Hardware and Components: Philips Monitors in Critical Care
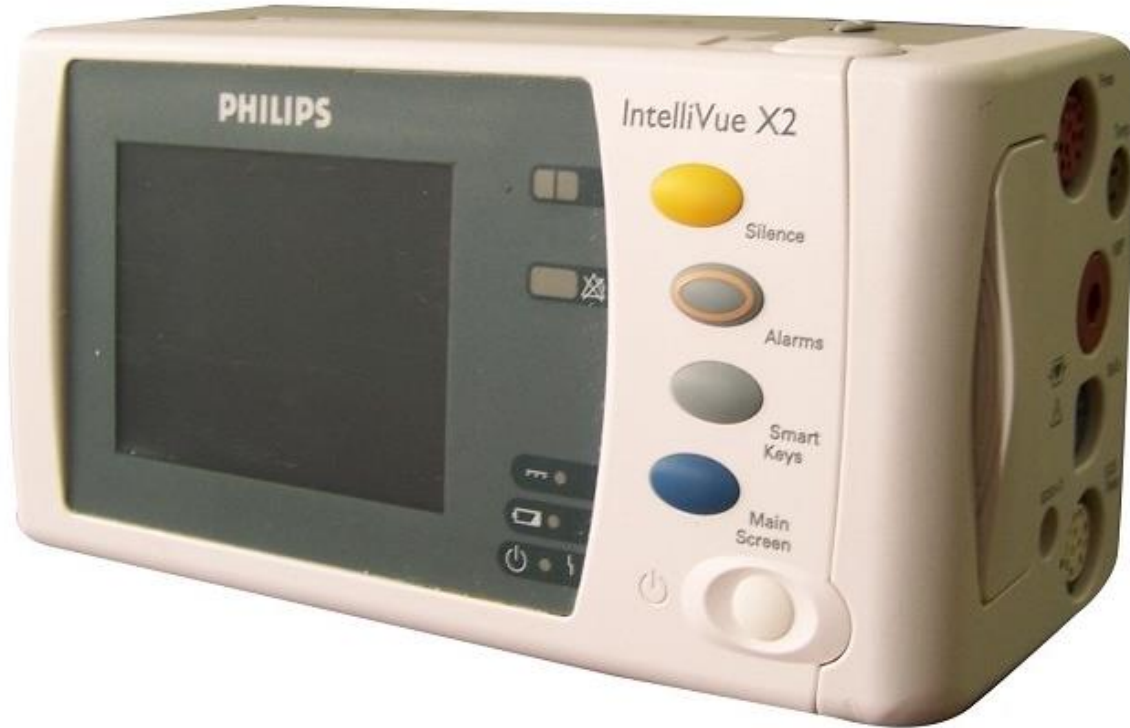

Intellivue MX 800 (the monitor):

This is the new bedside monitor. It is a touch screen.

Touch will work even when double gloved.

The monitor WILL NOT WORK unless the IntelliVue X2 is connected and is referred to as the "host monitor".

IntelliVue X2 (the "Brains")

IntelliVue X2:

This is the hard drive or brains. **The monitor (IntelliVue MX800) cannot work without it.**

Although it can be removed and used as a monitor during transport, the display is much smaller and provides only single pressure monitoring. It must be returned to the bedside before the bedside can be cleaned or used.

Continue to use the Philips MP5 for transporting patients.

IntelliVue MX 800 and X2 Relationship

When attached to the IntelliVue MX 800 the IntelliVue X2 acts as a Multi-Modal Module (MMS). It provides measurements, trends and patient information.

The IntelliVue X2 takes power from the host (IntelliVue MX 800) **including the power required to charge its battery.** Once connected, the host monitor controls all functions.

When the IntelliVue X2 is connected to the monitor, a blue bar on the screen will identify "Companion Mode" and "No Alarm Display".

Turning the Monitor On and Assessing the Charging Light
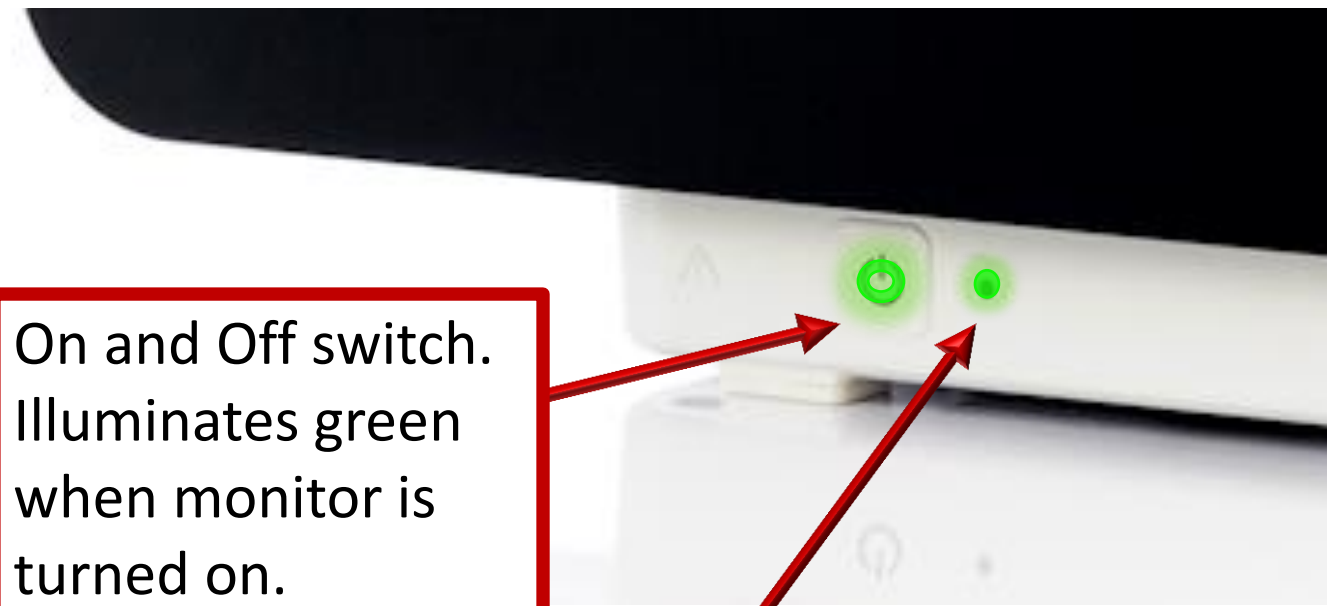
On and Off switch. Illuminates green when monitor is turned on.

Green light beside the on/off switch indicates that the monitor is plugged in. **Leave the monitor ON, the screen in standby and the IntelliVue X 2 attached when not in use in order to keep the IntelliVue X 2 charged.** A blinking light may indicate that the blue cable at the back of the monitor is loose.
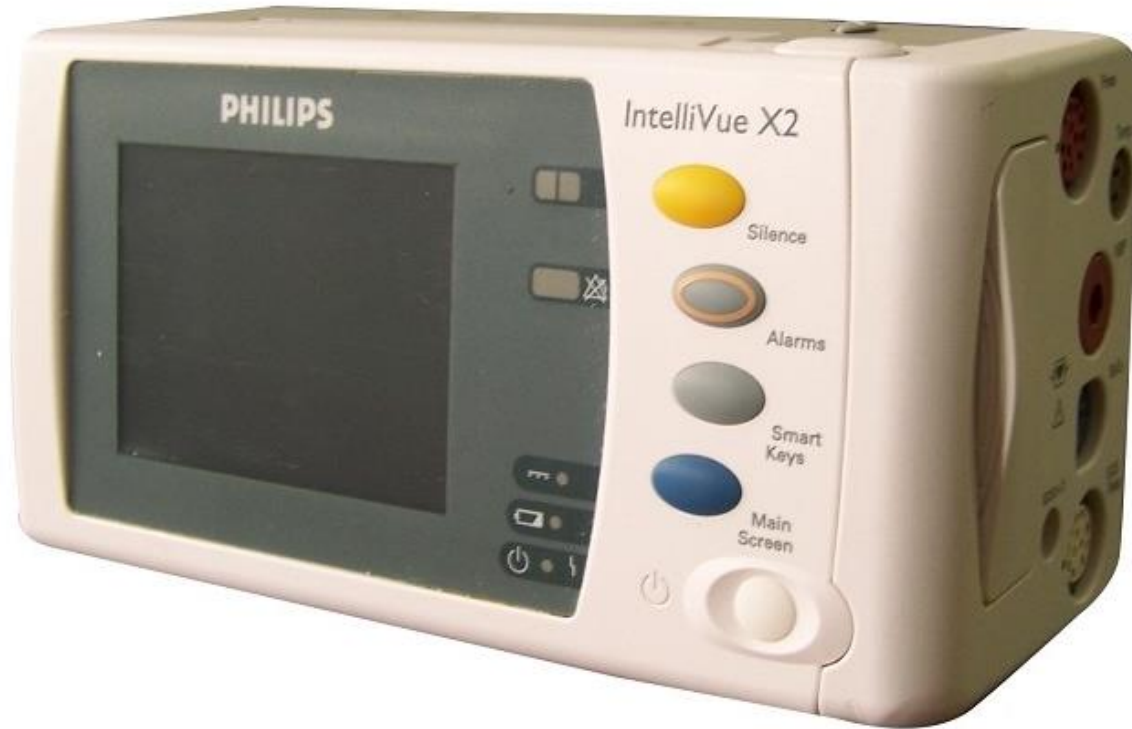
Menu keys

Each IntelliVue X2 includes ECG, one pressure, NIBP, temperature and SPO2 cables are connected at the side.

This is where all baseline cables are connected for bedside monitoring.

IntelliVue X2

IntelliVue X2:

Hard keys located on the front panel of the IntelliVue X2 allows menu navigation *when separated from the IntelliVue MX 800.*

The Bedside Setup

Each IntelliVue MX 800 will be mounted to a rack that has been attached to the arms at the bedside monitor.

The monitor can be easily adjusted up and down to obtain the optimal height for each user.

The IntelliVue X2 is mounted on the left side of the rack to a measurement extension module (the top of the rack can be seen behind the IntelliVue X2 and is highlighted in green).

The display side shown in this picture is not used when the IntelliVue X2 is attached to a bedside monitor (this is called the companion mode).
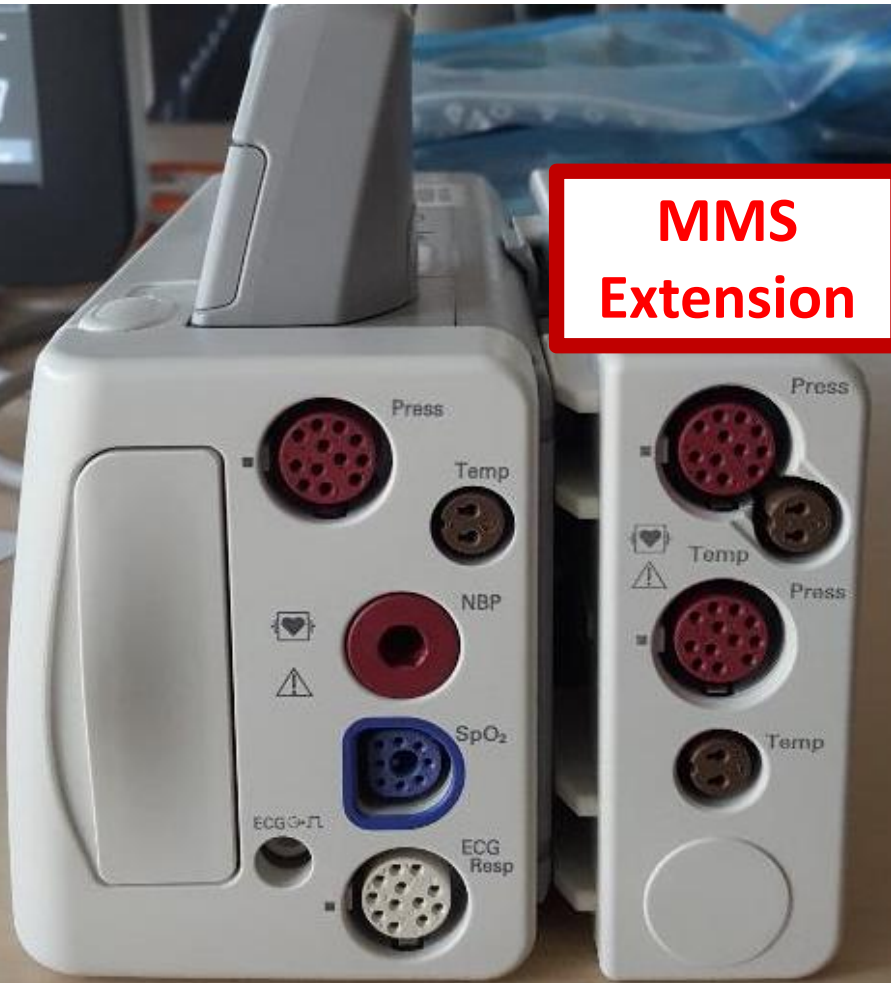
Module Rack

The front of the module rack is shown below with the IntelliVue X2 connected to the MMS extension. The MMS extension in this display includes End-Tidal CO2.

Additional stand alone modules are also shown. Hooks on the bottom are provided to keep cables tidy.

Display side of IntelliVue X2 is here

IntelliVue X2 and MMS Extensions

MMS Extension

The IntelliVue X2 is mounted to the rack by attaching it to a "Measurement Extension" (called an MMS extension).

In critical care, we will have 2 different MMS extensions available. Both of our MMS Extensions will include 2 additional pressures and temperature ports. The difference between our two MMS extensions will be that one will include End-Tidal CO_2 and the other does not. This picture shows an MMS Extension without End-Tidal CO_2.

MMS extensions can only provide monitoring when attached to an IntelliVue X2 **and the IntelliVue X2 is connected to an external power supply** (such as the host monitor or a battery extension). We do not currently have a battery extension.

Any extension that conflicts with those already being measured cannot be supported (for example, you cannot have 2 End-Tidal CO_2 extensions).
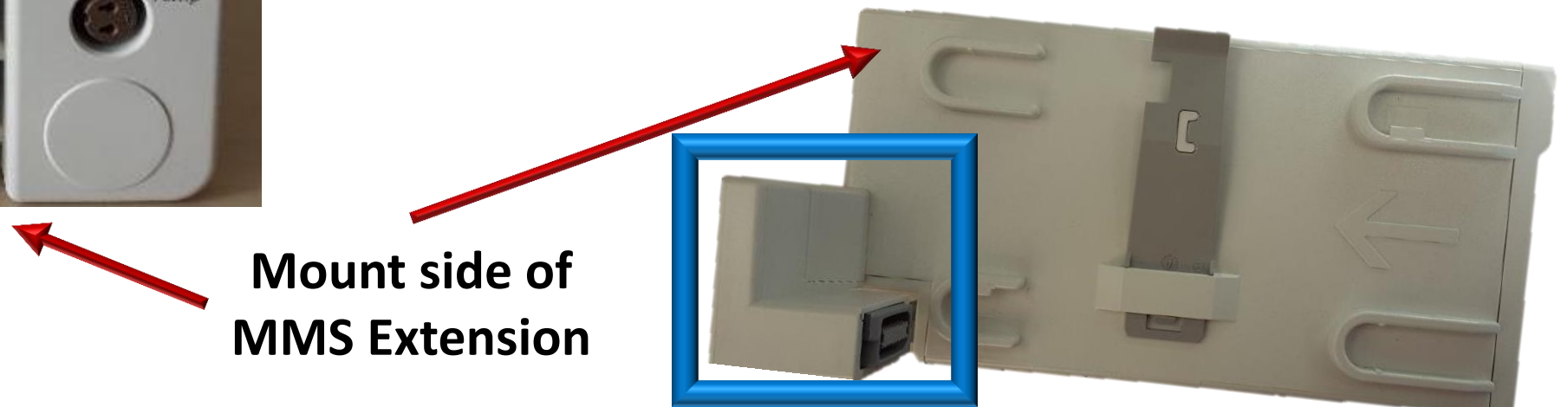
IntelliVue X2 and the MMS Extension

The picture below shows the mounting side of an MMS extension.

The connector highlighted in **Blue** interfaces the MMS extension and the IntelliVue X2 to the monitor (host). You cannot remove the interface connection.

You cannot add a second MMS extension. If you require more than 3 pressure waveforms, you will need to install a single pressure module for each additional wave.
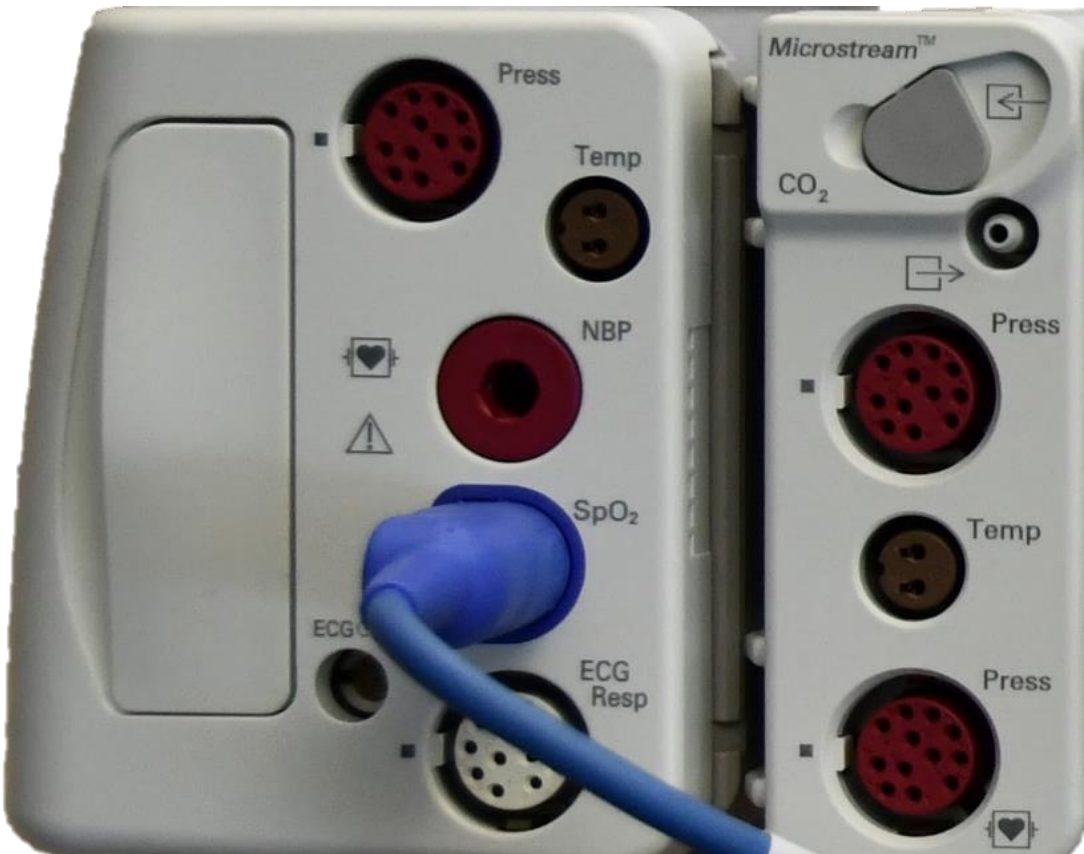
Mount side of MMS Extension

IntelliVue X2 with MMS Extension Disconnected

IntelliVue X2 with MMS Extensions

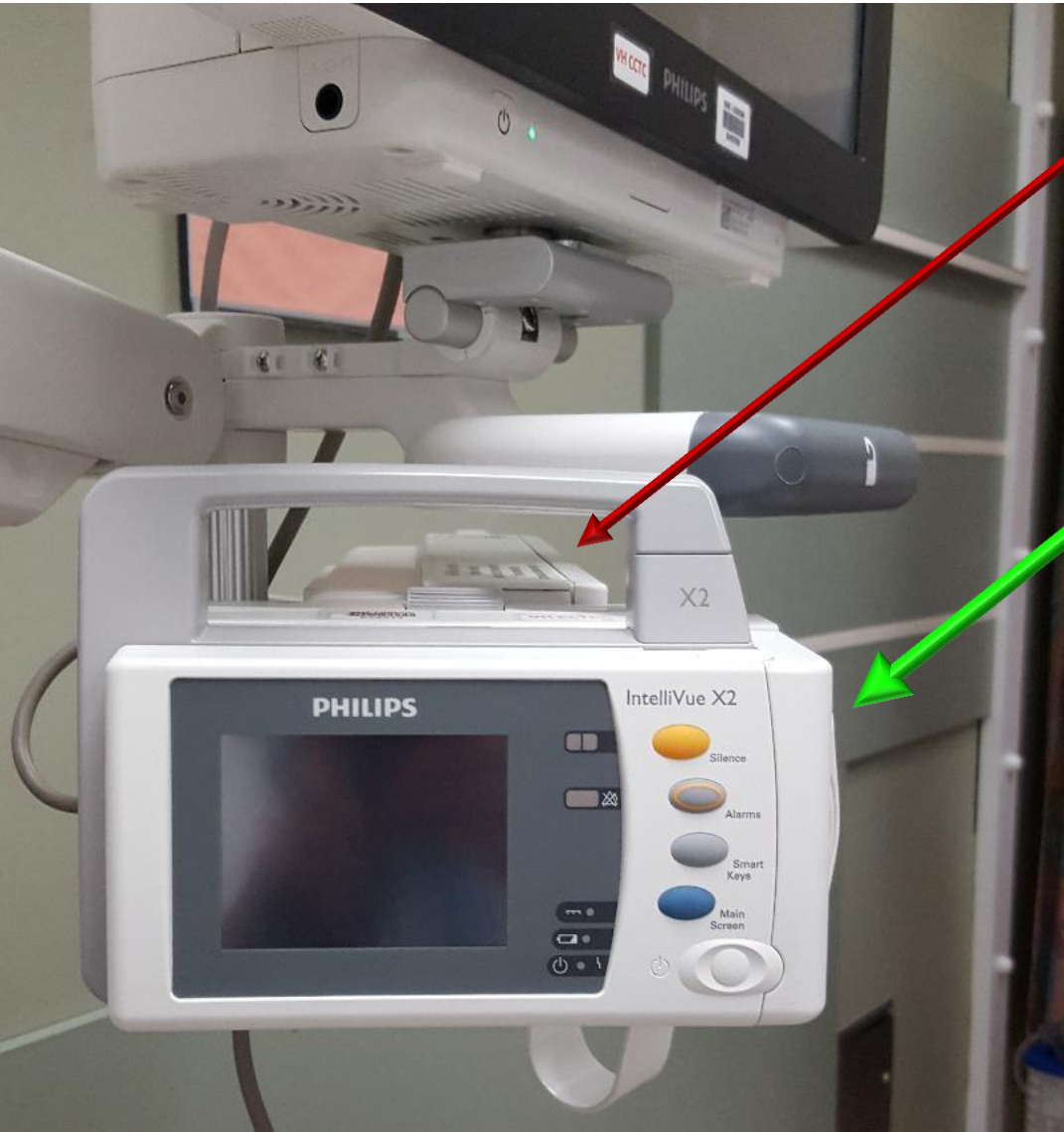Standard set-up *with* Microstream End-Tidal CO2 (M3015B)

Standard set-up *without* End-Tidal CO2. Notice the connection/disconnection point

IntelliVue X2 with MMS Extension: Bedside View

IntelliVue X2 display will be 90^0 to the rack
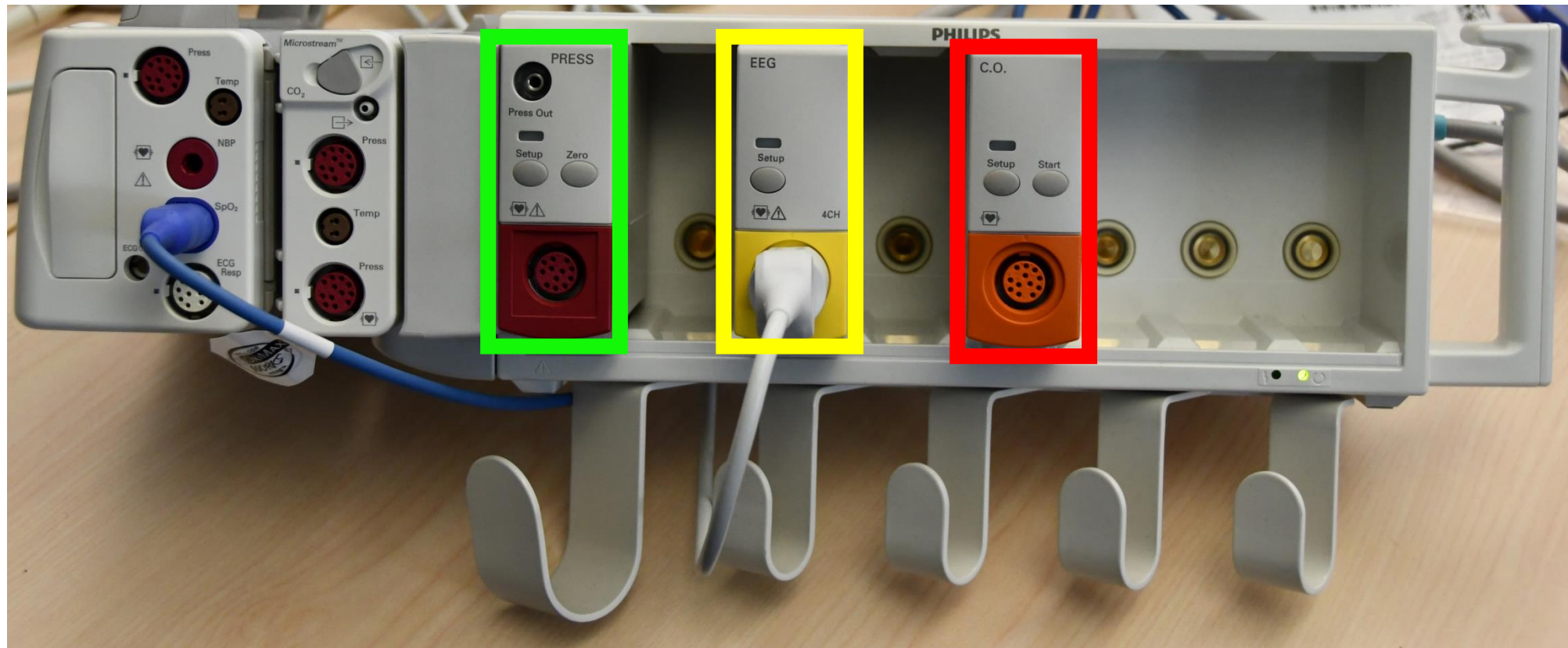
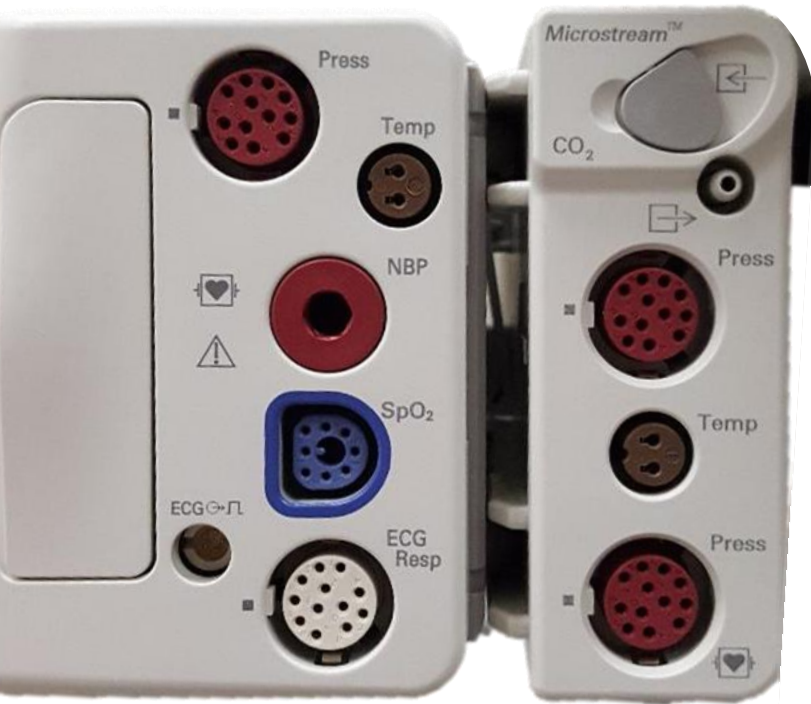Location of cable ports

Mounting Rack

Additional Measurement Modules

Additional modules can be added as needed including:

- CEEG
- Cardiac Output (this does not include any pressure waves)
- Single Pressure use if > 3 pressures required or to synchronize arterial pressure waveform from the IABP

Invasive Pressure Module Defaults

Pressure modules do not have standardized defaults like our previous monitors.

Instead, each pressure module will default to the same label that was assigned the last time that module was used.

If you plug in a second pressure module that has "ART" as the memory, you will be advised of a pressure conflict. To resolve this, you need to relabel your new pressure with a different name.

Invasive Pressure Module Defaults

To simplify setups and reduce the likelihood of conflict, assign pressure modules IN CCTC as follows:

Arterial pressure (Label is ART)
CVP
ICP

If a Pulmonary Artery Catheter is used, recall that we no longer have a bridge. The CVP and PA port both require separate transducers with continuous pressure monitoring. Reassign the lower pressure on the extension to the "PA" label or add a single pressure module.

The single pressure module is burgundy.

Turning on a Module Function

Monitoring should commence as soon as physiological data is presented to the monitor.

When you setup a monitor, if a cable is plugged in but there is no physiological data (e.g., no pressure transducer), a blue alarm will pop up to notify you that data is missing. Silencing this alarm once will stop all future alarms.

Pressure monitoring will automatically resume if you hook up a transducer at a later date and send data to the monitor.
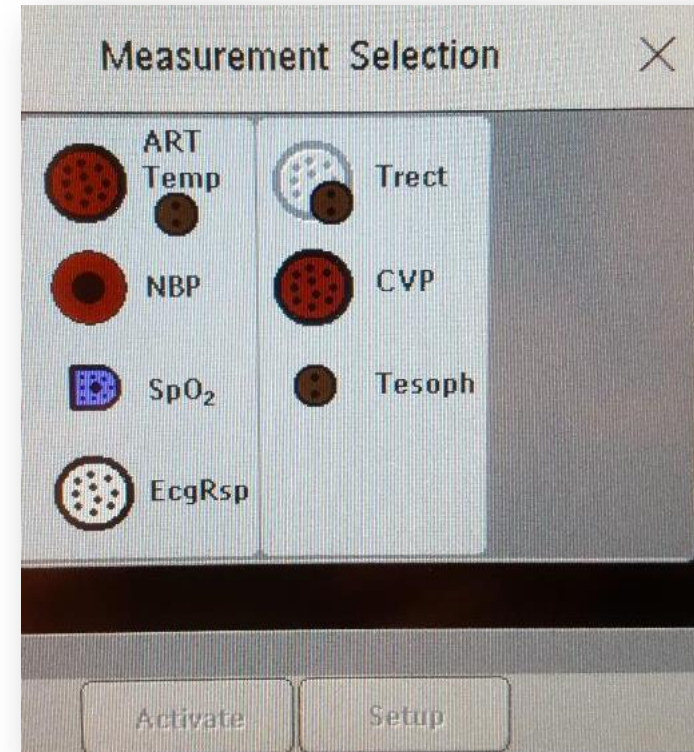
Unable to Select a Desired Pressure Option

If you attempt to label a waveform but the option is unavailable, this is because the label you attempted to use has already been assigned.

To resolve this conflict, choose the "Xylophone" located to the right of the "Main Screen".
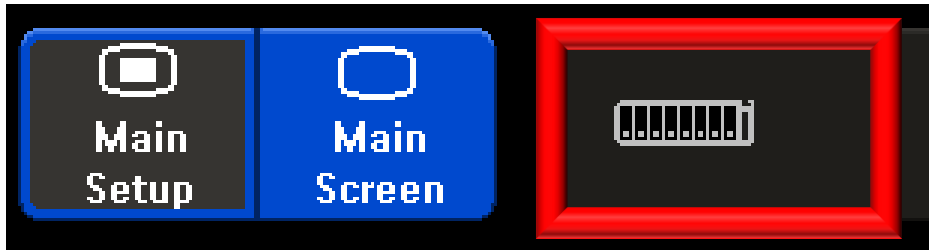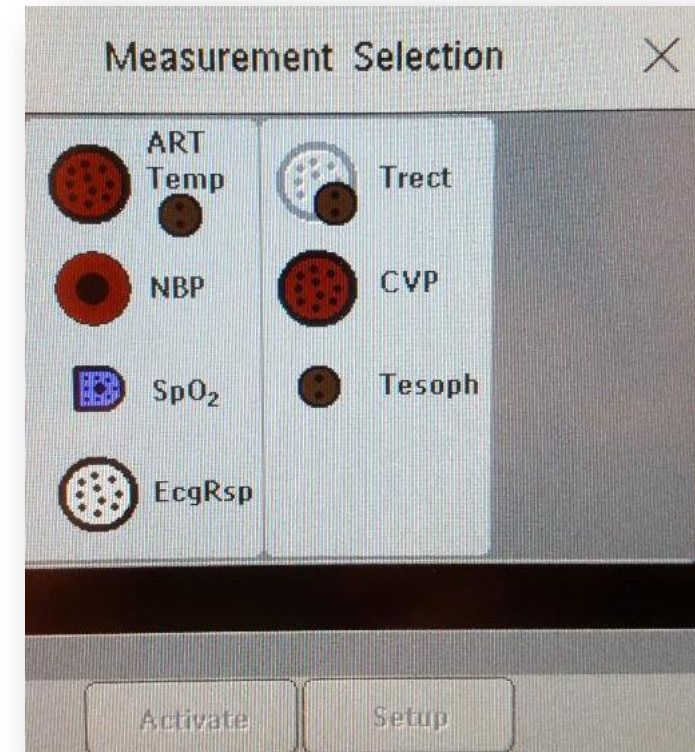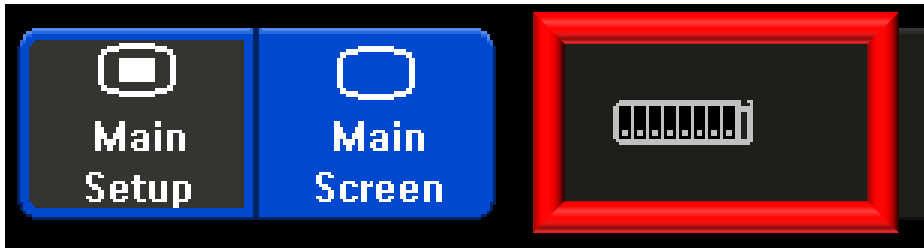

Touch on the pressure module with the same name and rename it.
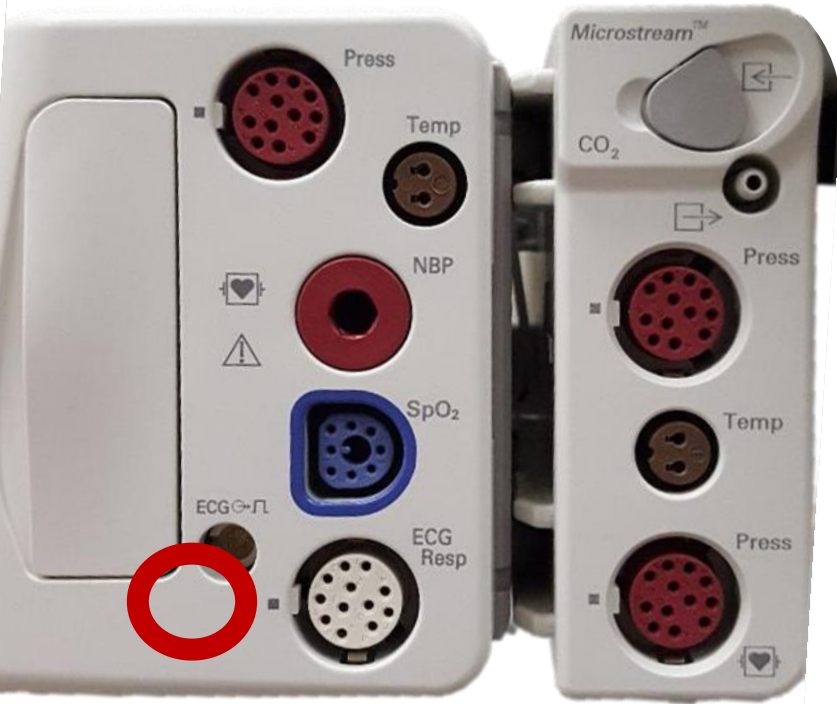
Turning on a Module Function

If monitoring does not commence, the module may have been turned off (*not recommended*). To reenable monitoring, press the "piano keys" located at the bottom right of the monitor beside the "Main Screen". Choose the module and reenable it.

Synchronization

The synchronization INPUT jack on the IntelliVue X 2 is available if you wanted to bring an ECG from another source to the IntelliVue X2 or monitor.

There is a synchronization OUTPUT port on the side of the monitor. We do not use this to synchronize a the external pacemaker/defibrillator (which would bring a copy of the monitor measurements to the defibrillator). ECG should be measured directly by the device that will be sensing or delivering synchronized shocks. Continue to set up two sources of ECG monitoring.

Use the single pressure module (burgundy) for IABP synchronization.

Connecting and Disconnecting IntelliVue X2

Transferring a patient:

The IntelliVue X2 can be disconnected and reconnected to another bedside. This will transfer patient data to the new monitor.

You can swap the IntelliVue X2 and cables with the one at your new bedside, but you need to check to ensure that you have the correct MMS extension (one with or without End-Tidal CO_2 as needed).

During a bedside-to-bedside transfer, you can transfer the IntelliVue X2 with the MMS extension for quick transfer, but you will not be able to display the pressures from the MMS extension while the patient is disconnected.

X2

Mounting Module
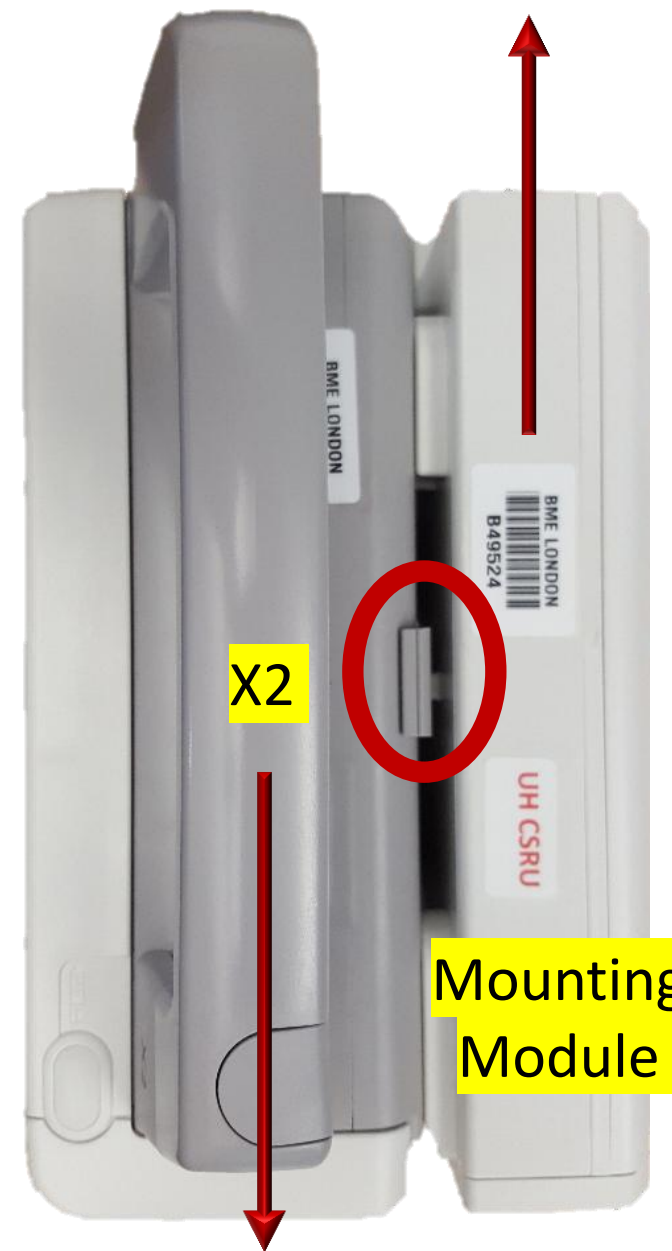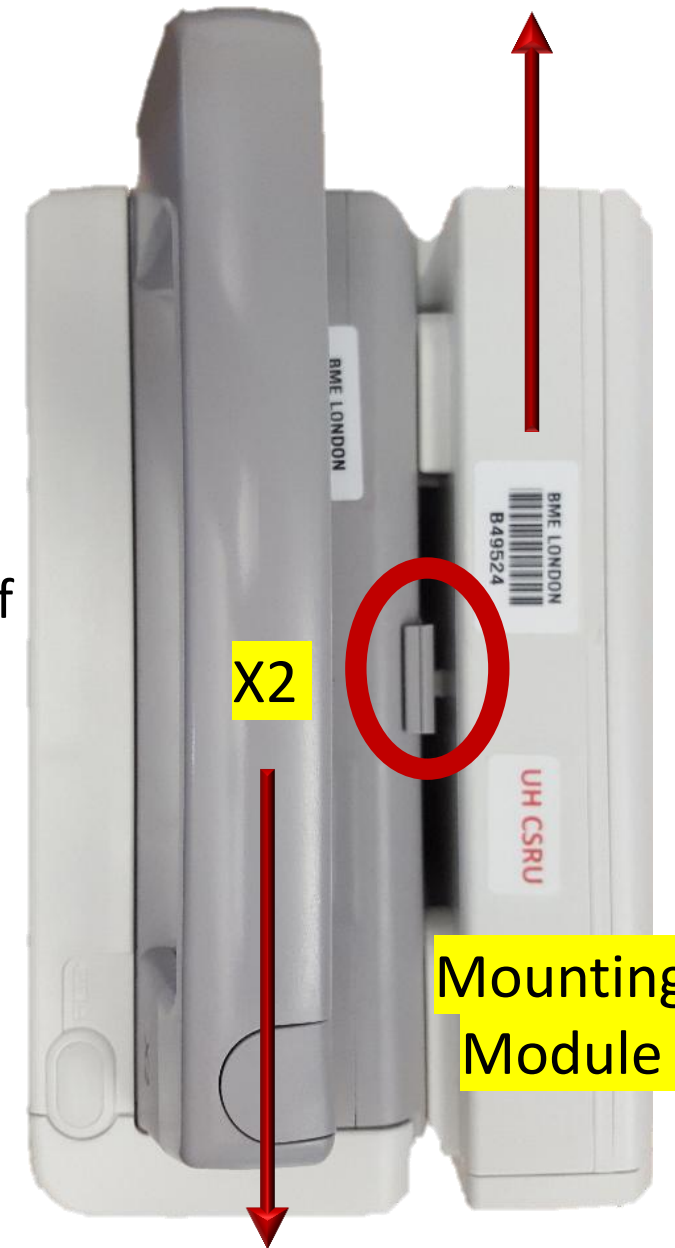
Connecting and Disconnecting IntelliVue X2

Transferring a patient:

If the patient has a pulmonary artery catheter the PA waveform should be displayed at all times to identify catheter migration; the PA waveform can be moved temporarily to the IntelliVue X2 pressure port to ensure safe patient movement if you want to transfer both the IntelliVue X2 and MMS extension together.

Once the IntelliVue X2 is connected to the new bedside, you will be asked if you want to transfer the patient to this monitor (confirm).

Confirming the "Transfer" function will remove the patient from the old monitor and transfer all information to the new bedside monitor.

DO NOT use the transfer function for a patient who is being monitored in another area (e.g., if the patient is still in the OR) as all data will be removed from the original monitor (do not preadmit a patient).
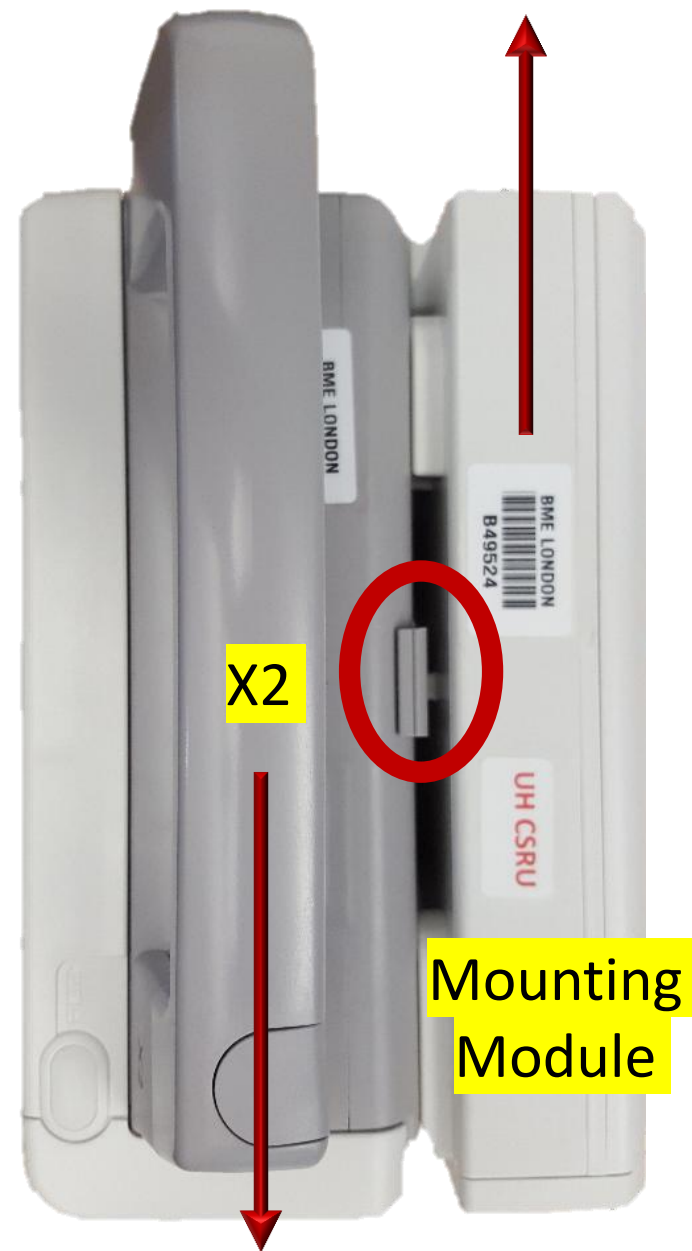
X2

Mounting Module

Connecting and Disconnecting IntelliVue X2

Disconnecting:

Press on the release button that is located between the IntelliVue X2 and the MMS extension. Slide the IntelliVue X2 forward and the MMS extension backward until it is released.

Press the silence on both the IntelliVue X2 and the monitor.

X2

Mounting Module

Connecting and Disconnecting IntelliVue X2

Reconnecting:

To reconnect, align the 4 protusions on the IntelliVue X2 in FRONT of the U shaped openings on the MMS extension.

Invasive Pressure Defaults

Reconnecting:

Once the two units are aligned, slide the IntelliVue X2 backward into the U shaped slots until it clicks into place.

Transport

For most situations, the MP5 will be used for transporting patients.

The MP5 provides a larger display than the IntelliVue X2 and keeps the bedside monitor functional.

Without an external power source, the IntelliVue X2 only provides one waveform display even if the MMS extension is attached (with the equipment we have purchased).

At discharge, the bedside cannot be cleaned and there will be no functional monitor until the IntelliVue X2 is returned.

Designated CCTC Equipment

DO NOT loan or exchange IntelliVue X2 modules or cables, or leave them in other units (like the OR). Without the IntelliVue X2 there is no bedside monitor.

Each ECG module in critical care can do either 5 Lead ECG or 12 Lead ECG monitoring by simply adding the additional limb to the 5 lead cable set. Not all IntellVue X2 monitors outside critical care have the same functionality (therefore may not be interchangeable).

The ECG leads that are used in the OR are leaded and not interchangeable with critical care.

Cables are Philips specific.

Cleaning

IntelliVue MX 800:

The screen and monitor must be cleaned according to hospital cleaning protocols and all products are safe.

There is a hospital cleaning protocol and cleaning staff have been educated.

Touch Screen

IntelliVue MX 800:

After cleaning protocols are completed and the product has dried, **the screen must be cleaned with 70% alcohol** to prevent buildup and visibility issues. Moisten a cloth with alcohol and wipe. Do not allow cleaners to drip. e the screen with alcohol.

To wipe the screen without activating the touch screen, **press and hold the blue Main Screen button until you hear a beep**. This will lock the screen so that you can wipe. Press and hold to reenable touch screen.