PSC-X80LT / X400LT Series

Hot Spot IR Cameras

- **Stand-alone operation**
- **4-20 mA output for process control**
- **Motorized focus**
- **Only affordable IR camera**
- **Compact size for OEMs**
- **Rugged stainless steel housing**
- **Intuitive user-friendly software**
- **Automatic hot/cold locator**

The PSC-X80LT is an industrial imager with 80x 80 pixels for the accurate temperature measurement from -20°C to 900°C (- 4°F to 1652°F). Its autonomous operation with automatic hot spot finder and direct analog output make it ideal for a multitude of manufacturing process applications.

Offering a variety of lenses to match the observation area with high resolution distance-to-spot-ratio of up to 190:1 enables these cost effective cameras to be applied to most non-contact temperature sensing applications.

The PSC-X400LT is a higher resolution industrial thermal imaging camera with 382 x 288 pixels with a distance-to-spot-size-ratio up to 390:1. The camera shares a temperature range of -20°C to 900°C (- 4°F to 1652°F).

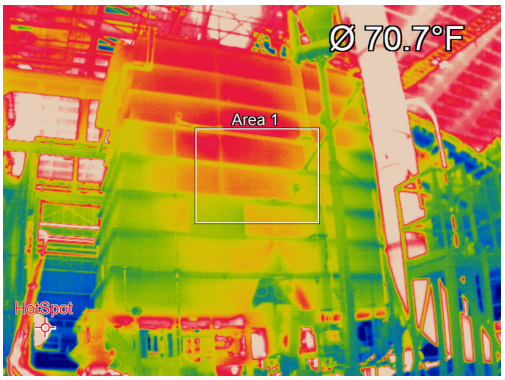
A 80 Hz frame rate allows for monitoring of fast thermal processes. Both cameras can be switched from thermal imaging mode to line scanning mode.

The rugged stainless steel housing and compact size make it ideal for OEM requirements.

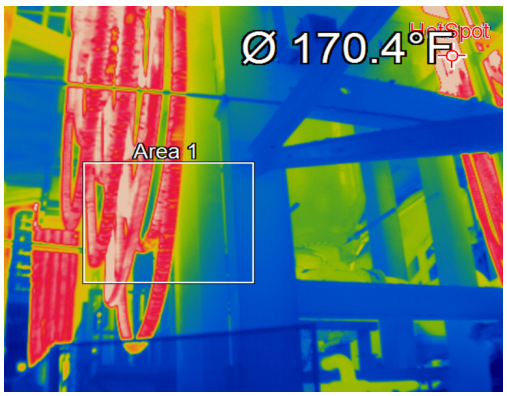
IR cameras come standard with free PSC-Camera Connect software and connection cables.

PSC-X80LT

TECHNICAL DATA



Metering Bin - OSB Plant



Thermal Hoses - OSB Plant

Type	PSC-X80LT
Optical resolution	80 x 80 pixels
Detector	FPA, uncooled (34 µm x 34 µm)
Spectral range	7.5 – 13 µm
Temperature ranges	–20 °C ... 100 °C (–4°F ... 212 °F), 0 °C ... 250 °C (32 °F ... 482 °F), (20 [68]) 150 °C ... 900 °C[1] (302 °F ... 1652 °F)[1]
Frame rate	50 Hz
Optics (FOV)	12° (f = 12.7 [0.50]), 30° (f = 5.1 [0.20]), 55° (f = 3.1 [0.12]), 80° (f = 2.3 [0.09])
Focus	Manual motor focus
Optical resolution D:S	190:1 (12° optics)
Thermal sensitivity (NETD)	100 mK
Accuracy	±2 °C or ±2 % (±3.6 °F or ±2 %), whichever is greater
PC interface	USB 2.0 / Ethernet (100 Mbit/s) / PoE / RS 485[2]
Direct Output/Input	1x analog output (0/4-20 mA) / 1x input (analog or digital); optically isolated
Process interface (PIF), industrial	3x analog outputs (0/4–20 mA or 0–10 V) or alarm OUT (relais) / 3x inputs (analog or digital) / fail-safe (LED and relay); stackable up to 3 PIFs; optically isolated
Cable length (USB)	USB: 1 m (3.3 ft) (standard), 3 m (9.8 ft), 5 m 16.4 ft), 10 m (32.8 ft), 20 m (65.6 ft) Ethernet / RS485: 100 m (328.1 ft)
Ambient temperature	0 °C to 50 °C (32 °F to 122 °F)
Enclosure (size / rating)	Ø 36 mm x 90 mm (Ø 1.42 in x 3.54 in) (M30x1 thread) / IP 67 (NEMA 4)
Weight	185 g (6.5 oz)
Shock / Vibration[3]	IEC 60068-2
Power supply	USB / PoE / 5–30 VDC
Scope of supply	• PSC-X80 • USB cable (1 m [3.3 ft]) • Cable for output/input (1 m) incl. terminal block • Mounting bracket with nut • Software package optris® PSC-Camera-Connect

[1] Accuracy statement effective from 150 °C
[2] Direct out- and inputs are not available while using the RS485 interface
[3] For more details see operator's manual

PSC-Camera Connect

Extensive infrared camera software

- No additional costs
- No restrictions in licensing
- Modern software with intuitive user interface
- Remote control of camera via software
- Display of multiple camera images in different windows
- Compatible with Windows 7, 8,10 and Linux
- Extensive license-free analysis and complete SDK inclusive
- Various color palettes to highlight thermal contrasts

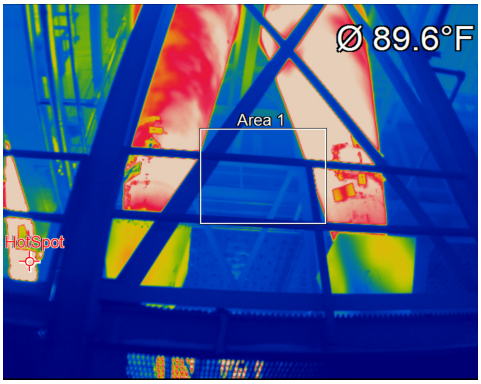
Extensive online and offline data analysis

- Real-time temperature information within main window as digital or graphic display
- Analysis supported by measurement fields, automatic hot and cold spot searching
- Logic operation of temperature information (measurement fields and image subtraction)
- Slow motion repeat of radiometric files & analysis without camera being connected
- Editing of sequences such as cutting and saving of individual images

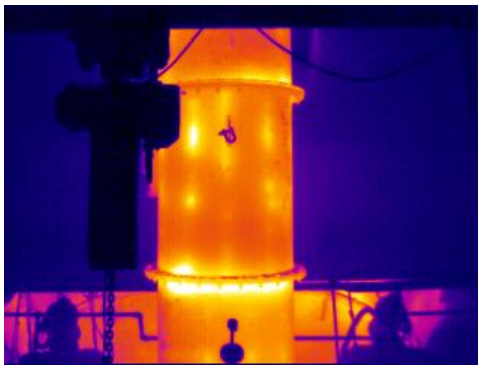
PSC-X400LT

TECHNICAL DATA

PSC-X 400 macro lens kit



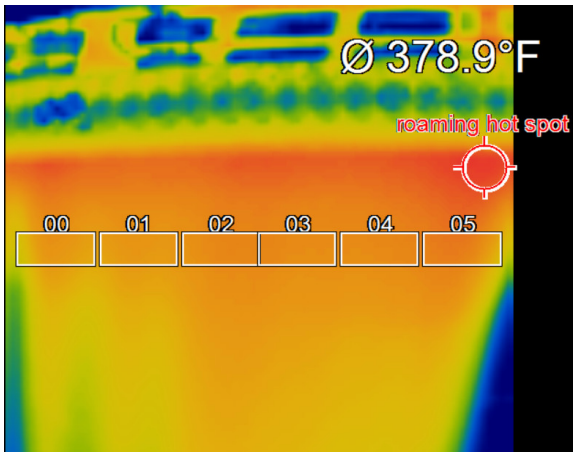
Feeder Pipes - OSB Plant



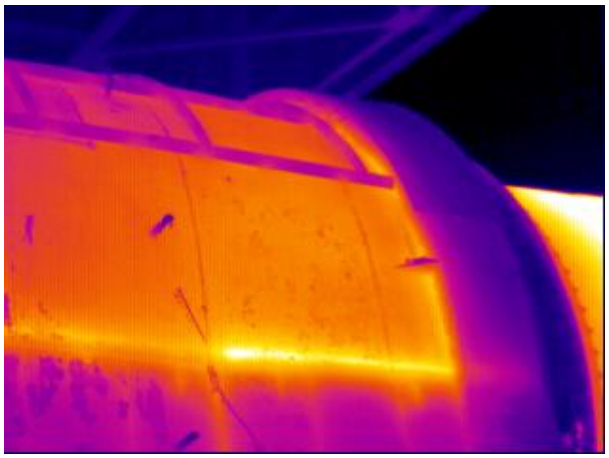
Vessel

Type	PSC-X400LT
Optical resolution	382 x 288 pixels
Detector	FPA, uncooled (17 µm x 17 µm pitch)
Spectral range	7.5 – 13 µm
Temperature ranges	–20 ... 100°C (–4 ... 212 °F), 0 ... 250 °C (32 ... 482 °F), (20 [68])150 ... 900 °C[1] (302 ... 1652°F)[1]
Frame rate	80 / 27 Hz
Optics (FOV)	18° x 14° (f = 20 [0.79]), 29° x 22° (f = 12.7 [0.50]), 53° x 38° (f = 7.7 [0.30]), 80° x 54° (f = 5.7 [0.22])
Macro optics	18° x 14° (f = 20), smallest measuring spot (MFOV): 240 µm
Focus	Manual motor focus
Optical resolution (D:S)	390:1 (18° optics)
Thermal sensitivity (NETD)	80 mK
Accuracy	±2 °C or ±2 % (±4 °F or ±2 %), whichever is greater
PC interface	USB 2.0 / optional USB to GigE (PoE) conversion
Process interface (PIF), standard	0–10 V input, digital input (max. 24 V), 0–10 V output
Process interface (PIF), industrial	2 x 0–10 V inputs, digital input (max. 24 V), 3 x 0–10 V outputs, 3 x relay (0–30 V / 400 mA), faile-safe relay
Cable length (USB)	1 m (3.3 ft) (standard), 3 m (9.8 ft), 5 m (16.4 ft), 10 m (32.8 ft), 20 m (65.6 ft)
Ambient temperature	0 °C to 50 °C (32 °F to 122 °F)
Enclosure (size / rating)	Ø 36 mm x 100 mm (Ø 1.42 in x 3.9 in) (M30x1 thread) / IP 67 (NEMA 4)
Weight	200 g (7.1 oz)
Shock [2]	IEC 60068-2-27 (25 G and 50 G)
Vibration [2]	• IEC 60068-2-6 (sinusoidal form) • IEC 60068-2-64 (broadband noise)
Power supply	USB
Scope of supply	• PSC-X400 • USB cable (1 m [3.3 ft]) • Standard PIF cable (1 m) incl. terminal block • Mounting bracket with nut • Software package optris® PSC-Camera-Connect

[1] Accuracy statement effective from 150 °C (302 °F)
[2] For more details see operator's manual



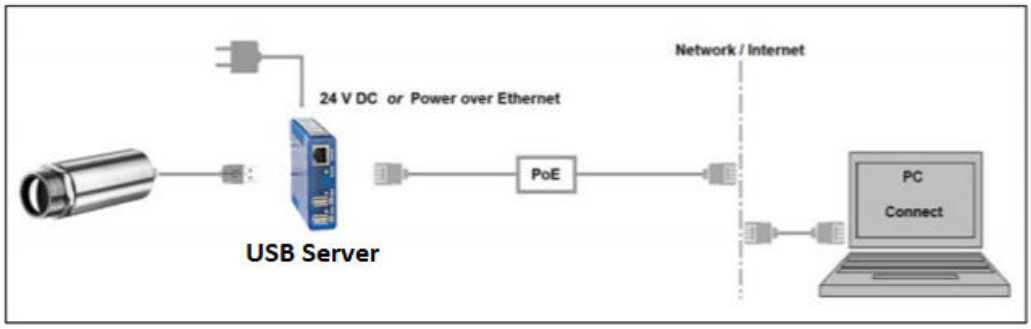
Plastic Extruded Web



Kiln Shell

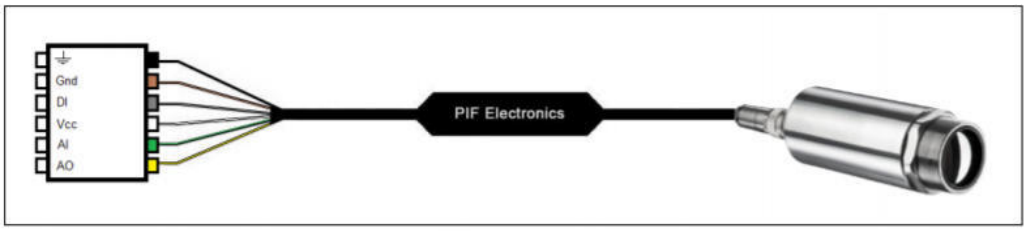
Wiring Diagrams

WIRING CONFIGURATIONS AND PROCESS INTERFACE (PIF) WITH MULTIPLE OUTPUTS FOR PROCESS CONTROL

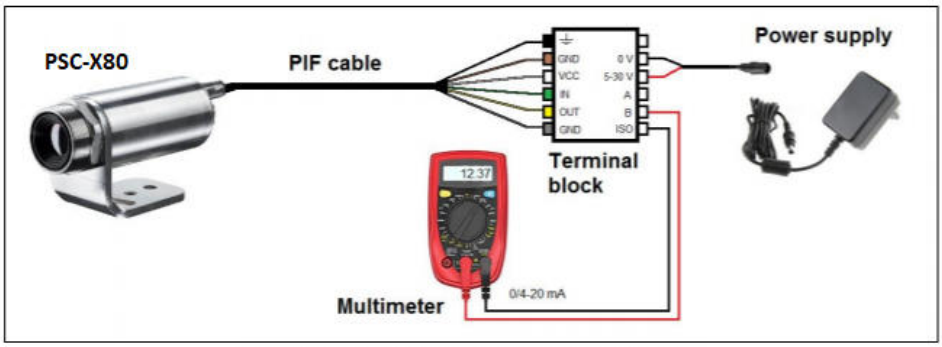


USB to Server Wiring Configuration

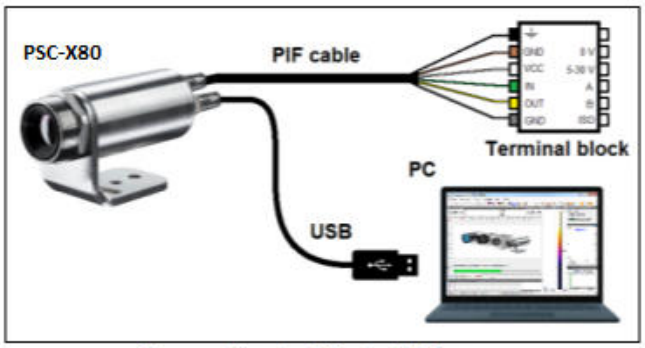
Rear Panel of Camera



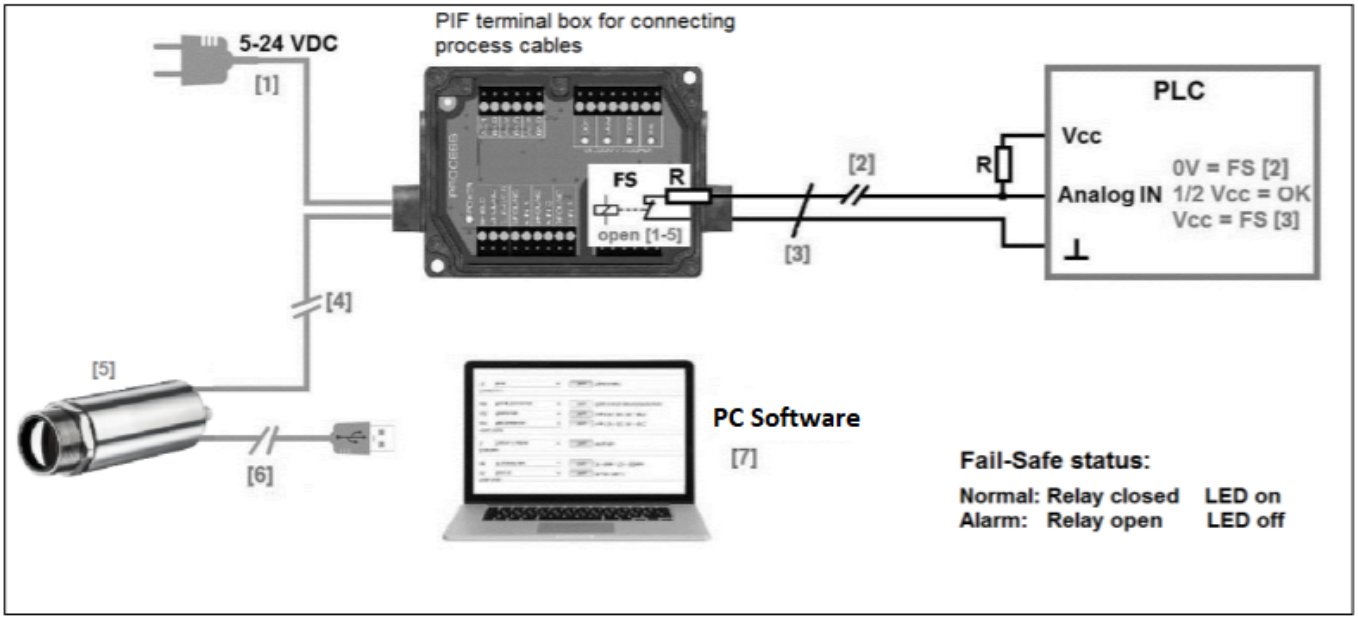
Standard (1m) PIF Cable with 1 Output



Electrical installation for autonomous operation



Connection to PC via USB



Optional PIF box with Multiple Outputs

Optics

AVAILABLE OPTICS FOR THE PSC-X80LT & PSC-X400LT

Table 1:

X80 80 x 80 px	Focal length [mm]	Minimum measurement distance*	Angle	Distance to measurement object [m]												
					0.05	0.1	0.2	0.3	0.5	1	2	4	6	10	30	100
F05 Standard lens	5	0.2 m	30°	HFOV [m]	0.028	0.056	0.111	0.167	0.279	0.557	1.115	2.230	3.346	5.6	16.7	55.8
			30°	VFOV [m]	0.028	0.056	0.111	0.167	0.279	0.557	1.115	2.230	3.346	5.6	16.7	55.8
			43°	DFOV [m]	0.039	0.079	0.158	0.24	0.39	0.79	1.58	3.15	4.7	7.9	23.7	78.9
			6.67 mrad	IFOV [mm]	0.33	0.67	1.33	2.0	3.33	6.67	13.33	26.67	40.00	66.67	200.00	666.67
F13 Telephoto lens	13	0.3 m	12°	HFOV [m]		0.022	0.043	0.065	0.11	0.21	0.43	0.85	1.28	2.1	6.4	21.3
			12°	VFOV [m]		0.022	0.043	0.065	0.11	0.21	0.43	0.85	1.28	2.1	6.4	21.3
			17°	DFOV [m]		0.031	0.061	0.092	0.15	0.30	0.60	1.20	1.81	3.0	9.0	30.1
			2.66 mrad	IFOV [mm]		0.3	0.5	0.8	1.3	2.7	5.3	10.6	15.9	26.6	79.7	265.6
F03 Wide angle lens	3	0.2 m	55°	HFOV [m]	0.057	0.110	0.218	0.325	0.539	1.07	2.14	4.27	6.41	10.7	32.0	106.7
			55°	VFOV [m]	0.057	0.110	0.218	0.325	0.539	1.07	2.14	4.27	6.41	10.7	32.0	106.7
			79°	DFOV [m]	0.080	0.156	0.308	0.459	0.762	1.52	3.02	6.04	9.06	15.1	45.3	150.9
			11.15 mrad	IFOV [mm]	0.6	1.2	2.3	3.4	5.6	11.2	22.4	44.6	66.9	111.5	334.5	1114.8
F02 Super wide angle lens	2	0.2 m	80°	HFOV [m]	0.090	0.174	0.343	0.509	0.884	1.682	3.357	6.708	10.058	16.8	50.3	167.5
			80°	VFOV [m]	0.090	0.174	0.343	0.509	0.88	1.682	3.357	6.708	10.058	16.8	50.3	167.5
			113°	DFOV [m]	0.127	0.246	0.483	0.72	1.19	2.38	4.75	9.49	14.2	23.7	71.1	236.9
			15.45 mrad	IFOV [mm]	0.08	1.6	3.2	4.7	7.8	15.5	31.0	61.9	92.8	154.6	463.7	1545.5

** Note: The accuracy of measurement can be outside of the specifications for distances below the defined minimum distance.*

Table 2:

X400 382 x 288 px	Focal length [mm]	Minimum measurement distance*	Angle	Distance to measurement object [m]												
					0.05	0.1	0.2	0.3	0.5	1	2	4	6	10	30	100
F13 Standard lens	13	0.2 m	29°	HFOV [m]		0.051	0.104	0.16	0.26	0.53	1.06	2.11	3.17	5.3	15.9	52.9
			22°	VFOV [m]		0.038	0.078	0.12	0.20	0.39	0.79	1.58	2.36	3.9	11.8	39.4
			37°	DFOV [m]		0.064	0.130	0.20	0.33	0.66	1.32	2.64	3.96	6.6	19.8	66.0
			1.34 mrad	IFOV [mm]		0.1	0.263	0.4	0.7	1.3	2.7	5.4	8.1	13.4	40.3	134.4
F20 Telephoto lens	20	0.3 m	18°	HFOV [m]			0.068	0.101	0.17	0.33	0.66	1.31	1.97	3.3	9.8	32.7
			14°	VFOV [m]			0.051	0.076	0.13	0.25	0.49	0.99	1.48	2.5	7.4	24.6
			23°	DFOV [m]			0.086	0.13	0.21	0.41	0.82	1.64	2.46	4.1	12.3	40.9
			0.85 mrad	IFOV [mm]			0.170	0.26	0.4	0.9	1.7	3.4	5.1	8.5	25.5	85.0
F08 Wide angle lens	8	0.2 m	53°	HFOV [m]		0.107	0.21	0.31	0.51	1.01	2.00	4.00	6.00	10.0	29.9	100.0
			38°	VFOV [m]		0.076	0.15	0.22	0.35	0.70	1.39	2.78	4.17	6.9	20.8	69.5
			66°	DFOV [m]		0.132	0.25	0.38	0.62	1.23	2.44	4.87	7.30	12.2	36.5	121.8
			2.20 mrad	IFOV [mm]		0.3	0.5	0.7	1.1	2.2	4.4	8.8	13.2	22.0	66.0	220.0
F06 Super wide angle lens	6	0.2 m	80°	HFOV [m]	0.069	0.149	0.30	0.46	0.78	1.57	3.14	6.29	9.43	15.7	47.3	157.7
			54°	VFOV [m]	0.047	0.098	0.20	0.30	0.51	1.01	2.03	4.06	6.10	10.2	30.5	101.7
			94°	DFOV [m]	0.084	0.178	0.36	0.55	0.93	1.87	3.74	7.49	11.23	18.7	56.3	187.6
			3.01 mrad	IFOV [mm]	0.2	0.3	0.6	0.9	1.5	3.0	6.0	12.0	18.1	30.1	90.3	300.9

** Note: The accuracy of measurement can be outside of the specifications for distances below the defined minimum distance.*

Table 3:

X400 Macro optics 382 x 288 px	Focal length [mm]	Minimum measurement distance*	Angle	Distance to measurement object [m]			
					0.09	0.1	0.11
F20 CF Macro optics	20	0.09 m	18°	HFOV [m]	0.031	0.034	0.037
			14°	VFOV [m]	0.024	0.026	0.028
			23°	DFOV [m]	0.039	0.043	0.047
			0.9 mrad	IFOV [mm]	0.08	0.09	0.10

** Note: The accuracy of measurement can be outside of the specifications for distances below the defined minimum distance*