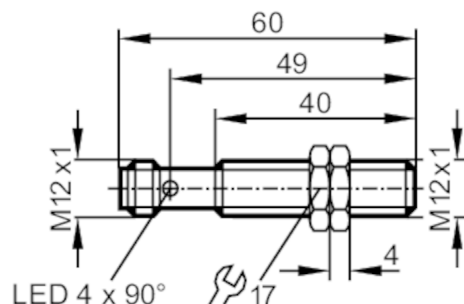


# IFM213



## Inductive sensor

IFKC004BASKG/M/60V/US-104-DRS



### Electrical data

|                             |      |            |
|-----------------------------|------|------------|
| Operating voltage           | [V]  | 10...60 DC |
| Current consumption         | [mA] | < 10       |
| Protection class            |      | II         |
| Reverse polarity protection |      | yes        |

### Outputs

|                                                 |      |                                 |
|-------------------------------------------------|------|---------------------------------|
| Electrical design                               |      | PNP/NPN                         |
| Output function                                 |      | normally open                   |
| Max. voltage drop switching output DC           | [V]  | 2.5; (100 mA)                   |
| Minimum load current                            | [mA] | 2                               |
| Max. leakage current                            | [mA] | 0.5; (only in 2-wire operation) |
| Permanent current rating of switching output DC | [mA] | 200                             |
| Switching frequency DC                          | [Hz] | 400                             |
| Short-circuit protection                        |      | yes                             |
| Type of short-circuit protection                |      | pulsed                          |
| Overload protection                             |      | yes                             |

### Detection zone

|                         |      |          |
|-------------------------|------|----------|
| Sensing range           | [mm] | 4        |
| Operating distance      | [mm] | 0...3.24 |
| Increased sensing range |      | yes      |

### Accuracy / deviations

|                   |           |                                                                             |
|-------------------|-----------|-----------------------------------------------------------------------------|
| Correction factor |           | steel: 1 / stainless steel: 0.7 / brass: 0.5 / aluminium: 0.5 / copper: 0.4 |
| Hysteresis        | [% of Sr] | 1...20                                                                      |

### Operating conditions

|                     |      |               |
|---------------------|------|---------------|
| Ambient temperature | [°C] | -40...85      |
| Protection          |      | IP 67; IP 69K |

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| Tests / approvals                         |                                                                                      |                                             |                                                                                                |                                   |    |    |    |                                                              |
|-------------------------------------------|--------------------------------------------------------------------------------------|---------------------------------------------|------------------------------------------------------------------------------------------------|-----------------------------------|----|----|----|--------------------------------------------------------------|
| EMC                                       | automotive area                                                                      |                                             |                                                                                                |                                   |    |    |    |                                                              |
|                                           | noise emission and noise interference according to the automotive directive 95/54/EC |                                             | E1 type approval                                                                               |                                   |    |    |    |                                                              |
|                                           | noise immunity according to DIN ISO 11452-2                                          |                                             | 100 V/m                                                                                        |                                   |    |    |    |                                                              |
|                                           | conducted interference acc. to ISO 7637-2                                            |                                             |                                                                                                |                                   |    |    |    |                                                              |
|                                           | pulse                                                                                |                                             | 1                                                                                              | 2                                 | 3a | 3b | 4  | 5                                                            |
|                                           | severity level                                                                       |                                             | IV                                                                                             | IV                                | IV | IV | IV | IV                                                           |
|                                           | failure criterion                                                                    |                                             | C                                                                                              | C                                 | A  | A  | A  | C                                                            |
|                                           | EN 61000-4-2 ESD                                                                     |                                             | 4 kV CD / 8 kV AD                                                                              |                                   |    |    |    |                                                              |
|                                           | EN 61000-4-3 HF radiated                                                             |                                             | 10 V/m                                                                                         |                                   |    |    |    |                                                              |
|                                           | EN 61000-4-4 Burst                                                                   |                                             | 2 kV                                                                                           |                                   |    |    |    |                                                              |
|                                           | EN 61000-4-5 Surge                                                                   |                                             | 0,5 kV line to line, Ri: 2 Ohm                                                                 |                                   |    |    |    |                                                              |
|                                           | EN 61000-4-6 HF conducted                                                            |                                             | 10 V                                                                                           |                                   |    |    |    |                                                              |
|                                           | EN 55011                                                                             |                                             | class B                                                                                        |                                   |    |    |    |                                                              |
|                                           | Vibration resistance                                                                 | EN 60068-2-6 Fc                             |                                                                                                | 20 g (10...3000 Hz) / -20...50 °C |    |    |    | 50 sweep cycles per frequency; 1 octave per minute in 3 axes |
| Shock resistance                          | EN 60068-2-27 Ea                                                                     |                                             | 100 g 11 ms half-sine; 3 shocks each in every direction of the 3 coordinate axes / -40...85 °C |                                   |    |    |    |                                                              |
| Continuous shock resistance               | EN 60068-2-29 Eb                                                                     |                                             | 40 g 6 ms; 4000 shocks each in every direction of the 3 coordinate axes / -20...50 °C          |                                   |    |    |    |                                                              |
| Fast temperature changes                  | EN 60068-2-14 Na                                                                     |                                             | TA = -40 °C; TB = 85 °C; t1 = 30 min; t2 = < 10 s; 50 cycles                                   |                                   |    |    |    |                                                              |
| Salt spray test                           | EN 60068-2-52 Kb                                                                     |                                             | severity level 5 (4 test cycles)                                                               |                                   |    |    |    |                                                              |
| MTTF                                      | [years]                                                                              | 662                                         |                                                                                                |                                   |    |    |    |                                                              |
| UL approval                               | Ta                                                                                   |                                             | 0...40 °C                                                                                      |                                   |    |    |    |                                                              |
|                                           | Enclosure type                                                                       |                                             | Type 1                                                                                         |                                   |    |    |    |                                                              |
|                                           | voltage supply                                                                       |                                             | Unlimited Voltage                                                                              |                                   |    |    |    |                                                              |
|                                           | File number UL                                                                       |                                             | E174191                                                                                        |                                   |    |    |    |                                                              |
| Mechanical data                           |                                                                                      |                                             |                                                                                                |                                   |    |    |    |                                                              |
| Weight                                    | [g]                                                                                  | 28.2                                        |                                                                                                |                                   |    |    |    |                                                              |
| Housing                                   |                                                                                      | threaded type                               |                                                                                                |                                   |    |    |    |                                                              |
| Mounting                                  |                                                                                      | flush mountable                             |                                                                                                |                                   |    |    |    |                                                              |
| Dimensions                                | [mm]                                                                                 | M12 x 1 / L = 60                            |                                                                                                |                                   |    |    |    |                                                              |
| Thread designation                        |                                                                                      | M12 x 1                                     |                                                                                                |                                   |    |    |    |                                                              |
| Materials                                 |                                                                                      | housing: stainless steel; sensing face: PBT |                                                                                                |                                   |    |    |    |                                                              |
| Displays / operating elements             |                                                                                      |                                             |                                                                                                |                                   |    |    |    |                                                              |
| Display                                   |                                                                                      | switching status                            |                                                                                                | 4 x 90° LED, yellow               |    |    |    |                                                              |
| Accessories                               |                                                                                      |                                             |                                                                                                |                                   |    |    |    |                                                              |
| Accessories (supplied)                    |                                                                                      | lock nuts: 2                                |                                                                                                |                                   |    |    |    |                                                              |
| Remarks                                   |                                                                                      |                                             |                                                                                                |                                   |    |    |    |                                                              |
| Pack quantity                             |                                                                                      | 1 pcs.                                      |                                                                                                |                                   |    |    |    |                                                              |
| Electrical connection - plug              |                                                                                      |                                             |                                                                                                |                                   |    |    |    |                                                              |
| Connector: 1 x M12; Contacts: gold-plated |                                                                                      |                                             |                                                                                                |                                   |    |    |    |                                                              |

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### 2-wire

