

TYPE EXAMINATION CERTIFICATE

Product or Protective Systems Intended for Use in Potentially Explosive Atmospheres

UKSI 2016:1107 (as amended)

1. **Type Examination Certificate Number:** ITS21UKEX0238X Issue 00
2. **Product:** MFT B-Series Mass Flow Meters – Models 454FTB, 454PFTB, 454WGF, 454FTB-WGF, 504FTB, 524FTB, 534FTB, and 544FTB

3. **Manufacturer:** Kurz Instruments Inc.

4. **Address:** 2411 Garden Road
Monterey, CA 93940, 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 Schedule 1 of UKSI 2016:1107 (as amended).

The examination and test results are recorded in the confidential report 104670511DAL-001 dated 5th August 2021.

7. Compliance with the Essential Health and Safety Requirements has been assured by compliance with EN IEC 60079-0:2018 and EN IEC 60079-7:2015/A1:2018 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 3 G Ex ec IIC T5...T3 Gc

For ambient temperature ratings refer to Section 11.

Certification Officer: _____
P Moss

Date: _____
16th August 2021

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11. Description of Equipment or Protective System

The MFT-B product family measures mass flow of various gases using a constant differential temperature anemometer. There are no moving parts as it uses the convective heat flow from a heated RTD (resistance temperature device) to infer the mass flux moving past the sensor. One RTD is self-heated and the other is passive measuring the ambient temperature.

The Mass Flow Meters consist of a flameproof enclosure directly mounted to a probe unit with a sensor on the end; the flameproof enclosure is isolated from the probe by a cemented joint. All models can be configured as transmitter attached (1 enclosure containing both the transmitter and sensing element) or transmitter separate (2 separate enclosures, one containing the transmitter electronics and the other containing the sensing element).

Additionally, the equipment has been evaluated for Level of Protection 'ec'. Configurations are found as described above with the addition of a polycarbonate enclosure for the transmitter separate option.

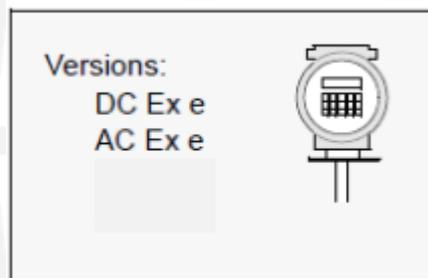


Image 1. Transmitter Attached Configuration

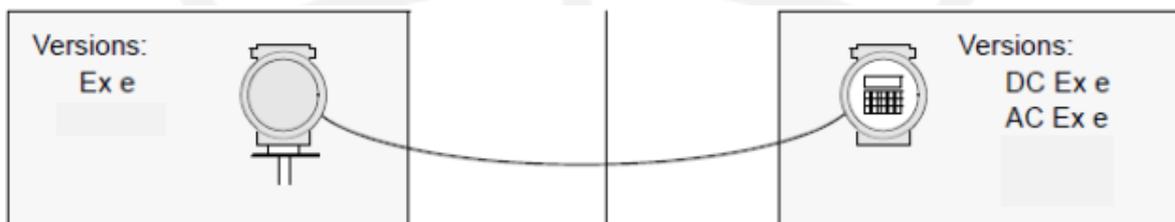


Image 2. Transmitter Separate Configuration



Image 3. Transmitter Separate Configuration with polycarbonate enclosure

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The meters come in two major categories. Insertion and In-line described as follows:

A. Insertion Mass Flow Transmitter

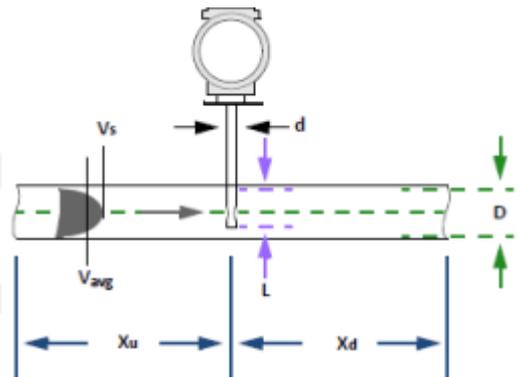


Image 4. Installation of Insertion Meters (representative)

Model 454FTB measures the mass weight velocity or standard velocity at its sensor tip (stings). By entering the flow area and velocity profile correction factor based on an in-situ calibration, it can compute volumetric or mass flow rate of a gas in a duct, pipe, or stack.

Model 454PFTB is the same as the 454FTB above but also includes a pneumatic cleaning method from an external source of inert, pressurized purge gas.

Model 454WGF measures mass weighted velocity or standard velocity after a centripetal water separator. By entering the flow area and velocity profile correction factor based on an in-situ calibration, it can compute volumetric or mass flow rate of a gas in a duct, pipe, or stack. The 454FTB-WGF measures the mass weight velocity or standard velocity at its sensor tip (stings). By entering the flow area and velocity profile correction factor based on an in-situ calibration, it can compute volumetric or mass flow rate of a gas in a duct, pipe or stack.

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B. In-line Mass Flow Transmitters

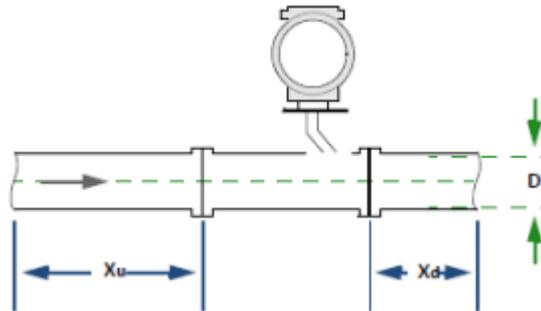


Image 5. Installation of In-line Meters (representative)

All meters are calibrated for standard volumetric or mass flow rate. This product type comes in several pipe and tube configurations depending on the process pressure and application.

Model 524FTB, polished tube flow body used for the ultra-high purity gas flow measurements.

Model 534FTB, schedule 10 pipe flow body with venturi flow conditioner for high immunity to upstream/downstream flow profile disturbances.

544FTB, lightweight aluminum flow body with honeycomb and venturi flow conditioning. Sensor is calibrated for standard velocity and flow is computed from multiplying by the venturi throat area. This device is designed for process pressures found in heating/ventilation duct work +/- 0.1 bar (1.5 psi).

Temperature Ratings:

More than one temperature class has been established for the range of models depending on their ambient and process temperatures as follow:

For Ex d transmitter attached (TA) models:

Input 24 VDC, 1 Amps

Transmitter Enclosure:

Ta = -40° to 65°C Temperature code T4

Sensing Element:

Tp = -40° to 45°C Temperature code T4

or Tp = -40° to 110°C Temperature code T3

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Input: 85-264 VAC, 24 W, 50/60 Hz, 1 PH

Transmitter Enclosure:

Ta = -40° to 50°C Temperature code T4

or Ta = -40° to 65°C Temperature code 150°C (T3)

Sensing Element:

Tp = -40° to 45°C Temperature code T4

or Tp = -40° to 110°C Temperature code T3

For Ex d, transmitter separate (TS) models:

Flow Element (FE) Portion

FE Enclosure:

Ta = -40° to 75°C Temperature code T5

Sensing Element:

Tp = -40° to 45°C Temperature code T4

or Tp = -40° to 110°C Temperature code T3

Flow Transmitter (FT) Portion

Input: 24 VDC, 1 Amps

Transmitter Enclosure:

Ta = -40° to 65°C Temperature code T4

Input: 85-264 VAC, 24 W, 50/60 Hz, 1 PH

Transmitter Enclosure:

Ta = -40° to 50°C Temperature code T4 or

Ta = -40° to 65°C Temperature code: 150°C (T3)

12. Report Number

Intertek Report: 104670511DAL-001 Dated: 5-August-2021.

13. Conditions of Certification

(a). Special Conditions of Use

- All sealing devices including cable glands, blanking elements, thread adapters and stopping plugs are required to be certified to type of protection Ex 'db'; be suitable for use in the ambient temperature range and Group of the equipment; carry the same IP rating of the equipment as a minimum and be suitably sized for the cabling which is carried. Installation shall take into account any applicable special conditions for safe use and all relevant installation requirements of IEC 60079-14.
- External non-metallic materials pose a potential electrostatic charging hazard. To minimize the risk from electrostatic discharge, clean only with a damp cloth.
- Flameproof joints are not intended to be repaired.

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- Each enclosure entry shall have no more than one thread adapter when an adapter is used. A blanking element shall not be used with an adapter.
- Flow Element Sensor (sting) shall only be installed in areas where the presence of ignitable gas concentrations does not exceed Zone 1 limits.

(b). Conditions of Manufacture - Routine Tests

- For the sensor probes: Overpressure test per the requirements of EN 60079-1

Clause 16.1.1: The following routine tests are intended to ensure that the enclosure withstands the pressure and also that it contains no holes or cracks connecting to the exterior.

The routine tests include an overpressure test made according to one of the methods described for the type tests in 15.2.3. For equipment intended for use at an ambient temperature below -20°C , a pressure test at normal ambient temperature is sufficient.

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: 103942484DAL-002 Dated: 10-December-2019.

15. Drawings and Documents

Title:	Drawing No.:	Rev. Level:	Date:
Electronic Configurations of SC board 420348 and 420380			
MFT B-Series, sensor/electronics configurations (ATEX)	280144	H	11/20/19
Markings/ Labels			
*MFT B-Series, Safety Label/Electronics Configurations (ATEX)	280173	K	8/1/21
Power supply			
Schematic, Power Supply (PS) PCB for MFT B series	300168	G	05-17-16
Fab, PCB MFT B-Series AC Power Supply (ATEX)	420349	F	12/5/19
Assembly Drawing (TOP), MFT B-Series MFT AC Power Supply (ATEX)	420350	H	12/5/19
FAB, PCB, Top Insulator Board for Power Supply	170265	E	12/5/19
Off-Line Xfmr Spc. 85-265 VAC to 24 VDC (ATEX)	310028	C	12/5/19
Schematic, Power Supply (PS) PCB for MFT B series	300168	G	05-17-16
Sensor Control Board Standard			
Schematic, MFT B-Series, Mass Flow Transmitter Electronics (ATEX)	300167	S	9/26/19

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FAB, PCB, MFT B-Series, Mass Flow Transmitter electronics	420347	S	8/7/19
Assembly Drawing, MFT B Series Mass Flow Transmitter Electronics	420348	U	10/18/17
Sensor Control/Transmitter PCB (HART Version)			
Assembly Drawing, MFT B Series Mass Flow Transmitter (HART) (ATEX)	420380	L	10/18/17
Schematic, MFT B-Series, Mass Flow Transmitter Electronics (HART) (ATEX)	300182	M	9/26/19
FAB, PCB, MFT B-Series, Mass Flow Transmitter (HART)	420379	L	8/7/19
LCD/Keypad			
Schematic, Keypad/LCD for MFT B-Series (ATEX)	300174	E	4-01-11
Assy, PCB, LCD/KYPD for MFTB-Series (ATEX)	420360	H	6-23-11
Fab PCB, LCD/KYPD for MFT B-Series (ATEX)	420359	G	4/1/11
Transmitter separate terminal block			
Schematic, Transmitter Separate (TS) PCB for MFT B Series	300169	D	3-12-07
Fab. PCB, Transmitter Separate Terminal Block	420351	D	09-6-06
Assembly Drawing, Transmitter Separate Terminal Block (ATEX)	420352	E	03-12-07
FD2 Sensors			
Safety Approval Drawing Series 544FTB (ATEX)	280127	A	10-10-08
Safety Approval Drawing Adalet, Series 454FTB -08 thru -16 (ATEX)	280139	I	12/5/19
Safety Approval Drawing Adalet, Series 504FTB, 534FTB,524FTB, -40 thru -96(ATEX)	280142	I	12/5/19
Safety Approval Drawing, Series 454PFTB-16 (ATEX)	280143	K	12/5/19
Safety Approval Drawing Adalet, Series 454FTB-WGF-12 thru -16 (ATEX)	280168	E	12/5/19
MD Sensors			
Safety Approval Drawing Adalet, Series 504FTB, 534FTB,524FTB, -4 thru -16 (ATEX)	280140	I	12/5/19
Safety Approval Drawing Adalet, Series 504FTB, 534FTB,524FTB, -24 thru -32 (ATEX)	280141	I	12/5/19
Safety Approval Drawing, Adalet, Series 454WGF-16 (ATEX)	280150	C	12/5/19
Fuse			
FUSE, 3.15A, 250V, 5X20mm, SLO-BLO	630081	C	3/12/07
PTS I/O Board			

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Schematic for SC TS I/O	300195	B	3-28-13
FAB, PCB SC TS I/O Board (ATEX)	420401	D	5-24-19
Assembly, PCB SC TS I/O Assy	420402	D	5-24-19
PTS I/O Jumper PCB			
Schematic I/O for MFT B –Series	300196	A	3-28-13
FAB, PCB SC Junction Connector Adapter FAB	420403	A1	1/25/17
Assembly, PCB SC Junction Connector Adapter Assy	420404	D	10/4/19
Profibus Board			
Assembly Profibus DP for MFTB (ATEX)	420424	C1	5/28/19
FAB Profibus DP for MFTB (ATEX)	420425	C	7/25/17
Schematic Profibus DP for MFTB Board (ATEX)	300205	B1	22-Aug-16
HART AO2 Board			
Schematic HART AO2 board	300204	A	01-29-15
FAB AO2 board	420421	A	30-Jan15
Assembly Drawings AO2 Board Analog Out 2 for HART Board	420422	A	30-Jan-15
Foundation Fieldbus IO (FF)			
Foundation Fieldbus Connection Board for MFTB SC	300200	1	7-21-16
FAB Foundation Fieldbus for MFTB user connect (ATEX)	420409	A	7-26-16
Assembly Foundation Fieldbus connection board for MFTB SC (ATEX)	420410	A	7-26-16
Fint Fieldbus Adaptor			
Foundation Fieldbus MFTB Interface	300198	A	7-21-16
FAB. PCB, F. Fieldbus MFTB interface Fint carrier board (ATEX)	420405	1	7-26-16
Foundation Fieldbus MFTB Interface	300198	A	7-21-16
Polycarbonate enclosure			
N4, MFTB TS AC with LCD Display (ATEX)	700691	B	4-4-14
Wall Mount, N4 Polycarbonate Enclosure (ATEX)	110573	A	4-8-14
Enclosure Lid Label (ATEX)	170301	B	12/19/16
Enclosure Lid Label (ATEX)	170302	A	3/28/13

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Subassembly Build Drawings			
Sub Assy, Sensor Control Board to mtg. bracket	700479	H	11-02-10
Sub-assy, MFT B-Series, AC with Display	700480	B	7-14-11
Sub-assy, MFT B-Series, AC w/o Display, Adalet	700481	B	8-31-10
Sub-assy, MFT B-Series, DC with Display	700482	C	7-14-11
Sub-assy, MFT B-Series, Transmitter Separate	700493	B	03-22-07
Sub Assy MFT B-Series, DC w/o Display	700503	A	11-20-06
Sub-Assy MFT B-Series, Adalet, AC with display (ATEX)	700590	D	11/9/17
Sub-Assy MFT B-Series, Adalet, AC w/o display (ATEX)	700591	C	11/9/17
Sub-Assy MFT B-Series, Adalet, DC with display (ATEX)	700592	D	11/9/17
Sub-Assy MFT B-Series, Adalet, Remote Electronics	700593	B	11/9/17
Sub-Assy MFT B-Series, Adalet, DC w/o display	700654	A	7-28-08
Enclosure modification drawing			
MFTB Housing - Adalet, Double sided Encl. Modified Series XDHM (ATEX)	110535	C	04-23-13
MFTB Remote Adalet Enclosure Modified Series XIHM (ATEX)	110536	C	04-23-13
MFTB Blind Adalet Cover Enclosure Modified Series XIHMFCX (ATEX)	110537	C	04-23-13
MFTB Glass Adalet Lid Modified Enclosure Series XIHMFCX (ATEX)	110538	C	04-23-13
MFTB Custom Cover Adalet Enclosure Series XIHMSDCX (ATEX)	110539	C	04-23-13
Modification XIHMDCX, MFT B-Series (ATEX)	110541	B	04-23-13
Stainless Steel enclosure (Ex d)			
Safety Approval MFT B Series Transmitter Separate, SS Enclosure Adalet (ATEX)	280198	D	01-06-17
SS enclosure base (ATEX)	110601	A	10-27-16
SS enclosure tall lid (ATEX)	110602	A	10-27-16
SS enclosure glass lid (ATEX)	110604	A	10-27-16
SS enclosure short lid (ATEX)	110605	A	10-27-16
XIHSX Series SS Instrument housing ATEX/IECEX	280203	A	11-15-16
Production Control Procedures			
Probe Support Epoxy Seal Potting Procedure (ATEX)	MP-018	E	6/11/18

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B Series Field Wiring Diagram and Installation			
Field Wiring Diagram MFT-B Series (ATEX)	342038	N	12/5/19
Field Wiring Diagram MFT-B Series, TS Configuration (ATEX)	342039	J	9/21/15
Field Wiring Diagram MFT-B Series, TS Polycarbonate Wall Mount (ATEX)	342058	B	12/3/13
Hook-up Label, MFT-B Series (ATEX)	170262	C	3/27/13
Hook-up Label, HART Version MFT-B Series (ATEX)	170304	B	7/20/15
*B-Series Hardware Guide	368041	O	8/5/21
B-Series Quick Start Guide	368043	C	12/5/19
B-Series Operations Guide	368042	E	12/5/19
Misc.			
Kurz FD2 and MD Sensor Auto Ignition Testing	430071	A	8/21/08

Note: An * is included before the title of documents that are new or revised.