BeneVision TM70 Telemetry Monitor

Quick Reference Guide

mindray

Note: The TM70 Quick Reference Guide is not intended as a replacement to the Operating Instructions. Prior to operating equipment, the user must be familiar with the Operating Instructions Manual contents. This document is a guideline only to be used as an aid to comprehensive Inservice Training.

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TM70 PHYSICAL VIEW

1. Display Activation (Power On/Off) key

    When the TM70 is powered off

    • Pressing this key will turn the TM70 on.

    When the TM70 is powered on

    • And the screen display is on, pressing this key will turn the display off.
    • And the screen display is off, pressing this key will turn the display on.
    • Press and hold this key for two seconds to display the power off confirmation menu.

    Note: When the TM70 is disconnected from the Central Monitoring System

    (CMS) or the lethal arrhythmia occurs, the display is always on. You cannot turn it off.

2. Nurse Call key

    Nurse call key activates nurse call message at the CMS.

3. Main Menu key

    • Pressing this key when on the main screen will open the main menu.
    • Pressing this key when a menu is open will return to the main screen.

- Pressing this key when the display is off will turn the display on.
- Pressing this key when the screen lock mode is configured for View Only will display the **Screen Locked** menu.

4. Display

   Touch screen display for viewing patient information and adjusting patient settings.

5. Patient alarm light indicator

6. ECG lead connector

7. SpO_2 cap

   Covers SpO_2 connector when SpO_2 is not in use.

8. SpO_2 connector

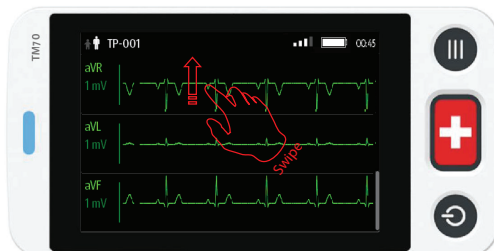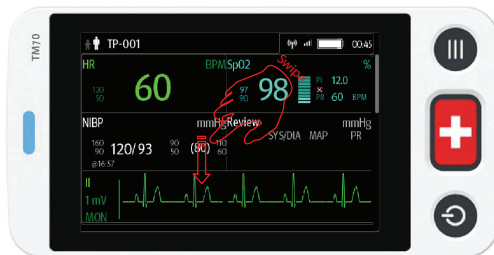   Connects the SpO_2 module.

9. Speaker

10. Battery compartment

    Contains the lithium-ion battery pack or AA battery tray.

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GENERAL NAVIGATION

Swipe for More Data
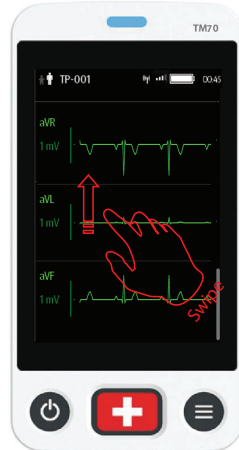
View More Data

The TM70 provides the following shortcuts to access additional information, as shown in the following figures:
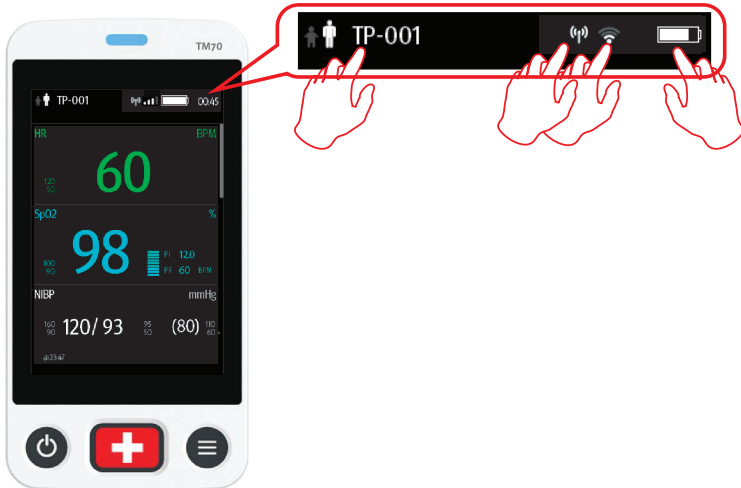
- Tap ⬛ TP-001 to enter the **Patient Info** menu
- Tap ⬛ to to view the MPAN info
- Tap ⬛ to view the network info
- Tap ⬛ to enter the **System Info** menu to view **Battery Information**

Quick Key Deployment/Screen Menu Bar Deployment
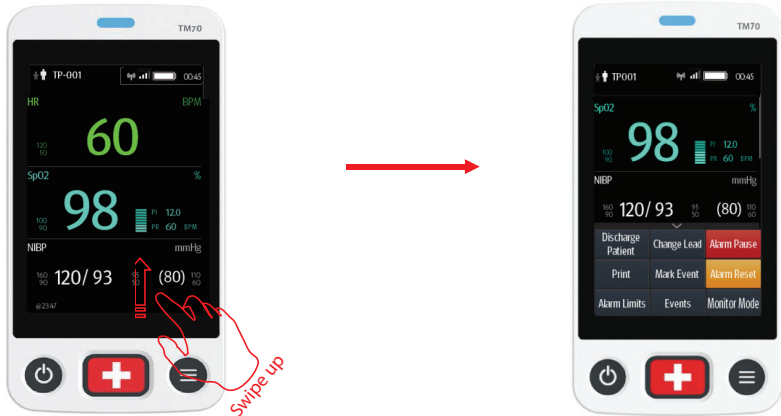
Note: The quick keys are configurable. These images are just representative.

PATIENT SETUP

Admit

After discharging the previous patient, you can admit a new patient by pressing ⬤ .

Discharge

Discharging the patient will stop monitoring, clear patient information, and restore default (preset) settings on the TM70.

A patient can be discharged by selecting the **Discharge Patient** menu.

Note: Discharging the patient on the TM70 discharges the patient from the CMS.

Select the Discharge Patient menu

1. Press ⬤ to enter the main menu.

2. Tap **Discharge Patient**.

3. Select **Yes**.

   • The patient is discharged from both the TM70 and the CMS.

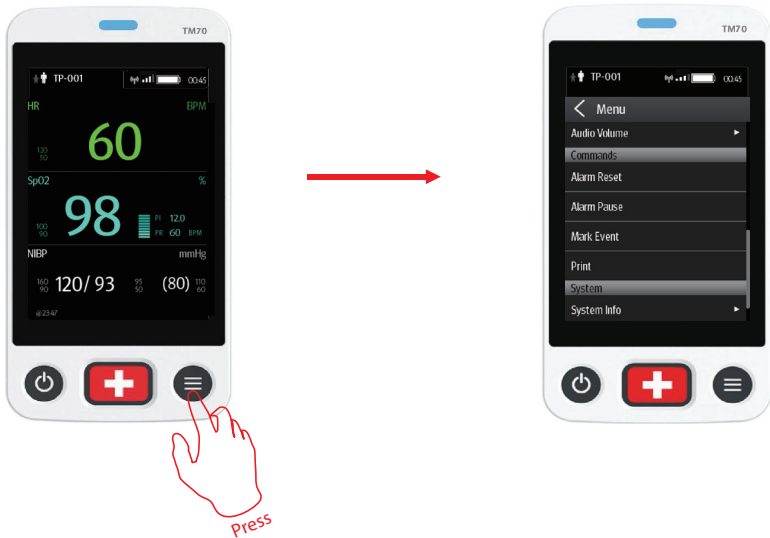   • The patient's configuration is cleared and the configuration is restored to the saved user configuration or factory default configuration.

   • The patient will be added to the discharged patients list at the CMS .

4. Press ⬤ to admit a new patient.

Adjust Patient Category

The Patient Info menu allows the clinician to adjust the patient category.

Note: Ensure the patient category selection is appropriate for the patient before monitoring begins. The supported patient categories are Adult and Pediatric.

To adjust the patient category:

1. Press ⬛ to enter the main menu.

2. Tap **Patient Info**.

3. Tap **Patient Category** to select the patient category.

4. Select **Yes** to confirm that the patient category should be changed.
   The selected patient category displays to the right of **Patient Category**.

5. Press ⬛ to return to the main screen.

Note: The patient category can only be changed on the TM70.

Note: Adjusting patient category restores the TM70 to the default (preset) settings but does not clear patient information or data.

Note: When the device is connected to the CMS, the patient category at the CMS is updated if the patient category is changed on the TM70.

STANDBY

Enter Standby
Placing a device into Standby:

- Suspends patient monitoring.

- Alarms are suspended.

- Displays **Standby** on the screen.

- The screen display automatically turns off after the device enters the Standby mode for 30 seconds.

Note: When connected to the CMS, and a device enters or exits Standby mode, the CMS is also notified to enter or exit Standby mode.

To enter Standby mode:

1. Press ⬛ to enter the main menu.

2. Tap **Standby**.

3. Select **Yes** to confirm the device should enter Standby mode.

Resume Monitoring

- Restores patient's settings, resumes alarm notification on the TM70 and the CMS.

- Alarm system is activated.

- The TM70 notifies the CMS of returning to Monitoring mode.

To exit Standby mode:

Press ⬛ to exit Standby mode.

Monitor Mode

Enter Monitor Mode

To enter monitor mode, select **Monitor Mode** from the quick key area. Then, the TM70's display is always on and alarms are issued locally.

Exit Monitor Mode

To exit monitor mode, select **Telemetry Mode** from the quick key area.

PRINTING

The clinician is able to print a strip from the TM70 to the CMS.

To print a strip:

Select **Print** from the quick key area or **Command** section in the main menu.

NURSE CALL

Activate a Nurse Call

Press 🔴 to activate a nurse call request to the CMS. The alarm light/indicator will flash cyan, and a "Nurse Call Initiated" message will display in the message area if the display is active.

Acknowledge the Nurse Call

The clinician can acknowledge the nurse call on the TM70.

To acknowledge the nurse call alarm:

1. Press ⬛ to enter the main menu.

2. Tap **Attendant Present**.

   The "Nurse Call Cancelled" message will display in the message area.

ECG

Select ECG Leadwire

The TM70 allows the clinician to set the ECG Leadwire Type being used. To configure the ECG Leadwire Type:

- On the main screen, tap the HR digital area or ECG waveform area to enter the **ECG** menu.

OR

1. Press ⬛ to enter the main menu.
2. Tap **Parameter Setup**.
3. Tap **ECG**.
4. Select **Cable Type**.
5. Select
   - **Auto**: the device automatically sets the leadwire type according to the leads connected.
   - **3 Lead**: to select 3-leadwire set
     If the leadwire type is set to 3-lead, the **Smart Lead** option becomes **Monitored Lead**. The clinician can select the preferred lead from the **Monitored Lead**.
   - **5 Lead**: to select 5-leadwire set
     All ECG leads display on the main screen.
   - **6 Lead**: to select 6-leadwire set
     If the leadwire type is set to 6-lead, both the **Va** and **Vb** are selectable.
6. Press ⬛ to return to the main screen.

Lead Placement

The TM70 Lead Placement menu allows the clinician to check the ECG Lead Status and troubleshoot Lead Fault messages. To enter the Lead Placement menu:

- Tap the lead off message on the main screen.

OR

- Press ⬛ to enter the main menu, and then tap **Lead Placement**.

The Lead Placement window indicates the lead status.

Information bar

Lead off indicator

Lead on indicator
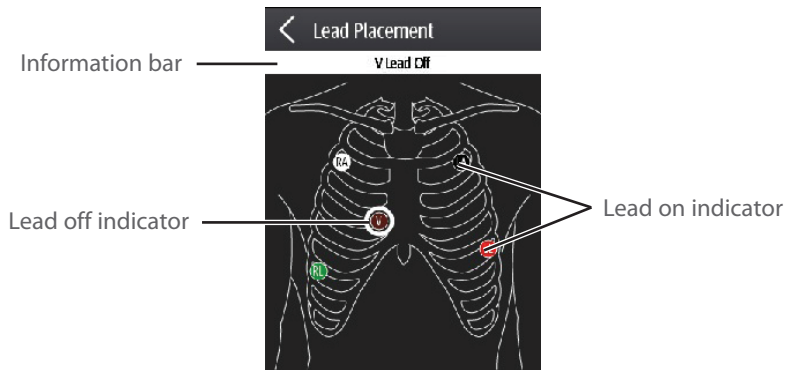
When any of the leads are off, the indications are as follows:

- The lead off message displays on the information bar.

  The background color of the information bar corresponds to the alarm level.

- A flashing circle indicates the disconnected lead.

  The color of the flashing circle is based on the alarm level.

Enable Pacer

The TM70 allows the clinician to enable pacemaker detection. The ♥ symbol displays in the waveform area on the CMS when the pacemaker detection in enabled.

To enable the pacemaker detection on the TM70:

- On the main screen, select the HR digital area or ECG waveform area to enter the **ECG** menu.

OR

1. Press ≣ to enter the main menu.
2. Tap **Patient Info**.
3. Tap **Paced** to enable Pacer by selecting **Yes**.
4. Press ≣ to return to the main screen.

RESP (OPTIONAL)

Set NCM Alarm Delay

The TM70 allows configuring the desired time for **NCM Alarm Delay**. When the patient has stopped breathing for longer than the set **NCM Alarm Delay** time, the TM70 will trigger the "No Chest Movement" alarm.

To set **NCM Alarm Delay**:

- On the main screen, tap the Resp digital area or Resp waveform area to enter the **Resp** menu.

OR

1. Press ⬛ to enter the main menu.

2. Tap **Parameter Setup**.

3. Tap **Resp**.

4. Set **NCM Alarm Delay**.

Note: The "No Chest Movement" alarm is displayed on the Central Monitoring System only.

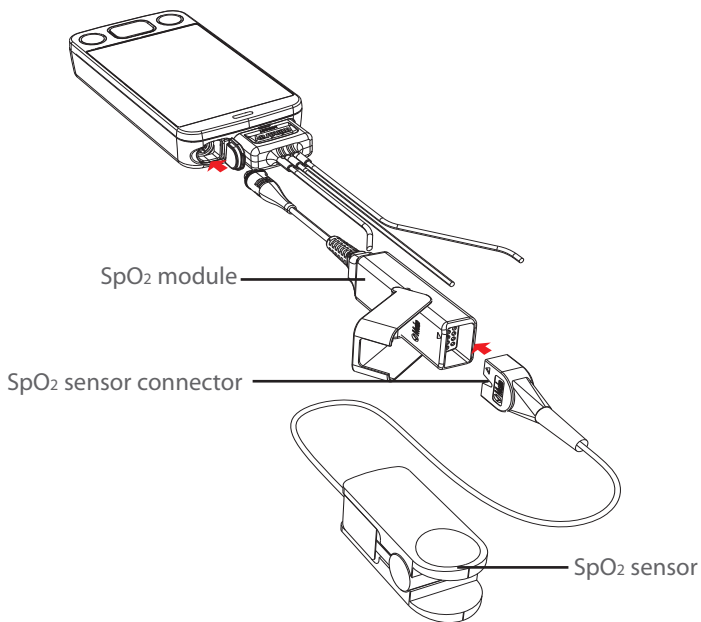**Note:** The Resp functionality for the TM70 telemetry monitor is available at the CMS whose version is 04.04.00 and above only.

SpO$_2$ (OPTIONAL)

The TM70 allows continuous pulse oximetry.

Connect the SpO$_2$ Module

Connect the SpO$_2$ module to the TM70 as shown in the following figure.

SpO$_2$ module

SpO$_2$ sensor connector

SpO$_2$ sensor

Connecting the Masimo SpO$_2$ module
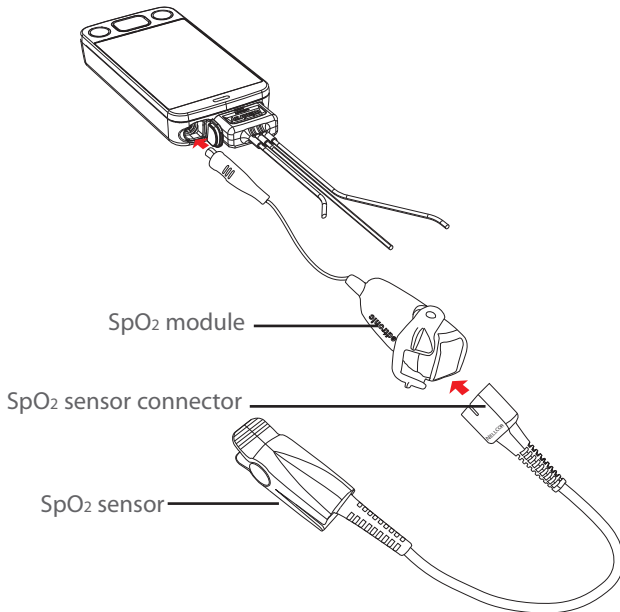
Connecting the Nellcor SpO₂ module

Initiate the SpO₂ Measurement

1. Connect the sensor to the SpO₂ module and the SpO₂ module to the TM70.

2. Select an appropriate sensor according to the patient size, and weight.

3. Prepare the SpO₂ site in accordance with hospital policy.

3. Apply the sensor to the patient.

   The SpO₂ measurement will display when the SpO₂ module acquires a signal from the patient.

NIBP (OPTIONAL)

The TM70 allows non-invasive blood pressure (NIBP) monitored by a BP10 NIBP module.

Pair a TM70 with a BP10

1. Press the MPAN key on the right panel of the BP10. The "Pairing..." message will display in the message area of the BP10.

2. Press ⬤ to enter the main menu.

3. Tap **Wireless Modules.**

4. Tap **MPAN** and then select **Connect to BP10.**

    The TM70 starts searching the BP10 devices in the vicinity and displays the devices that can be connected under **Devices**. Make sure that the device you wish to connect appears in the list of devices. If not, repeat Steps 1 to 4.

5. In the list of devices, select your desired device and tap **Connect**. Once the device is connected successfully, the status will be changed from **Disconnect** to **Connected**.

6. Tap anywhere in the NIBP digital area on the main screen to access the **NIBP** menu.

7. Tap **Start** to start NIBP measurement. Verify that the NIBP measurement results displayed at the BP10 are consistent with that displayed on the main screen of the TM70 and are the data for the same patient.

Pair a TM70 with a New BP10

1. Unpair the TM70 with the BP10 already connected by following steps in **Unpair a TM70 with a BP10 via the TM70** or **Unpair a TM70 with a BP10 via the BP10.**

2. Pair the TM70 with your desired BP10 by following steps in **Pair a TM70 with a BP10**.

Unpair a TM70 with a BP10 via the TM70

Option 1:

1. Press ⊜ to enter the main menu.

2. Tap **Wireles Modules**.

3. Select the device you wish to disconnect from the TM70 from the devices list under **Devices** and tap **Disconnect**.

    The connected device is disconnected from the TM70.

Option 2:

1. Press ⊜ to enter the main menu.

2. Tap **Wireles Modules**.

3. Tap **MPAN**.

4. Select **Off**.

Unpair a TM70 with a BP10 via the BP10

1. Press the MPAN key on the BP10.

2. Select **Yes** when the prompt message "A**re you sure you want to close MPAN and unpair BP10**?" appears.

Caution: Before moving a TM70 or BP10 to another area, unpair them first.

Caution: Before admitting a new patient at a BP10, you need to unpair it with a TM70 first.

ALARMS

Alarm Status Symbols

Symbol	Description
⚠	All the alarms are paused.
⚠	Audible alarm tones are turned off.
⚠	Alarms are acknowledged and the alarm system is reset.

Change Parameter Alarm Properties

1. Enter the **Alarm Limits** menu in either of the following ways:

   ◆ Select the **Alarm Limits** quick key.

   ◆ Press 🔵 to enter the main menu → tap **Alarms** →tap **Alarm Limits**.

2. Tap a parameter and set its alarm properties.

Change Arrhythmia Alarm Settings

1. Enter the **Arrhythmia Alarm Setup** menu in either of the following ways:

   ◆ Tap the **Arrhythmia Alarm Setup** quick key, if it is configured in the quick key area.

   ◆ Press 🔵 to enter the main menu → tap **Alarms** → tap **Arrhythmia Alarm Setup**.

2. Tap a parameter and set its alarm properties.

Pause Alarms

   1. Press 🔵 to enter the main menu.

   2. Tap **Alarm Pause** from the **Commands** section.

OR

When **Alarm Pause** is configured as a Quick key, you can

   1. Swipe up your finger at the bottom of the main screen to display the

      quick keys area.

   2. Tap the **Alarm Pause** quick key.

Reset Alarms

To silence *an alarm for the duration of the alarm* on the TM70 and the CMS:

   1. Press 🔵 to enter the main menu.

   2. Tap **Alarm Reset** from the **Commands** section.

OR

When **Alarm Reset** is configured as a Quick key, you can

   1. Swipe up your finger at the bottom of the main screen to display the

      quick keys area.

2. Tap the **Alarm Reset** quick key.

After the alarm system is reset, depending upon the system configuration, the alarm system responds as follows:

For physiological alarms:

- The alarm sound will be silenced.

- The ⚠ symbol appears on the top of the main screen.

- A √ will appear before the alarm message., indicating that the alarm is acknowledged.

- The color of the parameter numeric background corresponds with the alarm priority, but the parameter numeric does not flash..

For technical alarms:

- Some technical alarms are cleared and no alarm indications are given.

- Some technical alarms are changed to prompt messages.

- For some technical alarms, the alarm sound will be silenced, the alarm light will continue to indicate the alarm, a √ will appear before the alarm message.

- For some technical alarms, the ⚠ symbol appears on the top of the main screen.

REVIEW

Review Events

- Select **Events** from the quick key area.

OR:

1. Press ☰ to enter the main menu.

2. Tap **Review**.

3. Tap **Events**.

Review Tabular Trends

- Tab **Tabular Trends** in the upper right corner of the event review page.

OR:

1. Press ⬛ to enter the main menu.

2. Tap **Review**.

3. Tap **Tabular Trends**.

SCREEN DISPLAY

Switch Orientation

1. Swipe your finger down from the top of the main screen to display the following buttons.

   - ⬛: this button is displayed in portrait orientation. It switches portrait display to landscape display counterclockwise.

   - ⬛: this button is displayed in portrait orientation. It switches portrait display to landscape display clockwise.

   - ⬛: this button is displayed in landscape orientation. It switches landscape display inversely.

   - ⬛: this button is displayed in landscape orientation. It switches landscape display to portrait display.

2. Tap the desired option to switch the screen display orientation.

Adjust Display Order

The TM70 allows the clinician to adjust the parameter order on the main display. To adjust the display order:

1. Press ⬛ to enter the main menu.

2. Tap **Display Setup**.

3. To set portrait display orientation, tap **Portrait Order.**

   To set landscape display orientation, tap **Landscape Order**.

4. Tap a parameter or waveform

   The ⬛ parameter icon displays to the right.

5. Drag the selected parameter to the desired position and release.

6. Repeat steps 4 and 5 as needed.

7. Press ⬛ to return to the main screen.

SCREEN LOCK/VIEW ONLY MODE

The TM70 provides the ability to lock the touch screen display to restrict user access, options for View Only and Locked are available. View Only allows patient data to be viewed but prevents access to settings without a passcode. Locked requires a passcode for any access to the TM70.

Enable the Screen Lock

After the first time screen lock is enabled, a passcode is required.

To enable the screen lock:

1. Press ⬛ to enter the main menu.

2. Tap **Maintenance**.

3. Enter maintenance password.

4. Tap **Accept**.

5. Tap **Screen Lock** to select a screen lock mode: **Locked** or **View Only**.

6. Enter the screen lock passcode.

   The selected lock mode is displayed to the right of **Screen Lock**.

7. Press ⬛ to return to the main screen.

Unlock the Screen in Locked Mode

1. If the display is off, press ⬤ or ⬛ to activate the display and access the **Screen Locked** menu.

2. Enter the passcode to unlock the screen.
   Once the passcode is entered the screen is temporarily unlocked. If the clinician turns off the TM70 or the display times out, the passcode will need to be re-entered.

Unlock the Screen in View Only Mode

1. If the display is off, press ⬤ or ⬛ to activate the display.

2. Press ⬛ to display the **Screen Locked** menu.

3. Enter the passcode to unlock the screen.

   Once the passcode is entered the screen is temporarily unlocked. If the clinician turns off the TM70 or the display times out, the passcode will need to be re-entered.

ADJUST VOLUMES

The clinician is able to adjust alarm volumes, key volumes, and QRS volume on the TM70.

To adjust the volume settings:

1. Press ⬤ to enter the main menu.

2. Tap **Audio Volume**.

3. Select the category to adjust and drag the slider to the appropriate volume.

4. Press ⬤ to return to the main screen.

PARAMETER COLORS

The TM70 provides the ability to adjust the parameter's numeric and waveform (if applicable) color.

To adjust the parameter's color at the TM70:

1. Press ⬤ to enter the main menu.

2. Tap **Parameter Setup**.

3. Tap the parameter.

4. Tap **Color**.

5. Select the color.

6. Press ⬤ to return to the main screen.

Note: The parameter color configuration on the TM70 and the CMS are independent.

CLEAN/DISINFECT THE TM70

Clean the TM70

Clean your equipment on a regular basis. Before cleaning, consult your hospital's regulations for cleaning the equipment.

Caution: Never immerse the lithium-ion battery pack, AA battery tray and AA batteries in any fluids.

Before cleaning your TM70, make the following preparation:

• Install the battery pack or battery tray and firmly close to seal the battery

   compartment.

• Insert the SpO_2 cover in the SpO_2 connector when SpO_2 is not in use.

• Insert the ECG leadwire plug into the ECG connector.

The following table lists approved cleaning and disinfecting agents.

Product Name	Product Type	Ingredients
Sodium hypochlorite bleach*	Liquid	Sodium hypochlorite bleach 10%
Hydrogen peroxide*		Hydrogen peroxide 3%
Isopropanol*		Isopropanol 70%
1-Propanol*		1-Propanol 50%
Metrex CaviCide1™		Diisobutylphenoxyethoxyethyl dimethyl benzyl ammonium chloride 0.28%, Isopropanol 17.2%
Virex® II 256		Didecyl dimethyl ammonium chloride 8.704%, n-Alkydimethyl benzyl ammonium chloride 8.190%
Virex®TB		n-Alkyl dimethyl benzyl ammonium chlorides 0.105%, n-Alkyl dimethyl ethylbenzyl ammonium chlorides 0.105%
Rely+On™ Virkon®Powder *(Used as 1% solution)	Powder	Used as 1% solution Biocidal active: Pentapotassium bis (peroxymonosulphate) bis (sulphate)(500g/kg), Contains dipotassium peroxodisulphate.

Product Name	Product Type	Ingredients
Alpet® D2 Surface Sanitizing Wipes	Wipes	Isopropyl Alcohol 58.6000%® Octyl Decyl Dimethyl Ammonium chloride 0.0075%, Dioctyl Dimethyl Ammonium Chloride 0.0030%
Clorox Dispatch® Hospital Cleaner Disinfectant Towels with Bleach		Sodium Hypochlorite 0.65%
Clorox Healthcare®Bleach Germicidal Wipes		Sodium Hypochlorite 0.55%
Clorox Healthcare® Hydrogen Peroxide Cleaner Disinfectant Wipes		Hydrogen Peroxide 1.4%
Diversey Oxivir®TB Wipes		Hydrogen Peroxide 0.5%
Metrex CaviWipes™		Diisobutylphenoxyethoxyethyl dimethyl benzyl ammonium chloride 0.28%, Isopropanol 17.2%
PDI Sani-Cloth® AF3 Germicidal Disposable Wipe		n-Alkyl dimethyl ethylbenzyl ammonium chlorides 0.14%, n-Alkyl dimethyl benzyl ammonium chlorides 0.14%
PDI Sani-Cloth®Bleach Germicidal Disposable Wipe		Sodium Hypochlorite 0.63%,other ingredients 99.37%
PDI Sani-Cloth® HB Germicidal Disposable Wipe		n-Alkyl dimethyl ethylbenzyl ammonium chlorides 0.07%, n-Alkyl dimethyl benzyl ammonium chlorides 0.07%

Product Name	Product Type	Ingredients
PDI Sani-Cloth® Plus Germicidal Disposable Cloth	Wipes	n-Alkyl dimethyl ethylbenzyl ammonium chlorides 0.125%, n-Alky dimethyl benzyl ammonium chlorides 0.125%
PDI Super Sani-Cloth®Germicidal Disposable Wipe*		n-Alkyl dimethyl ethylbenzyl ammonium chlorides 0.25%, n-Alkyl dimethyl benzyl ammonium chlorides 0.25%, Isopropyl Alcohol 55.0%,
VIRAGUARD Hospital Surface Disinfectants		Isopropanol 70%,Other ingredients 30%

Note: For equipment with the symbol ⬤, all the listed cleaning and disinfecting agents are available for use. For equipment without the symbol ⬤, only the cleaning and disinfecting agents marked with "*" are available for use.

To clean the equipment:

1. Shut down the device.

2. Clean the display screen with wipes or a soft cloth moistened with one of the cleaning agents listed in the table above.

3. Clean the exterior surface of the telemetry monitor main unit and lithium-ion battery pack with wipes or a soft cloth moistened with one of the cleaning agents listed in the table above.

4. Wipe off all the residue with a dry cloth.

5. Dry your equipment in a ventilated, cool place.

Disinfect the TM70

Disinfect your equipment as required in your hospital's servicing schedule using one of the disinfecting agents listed in the table above. Cleaning the equipment before disinfecting is recommended.

CLEAN/DISINFECT REUSABLE ACCESSORIES

To clean and disinfect reusable ECG leadwires and SpO$_2$ sensors, refer to the instructions for use delivered with the accessory.

STERILIZATION

Sterilization is not recommended for this equipment, related products, accessories or supplies unless otherwise indicated in the instructions for use delivered with the products, accessories or supplies.

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