MAXIMUM EFFICIENCY

thanks to precision measurement monitoring, control or regulation
– in step with the market and absolutely reliable!

THE HIGHEST STANDARDS IN
MEASURING, CONTROL AND REGULATION

ZIEHL

www.ziehl.com

INNOVATIONS 2025

EFR4002IPR

Energy flow direction sensor (EnFluRi) with 333mV measuring input for Rogowski coils
Certified Monitoring of Pav,e, with standard VDE-AR-N 4105:2018-11

- Can be used for medium-voltage applications - Connection of earthed medium-voltage transformers and series-connected measuring devices possible
- Power Plant Controller **(PPC)** compliant communication
- Monitoring of the contractually agreed effective connected power Pav,e
  - Install 2/3 more generation capacity than can be fed in
  - Shut down in 3 steps if the limit is exceeded
- Optimisation of the share of consumed own energy
  - Intelligent use of the share of self-generated electricity, increase in the share of self-consumption
  - Switching on of up to 3 consumers in case of power surplus
  - Particularly interesting when feed-in tariff agreement expires
- For the requirements of the Electrotechnical Properties Verification Ordinance (**NELEV**) and the German regulation “Energieanlagen-Anforderungen-Verordnung” (**EAAV**)
- Fulfills the **ZEREZ** obligation

DIGITAL NETWORKING
(TCP/IP)

ONLINE-TEST EFR4002IPR
(Login: Test/Test)

S1

Current sensor for dtecting DC and AC current

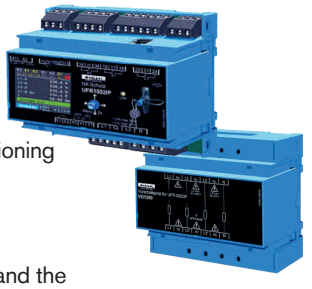
- Non-contact clip-on sensor
- Retrofitting possible
- Adjustable response value 5-30 A, max. 500 A
- NPN / PNP transistor outputs DC 24 V
- M12 connector for standard sensor connection
- LED for current flow detection

Innovative cloud solutions for your IP devices

- **Central platform for all IP devices**
- **Any number of users with individual authorizations**
- **Unlimited event memory and detailed history charts**
- **Efficient networking, monitoring and alarm management**

HIGHLIGHTS

UFR1002IP + VG 1200



Grid- and Plant Protection VDE-AR-N

- With preset programmes for German and international standards
- Component certificate from Bureau Veritas
- Example connection diagrams and operating videos for simple engineering and commissioning
- 2-step test function for testing both channels
- Unit protection on the generating units and intermediate decoupling protection
- Monitor up to 1,200 V in connection with the VG1200
- For the requirements of the Electrotechnical Properties Verification Ordinance (**NELEV**) and the German regulation “Energieanlagen-Anforderungen-Verordnung” (**EAAV**)
- Fulfills the **ZEREZ** obligation

DIGITAL NETWORKING
(TCP/IP)

ONLINE-TEST UFR1002IP
(Login: Test/Test)

TR640IP / TR660IP

Temperature Relay for Pt 100, Pt 1000 and PTC

- 6 inputs for sensors Pt 100, Pt 1000 and PTC, even mixed
- 4 alarms/ output relays
- Alarm 2 from X = Alarm only when the limit value is reached in at least 2 sensors
- Monioring of temperature differences
- Monitoring of the rate of termperature rise
- Recording of temperature curve and history
- Preset programmes for motor protection, transformer protection and others
- Ethernet TCP/IP network connection, collection of values via Modbus TCP
- **TR660IP:** 7 alarms/ relays, 4 analog outputs or RS485 interface (Modbus RTU)

DIGITAL NETWORKING
(TCP/IP)

ONLINE-TEST TR660IP
(Login: Test/Test)

THE UR-SERIES
Set a Limit to Temperatures!

NEW

UR220IP **UR420IP** **UR840IP** **URB40**

Limit Value Relay for Temperatures and Analog Signals

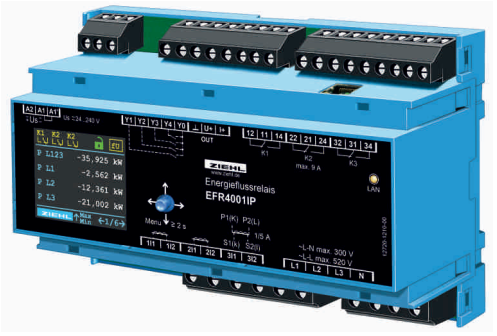
- Up to 8 universal inputs Pt 100/1000, thermocouples, DC 0/2-10 V, DC 0/4-20 mA, resistance 0-30 kΩ
- Up to 4 outputs, expandable by 4 outputs with relay extension box type URB40
- Modbus TCP and Modbus RTU interface
- Freely scalable analog outpus 0/4-20 mA, 0/2-10 V
- Cloud connection with additional functions, e.g. trend tracking

Universal Relay Box

- 4 additional alarms
- Simple expansion of existing control systems or stand-alone via bus
- Operation and control via RS485 (Modbus RTU)
- Interface, also for third-party devices

DIGITAL NETWORKING
(TCP/IP)

ONLINE-TEST UR840IP
(Login: Test/Test)



RENEWABLE ENERGIES

We have developed special measuring and monitoring devices to exploit the optimum performance from photovoltaic systems and to make clever use of your own consumption of self-generated energy.

- **Relays from our UFR range** are installed at the interface between self-generation system and public grid for grid and system protection. They monitor voltage, frequency and other parameters.
- **Relays from our EFR range** monitor compliance with the contractually agreed feed-in power (Pav,e). A further application is the optimisation of the self-consumption by switching on consumers when there is a high level of self-generation. The energy is then used when it is cheaply available.

TRANSFORMER PROTECTION

Our temperature relays protect dry transformers from overheating by monitoring winding and core temperatures using PTC thermistors or Pt 100 sensors. When necessary, integrated controllers switch on fans for cooling and thus ensure reliable and trouble-free operation.

TEMPERATURE MONITORING

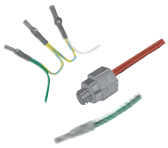
PTC THERMISTOR RELAY

for protection against overheating in motors, bearings, heat sinks or on surfaces. Available with ATEX approval in accordance with Directive 2014/34/EN, also with intrinsically safe sensor connection. Operation in conjunction with MINIKA®, 60 ... 180 °C.
E.g. MS, MSR, MSF

PTC THERMISTOR RELAYS FOR DRY TRANSFORMERS

do not generate a tripping pulse when activated. Simple versions up to variants with integrated fan controller and fan monitoring are available.
E.g. MS(R)220K, TR250

PTC SENSORS



MINIKA® PTC sensors for use in conjunction with PTC relays for protection of windings in transformers and motors or to monitor bearing temperatures in machines and plants.

WEB CONTROL

Devices with Ethernet interface can be connected to the Intranet/Internet and operated with a browser. Data are available via Modbus TCP/IP. If limit values are exceeded, an alarm is triggered by relay and e-mail.
E.g. TR1200IP

PT 100 AND THERMOCOUPLE

Type TR devices monitor and control temperatures. Up to 12 sensors, 7 switching points, digital displays, differential temperature monitoring and analog outputs open up a wide range of potential applications. Also for Pt 1000, KTY 83/84 and PTC sensors.

TEMPERATURE SENSORS (PT 100)

Pt 100 for use with switchgears, measuring transducers and display units. Designs for winding installation, as screw-in, immersions or room temperature sensor.
E.g. TF101R

SWITCHING RELAYS & CONTROLLERS

LEVEL RELAYS

monitor conductive fluids on up to 4 levels. Applications are the protection of aggregates and systems against overflow, dry running, leakage damage and the leakage monitoring of submersible pumps.
E.g. NS20K

SPEED RELAYS

monitor machines and plants, e.g. for compliance with a set speed. Also available for integrated measuring transducers.
E.g. DRR10

WATCHDOG TIMER RELAYS

monitor the process activity of computers in critical applications and switch off in the event of a fault (clock failure).
E.g. WD100V

CONTROLLERS FOR EXTRACTION SYSTEMS

ensure that dust produced on machine tools is reliably extracted and that the limit values specified in the Technical Rules for Hazardous Substances (TRGS 553) are observed.

They detect the operating status of the machines on which the extractors are installed by measuring the current consumption in the central power distributor. This reduces installation work. The central extraction system is started when one of up to 12 machines is switched on. More complex devices optimise the funtion by opening gate valves only in the extraction ducts where machines are in operation. This creates a higher extraction performance and offers high energy saving potential (Energy Efficiency Directive 2012/27/EU). STW164IP controllers (programmable via IP interface) in conjunction with bus modules STW161M and STW168M reduce the wiring work of extraction systems with up to 32 machines. Gate valves are connected to a common bus line that is also used for the DC 24 V power supply.

Vibration controls ensure regular cleaning of filters.

STWA1S electronic current transformers with integrated evaluation electronics are used if the extraction system is controlled by a PLC.

DIGITAL MEASURING INSTRUMENTS

MINIPAN® 300

4-digits, 36 x 72 mm, programmable
DC measurement: 500/100/10 V, 300 mV, 1 A, 0/4-20 mA
AC measurement: 500/50/10 V, 150 mV, 1 A
Pt 100: 2-/3-wire, programmable calibration
universal power supply AC/DC 24-240 V

MINIPAN® 352P

4-digits, 72 x 72 mm, programmable
AC/DC measuring inputs: 300 mV to 500 V, 0/4-20 mA, 1/5 A Pt 100/1000 2-/3-wire, KTY 83/84, thermocouples, resistance up to 30 kΩ, 2 switching points universal power supply AC/DC 24-240 V

MINIPAN® SE352

4-digits, 48 x 96 mm, programmable
AC/DC measuring inputs: 300 mV to 500 V, 0/4-20 mA, 1/5 A, Pt 100/1000 2-/3-wire, KTY 83/84, thermocouples, resistance up to 30 kΩ, 2 switching points
universal power supply AC/DC 24-240 V

MINIPAN® 350V

4-digits
2 HU switchgear
cabinet installation

MINIPAN® 352V

4-digits
4 T switchgear
cabinet installation

Measuring range as for MINIPAN® 300
universal power supply AC/DC 24-240 V

MAINS MONITORING

RELAYS FOR PHASE, COS φ, CURRENT AND DIRECTION OF ROTATION

Phase relays protect against asymmetries and incorrect phase sequences. Direction of rotation relays automatically correct incorrect phase sequences. Cos φ-swiches monitor overload and/or underload and current direction. E.g. PS2DK

CURRENT RELAYS (AC FLOW YES/NO)

Devices in an OR circuit detect when a current flows in one of up to 12 monitored lines. Current relays in an AND circuit monitor whether current is flowing in all 3 monitored lines and signal e.g. failure of a phase or a consumer. E.g. STW20V

CURRENT RELAYS (ADJUSTABLE)

as measuring relays for monitoring DC and AC flows. Currents of practically any magnitude can be monitored with external shunts or transformers. E.g. STW1000

ENERGY FLOW RELAYS

optimise self-consumption of self-generated energy.

CERTIFIED PAV,E-MONITORING

Install 2/3 more generation capacity than the grid connection allows.
For the requirements of the Electrotechnical Properties Verification Ordinance (**NELEV**) and the German regulation “Energieanlagen-Anforderungen-Verordnung” (**EAAV**).
Power Plant Controller **(PPC)** compliant communication and fulfillment of the **ZEREZ** obligation.

VOLTAGE RELAYS

monitor AC-, DC- and 3-phase AC networks up to 690 V for undervoltage and overvoltage and thus protect consumers from damage caused by deviations in the supply voltage. E.g. SW32V

ELECTRONIC CURRENT TRANSFORMERS

with integrated evaluation electronics for current detection yes/no, without auxiliary voltage. Simple detection of the operating status of an AC or DC consumer. Evaluation directly with the digital input of a PLC or a current relay for flow detection. E.g. STW1H, Current sensor S1

RESIDUAL CURRENT RELAYS

in conjunction with the appropriate transformers monitor fault currents in earthed networks. They signal insulation faults before major damage occurs and help to avoid shutdowns. E.g. RCM1000

FREQUENCY RELAYS

monitor the frequency in the range of 10-500 Hz in 20-830 V AC networks. The version with transducer provides an isolated 0/4-20 mA or 0-10 V output signal corresponding to a freely selectable frequency range. E.g. FRMU1000

RELAYS FOR GRID AND PLANT PROTECTION

monitor voltage, frequency and vector shifts on generation plants. Grid and systems protection in accordance with VDE-AR-N 4105 and others. For the requirements of the Electrotechnical Properties Verification Ordinance (**NELEV**) and the German regulation **EAAV**. Power Plant Controller **(PPC)** compliant communication and fulfillment of the **ZEREZ** obligation.

MEASURING TRANSDUCERS

TEMPERATURE MEASURING TRANSDUCER

in conjunction with Pt 100, Pt 1000 or KTY 83/84 temperature sensors or thermocouples provide a temperature-linear DC 0-10 V or 0/4 -20 mA output signal. E.g. TMU100V

AC CURRENT / VOLTAGE

for measuring AC voltages from 30 to 600 V and alternating currents from 1 to 5 A (larger currents via currents transformers). Insulated outputs 0-10V, 0/4-20 mA. E.g. MU2000K

DC CURRENT / VOLTAGE

for conversion and galvanic isolation of DC signals. Universal measuring transducers are available with DC 0... ±60/150/300 mV, 0...5...600 V (scalable) 1/5 A, 0/4-20 mA measuring inputs and 0-10 V, 0/4-20 mA outputs. E.g. MU1000K

MOTOR PROTECTION MEASURING TRANSDUCERS

for Pt 100 as a superior alternative to PTC thermistor protection. Installed in the motor terminal box and fed via a 4-20mA loop, switching points, hystereses and the reclosing behavior can be freely determindes with a PLC in the range of 0 to 200°C. E.g. TMU300

ELECTRONIC CURRENT TRANSFORMERS

with electronics integrated into the housing. Measuring ranges up to AC 100 A. Analog outputs 0-20 mA, 4-20mA. RS485 interface (Modbus RTU), frequency output (transistor) for direct evaluation with the digital input of a PLC. E.g. STWA1FH, STWA1SEH

MEASURING POINT CHANGE-OVER SWITCHES

for connection of up to 16 Pt 100, 0-10 V or 0-20 mA measuring points to one evalutaion unit. The inputs can be selected in digital code, e.g. using a PLC. Automatic operation is possible. E.g. MUM16

MEASURING POINT MULTIPLICATORS

measure the temperature at the input sensor (pt 100, Pt 1000, KTY 83/4, thermocouples B, E, J, K, L, N, R, S or T) and convert the signal into up to 4 isolated Pt 100 output signals. RS 485 interface for use as a Pt 100 simulator. E.g.TMU104V

LIMIT VALUE RELAYS

monitor standard 0/40-20 mA or 0-10 V signals from any transducer for compliance with 1 or 2 limit values. E.g. STW1000V

ZIEHL INDUSTRIAL ELECTRONICS – INFINITE POSSIBILITIES

We are committed to the **development and production of electronic devices for industry** – with competence and innovation. From universal temperature monitoring relays through mains decoupling relays for photovoltaic installations right up to individual special solutions, the ZIEHL universe offers an infinite range of efficient possibilities:

- **Temperature monitoring.** PTC thermistor relays with MINIKA® PTC sensors, Pt 100 (RTD) temperature relays and Pt 100 sensors, web-enabled universal relays, safety temperature limiters, thermocouple relays.
- **Grid monitoring.** Current and voltage relays, current transformers, phase and frequency relays. With our certified UFR1001E, we are market leaders in grid and system protection.
- **MINIPAN® digital panel meters** are used wherever measured values are to be displayed. Alarm outputs and integrated measuring transducers expand the range of applications.
- **Switching relays and controllers.** Of particular note here are the controllers for extraction systems in the wood-processing industry, speed monitors and level relays for conductive fluids.
- **Measuring transducers and measuring point change-over switches** for temperature, AC and DC current as well as voltage or potentiometer.
- **Development and production of special devices** according to customer specifications.

THE HIGHEST QUALITY – FOR SURE

Exceptional variety, better, faster and more innovative – the highest quality is our standard. All the products are developed and produced according to the latest technical findings at our factory in Schwäbisch Hall. Our company is **certified according to ISO 9001:2015 as well as ATEX Directive 2014/34/EU** and is regularly audited by UL.

ZIEHL

REPRESENTATIVES AROUND THE WORLD

Made in Germany

Our representative in your country:

ZIEHL PRECISION FOR OVER 55 YEARS

... innovative, future-oriented and renowned for the highest quality.
... dependable, committed and motivated with more than 50 highly trained employees.
... State-of-the-art, certified and regularly audited.

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