WELCH ALLYN®
ABPM 7100 AMBULATORY BLOOD PRESSURE MONITOR
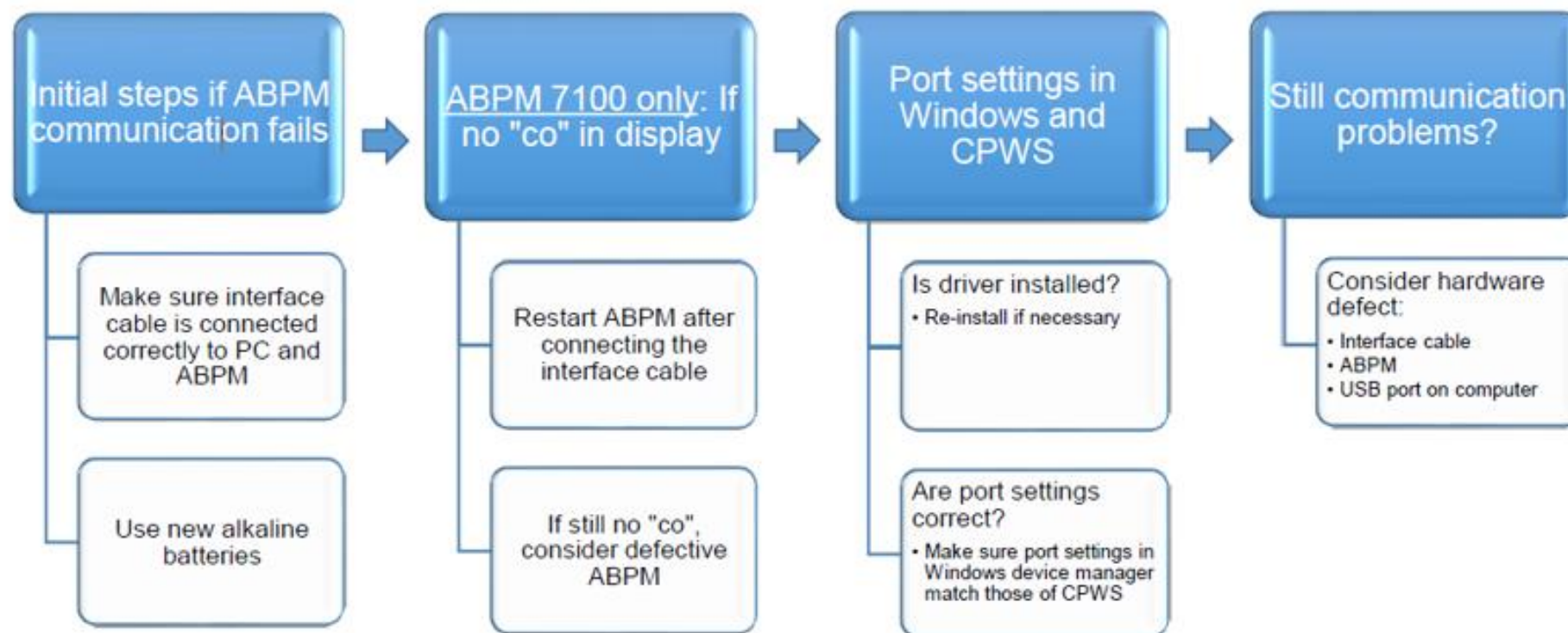
TROUBLESHOOTING GUIDE

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ABPM 7100 to CardioPerfect Workstation (CPWS)

COMMUNICATION TROUBLESHOOTING GUIDE

Initial steps if ABPM communication fails

- Make sure interface cable is connected correctly to PC and ABPM
- Use new alkaline batteries

→

ABPM 7100 only: If no "co" in display

- Restart ABPM after connecting the interface cable
- If still no "co", consider defective ABPM

→

Port settings in Windows and CPWS

- Is driver installed?
  - Re-install if necessary
- Are port settings correct?
  - Make sure port settings in Windows device manager match those of CPWS

→

Still communication problems?

- Consider hardware defect:
  - Interface cable
  - ABPM
  - USB port on computer

Cables and Battery

CABLE CONNECTIONS:

Make sure the interface cable is inserted properly into both the USB port on the computer and the port on the bottom of the ABPM.
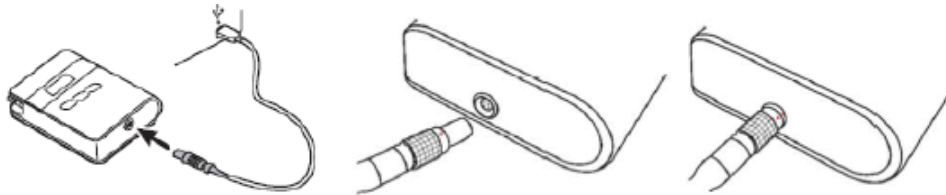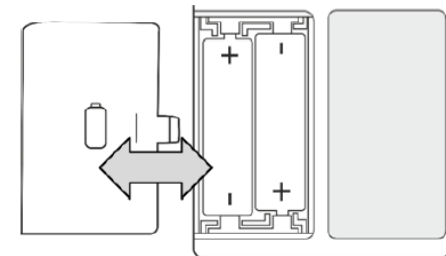

Figure 2 ABPM 7100 connections

BATTERIES:

It is important to use new fully charged batteries, Welch Allyn recommends using non-rechargeable alkaline batteries.


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Restart ABPM

"CO" SHOULD BE ON THE DISPLAY SCREEN

"co" on the display indicates the ABPM 7100 is in communication mode, this can only be accomplished by powering up the device while the interface cable is connected to the ABPM.

The device will automatically enter communication mode if you start it up with the interface cable connected. So plugging in the cable after the device has been switched on will not work, first plug in the cable, then switch on the device, after start up, the display should say "co".

Still no "co"

If after restarting the ABPM with the cable connected there's still no "co" on the display, you will need to have the device (and the cable) checked by Welch Allyn.

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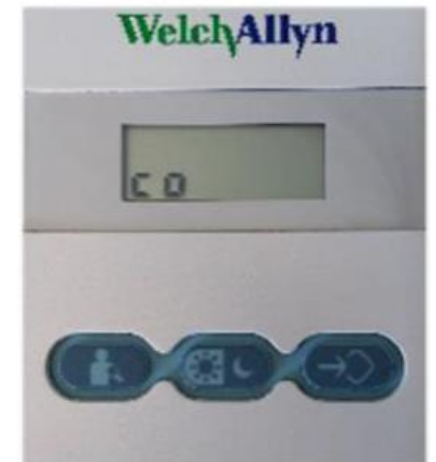
ABPM Driver

DURING THE INSTALLATION OF CPWS, THE DRIVER WOULD ALSO HAVE BEEN INSTALLED.

During the installation of CPWS, normally the driver for the ABPM would also have been installed.

See instructions in the section Port Settings to identify if the driver is installed.

To re-install the driver follow these instructions (Windows Administrator permissions required):

☐ *These instructions apply to CPWS 1.6.6 (instructions may be different with earlier versions) with the 7100 with USB cable (ABPM 7100 is only supported with CPWS 1.6.6)*

☐ Insert the CPWS DVD in your computer's DVD drive and wait for the menu to appear, from the menu select "CardioPerfect Device Drivers", then select "Install ABPM drivers" and follow the instructions on screen

☐ After the installation is finished, re-insert the ABPM interface cable into the computer. If it was indeed a question of a missing driver, Windows should now install the appropriate driver and create the virtual COM port. After this is finished, the port should now be visible in the Device manager as one of the three as mentioned under the section Port Settings

☐ After installing the driver, follow the instructions in the section Port Settings to identify and configure the port number
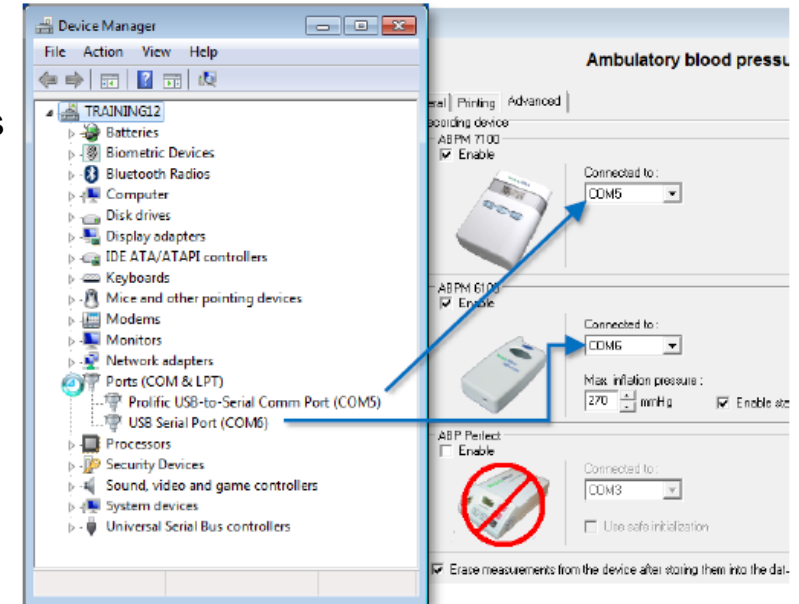
Port settings:

COM PORT

Every time you plug in the cable that connects the ABPM into the computer, Windows creates a so-called virtual COM port and gives this port a number. CPWS has been programmed with this number during the installation.

If the cable is removed from the computer and plugged in again, perhaps into a different USB port, Windows may hand out a different number to the virtual COM port. However, the settings in CPWS will not automatically change accordingly.

Take the following steps to find out if this is causing the issue and how to correct it

1. First we need to find out if the port is available in Windows and what the assigned port number is:

☐ In Windows, click the start button and type "Device manager" and hit enter or click on "device manager" in the list that appears

☐ The Device manager window will open

☐ In the list of devices that appears, look for an entry named "Ports (COM & LPT)" and click on the little arrow left of it to expand this entry (double clicking on the item itself also works)

☐ You should now see at least one entry that has one of the following names (depending on your ABPM version and interface cable type):

Port settings Continue

o "Prolific USB-to-Serial Comm Port (COMx)"

o "USB Serial Port (COMx)"

o "Keyspan USB Serial Port (COMx)"

The x represents the port number that Windows has assigned to the virtual port.

If none of these entries are shown under Ports, you may find an "Unknown device" under the section "Universal Serial Bus Controllers". In that case there may be a problem with the driver that is needed for this interface cable, see section ABPM Driver for instructions to (re)install the driver.

2. The port number (the number that is shown after "COM") must now be entered into the CPWS settings (windows Administrator privileges required):

 Open CPWS and go to: <File><Settings><Ambulatory Bloodpressure><Advanced>

 You can now verify or correct the selection under "Connected to:" for the appropriate device

 Then click OK to close the settings window and retry communication
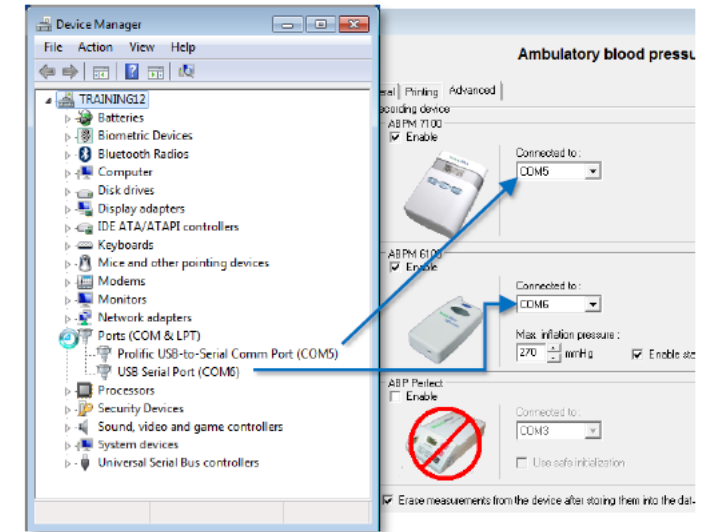
If the above fails, you may be dealing with a hardware problem

DEFECTIVE

☐ **Interface cable defective**

o Specifically for the ABPM 6100, if the ABPM seems to respond after starting communication (the device is being activated and beeps), but there is still the message that there is no communication, it is most likely due to a defective cable

☐ **ABPM defective**

o A defective interface cable or ABPM can only be confirmed by trying out a replacement. If you do not have that option, contact your Welch Allyn representative for assistance

☐ **USB port on computer defective or inactive**

o In case of a computer with a few USB ports on the front and more on the back, and the ABPM is connected to the front, plugging it into one of the USB ports on the back can make a difference

o It is not very likely, but there can be a problem with the USB port on your computer. The easiest way to rule that out is to connect another USB device to that port and confirm that it communicates with your computer

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Error Codes

ERROR DESCRIPTION OF THE ABPM 7100

Error symptom	Possible cause	Remedy
Time and date are not updated following a longer period without power supply from power packs or batteries.	The internal buffer battery is depleted.	Date and time can be reset after every power pack or battery replacement. Send the device to your Welch Allyn specialist.
Measurement data can no longer be called up/displayed.	An error occurred during patient data storage.	Delete the respective patient (menu bar) and recreate it.
The connection between the ABPM 7100 and the PC is faulty.	The incorrect COM interface is set.	Set the correct interface in the service programs.
	Cable plug or socket is defective.	Inspect the plug and the socket on the ABPM 7100. Ensure that the pins are straight to guarantee contact.
	The ABPM 7100 is not in transmitting mode (the displays shows the time).	Switch the ABPM 7100 off and then on again without removing the connecting cable.
No patient number.	The ABP Monitor is not initialized, i.e. the patient number was not transferred during the preparation for a 24-hour measurement.	The patient number can also be transmitted after the measurement. This does not influence the measurement data.

Error symptom	Possible cause	Remedy
No measurements were conducted during the nocturnal phase.	The battery packs or batteries were prematurely depleted.	The power packs or batteries may be defective (please contact your Welch Allyn specialist).
	The patient has switched off the ABPM 7100.	Draw the patient's attention to the urgency of a complete 24-hour measurement.
The display does not show "co" or "bt".	You are not in transmitting mode.	Communication via cable: Switch the ABPM 7100 off and then on again without pulling the plug.
		Communication via BT: Press and hold the START button and then press the DAY/NIGHT button. Select "bt" using the START button.
No automatic measurements will be performed.	No manual measurements performed after application.	Valid manual measurement must always be performed after the device has been positioned.
	Incorrect log set.	Set log 1 or 2.
The measurement interval does not meet your expectations.	Incorrect log set.	The programmed log does not correspond with the set log in the ABPM 7100. Check the log manually on the device.
	No manual measurements performed after application.	Conduct manual measurement to activate the set log

Error Codes

ERROR DESCRIPTION OF THE ABPM 7100

Error symptom	Possible cause	Remedy
Err 1	The patient displays severe arrhythmia.	ABP Monitor not applicable.
	The arm was moved during measurement.	Keep the arm still during measurement.
	Insufficient valid pulse rate detected.	Place the cuff on your arm again.
Err 2	The arm was moved during measurement.	Keep the arm still during measurement.
	Cuff does not fit the arm snugly.	Check the seating of the cuff and that of the device.
Err 3	Blood pressure beyond the measurement range.	Permanent notification renders the ABP Monitor unsuitable for the patient.
	Strong arm movements.	Keep the arm still during measurement.
	Problems with the pneumatics.	If the error persists permanently, send the device to your Welch Allyn specialist.
Err 4	Data transmission cable incorrectly inserted in ABP Monitor.	Insert the cable into the ABP Monitor correctly.
	Pins in the plug of the data transmission cable are mechanically damaged.	Check the plug to see whether the pins on the inside are damaged. If they are, contact your Welch Allyn specialist.
	Measurement value was not correctly transmitted.	Restart the transmission.

Error symptom	Possible cause	Remedy
Err 5 bAtt	Power pack or battery voltage too low.	Replace the power packs or batteries.
	Power packs or batteries are defective.	The power pack or battery voltage is correct but "bAtt" is displayed during cuff inflation. Replace the power packs.
	Battery contacts are corroded.	Clean the battery contacts with a cotton cloth and a little alcohol.
Err 6 + Possible continuous alarm until a button is pressed.	Build-up 25 fair.	Check the cuff for a build-up of air or a kink in the tubing. If the cuff tubing is kinked, straighten the tubing. Otherwise send the device in for inspection immediately.
	Blood pressure cuff incorrectly connected.	Connect the cuff to the device.
	Leaky points in the cuff or the cuff tubing.	If necessary, replace the cuff.
Err 7	The memory of the blood pressure measurement device is full. (a maximum of 300 measurements and events can be stored)	Delete the data in the ABP Monitor but ensure that the data was stored on your PC first.
Err 8	Measurement cancelled with a pressed button.	
Err 9 + Possible continuous alarm until a button is pressed.	Residual pressure inside the cuff	Wait for the cuff to deflate completely.
	Zero point comparison was unsuccessful.	Send the device to your specialist for inspection immediately or directly to your Welch Allyn specialist.

Error Codes and Communication Error-Bluetooth Interface

ERROR DESCRIPTION OF THE ABPM 7100

Error symptom	Possible cause	Remedy
Err 10 + Continuous alarm until a button is pressed.	Severe error caused by accumulated pressure outside the measurement process.	Send the device to your specialist for inspection and repair immediately or directly to your Welch Allyn specialist.
	These error messages all show a severe error in the program code.	
The analysis unit does not react to data transmission but the display shows "co".	Data transmission cable not correctly inserted in the PC. (also refer to Err 4)	Check whether the 9-pin plug of the data transmission cable is securely seated in the device's interface socket. (also refer to Err 4)
The ABPM 7100 measures every two minutes.	Log 9 is set in the ABPM 7100.	Set log 1 or 2.
The desired log cannot be set with the button combination.	The last patient's measurement values are still contained in the memory.	Delete the data in the ABP Monitor but ensure that the data was stored first.
The ABP Monitor cannot be switched on.	The battery packs or batteries were incorrectly inserted.	Reinsert either power packs or batteries and ensure correct polarity.
	Power pack or battery voltage too low.	Replace the power packs or batteries.
	Defective display.	Send the device to your specialist for repair or directly to your Welch Allyn specialist.
An error occurs during the first measurement.	The cuff size is not suitable for the patient's arm circumference.	Measure the patient's arm circumference and compare this with the imprint on the cuff. You may require a different cuff size.

Error symptom	Possible cause	Remedy
Code 1	Bluetooth® interface of the ABPM 7100 was not started correctly. Possible hardware fault.	Send the device to your Welch Allyn specialist for inspection.
Code 2	Bluetooth® interface of the ABPM 7100 could not be configured correctly. (Communication problem between ABPM 7100 and the Bluetooth® module.)	Try again. If the error persists, send the device to your Welch Allyn specialist for inspection.
Code 3	The status of the Bluetooth® interface of the ABPM 7100 could not be determined. (Communication problem between ABPM 7100 and the Bluetooth® module.)	Try again. If the error persists, send the device to your Welch Allyn specialist for inspection.
Code 4	The Bluetooth® interface of the ABPM 7100 has not yet been paired with the analysis software.	Reconnect the device via Bluetooth®.
Code 5	The Bluetooth® interface of the ABPM 7100 could not connect to the Bluetooth dongle on the computer.	Try again. If the error persists, send the device to your Welch Allyn specialist for inspection.
Code 6	The measurement value memory of the ABPM 7100 contains unsent blood pressure values.	These will be sent once further measurements have been performed.
Code 7	The ABPM 7100 is paired with a cell phone or GSM modem, which is technically incapable of transmitting measurement values, is outside the network range or is incorrectly configured.	Try again. If the error persists, contact your Welch Allyn specialist.

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