IECEx Certificate of Conformity

INTERNATIONAL ELECTROTECHNICAL COMMISSION
IEC Certification System for Explosive Atmospheres

for rules and details of the IECEx Scheme visit www.iecex.com

Certificate No.: **IECEx KLCS 23.0032X**

Certificate history:
Issue 0 (2024-01-24)

Status: **Current**

Issue No: 1

Date of Issue: 2024-10-28

Applicant: **MTL Instruments PVT Limited**
No 3 Old Mahabalipuram Road, Sholinganallur, Chennai, 600 119
India

Equipment: **Compact Fieldbus Barrier, 9373-FB3-XXXX-XXXS Series**

Optional accessory:

Type of Protection: **Flameproof enclosure 'd', increased safety 'e', intrinsic safety 'i', encapsulation 'm' & dust protection by enclosure 't'**

Marking: Ex db eb ib mb [ia Ga] IIC T4 Gb (-20ºC ≤ Ta ≤ +60ºC)

Ex tb IIIC T80ºC Db IP66 (-20 ºC ≤ Ta ≤ +60ºC)

Approved for issue on behalf of the IECEx Certification Body: **Vikram Paranjpe**

Position: **Dy. Director (Operations)**

Signature:
(for printed version)

Date:
(for printed version)

1. This certificate and schedule may only be reproduced in full.
2. This certificate is not transferable and remains the property of the issuing body.
3. The Status and authenticity of this certificate may be verified by visiting www.iecex.com or use of this QR Code.

Certificate issued by:

Karandikar Laboratories Certification Services
Gat No. 142, Boisar Chillar Rd.,
Opp. Union Park, At Betegaon,
Boisar (E), Tal- Palghar
Maharashtra 401501
India

IECEx Certificate of Conformity

Certificate No.: **IECEx KLCS 23.0032X**

Date of issue: 2024-10-28 Issue No: 1

Manufacturer: **MTL Instruments PVT Limited**
No 3 Old Mahabalipuram Road, Sholinganallur, Chennai, 600 119
India

Manufacturing locations:

This certificate is issued as verification that a sample(s), representative of production, was assessed and tested and found to comply with the IEC Standard list below and that the manufacturer's quality system, relating to the Ex products covered by this certificate, was assessed and found to comply with the IECEx Quality system requirements.This certificate is granted subject to the conditions as set out in IECEx Scheme Rules, IECEx 02 and Operational Documents as amended

STANDARDS :
The equipment and any acceptable variations to it specified in the schedule of this certificate and the identified documents, was found to comply with the following standards

IEC 60079-0:2017 Explosive atmospheres - Part 0: Equipment - General requirements
Edition:7.0

IEC 60079-1:2014 Explosive atmospheres - Part 1: Equipment protection by flameproof enclosures "d"
Edition:7.0

IEC 60079-11:2011 Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"
Edition:6.0

IEC 60079-18:2017 Explosive atmospheres - Part 18: Protection by encapsulation "m"
Edition:4.1

IEC 60079-31:2022 Explosive atmospheres – Part 31: Equipment dust ignition protection by enclosure "t"
Edition:3.0

IEC 60079-7:2017 Explosive atmospheres - Part 7: Equipment protection by increased safety "e"
Edition:5.1

This Certificate **does not** indicate compliance with safety and performance requirements other than those expressly included in the Standards listed above.

TEST & ASSESSMENT REPORTS:
A sample(s) of the equipment listed has successfully met the examination and test requirements as recorded in:

Test Reports:

IN/KLCS/ExTR23.0033/00 IN/KLCS/ExTR23.0033/01

Quality Assessment Report:

GB/BAS/QAR06.0022/11

IECEx Certificate of Conformity

EQUIPMENT:
Equipment and systems covered by this Certificate are as follows:

The '9373-FB3-XXXX-XXXS Fieldbus Barrier' is a field-mounted wiring hub providing up to12, intrinsically safe spur connections from a single non-intrinsically safe trunk, for connection to Foundation™ fieldbus H1 fieldbus instruments. The field-mounted Ex-Cell (IECEx BAS 15.0071U) enclosure contains a fieldbus barrier (IECEx BAS 19.0017U) supplied via a non-intrinsically safe trunk and converts this to several galvanically isolated, intrinsically safe, spur connections.

The trunk in terminal block (IECEx ULD 14.0005U or IECEx KEM 06.0027U or IECEx TUR 12.0011U) is the entry point for the wiring. The wires from the terminal block are routed to the Trunk IN Isolating switch (IECEx BVS 13.0108U) from which the wires are routed to the trunk surge protector FS32-XE (IECEx BAS 20.0079U). The Isolating switch is used to turn OFF the power to the fieldbus barrier module, in case the barrier module needs to be replaced during service. DIN-rail terminals and the Isolating switch are protected by covers that meets an IP30 ingress protection rating, since these are all bare live parts not protected by the Type of Protection "i".

The trunk terminals are implemented as increased safety (Ex e) and the spur terminals as intrinsically safe (Ex ia) for connection to IS fieldbus instruments in IIC, Zone 0 hazardous areas. The spur connections are compatible with both FISCO and Entity-certified field instruments. The 9377-FB3-** Compact Fieldbus Barrier (IECEx BAS 19.0017U) with built-in selectable fieldbus terminator is designed to be supplied from a 16V to 32Vdc.IEC 61158 compliant fieldbus trunk supply and produce 12 intrinsically safe spur outputs that are each compliant with the FISCO power supply requirements.

The spur outputs are isolated from the trunk input but are not isolated from each other. The electrical connections are made by either spring clamp or screw clamp terminals. A Trunk Out connection is available where the fieldbus trunk is to be connected to more than one fieldbus barrier in either the same or separate enclosures. The spur outputs may optionally be fitted with up to 12 FS32 Spur Surge Protectors (IECEx BAS 09.0083X). Each Spur Output –Connections is suitable for Zone 0 Areas.

The 12 spur channels share a common 0V output connection but are galvanically isolated from the connections to the safe area. The FS32 Fieldbus Surge Protection Devices are designed as a FISCO Field Device, to provide protection for sensitive electronic Fieldbus compatible equipment, and are intended to be mounted either in a Safe Area immediately following a certified FISCO Power Supply having an intrinsically safe output or within a Hazardous Area connected in an intrinsically safe circuit.

For Model designation, Electrical parameters & List of pre-certified devices please refer to ANNEX to IECEx KLCS 23.0032X Issue 1

SPECIFIC CONDITIONS OF USE: YES as shown below:
Refer ANNEX to IECEx KLCS 23.0032X Issue no. 1

IECEx Certificate of Conformity

DETAILS OF CERTIFICATE CHANGES (for issues 1 and above)
Addition of optional pre-certified terminal block, Make : Dinkle Enterprise CO., LTD., DK 2.5 certified vide IECEx TUR 12.0011U.

Annex:

ANNEX to IECEx KLCS 23.0032X.pdf

ANNEX to IECEx KLCS 23.0032X, Issue No. 01

Date: 28/10/2024

1. **Model designation:** Compact Fieldbus Barrier

9373-FB3	X	X	X	X	-	X	X	X	S
	a	b	c	d		e	f	g	
	Connector type	Enclosure	Tag Label Options	Cable entry sizes and additional terminals		Trunk Surge Protection options	Spur Surge Protection options	Cable entry plugs & breather options	Trunk Isolation Switch

Intelligent numbering system for 9373- FB3 with Trunk Isolation Switch.

9373-FB3 -	a	b	c	d	-	e	f	g	S

a	Connector type		Pluggable screw terminal	S
			Pluggable spring clamp	C
b	Enclosure options	Sheerness Ex-cel enclosures	Electropolished, Bolted, no document wallet	S
			Electropolished, Hinged (LHS) and quarter-turn lock, no document wallet	A
			Electropolished, Bolted, with document wallet	B
			Electropolished, Hinged (LHS) and quarter-turn lock, with document wallet	C
			Brushed, Bolted, no document wallet	D
			Brushed, Hinged (LHS) and quarter-turn lock, no document wallet	E
			Brushed, Bolted, with document wallet	F
			Brushed, Hinged (LHS) and quarter-turn lock, with document wallet	G
		Trimurti enclosures	Electropolished, Hinged (LHS) and quarter-turn lock, no document wallet	H
			Electropolished, Hinged (LHS) and quarter-turn lock, with document wallet	J
			Brushed, Hinged (LHS) and quarter-turn lock, no document wallet	K
			Brushed, Hinged (LHS) and quarter-turn lock, with document wallet	L
			Other options permitted by doc CI9373-FB3-6	U
c	Tag Label options		Blank Traffolyte, self-adhesive, not fitted	1
			Engraved Traffolyte, self-adhesive, fitted	2
			Tag label bracket fitted, blank Traffolyte tag label, not fitted	3
			Tag label bracket fitted, engraved Traffolyte tag label, fitted	4
			Tag label bracket fitted, blank stainless steel tag label, not fitted	5
			Tag label bracket fitted, engraved stainless steel tag label, fitted	6
d	Cable entry sizes and additional terminals (Spur cable entries M20 in all cases)		M20 Trunk In and Trunk Out; no additional terminals	1
			M25 Trunk In; M20 Trunk Out; terminals on din-rail for 2 x spare trunk cables.	2
			M25 Trunk In; M20 Trunk Out; terminals on din-rail for 4 x spare trunk cables.	3
			M32 Trunk In; M20 Trunk Out; terminals on din-rail for 4 x spare trunk cables.	4
			Other options permitted by doc CI9373-FB3-6	U
e	Trunk Surge Protection options		No trunk surge protection	N
			FS32-XE Trunk surge fitted.	C
f	Spur surge Protection options		No spur surge protection	N
			FS32 spur surge protector fitted to spur 1	1
			FS32 spur surge protector fitted to spurs 1 - 2	2
			FS32 spur surge protector fitted to spurs 1 - 3	3
			FS32 spur surge protector fitted to spurs 1 - 4	4
			FS32 spur surge protector fitted to spurs 1 - 5	5
			FS32 spur surge protector fitted to spurs 1 - 6	6
			FS32 spur surge protector fitted to spurs 1 - 7	7
			FS32 spur surge protector fitted to spurs 1 - 8	8
			FS32 spur surge protector fitted to spurs 1 - 9	9
			FS32 spur surge protector fitted to spurs 1 - 10	A
			FS32 spur surge protector fitted to spurs 1 - 11	B
			FS32 spur surge protector fitted to spurs 1 - 12	C
			Other options permitted by doc CI9373-FB3-6	U
g	Cable entry plugs & breather options		Plastic transit plugs in all entries, NiBr breather	V
			Plastic transit plugs in all entries, SS breather	W
			Ex e certified NiBr blanking plugs in all entries, NiBr breather	X
			Ex e certified plastic blanking plugs fitted in all entries, NiBr breather	Y
			Ex e certified SS blanking plugs fitted in all entries, SS breather	Z
			Other options permitted by doc CI9373-FB3-6	U

2. **Electrical parameters:**
Electrical parameters Trunk In terminal (+, S, -)
Parameters according to the certificate IECEx BAS 19.0017U:

Maximum input voltage	Um	253V
Rated voltage	UN	16 to 32 V d.c.
Rated current	IN	410 mA

Intrinsically safe output spur terminals without Surge module, optional 1 to 12 spurs (“+”, “S” or “-“):

12 spur outputs that are each compliant with the FISCO power supply requirements according to the certificate IECEx BAS 19.0017U.

Parameters according to the certificate IECEx BAS 19.0017U:

For each spur

Maximum output voltage	Uo	16.4 V
Maximum output peak current	Io	247.9 mA
Maximum output continuous current	Io	107.1 mA
Maximum output power	Po	1.02 W
Maximum internal capacitance	Ci	negligible
Maximum internal inductance	Li	negligible
Maximum external capacitance	Co	0.424µF
Maximum external inductance	Lo	0.57 mH
Maximum external inductance to resistance ratio	Lo/Ro	34.9 µH/Ω

The 12 spur channels share a common 0V output connection but are galvanically isolated from the connections to the safe area

Intrinsically safe output spur terminals with Surge module FS32, optional 1 to 12 spurs (“+”, “S” or “-“):

For each spur

Maximum output voltage	Uo	16.4 V
Maximum output peak current	Io	247.9 mA
Maximum output continuous current	Io	107.1 mA
Maximum output power	Po	1.02 W
Maximum internal capacitance	Ci	negligible
Maximum internal inductance	L	negligible
Maximum external capacitance	Co	0.424µF
Maximum external inductance	Lo	0.57 mH
Maximum external inductance to resistance ratio	Lo/Ro	34.9 µH/Ω

The 12 spur channels share a common 0V output connection but are galvanically isolated from the connections to the safe area.

The FS32 Fieldbus Surge protection Devices is designed as a FISCO Field Device and the intrinsically safe output spur terminals with the Surge module (FS32) will have the same output parameters as without Surge module, since the surge module has output parameters as input (Uo=Ui, Io=Ii, Po=Pi) according to the certificate IECEx BAS 09.0083X

3. List of pre-certified devices

Sr No.	Item	Manufacture	Type/Model	Ex Code*	Ambient temperature range	Certificate No	Standard*
1	Switch base	Cooper Crouse-Hinds GmbH	GHG 238 ** ** R ****	Ex db eb IIB/IIC Gb Ex db ia/ib IIB/IIC Gb	-55°C up to +80°C	IECEx BVS 13.0108U Issue No. 2	IEC 60079-0:2011 Ed. 6.0[1] IEC 60079-1:2014 Ed. 7.0 IEC 60079-7:2015 Ed. 5.0[1] IEC 60079-11:2011 Ed. 6.0
2	Fieldbus Surge Protection Device	Eaton Electric Limited	FS32	Ex ia IIB T3 Ga or Ex ia IIC T4 Ga	-40≤ Ta ≤+50 or +75	IECEx BAS 09.0083X Issue No. 03	IEC 60079-0:2011 Ed. 6.0[1] IEC 60079-11:2011 Ed. 6.0
3	Ex Cell Range of Enclosures	Cooper Crouse - Hinds GmbH	Ex -Cell EAGLE	Ex eb IIC Gb Ex tb IIIC Db	-60°C to +135°C	IECEx BAS 15.0071U Issue No. 03	IEC 60079-0:2017 Ed. 7.0 IEC 60079-31:2013 Ed. 2[1] IEC 60079-7:2017 Ed. 5.1
4	Stainless Steel Enclosure	Trimurti Stainlink Equipment PVT.	Series C with Silicon Gasket	Ex eb IIC Gb Ex tb IIIC Db	-20°C to +80°C	IECEx CML 17.0160U	IEC 60079-0:2011 Ed.6.0[1] IEC 60079-31:2013 Ed. 2[1]

ANNEX to IECEx KLCS 23.0032X, Issue No. 01

Date: 28/10/2024

Sr No.	Item	Manufacture	Type/Model	Ex Code*	Ambient temperature range	Certificate No	Standard*
		Ltd.					IEC 60079-7:2015 Ed. 5.0[1]
5	Feed through and protective conductor terminals with accessories	Weidmuller Interface GmbH & Co. KG	WDU 2,5	Ex eb IIC Gb	-40°C to +110°C	IECEx ULD 14.0005U Issue No. 7	IEC 600479-0:2017 Ed. 7.0 IEC 60079-7:2017 Ed. 5.1
6	Terminal Blocks	Phoenix Contact GmbH & Co. KG	UT 2,5	Ex eb IIC Gb	-60°C to +110°C	IECEx KEM 06.0027U Issue No. 9	IEC 60079-0:2017 Ed. 7.0 IEC 60079-7:2017 Ed. 5.1
7	Terminal Blocks	Dinkle Enterprise CO., LTD.	DK 2.5	Ex eb IIC Gb	-20°C to +85°C	IECEx TUR 12.0011U Issue No. 2	IEC 60079-0:2017 Ed. 7.0 IEC 60079-7:2017 Ed. 5.1
8	Surge Protection Device	Eaton Electric Limited	FS32-XE	Ex eb mb IIC Gb	-40°C ≤ Ta ≤ +80°C	IECEx BAS 20.0079U Issue No. 1	IEC 60079-0:2017 Ed. 7.0 IEC 60079-18:2017 Ed. 4.1 IEC 60079-7:2017 Ed. 5.1
9	Compact Fieldbus Barrier	Eaton Electric Limited	9377-FB3	Ex eb ib mb [ia Ga] IIC Gb	-20°C ≤ Ta ≤ +65°C	IECEx BAS 19.0017U Issue No. 0	IEC 60079-0:2017 Ed. 7.0 IEC 60079-11:2011 Ed. 6.1 IEC 60079-18:2014 Ed. 4.0[1] IEC 60079-7:2015 Ed. 5.0[1]
10	PCB Connector Series	Phoenix Contact GmbH & Co. KG	GMVSTB (R) (W) 2,5	Ex eb IIC Gb	-60C to +110C	IECEx KEM 10.0093U	IEC 60079-0:2017 Ed. 7.0 IEC 60079-7:2017 Ed.5.1

*Only the Ex marking and standards applicable to this assessment have been listed.

[1] Applicable technical difference have been addressed.

4. Specific Conditions of Use:

1. Intrinsically safe circuits can be connected to earth. Potential equalization along the intrinsically safe circuits must be ensured.
2. The installation requirements in hazardous areas are to be complied with in accordance with IEC 60079-14.
3. Equipment is not intended for use with Dust layer. It shall be ensured that the enclosure is routinely cleaned to avoid buildup of dust layer on the enclosure.
4. For pre-certified device, FS32 Fieldbus Surge Protection Device certified vide IECEx BAS 09.0083X
   - The FS32 Fieldbus Surge Protection Devices may not be capable of withstanding the 500V voltage withstand test for one minute without breakdown to earth. This must be taken into consideration in any installation.
   - FS32 Fieldbus Surge Protection Device must always fitted with Plug Connector for ensuring IP 20.
5. For pre-certified device, Ex-Cell Enclosure certified vide IECEx BAS 15.0071U
   - Due to narrow gauge of the Ex-Cell enclosure:
     - When a hinge lid is fitted, the enclosure shall only be mounted in a vertical orientation on a flat surface, and care is required in the installation process and when opening the hinged lid to ensure the enclosure do not distort.
     - When fully bolted lid is fitted the enclosure may be mounted in any orientation but it shall be on a flat surface, and care is required in the installation process to ensure the enclosure do not distort. Distortion will affect the sealing faces.
   - Cable entry holes in the gland plate, side panels or back panel shall be fitted with suitable cable gland having an equipment certificate with IP66 rating and service temperature range of -20°C to +65°C. The plain hole shall be no larger than 0.7mm above the major diameter of the cable gland thread. Cable gland entries are not permitted in the enclosure lid.
   - Unused entry holes shall be fitted with suitable stopping plugs having an equipment certificate or having a component certificate subjected to the confirmation by the end user/installer of the ingress protection rating and the permitted service temperature of the component. The operating

temperature range and ingress protection rating of the enclosure is limited to that of the stopping plug fitted.

- Only equipment certified breather/drain device may be used with these enclosures and they shall be suitable for the wall thickness of the enclosure to ensure draining can occur, subject to the confirmation by the end user/installer of the ingress protection rating IP 66 and the permitted service temperature range of -20°C to +65°C. The breather/drain devices must be installed in their correct orientation in the bottom face.
- Only adapter/reducer devices having an equipment certificate may be used with these enclosures subject to the confirmation by the end user/installer of the ingress protection rating IP66 and the permitted service temperature range of -20°C to +65°C. The operating temperature range and the ingress protection rating of the enclosure is limited to that of the adaptor/reducer device fitted.
- For Dust Application: When the Ex-Cell enclosure has a non-metallic coating a warning shall be added to the equipment label i.e., “Warning: For Dust Applications, potential electrostatic charging hazard, see instructions”

6. For pre-certified device, 93ZX-FB3 Compact Fieldbus Barrier, certified vide IECEx BAS 19.0017U
   - When one or more FS32 Spur Surge Modules are fitted, the spur output will not withstand a 500V a.c. isolation test to earth. This must be taken into account during installation.
7. For pre-certified device, FS32-XE Surge Protection Device certified vide IECEx BAS 20.0079U
   - The equipment in which the FS32-XE is installed will not be capable of withstanding a 500Vac isolation test voltage between all inputs to earth. This must be taken into account during installation.
8. For pre-certified device, Switch Base, certified vide IECEx BVS 13.0108U
   - In case of the parts forming the joint shall be replaced or repaired, the dimensions information of the flameproof joints must be obtained from the manufacturer, because the gap length of the flameproof joint of this apparatus are in parts longer and the gap width are in parts smaller than required by Table 3 of IEC 60079-1:2014.
9. For pre-certified device, Terminal Blocks WDU 2.5 certified vide IECEx ULD 14.0005U
   - When using the types WDU and WPE with other terminal blocks series or sizes or accessories, the requirements for clearance and creepage distances according to table 2 of IEC 60079-7 must be observed. Regarding the use of covers, cross-connectors and end brackets the instructions of the manufacturer must be followed.
   - For terminal jumper accessories current ratings and the resistances across the terminals please refer to the table under “types & electrical rating” above. Details on creepage and clearance values and the required torque values are in the respective “Notice to installers”.The terminal can be used with either one or two wires into either side of the terminal. When two wires are used they must be of the same type, and of equal sizes. No other wire sizes or types than the ones specified in instructions must be used. The terminal blocks must either be mounted next to another block of the same type and size or with an end plate.
   - Unused terminals shall be tightened.
10. For pre-certified device, Terminal Block certified vide IECEx KEM 10.0093U.
    - The installation instructions of the manufacturer shall be followed. The data regarding current and associated temperature rise shall be used as guideline for the given conductor cross sections. The cross section has an influence on the temperature rise which shall be assessed in the end application.
11. For pre-certified device, terminal block, certified vide IECEx TUR 12.0011U
    - The screws for the DK2.5 terminal blocks shall be tightened to the torque value not less than 5.1kgf.cm.

END OF DOCUMENT