MRI Trigger Interface 4.4

Interfacing the MR Scanner with SCAN

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1 MRI Trigger Interface

MRI Trigger Interface User Guide

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1.1 Contact Information

For Technical Support.....

If you have any questions or problems, please contact Technical Support through any of the following routes.

If you live outside the USA or Canada, and purchased your system through one of our international distributors, please contact the **distributor** first, especially if your system is under warranty. In all other cases, please use **techsup@neuroscan.com**, or see the other Support options on our web site (*http://www.neuroscan.com*). Or, if you live in the USA or Canada, please call **1-800 474-7875**. International callers should use **877-717-3975**.

For Sales related questions, please contact your local distributor, or contact us at **sales@neuroscan.com**.

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1.2 Device Classification

ATTENTION: CONSULT ACCOMPANYING DOCUMENTS BEFORE USING

The MRI Trigger Interface PN3361 assembly is a 5 VOLT DC powered assembly and should be used only according to the manufacturer's instructions. Replacement parts and accessories may be obtained from the manufacturer.

Manufacturer:

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There is no guarantee that interference will not result from operation of this device in proximity or connected to some other device. If interference occurs, the user or operator is encouraged to try and correct the interference by one or more of the following measures: (1) Change the orientation of the two devices relative to one another; (2) Increase the separation between the two devices; (3) Check the power source and grounding for the two devices; and (4) Consult the dealer, Technical Support, or an experienced technician for help.

Classification
The assembly is ordinary equipment not protected against ingress of water and should not be used in the presence of any spilled liquids. It is not designed to be suitable for use in the presence of a flammable anesthetic mixture of air and oxygen or nitrous oxide. The device is capable of continuous operation.

Technical Description

MRI Trigger Interface Input: 5 Volts D.C. +/-.25 volts @ <30mA

MRI Trigger Interface

Weight:	75gr	
Dimensions	Height:	66.5cm
	Width:	66.5cm
	Depth:	18.8cm

Shipping and Storage Maximum Limits
-20°C to +70°C, 10% to 100% humidity, non-condensing RH, 500hPa to 1060hPa. After unpacking, allow devices to adjust to room temperature for at least two hours prior to interconnection and application of power.

Operational Limits

+15°C to +30°C, 25% to 95% humidity, non-condensing RH, 700hPa to 1060hPa pressure.

Warnings and Precautions
Instructions
Read instructions before operating the device.

The MRI Trigger Interface operates using 5 volts D.C. supplied by a host PC USB cable.

This device is not equipped with appropriate alarms required for use in monitoring clinical parameters of a patient where it is necessary to alert the user of situations which could lead to death or severe deterioration of the patient's state of health.

CAUTION: MEDICAL ELECTRICAL EQUIPMENT needs special precautions regarding EMC (ElectroMagnetic Compatibility) and needs to be installed and put into service according to the EMC information provided in the ACCOMPANYING DOCUMENTS.

CAUTION: Portable and mobile RF communications equipment can affect MEDICAL ELECTRICAL EQUIPMENT. Use of this type of equipment in close proximity to the Power Unit should be prohibited. If portable or mobile RF communications devices are used in the vicinity of the Power Unit, the user or operator should verify normal operation of the device.

Environment

The MRI Trigger Interface is designed to be used in a research laboratory environment. Extremes of humidity, temperature, or pressure should be avoided. The device should not be used in a location where contact with liquids is possible, and if liquids are spilled on or in the area of the device, it should not be used until it can be ensured that the fluid or its residue will not affect device operation. Questions should be directed to the manufacturer or its representatives.

Cleaning Instructions

The MRI Trigger Interface enclosure may be cleaned with a damp sponge or cloth and mild nonabrasive cleanser. Take care to ensure that liquid does not spill in or on the device. Do not use abrasives or detergents.

Repair

There are no user serviceable parts in the MRI Trigger Interface. Contact your dealer or Compumedics/Neuroscan Technical Support if you believe the MRI Trigger Interface is in need of repair.

Maintenance

Compumedics/Neuroscan suggests that the assembly be visually inspected at least once per year. Replace any worn or frayed cables, and contact your dealer or Compumedics/Neuroscan technical support if you have concerns about what you see. This inspection interval may be shortened for devices that are moved often or experience unusually heavy use. No other maintenance or service is required.

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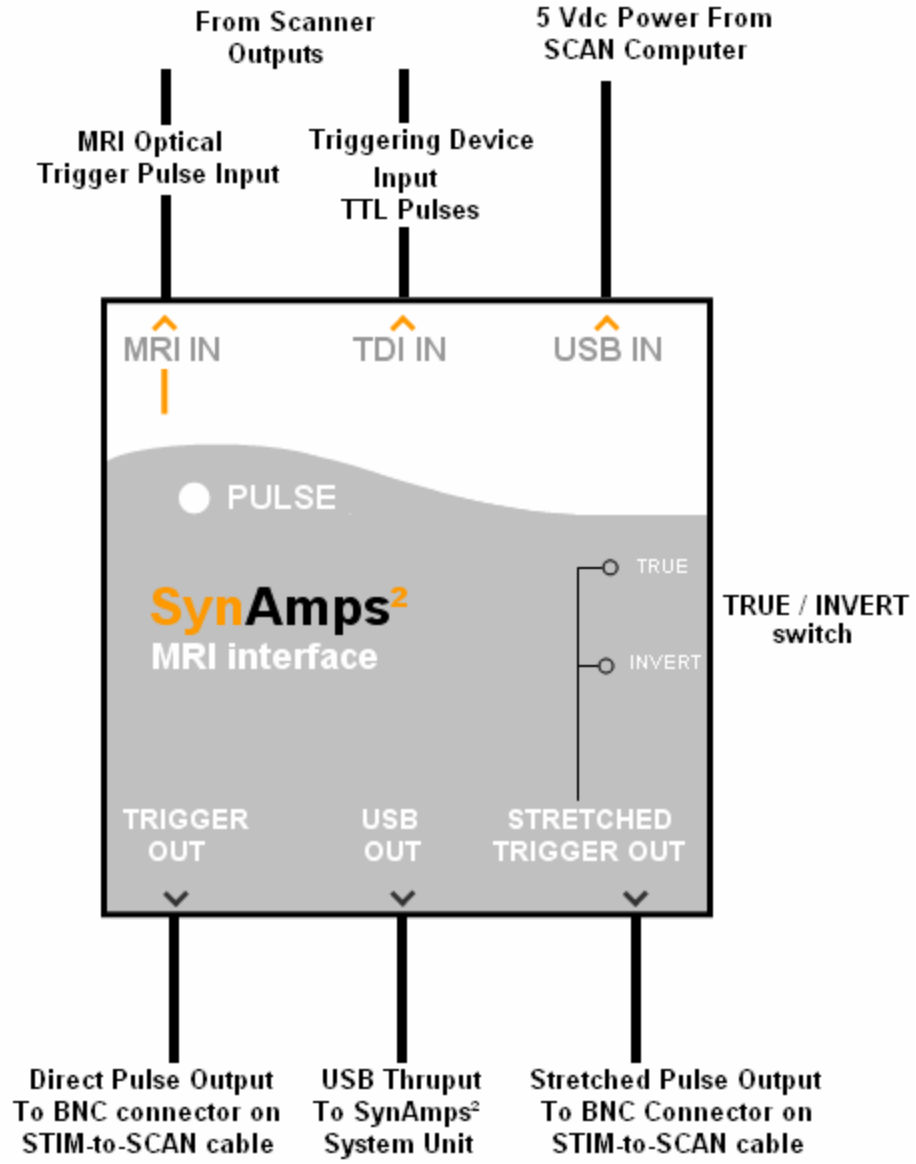
2 Installation and Details

The MRI Trigger Interface is designed for use with SynAmps^2 systems. It provides an interface between the MR scanner trigger output and the Scan ACQUIRE program. The triggers sent from the scanner will be registered in the ACQUIRE software during acquisition.



2.1 Installing the MRI Trigger Interface

The MRI Trigger Interface "splices" in between the Scan computer and the *SynAmps RT* System Unit, using the longer USB cable from the computer to the Interface (USB IN), and the shorter USB cable from the Interface to the System Unit. Alternatively, if you have extra USB connections on the Scan computer, you can connect a USB power cable to the Interface, and use a separate cable to connect the Scan computer to the System Unit.

1. The Interface will accept *optical* or *TTL* trigger pulses, depending on the output generated by your scanner. For example, Seimens has optical trigger outputs, and GE and Varian have TTL pulses. (On GE scanners, use the RF UNBLNK output). *Optical* pulses should be connected to the **MRI IN** input. *TTL* pulses should be connected to the **TDI IN** (Triggering Device Input) input.

2. The MRI Trigger Interface is powered by a USB cable from the *Scan computer*. Connect the USB cable from a USB port on the computer to the **USB IN** input on the Interface.

3. Connect the short USB cable from the **USB OUT** port to the USB port on the back of the *SynAmps RT* System Unit.

4. You can connect the output trigger cable to either the **Trigger OUT** or **Stretched Trigger OUT** connector. **Trigger OUT** passes the trigger directly through, without any changes to the signal (used primarily for debugging). Generally, you will want to extend, or stretch, the duration of the pulse, and it is recommended that you use the **Stretched Trigger OUT** output. (Pulses are stretched to approximately 65 to 70μsec). Connect the other end of the trigger cable to the BNC connection on the *STIM-to-SCAN cable*.

5. TRUE / INVERT switch. In the **TRUE** state, the resting TTL is 5V, and the trigger occurs when the voltage drops to 0V. In the **INVERT** state, the resting voltage is 0V, and trigger occurs at 5V. Set the switch according to your scanner's logic.

2.2 In Operation

When connected correctly, you will see the **Pulse** light blink when a trigger is passed through the interface. In ACQUIRE, in the CNT file, you will see a red (response) Type Code of 5 for each pulse from the scanner.

2.3 Troubleshooting

If you do not see any trigger events:

1. Verify the type of pulse being sent from the scanner (optical or TTL), and verify it is connected into the correct input on the Interface.
2. Verify all cable connections.
3. If you are not using the Stretched Trigger Output, try using it.
4. Try switching between TRUE and INVERT.

If you are still having problems, contact techsup@neuroscan.com.

If you notice **any** Mechanical Damage, contact techsup@neuroscan.com for return instructions.

DO NOT ATTEMPT TO REPAIR. WARRANTY WILL BE VOID IF UNAUTHORIZED REPAIR WORK HAS BEEN CARRIED OUT.