



KRIWAN **HVAC/R** PROTECTION SOLUTIONS

For Chillers, Racks and Condensing Units



Suitable for
natural refrigerants



Made for
Heat Pumps



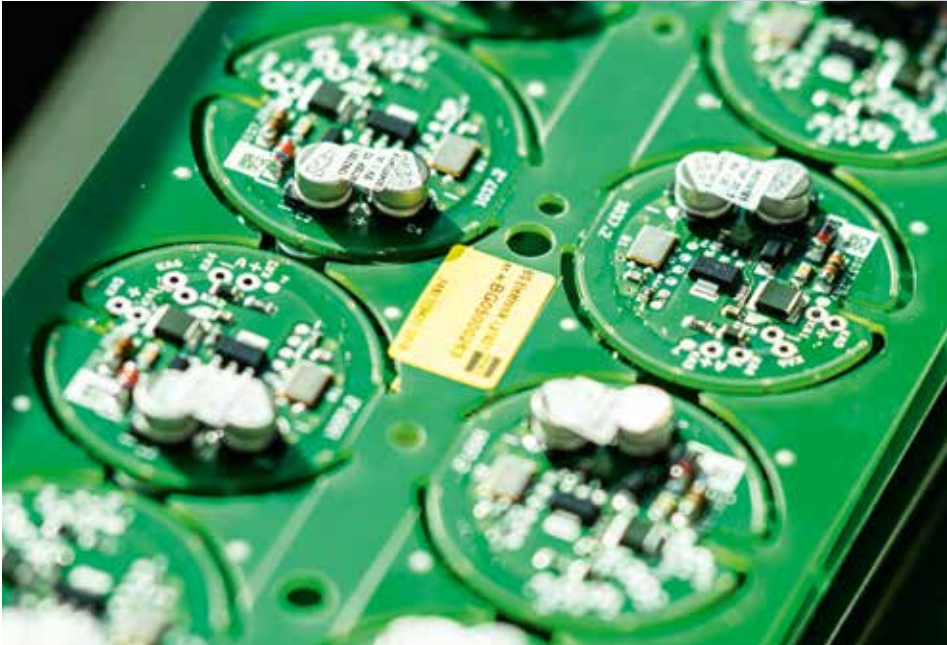
SOLUTIONS FOR MACHINE PROTECTION

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.

EMPLOYEES WORLDWIDE

Approx. **200**

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.



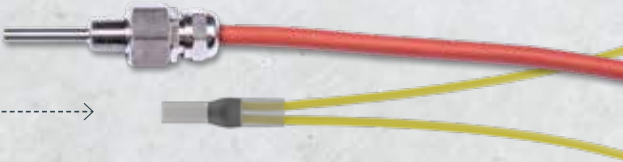
PROTECTIVE RELAY



GATEWAYS



TEMPERATURE SENSORS



LEVEL SENSORS



OIL LEVEL REGULATORS

DIFFERENTIAL PRESSURE SENSORS



WIND SENSORS

AIR FLOW SENSORS



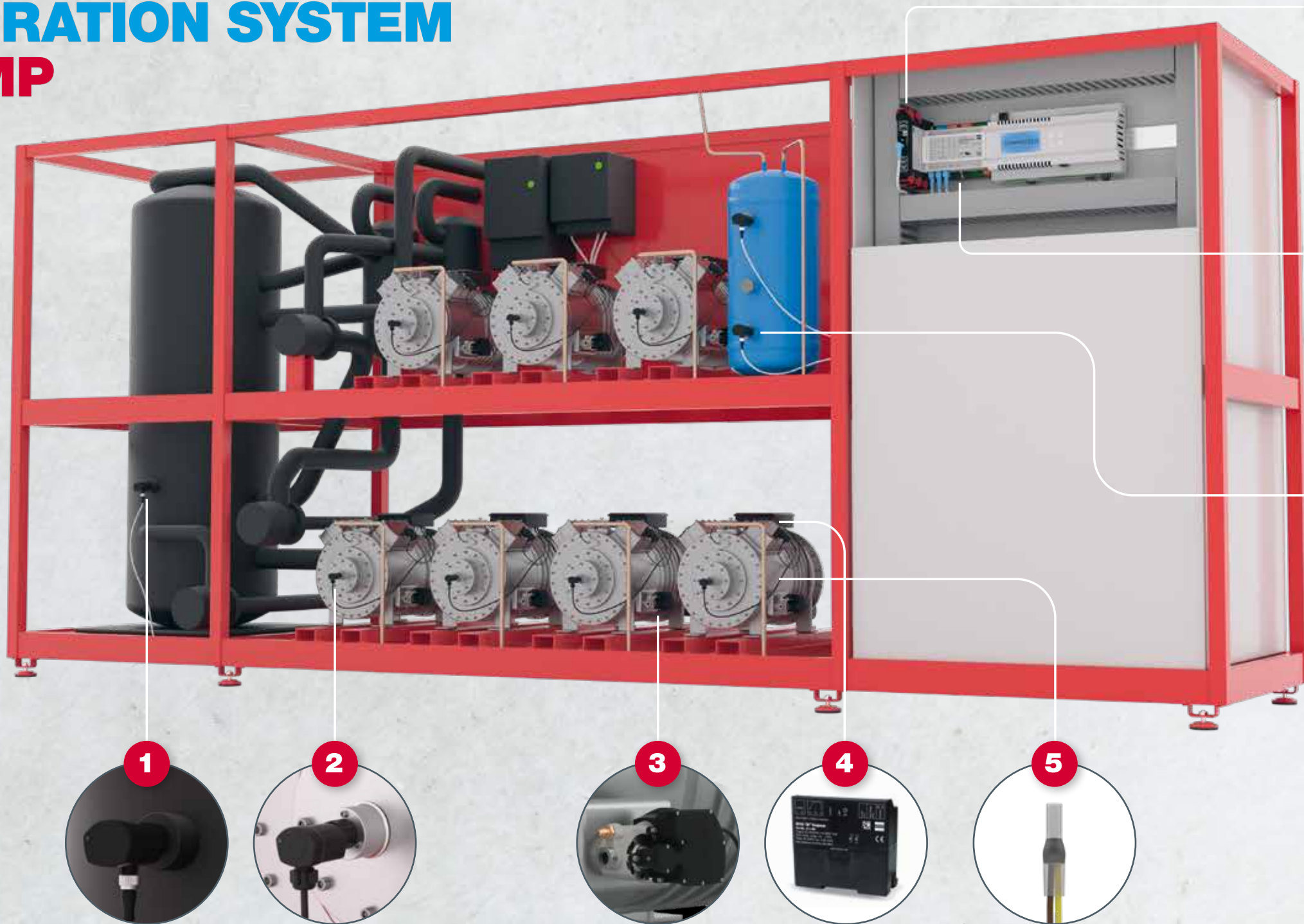
PROTECTION TECHNOLOGY FOR YOUR REFRIGERATION SYSTEM AND HEAT PUMP

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



Suitable for
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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 (CO₂). 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 data-based 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

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LEVEL MONITORING

INT[®]275–279

cULus



(Depending on model)

KRIWAN level monitoring offers different sensor versions for the monitoring of the liquid level in refrigerant compressors, oil and refrigerant receivers, and oil separators.

ADVANTAGES

- Universal applicability with different media (refrigerant, oil, fruit juice) due to optical measuring principle
- Two-part design enables replacement without evacuation of the system
- Increased safety through screw-in detection and self-monitoring
- Can be used in the safety chain due to potential-free relay
- Vibration resistance enables use on compressors
- Quick and uncomplicated recognition of the safety status through LED status display

INT[®]276 ICN INT[®]276 ICX

Robust design for low temperatures

APPLICATION

- Optimized for use on the CO₂ 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+

Made for
Heat Pumps

Level monitoring for use on oil receiver and oil separator at media temperatures of up to 140 °C

APPLICATION

- Oil management for natural refrigerants with high temperature requirements, such as CO₂ or NH₃
- 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)



ADVANTAGES

- Fast wiring in the factory due to wiring harnesses – time and cost savings
- Flexible connection to the PLC or control system



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



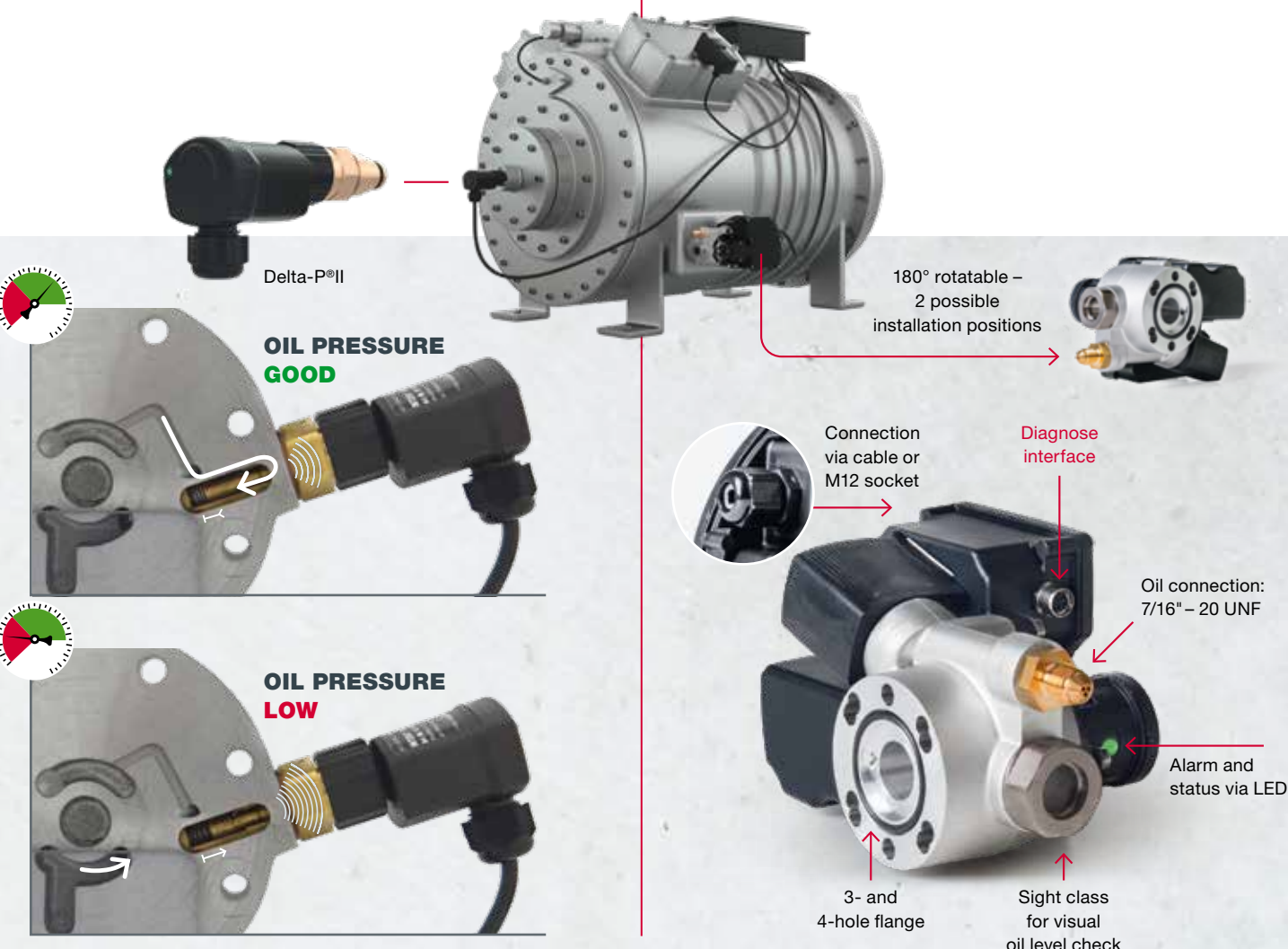
The KRIWAN solutions for differential pressure monitoring monitor the function of the oil pump in semi-hermetic reciprocating compressors, ensuring the transport of a sufficient oil quantity and preventing damage to the compressor.

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



3 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
 - Changing of the function parameters

4 Motor protection **INT69® DIAGNOSE**



The KRIWAN's INT69® brand has become the industry standard for protection and monitoring of semi-hermetic refrigerant compressors in its 50+ year history. The INT69® Diagnose protects against hazardous conditions, such as critical motor temperature an insufficient power supply or incorrect commissioning of the compressor.

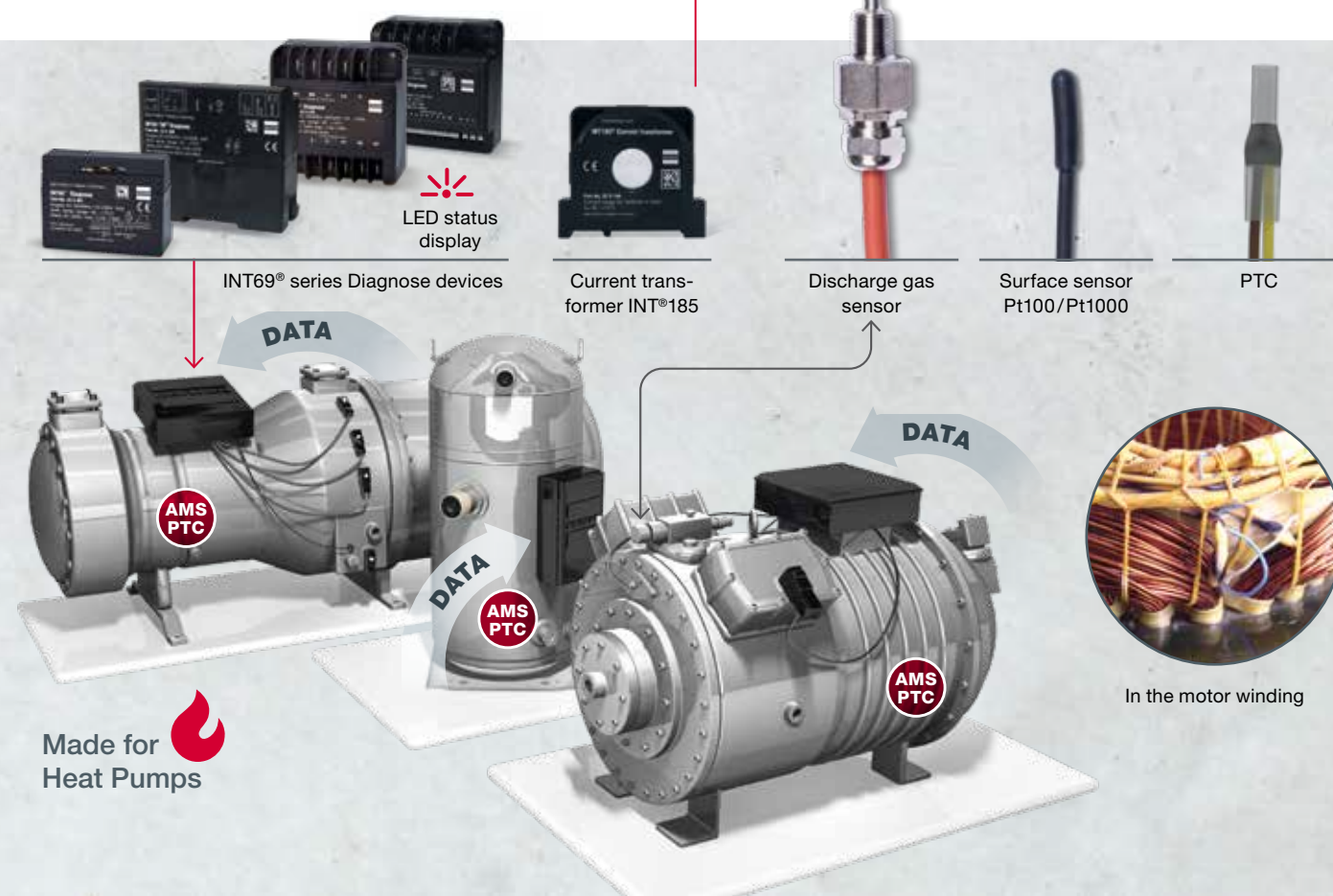
Thanks to its diagnose capability, you can read out data and perform troubleshooting quickly.

PROTECTIVE FUNCTIONS

- 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



5 Temperature sensors **A VARIETY OF TYPES**



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

6 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 INTspecter® app
- Advanced insight with INTspection Memory
- More precise adherence to the set point $\pm 2,5\%$
- Faster error detection within 60 ms

7 Connectivity INT®600 DM GATEWAY



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)

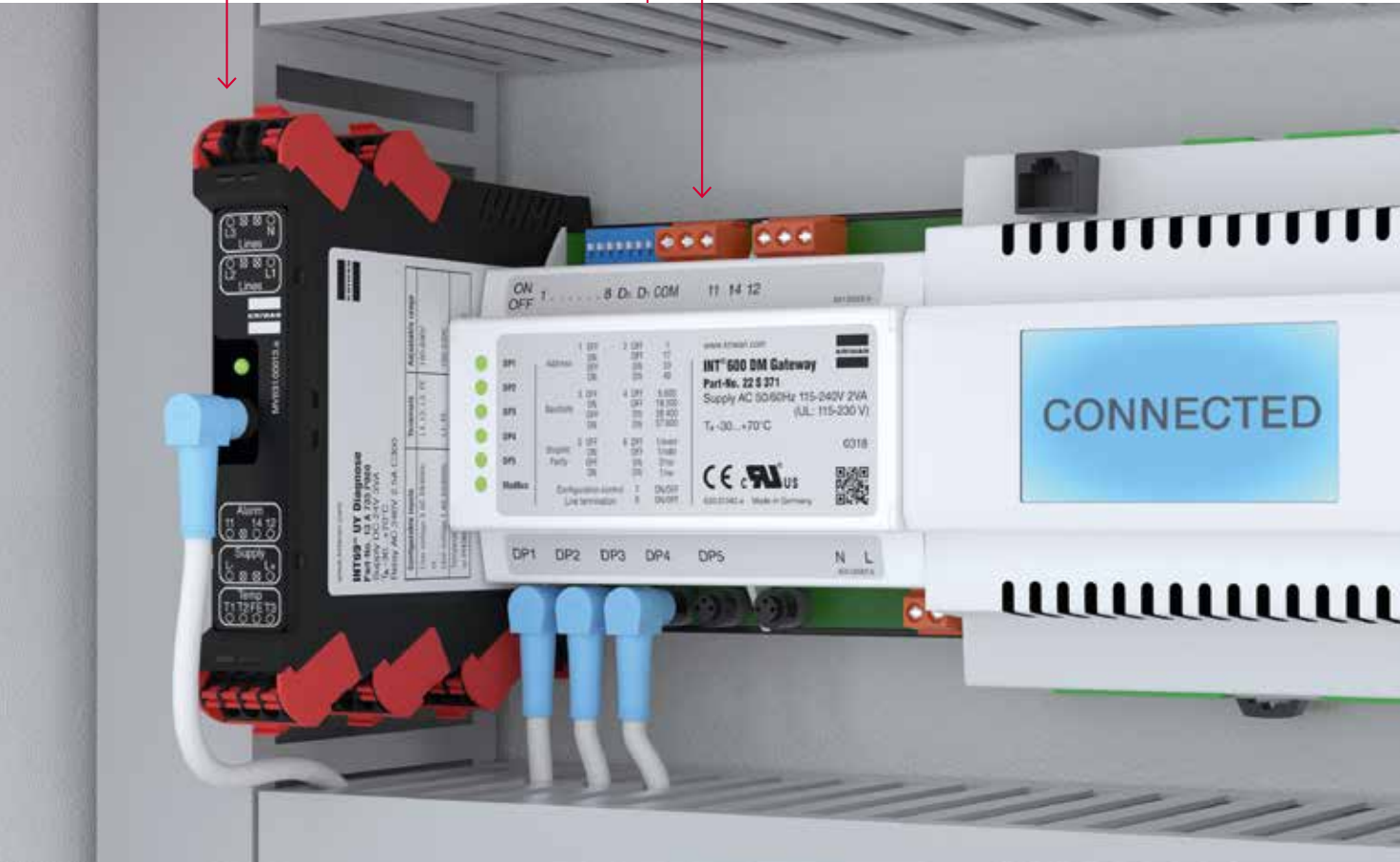
Supply voltage
AC 50/60 Hz 115 – 240 V
PART NUMBER
22 S371



Placement in the
switching cabinet

INT69® UY Diagnose

INT®600 DM Gateway



DIAGNOSIS ON SITE

The KRIWAN INTspecter® 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 INTspecter® app, you need a gateway (Bluetooth or USB).

INT®600 DB Gateway
BLUETOOTH



PART NUMBER
02 S377 S021

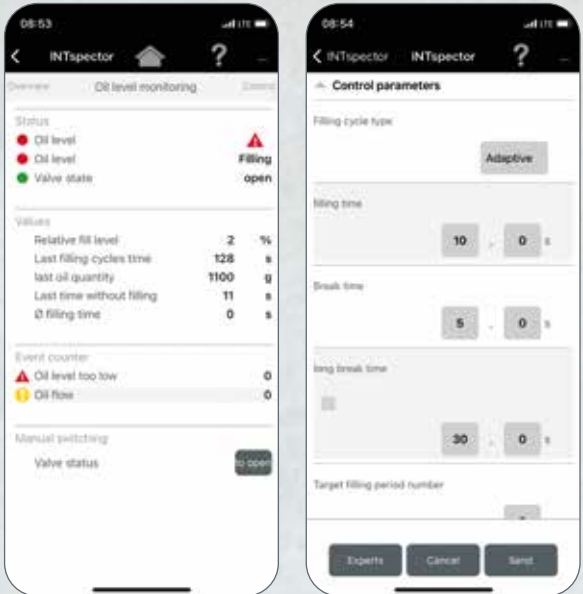
INT®600 DU Gateway
USB
Not compatible with
Apple devices



PART NUMBER
02 S365 S21



INTspecter® app



The INTspecter® 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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