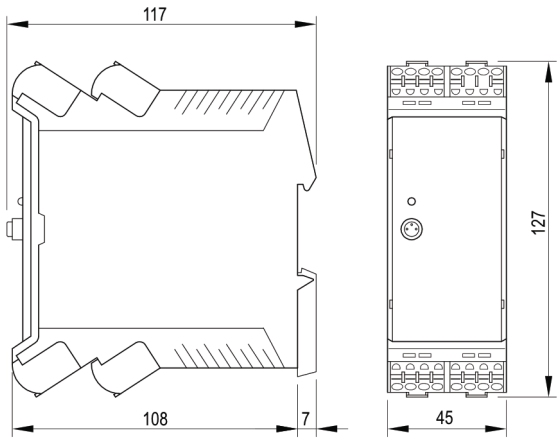
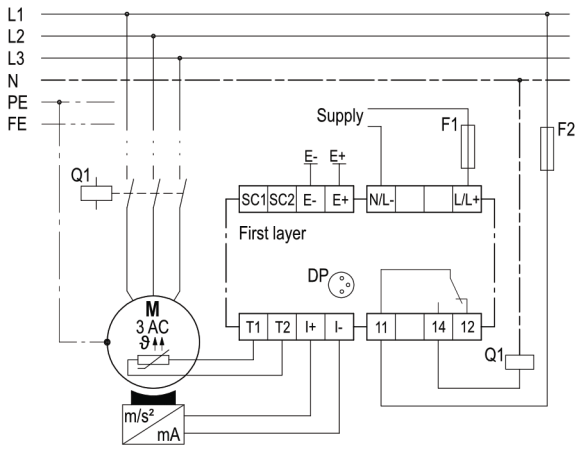
INT69® YF Diagnose

INT69 YF Diagnose

Illustration similar. Scope of delivery may deviate.



Dimensions in mm



Wiring diagram

Application

The INT69 YF Diagnose is a universal and versatile protection relay.

The following inputs and outputs are available for monitoring electrical components:

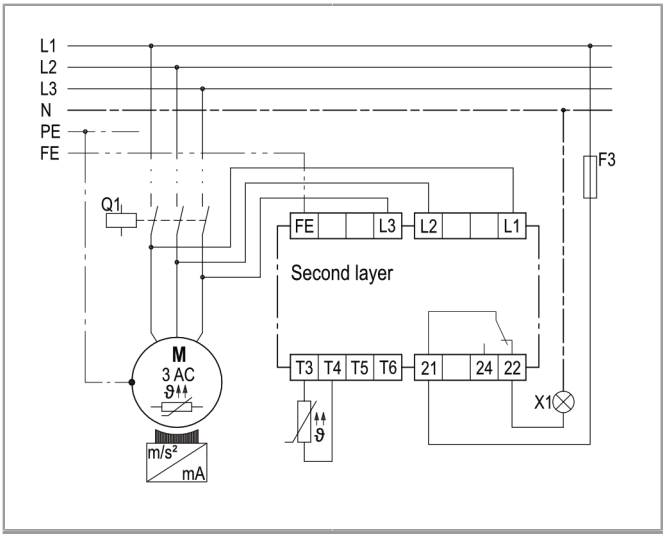
Terminals	Inputs and outputs
L/L+, N/L-	Supply voltage
T1, T2	Motor temperature (PTC, Pt100, Pt1000, bimetal, external relay contact)
T3, T4	Temperature 1 (PTC, Pt100, Pt1000)
T5, T6	Temperature 2 (PTC, Pt100, Pt1000)
E+, E-	Leakage 1 (resistance measurement)
SC1, SC2	Switching input (float switch, external reset)
I+, I-	Analog input 0/4-20 mA
FE	Functional ground
L1, L2, L3	Phase monitoring with phase sequence, phase failure, phase asymmetry, undervoltage and overvoltage
11, 14, 12	Relay 1
21, 24, 22	Relay 2

Parametrization enables protection functions and response settings to be adapted flexibly to suit the application.

The INT69 YF Diagnose saves operating and fault data in a non-volatile memory. This data can be read out and evaluated for diagnostic purposes.

Parameterization and diagnostics are possible via the built-in diagnostic port (DP) using the INTspector app and with separately available accessories.

This protection relay device is used primarily for the protection of pumps and agitators.



Wiring diagram

Functional description

All monitoring functions are configurable via simple parameterization using the INTspector app.

The protection relay has **an integrated real-time clock** and records or transmits data with a real time stamp. The real-time clock is not battery-buffered.

The following operating states of the inputs are described as active, but can be deactivated via parameterization.

Temperature monitoring is performed according to the evaluation method of a PTC, Pt100 or Pt1000. The monitoring of a PTC sensor switches off the parameterized relay without delay when the nominal response temperature is reached. The monitoring of a Pt100 and Pt1000 switches off when the adjustable temperature limits are reached after the adjustable trigger delay of the parameterized relay has elapsed. A short circuit or an interruption at a temperature input also causes the parameterized relay to de-energize (only for PTC, Pt100 and Pt1000, trigger delay for interruption: 30 min., for short circuit: 2 s). The temperature monitoring of the motor winding can additionally be carried out according to the evaluation procedure of a bimetal switch. When the bimetal switch is opened, the parameterized relay is switched off without delay. In addition, the NC contact of an external relay can be read in. A short circuit or interruption also leads to an interlocked switch-off.

Leakage monitoring is based on the evaluation method of an ohmic resistor. The monitoring switches off when the adjustable limits are reached after the adjustable trigger delay of the parameterized relay has elapsed.

The **switching input** monitors a floating switching contact (NC contact, NO contact or reset). When the connected contact is triggered, the parameterized relay is switched off without delay. When the external reset is activated, a restart delay or interlocked switch-off is reset if there is no longer an error.

Analog signal monitoring is carried out according to the evaluation method of a current. When the adjustable limits are reached, the parameterized relay is switched off after the adjustable trigger delay has elapsed. The closed current of the analog signal is adjustable and is additionally monitored. Falling below the parameterized closed current is detected as a sensor error (e.g., interruption) and leads to an interlocked switch-off.

Phase monitoring of the motor voltage is active from 2 s after motor start. The correct phase sequencing is monitored for 5 s. Phase failure, phase asymmetry, undervoltage and overvoltage during the entire motor running time. If the phase sequence is incorrect, the protection relay locks. The parameterized relay is also switched off in the event of phase asymmetry or phase failure, as well as in the event of undervoltage or overvoltage, after the adjustable limits have been reached and after the adjustable trigger delay has elapsed.
After the motor has stopped, phase monitoring is deactivated for approx. 2 seconds to prevent unwanted locking due to a brief reversing of the machine. The functional ground must be connected to ensure the function of the INT69 YF Diagnose. In frequency converter mode, the phase sequence, undervoltage and overvoltage are monitored.

The **switching frequency monitoring** records switching operations per time period. When the adjustable switching is exceeded within the settable time period, the parameterized relay is switched off.

The INT69 YF Diagnose has a service interval function. Restarting the **service interval** loads the adjustable interval time. After the time has expired, the service is indicated by the built-in LED or additionally by switching off the parameterized relay.

Parameterization (see parameter table) is possible via the diagnostic port using INTspector app with separately available accessories. A password query is possible for parameterization. The **LED** indicates the current status of the protection relay (see the flashing code). In fault-free operation, the installed LED shows a steady green light. The parameterized relay picks up. If an error or warning is detected, an alarm or warning is triggered. **Relay 1** and **relay 2** can be set to all detectable faults or warnings via parameterization. The monitoring of motor temperature, phase sequence, phase failure, phase asymmetry, undervoltage and overvoltage are always active as alarms for relay 1 and cannot be deselected for relay 1. Both relays operate according to the closed-circuit current principle.

If there is no longer an error, a reset is necessary to reset an interlocked switch-off or a restart delay:

- Option 1: Network reset >5 s
- Option 2: External reset at the switching input >5 s

All detected events such as warnings, errors or messages are stored in a non-volatile internal memory and can be read out via the diagnostic port (DP) and the INTspector app. The event memory contains the 100 most recent events with time and date; the 10 most recent errors are also recorded with extended data for all sensor inputs.

The Modbus function code 0x04 read input register is supported via the **DP interface** and the separately available INT600 DM gateway. The data of the INT69 YF Diagnose can be read out via Modbus function code 0x04 read input register.

For proper operation, the functional ground (FE) must be connected and the supply voltage must be permanently present.

Safety notices

⚠ Installation, maintenance and operation must be carried out by a qualified electrician.

The applicable European and country-specific standards for the connection of electrical equipment must be observed.

Outgoing connected sensors and connecting cables from the terminal box must have at least basic insulation.

Fittings

INTspector app

The INTspector app is required for parameterisation and diagnostics with the protective relay.

INT600 DU gateway **02 S 365 S21**

USB gateway, direct connection between INT69 YF Diagnose and PC, smartphone or tablet

INT600 DM gateway **22 S 371**

Modbus RTU Gateway, is used to network the INT69 YF Diagnose into the system control and read out data via Modbus.

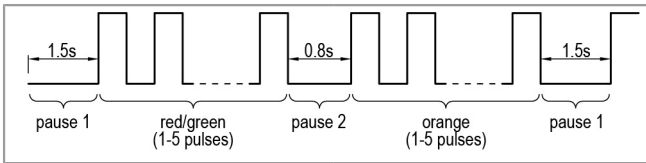
Ordering information

INT69 YF Diagnose (24 V~/⎓ 50/60 Hz)	**20 A 701 P081**
INT69 YF Diagnose (100-240 V~ 50/60 Hz)	**22 A 701 P081**
Further product information	See www.kriwan.com

Flashing code

The KRIWAN flashing code is used for quick and easy status indication and troubleshooting.

The flashing code consists of a cyclic flashing sequence. In the event of a fault, the flashing sequence consists of red and orange pulses. If warnings are pending, the sequence consists of green and orange pulses. The current status can be determined from the number of flashing pulses.



Flashing code

Overview of flashing code

Status	Description
Steady green	Machine ready for operation
Flashing green	Machine in operation
Steady orange	Machine ready for operation, service due
Orange flashing	Machine in operation, service due
Green / orange flashing	Warning, see the description below
Red / orange flashing	Fault, machine is shut down, see the description below

LED	1. Flashing sequence	2. Flashing sequence	Description
Warning Fault	1x green 1x red	1x orange 1x orange	Motor temperature: Switch-off/warning, permissible winding temperature exceeded
Fault	1x red	4x orange	Motor temperature: Switch-off, sensor input detected an open or short circuit
Fault	2x red	1x orange	Phase monitoring: Switch-off, incorrect phase sequence
Warning Fault	2x green 2x red	2x orange 2x orange	Phase monitoring: Switch-off/warning Phase failure/asymmetry
Warning Fault	2x green 2x red	3x orange 3x orange	Phase monitoring: Switch-off/warning Undervoltage/overvoltage
Fault	2x red	4x orange	Phase monitoring: Restart delay after phase monitoring error
Warning Fault	3x green 3x red	1x orange 1x orange	Temperature input 1: switch-off/warning, permissible temperature exceeded
Warning Fault	3x green 3x red	2x orange 2x orange	Temperature input 2: switch-off/warning, permissible temperature exceeded
Fault	3x red	4x orange	Temperature input 1: Switch-off, sensor input detected an open or short circuit
Fault	3x red	5x orange	Temperature input 2: Switch-off, sensor input detected an open or short circuit
Warning Fault	4x green 4x red	1x orange 1x orange	Leakage input 1: Switch-off/warning, permissible limit exceeded/ undershot
Fault	4x red	3x orange	Switching input 1: switch-off
Fault	5x red	1x orange	General: Device error
Warning Fault	5x green 5x red	3x orange 3x orange	General: Analog input 1 Switch-off/warning, permissible limit exceeded/ fallen below
Fault	5x red	4x orange	General: Analog input 1 Sensor fault detected, closed current fallen below
Warning Fault	5x green 5x red	5x orange 5x orange	General: switching frequency switch-off/warning, permissible switches exceeded

Technical data

Supply voltage 20 A 701 P081 22 A 701 P081	 24 V~/⎓ 50/60 Hz ±20 % 7 VA 100-240 V~ 50/60 Hz ±10 % 9 VA
Permissible ambient temperature T_a	-30 °C ≤ T_a ≤ +70 °C
Permissible humidity	0–95 % r.h., non-condensing
Maximum usage height	2000 m
Temperature measuring circuit bimetal/external relay contact	
– Type	for an NC contact
– Contact suitable for	24 V⎓ 20 mA
– Max. line length	100 m
PTC temperature measuring circuit	
– Type	1-9 PTC sensors according to DIN VDE V 0898-1-401 in series
– $R_{25, total}$	<1.8 kΩ
– $R_{triggering, static}$	4.5 kΩ ±20 %
– R_{reset}	2.75 kΩ ±20 %
– Short circuit monitoring	<20 Ω
– Break monitoring	>20 kΩ
– Applied voltage	
– Motor temperature	24 V⎓
– Temperature 1	5 V⎓
– Temperature 2	5 V⎓
– Max. line length	100 m
Pt100 temperature measuring circuit	
– Measuring range	-50… +300 °C
– Resolution	1 K
– Accuracy	5 % of the ohmic value
– Short circuit monitoring	<20 Ω
– Break monitoring	>400 Ω
– Applied voltage	
– Motor temperature	24 V⎓
– Temperature 1	5 V⎓
– Temperature 2	5 V⎓
– Max. line length	100 m
Pt1000 temperature measuring circuit	
– Measuring range	-50… +300 °C
– Resolution	1 K
– Accuracy	5 % of the ohmic value
– Short circuit monitoring	<20 Ω
– Break monitoring	>2.3 kΩ
– Applied voltage	
– Motor temperature	24 V⎓
– Temperature 1	5 V⎓
– Temperature 2	5 V⎓
– Max. line length	100 m
Leakage measuring circuit	
– Type	Resistance measurement between electrode pairs
– Measuring range	5 kΩ - 1.5 MΩ
– Resolution	1 kΩ
– Accuracy	±(1 kΩ + 10 % of MV)
– Applied voltage	Approx. 24 V~
– Max. line length	100 m

Switching input	
– Type	For a floating NC or NO contact (e.g., reset button)
– Contact suitable for	24 V⎓ 20 mA
– Max. line length	100 m
Analog input	
– Type	0-20 mA / 4-20 mA current signal
– Applied voltage	24 V⎓ +5 % / -25 %
– Measuring range	0-20 mA
– Resolution	0.1 mA
– Accuracy	±2.5 % of the MV
– Current limitation	30 mA, short-circuit-proof
– Max. line length	100 m
Phase measurement	
– Operation with FC	Suitable
– Measuring range, phase-phase	20-100 Hz~ 60-690 V~ ±10 %
– Resolution	1 V
– Clock frequency range	2-16 kHz
– Typical clock frequency	8 kHz
– Precision, sinus operation	±(1 V + 2.5 % of MV)
– Precision, FC operation	±(1 V + 5 % of MV)
– Max. line length	3 m
Frequency measurement	
– Resolution	1 Hz
– Accuracy	±1 Hz
Interface	Diagnostic port (DP)
– Max. line length	10 m
Reset of lock or restart delay	
– Option 1	Network reset >5 s
– Option 2	External reset at the switching input >5 s Only possible once any errors have been rectified
Relay 1 1 changeover contact, floating	
Degree of protection as per EN 60529	IP20
Connection type	
– General	Tension spring connection (push-in) 0.2-2.5 mm²
Housing material	PA 66 GF 30
Fixing	Control cabinet housing (basic grid 45 mm), clippable on to 35 mm standard rail as per EN 60715
Dimensions	See dimensions in mm
Weight	
– 22 A 701 P081	300 g
– 20 A 701 P081	300 g
Test regulations	EN 61000-6-2 EN 61000-6-3 EN 61010-1 Overvoltage category III Degree of pollution 2
Approval	UL file no. E473026

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