UK Type Examination Certificate CML 21UKEX31148X Issue 1

United Kingdom Conformity Assessment

1 Product or Protective System Intended for use in Potentially Explosive Atmospheres UKSI 2016:1107 (as amended) – Schedule 3A, Part 1

2 Equipment **HTS2FM and HTS2FAM, and HTS3FM and HTS3FAM Ranges of Series Resistance Heating Tapes**

3 Manufacturer **Heat Trace Limited**

4 Address **Mere's Edge, Chester Road, Helsby, Frodsham, Cheshire, WA6 0DJ, United Kingdom**

Cromwell Road, Bredbury, Stockport, SK6 2RF, United Kingdom

Unit 9 Southside, Bredbury Industrial Estate, Bredbury, Stockport, SK6 2SP, United Kingdom

5 The equipment is specified in the description of this certificate and the documents to which it refers.

6 Eurofins E&E CML Limited, Newport Business Park, New Port Road, Ellesmere Port, CH65 4LZ, United Kingdom, Approved Body Number 2503, in accordance with Regulation 43 of the Equipment and Protective Systems Intended for Use in Potentially Explosive Atmospheres Regulations 2016, UKSI 2016:1107 (as amended), certifies that this equipment has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment intended for use in potentially explosive atmospheres given in Schedule 1 of the Regulations.

The examination and test results are recorded in the confidential reports listed in Section 12.

7 If an 'X' suffix appears after the certificate number, it indicates that the equipment is subject to specific conditions of use (affecting correct installation or safe use). These are specified in Section 14.

8 This UK Type Examination certificate relates only to the design and construction of the specified equipment. Further requirements of the Regulations apply to the manufacturing process and supply of the product. These are not covered by this certificate.

9 Compliance with the Essential Health and Safety Requirements, with the exception of those listed in the confidential report, has been demonstrated through compliance with the following documents:

EN IEC 60079-0:2018 EN 60079-30-1:2017

10 The equipment shall be marked with the following:

Ex II 2 G D

Ex 60079-30-1 IIC T6…T1 Gb

Ex 60079-30-1 IIIC T85°C…T450°C Db

Withstand temp range: -40°C to +200°C

11 Description

The HTS2FM and HTS2FAM, and HTS3FM and HTS3FAM ranges of series resistance heating tapes are rated at 600 VAC at 50 Hz and up to 50 W/m. They use either two (HTS2FM) or three (HTS3FM) copper or aluminium heating conductors (foils); that are insulated in silicone rubber, covered with a tinned copper/nickel plated copper braid, or aluminium jacket, and an option to have a silicone rubber or fluoropolymer (MFA/PFA) outer jacket for corrosion protection.

Note, the 3-foil version is marked HTS3FM which applies when all three foils are energised, however, if two foils are energised, it is referred to as the HTS2FM.

The nomenclature for the product is as follows:

Heat Trace Ltd HTS***V**M-**WXYY** 600VAC

Longline Tape

Type:

Available Part No's:	HTS	*	**V**	M	-	**W**	**X**	**YY**600VAC(3Phase)	

Options: HTS Heating Tape Type (no options available)

* No. of foils
(2) Two (Three foils present in the construction, but only two are energised)
(3) Three (Three foils present in construction, and all three are energised)

V (F) Copper foil
(FA) Aluminium foil

M Multiple Foils configuration

W Continuous conductive covering
(C) Tinned Copper Braid
(A) Aluminium Jacket
(N) Nickel Plated Copper Braid

X Optional Outer Jacket Materials Available
(F) Fluoropolymer (MFA/PFA)
(S) Silicone Rubber

YY Conductor Cross Sectional Area
For copper conductor:
(0.2) 0.2mm^2
to
(1.6) 1.6mm^2
For aluminium conductor:
(0.6) 0.6mm^2
to
(2.4) 2.4mm^2
600VAC (3 phase) Rated/Maximum voltage (at 50Hz)

The power output is determined by the resistance of the foil; therefore, the foil thickness is altered to provide the required power output.

The temperature class is dependent on the maximum pipe temperature.

HTS3FM							
Product types	Nominal output (W/m)	Maximum permissible workpiece temperature (°C)					
		T6 (85°C)	T5 (100°C)	T4 (135°C)	T3 (200°C)	T2 (300°C)	T1 (450°C)
HTS3FM-C HTS3FM-A HTS3FM-N	10	47	66	107	181	200	200
	20		32	75	157	191	191
	30			41	132	163	163
	40				108	133	133
	50				76	97	97
HTS3FM-CS HTS3FM-AS HTS3FM-NS	10	57	73	112	181	200	200
	20	37	53	93	166	180	180
	30		31	73	152	157	157
	40			51	127	127	127
	50			27	92	92	92
HTS3FM-CF HTS3FM-AF HTS3FM-NF	10	57	73	112	181	192	192
	20	37	53	93	166	177	177
	30		31	73	152	165	165
	40			51	127	127	127
	50			27	92	92	92

HTS3FAM							
Product types	Nominal output (W/m)	Maximum permissible workpiece temperature (°C)					
		T6 (85°C)	T5 (100°C)	T4 (135°C)	T3 (200°C)	T2 (300°C)	T1 (450°C)
HTS3FAM-C HTS3FAM-A HTS3FAM-N	10	47	66	107	181	200	200
	20		32	75	157	191	191
	30			41	132	163	163
	40				108	133	133
	50				76	97	97
HTS3FAM-CS HTS3FAM-AS HTS3FAM-NS	10	57	73	112	181	200	200
	20	37	53	93	166	180	180
	30		31	73	152	157	157
	40			51	127	127	127
	50			27	92	92	92
HTS3FAM-CF HTS3FAM-AF HTS3FAM-NF	10	57	73	112	181	192	192
	20	37	53	93	166	177	177
	30		31	73	152	165	165
	40			51	127	127	127
	50			27	92	92	92

The manufacturer declared parameters for the heating foils are listed below:

Ambient temperature range:	-40°C to +60°C
Process temperature range (Maintain Temperature):	See tables above
Maximum Continuous Exposure Temperature (Power On):	+200°C
Maximum Permissible Exposure Temperature (Power Off):	+200°C
Maximum Withstand Temperature:	+200°C
Minimum Installation Temperature:	-40°C
Maximum Voltage:	See part no. breakdown above
Rated Power Output:	See part no. breakdown above
Minimum Bend Radius:	75mm
Braid Coverage:	>70%
Braid Thickness:	0.5mm
Earth Braid Resistance:	18.2Ω/km
Cable Length:	up to 2Km

SK/HTS3FM – Inline splice kit between two heating tapes

This splice construction involves the joining of two HTS2FM or HTS3FM heating tapes, with each conductor wrapped in self-amalgamating tape and crimped together in a tin-plated crimp. The connection of the heating tapes is made in a silicone rubber tube, that is filled and sealed with a RTV silicone sealant, which holds two RTV slotted bushes in place (one at each end) where the insulation of the heating tapes pass through an elongated oval slot. The electrical bonding is achieved by the braid of the heating foils, which are connected externally to the silicone with a tin-plated copper crimp.

TK/HTS3FM/6 and TK/HTS3FM/10 – Termination kit between heating tape and cold lead

The construction and material specifications of this splice is similar to that of the inline splice between two heating tapes, with both the heating cable and cold lead conductors wrapped in self-amalgamating tape and crimped together in a tin-plated crimp. The connection is made in a silicone rubber tube, that is filled and sealed with a RTV silicone sealant, which holds two RTV slotted bushes in place (one at each end) where the insulation of the heating tapes pass through an elongated oval slot and a round slot for the cold lead. The electrical bonding is achieved by the braid of the heating foils, which are connected externally to the silicone with a tin-plated copper crimp.

TK/HTS3FM/16 – Termination kit for HTS3FM between heating tape and cold lead

This splice construction involves the joining of HTS2FM or HTS3FM heating tapes with a cold lead, with each of the conductors wrapped in self-amalgamating tape and crimped together in a tin-plated crimp. The connection of the heating tapes is made in a silicone rubber mould that is filled and sealed with an RTV silicone sealant. The electrical bonding is achieved by the braid of the heating foils, which are connected externally to the silicone with a tin-plated copper crimp.

Variation 1

This variation introduced the following modifications:

i. Introduction of alternative braid option.
ii. To recognise a change to the trademark.
iii. To recognise additional manufacturing locations.
iv. Amendments to formatting and typographical errors in product description.

12 Certificate history and evaluation reports

Issue	Date	Associated report	Notes
0	31 Aug 2022	R14618M/00	Issue of the prime certificate. CML 19ATEX3389X, Issue 0 is attached and shall be referred to in conjunction with this certificate.
1	04 Jan 2023	R16006A/00	Introduction of Variation 1

Note: Drawings that describe the equipment are listed in the Annex.

13 Conditions of Manufacture

The following conditions are required of the manufacturing process for compliance with the certification.

i. An electric strength test of 2U+1000 V shall be applied, for each heater manufactured, between the conductors and the outer braid or jacket as appropriate for 60 seconds as required by clause 5.1.2 of EN 60079-30-1.

ii. An electric strength test of the over jacket used for corrosion resistance shall be carried out in accordance with the requirements of EN 60079-30-1 clause 5.2.1.

iii. The manufacturer shall verify the output rating for each cable manufactured in accordance with EN 60079-30-1 clause 5.2.2.

14 Specific Conditions of Use

The following conditions relate to safe installation and/or use of the equipment.

i. The heaters shall be installed in suitable certified terminal boxes, via suitable certified terminals and cables.

ii. Suitable cold leads shall be selected by the end user.

iii. Testing for outdoor exposure in accordance with EN 60079-30-1 Clause 5.1.16 was not conducted. Therefore, the heating tapes and splices (permitted by this certificate) shall not be exposed to UV light, or a combination of UV light and moisture in service.

Certificate Annex

Certificate Number	**CML 21UKEX31148X**
Equipment	**HTS2FM and HTS2FAM, and HTS3FM and HTS3FAM Ranges of Series Resistance Heating Tapes**
Manufacturer	**Heat Trace Limited**

The following documents describe the equipment defined in this certificate:

Issue 0

The following drawings are the complete set associated with this UK Type Examination certification:

Drawing No	Sheets	Rev	Approved date	Title
HC1450/C	1 of 1	6	31 Aug 2022	Copper Longline Tape HTS2FM/HTS3FM
HC1453/C	1 of 1	7	31 Aug 2022	Aluminium Longline Tape HTS2FAM and HTS3FAM
HC1458/C	1 of 1	1	31 Aug 2022	HTS2FM/HTS3FM Copper Conductor – Conductor Thickness vs. Resistance graph
HC1459/C	1 of 1	1	31 Aug 2022	HTS2FAM/HTS3FAM Aluminium Conductor – Conductor Thickness vs. Resistance graph
SK/HTS3FM/C	1 of 1	0	31 Aug 2022	In-line splicing kit for longline HTS3FM between two heating tapes
TK0470/C	1 of 1	5	31 Aug 2022	Longline Tape hot to cold boot 16mmSQ 3 core cold lead
TK/HTS/EG/C	1 of 1	3	31 Aug 2022	Termination for Longline HTS2F and HTS3F via cable gland (e or d)
TK/HTS3FM/16/C	1 of 1	0	31 Aug 2022	Supply end termination kit for longline HTS3FM between heating tape and cold lead
TK/HTS3FM/C	1 of 1	0	31 Aug 2022	Supply end termination kit for longline HTS3FM between heating tape and cold lead
TK0486/C	1 of 1	0	31 Aug 2022	Longline HTS3FM Splice/Termination Tube
HTS3FAM-Markings	1 of 1	3	31 Aug 2022	HTS3FAM Aluminium Foil – ATEX, IECEx and UKEX Marking
HTS3FM Drum Label	1 of 1	3	31 Aug 2022	Drum Cable label – for cable type HTS3FM
HTS3FM-Markings	1 of 1	3	31 Aug 2022	HTS3FM Copper Foil – ATEX, IECEx and UKEX Marking
HTS3FM-01/C	1 of 1	4	31 Aug 2022	Certification Drawing for HTS3FM Marking Label
HTS3FM-02/C	1 of 1	4	31 Aug 2022	HTS3FM ATEX, IECEx and UKEX Label

Certificate Annex

Certificate Number **CML 21UKEX31148X**

Equipment **HTS2FM and HTS2FAM, and HTS3FM and HTS3FAM Ranges of Series Resistance Heating Tapes**

Manufacturer **Heat Trace Limited**

Issue 1

Drawing No.	Sheets	Rev	Approved date	Title
HC1450/C	1 of 1	8	08 Dec 2022	COPPER LONGLINE HTS2FM and HTS3FM
HC1453/C	1 of 1	8	08 Dec 2022	ALUMINIUM LONGLINE HTS2FAM and HTS3FAM
HC1458/C	1 of 1	2	08 Dec 2022	GRAPH SHOWING HTS3FM COPPER CONDUCTOR THICKNESS VS RESISTANCE
HC1459/C	1 of 1	2	08 Dec 2022	GRAPH SHOWING HTS3FAM ALUMINIUM CONDUCTOR THICKNESS VS RESISTANCE
HTSFAM-MARKINGS	1 of 1	4	08 Dec 2022	HTS3FAM ALUMINIUM FOIL- ATEX, IECEx and UKEX MARKINGS
HTS3FM DRUM LABEL	1 of 1	4	08 Dec 2022	DRUM CABLE LABEL – FOR CABLE TYPE HTS3FM
HTS3FM-MARKINGS	1 of 1	4	08 Dec 2022	HTS3FM COPPER FOIL- ATEX, IECEx and UKEX MARKINGS
HTS3FM-01/C	1 of 1	5	08 Dec 2022	CERTIFICATION DRAWING FOR HTS3FM MARKING LABEL
HTS3FM-02/C	1 of 1	5	08 Dec 2022	HTS3FM ATEX, IECEx & UKEX LABEL
SK HTS3FM / C	1 of 1	1	08 Dec 2022	IN-LINE SPLICING KIT FOR LONGLINE HTS3FM BETWEEN TWO HEATING TAPES
TK0470/C	1 of 1	6	08 Dec 2022	LONGLINE TAPE HOT TO COLD BOOT 16mmSQ 3 CORE COLD LEAD
TK HTS EG/C	1 of 1	4	08 Dec 2022	Termination GA for Longline HTS2FM and HTS3FM Via a Cable Gland (e or d)
TK HTS3FM/16/C	1 of 1	1	08 Dec 2022	SUPPLY END TERMINATION KIT FOR LONGLINE HTS3FM BETWEEN HEATING TAPE AND COLD LEAD
TK HTS3FM / C	1 of 1	1	08 Dec 2022	SUPPLY END TERMINATION KIT FOR LONGLINE HTS3FM BETWEEN HEATING TAPE AND COLD LEAD
TK0486/C	1 of 1	1	08 Dec 2022	LONGLINE HTS3FM SPLICE/TERMINATION TUBE