White Paper

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Using interconnect cables to slave ECG to a device with a lead selector

or without a lead selector…

One patient cable is enough to have on a patient. So we designed interconnect cables to go from the primary monitor to other ECG devices needed for monitoring and/or therapy to eliminate the need for multiple patient cables and assure an appropriate ECG signal.

An interconnect cable usually consists of a connector that mates with the output of a primary monitor, 14 feet of special cable, an attenuator network, and a patient cable input connector. No matter what lead you choose on the primary monitor, it will be displayed on the secondary monitor thru the Lead II selector position.

We chose to use lead II on the receiving device patient cable input end because it is the most common lead monitored (because it is most representative of a life-threatening ventricular waveform). It is also the configuration used when there is NO lead selection on a monitor! Why is that important; because when you plug the interconnect cable into the slaved device it will probably already be in lead II.

The ECG lead selected on the primary monitor will only be presented when the slaved monitor is set to lead II. -OR- the interconnect cable will only work when the secondary monitor is set to lead II (if a lead selector is present).

Primary monitor lead selection	Slaved monitor lead selection	Lead seen on slaved monitor
Lead II	Lead II	Lead II
Lead III	Lead II	Lead III
Lead AVL	Lead II	Lead AVL

Technical stuff;

The analog output (ECG waveform) of a monitoring device is typically one volt in amplitude and we attenuate it to one millivolt so we can connect it directly to the ECG lead II input of other ECG monitoring devices. Most outputs are isolated which provides assurance that the interconnect cable cannot inappropriately interact with the two devices connected.

We choose the 'ECG patient cable input' because it is always one millivolt in every manufacturer's equipment. ECG patient cable inputs are all isolated, which also provides assurance that the interconnect cable cannot inappropriately interact with the two devices connected. When appropriate, we do use the Auxiliary input.

User instructions: (over)

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Choose the end of your interconnect cable that looks identical to the patient cable connector and plug it into the patient cable connector of the unit to be slaved/remote.

Plug the other end of the interconnect cable into the output of the device that is connected to the patient via an ECG patient cable with electrodes. The output connectors vary both in type and location. Our web site can be helpful at this point. Sometimes there will be an output adapter or an output multiplier plugged directly into the primary monitor device, if so, plug the appropriate interconnect cable into that adapter/multiplier.

The output multiplier referenced above is a box with multiple jacks on a cable that allows multiple devices to be slaved from one patient monitor (with only one patient cable required).

Photo shows GE Healthcare PDM patient monitor output Multiplier/Adapter

Other notes.

Maguire Enterprises manufactures a full line of adapters which enables the user to have significant standardization when moving from dissimilar manufacturers devices. Many of them can be seen on our web site. MaguireEnterprises.com

Input Adapter: Adapts a patient cable input to 'look' like another manufacturers device. These are available for both ECG and Blood pressure. Example: A Philips patient cable can be connected to a Physio-Control defibrillator.

Output Adapter: Adapts the output of a device to 'look' like another manufacturers or model device to allow an interconnect cable designed for a different output to be used to slave from a different device. Example: A Philips interconnect cable designed to take the output of a Philips device can be used to take the output of a ZOLL defibrillator.

Output Multiplier: The output multiplier is a box with multiple jacks on a cable that allows multiple devices to be slaved from one patient monitor (with only one patient cable required). See above photo.