distributors on our web site:

www.simtronics.eu

Email address for general enquiries: contact@simtronics.fr

Simtronics SAS
792, av de la Fleuride
BP 11016, 13781 AUBAGNE CEDEX – France
Tel: +33 (0) 442 180 600

Simtronics AS
Kabelgaten 8, Økern Næringspark
PO Box 314, Økern, NO-0511 Oslo, Norway
Tel: +47 2264 5055