



DFK 36CX415-I67 Technical Reference Manual



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1 Quick Facts

| General | |
|-------------------------------|--|
| Dynamic Range | 12 bit |
| Resolution | 3840x2160 |
| Frame Rate at Full Resolution | 30 |
| Pixel Formats | 12-Bit Bayer (GB) 10-Bit Bayer (GB) |

| Optical Interface | |
|-------------------|------------------|
| Sensor Type | Sony IMX415-AAQR |
| Shutter Type | Rolling |
| Sensor Format | 1/2.8 inch |
| Pixel Size | 1.45 µm |

| Electrical Interface | |
|----------------------|----------------------------------|
| Interface | FPD-Link III via FAKRA connector |
| Supply voltage | 10-27V |
| Current consumption | approx 110 mA @ 18 VDC |

| Mechanical Data | |
|------------------|--------------------------------|
| Dimensions | H: 36 mm, W: 36 mm, L: 60.3 mm |
| Mass | 80 g |
| Protection Class | IP6K6, IP6K7 (ISO 20653) * |

*) Protection only while The Imaging Source IP67 FAKRA cable is connected to the camera.

| Adjustments | |
|-------------|----------------|
| Shutter | 15 µs to 0.1 s |
| Gain | 0 dB to 72 dB |



| Environmental | |
|-------------------------|-------------------------------|
| Temperature (operating) | -5 °C to 45 °C |
| Temperature (storage) | -20 °C to 60 °C |
| Humidity (operating) | 20 % to 80 % (non-condensing) |
| Humidity (storage) | 20 % to 95 % (non-condensing) |

2 Electrical Characteristics

2.1 Absolute Maximum Ratings

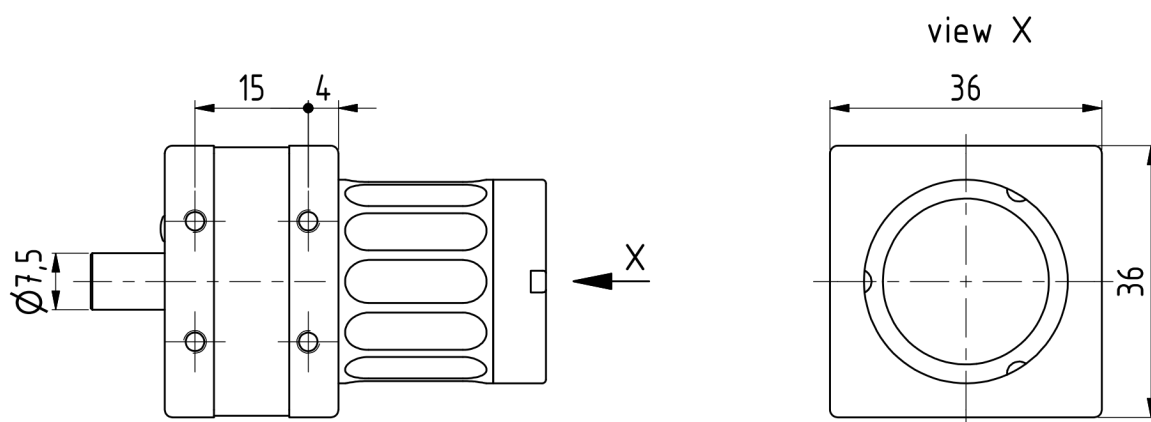
| Item | Symbol | Pins | Min | Max | Unit |
|----------------|--------|------|------|-------|------|
| Supply voltage | V_COAX | | -0.3 | +27.0 | V |

2.2 Recommended Operating Conditions

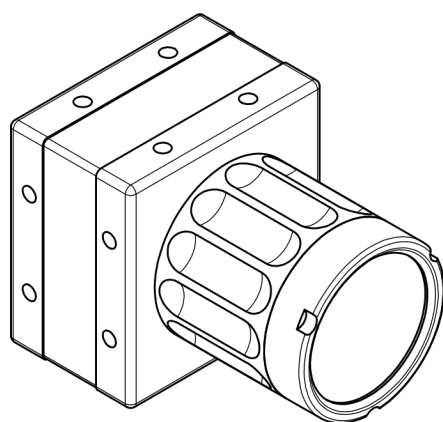
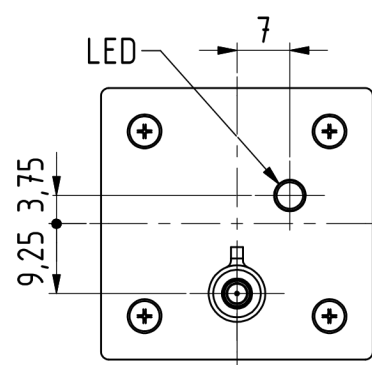
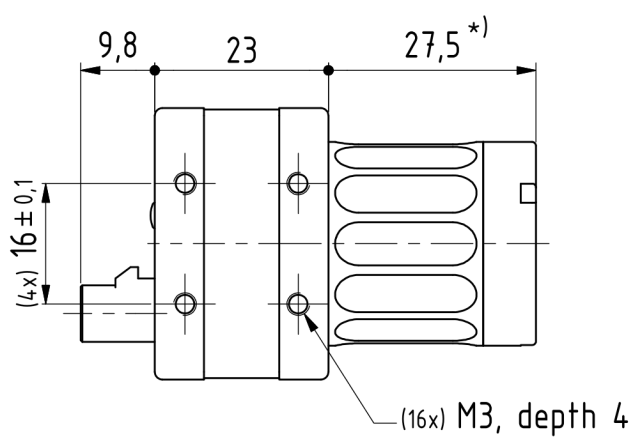
| Item | Symbol | Pins | Min | Typ | Max | Unit |
|----------------|--------|------|-----|------|------|------|
| Supply voltage | V_COAX | | 9.0 | 18.0 | 24.0 | V |

3 Dimensional Diagrams

3.1 DFK 36CX415-I67 without Tripod Adapter



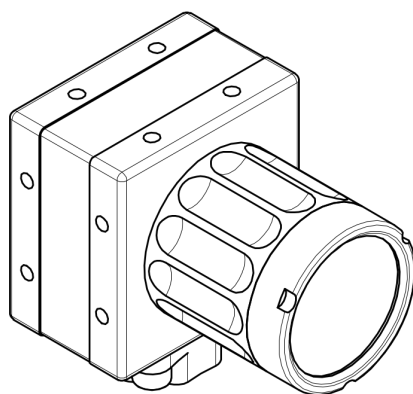
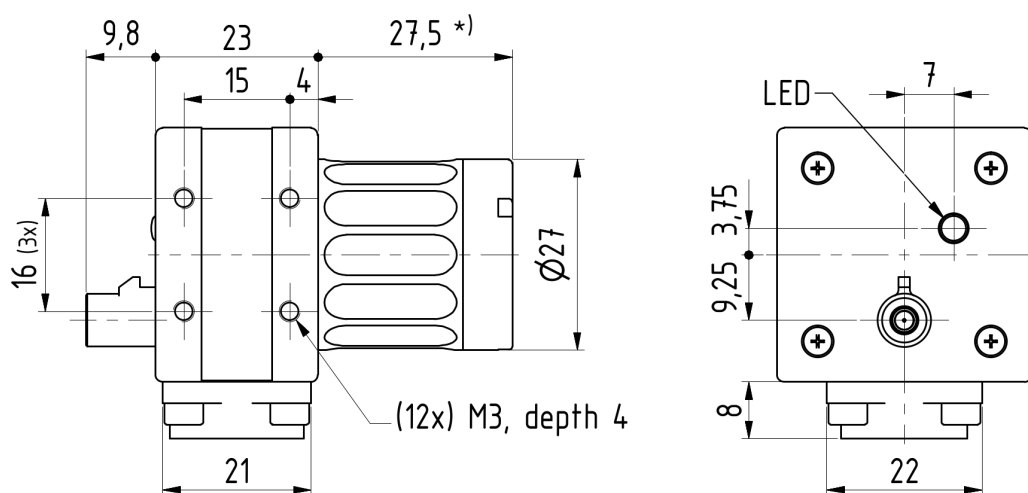
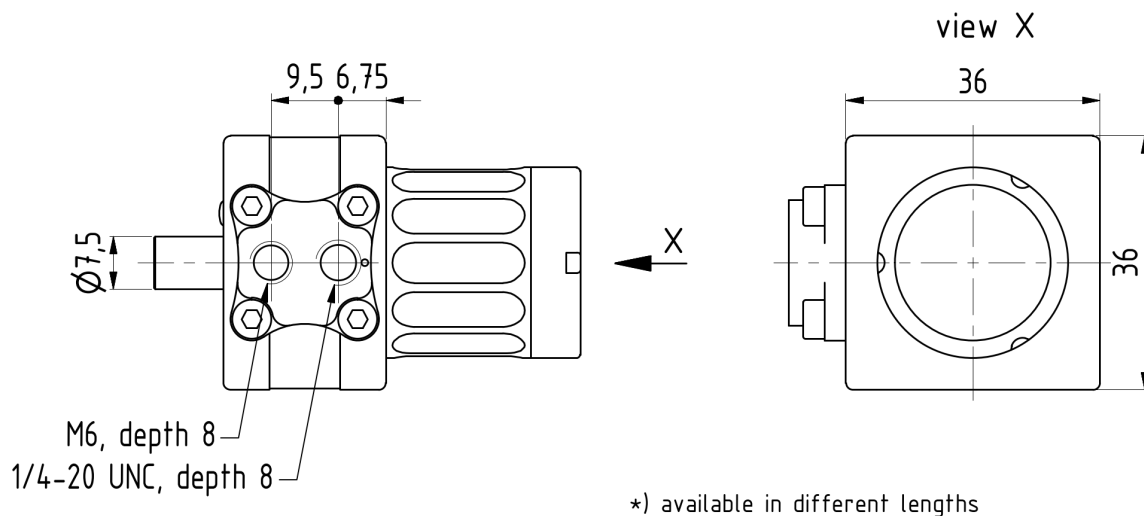
*) available in different lengths



Scale: 1 : 1
 Dimensions: mm
 Tolerances: DIN ISO 2768-m
 275-20-1-01-00-c (w/o tripod-adapter)



3.2 DFK 36CX415-I67 with Tripod Adapter

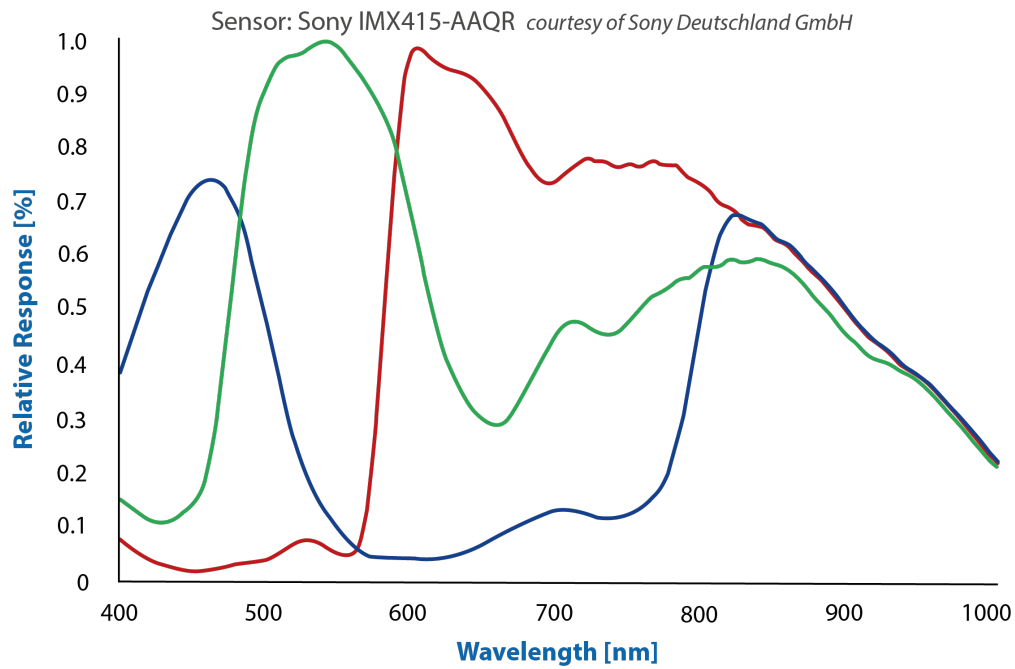


Scale: 1:1
 Dimensions: mm
 Tolerances: DIN ISO 2768-f
 275-20-1-01-00-c



4 Spectral Characteristics

4.1 Spectral Sensitivity - IMX415-AAQR





5 FPD-Link Serializer I/O Signals

The serializer chip DS90UB953-Q1 (Texas Instruments) has 4 GPIO pins. Their purpose is described in the following table:

| Pin | Name | Dir | Description |
|------------|-----------------|-----|-----------------|
| 17 (GPIO0) | NC | - | Not connected |
| 18 (GPIO1) | NC | - | Not connected |
| 27 (GPIO2) | NC | - | Not connected |
| 28 (GPIO3) | RESERVED1_GPIO3 | I/O | Reserved signal |

The serializer's CLK_OUT (19) pin is connected to the sensor's clock input. This means that the sensor's clock frequency is controlled through serializer PLL registers.

6 I2C I/O Expander Configuration

Various I/O functionalities of the camera are controlled through a I2C I/O Expander.

The TCA6408A part has the 7-bit I2C-address 0x20. The table below depicts which signals can be controlled through this expander:

| I/O Pin | Name | Dir | Description |
|---------|--------------|-----|--|
| P0 | CAM_PWR | O | Enable CMOS sensor power supply 0: Sensor power disabled 1: Sensor power enabled |
| P1 | RESET | O | CMOS sensor reset signal 0: Sensor is in reset state 1: Sensor is in operational state |
| P2 | GPOUT_LEVEL | O | If GPOUT_SELECT = 0: --->0: LED1 off --->1: LED1 on |
| P4 | GPOUT_SELECT | O | 0: Control LED via GPOUT_LEVEL 1: Reserved |
| P5 | RESERVED_5 | O | Reserved |
| P6 | RESERVED_6 | O | Reserved |
| P7 | RESERVED_7 | O | Reserved |

7 I2C Devices

There are multiple I2C devices on the DFK 36CX415-I67 sensor board. The following table describes the parts and their I2C addresses:

| Address (7-bit) | Device | Description |
|-----------------|-------------|--------------|
| 0x1A | IMX415-AAQR | Image Sensor |
| 0x20 | TCA6408A | I/O Expander |
| 0x50 | AT24C256C | EEPROM |
| 0x57 | AT24C02C | EEPROM |

8 Status LEDs

There is one status LED on the serializer board:

| Name | Color | Description |
|------|-------|--|
| LED1 | Green | Controlled through GPOUT_LEVEL on the I/O expander |

DFK 36CX415-I67

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All weights and dimensions are approximate. Unless otherwise specified, the lenses shown in the context of cameras are not shipped with these cameras.

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