

# NIR-300

Near-infrared Camera with 320 x 256 pixels



## Features

- 320 (H) x 256 (V) pixels
- Spectral response **900nm – 1700nm** (NIR)
- InGaAs sensor
- 30  $\mu\text{m}$  x 30  $\mu\text{m}$  pixels
- 14 bit digital processing
- Frame rate 50 Hz (optional 100 Hz)
- Different interfaces available (**Camera Link** or **Gigabit Ethernet**)
- Adapted for C-Mount optical lenses
- **Optional:** Peltier Cooling for longer exposure times

**VDS** Vosskühler

By means of the **NIR-300** VDS Vosskühler offers for the first time a camera for the NIR area from 900 to 1700nm. The camera has an InGaAs sensor with a resolution of 320 x 256 pixels.

InGaAs detectors are known to be very sensitive with good linearity and high damage threshold against intense illumination.

At a frame rate of 50 frames/sec. the **NIR-300** (or rather 100 frames/sec. with the **NIR-300F** models) camera delivers excellent, low noise images with a 14 bit resolution.

In addition to a continuous image capture with 50 Hz (100 Hz), the camera has an Image on demand mode, enabling to exposure all pixels at the same time and to output them in the following.

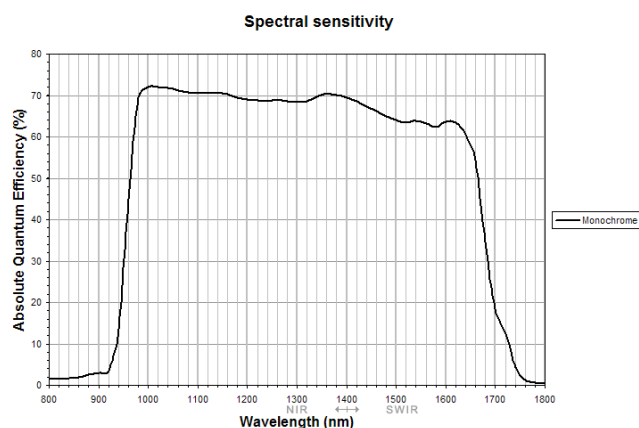
The **NIR-300** is available with two different interfaces: Camera Link (**CL**) or Gigabit Ethernet (**GE**).

As an option the camera is available with a Peltier cooling (**P**) for longer exposure times or in order to enable an exact temperature measuring within the image.

### Technical Data

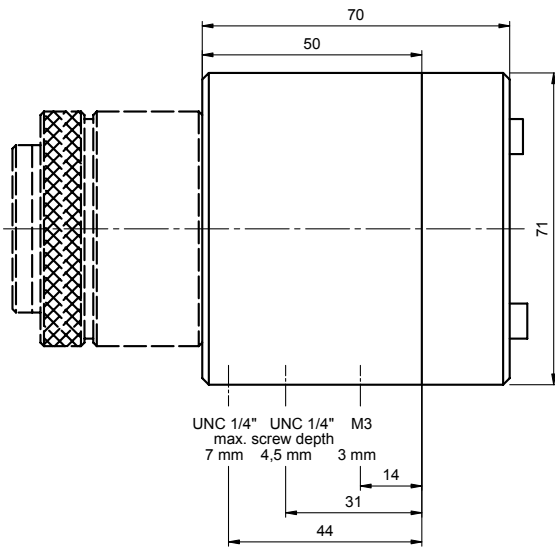
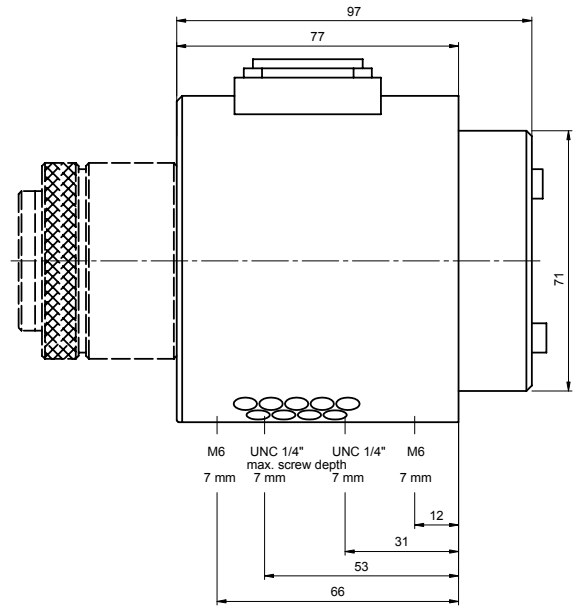
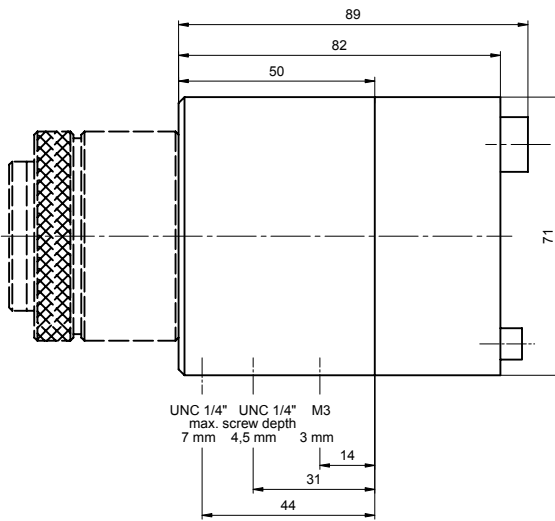
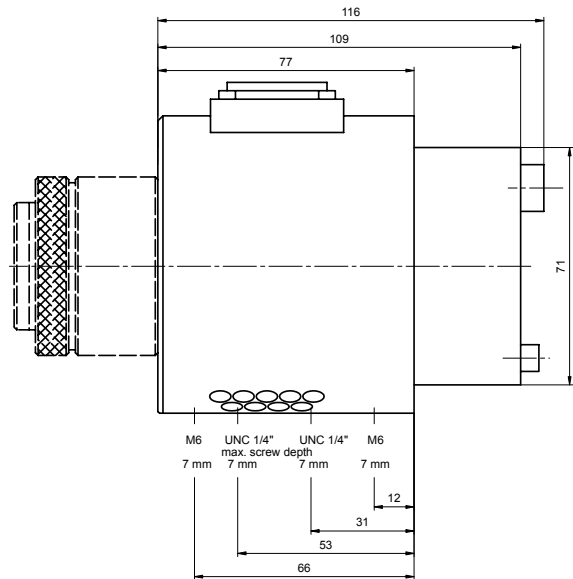
- Resolution:
  - NIR-300/F models: 320 (H) x 256 (V) pixels (full res.)
  - NIR-300F models: 320 (H) x 160 (V) pixels (red. res.)
- Pixel size: 30 µm x 30 µm
- InGaAs sensor
- Spectral response: 0.9 µm - 1.7 µm (NIR)
- Quantum efficiency: > 70% (1.0 µm -1.6 µm)
- Sensitive area: 9.6 mm x 7.68 mm
- Electronic full-frame shutter
- Exposure times:
  - NIR-300 models: 64 µs – 100 ms
  - NIR-300P models: 64 µs – 1 s
  - NIR-300F models: 32 µs – 100 ms
  - NIR-300FP models: 32 µs – 1 s
- Progressive scan
- Frame rate:
  - NIR-300 models: up to 50 Hz
  - NIR-300F models: up to 100 Hz or rather 186 Hz with reduced resolution
- Fullwell > 1x10<sup>6</sup>e (250ke, @gain 4; 100ke, @gain 10)
- Read out noise: < 400e (<100e, @gain 10)
- Dynamics: > 1:2500 (>1:800, @gain 10)
- Pixel clock:
  - NIR-300 models: 5.25 MHz
  - NIR-300F models: 10.5 MHz
- 14 bit digital processing, 12 bit output (Camera Link Base or 1000Base-T Gigabit Ethernet)
- Serial interface for control (via Camera Link or Gigabit Ethernet, optional RS232)
- Peltier cooling stabilized to +0°C (NIR-300P models only)
- C-Mount optical interface

- Power supply + 12V (SELV)
  - NIR-300(F)CL: 0.4 A
  - NIR-300(F)GE: 0.6 A
  - NIR-300(F)PCL: 0.9 A (max. 2.6 A)
  - NIR-300(F)PGE: 1.1 A (max 2.8 A)
- Ambient air temperature:
  - NIR-300(F) models: 10°C up to 30°C;
  - NIR-300(F)P models: 0°C up to 40°C
- Forced air cooling (NIR-300P models only)
- Weight:
  - NIR-300(F)CL: 600 g
  - NIR-300(F)GE: 660 g
  - NIR-300(F)PCL: 1360 g
  - NIR-300(F)PGE: 1420 g
- CE conform
- Made in Germany

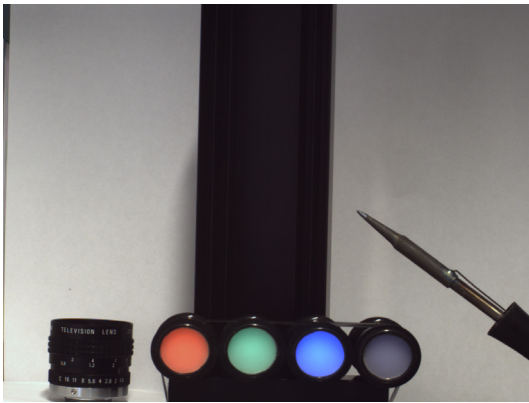


### Applications:

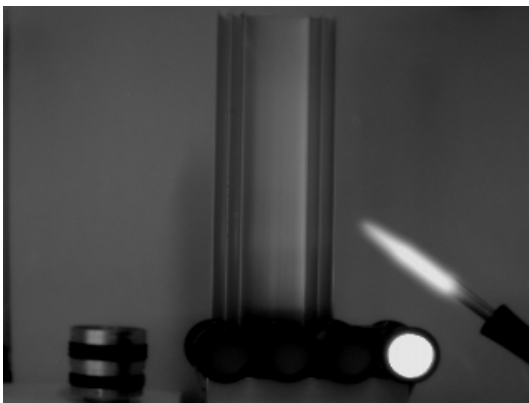
- Near-infrared imaging
- Thermal imaging of hot objects (in a range of 250°C to 800°C)
- Imaging spectroscopy
- Laser beam profiling
- Sorting according to plastic
- Semiconductor inspection
- Water or moisture detection
- Medical science and biology
- Vision enhancement

**Mechanical dimensions:****NIR-300CL / NIR-300FCL:****NIR-300PCL / NIR-300FPCL:****NIR-300GE / NIR-300FGE:****NIR-300PGE / NIR-300FPGE:**

## Examples of NIR imaging:



Example 1 – CCD-camera



Example 1 – NIR camera



Example 2 – CCD-camera



Example 2 – NIR camera

### Power and Control Input (15-pin D-SUB Jack)

Pin	Function
1	+12V DC
2	
3	GND
4	
5	Test output (reserved)
6	
7	RXD (RS232)
8	TXD (RS232)
9	Mode: (Open) → Continuous Mode (GND) → Image on Demand
10	Trigger Input (Opto Coupler)
11	
12	Exposure Output (Opto Coupler)
13	
14	Line Sync Output (active low)
15	Frame Sync Output (active low)

### Camera Link Connector (MDR-26 Jack)

Pin	Function	Pin	Function
1	GND	14	GND
2	X0-	15	X0+
3	X1-	16	X1+
4	X2-	17	X2+
5	XCLK-	18	XCLK+
6	X3-	19	X3+
7	SerTC+	20	SerTC-
8	SerTFG-	21	SerTFG+
9	CC1- (Trigger Input)	22	CC1+ (Trigger Input)
10	CC2+ (Image Resolution)	23	CC2- (Image Resolution)
11	CC3- (Gain)	24	CC3+ (Gain)
12	CC4+ (IOD)	25	CC4- (IOD)
13	GND	26	GND

### Gigabit Ethernet Connector (RJ-45 Jack)

Pin	Function	Pin	Function
1	D1+	5	D3-
2	D1-	6	D2-
3	D2+	7	D4+
4	D3+	8	D4-

### Order codes

Camera	Art. No.
NIR-300CL	1045101
NIR-300GE	1045151
NIR-300FCL	1045111
NIR-300FGE	1045161
NIR-300PCL	1045702
NIR-300PGE	1045452
NIR-300FPCL	1045712
NIR-300FPGE	1045762