Baaske Medical

MED MI 1005

Network Isolators

General

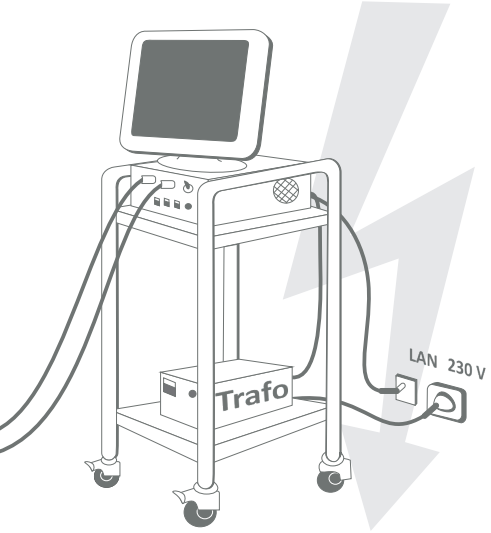
Network isolators protect patients and medical devices from excessive leakage currents that may flow through the data network. Every device connected to the network represents a risk, and connection to the data network means that there is a risk for patients, too. The MI 1005 Ethernet Isolator protects patients, equipment and users from dangerous leakage currents that can appear unexpectedly at any time.

On the following pages, we will present various solutions for galvanically isolating your data network using MI 1005 medical network isolators. You decide whether you want a flexible version for your system, the possibility to fix the unit to the wall or, for example, a built-in version for a medical product.

Contents

►	General	1
◄	Example of use: MI 1005	3 - 4
►	MED MI 1005 Network Isolator	5 - 6
◄	MI 1005 E Medical Built In Isolator	7 - 8
►	Network Isolator MED MI 1005 MB	9 - 10
◄	Functions and benefits	11
►	Technical specifications	12 - 14
◄	Circuit	15
►	Frequency range	16
◄	Compliance with standards and certificates	17
►	Manufacturer contact	19

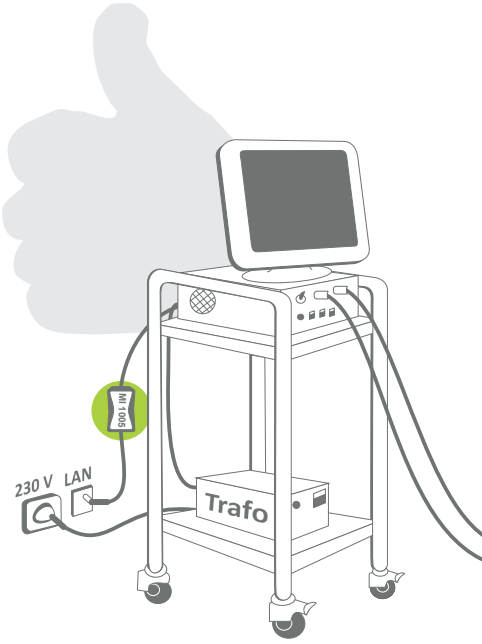
Example of use: MI 1005



not electrically protected

In the left-hand example, an isolating transformer has been used to ensure electrical safety. As the medical device or system (PC, measuring station, ...) is connected to a network (LAN), this electrical safety is rendered ineffective. The reason for this is that the LAN connection has not been electrically protected (isolated) via the network cable.

In the right-hand example, a network isolator has been used between the LAN output socket and the medical device or system (PC, measuring station, ...), thus galvanically isolating the entire system from the LAN.



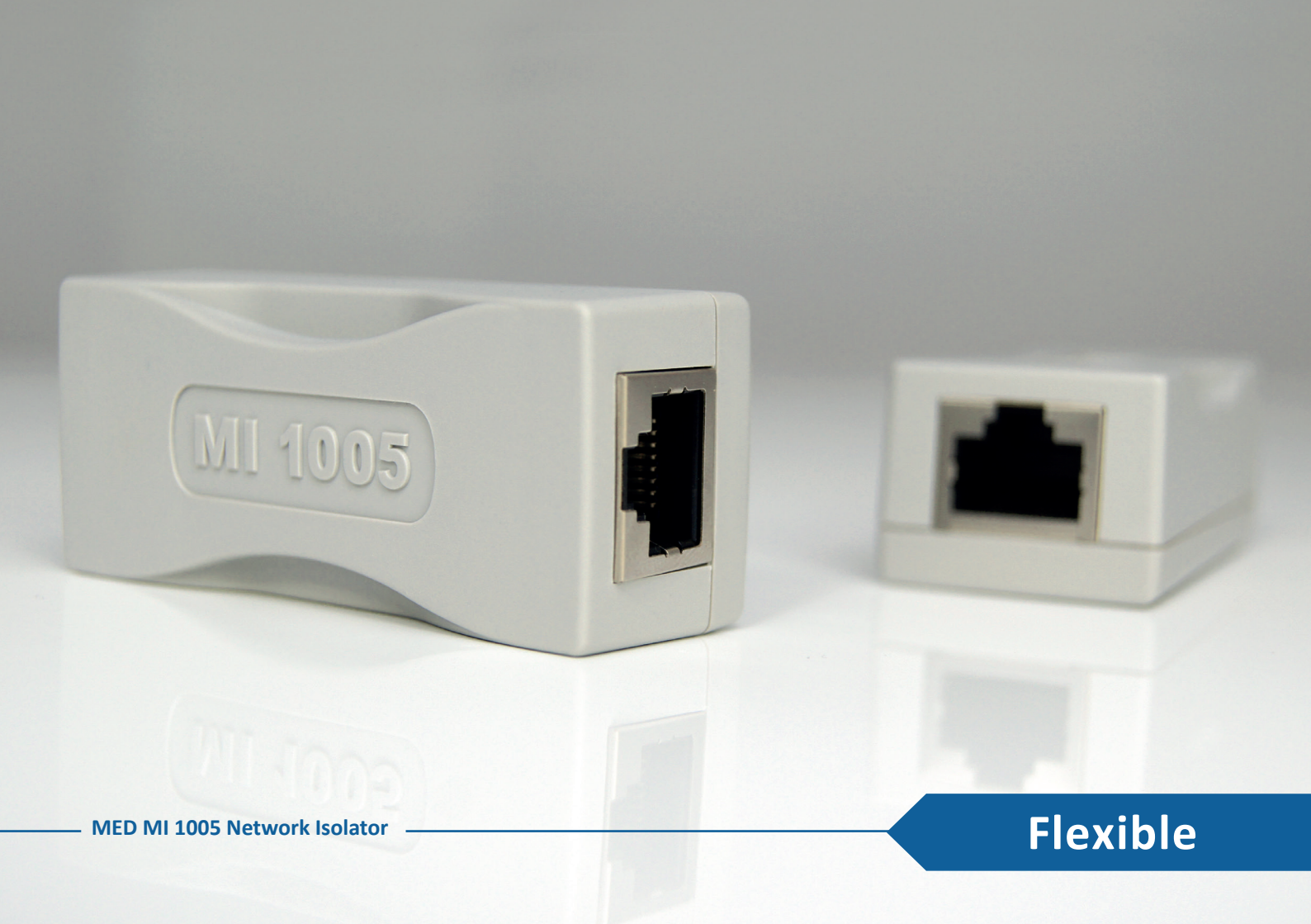
electrically protected

HRS
M 1005

MED MI 1005 Network Isolator

The flexible and easy way to immediately isolate medical devices.

- easy handling - no installation required
- compact, sleek and suitable for universal use
- protect patients, users and fixtures from dangerous leakage currents in less than 5 seconds
- no fixed cables - if a network cable is faulty, there is **no need** to replace the entire isolator
- light and resistant housing - can be plugged into any system with a network connection
- low-cost purchasing and efficient operation - no independent power supply required



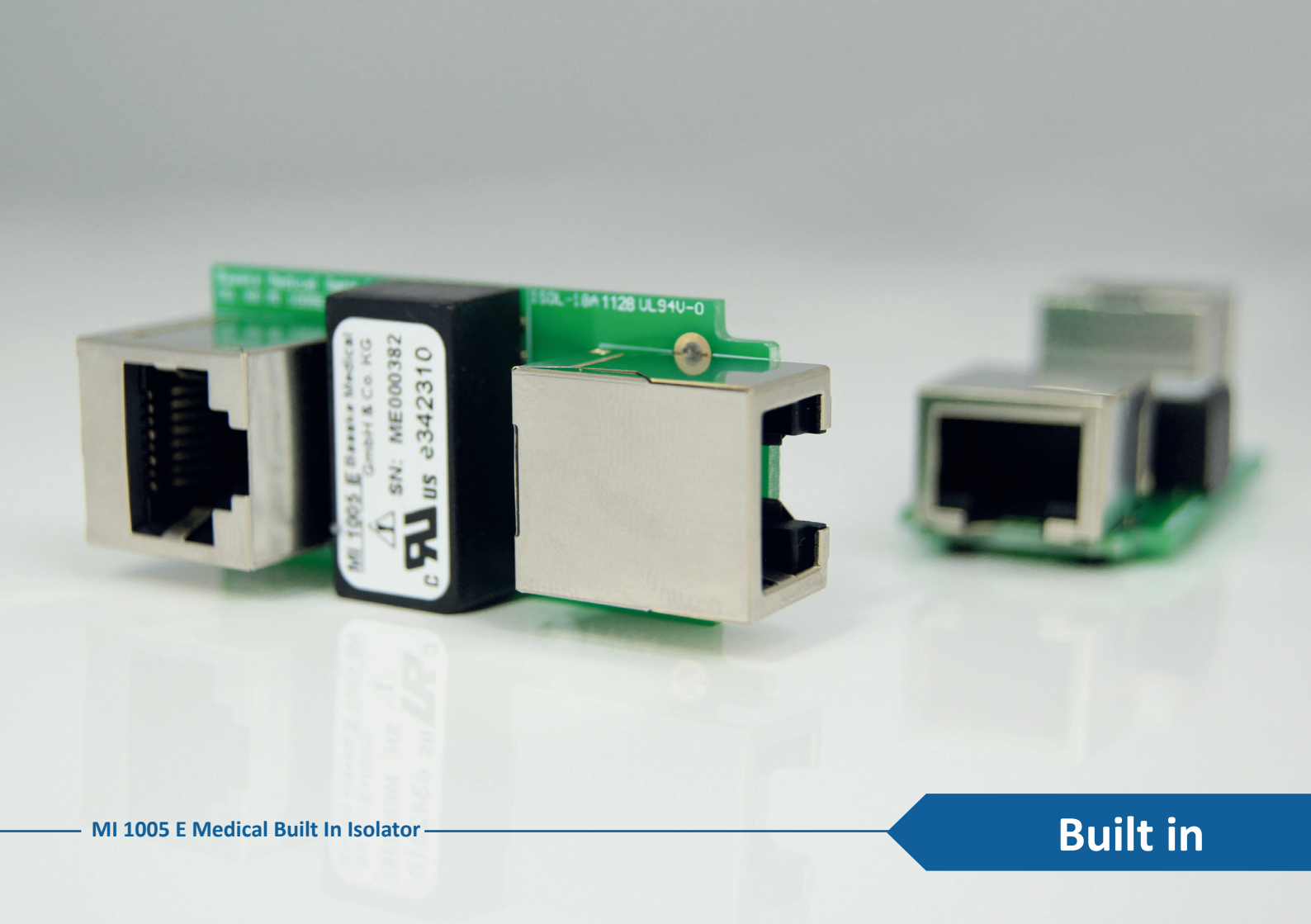
MED MI 1005 Network Isolator

Flexible

MI 1005 E Medical Built In Isolator

Built-in isolator for galvanic network isolation of electrical medical devices

- ideal for manufacturers of medical devices
- isolation from the walls of the device housing
- easy installation thanks to standardized Harting PushPull technology
- offers planning reliability and long-term availability
- small and light - weights just 20g (approx.)
- no fixed cables - easy to replace
- Harting PushPull technology, up to IP68
- low-cost purchasing and efficient operation - no independent power supply required

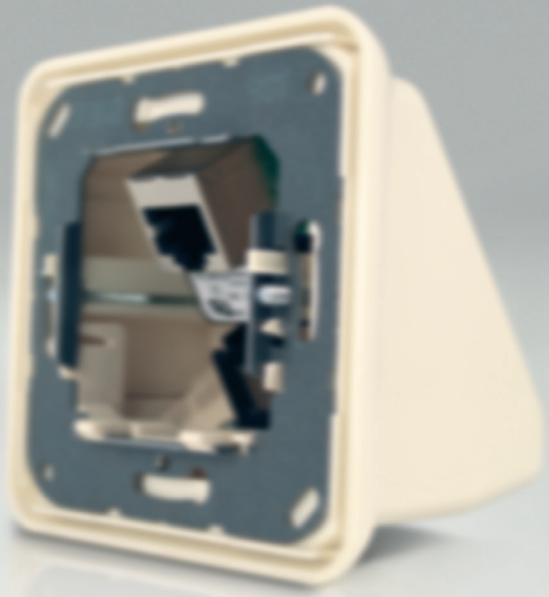


Built in

Network Isolator **MED MI 1005 MB**

Wall-mounted medical network isolator

- isolation from the wall outlet
- fixed installation - cannot be transported
- robust housing - absorbs minor impacts and protects the isolator and network connection cables
- no installation of drives or additional software required
- low-cost purchasing and efficient operation - no independent power supply required
- completely secure connection with Harting PushPull technology



Network Isolator MED MI 1005 MB

Wall-mounted

Functions and benefits

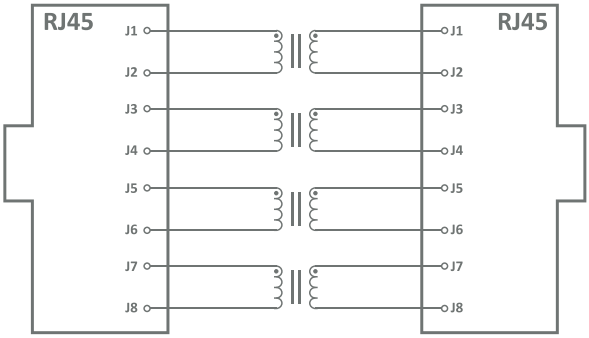
- protection against incalculable currents in the patient environment
- no fixed cables - easy to replace
- long-term availability
- years of acceptance on the global market
- long-lasting: 1 error in 21 000 000 hrs
- isolation up to 5 kV AC; up to 10 kV DC (10 sec.) under stress conditions
- fulfills the statutory specification for 4 kV as per 60601-1
- additional suppression of short-term excess voltage in the signal cables
- outstanding Ethernet performance, 1 dB attenuation
- virtually loss-free – behaves like a 1 m network cable
- lowest possible insertion loss, no resistors or capacitors
- tested and standardized in accordance with IEC 60601-1 (3rd Edition)
- UL production monitoring for consistent quality
- reinforced isolation in accordance with IEC 60601-1
- can be combined with Cat5 / Cat6 patch cables
- suitable for use in medical sectors
- 24-hour reliable and maintenance-free continuous operation
- low failure rates – 5-year guarantee

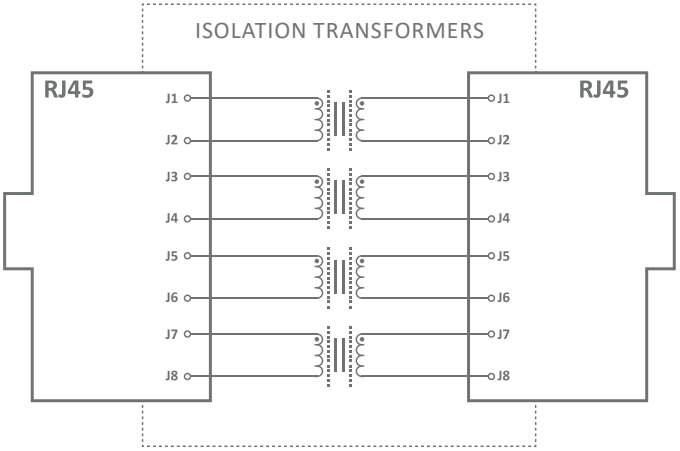
Technical specifications

Type:	Network Isolator **MED MI 1005**	Network Isolator **MED MI 1005 Retail**	**MI 1005 E** Medical Built In Isolator	Network Isolator **MED MI 1005 MB**
Housing color:	light gray	light gray	no housing	creamy white
Dimensions (L x B x H):	65 x 29 x 23 mm	65 x 29 x 23 mm	51 x 23.4 x 18.2 mm	81 x 81 x 57 mm
Weight approx.:	50 g	50 g	20 g	106 g
Operating mode:	continuous operation	continuous operation	continuous operation	continuous operation
Dielectric strength of signal and shielding:	5000 V 50/60 Hz over 1 min.			
Data throughput:	10/ 100/ 1000 MBit/s			
Connections:	2 x RJ45 in/output			
DC stress test (10 sec.):	10 kV			
Network specifications:	IEEE 803.2 from 10/100/1000-BaseT, twisted-pair, auto-conf (behaves entirely transparently within the network)			
Material:	UL94V-0 / RoHS compliant / SvHC / REACH			
Product rating (UL):	passive, electronic components, isolation level DI (300 V AC / 400 V DC) tested at 5 kV AC			
Duration of operation between failures:	0.21 x 10 ^ 8 (1 error in 21 000 000 hrs)			
Return loss:	min. 10 dB			
Insertion loss:	max. 1.1 dB			
Standards:	IEC 60601-1 (3rd Edition); IEC 60601-1-2, UL 60601 (UL Listed E342310); IEEE 802.3			
Item no.	2005674	2006484	2006633	2007704

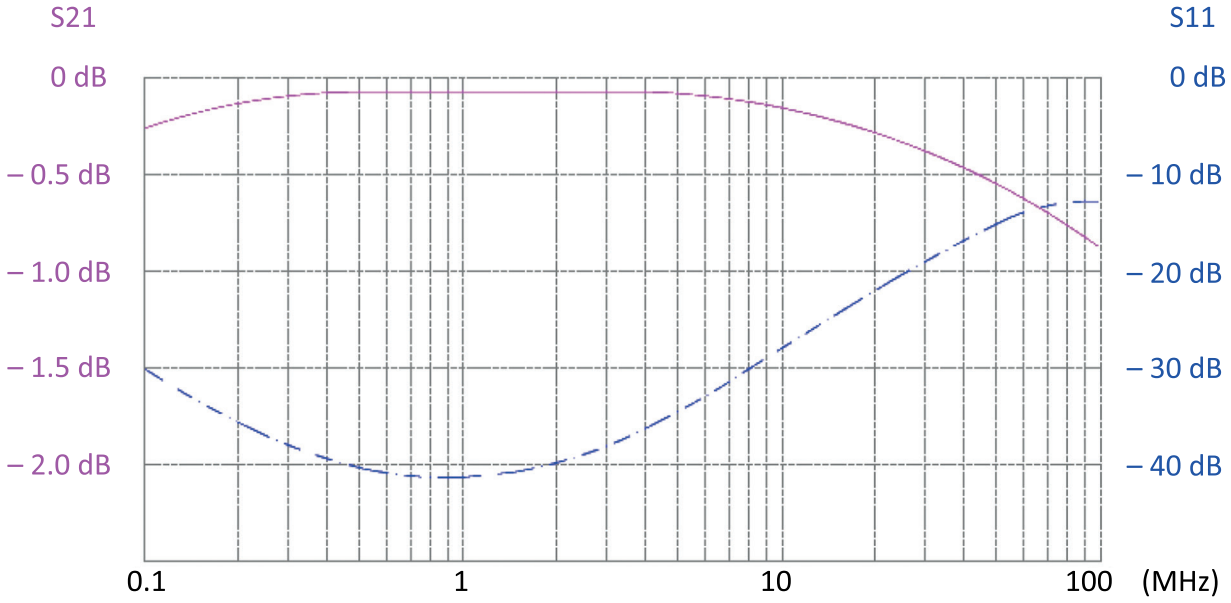
Type:	Network Isolator **MED MI 1005**	Network Isolator **MED MI 1005 Retail**	**MI 1005 E** Medical Built In Isolator	Network Isolator **MED MI 1005 MB**
Ambient conditions during operation				
Temperature:	-10°C to +85°C			
Relative humidity:	10% to 90% (non-condensing!)			
Air pressure:	700 hPa to 1060 hPa			
Ambient conditions during storage / transport				
Temperature:	-10°C to +85°C			
Relative humidity:	10% to 90% (non-condensing!)			
Air pressure:	700 hPa to 1060 hPa			
Warranty:	5 years			
Scope of delivery:	Network Isolator MED MI 1005	25 cm patch cable, handbook, outer packaging and serial number	MI 1005 E Medical Built In Isolator	1 x mounting plate; 1 x cover; 1 x frame; 1 x MI 1005 E Medical Built In Isolator; 1 x retaining plate; 1 x Harting PushPull; 2 x screws; 2 x nuts; 1 x assembly instructions; 1 x handbook
Item no.	2005674	2006484	2006633	2007704

Circuit


RJ45
J1
J2
J3
J4
J5
J6
J7
J8
RJ45
J1
J2
J3
J4
J5
J6
J7
J8


ISOLATION TRANSFORMERS
RJ45
J1
J2
J3
J4
J5
J6
J7
J8
RJ45
J1
J2
J3
J4
J5
J6
J7
J8

Frequency range



S21: Insertion loss
S11: Return loss

Compliance with standards and certificates

The MI 1005 network isolators fulfill the high requirements of current medical standards as per IEC 60601-1 (3rd Edition) and IEC 60601-1-2. For this reason, these galvanic network isolators are ideally suited to use in medical sectors.

The MI 1005 network isolators are listed for their consistent quality by UL in accordance with applicable UL standards and requirements. Representative samples of this product have been assessed by UL and fulfill the applicable safety standards. Use on US and Canadian markets is therefore possible.

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Rev.5 as at 01.2022