

TYPE EXAMINATION CERTIFICATE

Equipment or Protective System Intended for use in Potentially Explosive Atmospheres Directive 2014/34/EU

1. **Type Examination Certificate Number:** ITS15ATEX18396 **Issue** 04
2. **Product:** Toxic Vapor Analyzer (Kit) * See general product information
3. **Manufacturer:** THERMO FISHER SCIENTIFIC
4. **Address:** 27 Forge Parkway
Franklin, MA 02038
USA
5. This product and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.
6. Intertek Testing and Certification Limited, certifies that this product has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of the products intended for use in potentially explosive atmospheres given in Annex II of Directive 2014/34/EU of the European Parliament and of the Council, dated 26 February 2014.
7. Compliance with the Essential Health and Safety Requirements has been assured by compliance with EN 60079-0:2012+A11, EN 60079-11:2012 except in respect of those requirements referred to within item 14 of the Schedule
8. If the sign "X" is placed after the certificate number, it indicates that the product is subject to the special conditions of use specified in the Schedule to this certificate.
9. This Type Examination Certificate relates only to the design of the specified product and not to specific items subsequently manufactured.
10. The marking of the product shall include the following:



II 2 G Ex db ib T3 Gb

-10°C ≤ Ta ≤ 45°C

Certification Officer:



Kevin J. Wolf

Date:

31 March 2020

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11. Description of 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

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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)

12. Report Number

Intertek Report: 103350927CRT-002a and -002b dated 01/10/2019 and 103929852CRT-001a dated 08/21/2019

13. Conditions of Certification

(a). Special Conditions of Use

- None

(b). Conditions of Manufacture - Routine Tests

- None

14. Essential Health and Safety Requirements (EHSRs)

The relevant Essential Health and Safety Requirements (EHSRs) affected by this variation have been identified and assessed in Intertek Report: 103929852CRT-001a dated 08/21/2019

15. Drawings and Documents

Title:	Drawing No.:	Rev. Level:	Date:
Layout, TVA2020 Motherboard	110362-00	C	10/19/2015
Assy, TVA2020 Motherboard	110363-00.pdf	C01	10/5/2018
BOM, TVA2020 Motherboard	110363-00(BOM).pdf	C01	6/25/2019
Assy, TVA2020 Motherboard w BT & GPS	110363-03	B	5/8/2019
Schematic, TVA2020 Motherboard	110364-00	C	9/10/2015
PUI Audio Indicator Spec Sheet	110501-00	A	8/24/2016
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	A01	1/10/2014

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Assy, GPS Board	112352-00.pdf	A01	8/28/2013
BOM, GPS Board	112352-00(BOM).pdf	A01	8/28/2013
Schematic, GPS Board	112353-00	A01	8/28/2013
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
Assy, Probe Head Board	111184-00.pdf	E01	2/20/2019
BOM, Probe Head Board	111184-00(BOM).pdf	E01	6/24/2019
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	E	6/29/2016
BOM, TVA2020 Battery Charger Board	110928-00(BOM).pdf	E	9/12/2016
Assy, TVA2020 Battery Charger Board	110928-00.pdf	E	6/29/2016
Schematics, TVA2020 Battery Charger Board	110929-00	E	6/29/2016
Label, Charger	114042-XX	D	1/22/2019
Layout, Battery Board	115672-00	D	1/30/2019
Assy, Battery Board	115673-00.pdf	C	11/2/2017

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BOM, Battery Board	115673-00(BOM).pdf	C	11/2/2017
Schematics, Battery Board	115674-00	C	11/2/2017
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	B	11/11/2015
Epoxy, Potting, Amber	112656-00	B	10/20/2016
Battery	56-011811	E	11/4/2016
Control Document, Flamepath	112846-00	E	10/29/2015
Adapter, Molding	112963-00	E	6/7/2016
Bezel, Display Molding	112964-00	C	10/24/2015
TVA2020, Casing Front	34-011690-0010	E	10/9/2015
TVA2020, Housing, Front	34-011690-0011	F	10/9/2015
TVA2020, Overmold, Front	34-011690-0012	C	10/9/2015
TVA2020, Casing, Rear	34-011690-0020	D	10/9/2015
TVA2020, Housing, Rear	34-011690-0021	C	10/9/2015
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	E	3/24/2020
Ampire, Display	P0152FV	E	Not Available
Interconnection Diagram	114302-XX	D	2/7/2019
Label Drawing, TVA2020	116005-XX	C	7/18/19

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.

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Registered No 3272281 Registered Office: Academy Place, 1-9 Brook Street, Brentwood, Essex, CM14 5NQ.

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Instrument Manual	117061-00	n/a	7/16/2019
TVA2020 Interconnection Table	117506-00	A	8/15/2017
Product Safety Specifications	117576-00	B	7/10/2019
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	B	1/23/2019
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	7/16/2019

16. Details of Certificate changes Issue 1

- Add new/alternate Diodes D1-D21 in battery pack from ROHM semiconductor RSX501L-20 to ComChip CDBA540-HF.
- Revision of technical documentation as result of new/alternative Diodes in Battery Pack. Additional documentation changes as result of correction and change in nomenclature.

16. Details of Certificate changes Issue 2

- Update Standard: To: EN 60079-0:2018; From: EN 60079-0:2012
- Update Standard: To: IEC 60079-0:2017; From: IEC 60079-0:2011
- Update Standard: To: IEC 60079-1:2014; From: IEC 60079-1:2007
- Add Models (Numbers): For Made in China: TVA2020 followed by A, B or C; followed by 3, 4, 5, or 6; followed by N, S, A or C; followed by 1, 2, 3 or 4; followed by N, C, R or B; followed by 2, 3, or 4.
- Change revision of BOM Drawing # 110528-00; From Rev CO2 To Rev C03:
This is change is to make revision level of BOM and Assembly Drawing Match
- Change revision of Drawing # 110363-00(BOM).pdf: from Rev C to Rev C01:
Alternate manufacturer added to items 61 and 67. Items 61 and 67 are resistors:
- Change revision of Drawing # 110428-00.pdf: from Rev B to Rev B01:

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Assembly drawing revised to match same level as BOM. No changes to drawing.

- Change revision of Drawing # 110428-00(BOM).pdf: from Rev B to Rev B01:
Item 4, added alternate manufacturer: Item 4 is Connector Jack
- Change revision of Drawing # 110405-00: from Rev C02 to Rev C03:
Revised part numbers for D3-D4: from 1SMB5.0AT3G to SMBJ5.0A
- Change revision of Drawing # 110528-00.pdf: from Rev C02 to Rev C03:
Assembly drawing revised to match same level as BOM. No changes to drawing.
- Change revision of Drawing # 110528-00(BOM).pdf: from Rev C02 to Rev C03:
Alternate manufacturers added to Items, 5,7,11,16,17,18,26 and 45.

Item 49 Manufacturer updated from National Semi to TI.

Items 5 & 7 are capacitors,

Item 11 is D3-D4 above.

Item 16 is Q1

Item 17 is Q2

Item 18 is R1

Item 26 is R11

Item 45 is R41

Item 49 is U3

- Change revision of Drawing # 111184-00.pdf: from Rev E to Rev E01:
Assembly drawing revised to match same level as BOM. No changes to drawing.
- Change revision of Drawing # 111184-00(BOM).pdf: from Rev E to Rev E01:
Alternate manufacturers added to Items 2, 4, 17 and 32

Item 2 C1, C3, C4, C7, C8, C9, C11, C22, C25, C26,C27 are capacitor

Item Old 17 is Q1

Item Old 32 are Switches

- Change revision of Drawing # 114042-XX: from Rev: C to Rev D:
Second label added for assemblies built in China.
- Change revision of Drawing # 115672-00: from Rev: C to Rev D:
Correct PCB Layout: Solder Masks For Top and Bottom Sides

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- Change revision of BOM Drawing # 110363-00; From Rev C To Rev C01:
Correct PCB Layout: Layout was erroneously changed from Revision B to C:

Solder Masks For Top and Bottom Sides Reversed Opening For "B-" Pad.

Revision D Corrects Opening For "B-" Pad To Bottom Side.
- Change revision of Drawing #: 114302-XX: from Rev C to Rev D:
Drawing number suffix changed from -00 to -XX. BOM revised to support China built instruments.
- Change revision of Drawing #116005-XX: from Rev B to Rev C:
Drawing number suffix changed from -00 to -XX. Second label added for assemblies built in China (-30). Third part number added for assemblies built in China for Europe (-40). 05/13/19: 'Made in China' added to -30 version of label.
- Change date of Drawing #: 117061-00: from 11/27/2017 to 2/21/2019:
Flow calibration procedure revised.
- Change revision of Drawing # 117624-00: from Rev A to Rev B:
Keypad drawing was split into two parts, separating the intrinsic safety aspects from the construction details.
- Change revision of Drawing # 117625-00: from Rev A to Rev B:
Note changed to 'Anti-glare finish opposite side' from 'Anti-glare finish this side'.
- Change revision of Drawing # 117777-XX: from Rev A to Rev B:
Drawing number suffix changed from -00 to -XX. Second label added for assemblies built in China.
- Change revision of Drawing # 118641-XXXX: from Rev A to Rev B:
Item 35, Drawing number updated to 116005-XX for China models
- New Drawing # 119903-XXXX: Rev A
Part number assigned to support China built instruments
- New Drawing # 119943-00:
Manual created to support China built instruments.
- Change revision of Drawing # TVA2020-Model: from Rev F to Rev G:
Model Code updated to support instruments made in China

16. Details of Certificate changes Issue 3

- Change revision of Drawing # 112245-00: from Rev D to Rev E:
Add new Display LCD module to the existing list.