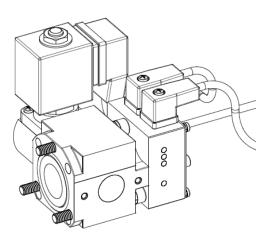


# Optical Level Control Unit TK3 - 46 bar



Sight glass on left side (TK3 bottom view). TK3 is designed also for right side mounting.

#### **Main Features**

- **High reliability** ensured by absence of mechanical moving parts.
- Sight glass and electronic LEDs can be checked on the same side where is more comfortable to do inspections.
- Well consolidated steel with fused glass technology and the absence of seals ensures no leakage and good chemical compatibility.
- Direct mounting onto 3/4 bolts compressors
- Easy maintenance of the coil of the valve and of the Electro-Optic sensor that can be easily replaced without emptying or depressurizing the plant.
- No need to use external pressure reduction devices
- Maximum compatibility with particular media due to the possibility of mounting of different/custom valves
- 230 VAC /2A alarm relay output suitable for direct connection in the security chain of the system
- Adapters suitable for various types of compressors
- Unit conform to directives:

\*2004-108-CE

\*CEI EN 60204-1:2006

# **Application Description**

The TK3 is designed to control the oil level in the compressor crankcase in order to avoid the compressor to run without oil and so improve its lifetime. TK3 monitors the oil level with the embedded electro-optic sensor and comprises a solenoid valve for oil filling and a relay output contact to give an alarm or directly stop the compressor (through a separate power relay).

The output contact (normally open) is closed when the oil level is enough and open if after a determined number of filling cycles the oil level is not restored. Alarm state is represented by the red LED.

The LEDs on the Electronic box give immediately info on the status of the system and act as follows: Power Light (green colour): always on when power is applied.

Oil Good (green colour): steady on while oil level is good, blinking for a first period of oil missing (even due to turbulence, undulations, etc.) before start filling and is off when filling.

Oil Filling (yellow colour): Off while oil level is good, steady on while injecting oil, blinking while (after filling) TK3 check if the oil level is restored.

Alarm (red colour): Off while oil level is enough, steady on if after a determined number of filling cycles the oil level is not restored.

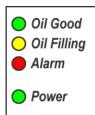
Filling cycles continue also in alarm condition and in each phase if the correct oil level is restored the oil feeding is stopped and the alarm is deactivated (auto restore from alarm).

SECUROIL

In standard model the functioning sequence is the following:

- 10 sec of continuative absence of oil before starting the filling phase
- 5 sec of oil injection for the first cycle up to a maximum of 25 sec
- 45 sec of oil monitoring before to fill again or to return to normal condition
- 7 minutes before giving alarm in case of oil lack.

Functioning and alarm delay times can be customized in order to follow customer needing.





## **Technical Data**

Supply voltage	24 VAC ± 10% @ 50 / 60Hz
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Supply Current 0,6A during normal operation (depending on the solenoid valve).

Each TK3 require 30VA.

**Electrical connection** 9.4mm Industry Standard Connectors / EN175301-803A Connector

Output signal Contact free relay output NO and NC

Up to 230VAC @2A

Relay outputs The Normally Open (NO) alarm contact (blue wire) is closed when power

is applied to the TK3

Housing material Nickel plated steel

Enclosure protection class IP 65

Media Temperature -40°C..+85°C
Ambient temperature -40°C..+60°C

Max working pressure 46 bar (higher values upon request)

Oil Return Line 7/16 – 20 UNEF male

Cable Type PVC cable CEI 20-22. Working temp.: -20 ÷ +70 °C (fixed laying)

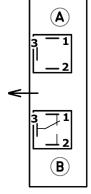
46 bar (higher values upon request)

#### **Electrical Connections**

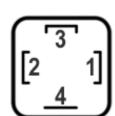
**MOPD** 

Electronic Sensor Connections (Industry Std. 9.4mm).

Solenoid Valve Connection EN 175301-803 (EX DIN 43650 size A)



Top View. The arrow indicates the glass side where the sensor is mounted on TK3 body. The 90° female flying part exit on the other side.



The coil is connected between pins 1 and 2 and in the supplied harness is properly wired to the A connector of the Electronic Sensor.

A – Power Supply B – Relay

(cable with 2 wires and valve derivation)
2: Brown (24VAC)
(cable with 3 wires)
1: Brown (close in alarm)
2: Blue or Gray (open in alarm)

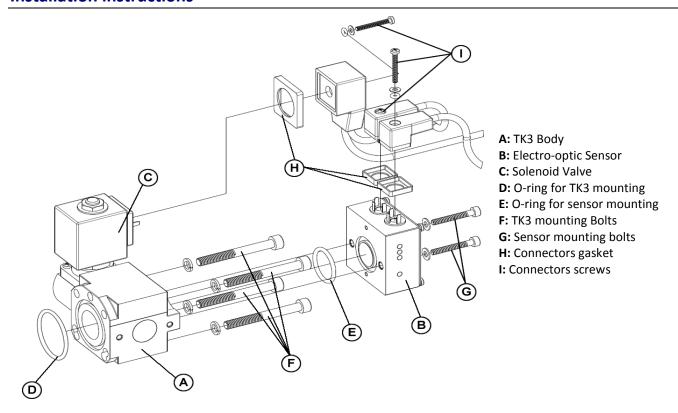
3: Blue (24VAC) 3: Black (common)

## **Installation notes**

- Only qualified personnel should carry out installation/maintenance
- Protect hands and face from contacting the oil, which may contain harmful acid.
- Depressurize the system before attempting any work
- Switch off power supply and isolate compressor
- If fitting to an existing installation, drain the compressor crankcase to just under the oil level sight glass.
- Mount the TK3 body on the compressor (see below).
- The correct oil level in the compressor crankcase must be reached before restarting the system.



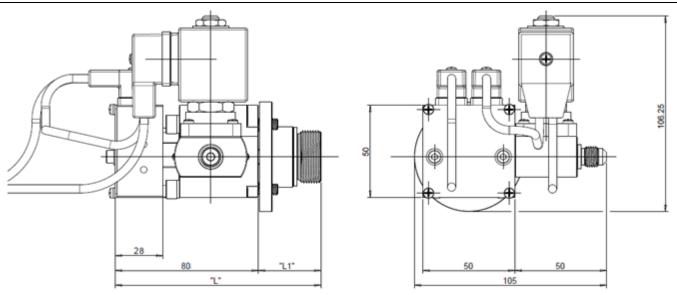
## **Installation instructions**



- Ensure that both the glass surfaces of the Electronic Box and of the TK3 for the electronic are dry and clean.
- Mount the TK3 body (A) on the compressor with 3 or 4 supplied bolts and washers (F) using proper o-ring (D) for the flange.
- Mount the electro-optic sensor (B) on the TK3 body using the 2 supplied bolts and plastic washers (G) using supplied o-ring for electronic (E).
- Plug the Valve connector to the coil of the valve (C) using supplied gasket (H) and screw (I).
- Plug the Alarm and the Power connectors to the electro-optic sensor using supplied gaskets (H) and screws (I).

Note. If the TK3 need an adapter to be mounted onto the compressor, first mount the adapter onto the compressor then assemble the TK3 with the adapter.

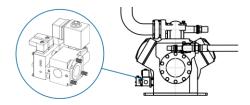
## **Mechanical Dimensions**



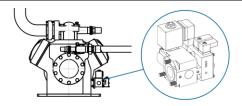
Note. - Quotes in mm -. L and L1 can vary depending on the adapter (see TK3 Adapter Addendum)



# Left / Right mounting possibilities

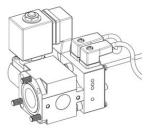




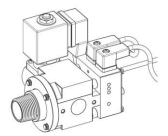


**TK3 Left Model Mounting Example** 

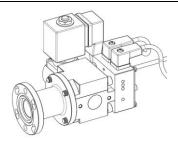
# **Available adapters**



**TK3 Direct mounting** 



TK3 + Threaded Adapter (1-1/8" – 18 UNEF or ¾" NPT)



TK3 + 3/4/6 Holes Adapter/spacer

# Ordering Code Examples with mentioned timings (Other possibilities and timings available on request)

	Std. refrigerants (46 bar) Left Version	•	ms (80 bar) /ersion	Std. refrigerants (46 bar) Right Version		CO2 Systems (80 bar) Right Version
TK3 with no Adapter	TK3-0000V00005000420	TK3-0004V00005000420		TK3-1000V00005000420		TK3-1004V00005000420
1" 1/8 – 18 UNEF Adapter	TK3-0100V00005000420	TK3-0104V00005000420		TK3-1100V00005000420		TK3-1104V00005000420
¾" NPT Adapter	TK3-0200V00005000420	TK3-0204V00005000420		TK3-1200V00005000420		TK3-1204V00005000420
3/4/6 bolts flange Adapter	TK3-0300V00005000420	TK3-0304V00005000420		TK3-1300V00005000420		TK3-1304V00005000420
			3 m length cable		6 m length cable	
Power and solenoid valve cable		TK3-CA03000000000000		TK3-CA06000000000000		
Alarm output cable (relay)		TK3-CB03000000000000		TK3-CB06000000000000		

### Recommendations

Teklab recommends the use of a 10-micron filter in the oil line in order to protect the sensor from contamination.

The device does not need maintenance, but it is recommended to check and keep clean sensitive surfaces during major servicing.

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#### Teklab S.r.l.

Via Emilia Ovest, 1179 - 41123 Modena - Italy tel. +39 059 375498 - fax +39 059 376294

website: http://www.teklab.eu - email: info@teklab.eu