



FM Approvals  
 1151 Boston Providence Turnpike  
 P.O. Box 9102 Norwood, MA 02062 USA  
 T: 781 762 4300 F: 781-762-9375 www.fmapprovals.com

Member of the FM Global Group

# CERTIFICATE OF COMPLIANCE

## HAZARDOUS (CLASSIFIED) LOCATION ELECTRICAL EQUIPMENT

This certificate is issued for the following equipment:

**KFD0-SD2-Ex1.1045. Solenoid Driver.**  
**KFD0-SD2-Ex2.1045. Solenoid Driver.**  
**KFD0-SD2-Ex1.1245. Solenoid Driver.**  
**KFD0-SD2-Ex2.1245. Solenoid Driver.**  
**KFD0-SD2-Ex1.1065. Solenoid Driver.**  
**KFD0-SD2-Ex2.1065. Solenoid Driver.**  
**KFD0-SD2-Ex1.10100. Solenoid Driver.**  
 AIS/I,II,III/1/ABCDEFG – 266-031FM-12; Entity  
 I/0/[AEx ia] IIC – 266-031FM-12; Entity  
 NI/II/2/ABCD/T4, Ta = 60°C  
 I/2/AEx nA II T4, Ta = 60°C

Entity Parameters:

| Voc, Uo (V)   | Isc, Io (mA) | Po (mW) | Group           | Ca,Co (µF) | La, Lo (mH) | Lo/Ro (µH/Ω) |
|---|--------------|---------|-----------------|------------|-------------|--------------|
| Type KFD0-SD2-Ex*.1045 – Terminals: Channel 1: 1,2,3 Channel 2: 4,5,6 |              |         |                 |            |             |              |
| 25.2  | 93           | 586     | A, B, IIC       | 0.107      | 4.11        | 60           |
|   |              |         | C, E, F, G, IIB | 0.82       | 16.44       | 242          |
|   |              |         | D, IIA          | 2.90       | 32.88       | 485          |
| Type KFD0-SD2-Ex*.1245 – Terminals: Channel 1: 1,2,3 Channel 2: 4,5,6 |              |         |                 |            |             |              |
| 25.2  | 110          | 693     | A, B, IIC       | 0.107      | 2.93        | 51           |
|   |              |         | C, E, F, G, IIB | 0.82       | 11.75       | 205          |
|   |              |         | D, IIA          | 2.90       | 23.50       | 410          |
| Type KFD0-SD2-Ex*.1065 – Terminals: Channel 1: 1,2,3 Channel 2: 4,5,6 |              |         |                 |            |             |              |
| 17.22   | 220          | 947     | A, B, IIC       | 0.353      | 0.73        | 37           |
|   |              |         | C, E, F, G, IIB | 2.06       | 2.93        | 150          |
|   |              |         | D, IIA          | 8.50       | 5.87        | 300          |
| Type KFD0-SD2-Ex1.10100 – Terminals: 1,2,3                            |              |         |                 |            |             |              |
| 17  | 271          | 1152    | A, B, IIC       | 0.375      | 0.48        | 30           |
|   |              |         | C, E, F, G, IIB | 2.20       | 1.93        | 123          |

| Voc, Uo (V) | Isc, Io (mA) | Po (mW) | Group  | Ca,Co (µF) | La, Lo (mH) | Lo/Ro (µH/Ω) |
|-------------|--------------|---------|--------|------------|-------------|--------------|
|             |              |         | D, IIA | 9.00       | 3.87        | 246          |

*Special Conditions of Use:*

- 1) In Class I, Division 2 installations, the subject equipment shall be mounted within a tool-secured enclosure which is capable of accepting one or more of the Class I, Division 2 wiring methods specified in the National Electrical Code (ANSI/NFPA 70).
- 2) In Class I, Zone 2 installations, the subject equipment shall be mounted within a tool-secured enclosure which is capable of accepting one or more of the Class I, Zone 2 wiring methods specified in the National Electrical Code (ANSI/NFPA 70). The equipment shall be installed in an enclosure with a minimum ingress protection rating of IP54 unless the apparatus is intended to be afforded an equivalent degree of protection by location
- 3) In Class I, Zone 2 installations, the installer shall ensure protection of supply terminals against transient voltages exceeding the rated supply voltage by greater than 40%.

**KFD0-SD2-Ex1.1180. Solenoid Driver.**

AIS/I,II,III/1/CDEFG – 266-031FM-12; Entity

I/O/[AEx ia] IIB –266-031FM-12; Entity

NI/I/2/ABCD/T4, Ta = 60°C

I/2/AEx nA II T4, Ta = 60°C

Entity Parameters:

| Voc, Uo (V)                               | Isc, Io (mA) | Po (mW) | Group           | Ca,Co (µF) | La, Lo (mH) | Lo/Ro (µH/Ω) |
|---|--------------|---------|-----------------|------------|-------------|--------------|
| Type KFD0-SD2-Ex1.1180 – Terminals: 1,2,3 |              |         |                 |            |             |              |
| 25.2                                      | 184          | 1159    | A, B, IIC       | NA         | NA          | NA           |
|   |              |         | C, E, F, G, IIB | 0.82       | 4.20        | 122          |
|   |              |         | D, IIA          | 2.90       | 8.40        | 245          |

*Special Conditions of Use:*

- 1) In Class I, Division 2 installations, the subject equipment shall be mounted within a tool-secured enclosure which is capable of accepting one or more of the Class I, Division 2 wiring methods specified in the National Electrical Code (ANSI/NFPA 70).
- 2) In Class I, Zone 2 installations, the subject equipment shall be mounted within a tool-secured enclosure which is capable of accepting one or more of the Class I, Zone 2 wiring methods specified in the National Electrical Code (ANSI/NFPA 70). The equipment shall be installed in an enclosure with a minimum ingress protection rating of IP54 unless the apparatus is intended to be afforded an equivalent degree of protection by location.
- 3) In Class I, Zone 2 installations, the installer shall ensure protection of supply terminals against transient voltages exceeding the rated supply voltage by greater than 40%.

**Equipment Ratings:**

Model KFD0-SD2-Ex\*.1045, KFD0-SD2-Ex\*.1245, KFD0-SD2-Ex\*.1065 and KFD0-SD2-

Ex1.10100 Solenoid Drivers: Intrinsically safe (entity) connections to Class I, II and III, Division 1, applicable Groups A, B, C, D, E, F and G; intrinsically safe (entity) connections to Class I, [AEx ia] IIC per control drawing 266-031FM-12; nonincendive for Class I, Division 2, Groups A, B, C and D, T4 at Tambient = -20°C to 60°C; non-sparking, AEx nA for Class I, Zone 2, T4 at Tambient = -20°C to +60°C, hazardous (classified) indoor locations.

Model KFD0-SD2-Ex1.1180 Solenoid Driver: Intrinsically safe (entity) connections to Class I, II and III, Division 1, applicable Groups C, D, E, F and G; intrinsically safe (entity) connections to Class I, [AEx ia] IIB per control drawing 266-031FM-12; nonincendive for Class I, Division 2, Groups A, B, C and D, T4 at Tambient = -20°C to 60°C; non-sparking, AEx nA for Class I, Zone 2, T4 at Tambient = -20°C to +60°C, hazardous (classified) indoor locations.

FM Approved for:

Pepperl+Fuchs GmbH  
Mannheim, Germany

This certifies that the equipment described has been found to comply with the following Approval Standards and other documents:

|                   |      |
|-------------------|------|
| Class 3600        | 1998 |
| Class 3610        | 2007 |
| Class 3611        | 2004 |
| ANSI/ISA 12.12.02 | 2003 |
| Class 3810        | 2005 |

Original Project ID: 3028278

Approval Granted: *FEB 6, 2008*

Subsequent Revision Reports / Date Approval Amended

| Report Number | Date | Report Number | Date |
|---------------|------|---------------|------|
|---------------|------|---------------|------|

FM Approvals LLC

  
Robert L. Martell, Jr.  
Assistant Vice President

*FEB 6, 2008*  
Date