

ExCam® XI410

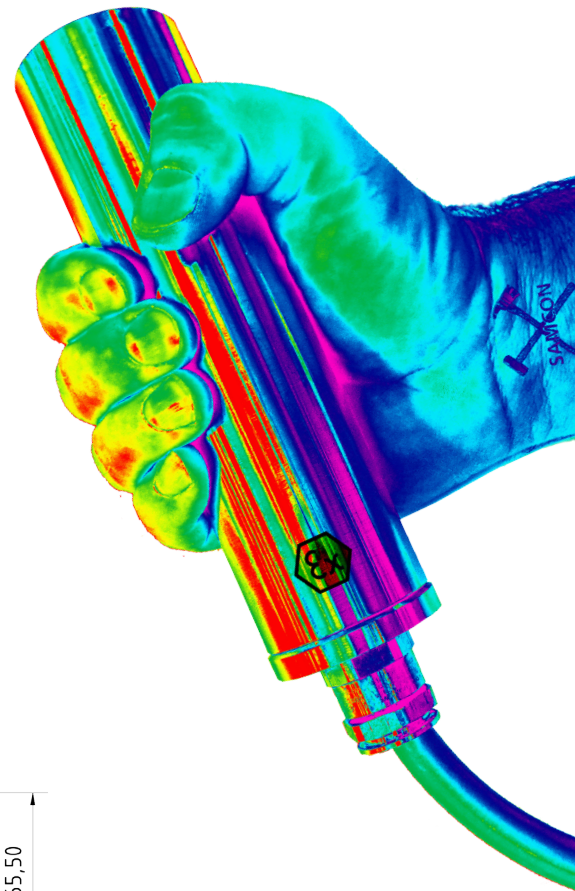


Datasheet.

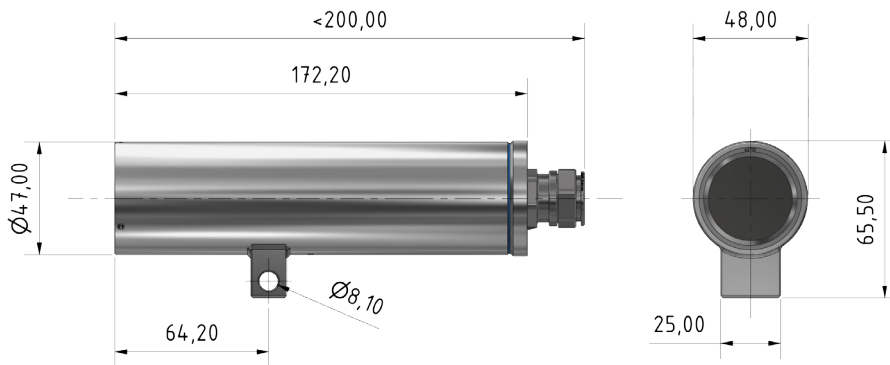
World's Smallest Explosion Proof Spot-Finder Thermographic Camera

Features.

- ✓ Certification for Hazardous Areas
- ✓ Ultra-Compact and Lightweight Thermal Imaging Camera with Integrated IR-Thermometer
- ✓ Resolution of 384x240 p for exact Temperature Measurement from -20°C to 900°C
- ✓ Thermal Sensitivity NETD 0.08°C
- ✓ Imager with Motor-Focus
- ✓ Four Different Optics Available
- ✓ Autonomous Operation with Automatic Spot Finder
- ✓ Automatic Calibration
- ✓ Single-Cable-Solution (Ethernet, Voltage, I/O)
- ✓ Protection Level of IP66/68 (IEC 60529)
- ✓ Software with Extensive Analysis Features



Dimensions.

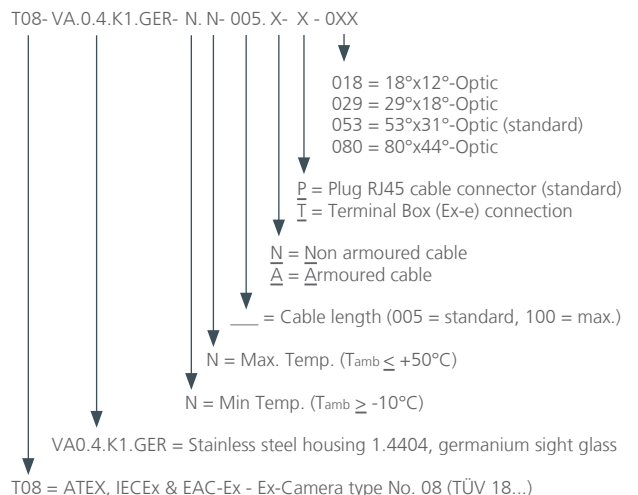


Zones.

| Group II (Gas & Dust) | ATEX / IECEx | | | | |
|-----------------------|--------------|---|---|----|----|
| Zone | 0 | 1 | 2 | 21 | 22 |
| For use in | ✗ | ✓ | ✓ | ✓ | ✓ |

More certificates upon request

Models.



Data.



Explosion protection

Declaration of conformity:

DIN EN/IEC/GOST ... 60079-0, DIN EN/IEC/GOST ... 60079-1,
DIN EN/IEC/GOST ... 60079-7, DIN EN/IEC/GOST ... 60079-14,
DIN EN/IEC/GOST ... 60079-31
TUEV-18-ATEX-8218X, IECEX-TUR-18.0023X,
No. TC RU C-DE.HA65.B.01652/22, TUEV-22-UKEX-7137X



Ex- certificates:

II 2G Ex db IIC T6 Gb
 II 2D Ex tb IIIC T80°C Db



Ex- Marking Camera:
Explosion protection (gas):
Explosion protection (dust):
Ex- Marking Terminal Box:
Explosion protection (gas):
Explosion protection (dust):

II 2G Ex eb IIC T5 Gb
 II 2D Ex tb IIIC T95°C Db IP66



Mechanical characteristics

Material (cam / junction box):
Protection level (cam / junction box):
Weight:

Stainless Steel (AISI 316L/1.4404) / Polyester resin
IP66/68 / IP66 (IEC/EN 60529)
0.93 kg



Range of temperature

-10°C to +50°C



Power supply

Power input:
Power consumption:

10 - 30VDC
max. 2.5 W@24VDC; typ. < 2.0W
max. 500 mA



Connection cable type

Outside diameter:

WWW.SAMCON.EU ... Cat.6 / 4x2xAWG23/1
8.9mm to 15.5mm (12.4mm SKDP03-T)



Optic

Type (choosable):
Field of view:
Minimum object distance (MOD):
Smallest recommended object size:

18° (f=20), 29° (f=13), 53° (f=8) Standard, 80° (f=6)
18°x12° / 29°x18° / 53°x31° / 80°x44°
0.35m@18°/29°; 0.25m@53°; 0.2m@80°
Measurement Field of View (MFOV): 3x3 Pixel



Camera

Image sensor:
Resolution:
Focus:
Frame rate:
Spectral range:
Temperature range:
Thermal sensitivity:
Precision:
Visual resolution (D:S):
Warm-up period:
Emissivity:
PC-Interfaces:
Direct Out-/Inputs:
Video streaming:

FAP (Focal Plane Array), uncooled microbolometer (34 µm Pitch)
384x240p@25Hz
Motorized focus with remote control
25Hz
8 - 14 µm
-20°C ... 100°C, 0°C ... 250°C, 150°C ... 900°C switchable
NETD < 80 mK
±2°C or ±2 %, the higher value is valid
390:1 (18° optics)
10 min.
0.100 ... 1.100*
Ethernet (100 Mbit/s) / RS 4852**
1x analog output (0/4-20 mA); input (analog or digital); optical isolated
Triggered data capture, radiometric videos (*.ravi) and snapshots (*.tiff, *.avi),
Adaption of recording frequency



Image setting:

Real Time-Temperature information as digital display or graphic display (line profile, temperature-time-diagram), range of colours to emphasize thermal contrasts, ...



Network

100BaseTX

System integration

Software package:
SDK:
Process Interface features:

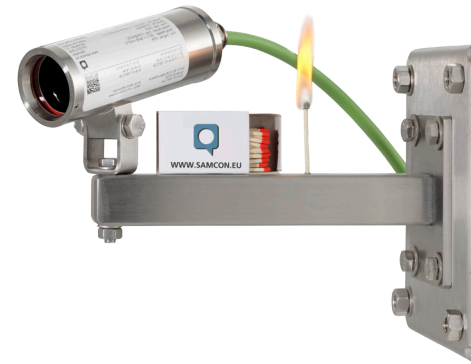
optris PIX Connect (on a supplied USB-stick), compatible with Windows 7, 8 and 10
Software Development Kit (open source)
External control of emissivity, background radiation, compensation or reference,
temperature/ Triggered video or snapshot recording,
analog output of temperatures of main measuring area or alarm output
Configuration Automatic or manual scaling of the measuring range
Selectable and definable software layouts, Language-translation-tool, Adjustable measuring
parameters: Emissivity 0.10 - 1.00, Background radiation compensation, Reference temperature,
Measurement Modes; Flexible spots and measurement fields with automatic calculation of
MAX, MIN or AVG values; Automatic HOT-spot- and COLD-spotfinder, Temperature profiles,
Isotherm exposition Reference function (with external sensor), Linescanning modes,
Image presentation, 11 color palettes, Color reference bar, Histogram, Digital display of measuring
field temperatures (with alarm signal), Video control (play, pause, stop, detail screen forward & backward),
Full screen mode,
Video recording: Realtime video recording (radiometric) with 50 Hz (adjustable), Video editing tools,
Snapshot saving (radiometric JPG);
External software communication via COM-Ports and DLL

Software features:

Optional accessories

Industrial-Process-Interface (PIF):

Wall mount bracket (WMB), Pole mount bracket (PMB)
3x analog output (0/4-20 mA or 0-10 V) or 3x alarm output (relais 0-30 V / 400 mA)
3x input (analog or digital) / 1x failsafe (LED and relais);
upgretable up to 3 PIFs; optical isolated



* = Caution: The measurement result can be falsified on reflective surfaces (shiny metal surfaces).

** = Direct out- and inputs are not available when using the RS485-interface



ExCam XI410

Measurement field- and pixel size



| Optic | | | Distance to measurement object [m] | | | | | | | | | | | |
|-------|--|-----------------|------------------------------------|-------|-------|-------|------|------|------|------|------|------|------|-------|
| | | | 0.05 | 0.1 | 0.2 | 0.3 | 0.5 | 1 | 2 | 4 | 6 | 10 | 30 | 100 |
| 53° | Enlargement of total measuring field at object level [m] | Horizontal HFOV | | 0.1 | 0.2 | 0.3 | 0.49 | 0.99 | 2.0 | 4.0 | 5.9 | 9.9 | 29.7 | 98.9 |
| | | Vertikal VFOV | | 0.057 | 0.11 | 0.17 | 0.28 | 0.55 | 1.1 | 2.2 | 3.3 | 5.5 | 16.5 | 54.9 |
| | | Diagonal DFOV | | 0.115 | 0.23 | 0.34 | 0.57 | 1.13 | 2.3 | 4.5 | 6.8 | 11.3 | 33.9 | 113.1 |
| | Size of the single pixel [mm] | IFOV | | 0.3 | 0.5 | 0.8 | 1.3 | 2.6 | 5.1 | 10.3 | 15.5 | 25.8 | 77.2 | 257.4 |
| 18° | Enlargement of total measuring field at object level [m] | Horizontal HFOV | | | 0.069 | 0.102 | 0.17 | 0.33 | 0.66 | 1.31 | 2.0 | 3.3 | 9.8 | 32.6 |
| | | Vertikal VFOV | | | 0.043 | 0.064 | 0.1 | 0.21 | 0.41 | 0.82 | 1.2 | 2.1 | 6.1 | 20.5 |
| | | Diagonal DFOV | | | 0.081 | 0.12 | 0.2 | 0.39 | 0.78 | 1.55 | 2.3 | 3.9 | 11.5 | 38.5 |
| | Size of the single pixel [mm] | IFOV | | | 0.2 | 0.3 | 0.4 | 0.9 | 1.7 | 3.4 | 5.1 | 8.5 | 25.5 | 84.8 |
| 29° | Enlargement of total measuring field at object level [m] | Horizontal HFOV | | 0.059 | 0.112 | 0.17 | 0.27 | 0.53 | 1.07 | 2.1 | 3.2 | 5.3 | 15.9 | 52.9 |
| | | Vertikal VFOV | | 0.036 | 0.068 | 0.1 | 0.16 | 0.32 | 0.64 | 1.3 | 1.9 | 3.2 | 9.5 | 31.7 |
| | | Diagonal DFOV | | 0.069 | 0.131 | 0.19 | 0.32 | 0.62 | 1.24 | 2.5 | 3.7 | 6.2 | 18.5 | 61.6 |
| | Size of the single pixel [mm] | IFOV | | 2.0 | 0.3 | 0.4 | 0.7 | 1.4 | 2.8 | 5.5 | 8.3 | 13.8 | 41.3 | 137.7 |
| 80° | Enlargement of total measuring field at object level [m] | Horizontal HFOV | 0.084 | 0.16 | 0.32 | 0.48 | 0.81 | 1.6 | 3.3 | 6.5 | 9.8 | 16.6 | 49.9 | 166.4 |
| | | Vertikal VFOV | 0.044 | 0.08 | 0.17 | 0.25 | 0.41 | 0.8 | 1.6 | 3.2 | 4.8 | 8.0 | 24.1 | 80.4 |
| | | Diagonal DFOV | 0.095 | 0.18 | 0.36 | 0.54 | 0.91 | 1.8 | 3.6 | 7.3 | 10.9 | 18.5 | 55.4 | 184.8 |
| | Size of the single pixel [mm] | IFOV | 0.2 | 0.4 | 0.8 | 1.3 | 2.1 | 4.2 | 8.5 | 16.9 | 25.5 | 43.4 | 130 | 433.2 |

For distances smaller than the minimum measuring distance, the measuring accuracy can be outside the specification.



As an alternative to the table, you can use the Optris GmbH [Opticcalculator](https://www.optris.de/optikkalkulator-fuer-waermebildkameras):
<https://www.optris.de/optikkalkulator-fuer-waermebildkameras>



Or the free optris [Opticcalculator App](https://play.google.com/store/apps/details?id=com.optris.calculator&hl=de&gl=US):
<https://play.google.com/store/apps/details?id=com.optris.calculator&hl=de&gl=US>

