**Translation**

# EU-Type Examination Certificate Supplement 2

**Change to Directive 2014/34/EU**

1

2 **Equipment intended for use in potentially explosive atmospheres Directive 2014/34/EU**

3 EU-Type Examination Certificate Number: **BVS 14 ATEX E 159 X**

4 Product: **_Digital Output Driver type D5040* or D5040*-xxx / D5240* or D5240*-xxx_**

5 Manufacturer: **G.M. International S.R.L.**

6 Address: **Via Mameli 53/55, 20852 Villasanta (MB), Italy**

7 This supplementary certificate extends EC-Type Examination Certificate No. BVS 14 ATEX E 159 X to apply to products designed and constructed in accordance with the specification set out in the appendix of the said certificate but having any acceptable variations specified in the appendix to this certificate and the documents referred to therein.

8 DEKRA Testing and Certification GmbH, Notified Body number 0158, in accordance with Article 17 of Directive 2014/34/EU of the European Parliament and of the Council, dated 26 February 2014, certifies that this product has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of products intended for use in potentially explosive atmospheres given in Annex II to the Directive.
The examination and test results are recorded in the confidential Report No. BVS PP 14.2231 EU.

9 The Essential Health and Safety Requirements are assured in consideration of:

| | |
|---|---|
| **EN IEC 60079-0:2018** | **General requirements** |
| **EN IEC 60079-7:2015 + A1:2018** | **Increased Safety "e"** |
| **EN 60079-11:2012** | **Intrinsic Safety "i"** |

10 If the sign "X" is placed after the certificate number, it indicates that the product is subject to the Special Conditions for Use specified in the appendix to this certificate.

11 This EU-Type Examination Certificate relates only to the design and construction of the specified product. Further requirements of the Directive apply to the manufacturing process and supply of this product. These are not covered by this certificate.

12 The marking of the product shall include the following:

⟨Ex⟩ **II 3(1)G Ex ec [ia Ga] IIC T4 Gc
II (1)D [Ex ia Da] IIIC
I (M1) [Ex ia Ma] I**

DEKRA Testing and Certification GmbH
Bochum, 2022-05-06

Signed: Jörg-Timm Kilisch
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Managing Director

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Akkreditierungsstelle
D-ZE-17438-02-00

| 13 | **Appendix** |
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| 14 | **EU-Type Examination Certificate** |
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**BVS 14 ATEX E 159 X**
**Supplement 2**

| 15 | **Product description** |
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| 15.1 | **Subject and type** |
|---|---|

*Digital Output Driver type D5040\* or D5040\*-xxx / D5240\* or D5240\*-xxx)*

| 15.2 | **Description** |
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With this supplement the certificate is changed to Directive 2014/34/EU.
(Annotation: In accordance with Article 41 of Directive 2014/34/EU, EC-Type Examination Certificates referring to 94/9/EC that were in existence prior to the date of application of 2014/34/EU (20 April 2016) may be referenced as if they were issued in accordance with Directive 2014/34/EU. Supplementary Certificates to such EC-Type Examination Certificates, and new issues of such certificates, may continue to bear the original certificate number issued prior to 20 April 2016.)

Reason for the supplement:
- Change to Directive 2014/34/EU.
- Update of the standards statuses:
  - EN 60079-0:2012+A11:2013 to EN IEC 60079-0:2018
- Change of the type of protection "nA" to "ec"

**Description of Product**
The Digital Output Driver models are designed as associated apparatus and designated for installation in the safe area or alternatively in areas requiring EPL Gc equipment.
Electronic components of the Digital Output Driver models are arranged on printed-circuit-boards (PCB) packaged in plastic enclosures, suitable for installation on T35 DIN Rails.
The Digital Output Drivers provide fully floating single, dual or triple channel intrinsically safe power supply for solenoid valves, visual or audible alarm devices located in hazardous areas driven by control-signals generated in the safe area.

**Digital Output Driver type D5040\* or D5040\*-xxx providing single or dual channel configuration:**
For each channel two basic outputs are selectable (output A or B) with different safety parameters.
The basic outputs of the same channel can be used 'exclusive-or' only.
In addition, the basic outputs A and/or B of the two channels of dual channel model D5040D or D5040D-xxx may be interconnected in parallel for single channel operation. See '15.3) Parameters' for permissible combinations.

**Digital Output Driver type D5240T or D5240T-xxx providing three channel configuration**:
For each channel three basic outputs are selectable (output A or B or C) with different safety parameters. The basic outputs of the same channel can be used 'exclusive-or' only.
In addition, the basic outputs A, B and/or C of the three channels may be interconnected in parallel for dual or single channel operation. See '15.3) Parameters' for permissible combinations.
The intrinsically safe output circuits provide safe galvanic separation from the non-intrinsically safe circuits on the PCB up to a sum of peak values of rated voltages of 375 V.

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### 15.3 Parameters

#### 15.3.1 Non-intrinsically safe power supply circuit

| Digital Output Driver Type | Voltage | | Power |
|---|---|---|---|
| | $U_n$ | $U_m$ | $P_n$ |
| | DC [V] | AC [V] | [W] |
| D5040S, D5040S-xxx | 24 | 253 | ≤ 1.7 |
| D5040D, D5040D-xxx | 24 | 253 | ≤ 2 x 1.5 |
| D5240T, D5240T-xxx | 24 | 253 | ≤ 3.3 |

#### 15.3.2 Intrinsically safe output circuits

#### 15.3.2.1 Digital Output Driver type D5040S, D5040S-xxx, D5040D, D5040D-xxx

| General single channel parameters | Maximum parameters | | | |
|---|---|---|---|---|
| | Group | $C_o[\mu F]$ | $L_o[mH]$ | $L_o/R_o\ (\mu H/\Omega)$ |
| Output A:<br>Terminals:<br>7-8 or 10-11<br>$U_o$ = DC    25.2 V<br>$I_o$ =        146    mA<br>$P_o$ =        916    mW<br>Characteristic: linear | IIC | 0.107 | 1.67 | 38.8 |
| | IIB | 0.82 | 6.71 | 155.3 |
| | IIA | 2.9 | 13.42 | 310.7 |
| | I | 4.8 | 22.01 | 509.8 |
| | IIIC | 0.82 | 6.71 | 155.3 |
| Output B:<br>Terminals:<br>7-9 or 10-12<br>$U_o$ = DC    25.2 V<br>$I_o$ =        108    mA<br>$P_o$ =        676    mW<br>Characteristic: linear | IIC | 0.107 | 3.07 | 52.6 |
| | IIB | 0.82 | 12.3 | 210.4 |
| | IIA | 2.9 | 24.61 | 420.0 |
| | I | 4.8 | 40.37 | 690.3 |
| | IIIC | 0.82 | 12.3 | 210.4 |

Remarks:

parameters of output A and output B of the same channel interconnected in parallel are identical with parameters of output A

D5040S, D5040S-xxx:
Terminal 7: common '+' of both outputs
Terminals 8, 9: '-' output A, B

D5040D, D5040D-xxx
Terminal 7: common '+' of both outputs of channel 1
Terminals 8, 9: '-' output A, B channel 1
Terminal 10: common '+' of both outputs channel 2
Terminals 11, 12: '-' output A, B channel 2

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### 15.3.2.2 Digital Output Driver type D5040D, D5040D-xxx

| General parameters, single channel | Maximum parameters | | | |
|---|---|---|---|---|
| | Group | $C_o[\mu F]$ | $L_o[mH]$ | $L_o/R_o\ (\mu H/\Omega)$ |
| Output A:<br>Terminals: 13-14<br>       or 17-18<br>       or 21-22<br>$U_o$ = DC   25.2 V<br>$I_o$ =    146   mA<br>$P_o$ =    916   mW<br>Characteristic: linear | IIC | 0.096 | 1.67 | 38.8 |
| | IIB | 0.809 | 6.71 | 155.3 |
| | IIA | 2.889 | 13.42 | 310.7 |
| | I | 4.789 | 22.01 | 509.8 |
| | IIIC | 0.809 | 6.71 | 155.3 |
| Output B:<br>Terminals: 13-15<br>       or 17-19<br>       or 21-23<br>$U_o$ = DC   25.2 V<br>$I_o$ =    108   mA<br>$P_o$ =    676   mW<br>Characteristic: linear | IIC | 0.096 | 3.07 | 52.6 |
| | IIB | 0.809 | 12.3 | 210.4 |
| | IIA | 2.889 | 24.61 | 420.0 |
| | I | 4.789 | 40.37 | 690.3 |
| | IIIC | 0.809 | 12.3 | 210.4 |
| Output C:<br>Terminals: 13-16<br>       or 17-20<br>       or 21-24<br>$U_o$ = DC   25.2 V<br>$I_o$ =    93   mA<br>$P_o$ =    580   mW<br>Characteristic: linear | IIC | 0.096 | 4.18 | 61.3 |
| | IIB | 0.809 | 16.72 | 245.3 |
| | IIA | 2.889 | 33.45 | 490.6 |
| | I | 4.789 | 54.88 | 804.9 |
| | IIIC | 0.809 | 16.72 | 245.3 |

Remarks:

parameters of output A, B and/or C of the same channel interconnected in parallel are identical with parameters of output A
Terminals 13, 17, 21: common '+' of all channels and outputs;
Terminals 14, 15, 16: '-' output A, B, C channel 1
Terminals 18, 19, 20: '-' output A, B, C channel 2
Terminals 22, 23, 24: '-' output A, B, C channel 3

### 15.3.2.3 Digital Output Driver type D5240T, D5240T-xxx

### 15.3.2.3.1 Application mode: three single channels

| General parameters, single channel | Maximum parameters | | | |
|---|---|---|---|---|
| | Group | $C_o[\mu F]$ | $L_o[mH]$ | $L_o/R_o\,(\mu H/\Omega)$ |
| Output A:<br>Terminals: 13-14<br>       or 17-18<br>       or 21-22<br>$U_o = DC$   25.2 V<br>$I_o =$   146  mA<br>$P_o =$   916  mW<br>Characteristic: linear | IIC | 0.096 | 1.67 | 38.8 |
| | IIB | 0.809 | 6.71 | 155.3 |
| | IIA | 2.889 | 13.42 | 310.7 |
| | I | 4.789 | 22.01 | 509.8 |
| | IIIC | 0.809 | 6.71 | 155.3 |
| Output B:<br>Terminals: 13-15<br>       or 17-19<br>       or 21-23<br>$U_o = DC$   25.2 V<br>$I_o =$   108  mA<br>$P_o =$   676  mW<br>Characteristic: linear | IIC | 0.096 | 3.07 | 52.6 |
| | IIB | 0.809 | 12.3 | 210.4 |
| | IIA | 2.889 | 24.61 | 420.0 |
| | I | 4.789 | 40.37 | 690.3 |
| | IIIC | 0.809 | 12.3 | 210.4 |
| Output C:<br>Terminals: 13-16<br>       or 17-20<br>       or 21-24<br>$U_o = DC$   25.2 V<br>$I_o =$   93  mA<br>$P_o =$   580  mW<br>Characteristic: linear | IIC | 0.096 | 4.18 | 61.3 |
| | IIB | 0.809 | 16.72 | 245.3 |
| | IIA | 2.889 | 33.45 | 490.6 |
| | I | 4.789 | 54.88 | 804.9 |
| | IIIC | 0.809 | 16.72 | 245.3 |
| Remarks:<br><br>parameters of output A, B and/or C of the same channel interconnected in parallel are identical with parameters of output A<br>Terminals 13, 17, 21: common '+' of all channels and outputs;<br>Terminals 14, 15, 16: '-' output A, B, C channel 1<br>Terminals 18, 19, 20: '-' output A, B, C channel 2<br>Terminals 22, 23, 24: '-' output A, B, C channel 3 | | | | |

**15.3.2.3.2** Application mode: two of three channels in parallel; third channel not used or used as single channel

| General parameters, single channel | Maximum parameters | | | |
|---|---|---|---|---|
| | Group | $C_o[\mu F]$ | $L_o[mH]$ | $L_o/R_o\ (\mu H/\Omega)$ |
| Output A+C: [1]<br>Terminals:<br>       13//17 - 14//20<br>    or 13//21 - 14//24<br>    or 17//13 - 18//16<br>    or 17//21 - 18//24<br>    or 21//13 - 22//16<br>    or 21//17 - 22//20<br>$U_o = DC\quad 25.2\ V$<br>$I_o =\quad 238\quad mA$<br>$P_o =\quad 1496\quad mW$<br>Characteristic: linear | IIC | N/A | N/A | N/A |
| | IIB | 0.798 | 2.51 | 95.1 |
| | IIA | 2.878 | 5.03 | 190.2 |
| | I | 4.778 | 8.25 | 312.1 |
| | IIIC | 0.798 | 2.51 | 95.1 |
| Output B+B:<br>Terminals:<br>       13//17-15//19<br>    or 13//21-15//23<br>    or 17//21-19//23<br>$U_o = DC\quad 25.2\ V$<br>$I_o =\quad 216\quad mA$<br>$P_o =\quad 1352\quad mW$<br>Characteristic: linear | IIC | N/A | N/A | N/A |
| | IIB | 0.798 | 3.07 | 105.2 |
| | IIA | 2.878 | 6.15 | 210.4 |
| | I | 4.778 | 10.09 | 345.1 |
| | IIIC | 0.798 | 3.07 | 105.2 |
| Output C+C:<br>Terminals:<br>       13//17-16//20<br>    or 13//21-16//24<br>    or 17//21-20//24<br>$U_o = DC\quad 25.2\ V$<br>$I_o =\quad 185\quad mA$<br>$P_o =\quad 1160\quad mW$<br>Characteristic: linear | IIC | N/A | N/A | N/A |
| | IIB | 0.798 | 4.18 | 122.6 |
| | IIA | 2.878 | 8.36 | 690.3 |
| | I | 4.778 | 13.72 | 402.4 |
| | IIIC | 0.798 | 4.18 | 122.6 |

Remarks:

[1] parameters of output A of channel 1 or 2 or 3 and output C of one of the other two channels

// = terminals connected in parallel

15.3.2.3.3 Application mode: three channels in parallel (3 x output A or B or C in parallel

| General parameters, single channel | Maximum parameters | | | |
|---|---|---|---|---|
| | Group | $C_o[\mu F]$ | $L_o[mH]$ | $L_o/R_o\ (\mu H/\Omega)$ |
| Output A+A-A: Terminals : 13//17//21-14//18//22 $U_o = DC\quad 25.2\ V$ $I_o =\quad 437\quad mA$ $P_o =\quad 2138\quad mW$ Characteristic: linear | IIC | N/A | N/A | N/A |
| | IIB | N/A | N/A | N/A |
| | IIA | 2.867 | 1.49 | 103.5 |
| | I | 4.767 | 2.44 | 169.9 |
| | IIIC | N/A | N/A | N/A |
| Output B+B+B: Terminals : 13//17//21-15//19//23 $U_o = DC\quad 25.2\ V$ $I_o =\quad 323\quad mA$ $P_o =\quad 2028\quad mW$ Characteristic: linear | IIC | N/A | N/A | N/A |
| | IIB | 0.787 | 1.36 | 70.1 |
| | IIA | 2.867 | 2.73 | 140.2 |
| | I | 4.767 | 4.48 | 230.1 |
| | IIIC | 0.787 | 1.36 | 70.1 |
| Output C+C+C: Terminals : 13//17//21-16//20//24 $U_o = DC\quad 25.2\ V$ $I_o =\quad 277\quad mA$ $P_o =\quad 1740\quad mW$ Characteristic: linear | IIC | N/A | N/A | N/A |
| | IIB | 0.787 | 1.85 | 81.7 |
| | IIA | 2.867 | 3.71 | 163.5 |
| | I | 4.767 | 6.09 | 268.3 |
| | IIIC | 0.787 | 1.85 | 81.7 |
| Remarks: // = terminals connected in parallel | | | | |

15.3.2.3.4 Application mode: three channels in parallel (3 outputs in parallel, A or B or C mixed

| General parameters, various outputs of the three channels in parallel | Maximum parameters | | | |
|---|---|---|---|---|
| | Group | $C_o [\mu F]$ | $L_o [mH]$ | $L_o/R_o\ (\mu H/\Omega)$ |
| Output A+B+B: Terminals: 13//17//21-14//19//23 or 17//13//21-18//15//23 or 21//13//17-22//15//19 $U_o = DC\quad 25.2\ V$ $I_o =\quad 361\quad mA$ $P_o =\quad 2138\quad mW$ Characteristic: linear | IIC | N/A | N/A | N/A |
| | IIB | N/A | N/A | N/A |
| | IIA | 2.867 | 2.18 | 125.4 |
| | I | 4.767 | 3.58 | 205.8 |
| | IIIC | 0.787 | 1.09 | 62.7 |
| Output A+A+C: Terminals: 13//17//21-14//18//24 or 13//21//17-14//22//20 or 17//21//13-18//22//16 $U_o = DC\quad 25.2\ V$ $I_o =\quad 384\quad mA$ $P_o =\quad 2138\quad mW$ Characteristic: linear | IIC | N/A | N/A | N/A |
| | IIB | N/A | N/A | N/A |
| | IIA | 2.867 | 1.93 | 118 |
| | I | 4.767 | 3.17 | 193.6 |
| | IIIC | 0.787 | 0.96 | 59 |
| Remarks: // = terminals connected in parallel | | | | |

15.3.3 Ambient temperature range

-40 °C ≤ $T_{amb}$ ≤ +70 °C

| 16 | **Report Number** |
|---|---|

BVS PP 14.2231 EU, as of 2022-05-06

| 17 | **Special Conditions for Use** |
|---|---|
| 17.1 | Group I application |

The Digital Output Driver shall be installed outside the hazardous area or alternatively in an enclosure providing a suitable type of protection according to separate certification.
For group I application interconnection of the Digital Output Driver with other electrical apparatus to an intrinsically safe electrical system shall be assessed in a System Certificate, if required in local installation rules.

| 17.2 | Group II application (gas): |
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The Digital Output Driver shall be installed:
- outside the hazardous area, or
- in case of alternative installation in areas requiring EPL Gc equipment:
  - The equipment shall only be used in an area of at least pollution degree 2, as defined in EN 60664-1.
    and
  - The equipment shall be installed in an enclosure that provides a minimum ingress protection of IP 54 in accordance with EN 60079-0.

| 17.3 | Group III application (dust): |
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The Digital Output Driver shall be installed outside the hazardous area or alternatively in an enclosure providing a suitable type of protection according to separate certification.

| 17.4 | General |
|---|---|

The installation of the Digital Output Driver shall be carried out in such a way that the clearances of
un-insulated conductors of intrinsically safe circuits to grounded metal parts of the enclosure are at least 3 mm, and un-insulated conductors of non-intrinsically safe circuits of other apparatus are situated at least 50 mm from terminals for external intrinsically safe circuits, or are separated from them by an insulating barrier according to clause 6.2.1 of
EN 60079-11:2012.

| 18 | **Essential Health and Safety Requirements** |
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The Essential Health and Safety Requirements are covered by the standards listed under item 9.

| 19 | **Drawings and Documents** |
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Drawings and documents are listed in the confidential report.

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We confirm the correctness of the translation from the German original.
In the case of arbitration only the German wording shall be valid and binding.

DEKRA Testing and Certification GmbH
Bochum, 2022-05-06
BVS-Ret/MGR        A20210562

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Managing Director