

# EU TYPE-EXAMINATION CERTIFICATE

1. **EU type-examination Certificate (Module B)**

2. **Equipment or Protective System intended for use in potentially explosive atmospheres (Directive 2014/34/EU)**



3. **EU type examination certificate Nr**      **ITS15ATEX18396 R.1**

4. **Product:**                      Toxic Vapor Analyzer (Kit) \* See general product information

5. **Manufacturer:**              Thermo Fisher Scientific                      **Applicant:**                      Thermo Fisher Scientific

6. **Address:**                      27 Forge Parkway, Franklin, MA 02038, U.S.A.                      **Address:**                      27 Forge Parkway, Franklin, MA 02038, U.S.A.

- 7. This product and any acceptable variation thereto are specified in the schedule to this certificate and therein referred to.
- 8. INTERTEK ITALIA S.p.A., Notified Body n° 2575 in accordance with article 17 of the Directive 2014/34/EU of the European Parliament and Council of the 26 February 2014, certifies that the equipment or protective system has been found to comply with the essential Health and Safety Requirements relating to the design and construction of equipment and protective system intended for use in potentially explosive atmosphere, given in Annex II of the Directive.  
The examination and tests results are recorded in confidential technical evaluation Intertek Report Nr. 104500144DAL-002.
- 9. Compliance with the Essential Health and Safety Requirements has been assured by compliance with standards EN 60079-0:2018, EN 60079-1: 2014 and EN 60079-11: 2012 except in respect of those requirements referred to at item 16 of the Schedule.
- 10. If the sign X is placed after the certificate number, it indicates that the product is subject to Special Conditions for Safe Use specified in the schedule to this certificate.
- 11. This EU-Type Examination Certificate relates only to the design and construction of the specified product. Further requirements of the Directive apply to the manufacturing process and supply of this product. These are not covered by this certificate.
- 12. The marking of the product shall include the following:



II 2 G  
Ex db ib IIC T3 Gb  
Tamb: -10°C ≤ Tamb ≤ +45°C

01 March 2022

**Certificate issue date**

**Todd Relyea**  
Certification Officer  
Intertek Italia S.p.A. (NB 2575)



PDR N° 277B

Membro degli Accordi di Mutuo Riconoscimento EA, IAF e ILAC

Signatory of EA, IAF and ILAC Mutual Recognition Agreements

This certificate has been issued by Intertek Italia S.p.A. NB 2575 on transfer from Intertek Testing & Certification Ltd. (NB 0359) using the same issued original certificate number.



This Certificate is for the exclusive use of Intertek's client and is provided pursuant to the agreement between Intertek and its Client. Intertek's responsibility and liability are limited to the terms and conditions of the agreement. Intertek assumes no liability to any party, other than to the Client in accordance with the agreement, for any loss, expense or damage occasioned by the use of this Certificate. Only the Client is authorized to permit copying or distribution of this Certificate and then only in its entirety. Any use of the Intertek name or one of its marks for the sale or advertisement of the tested material, product or service must first be approved in writing by Intertek.

**Intertek Italia S.p.A.** Via Miglioli, 2/A - 20063 Cernusco sul Naviglio, Milano - Italy



## SCHEDULE

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### 13. DESCRIPTION OF THE EQUIPMENT OR PROTECTIVE SYSTEM

The product (TVA2020 Toxic Vapor Analyzer) is a complete Kit. This product is a vapor monitor for measuring compounds in air. The product (TVA2020 Toxic Vapor Analyzer (Kit)) comes in four main versions: 1. No Probe, 2. Sampling Probe, 3. Enhanced Probe, or 4.

Combination of Sampling and Enhanced Probes. The complete Kit comes with three assemblies: 1. Analyzer with/without probe(s), 2. Battery Charger and 3. USB Barrier. The Analyzer is used in explosive atmospheres alone and the complete kit is used in non-explosive atmospheres only. The Analyzer is powered by Battery Pack. The Complete kit is powered by Mains and Computer.

The Analyzer is a portable gas detection equipment that consist of Battery Pack, Motherboard, Probe options (see above), with/without optional communication modules: 1. Bluetooth and/or 2. GPS or 3. None. The Analyzer uses either FID (Flame Ionization Detection) or PID (Photo Ionization Detection) or both options. The Analyzer includes refillable and replaceable hydrogen cylinder for use by the FID. For operation in Safe Area, the Analyzer is connected to Battery Charger for power and charging of Battery Pack and Computer via USB barrier for downloading data.

The Analyzer uses protection types Ex d (FID assembly) and Ex ib (Other parts of Analyzer). The Battery Charger and USB Barrier are accessories used with Analyzer in non-explosive atmosphere.

#### MODEL

2020 = FID/PID Toxic Vapor Analyzer

#### NOMINAL SUPPLY VOLTAGE AND FREQUENCY

A = 120 Vac 50/60 Hz (North America)

B = 220 Vac 50/60 Hz (Europe)

C = 230 Vac 50/60 Hz(China)

#### DETECTOR

3 = FID (DOT-SP 7607)

4 = Dual (DOT-SP 7607)

5 = FID (Made in China)

6 = Dual (Made in China)

#### PROBE

N = No Probe

S = Sampling Probe

A = Enhanced Probe

C = Both Probes

#### OUTPUTS

1 = None

2 = Bluetooth

3 = GPS

4 = Both

#### SHIPPING

N = None

C = Transportation Case

R = Hydrogen Refill Assembly

B = Case and Refill Assembly

#### CERTIFICATION

2 = ETL(US CLASS 1 DIV 1 GROUPS A-D T3) /ATEX/IECEX/CSA

3 = NEPSI/IECEX (Made in China - Chinese Text)

4 = ATEX/IECEX (Made in China - English Text)



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CE Marking shall be accompanied by the identification number of the Notified Body responsible for surveillance of production.

### 14. DRAWINGS AND DOCUMENTS

TITLE	DOCUMENT Nr	LEVEL	DATE
Layout, TVA2020 Motherboard	110362-00	C	10/19/2015
Assy, TVA2020 Motherboard	110363-00.pdf	C02	3/14/2021
BOM, TVA2020 Motherboard	110363-00(BOM).pdf	C02	3/18/2021
Assy, TVA2020 Motherboard w BT & GPS	110363-03	C	3/23/2021
Schematic, TVA2020 Motherboard	110364-00	C01	3/14/2021
PUI Audio Indicator Spec Sheet	110501-00	B	8/24/2017
Layout, Bluetooth Board	110427-00	B	7/23/2014
Assy, Bluetooth Board	110428-00.pdf	B01	2/20/2019
BOM, Bluetooth Board	110428-00(BOM).pdf	B01	2/20/2019
Schematic, Bluetooth Board	110429-00	B	8/12/2014
Layout, GPS Board	112351-00	B	3/15/2021
Assy, GPS Board	112352-00.pdf	B	3/15/2021
BOM, GPS Board	112352-00(BOM).pdf	B	3/16/2021
Schematic, GPS Board	112353-00	B	3/15/2021
Schematic, TVA2020 Pre-Amp/FID	110405-00	C03	1/19/2018
Layout, TVA2020 Pre-Amp/FID	110527-00	C	10/3/2014
Assembly, TVA2020 Pre-Amp/FID	110528-00.pdf	C03	1/19/2018
BOM, TVA2020 Pre-Amp/FID	110528-00(BOM).pdf	C03	1/19/2018
Layout, Pre-Amp Barrier Board	116442-00	B	10/26/2016
BOM, Pre-Amp Barrier Board	116443-00.xls	B	10/26/2016
Assy, Pre-Amp Barrier Board	116443-00.pdf	B	10/26/2016
Schematic, Pre-Amp Barrier Board	116444-00	B	10/26/2016
Layout, TVA2020 Pump Board	110810-00	B	4/27/2017
Assy, TVA2020 Pump Board	110811-00.pdf	B	10/27/2016
BOM, TVA2020 Pump Board	110811-00(BOM).pdf	B	4/27/2017
Schematics, TVA2020 Pump Board	110812-00	B	10/27/2016
Layout, Probe Head Board	111183-00	E	10/27/2016



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TITLE	DOCUMENT Nr	LEVEL	DATE
Assy, Probe Head Board	111184-00.pdf	E02	3/12/2021
BOM, Probe Head Board	111184-00(BOM).pdf	E02	3/17/2021
Schematics, Probe Head Board	111185-00	E	3/3/2017
Layout, USB Barrier Board	113454-00	C	5/10/2016
Assy, USB Barrier Board	113455-00.pdf	C	5/10/2016
BOM, USB Barrier Board	113455-00(BOM).pdf	C	5/10/2016
Schematics, USB Barrier Board	113456-00	C	5/10/2016
Layout, TVA2020 Battery Charger Board	110927-00	F	3/15/2021
BOM, TVA2020 Battery Charger Board	110928-00(BOM).pdf	F	3/18/2021
Assy, TVA2020 Battery Charger Board	110928-00.pdf	F	2/15/2021
Schematics, TVA2020 Battery Charger Board	110929-00	F	3/15/2021
Label, Charger	114042-XX	E	4/30/2021
*Layout, Battery Board	115672-00	E	1/19/2022
*Assy, Battery Board	115673-00.pdf	E	1/19/2022
*BOM, Battery Board	115673-00(BOM).pdf	E	1/19/2022
*Schematics, Battery Board	115674-00	E	1/19/2022
Battery Datasheet, Li-Ion Cell 3.7V- 1.8Ah	112627-00	B	10/9/2015
Potted, Cell	112626-00	C	10/26/2016
Cable Assy, Red Wire	112635-00	B	10/20/2016
Epoxy Datasheet	112639-00	B	10/20/2016
*Battery Pack, 6 cells and PCB	112654-00	C	12/13/2021
*Epoxy, Potting	112656-00	C	1/17/2022
*Battery	56-011811	G	12/13/2021
Control Document, Flamepath	112846-00	F	7/13/2020
Adapter, Molding	112963-00	E	6/7/2016
Bezel, Display Molding	112964-00	C	10/24/2015
TVA2020, Casing Front	34-011690-0010	F	2/13/2020
TVA2020, Housing, Front	34-011690-0011	G	2/12/2020
TVA2020, Overmold, Front	34-011690-0012	C	10/9/2015
TVA2020, Casing, Rear	34-011690-0020	E	2/13/2020



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TITLE	DOCUMENT Nr	LEVEL	DATE
TVA2020, Housing, Rear	34-011690-0021	D	2/13/2020
TVA2020, Overmold, Rear	34-011690-0022	C	10/12/2015
Ring, Nozzle Retention	34-011878	B	9/29/2015
Handle, Enhanced Probe, Left	34-011948	B	10/9/2015
Handle, Enhanced Probe, Right	34-011949	B	10/9/2015
Handle, Simple Probe, Right	34-011952	B	10/2/2015
Handle, Simple Probe, Left	34-011953	B	10/2/2015
Pump, TVA2020	111241-00	A	4/9/2012
Sensor, PID	111256-00	C	2/22/2017
Display Module, LCD Board	112245-00	F	2/8/2021
Ampire, Display	P0152FV	E	Not Available
Interconnection Diagram	114302-XX	D	2/7/2019
*Label Drawing, TVA2020	116005-XX	E	1/17/2022
Instrument Manual	117061-00	n/a	5/11/2021
VA2020 Interconnection Table	117506-00	A	8/15/2017
Product Safety Specifications	117576-00	C	4/30/2021
Keypad, TVA2020	117624-00	B	11/21/2018
Enhanced Probe Window (8 x 20)	117625-00	B	2/20/2019
Label, Barrier, TVA2020	117777-XX	C	4/30/2021
NDA Protected Schematics	117851-XX	A	3/22/2017
Assy, Enhanced Probe	56-011950-XXXX	E	11/4/2016
Assy, TVA2020	118641-XXXX	B	2/14/2019
TVA Model Code Document	TVA2020-Model	G	Not Available
Label, Protective Overlay	118579-00	A	10/26/2017
Handle, Hydrogen Tank	114011-00	A	8/8/2013
Assy, TVA2020, China	119903-XXXX	A	2/11/2019
Instrument Manual, China	119943-00	n/a	5/11/2021
BOM, Bluetooth Module, Laird	120124-00 (BOM)	A	7/22/2020
Assy, Bluetooth Module, Potted	120124-01	A	10/16/2020
Schematic, Bluetooth Module, Laird	120125-00	A	7/22/2020



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TITLE	DOCUMENT Nr	LEVEL	DATE
Ceramic Potting Epoxy	121128-00	A	Not Available

Copies of the above listed documents are kept at Intertek Italia S.p.A. archive.

### 15. SPECIAL CONDITIONS FOR SAFE USE

None

### 16. ESSENTIAL HEALTH AND SAFETY REQUIREMENTS

The relevant essential Health and Safety Requirements have been identified and assessed in Intertek Report Nr. 104500144DAL-002 dated 9 September 2021.

### 17. ROUTINE (FACTORY) TESTS

None

### 18. DETAIL OF CERTIFICATE CHANGES

#### Changes Considered under Revision 0 of Certificate

Free Reference Number: G104500144

Date: 9 September 2021

- Addition of an alternate wire material
- Addition of an alternate Bluetooth module (Laird BT740-SC)
- Due to the addition of the alternate Bluetooth module, the active trip current on the crowbar circuit will increase from 152mA to 200mA.
  - R67, R71 and R82 have been updated from 0.33Ω to 0.25Ω. These are reference resistors in the crowbar circuitry.
  - This alternate Bluetooth module contains an LDO as well (Torex Semiconductor - XC6214P332PR-G).
  - This alternate module doesn't contain greater than allowed inductance and capacitance as confirmed from the Bluetooth BOM and previously certified analysis.
- MOSFETs that are a part of the crowbar circuit (Q3 – Q18) are obsolete and will therefore be replaced with the following options:
  - Obsolete component – International Rectifier IELL3303
  - Alternate components – ST Microelectronics STN4NF03L and Diodes Incorporated DMN3032LE-13
- Replace MOSFETs Q3, Q4, Q5
- Replace Flash RAM U9
- Revised to track GPS module change to revision B.
- Addition of a voltage divider resistor network to drop voltage to the antenna.
- Replacement for obsolete D15 on the Probe Headboard
- Update of power supply to 6pin mini-DIN
- Update on plastic resin by adding a gray pigment.
- Update of a typo in manufacturer's part number in Display Module, LCB Board
- Update of label drawings due to the notified body change



## SCHEDULE

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- Update EN 60079-0 from 2012 +A11: 2013 to 2018 edition

### **Changes Considered under Revision 1 of Certificate**

**Free Reference Number:** G104925504

**Date:** 30 January 2022

- Modifications to battery board to provide additional current limiting components.
- Modifications to critical component specifications on battery board to provide components more suited to vibration and mechanical stresses.
- Specification of alternate components on battery board to alleviate supply chain issues.
- Specification of alternative encapsulation material on battery board.
- Minor amendments to battery board Gerber file.