



working for a safer tomorrow

Karandikar Laboratories



F 08 CE Rev. 02

1) Ex EQUIPMENT TYPE EXAMINATION REPORT

2) TE Report Number: **KLPL/Ex/23-006** Issue no.00 Dated: **17.01.2023**

3) **Ex Equipment:** **MTL5521/MTL5523V Solenoid / Alarm Drivers**

4) **Manufacturer:** **MTL Instruments Private Limited,**
#3, Old Mahabalipuram Road, Sholingnallur, Chennai – 600119,
INDIA.

5) This equipment and any acceptable variation thereto are specified in the schedule to this report and the documents therein referred to

6) Karandikar Laboratories Pvt. Ltd. reports that this equipment has been found to comply with requirements of the following standards relating to the design and construction of equipment for explosive gas/dust atmospheres as applicable.

7) This TE Report was issued as verification that a sample, was assessed, tested and found to comply with the IS / IEC standards listed below.
IS/IEC 60079-0: 2017 & IS/IEC 60079-11: 2011

8) The Examination and Test results are recorded in KLPL's confidential
Report No.: KLPL/Ex/ MTL-23/001 Dated: **17.01.2023**

9) The sign X if placed after the TE report number; it indicates that the equipment is subject to specific conditions of use specified in the schedule to this TE Report.

10) This Report does not indicate compliance with electrical safety and performance requirements other than those expressly included in the above listed standards.

11) The marking of the Equipment shall include the following:

Ex Code:

[Ex ia Ma] I (-20°C ≤ Ta ≤ +60°C)

[Ex ia Ga] IIC (-20°C ≤ Ta ≤ +60°C)

[Ex ia Da] IIIC (-20°C ≤ Ta ≤ +60°C)

Page 1 of 4



Atul Marathe

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Technical Manager

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TE Report No.: KLPL/Ex/23-006 Issue No.00

Dated: 17.01.2023

SCHEDULE



F # 08 CE Rev. 02

12) Details of Type Examination Reports Issued: -

TE Report No.	Issue No.	Report No.	Date	Reason for Issue
KLPL/Ex/23-006	00	KLPL/Ex/MTL-23/001	17.01.2023	Original issue

13) Description of equipment

The MTL5521/MTL5523V Solenoid / Alarm Driver are designed to control and monitor a device located in the hazardous area and restrict the transfer of energy from unspecified apparatus in the non-hazardous area to an intrinsically safe circuit in the hazardous area by the limitation of voltage and current. Opto-isolators and a transformer provide galvanic isolation between the hazardous and non-hazardous area circuitry.

The apparatus comprise an isolating transformer, Opto-isolators, duplicated zener diode chains and current limiting resistors to provide voltage and current limitation. The above, together with other electronic components are mounted on a printed circuit board (PCB) and housed in a moulded plastic enclosure. Polarised plugs and sockets are provided for hazardous and non-hazardous area connections.

Above listed models are built on a common PCB and are configured have certain features such as Line Fault Detection (LFD) and Phase Reversal facilities. There are also models in the range that are loop powered or have low current hazardous area outputs. All models have LED indication dependant on the model configuration.

The degree of ingress protection of IP 20 as per IS/IEC 60529:2001 is achieved by enclosure.

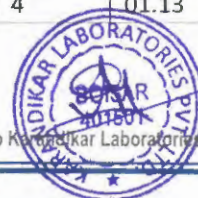
14) Model Designation:

Model No.	Product	Rating
MTL5521	Loop Powered Solenoid / Alarm Drivers	Refer Point 17 below
MTL5523V	Solenoid / Alarm Driver with Line Fault Detection Alarm	

15) Drawings & Documents

Drawing Title	Document Number	Rev. no.	Date MM.YY	No. of Pages
MTL4500 and MTL5500 Conformal Coating	CI4500-6 (I)	1	12.10	1 of 1
Parts List for MTL4521/ MTL5521	CI4521-1(I)	2	08.06	1 of 6
CIRCUIT DIAGRAM FOR MTL4521/MTL5521	CI4521-1(I)	5	07.10	2 of 6
MTL4521/MTL5521 Track Layout	CI4521-1(I)	3	02.10	3 of 6
MTL4521 /MTL5521 COMPONENT LAYOUT	CI4521-1(I)	4	01.13	4 of 6

Page 2 of 4



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TE Report No.: KLPL/Ex/23-006 Issue No.00

Dated: 17.01.2023



SCHEDULE

F # 08 CE Rev. 02

PCB Detail for TPL301	CI4521-1(I)	2	01.07	5 of 6
Parts List for MTL4523V/ MTL5523V	CI4523-1 (I)	2	08.10	1 of 6
PCB Detail for TPL301	CI4523-1 (I)	1	08.10	5 of 6
CIRCUIT DIAGRAM FOR MTL4523V/ MTL5523V	CI4523-2 (I)	2	11.11	1 of 3
MTL4523V/ MTL5523V Track Layout	CI4523-2 (I)	1	08.10	2 of 3
MTL4523V/ MTL5523V COMPONENT LAYOUT	CI4523-2 (I)	2	01.13	3 of 3
New 5500 outline	CI5500-100 (I)	3	01.13	1 of 1
MTL5521 SIDE LABEL	CI5521-701	1	01.23	1 of 1
MTL5523V SIDE LABEL	CI5523V-701	1	01.23	1 of 1
PARTS LIST FOR MTL5521	CI4521-3(I)	1	12.22	1 to 4
PARTS LIST FOR MTL5523V	CI4524-3 (I)	1	12.22	1 to 4

Drawings listed above are finally accepted as accurately representing the product for which this evaluation report has been prepared. These drawings provide necessary information as required by the above referred standards.

16) Temperature Class:

MTL5521/MTL5523V Solenoid / Alarm Driver is an associated apparatus which will be placed in a non-Hazardous area and does not require a temperature class.

17) Electrical Rating:

Non-Hazardous Area Terminals 11 to 12

Um = 253V r.m.s.

The circuit connected to non-hazardous area terminals 11 & 12 is designed to operate from a d.c. supply voltage of 20 V to 35 V.

Hazardous Area Terminals 1 w.r.t. 2 (Channel 1)

Uo = 25 V, Io = 147 mA, Po = 0.92 W, Ci = 0, Li = 0

The capacitance and either the inductance or inductance to resistance ratio (L/R) of the hazardous area load connected must not exceed the following values:





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TE Report No.: KLPL/Ex/23-006 Issue No.00

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SCHEDULE



F # 08 CE Rev. 02

TABLE 1

GROUP	CAPACITANCE (μ F)	INDUCTANCE (mH)	L/R RATIO (μ H/ohm)
IIC	0.11	1.4	40
IIB**	0.84	7.2	159
IIA	2.97	14.4	328
I	4.87	20.2	478

**Group IIB parameters also applicable for associated apparatus [Ex ia Da] IIIC

Note:

1. The above load parameters apply when one of the two conditions below is given:
 - The total Li of the external circuit (excluding the cable) is $< 1\%$ of the Lo, value or
 - The total Ci of the external circuit (excluding the cable) is $< 1\%$ of the Co, value.
2. The above parameters are reduced to 50% when both of the two conditions below are given:
 - The total Li of the external circuit (excluding the cable) is $\geq 1\%$ of the Lo, value and
 - The total Ci of the external circuit (excluding the cable) is $\geq 1\%$ of the Co value.

The reduced capacitance of the external circuit (including cable) shall not be greater than 1 μ F for Groups IIB, IIA & I and 600nF for Group IIC.

18) **Specific conditions of use:** Nil

19) **Routine test:**

Routine test is to be carried out on each infallible switching transformer, it shall comply the dielectric test of Cl 11.2 IS/IEC 60079-11: 2011

At 1500 Vac between the primary and secondary windings.

At 500 Vac between all the windings and the core or screen.

During these tests, there shall be no breakdown of the insulation between windings.

END OF DOCUMENT



Page 4 of 4

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