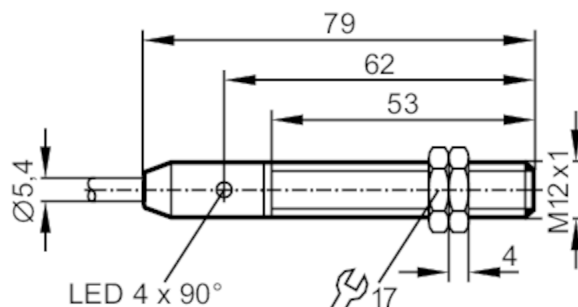


# IFM209



## Inductive sensor

IFK3004BBPKG/M/60V/6M/ZH



### Product characteristics

|                    |                  |
|--------------------|------------------|
| Electrical design  | PNP              |
| Output function    | normally open    |
| Sensing range [mm] | 4                |
| Housing            | Threaded type    |
| Dimensions [mm]    | M12 x 1 / L = 79 |

### Application

|             |                                      |
|-------------|--------------------------------------|
| System      | Increased sensing range              |
| Application | Use in mobile and harsh applications |

### Electrical data

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

### Outputs

|                                                      |                    |
|------------------------------------------------------|--------------------|
| Electrical design                                    | PNP                |
| Output function                                      | normally open      |
| Max. voltage drop switching output DC [V]            | 2.5                |
| Permanent current rating of switching output DC [mA] | 200                |
| Switching frequency DC [Hz]                          | 400                |
| Short-circuit protection                             | yes                |
| Type of short-circuit protection                     | yes (non-latching) |
| Overload protection                                  | yes                |

### Monitoring range

|                         |          |
|-------------------------|----------|
| 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 / aluminum: 0.5 / copper: 0.4 |
|-------------------|----------------------------------------------------------------------------|



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|                                      |                                                                                                             |                                                                                                |
|--------------------------------------|-------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|
| Hysteresis                           | [% of Sr]                                                                                                   | 1...20                                                                                         |
| <b>Operating conditions</b>          |                                                                                                             |                                                                                                |
| Ambient temperature                  | [°C]                                                                                                        | -40...85                                                                                       |
| Protection                           |                                                                                                             | IP 67; IP 69K                                                                                  |
| <b>Tests / approvals</b>             |                                                                                                             |                                                                                                |
| EMC                                  | Automotive area                                                                                             |                                                                                                |
|                                      | Noise emission and noise interference: ECE R10                                                              | E1 type approval                                                                               |
|                                      | noise immunity according to DIN ISO 11452-2                                                                 | 100 V/m                                                                                        |
|                                      | conducted interference in 24 V networks to ISO 7637-2: 2004 (pulse 1 to 4) and ISO16750-2: 2012 (load dump) |                                                                                                |
|                                      | pulse                                                                                                       | 1 2a 2b 3a 3b 4 Load dump                                                                      |
|                                      | Severity level                                                                                              | III III III III III Test A                                                                     |
|                                      | Failure criterion                                                                                           | C A C A A C 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 mains line to line                                                                      |
|                                      | EN 61000-4-6 HF conducted                                                                                   | 10 V                                                                                           |
|                                      | EN 55011                                                                                                    | class B                                                                                        |
|                                      | EN 60068-2-6 Fc                                                                                             | 20 g (10...3000 Hz) / -20...50 °C                                                              |
| Vibration resistance                 |                                                                                                             | 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 60068-2-27                                                                                               | 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                                                                                         |
|                                      | File number UL                                                                                              | E174191                                                                                        |
| <b>Mechanical data</b>               |                                                                                                             |                                                                                                |
| Weight                               | [g]                                                                                                         | 284.5                                                                                          |
| Housing                              |                                                                                                             | Threaded type                                                                                  |
| Mounting                             |                                                                                                             | flush mountable                                                                                |
| Dimensions                           | [mm]                                                                                                        | M12 x 1 / L = 79                                                                               |
| Thread designation                   |                                                                                                             | M12 x 1                                                                                        |
| Material                             |                                                                                                             | housing: stainless steel; sensing face: LCP natural; LED window: PEI; lock nuts: brass         |
| <b>Displays / operating elements</b> |                                                                                                             |                                                                                                |
| Display                              | Switching status                                                                                            | 4 x 90° LED, yellow                                                                            |
| <b>Accessories</b>                   |                                                                                                             |                                                                                                |
| Items supplied                       |                                                                                                             | lock nuts: 2                                                                                   |

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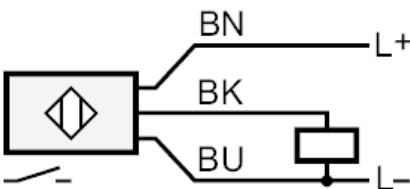
### Remarks

|               |        |
|---------------|--------|
| Pack quantity | 1 pcs. |
|---------------|--------|

### Electrical connection

Cable: 6 m, PUR; burning behaviour to ECE R118 rev. 2; 3 x 0.5 mm<sup>2</sup>

### Connection



|      |               |
|------|---------------|
| BK = | Core colors : |
| BN = | black         |
| BU = | brown         |
|      | blue          |