

PYROscan[®] V2

The Intelligent Infrared Line Scanner

Manual

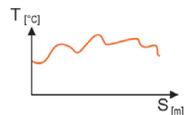


- 1 Side brackets
- 2 Air supply
- 3 Scanner unit
- 4 Lens tube
- 5 Integrated laser

1. Function

The PYROscan measures the temperature along a line. You can change the line length using the keyboard.

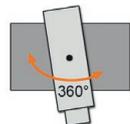
The temperature is measured with a high-quality pyrometer. The pyrometer features a remarkable long-term stability and a special measured-value-acquisition geometry. Infrared energy radiated from the target surface is sensed by the PYROscan and converted into temperature value.



PYROscan has been designed for tough continuous operation. Its integrated patented air cooler and blower allow perfect operation in rough and hot environments. The measured temperature is available as an analog output signal (4-20 mA). The scan position can be marked with an integrated laser 5.

2. Installation

Screw the PYROscan onto a level surface. Make sure that the diameters of the four drill holes in the side brackets 1 are 6 mm and that the case is made of die-cast aluminum. When tightening the screws make sure you do not damage the die-cast casing.



You should use port 2 to cool the instrument and blow clean the optics. A standard hose connector with 9 mm internal diameter should be used.

The scanner unit 3 rotates through 360°. To protect it from damage please make sure that this unit is not obstructed by anything



3. Adjusting the air supply

A special feature of the PYROscan is the blower-cooler combination through a single air supply ②. Adjust the pressure so that the scanner operating temperature does not exceed 60°C. Power losses from the micro-processor controlled fine step drive inside the PYROscan heat up the casing. When dimensioning the air consumption you should take into account the temperature rise caused by the unit itself as well as heating by the environment. Ideal service conditions are achieved when the temperature of the case exterior doesn't exceed 60°C. For exterior temperatures greater than 60°C, you should increase the air pressure. Another criterion determining air pressure is the amount of external soiling. A double blower system fitted in the PYROscan generates turbulence in the instrument at low air flows that guard the optics against soiling through opening ②. If, however, the lens system does become soiled, you can clean the lens carefully through the tube ④ with a soft, dry cloth.

- However a more gentle approach is recommended by cleaning with absolutely dry, compressed air that is free of oil and dust.
- Lens soiling causes a drop in the temperature signal.

[A low temperature measurement can be caused by lens soiling!](#)

Lens soiling can occur when the operating pressure (see section 3) is too low. Increase the pressure!

**Never open the PYROscan to clean it.
This will damage the instrument and render the warranty null and void!**

4. Maintenance

The instrument parts normally need no maintenance. Extreme overtemperatures, soiling and associated continuous mechanical stressing can hinder the operation of the PYROscan. We therefore recommend an annual system check carried out by us. You can very easily check the PYROscan accuracy in situ. The maintenance interval depends on the degree of soiling of the plant being monitored. A monthly check will prevent process disruptions due to excessive heating of the monitored object.

Our PYROcal - a portable, highly accurate 95°C blackbody radiator - is a great help here. To check out the system simply insert the PYROcal into the tube ④ and read the measured temperature on your evaluation system.

Soiling of the optics, PYROscan measurement errors, problems with the series-connected evaluation system, or line problems will be detected.



For information please call +49 (0)6123 - 689120 or refer to www.PYROscan.de

5. Emittance

The PYROscan emittance has been set to monitor the special rolls at the Küsters company. There is therefore no need to change the emittance.

6. Connect to pin assignment

PIN	DESIGNATION	CABLECOLOR
1	+24V	red
2	Gnd	blue
3	D0 (Mode ext.)	
4	+ Pyrometer (4 ... 20mA)	pink
5	D1 (Mode ext.)	
6	- Pyrometer (4 ... 20mA)	brown
7	D2 (Mode ext.)	
8		
9		
10		
11	Laser On (ext.)	grren
12	U+ für L/R, Error	grey
13	Error	gelb
14	L/R	white
15		shielding
16		

Shielding is connected on the PYROscan side and only runs on with cable extensions

To prevent ground loops occurring never connect the shielding to the supply side (control cabinet)..

The PYROscan is normally grounded already through the frame connection.

7.

Power supply

The PYROscan is powered with a DC voltage of 24 V + 10% / 300 mA. When connecting the instrument to the supply make sure the polarity is correct. Then, the instrument is ready for operation

8.

Settings the scan angle

The PYROscan has seven scan angle settings. The desired setting is chosen by coding the connector. Coding is done at the factory to suit the angles ordered. Scan angles and connector pin assignments are given in the table below.

MODE	Starting angle	Final angle	PIN 3	PIN 5	PIN 7
			[D0]	[D1]	[D2]
Manual setting	depending on key setting		X	X	X
1	- 5°	+ 5°	0	X	X
2	-10°	+10°	X	0	X
3	-15°	+15°	0	0	X
4	-20°	+20°	X	X	0
5	-25°	+25°	0	X	0
6	-30°	+30°	X	0	0
7	-40°	+40°	0	0	0

X – link to PIN 2 [GND]

With pins (3.5.7) linked to GND (pin 2), „MODE“ can be selected by button. In this case the setting is stored in an EEPROM. After power failure or cold restart this setting is always loaded.

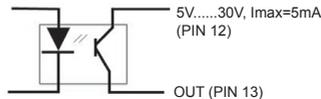
Only one “scan angle“ at a time can be selected with the “MODE“ button. The final position of the scanning pyrometer is determined by the starting angle and the final angle. The “MODE“ button itself only reacts when pressed for a longer period to prevent incorrect settings being made. As soon as the connector has been coded (that is, any setting except 000), the “MODE“ button is disabled. The three coding pins in the connector may also be programmed from a PLC.

9.

Error message / output

The PYROscan is controlled and monitored by a microcontroller. An error message appears after a short time if any of the following occur.

- the scanner drive does not move anymore
- it moves too slowly
- it is arrested by external factors (soiling)



The fault pilot lamp on the PYROscan is illuminated, and the optical isolator output PIN 13/PIN 12 in the main connector is switched. The maximum current should not exceed 5 mA. After approximately 40 seconds the PYROscan attempts a restart. If the fault has not been cleared the error message shows again

10.

Right / left (signal & output)

The PYROscan returns the reversal points of the scanner unit. Thus a signal can be evaluated easily in a process visualization system. As with the error message (section 9) this signal is output through an electrically-isolated open-collector output. Rotation to the right = HIGH active. The signal appears at PIN 14 and is switched to PIN 12.

11.

Laser on / off

This laser used is a class 2 industrial laser.

! You should NEVER look directly into the laser beam !

Hold the laser button pressed for at least two seconds to switch on the laser. Pressing the laser button again will cause the laser to switch off. The laser can also be switched on through PIN 11 in the main connector. This is achieved by linking PIN 11 to GND (PIN 2) in the connector.

Case material:	aluminium
Required space:	260 x 160 x 160 for 360° rotation (W x H x D) basic case housing incl. clips
Case connections:	bore hole gauge 240 x 90 for M6
Drive:	microprocessor-based drive system with gear unit an stepper motor
Laser tracker:	industrial laser, cooled with blower
Air supply:	air supply for cooling the whole system and purging the pyrometer optics. usable air: oil free, dry, Pmax: 1.5 bar, compressed-air coupling
Spectral range:	8 ... 14µm (no disturbance from steam or CO ₂)
Pyrometer supply:	pin 4/6, 24V DC ± 20 % smoothed, ripple factor <50mV
Temperatures:	environment: 0 ... + 60°C, (air cooled up to 110°C), warehousing: -20 ... + 70°C
Measurement output:	4... 20 mA temperature linear (0 ... 300°C), 0,0533mA/ °C
Load:	- max. 500 Ω at 24 V, - max. 200 Ω at 18 V (pyrometer output)
Absolute error:	+ 1% of span + 1°C (with emittance correctly set, T _u = 23°C)
Reproducibility:	± 1,5°C (maximum value)
Temperature dependence:	0 ... 60 °C: 0,03% / °C
Weight:	2,6 kg

If the original packaging is not available, a box lined with damping PE material should be used to transport the instrument. When shipping overseas or storing for longer periods in a very humid environment, the instrument should be protected against moisture with a sealed foil (include silica gel if necessary).

ORGLMEISTER Infrarot-Systeme guarantees the PYROscan for two years from the date invoices are issued. This warranty relates to production faults and faults that occur during operation and that point to a fault of ORGLMEISTER Infrarot-Systeme. Faults caused by the owner, such as incorrect handling, unauthorized modifications made to the instrument or major mechanical changes to the instrument are not covered by the warranty and are the responsibility of the owner.

The warranty can only be implemented if the PYROscan has been checked at our factory 12 months after delivery.