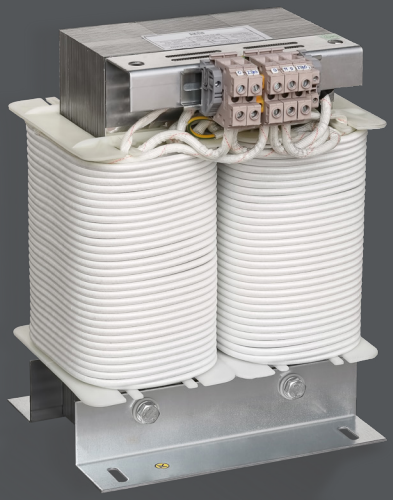
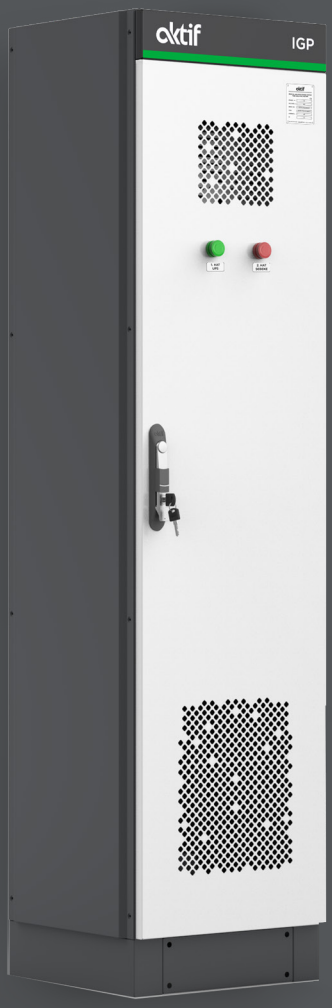
Isolated Power Systems







Medical Solutions

IG | IT | MED Series

aktif
ELEKTROTEKNİK

Isolated Power Systems
IG Series

Isolated Power Supply Panels

Isolated power panels are used in Group 2 rooms in medical locations, and they consist of auxiliary devices and test combinations such as isolating transformer, insulation monitoring device and insulation fault location devices.

IT system different from TN and TT systems, when an insulation failure occurs, IT system ensures that there is no electrical problem by preventing the circuit breakers from tripping and interrupting the system. The medical equipment continues to function, the fault currents are reduced to non-critical values, and the energy interruption is prevented.

Insulation level is continuously monitored by the isolated power panels and if a value less than 50 kΩ is detected alarm is created and logged. Aforementioned alarm can also be displayed through the OCP series operating room control panels, LAP 70 Local Alarm Panel and RAI 70 Remote Alarm Panel.

Isolated power panels, which have a fault location detection system, have the feature of detecting in which line the insulation fault occurred. Thanks to this feature, the time to detect the location of the insulation fault is reduced.



Technical Features

- Power of system 3,15 ... 10 kVA
- Rated voltage 230 Vac
- Rated frequency 50 / 60 Hz
- Communicates with the RAI 70 Remote Alarm Indicator with standard Modbus RTU protocol
- Monitoring insulation resistance, load current and temperature of the transformer
- Color of panel
  - Door RAL 9003
  - Side covers RAL 7015

Application Areas

Medical locations where Group 2 rooms are available, like:

- Hospitals
- Health Care Centers
- Dental Clinics
- Esthetic Centers
- Animal Hospitals

Standards

- IEC 60364-7-710 Requirements for special installations or locations - Medical locations
- IEC 61558-2-15 Particular requirements and tests for medical isolating transformers
- IEC 61557-8 Equipment for testing, measuring or monitoring of protective measures - Part 8 : Insulation monitoring devices for IT systems
- IEC 61557-9 Equipment for testing, measuring or monitoring of protective measures - Part 9 : Equipment for insulation fault location in IT systems
- Low-voltage switchgear and controlgear - Part 5-1: Control circuit devices and switching elements

Advantages

- Communication with Modbus RTU protocol
- Standard compact design from 3,15 to 10 kVA rated power up to 24 outgoings
- High speed transfer between power supplies
- Flexiblty for tailor made production

Technical Specifications

	IGP	IGT	IGD	IGH
Power Supply - Main - Safety	✓ -	✓ ✓	✓ -	✓ ✓
Insulation Monitoring Device	✓	✓	✓	✓
Changeover Module	-	✓	-	✓
Insulation Fault Location Device	-	-	✓	✓
Alarm Outputs - Insulation fault - Overload - Overtemperature - Switchover failure - Insulation fault location	✓ ✓ ✓ - -	✓ ✓ ✓ ✓ -	✓ ✓ ✓ - ✓	✓ ✓ ✓ ✓ ✓
Rated Power	3,15 / 4 / 5 / 6,3 / 8 / 10 kVA	3,15 / 4 / 5 / 6,3 / 8 / 10 kVA	3,15 / 4 / 5 / 6,3 / 8 / 10 kVA	3,15 / 4 / 5 / 6,3 / 8 / 10 kVA
Rated Voltage - Main - Safety	230 Vac -	230 Vac 230 Vac	230 Vac -	230 Vac 230 Vac
Rated Frequency	50 / 60 Hz	50 / 60 Hz	50 / 60 Hz	50 / 60 Hz
Rated Insulation Level	3 kV / 1 min	3 kV / 1 min	3 kV / 1 min	3 kV / 1 min
Leakage Current to Enclosure	< 0,5 mA	< 0,5 mA	< 0,5 mA	< 0,5 mA
Response Range	50 ... 750 kΩ	50 ... 750 kΩ	50 ... 750 kΩ	50 ... 750 kΩ
Fault Detection Responce Time	< 2 s	< 2 s	< 2 s	< 2 s
Switchover Time	-	< 200 ms	-	< 200 ms
Operating Temperature	-5 ... 50 °C	-5 ... 50 °C	-5 ... 50 °C	-5 ... 50 °C
Storage Temperature	-25 ... 60 °C	-25 ... 60 °C	-25 ... 60 °C	-25 ... 60 °C
Cooling System	Natural	Natural	Natural	Natural
Protection Class	IP 31	IP 31	IP 31	IP 31
Distribution Outgoings	6 ... 24	6 ... 24	6 ... 24	6 ... 24
Color - Door - Side cover	RAL 9003 RAL 7015	RAL 9003 RAL 7015	RAL 9003 RAL 7015	RAL 9003 RAL 7015
Standards	IEC 60364-7-710	IEC 60364-7-710	IEC 60364-7-710	IEC 60364-7-710

Dimensions (w x d x h) (mm)

Nr of Distribution Outgoings	IGP	IGT	IGD	IGH
1 ... 6	405 x 405 x 1700	405 x 405 x 1700	405 x 405 x 1700	405 x 405 x 1700
7 ... 12	405 x 405 x 1700	405 x 405 x 1700	405 x 405 x 1700	405 x 405 x 1700
13 ... 18	405 x 405 x 1850	405 x 405 x 1850	405 x 405 x 1850	405 x 405 x 1850
19 ... 24	405 x 405 x 2000	405 x 405 x 2000	405 x 405 x 2000	405 x 405 x 2000

Isolated Power Systems
IT Series

Isolating Transformers

IT series medical isolating transformers are manufactured in accordance with IEC 60364-7-710 and IEC 61558-2-15 standards. IT isolating transformers are used to supply power at Group 2 rooms of medical locations such as operating rooms, intensive care units and as addition they are also used to power laboratory instruments and other sensitive devices.

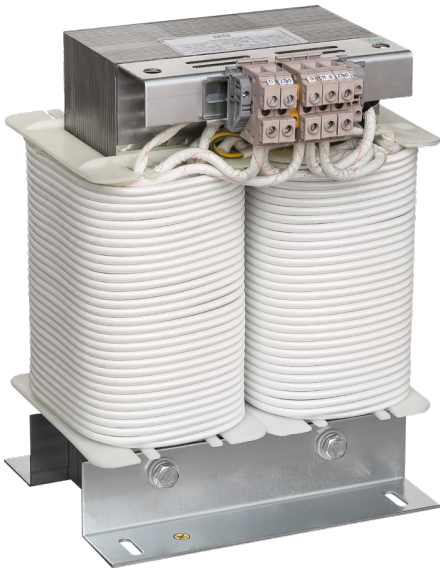
The design of the isolating transformers is aimed at reducing the impact of electrical faults through electrostatic protection. The IT series medical isolating transformers have galvanically isolated windings to minimize electrical interference, with an electrostatic shield placed between the primary and secondary windings. The output of the transformer is connected to an insulated terminal of the equipotential junction.

The overload current and temperature of the isolating transformer are monitored instantly by the IMD 30 Insulation Monitoring Device in the system. Isolating transformers have overload protection and temperature monitoring with PTC thermistors placed into the windings. They are produced from 3,15 to 10 kVA having high excessive load capacities.

IT series medical isolating transformers are the ideal choice to provide reliable power supply from 3,15 kVA to 10 kVA where sensitive devices such as medical facilities are used.

Technical Specifications

Power Range	3,15 ... 10 kVA
Primary Voltage	230 Vac
Secondary Voltage	230/115 Vac
Frequency	50/60 Hz
Windings	Al or Cu
Inrush Current (Ie)	< 12xIn
Leakage Current	< 0,5 mA
No-load Input Current (Io)	< 3%
No-load Output Current (Io)	< 236 Vac
Short-Circuit Voltage (Uk)	< 3%
Max Ambient Temp.	40°C
Protection Class	IP 00 (IP 21 optional)
Isolation Class	F (155 °C) or B (120 °C)
Cooling	Natural
Standards	IEC 61558-2-15



Application Areas

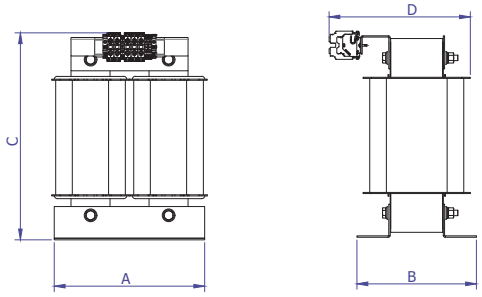
Medical locations where Group 2 rooms:
- Hospitals
- Health Care Centers
- Dental Clinics
- Esthetic Centers
- Animal Hospitals.

Advantages

- Overload protection
- Standard Al, optional Cu windings
- Standard power ranges from 3,15 to 10 kVA
- Standard F class, optional B class
- High excessive load capacity

Dimensions (A x B x C x D) (mm)

Type	Power	A	B	C	D
IT-3.15	3,15 kVA	170	195	250	215
IT-4	4 kVA	170	195	250	215
IT-5	5 kVA	270	145	370	185
IT-6.3	6,3 kVA	300	145	400	200
IT-8	8 kVA	300	160	400	200
IT-10	10 kVA	270	216	372	256



Isolated Power Systems
MED Series

IMD 30 Insulation Monitoring Device

IMD 30 Insulation Monitoring Device is one of the most important equipment of IT grounding systems.

It detects insulation fault in the system by constantly checking the insulation resistance level between phases and earth. At the same time, it monitors the load current and the temperature of the isolating transformer in accordance with the IEC 60364-7-710 standard and ensures that the warning system is started when it reaches critical values.

The device, which can indicate alarm situations visually and audibly, has the feature of showing insulation fault, overload current and over temperature information of the insulation transformer both on its screen and with the LEDs on it. It also transfers this alarm information to the RAI 70 Remote Alarm Indicator and the LAP 70 Local Alarm Panel, allowing the relevant personnel to be informed about the malfunctions.

IMD 30 Insulation Monitoring Device communicates with the EDS 30 Fault Location Device, allowing the authorized personnel to intervene faster with the fast detection of any insulation fault based on line.

Standards

- IEC 60364-7-710 Requirements for special installations or locations - Medical locations
- IEC 61557-8 Equipment for testing, measuring or monitoring of protective measures Part 8 : Insulation monitoring devices for IT systems

Advantages

- High measurement resolution with 1 kΩ
- Low measurement uncertainity less than 9%
- Wide measurement range between 50 kΩ - 750kΩ
- Display with backlight
- Modbus RTU protocol



Technical Specifications

Brand	Aktif
Model	IMD 30
Supply Voltage	24 Vac/dc
Power Consumption	9,5 W
Frequency	50/60 Hz
Internal Resistance	≥240 kΩ
Insulation Measurement Range	50 kΩ ... 750 kΩ
Insulation Measurement Resolution	≤1 kΩ
Insulation Measurement Uncertainty	≤9%
Response Time	≤2 s
Current Measurement Range	0-50 A
Current Measurement Resolution	0,1 A
Temperature Sensor Types	NTC Thermistor PTC Thermistor
Max. Supported Fault Location Devices	4
Fault Relay Types	1 x Relay output (NO, NC)
Display	16x2 LCD with backlight
Alarms	Insulation fault Overload Overtemperature
Visual Warnings	LEDs, LCD Display
Communication Protocol	Modbus RTU (Used to only communicate with IT devices)
Wire Range	Rigid: 0,5 ... 2,5 mm^2 Flexible: 0,5 ... 2,5 mm^2
Enclosure	DIN rail according to DIN43880
Net Weight	289 gr
Humidity	<95%
Operating Temperature	-5 °C ... +55 °C
Standards	IEC 61557-8 IEC 60364-7-710

Isolated Power Systems
MED Series

CTS 30 Changeover Module



CTS 30 Changeover Module is the equipment that enables to select the convenient one between two different sources supplying the isolated power panel and transfer it to the output.

The changeover module, which performs the transfer process within the periods specified by the IEC 60364-7-710 standard, monitors the continuous voltages of the two sources and automatically transfers when the voltage value drops below 0,9xUn and exceeds 1,15xUn. Thus, any power interruption that may occur from the failure of the supply source or from the supply cables is prevented.

Advantages

- Transfer Time: ≤ 40 ms
- Monitors via RAI 70 Remote Alarm Indicator and LAP 70 Local Alarm Panel

Technical Specifications

Brand	Aktif
Model	CTS 30
Supply Voltage	220 Vac
Power Consumption	5,5 W
Frequency	50/60 Hz
Transfer Time	≤40 ms
Protection Class	IP 20
Utilization Category	AC-15
Ui	690 V
Uimp	4,0 kV
Fault Protection	⧈ (Class II)
Display	16x2 LCD with backlight
Alarms	Source fault
Visual Warnings	LEDs
Communication Protocol	Modbus RTU (Used to only communicate with IMD 30)
Wire Range	Rigid: 0,5 ... 2,5 mm^2 Flexible: 0,5 ... 2,5 mm^2
Enclosure	DIN rail according to DIN43880
Net Weight	425 gr
Humidity	<95%
Operating Temperature	-5°C ... 55°C
Standards	IEC 60947-5-1 IEC 60364-7-710

EDS 30 Fault Location Device



EDS 30 Fault Location Device is designed to detect the location of insulation fault in IT systems. EDS 30 Fault Location Device communicates with the IMD 30 Insulation Monitoring Device with the Modbus RTU protocol and determines which line the fault originates from in a very short time. It continuously scans its 6 current transformers and if a leakage is detected the alarm LED of the faulty channel lights up.

Alarm details are displayed on the LAP Local Alarm Panel and the RAI 70 Remote Alarm Indicator.

Advantages

- Elegant designed to detect the location of insulation fault in IT systems
- Fault detection at 6 lines in one device

Technical Specifications

Brand	Aktif
Model	EDS 30
Supply Voltage	24 Vac/dc
Power Consumption	1,5 W
Frequency	50/60 Hz
Number of Channels	6
CT Inner Diameter	11,5 mm ± 0,3
Response Value	<0,5 mA
Response Time	<2 s
Alarms	Residual current
Visual Warnings	LEDs
Communication Protocol	Modbus RTU (Used to only communicate with IMD 30)
Wire Range	Rigid: 0,5 ... 2,5 mm^2 Flexible: 0,5 ... 2,5 mm^2
Net Weight	438 gr
Humidity	<95%
Operating Temperature	-5 °C ... +55 °C
Standards	IEC 61557-9 IEC 60364-7-710

Isolated Power Systems
MED Series

LAP 70 Local Alarm Panel



LAP 70 Local Alarm Panel indicates alarms like insulation fault, overcurrent, transformer over temperature visually and audibly that are detected by the IMD 30 Insulation Monitoring Device and stores each event with their timestamp.

Advantages

- Automatic adressing thanks to synchronization with IMD 30
- Up to 150 event logs thanks to its internal real time clock.
- Remote insulation test and fault contact outputs

Technical Specifications

Brand	Aktif
Model	LAP 70
Supply Voltage	24 Vac/dc
Power Consumption	8 W
Frequency	50/60 Hz
Number of Event Logs	150
Fault Relay Types	2 x Relay output (NO, NC)
Display	128x64 Graphical LCD
Alarms	Insulation fault Overload Overtemperature
Visual Warnings	LEDs Graphical LCD Display
Internal Communication Protocol	Modbus RTU (Used to only communicate with IT devices)
Wire Range	Rigid: 0,5 ... 2,5 mm^2 Flexible: 0,5 ... 2,5 mm^2
Net Weight	289 gr
Cable Length	≤1000 m
Humidity	<95%
Operating Temperature	-5 °C ... 55 °C
Standards	IEC 60364-7-710

RAI 70 Remote Alam Indicator



The RAI 70 Remote Alarm Indicator enables remote monitoring of all data, alarms, and events in the isolated power system through its LCD screen. Additionally, it generates visual and auditory alarms in the event of errors, thanks to its equipped features beyond the LCD screen.

Advantages

- Remotely monitor all alarm information detected by the isolated power system
- Up to 150 event logs thanks to its internal real time clock.
- Up to 32 supported insulation monitoring device
- Remote insulation test and fault contact outputs
- Modbus RTU protocol

Technical Specifications

Brand	Aktif
Model	RAI 70
Supply Voltage	24 Vac/dc
Power Consumption	8 W
Frequency	50/60 Hz
Max. Supported Insulation Monitoring Device	32
Number of Event Logs	150
Fault Relay Types	2 x Relay output (NO, NC)
Display	128x64 Graphical LCD
Alarms	Insulation fault Overload Overtemperature
Visual Warnings	LEDs Graphical LCD Display
Internal Communication Protocol	Modbus RTU (Used to only communicate with IT devices)
BMS Communication	Protocol: Modbus RTU (8 data bits, no parity, 1 stop bit) Boud rate: Selectable (300..115200 bits/s)* Device ID: Selectable (0...255)
Wire Range	Rigid: 0,5 ... 2,5 mm^2 Flexible: 0,5 ... 2,5 mm^2
Net Weight	289 gr
Cable Length	≤1000 m
Humidity	<95%
Operating Temperature	-5 °C ... 55 °C
Standards	IEC 60364-7-710

Isolated Power Systems
MED Series

HMI 70 Hospital Monitoring Interface



HMI 70 Hospital Monitoring Interface is used to remotely monitor all alarm information detected by the medical isolated power system. HMI 70 Hospital Monitoring Interface communicates with RAI 70 Remote Alarm Panel and IG Series Medical Isolated Power Panel, allowing the technical service personnel in the hospital to monitor transfer alarm, insulation fault, overtemperature fault and overload fault information audibly and visually through a single product.

Advantages

- Monitoring the entire system on a single screen
- Customizible zone names

Technical Specification

Brand	Aktif
Model	HMI 70
Supply Voltage	24 Vdc
Power Consumption	8,5 W
Max. Supported Remote Alarm Indicator	25
Max. Supported IT Panel for Each Zone	20
Display	7" TFT LCD (65535 colors)
Alarms	Insulation fault Overload Overtemperature
Visual Warning	7" TFT LCD Display
Communication Protocol	Protocol : Modbus RTU (Used to only communicate with RAI 70) Baud rate : 9600
Wire Range	Rigid: 0,5 ... 2,5 mm^2 Flexible: 0,5 ... 2,5 mm^2
Weight	970 gr
Cable Length	≤1000 m
Humidity	<95%
Operating Temperature	0 °C ... 50 °C

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