

KRIWAN INDUSTRIE-ELEKTRONIK

**EMPLOYEES** 

**WORLDWIDE** 

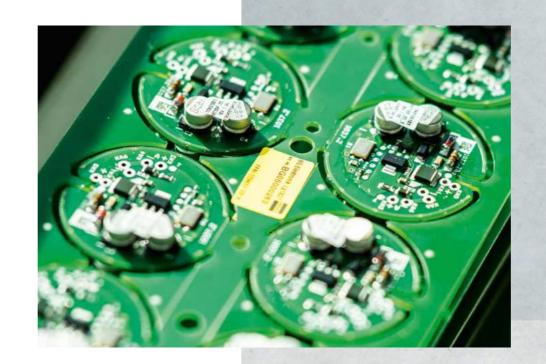
# SOLUTIONS FOR MACHINE PROTECTION

For more than 50 years, KRIWAN has been providing protection systems for a wide variety of machinery and equipment, especially for fluid machinery such as pumps and compressors.

Our products protect machines from operational failures and overload. At the same time, the innovative systems provide insight into operating data. The app developed by KRIWAN allows fast and targeted fault and condition diagnose on site. Through integration into the system controller, continuous monitoring of the state of the system is possible.

With our deep understanding of technology and excellent quality standards, we ensure our customers can operate their machines and systems safely and reliably.

That's why we are a global leader in the manufacturing of electronics and sensor technology for refrigerant compressors, electric motors and industrial weather measurement technology, and other sectors.



# KRIWAN PRODUCT ASSORTMENT

Whether it's motor protection or wind sensors, voltage monitors or oil level regulators, at KRIWAN, you will find the ideal solution to virtually any problem.

#### **MADE IN GERMANY**

All products, from sensors to protection and monitoring electronics, are developed, tested and produced entirely at the site in Forchtenberg.









**GATEWAYS** 



#### **LOCATIONS**

Germany	// 1968
France	// 1999
Austria	// 2001
China	// 2005
America	// 2006
Italy	// 2012
Brazil	// 2016

#### **TEST CENTER**

The KRIWAN Test Center is part of the company group. Testing, certification and qualification in the field of electromagnetic compatibility and environmental simulation are important components of the service portfolio.









LEVEL SENSORS

OIL LEVEL REGULATORS



WIND SENSORS

AIR FLOW SENSORS



# PROTECTION TECHNOLOGY FOR

YOUR REFRIGERATION SYSTEM

**AND HEAT PUMP** 

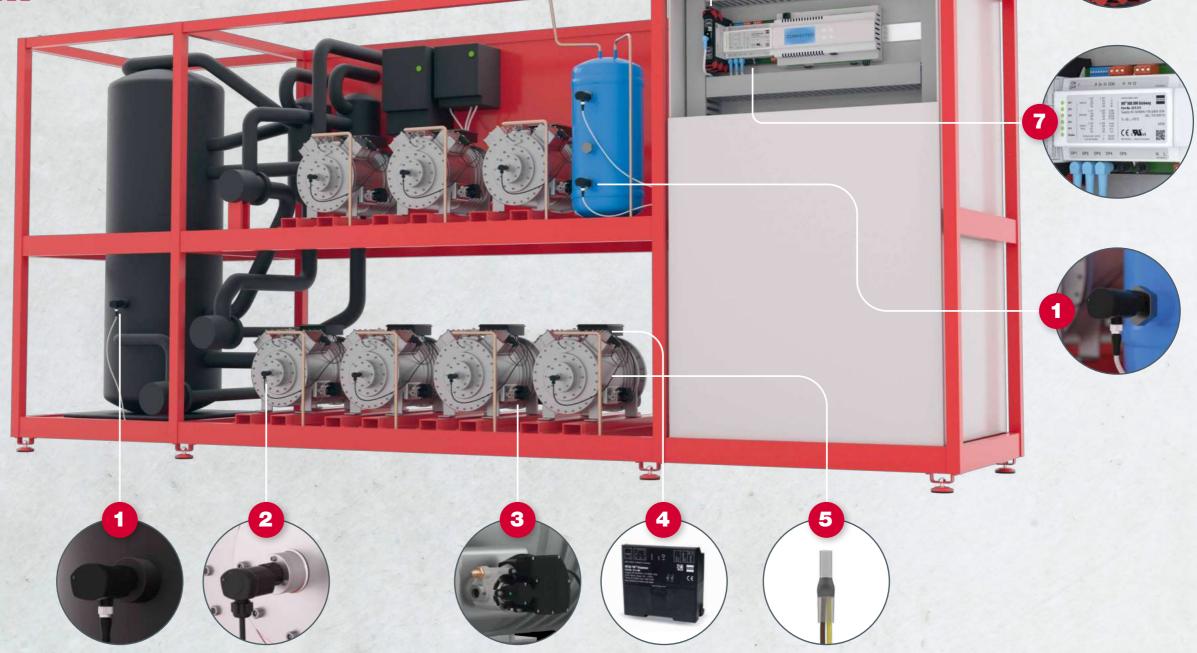
The KRIWAN product portfolio for multi-compressor refrigeration systems and heat pumps enables reliable and comprehensive system protection.

In addition, the data interfaces of the KRIWAN devices allow data to be read out and integrated into higher-level control systems, while being optimized in the process.

### PERFECT-FIT

# **SOLUTIONS FOR**

- **1** Level monitoring
- **2** Differential pressure monitoring
- **3** Oil level regulators
- **4** Motor protection
- **5** Temperature sensors
- **6** Voltage monitoring
- **7** Modbus gateway







# **NATURAL REFRIGERANTS**

Natural refrigerants are essential to ensure the future viability of the HVAC/R industry and to comply with legal regulations.

Our product portfolio is optimized for different refrigerants. Of particular note is the product range developed specifically for natural refrigerants such as R744 (CO<sub>2</sub>). The products are designed for requirements such as higher pressure and higher temperatures. Some are also particularly resistant to corrosion.

# **YOUR ADVANTAGES**



Product variants for both conventional refrigerants and natural refrigerants



Longer service life of the systems due to individual protection of the system components



Efficient and databased troubleshooting through the collection and storage of operational data



High reliability
due to particularly high
quality standards
and durability of the
products



Made in Germany – Developed and produced





Robust design for low temperatures

#### **APPLICATION**

 Optimized for use on the CO<sub>2</sub> refrigerant receiver

#### **ADVANTAGE**

 Resistant to icing of the optical measuring principle

# INT®279 LN INT®279 LX

Monitoring of the minimum/ maximum liquid level

#### **APPLICATION**

 Universally applicable for oil management in systems with conventional refrigerants and lower temperature requirements

#### **ADVANTAGE**

Vibration resistant (use on compressor)

# INT®276 CN+ INT®276 CX+



through LED status display

Level monitoring for use on oil receiver and oil separator at media temperatures of up to 140  $^{\circ}\text{C}$ 

#### **APPLICATION**

- Oil management for natural refrigerants with high temperature requirements, such as CO<sub>2</sub> or NH<sub>3</sub>
- Heat pumps with higher temperature requirements

#### **ADVANTAGE**

■ Temperature-resistant components up to 140 °C

# Optional M12 **PLUG-IN CONNECTION**

More flexibility due to optional M12 plug-in connection (according to DIN 43650)

















# Differential pressure monitoring **DELTA-P®II/INT250**





(Depending on model)

The KRIWAN solutions for differential pressure monitoring monitor the function of the oil pump in semi-hermetic reciprocating compressors, ensuring the transport of a sufficient oil quantity and preventing damage to the compressor.

#### **APPLICATION**

Monitoring of the oil pump function

#### **ADVANTAGES**

- Suitable for the protection of machinery in potentially explosive atmospheres
- Optical status display
- System monitoring
- Potential free relay contact
- Low leakage rate

Link to the

PRODUCT WEBSITE

- Quick and easy assembly
- Self-monitoring of the device function
- Two-part design: Replacement without evacuating the system

**OIL PRESSURE** 

GOOD

# Oil level control **INT®280 DIAGNOSE**



The INT®280 oil level regulator supplements the KRIWAN system solutions for efficient and safe oil management in the refrigeration circuit.

#### **VERSIONS**

- INT®280-60 Diagnose → applications up to 60 bar, also suitable for CO2
- INT®280-130 Diagnose → specially developed for transcritical CO2 systems, up to 130 bar

#### **ADVANTAGES**

- Plug-and-play solution
- For high oil temperatures up to 100 °C
- Intelligent oil management
- Compact design
- Diagnose interface
- → Troubleshooting with the INTspector® app

Link to the

PRODUCT WEBSITE

→ Changing of the function parameters

### **PROTECTIVE FUNCTIONS**

and perform troubleshooting quickly.

c**Al**us (Ex)

Motor protection INT69® DIAGNOSE

The KRIWAN's INT69® brand has become the industry

refrigerant compressors in its 50+ year history. The

standard for protection and monitoring of semi-hermetic

INT69® Diagnose protects against hazardous conditions,

such as critical motor temperature an insufficient power

supply or incorrect commissioning of the compressor.

Thanks to its diagnose capability, you can read out data

(Depending on model)

- Motor temperature
- Discharge gas monitoring
- Current measurement
- Phase monitoring
- Line voltage monitoring
- Power monitoring
- Switching cycles

#### **ADVANTAGES**

- Suitable for the protection of machinery in potentially explosive atmospheres
- Lubrication monitoring
- Data interface

Made for

**Heat Pumps** 

Link to the PRODUCT WEBSITE



# Temperature sensors **A VARIETY OF TYPES**





(Depending on model)

Temperature sensors play an important role in the thermal monitoring of electric motors, discharge gas or other hotspots in the refrigeration system.

KRIWAN provides the monitoring of numerous of applications using a variety of sensor types and designs. Thanks to the fully automated production of PTC sensors, we achieve a very high process reliability and an extremely low PPM rate.

#### **APPLICATION**

- Winding installation electric motors
- Surface temperature sensor
- Screw-in sensors
- Discharge gas temperature compressor

#### **TYPES**

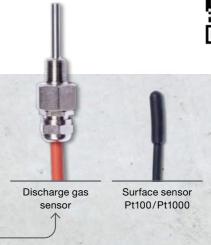
- PTC thermistor
- Pt100 / Pt1000
- NTC AMS
- PTC+

#### **ADVANTAGE**

 Suitable for the protection of machinery in potentially explosive atmospheres

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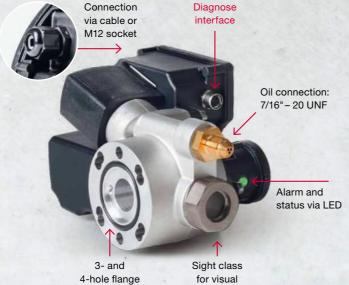




In the motor winding

LED status display INT69® series Diagnose devices Current transformer INT®185 DATA DATA





oil level check

180° rotatable -2 possible installation positions

# Voltage monitoring INT69® UY DIAGNOSE



With the INT69® UY Diagnose voltage monitor, KRIWAN offers a highly precise for protecting and monitoring sensitive electrical components, drives and electrical consumers.

#### **APPLICATION**

- Protection and monitoring of the system power supply
- Monitoring of single-phase and three-phase networks
- Control cabinet mounting on profile rails

#### **ADVANTAGES**

- Fast and simple connection thanks to push-in terminals
- Temperature: PTC or Pt1000
- Programmable with the INTspector® app
- Advanced insight with INTspection Memory
- More precise adherence to the set point ± 2,5 %
- Faster error detection within 60 ms



Link to the

Placement in the switching cabinet

INT69® UY Diagnose





With the help of the INT®600 DM gateway, you can integrate KRIWAN Diagnose devices into your system controller and convert the operating data of the refrigeration system into the Modbus protocol (Modbus RTU).

Continuous and long-term monitoring gives you a comprehensive insight into the function of the system and allows you to optimize processes.

#### **APPLICATION**

- Mounting in the control cabinet
- Integration of KRIWAN Diagnose devices into the system controller

#### **ADVANTAGES**

- Cost reduction through remote monitoring
- For up to 5 Diagnose devices
- Free Modbus protocol (Modbus RTU)



Link to the
PRODUCT WEBSITE

Supply voltage AC 50/60 Hz 115 – 240 V PART NUMBER

INT®600 DM Gateway



# DIAGNOSIS ON SITE

The KRIWAN INTspector® app enables fast and targeted fault and condition diagnose on site. You can connect the KRIWAN Diagnose device to the app via a gateway and access all important operating data in the process.





### **GATEWAYS**

To access the device data of the KRIWAN Diagnose device with the INTspector® app, you need a gateway (Bluetooth or USB).

# INT®600 DB Gateway



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Link to the
PRODUCT WEBSITE
PART NUMBER

02 \$377 \$021

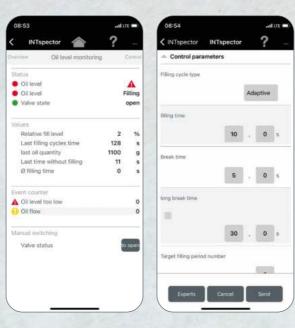
INT®600 DU Gateway
USB
Not compatible with







# INTspector® app



The INTspector® app visualizes operating data and supports you during maintenance and service work. In addition, the app is used for the commissioning and parameterization of the Diagnose devices.



### **PARAMETERIZATION**

In parameterization mode, you can set the Diagnose device perfectly to your application. Functions such as motor temperature and oil level monitoring, etc. are available for this purpose.

#### **DIAGNOSE**

The "Diagnose Data" function provides an overview of the operating behavior of your multi-compressor system. Events, operating times, switching cycles and current measured values are stored in an internal memory and help with detailed analysis on site. With the help of live diagnose, all measured sensor data can be tracked in real time and recorded over an extended period of time.

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