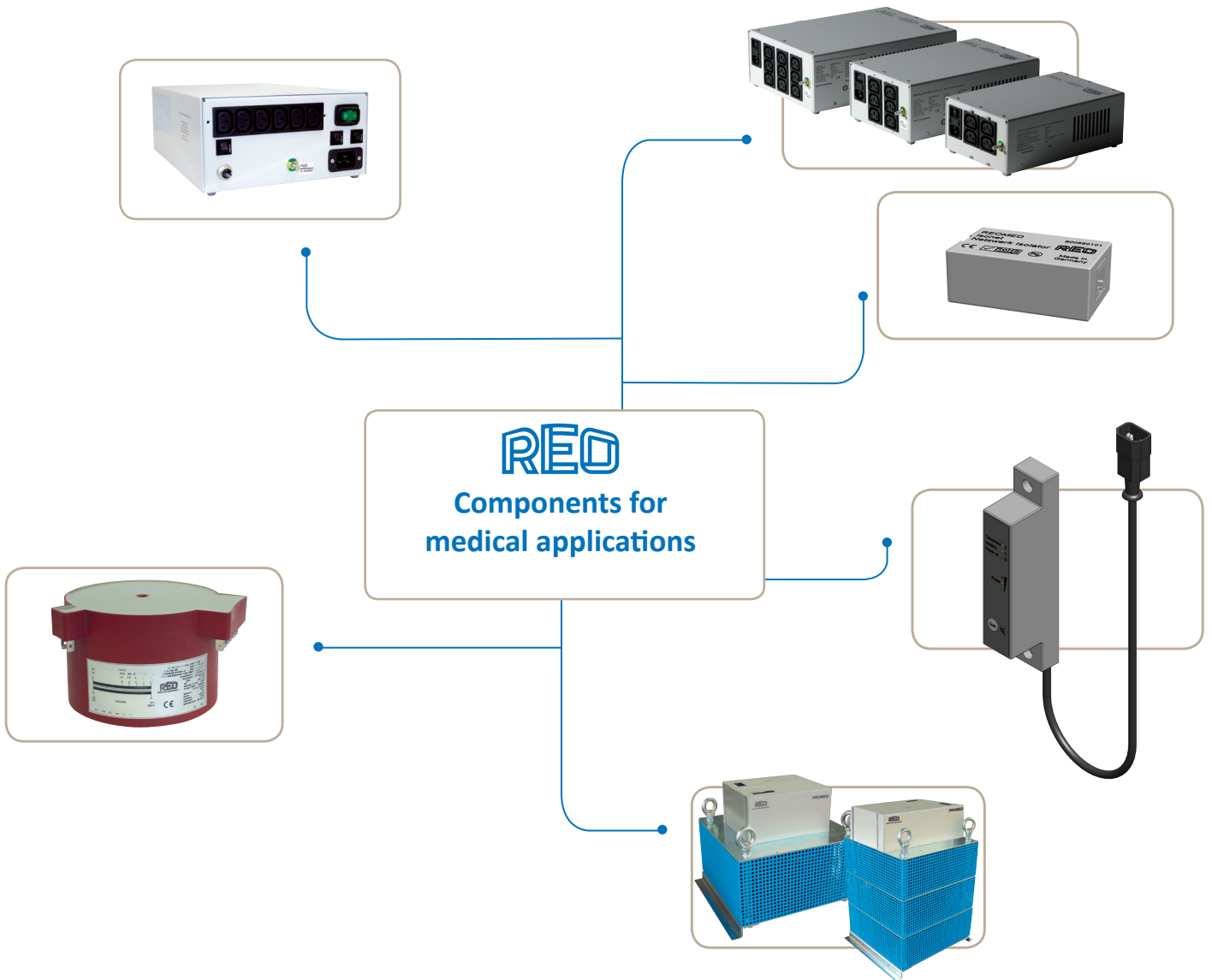




## ElectroMedical Solutions

### Product catalogue



## Medical Technology

Most modern medical examination and surgical procedures would not be possible without electricity. Whether body scanning, heart monitoring using an electrocardiogram or dental treatment, the use of electrical equipment has replaced and improved traditional methods, whilst at the same time making certain medical procedures possible.

The use of electricity means that there is a potential for danger, electrical applications in medical technologies especially may have particular hazards for patients and operating personnel alike. These hazard sources will be avoided with standards like IEC 60601-1 which are responsible for safety power supplies in the medical area.

REO has been developing advanced solutions for transforming and regulating voltage since 1925.

Today REO manufactures transformers for medical applications, which conform to global standards and set a benchmark for risk-free operation and efficiency.

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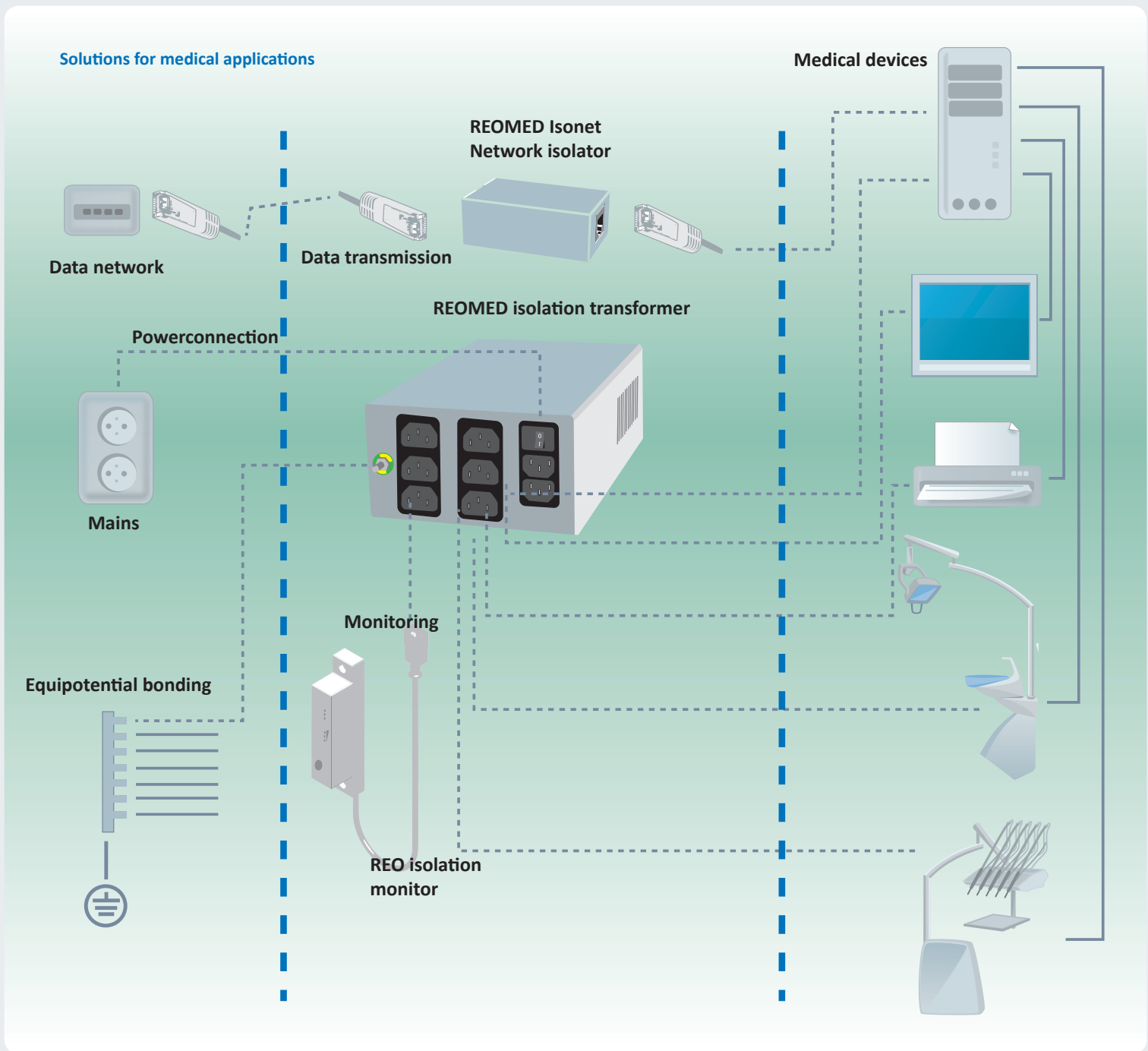
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The standard IEC 60601-1 and the EU guideline 93/42/EEG define the safety of electrical systems. To guarantee a safe power supply, experience and knowledge is necessary. REO has many years experience of transformer production for industrial applications, REO provides solutions which go above and beyond the required standards.

REO transformers are especially characterized by:

- Minimal leakage field - Meaning that high EMC compatibility can be guaranteed
- High quality core - Means high efficiency and good regulation properties
- Fully encapsulated - For protection from mechanical influences and better heat dissipation
- Additional electrical components - Such as short-circuit, overload protection and inrush current limiting sections are developed and manufactured in-house, which ensures optimal performance.

REO also produces bespoke solutions integrating many of our core competencies. This allows customer-specific solutions such as special housing or mounting plates for example.

Components used in medical application must be safe, so each product is rigorously tested. REO also develops and manufactures test systems for railway traction and industrial applications. So safety and product testing to high standards are the norm for REO.

To ensure standards are maintained, REO has its own testing facility at Pfarrkirchen. Experience in many electrical fields and broad market knowledge guarantee optimal solutions with the latest technology and developments. REO is a partner that you can rely on. Constant research and development and continuous improvement systems ensure that REO always employs state of the art in its field.

### Benefits of REO components

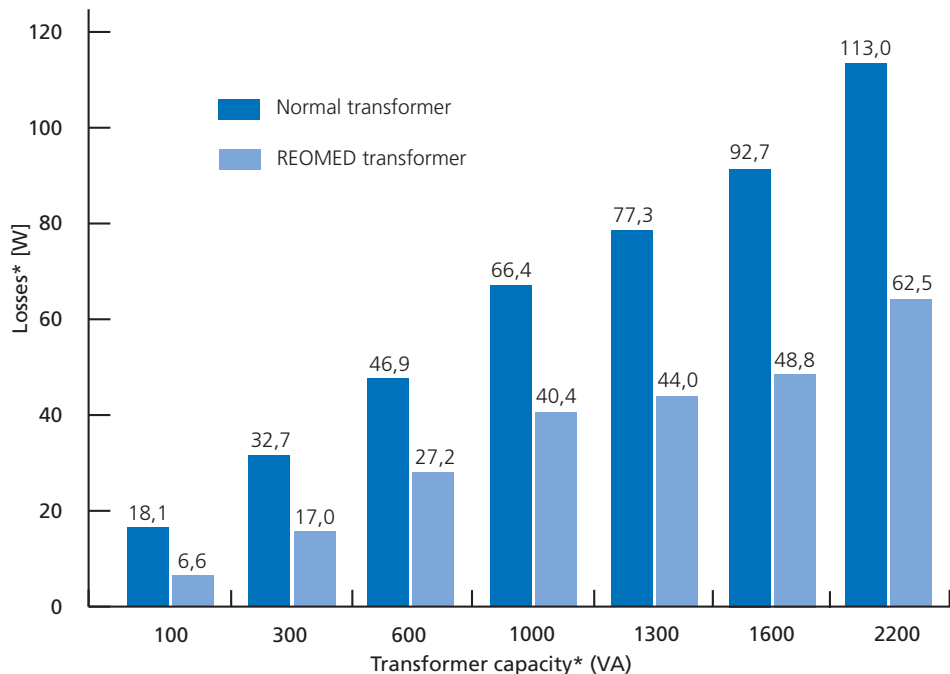
- **REOMED with toroidal fixed cores**
- **Reduction of energy especially at continuous operation**
- **Environmentally friendly by saving energy**
- **Integrated inrush limitation**
- **Protection against short-circuit and overload**
- **Wide range of options**
- **Long product life**

## REOMED isolation transformers for efficient reduction in costs and energy

Due to the increasing environmental impact and the resulting awareness of these issues energy efficiency is a key driver in REO's product development.

REOMED transformers help to achieve this goal. The following chart shows the loss values between a normal transformer and a REOMED transformer at various power levels.

The large difference shows the increased efficiency of REOMED transformers against conventional designs.



### Efficient energy reduction

Comparison of the losses between a normal transformer and a REO toroidal transformer: The large energy savings become quickly visible

\*Loss at operating temperature

## Selections for the REOMED:

- Mains input 115 or 230 V or far range 100-130 V / 200-250 V
- Output 115 or 230 V or far range 100-130 V / 200-250 V

### Options:

Inrush current limiter:

- Option A 10 = NTC
- Option A 50 = electronically damped start-up.
- Option X1 = Overvoltage protection
- Option X2 = Mains filter
- Option X3 = Overvoltage protection + Mains filter

### Standard models

Default or preferably our REOMED models are equipped as follows:

REOMED 300 = Option A50

REOMED 600 = Option A 50

REOMED >1000 = Option A 50



REOMED I ed 3.1 Edition isolation transformers

Technical data*		
Input voltage	100 - 130 V / 200 - 250 V	[V]
Output voltage	100 - 130 V / 200 - 250 V	[V]
Rated power	300 - 2200	[VA]
Casing protection	IP 20	
Weight	4,5 - 19,0	[kg]
Earth leakage current at 254 V / 50 Hz	< 500	[µA]
Number of output connections	4 - 9 x IEC 320	[V]

REOMED ed 3.1



\*All devices have an integral start-up current limiter (NTC or electrical), a equipotential earthing pin conforming to DIN 42801, a primary mains line and over current protection. The devices can mounted on a wall, bench or even on the floor.

REOMED I ed 3.1 Edition isolation transformers

Medical systems must have low levels of leakage currents, combinations of systems and components often increase this level beyond safe limits. The TÜV-certified REOMED isolating transformers are proven and reliable equipment for use with all electrical systems in a medical environment. They reduce the leakage current and thus help to ensure the safety of patients.

REOMED isolating transformers are characterized by their very low magnetic stray-fields and reliability, whilst also providing high efficiency and easy connectivity.

In addition to the standard range, these transformers may be constructed to customer requirements and enhanced by adding an electronic, start-up current limiter, surge protection and a mains filter.

Benefits

- Wide range of options
- Small weight
- Short-circuit and overload protection
- Integral start-up current limiter
- Solid aluminum casing
- Equipotential earthing pin DIN 42801
- Output sockets EN 60320
- EMC tested to EN 60601-1-2
- IEC 60601-1:2005 / AM D1:2012
- ANSI / AAMIES 60601-1:2005/CR2012
- CAN / CSA-22.2 No 60601-1:14

## REOMED II isolation transformers - Prepared for ed 3.1 Edition\*\*

Technical data*		
Input voltage	230	[V]
Output voltage	230	[V]
Rated power	660 - 2000	[VA]
Casing protection type	IP 20	
Primary circuit breaker	4 - 12	[A]
Secondary circuit breaker	3 - 10	[A]
Earth leakage current at 254 V / 50 Hz	< 100	[μA]
Test voltage	4 (between primary and secondary winding)	[kV]
Max. ambient temperature	40	[°C]
Isolation	> 2	[MΩ]
PE resistance	< 0,1	[Ω]

REOMED II isolation transformers

\*All devices have an integral start-up current limiter (NTC or electrical), a equipotential earthing pin conforming to DIN 42801, a primary mains line and over current protection. The devices can mounted on a wall, bench or even on the floor.



### REOMED II isolation transformer

The REOMED II isolation transformer provides reliable leakage current reduction in medical applications.

Safe isolation on the input side is effected by using high quality materials and first class production methods. The isolation transformers are designed for low internal losses and so achieve very low no-load losses (<= 1% relating to the input power).

Overload and short-circuit protection on the input and output side is effected by an integral circuit breaker. The transformer is isolated using an illuminated mains switch and circuit protection is effected by two fuses on the input side and a single-pole one on the output side. As thermal protection is utilized problems regarding fuses (i.e incorrect values being fitted, power interruption are avoided)

Furthermore in the isolating transformer a temperature cut-out is integrated, which provides an additional protection in the event of exceptional ambient conditions or prolonged obstruction of the cooling vents.

### Benefits

- Compact dimensions
- Solid aluminium casing
- Green illuminated mains switch
- Low total weight
- Integrated circuit protection
- IEC60601-1:2005 (3rd. Edition)

\*\*To register for ed 3.1 Edition



# Medical transformers

## REO Promed1 + Promed3 isolation transformers

Technical data		
Rated Power	3150 - 8000	[VA]
Input voltage	230 - 400 ±5% / 3 x 230 - 400 ±5%	[V]
Output voltage	230 with centre tap / 3 x 230	[V]
Short circuit voltage	<=3	[%]
No load current	<=3	[%]
Current	14,3 - 36,3 / 3 x 8,2 - 3 x 21	[A]
Weight	35 - 95	[kg]

REO Promed1 + Promed3

### Promed1 + Promed 3 isolation transformers

The PROMED isolation transformers are constructed for central power supply in medical systems and provide high single-phase powers ranging from 3150VA up to 8000 VA. The transformers are also available in three-phase versions.

## REO Unimed transformers

Technical data		
Rated power	100 - 300	[VA]
Weight	1,9 - 3,2	[kg]
Input voltage	0-115 / 0-100-115	[V]
Output voltage	230	[V]
Current	0,43 - 1,30	[A]
Max. ambient temperature	40	[°C]
Protection	IP 54 (Connections IP 00)	

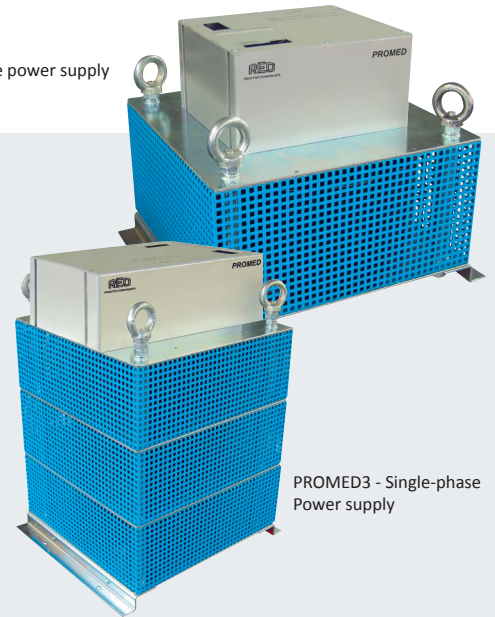
REO Unimed

### Benefits

- Conforms to medical standard EN 60601-1
- Standard connections ensure straightforward integration.
- Very low leakage current
- Very high efficiency
- High capacity
- No hum
- Low power losses
- Reduced magnetic stray field
- Easy installation



PROMED1 -  
Single-phase power supply



PROMED3 - Single-phase  
Power supply

### Benefits

- Very high efficiency
- Very low no-load current
- Minimal magnetic stray field
- Low mechanical noise
- Integrated PTC + thermo controller
- Protection against short-circuit and overload (external)
- Low heat build up
- Electronically damped start-up.
- No inrush current peak, minimum loads on
- the supply grid or Connected equipment eg. UPS



### REO Unimed - Transformers for worldwide medical applications

The REO UNIMED can be configured to use many different input voltage combinations, ensuring safety standards can be maintained on a world-wide basis.

The UNIMED series are designed for installation in a compact housing or on mounting plates. The units have safe terminals for easy connection. The special winding design ensures a safe separation of primary and secondary circuits and compliance with the required air and creepage distances.

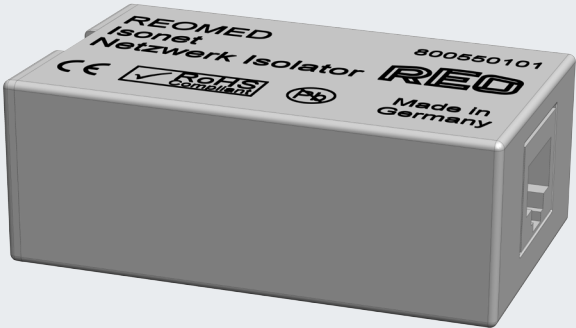
Another advantage of the REO-UNIMED: By using UL tested and high quality insulating materials functional safety and long product life is ensured. The series is manufactured according to the REO insulation system B1 (UL-No: E251513).



REOMED Isonet - Network isolator

REOMED Isonet Network isolator

The REOMED Isonet network isolator is used for electrical isolation of devices in copper wire-bound Ethernet networks. The isolation protects equipment and people from the effects of possible electrical voltage spikes on power supplies. Potential equalization currents on the shielding of the network cable are reliably prevented.



Advantages

- Protection in both transfer directions
- Interruption of the shield connection of the network cable
- No additional power supply required
- No software installation required
- Maintenance-free
- RoHS compliant
- EN 60950-1
- EN 60 601-1

Isolation voltage	4	[KV]
Input / output connector	RJ45	
Supported network protocols	10BaseT, 100BaseTx, 1000BaseT	
Insertion loss	-1,3 max.	[dB]
Return loss	-8 min.	[dB]
Protection	IP 20	
Max. voltage of the connected devices	250	Vac rms
Operating temperature	-10 ...+70	[°C]
Storage temperature	-40 ... +85	[°C]
Humidity	10 ... 90 (without condensation)	[%]
Housing	plastic	
Weight	45	[g]
Dimensions (B x H x T)	25 x 66 x 40	[mm]

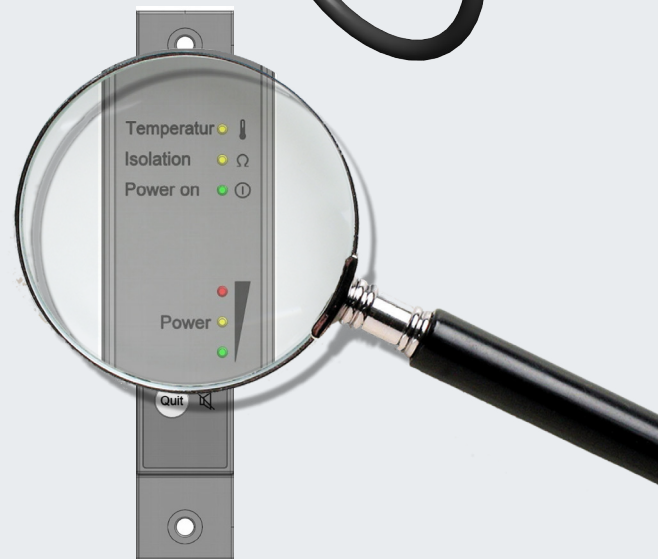
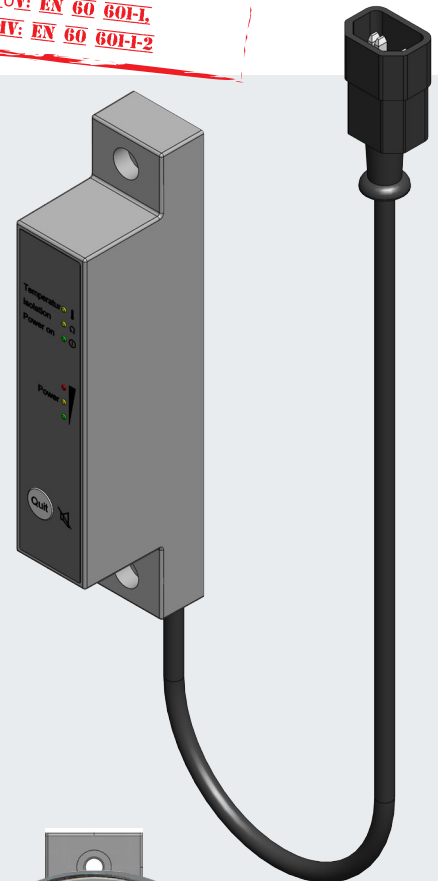
REO Netzwerkisolator

**IN COMBINATION WITH THE  
REOMED ISOLATION TRANSFORMERS  
ACCORDING TO:  
TUV: EN 60 601-1  
EMV: EN 60 601-1-2**

## Isomonitor - Isolation monitor for REOMED transformers

Technical data*			
Rated voltage	230	115	[V]
Operation range	200 - 240	100 - 120	[VAC]
Response value	≤ 50	≤ 25	[kOhm]
Response time	< 2		[sec.]
Signal display	Yellow LED (temperature): Transformer temperature limit exceeded Yellow LED (isolation): Isolation fault Green LED (Power on): Running  Load of the Transformer (Power): Green LED: 30% Yellow LED: 60% Red LED: 90%		
Acoustic signal	Pulsing for isolation fault Continuous for temperature fault		
Ambient operating temperature	0 ...+40		[°C]
Relative humidity of environment	30 ...75		[%]
Protection class	II		
Protection	IP 20		
Dimensions [H x B x T]	192 x 34 x 56		[mm]

REO ISOMONITOR



**\*Note: The ISOMONITOR has been designed solely for use with REOMED isolation transformers.**

## ISOMONITOR - Isolation monitor for REOMED transformers

Normal safety devices used for protection against isolation failures, such as residual- current circuit-breakers (RCD) used in domestic installations, cannot detect isolation breakdown on the secondary side of isolating transformers.

The ISOMONITOR monitors the dielectric resistance between both of the live output- socket terminals of the isolation transformer and earth potential, and generates a warning signal in the event of a fault condition. The insulation resistance is constantly monitored to ensure that it does not drop below a limit of 50 kOhm (25 kOhm). If it does fall below this value, then both an acoustic alarm (sound pulsating at approximately 3kHz and 98 db) and a visual signal (LED display) are generated.

The ISOMONITOR can be connected to one of the socket outlets of the isolating transformer.

Further functional options are monitoring of the temperature of the transformer including audible and visual alarm, as well as a visual display of the transformers power consumption.

## Benefits

- Easy to operate
- Audio/Visual alarm
- Functional test
- Display of power consumption (optional)
- Temperature warning (optional)



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