



## INSTALLATION MANUAL

# DIGIMON TFT CONSOLE



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## INTRODUCTION

The handbook gives all the instructions for installation and use of DGM console.



**This product complies with EU Directive 2012/19/UE.**

The crossed-bin symbol on the device indicates that the product, at the end of its lifecycle, should be disposed separately from household waste, must be brought to a electrical and electronic equipment collection point.

Note: Start Italiana Srl, in respect of its quality duties may modify its production and the data shown on this handbook. This manual cannot be reproduced, totally and neither partially, without authorization.

## GENERAL WARNINGS

- Please read carefully the instructions given in this handbook before working on this equipment.
- The manufacture is not responsible of any operation performed not mentioned in this handbook.
- In case of failure or faulty operations, please refer to authorized people in charge for maintenance or directly to the manufacturer.
- The manufacturer refuses all responsibility for any eventual injury and/or damage to things caused by the missing observation of safety requirements.
- The assigned personnel is required to know all the safety requirements relative to this equipment.
- In case of doubts about functioning of the equipment please refer to authorized people for maintenance or directly to the manufacturer.
- Every tampering of the equipment relieves the manufacturer from any responsibility in front of competent authorities.



This product is used in fuel tanks and in hazardous areas for risk of explosion and fire. Subterranean leakage of fuel tanks may cause serious damages to environment and injury.

## DESCRIPTION

Console for monitoring level gauge and tanks alarm of 16 probe bus management, 2 sensors, 4 relays on the bus with outputs and programmable events. Can be used with the most popular management system used in service stations.

Main feature	
Supply	12-24VDC
Auxiliary supply	Backup battery 9VDC 2014 Duracell
Consumption	0,75 VA
Number of probes	16
Output	4 RS232
Relay output capacity	4 relay low power MAX 12Vcc 2A
Serial communication	RS485
Host communication	RS232
Configuration	RS232
Working temperature	-20°C / +60°C
Relative humidity	Da 5% a 95% (no humidity)
Protection	IP66/68
Enclosure	Painted metal
Dimension [mm]	165 x 145 x 120

## CONNECTION BOARD

Follow these steps:

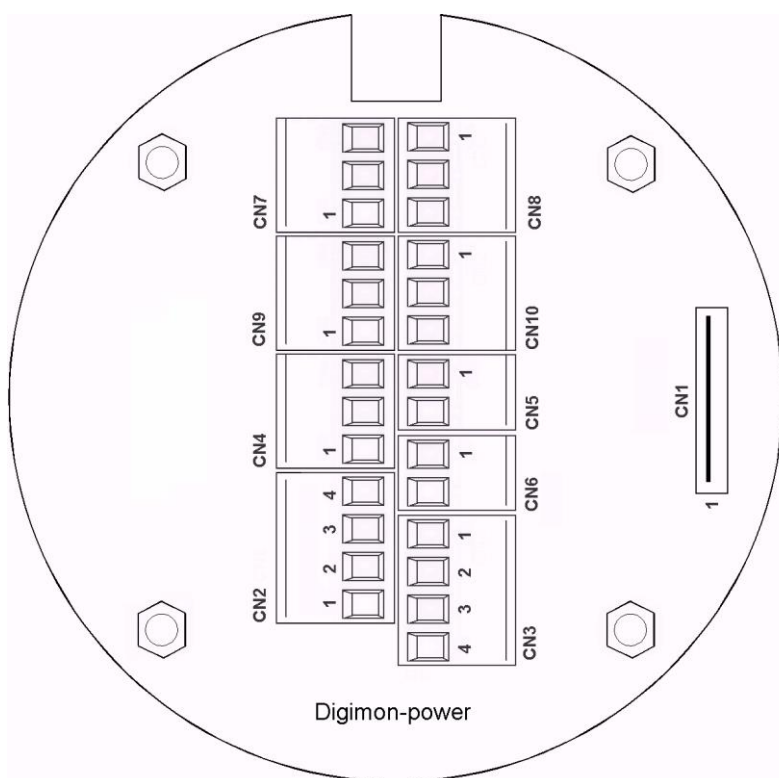
1. Open the top enclosure
2. Remove the 4 cross head screw using correct screw driver that fixes the CPU board



3. Lift the CPU board

**WARNING: be carefull to not damage the flat-cable connection to the underneath DGM POWER board**

4. Proceed connection following procedure procedere later in this handbook, connection summary
5. Use serial RS232 connection on CN4 with proper cable to program the console.



## CONNECTIONS PROSPECT

CN2 RS485 Slave to system	
1	12-24V input
2	RS485-B
3	RS485-A
4	GND

CN4 RS232	
1	RS232-TX
2	RS232-RX
3	GND

CN7 Relay (K1) contacts	
1	K1-NO
2	K1-Common
3	K1-NC

CN9 Relay (K3) contacts	
1	K3-NO
2	K3-Common
3	K3-NC

Cable colors

Red  
Brown  
Blu  
White

CN3 RS485 Master to probe	
1	12V output
2	RS485-A
3	RS485-B
4	GND

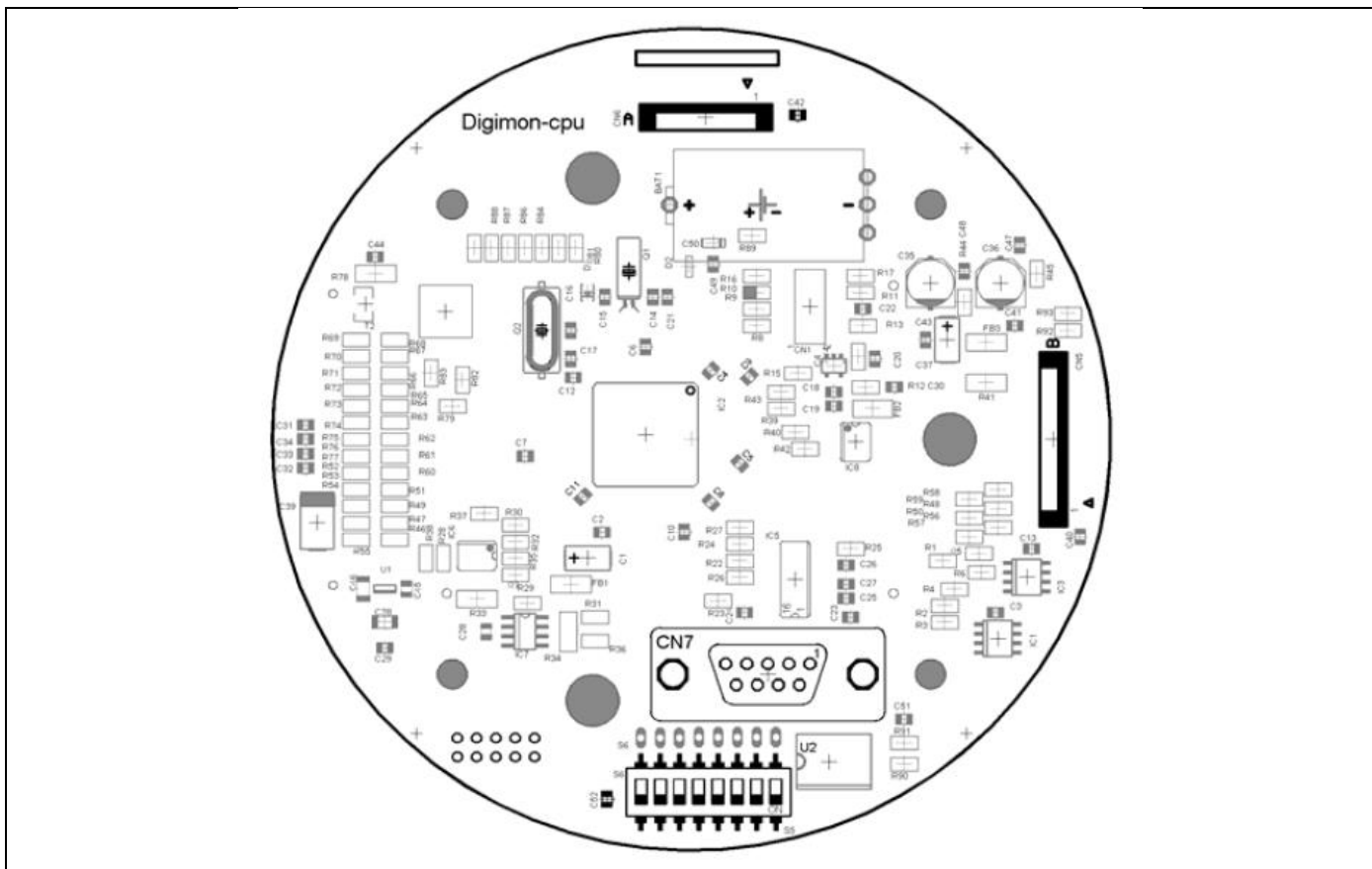
SUB D 9-CN7 RS232 (CPU)	
2	RS232-RX
3	RS232-TX
5	GND

CN8 Relay (K2) contacts	
1	K2-NO
2	K2-Common
3	K2-NC

CN10 Relay (K4) contacts	
1	K4-NO
2	K4-Common
3	K4-NC

## CPU BOARD

CPU board manages all console functions



## INSTALLATION



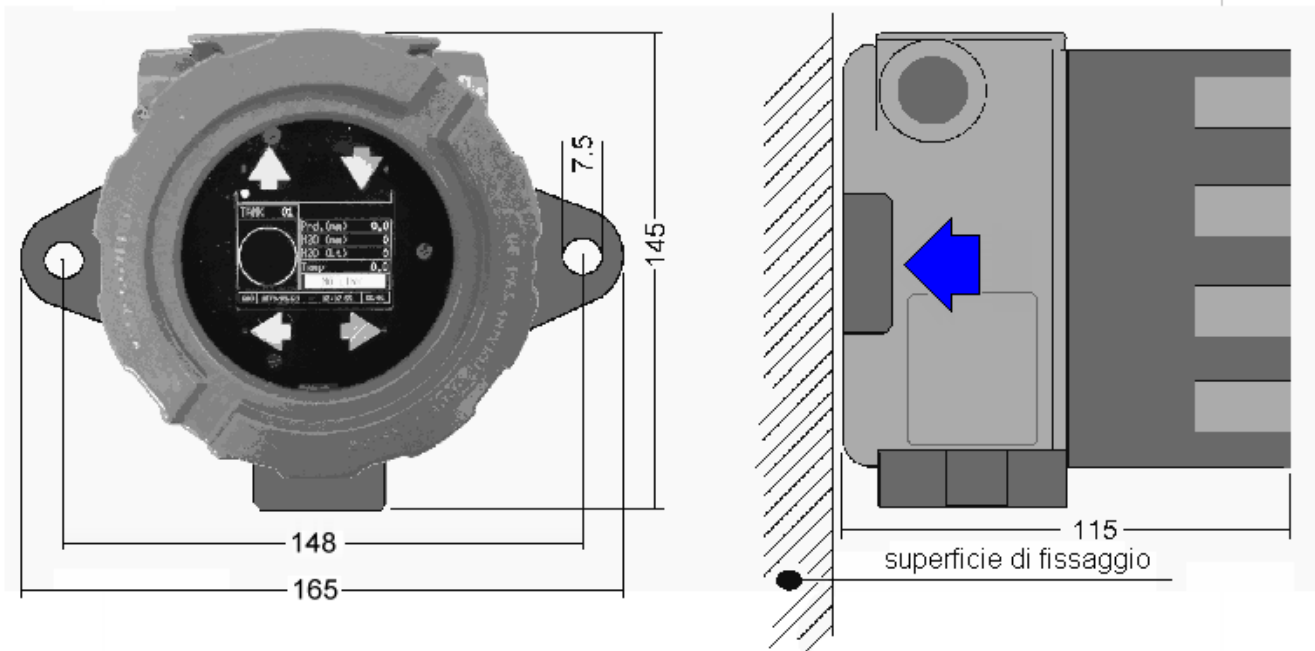
- If mixed with air, the flammable vapors may cause explosion. Hazardous areas may be originated therefore by the presence of gas or vapors.
- Explosions or fires may cause damage, even lethal.
- This console is explosion proof.

### Installation site

When choosing installation site you must consider that the console must be protected from vibration and from critical weather conditions, such as high temperature, humidity and so on, to avoid damages on the electric part.

### Installation procedure

Place the console on the wall, fixed it with holes as described in the picture below.



### Elettronic connection

Follow the steps to connect the console electrically.

- Turn off all the power switches of the electrical panel.
- Connect power supply panel to the console using proper connectors.
- To connect driving force, please use cable with 3 wires whose section is at least 1,5 mm<sup>2</sup> (phase, neutral, earth) adequately protected.



- The equipment installed in hazardous areas shall be explosion-proof or intrinsically safe according to the degree of protection required.

## PROGRAMMING

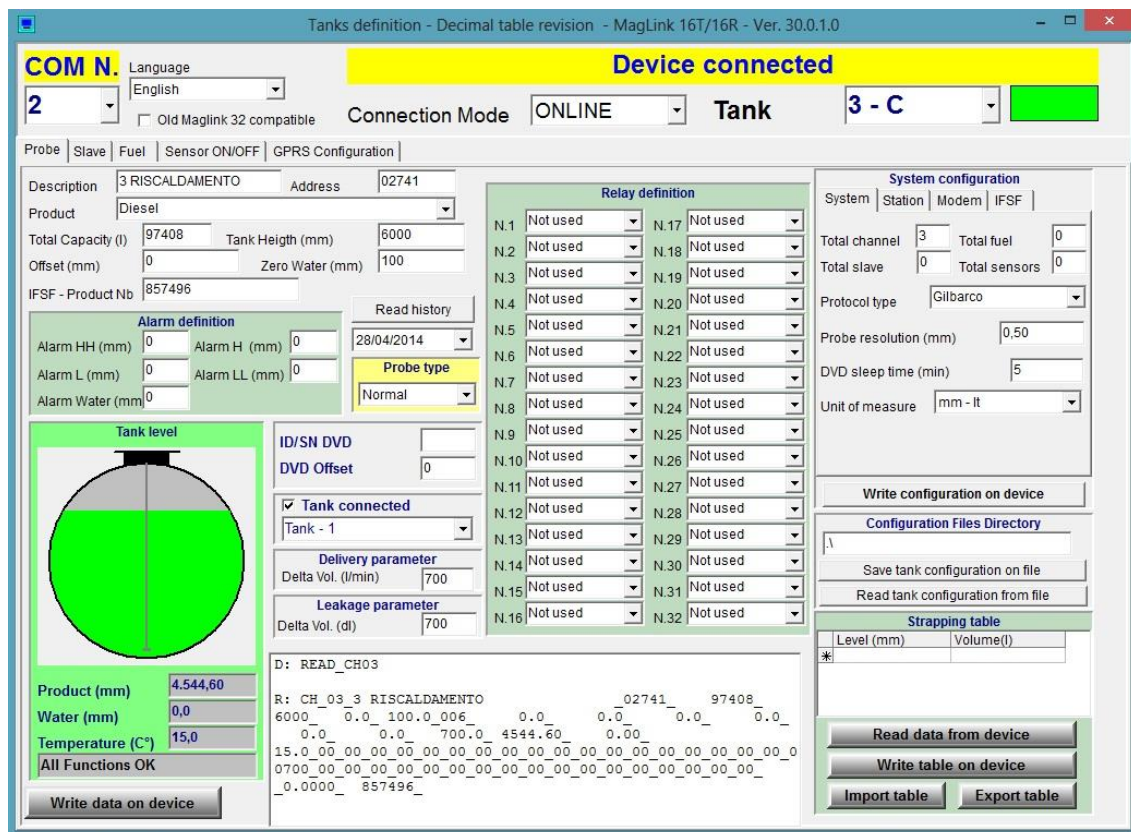
Use Console Config software to program Digimon TFT console.



Select communication port used to connect to the console

The program now should look like this:

CONSOLE CONNECTED CORECTLY.





Channel	you can choose from 32 channels max available.
Description	Displayed tank description ex: <b>DIESEL 01</b>
S.N. Address	Unique serial number, each probe has one.
Product	select tank product type.
Tot. Capacity	Total capacity in liters, based on the loaded strapping table
Tank height	tank height in millimeters based in the loaded strapping table
Offset	Product float offset (-30000 +30000 mm): measurement unit in m, 1mm absolute resolution. Used to align the value of the height of the float of the tank product in the tank.
Zero Water	Water float offset (30000 mm): measurement unit in m, 1mm absolute resolution, under the specified value the height water value read by the float is zero.

## ALARM DEFINITION

In the alarm section you set various alarm thresholds point for each level probe.

Allarme HH	very high threshold in mm.
Allarme H	high threshold in mm.
Allarme L	low threshold in mm.
Allarme LL	very low threshold in mm.
Allarme Acqua	water threshold in mm.

## TANK LEVELS

Here you can see the current level of the product in the selected tank

Product (mm)	Product tank level.
Water (mm)	Water tank level.
Temperature (C°)	Product temperature in the tank

## RELAY DEFINITION

Here you can assign relay functions from 1 to 16 for each tank. Relay can be assigned one for each tank or simultaneously on all channels

EX:

Relay N1 Low level alarm tank 1

Relay N2 Low level alarm tank 1

Relay N1 Low level alarm tank 1,2,3...32

## WRITE DATA TO UNIT

This button is used to store data

## CHANNELS

Here you can select the tank from 1 to 32 of the console

## SYSTEM CONFIGURATION

Console configuration section:

<b>TOTAL CHANNEL</b>	set total number of probes conneted to the console.
<b>TOTAL SLAVE</b>	set total number of slave configured in the console es: Display Digimon slave bordo macchina.
<b>HISTORY INTERVAL (min)</b>	time elapsed used to store history measurements on Micro SD (if present)
<b>PROTOCOL TYPE</b>	select output communication protocol on serial port RS232 of the console to connect the console to managment systems (GILBARCO, TOHKEIM, NUOVO PIGNONE, TOPLEVEL)
<b>DELIVERY TIMES (S)</b>	

## WRITE CONFIGURATION

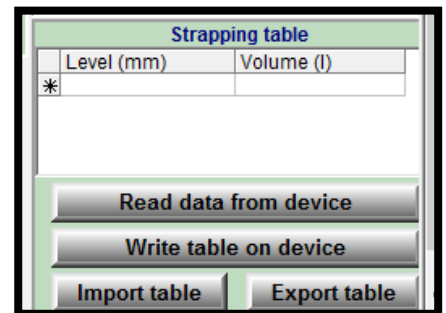
Button to save the above information to the console.

## STRAPPING TABLE

The console has the facility to calculate the volume starting from the height as linear interpolation between two near points. In order to do that operation the strapping table (correspondence mm – lt) must be downloaded into the console.

It is necessary to follow few rules in order to download correctly the table into the console:

- Values in **millimeters/inches** and liters/gallons
- Maximum number of points: **250**
- Numbers with decimals have to be written with a dot ( . ) and not with a comma.
- Table has to be written in Excel or Note Pad and saved as **.csv** or **.txt**.



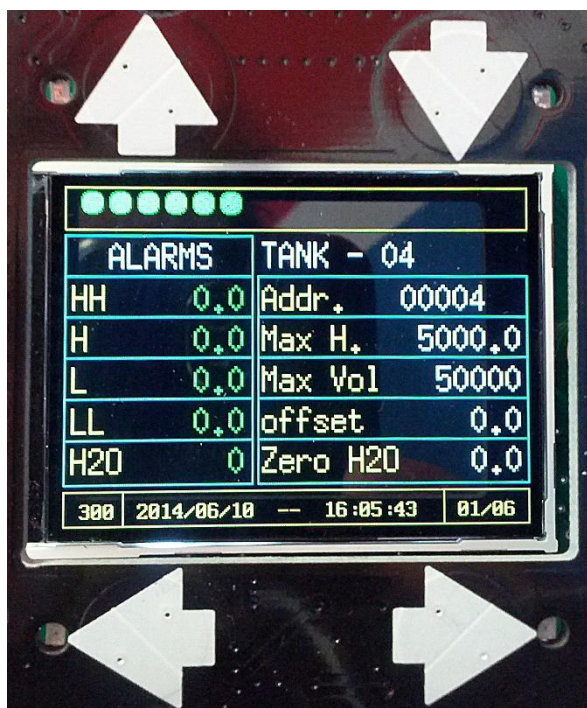
The .csv format allows to save the data filled into the Excel table separating them with semicolon symbol ( ; ).

Opening .csv file with Note Pad it will be possible to read data as per the example shown below. Otherwise it is possible to complete the table manually into program Note Pad separating the values with semicolons.

## DIGIMON FUCNTIONS

Following all the Digimon available functions, tank data, diagnostic data, graphical an stock percentage. Arrow are used to navigate through all the tanks connected and all the functions.

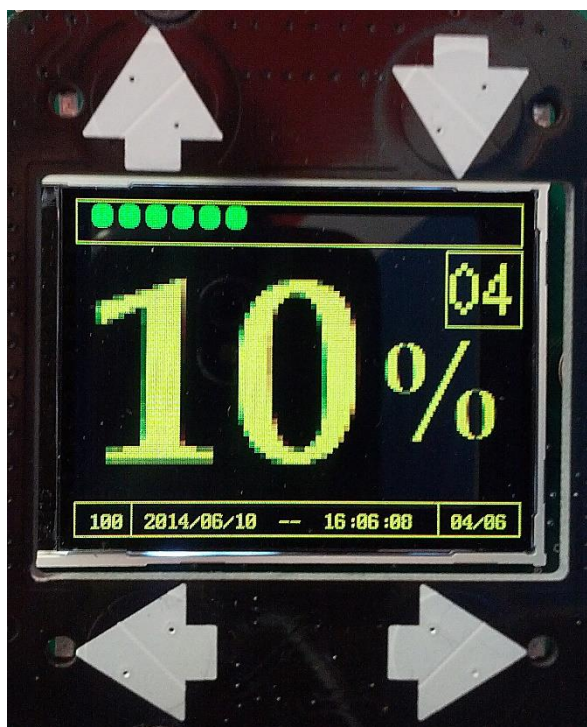
Tank data



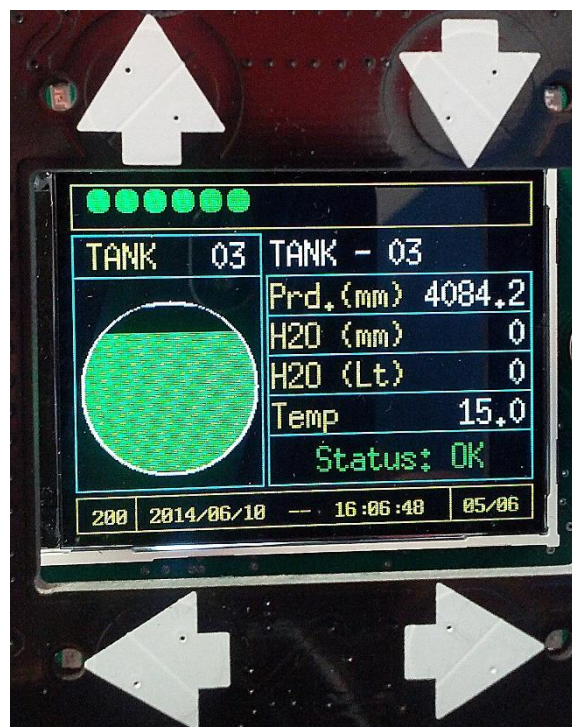
Diagnostic Data



Percentage tank data



Graphical tank data





## ATEX CERTIFICATION AND CESI NOTIFICATION

**INERIS**

- (2) **Equipment and protective systems intended for use in potentially explosive atmospheres**  
**Directive 94/9/EC**

(1) **EC-TYPE EXAMINATION CERTIFICATE**

- (3) Number of the EC type examination certificate: **INERIS 06ATEX0051**

- (4) Equipment or protective system:

**LEVEL TRANSMITTER or SWITCH or DISPLAY TYPE XMT, XCR, XLR or DGM**

- (5) Manufacturer: **START ITALIANA srl**

- (6) Address: **Via Napoli, 29A  
I - 20030 Bovisio Masciago (MI)**

- (7) This equipment or protective system and any other acceptable alternative of this one are described in the annex of this certificate and the descriptive documents quoted in this annex.

- (8) The INERIS, notified body and identified under number 0080, in accordance with article 9 of Council Directive 94/9/EC of the 23<sup>rd</sup> March 1994, certifies that this equipment or protective system fulfils the Essential of Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres, described in annex II of the Directive.

The examinations and the tests are consigned in confidential report No P64807/06.

- (9) The respect of the Essential Health and Safety Requirements is ensured by:




- conformity with:

EN 50 014 of June 1997 + Amendments 1 and 2  
EN 50 018 of November 2000 + Amendment 1  
EN 50 281-1-1 of September 1998 + Amendement 1

- specific solutions adopted by the manufacturer to meet the Essential Health and Safety Requirements described in the descriptive documents.

EC-Type Examination Certificate N° INERIS 06ATEX0051

- (10) Sign X, when it is placed following the Number of the EC type examination certificate, indicates that this equipment and protective system is subjected to the special conditions for safe use, mentioned in the annex of this certificate.
- (11) This EC type examination certificate relates only to the design, examination and tests of the specified equipment or protective system in accordance to the directive 94/9/EC. Further requirements of the Directive apply to the manufacturing process and supply of this equipment or protective system, these are not covered by this certificate.
- (12) The marking of the equipment or the protective system will have to contain:

 II 1/2 G  
 II 1/2 GD or  II 2 GD

EEx d IIB T6 or EEx d IIC T6  
EEx d IIB T6 or EEx d IIC T6 T85 °C IP66/68

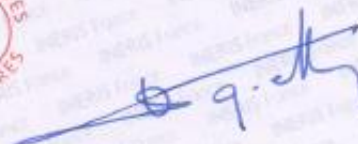
Verneuil-en-Halatte, 2006 11 15



C. PETITFRERE

Project Manager at the ATEX  
Equipment Certification Laboratory





Director of the Certifying Body,  
By delegation  
B. PIQUETTE  
Deputy Manager of Certification



EC-Type Examination Certificate N° INERIS 06ATEX0051

(13)

## ANNEX

(14)

EC TYPE EXAMINATION CERTIFICATE N° INERIS 06ATEX0051

### (15) DESCRIPTION OF THE EQUIPMENT OR THE PROTECTIVE SYSTEM

This apparatus, intended with different types, consists in a tube screwed on one of the following flameproof enclosures :

- Type XD-AD, XD-Adwin or XD-ADH covered by the EC type examination certificate FTZU 03ATEX0074U, code EEx d IIC.
- Type XD-I or XD-Iwin covered by the EC type examination certificate FTZU 03ATEX0207U, code EEx d IIC;
- Type XD-ID100 or XD-ID100win covered by the EC type examination certificate FTZU 04TEX0332U code EEx d IIC.

One version for display, type DGM, is intended without tube.

The tube fitted with the metallic or spansil NBR float is located in Zone 0.

The enclosure gets the protection degrees IP66/68 according to the European standard EN 60 529, the verification of the protection degree IPX8 corresponds to an Immersion under 1 meter of water during one hour.

### PARAMETERS RELATING TO THE SAFETY

#### Transmitter type XMT and Display type DGM :

Supply voltage : 9 to 30 V (dc)  
Current : 15 to 110 mA  
Maximum power dissipated : 600 mW

#### Transmitter type XCR :

Supply voltage : 12 to 30 V (dc)  
Maximum power dissipated : 600 mW

#### Switch type XLR :


Supply voltage : 220 to 400 V (ac or dc)  
Current : 0.5 to 3 A

EC-Type Examination Certificate N° INERIS 06ATEX0051

**MARKING**

Marking has to be readable and indelible; it has to include the following indications:

**A- Transmitter or switch with spansil NBR float :**

- START ITALIANA srl
- I - 20030 Bovisio Masciago (MI)
- (\*)
- INERIS 06ATEX0051
- (Serial number)
- (Year of construction)
-  II 1/2 G
- EEx d IIB T6
- Tamb : -20°C to 60°C
- DO NOT OPEN WHEN ENERGIZED


(\*) One of the following types : XMT, XCR or XLR

**B- Transmitter or switch with metallic float :**

- START ITALIANA srl
- I - 20030 Bovisio Masciago (MI)
- (\*)
- INERIS 06ATEX0051
- (Serial number)
- (Year of construction)
-  II 1/2 GD
- EEx d IIC T6
- T85°C IP66/68
- Tamb : -20°C to 60°C
- DO NOT OPEN WHEN ENERGIZED

(\*) One of the following types : XMT, XCR or XLR

**C- Display DGM :**

- START ITALIANA srl
- I - 20030 Bovisio Masciago (MI)
- DGM
- INERIS 06ATEX0051
- (Serial number)
- (Year of construction)
-  II 2 GD
- EEx d IIC T6
- T85°C IP66/68
- Tamb : -20°C to 60°C
- DO NOT OPEN WHEN ENERGIZED

Marking may be carried out in the language of the country of use.

The protective system or equipment has also to carry the marking normally stipulated by its construction standards.



EC-Type Examination Certificate N° INERIS 06ATEX0051

**ROUTINE EXAMINATIONS AND TESTS**

Each equipment, except the display type DGM, defined above have to successfully passed the following individual tests before delivery :

- In accordance with clause 16.1 of the EN 50 018 standard, an overpressure test of a period comprised between 10 and 60 seconds under 30.8 bar.

**(16) DESCRIPTIVE DOCUMENTS**

The descriptive documents quoted hereafter constitute the technical documentation of the equipment, subject of this certificate.

- Certification file n° A4-015 rev.0 of 2006.07.03 signed on 2006.07.03 included 7 items.

**(17) SPECIAL CONDITIONS FOR SAFE USE**

The conditions are stipulated on the instruction.

**(18) ESSENTIAL SAFETY AND HEALTH REQUIREMENTS**

The respect of the Essential Health and Safety Requirements is ensured by:

- Conformity to the European standards EN 50 014, EN 50 018 and EN 50 281-1-1,
- All provisions adopted by the manufacturer and defined in the descriptive documents.



Addition No 01 to the EC-type examination certificate INERIS 06ATEX0051

## ADDITION

(3) **INERIS 06ATEX0051/01**

(4) **LEVEL TRANSMETTEUR or SWITCH or DISPLAY TYPE XMT, XCR, XLR or DGM**

(5) **Made by START ITALIANA srl**

(15) **PURPOSE OF THE ADDITION**

- Application of new standards EN 60079-0 : 2006, EN 60079-1 : 2004, EN 61241-0 : 2006 and EN 61241-1 : 2004.
- Use of a new float in PVC.
- Adjonction of a new boxes type XD-JBA, XD-JBAwin, XD-JBB and XD-JBBwin covered by the EC type examination certificate FTZU 07ATEX0134U, code Ex d tD IIC.

**PARAMETERS RELATING TO THE SAFETY**

The parameters relating to the safety are unchanged.


**MARKING**

The marking is modified as follows:

**A- Transmitter or switch with spansil NBR float :**

START ITALIANA  
I - 20030 Bovisio Masciago (MI)

(\*)  
INERIS 06ATEX0051  
(Serial number)  
(Year of construction)

 II 1/2 GD

Ex d IIB T6  
Ex tD A21 IP66/68 T85°C  
T<sub>amb</sub> : -20°C to 60°C

**WARNING : DO NOT OPEN WHEN ENERGIZED**

(\*) One of the following types : XMT, XCR or XLR

Addition No 01 to the EC-type examination certificate INERIS 06ATEX0051

**B- Transmitter or switch with metallic float :**

START ITALIANA


I - 20030 Bovisio Masciago (MI)

(\*)

INERIS 06ATEX0051

(Serial number)

(Year of construction)

 II 1/2 GD

Ex d IIC T6

Ex tD A21 IP66/68 T85°C

T<sub>amb</sub> : -20°C to 60°C

**WARNING : DO NOT OPEN WHEN ENERGIZED**

(\*) One of the following types : XMT, XCR or XLR

**C- Transmitter or switch with sparsil PVC float :**

START ITALIANA


I - 20030 Bovisio Masciago (MI)

(\*)

INERIS 06ATEX0051

(Serial number)

(Year of construction)

 II 1/2 GD

Ex d IIA T6

Ex tD A21 IP66/68 T85°C

T<sub>amb</sub> : -20°C to 60°C

**WARNING : DO NOT OPEN WHEN ENERGIZED**

(\*) One of the following types : XMT, XCR or XLR

**D- Display DGM :**

START ITALIANA


I - 20030 Bovisio Masciago (MI)

DGM

INERIS 06ATEX0051

(Serial number)

(Year of construction)

 II 2 GD

Ex d IIC T6

Ex tD A21 IP66/68 T85°C

T<sub>amb</sub> : -20°C to 60°C

**WARNING : DO NOT OPEN WHEN ENERGIZED**

Marking may be carried out in the language of the country of use.

The protective system or equipment has also to carry the marking normally stipulated by its construction standards.

## Addition No 01 to the EC-type examination certificate INERIS 06ATEX0051

**ROUTINE EXAMINATIONS AND TESTS**

The routine examinations and tests are modified as follows :

Each equipment defined above, except the display type DGM, have to successfully passed the following individual tests before delivery in accordance with clause 16.1 of the EN 60079-1 standard, an overpressure test of a period comprised between 10 and 60 seconds under 30.8 bar.

**(16) DESCRIPTIVE DOCUMENTS**

The descriptive document quoted hereafter constitutes the technical documentation describing the modification of the equipment, subject of this present addition.

Certification file n° A4-015 rev.1 of 2007.03.06 (8 rubrics)

signed on 2008.02.18

**(17) SPECIAL CONDITIONS FOR SAFE USE**

None.


**(18) ESSENTIAL SAFETY AND HEALTH REQUIREMENTS**

The respect of the Essential Health and Safety Requirements is completed as follows:

- Conformity to the standards EN 60079-0:2006, EN 60079-1:2004, EN 61241-0:2006 and EN 61241-1:2004.
- All provisions adopted by the manufacturer and defined in the descriptive documents.

Verneuil-en-Halatte, 2008 03 06

S. MAUGER  
Project Manager at the ATEX  
Equipment Evaluation Laboratory



Director of the Certifying Body,  
By delegation  
T. HOUeix  
Certification Officer  
Certification Division

Addition No 02 to the EC-type examination certificate INERIS 06ATEX0051

## ADDITION

(3) INERIS 06ATEX0051/02

(4) LEVEL TRANSMITTER or SWITCH or DISPLAY TYPE XMT, XCR, XLR or DGM

(5) Made by START ITALIANA S.r.l

(15) PURPOSE OF THE ADDITION

Adjonction of a new boxes for DGM version type LIMATHERM XD-120 and LIMATHERM XD-JB-85 covered by the EC type examination certificate FTZU 08ATEX0181U and FTZU 05ATEX0262U.

PARAMETERS RELATING TO THE SAFETY

The parameters relating to the safety are unchanged.

MARKING

The marking is unchanged.

ROUTINE EXAMINATIONS AND TESTS

The routine examinations and tests are unchanged.

(16) DESCRIPTIVE DOCUMENTS

The descriptive document quoted hereafter constitutes the technical documentation describing the modification of the equipment, subject of this present addition.

- Certification file n° A4-015 rev.0 of 2010.01.18 (5 rubrics) signed on 2010.01.18

(17) SPECIAL CONDITIONS FOR SAFE USE

None.




Addition No 02 to the EC-type examination certificate INERIS 06ATEX0051

(18) ESSENTIAL SAFETY AND HEALTH REQUIREMENTS

The respect of the Essential Health and Safety Requirements is unchanged.

Verneuil-en-Halatte, 2010 04 02



  
Director of the Certifying Body,  
By delegation  
T. HOUEIX  
Certification Officer  
Certification Division

**CESI**

**NOTIFICATION**



CESI S.p.A.  
Via Rubattino 54  
I-20134 Milano - Italy  
Tel: +39 02 21251  
Fax: +39 02 21255440  
e-mail: info@cesi.it  
www.cesi.it

Schema di certificazione

**CESI-ATEX**



PRD N. 018B  
Membro degli Accordi di Mutuo  
Riconoscimento EA, IAF e ILAC  
Signatory of EA, IAF and ILAC  
Mutual Recognition Agreements

ATEX EN 021-1-1

[1] **PRODUCTION QUALITY ASSURANCE  
NOTIFICATION**

[2] **Equipment or Protective System or Component intended for use  
in potentially explosive atmospheres  
Directive 94/9/EC**

[3] Notification number:

**CESI 06 ATEX 031 Q**

[4] Equipment or component type: Transmitters and level switches  
Capacitive sensors for continuous liquid level measurement  
and discriminative function for different  
Terminal boxes  
Magnetostrictive level sensors  
Galvanically isolated barriers  
Flameproof enclosures "d"  
Intrinsic safety "i"  
Encapsulation "m"  
Dust ignition protection "tD"  
Mechanical protection by constructional safety "c"

Protection concepts:

[5] Applicant: START Italiana S.r.l.  
via Pola, 6  
20813 Bovisio Masciago - MB

[6] Manufacturer: START Italiana S.r.l.  
via Pola, 6  
20813 Bovisio Masciago - MB

[7] CESI, notified body n. 0722 in accordance with Article 9 of the Council Directive 94/9/EC of 23 March 1994, notifies to the applicant that the actual manufacturer has a production quality system which complies to Annex IV of the Directive.

[8] This notification is based on audit report n. EX-B2007677 issued the 17/03/2012.

This notification can be withdrawn if the manufacturer no longer satisfies the requirement of Annex IV.

**Results of periodical re-assessment of the quality system are a part of this notification.**

[9] This notification is **valid until 17/03/2015** and can be withdrawn if the Manufacturer does not satisfy the production quality assurance re-assessment.

[10] According to Article 10 [1] of the Directive 94/9/EC the CE marking shall be followed by the identification n. 0722 identifying the notified body involved in the production control stage.

This notification may only be reproduced in its entirety and without any change.

**Date of 1<sup>st</sup> issue  
17th March 2006**

**Date of renewal  
17th March 2012**

Translation issued 17th March 2012

**Prepared  
Tiziano Cola**

Page 1/1

**Verified  
Mirko Balaž**

**Approved  
Fiorenzo Bregani**

**CESI** S.p.A.  
Testing & Certification Division

## REVISION INDEX

DATE	REVISION NUMBER	DESCRIPTION	Firmware revision
05 2014	1	General revision	



Start Italiana S.r.l.  
Via Pola, 6  
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