

PS-320

User Manual

PS-320 Patient Simulators



P/N 17225

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METRON warrants that the PS-320 Patient Simulator will substantially conform to published specifications and to the documentation, provided that it is used for the purpose for which it was designed. METRON will, for a period of twelve (12) months from date of purchase, replace or repair any defective simulator, if the fault is due to a manufacturing defect. In no event will METRON or its local representatives be liable for direct, indirect, special, incidental, or consequential damages arising out of the use of or inability to use the PS-320 Patient Simulator, even if advised of the possibility of such damages. METRON or its local representatives are not responsible for any costs, loss of profits, loss of data, or claims by third parties due to use of, or inability to use the PS-320 Patient Simulator. Neither METRON nor its local representatives will accept, nor be bound by any other form of guarantee concerning the PS-320 Patient Simulator other than this guarantee. Some jurisdictions do not allow disclaimers of expressed or implied warranties in certain transactions; therefore, this statement may not apply to you.

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Manual Revision Record

This page is for recording revisions to your *PS-320 User Manual* that have been published by METRON AS or its authorized representatives. We recommend that only the management or facility representative authorized to process changes and revisions to publications do so:

- make the pen changes or insert the revised pages;
- ensure that obsolete pages are withdrawn and either disposed of immediately, or marked as superseded and placed in a superseded document file, and;
- enter the information below reflecting that the revisions have been entered.

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1. Introduction

This chapter describes the METRON PS-320 Patient Simulator's features and specifications.

1.1 Features

PS-320 is a compact, lightweight high performance simulator designed to be used by trained service technicians for fetal monitor testing.

Cardiotocographs or Electronic Fetal Monitoring ("EFM") is a diagnostic tool used to identify a fetus at risk for neurological injury or death, so that timely and appropriate intervention can be carried out before the underlying condition causes irreversible damage. The goal of EFM is to detect fetal hypoxia at its earliest stage, and to attempt to prevent asphyxia resulting from prolonged and severe hypoxia.

The PS-320 provides comprehensive simulation of fetal and maternal ECG as well as uterine activity. It can simulate several fetal parameters, including twins, via monitor modes as DECG and ultrasound.

PS-320 offers an easy user interface providing a 2 x 16 character LCD display with adjustable contrast.

The unit runs on a 9V battery and it provides an indication when the battery is low and shuts down. It also supplies RS232 two-way data communication that is used to control the selections of the unit. The RS232 can also provide information regarding the status of the PS-320.

1.2 Specifications

1. Fetal ECG

5 Leads with independent outputs

Fetal ECG Static Rates: 30, 60, 90, 120, 150, 180, 210, 240 BPM

ECG sensitivity 50µV, 100 µV, 200 µV, 500 µV, 1mV, 2 mV

US-1 Tracks the fetal ECG Rates

2. Fetal Patterns

NOTE: US-1 and Fetal ECG track these selections. US-2 is in normal pattern, except during TREND#1 Selection.

TREND#1 – TWIN FETAL PATTERNS:

NORMAL	Normal pattern
TACHYCARDIA	Tachycardia pattern
BRADYCARDIA	Bradycardia pattern
ARRHYTHMIAS	Arrhythmia pattern
LATE DECELERATION	Late deceleration
EARLY DECELERATION	Early deceleration

MODERATE DECELER.	Moderate variable deceleration
ACCELERATION #1	Acceleration wave #1
ACCELERATION #2	Acceleration wave #2
SINUSOIDAL (HIGH)	Sinusoidal pattern, large change
SINUSOIDAL (LOW)	Sinusoidal pattern, small change
SEVERE VAR. DEC. #1	Severe deceleration wave #1
SEVERE VAR. DEC. #2	Severe deceleration wave #2
PROLONGED DECELER.	Prolonged deceleration
BIPHASIC DECELERAT.	Biphasic deceleration
EXAGGERATED DECELE.	Exaggerated deceleration
NON_UNIFORM DECELE.	Non-uniform deceleration (2 different shapes)
VAR. DECELERATION (U)	Variable deceleration "U" shaped
VAR. DECELER. TACH	Variable deceleration with high rate BPM
VAR. DECELER (V)	Variable deceleration "V" shaped
VAR. DECEL. (POST)	Variable deceleration post exaggerated
VAR. DECELERATION	Variable deceleration
DECELER. (POSITION)	Variable deceleration with position changes
LONG DECELERATION	Long deceleration
COMPENSATORY ACCEL.	Compensatory acceleration

3. Maternal ECG

Maternal ECG Static Rates: 60, 80, 100, 120, 140, 160 BPM
 ECG sensitivity 0.5 mV, 1 mV and 2 mV
 Pattern is selected during Trend #1 selection

4. Uterine Activity

Note: Toco waveform selection not available during TREND #1

EXECUTE WAVEFORM	Start toco waveform
UTERINE WAVE OFF	Stop toco waveform
ANALOG 0 TO +1 VOLT	Analog range 0 to +1 V (1 V=100 mmHg)
ANALOG 0 TO -1 VOLT	Analog range 0 to -1 V (-1 V=100 mmHg)
UTERINE WAVE 0-25	Range of toco waveform
UTERINE WAVE 0-50	Range of toco waveform
UTERINE WAVE 0-100	Range of toco waveform
SHORT DURATION	Toco waveform of short duration
NORMAL DURATION	Normal duration of toco waveform
INCREASED DURATION	Long duration of toco waveform
UTERINE LEVEL =ZERO	Zero toco channel (automatic on power up)
UTERINE STATIC +20	Increase toco static level by 20 mmHg (0-100 mmHg)
INCR. RESTING TONE	Resting tone increases
COUPLING	2 close toco waves
TRIPLING	3 close toco waves
UTERINE PRESSURE SENSIVITY	5 or 40 μ V on power up

1.3 General Information

Display/Control:	16-digit alphanumeric display keys 2 and Power ON/OFF
RS232 Interface:	Bi-directional interface. Baud rate: 9600
ECG & US Output Connectors	5 AHA/IEC connectors accepting ECG snaps and pins.
Power:	9 V alkaline battery or battery eliminator
Case:	High impact plastic
Weight (w/o batt.):	0.343 kg / 12.1 oz.
Dimensions:	Height: 3.4 cm / 1.4 in. Width: 10.7 cm / 4.2 in. Length: 16.0 cm / 6.3 in.
Part No:	PS-320 Patient Simulator (P.N. 17150)
Standard Accessories:	<i>PS-320 User Manual</i> (P.N. 17226) High Impact Plastic Carrying Case (P.N. 17260)
Optional Accessories:	110 V or 220 V AC Adapter/ Battery Eliminator (P.N. 17021) Mechanical Infant Heart (P.N. 17155) Agilent 50 Series - Ultrasound Cable(P.N. 17482) Agilent 50 Series TOCO - External Cable (P.N. 17484) Agilent 50 Series TOCO - IUP Cable(P.N. 17487) Agilent 8040 Series TOCO - IUP Cable (P.N. 17488) Corometrics - Ultrasound Cable (P.N. 17483) Corometrics TOCO - External Cable (P.N. 17481) Corometrics TOCO - IUP Cable (P.N. 17486) RS-232 Cable PS-320/420/440 (P.N. 17291)

* Contact your local METRON Sales Agent for further details

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2. Installation

This chapter explains unpacking, receipt inspection and claims, and the general procedures for PS-320 setup.

2.1 Receipt, Inspection and Return

1. Inspect the outer box for damage.
2. Carefully unpack all items from the box and check to see that you have the following items:
 - PS-320 Patient Simulator (P.N. 17150)
 - *PS-320 User Manual* (P.N. 17226)
 - High Impact Plastic Carrying Case (P.N. 17260)
3. If you note physical damage, or if the unit fails to function according to specification, inform the supplier immediately. When METRON or the Company's Sales Agent, is informed, measures will be taken to either repair the unit or dispatch a replacement. The customer will not have to wait for a claim to be investigated by the Sales Agent. The customer should place a new purchase order to ensure delivery.
4. When returning an instrument to METRON, or the Sales Agent, fill out the address label, describe what is wrong with the instrument, and provide the model and serial numbers. If possible, use the original packaging material for return shipping. Otherwise, repack the unit using:
 - a reinforced cardboard box, strong enough to carry the weight of the unit.
 - at least 5 cm of shock-absorbing material around the unit.
 - nonabrasive dust-free material for the other parts.

Repack the unit in a manner to ensure that it cannot shift in the box during shipment.

METRON's product warranty is on page ii of this manual. The warranty does not cover freight charges. C.O.D. will not be accepted without authorization from METRON or its Sales Agent.

METRON PS-320

Fetal Simulator

main sub scroll view

fetal
fetal ▲ fetal ▼ ampl ▲

maternal
mat. ▲ mat. ▼ ampl ▲

toco
toco ▲ 5 μ V 40 μ V

display
LCD ▲ LCD ▼ enter

3. Operating PS-320

This chapter describes the controls and terminals of the PS-320 and Fetal Simulator. It also provides basic instructions on operating the simulator.

3.1 Controls and Terminals

PS-320 Top Panel

1. **Battery Eliminator** 2.1 mm micro jack for connecting a 9 V plug-in power supply transformer for use in operating the unit from any standard electrical outlet. The jack polarity is center negative. We recommend you use METRON's AC Adapter (P.N. 17021), available separately from your METRON Sales Agent.
2. **Power Switch** Turns the power on and off.

PS-320 Front Panel

3. **LCD Display** 15 mm x 60 mm (.58 in. x 2.37 in.) window displaying up to two lines of 20 point font.

4. Keypad Control Keys

- enter** Enters the selected code line value into memory.
- main** Selects the main headings or groupings.
- sub** Selects the functions within the main menu.
- scroll** Scrolls selections back whether within the main menu or sub menu.
- view** Pressing "view" scrolls through the currently active functions.
- LCD▲ / LCD▼** Changes the contrast of the display.

5. Keypad Soft Keys

- fetal▲ / fetal▼** - Scrolls selections through available fetal heart rate parameters.
- ampl▲** - Scrolls selections through available amplitude parameters.
- mat.▲ / mat.▼** - Scrolls selections through available maternal heart rate parameters.
- ampl▲** - Scrolls selections through available amplitude parameters.
- toco▲** - Scrolls selections through available TOCO parameters.
- 5 μ V** Selects sensitivity of 5 μ V.
- 40 μ V** - Selects sensitivity of 40 μ V.

6. ECG Connectors

Five snap and multi-banana connectors for ECG output, allowing for connection to any ECG. These terminals are labeled and on the left side panel. Labels and their definitions are as follows:

Label	Definition
Fetal	Fetal ECG signal
Fet/Mat	Fetal and Maternal ECG signal. Fetal signal is approximately ½ of the Fetal amplitude selected

Maternal	Maternal ECG signal
Reference	Ground reference lead

- 7. **RS-232** 6-pin mini-DIN plug connector for the serial connection. The cable connection matrix for the serial cable is shown in Appendix A.
- 8. **Toco** 6-pin mini-DIN connector for the TOCO signal cable. The connection matrix for the cable is shown in Appendix A.
- 9. **US1 & US2** 8-pin mini-DIN plug connector for ultrasound cable plugs. The cable connection matrix is shown in Appendix A.

3.2 Power

- The simulator uses a 9 V alkaline battery (Duracell® MN1604 or equivalent). It is designed to use as much of the battery as possible. When it detects less than about 5.6 volts, it goes into a shut-down mode, sounds a continuous tone alarm and displays the following message:

NOTE

Remove the batteries and disconnect the AC Adapter / Battery Eliminator if you do not intend to use the PS-320 for an extended period of time.

REPLACE BATTERY!
UNIT SHUTDOWN!

The battery is situated in the base of the instrument. Use a 9 volt alkaline battery (Duracell® MN1604 or equivalent). Do not use mercury, air or carbon-zinc batteries.

- As an alternative to batteries you can power the simulator with a 2.1 mm size plug AC adapter (for example, METRON's AC Adapter/Battery Eliminator, P.N. 17021). The adapter voltage must not exceed 14.5 volts.
- The battery eliminator must be used when using the fetal heart simulator option.

3.3 Operating PS-320

Operating the simulator is simple. Connect the simulator to the device under test. By using the simulator's keypad you can select the code presets. The simulator then transmits these values to the device.

- First connect your ECG leads. The active lead will go on the Fetal, Fet/Mat, or Maternal points as appropriate. The reference lead will be connected to the reference point.
- Switch the simulator **ON**. The LCD window displays the program version for about two seconds.

The window then displays the default code entry display.

- Use the keypad to indicate the desired parameter then press "**enter**". This will activate the new parameter.

4. At any point you can view the simulator's current parameter settings simply by pressing "**view**". Repeated pressing of "**view**" will scroll through all of the settings.

NOTE

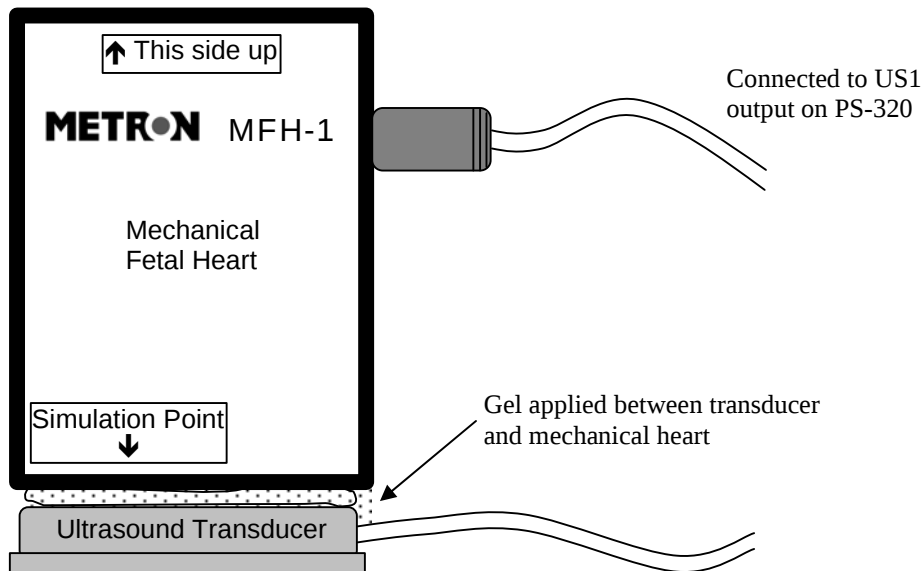
Only use the **enter** key when scrolling through the current settings. Using a menu scroll or change key interrupts the scrolling operation.

The first parameter setting ("**TOCO=00 5 μ V**") is then displayed. Thereafter, each time you press **view**, current settings are displayed in the following sequence:

TOCO=00 5 μ V
MAT SENS. @ 1mV
FET SENS. @ 1mV
US1=150 US2=NORM
FETHR=150 STATIC
MATERNAL HR=100

3.4 Operating PS-320

The Mechanical Fetal Heart (MFH-1) is an accessory to the PS-320 Fetal Simulator. The MFH-1 is connected to the PS-320 via the cable supplied with the MFH-1 and the US1 port on the simulator. The rate and rhythm of the mechanical heart is set by adjusting the US1 output on the PS-320. For the MFH-1 to function, the PS-320 must be powered through the battery eliminator. The Mechanical Fetal Heart will not function off of battery power.



The ultrasound transducer should be placed face up on your work surface and coated with an appropriate ultrasound conductive gel. The MFH-1 outputs the mechanical signal via the simulation window. This

window needs to be placed over each crystal of the transducer in turn to verify each crystal's function.

When you are finished using the MFH-1, clean the unit with normal soap and water, then dry.

4. Simulation Functions

This chapter describes PS-320 simulation procedures by function. If you are unfamiliar with the simulators' basic operation, refer to *paragraph 1.3, Operating PS-320*.

4.1 Simulation Function Descriptions

PS-320 Command Structure

Main Menu is indicated by an arrow and selects the main grouping of selections.

Sub Menu is indicated by an * and displays the selections.

MAIN MENU	SUB MENU	FUNCTION
→FETAL ECG		
	*FETAL RATE +30	-INCREASES FETAL RATE UP BY 30 BPM
	*FETAL RATE -30	-DECREASES FETAL RATE UP BY 30 BPM
	*FET SEN. 50 μ V	- SETS FETAL ECG AMPLITUDE TO 50 μ V
	*FET SEN. 100 μ V	- SETS FETAL ECG AMPLITUDE TO 100 μ V
	*FET SEN. 200 μ V	- SETS FETAL ECG AMPLITUDE TO 200 μ V
	*FET SEN. 0.5mV	- SETS FETAL ECG AMPLITUDE TO 0.5mV
	*FET SEN. 1 mV	- SETS FETAL ECG AMPLITUDE TO 1 mV
	*FET SEN. 2 mV	- SETS FETAL ECG AMPLITUDE TO 2 mV
→MATERNAL ECG		
	*MAT SEN. 0.5mV	-SETS MATERNAL ECG AMPLITUDE TO 0.5mV
	*MAT SEN. 1 mV	-SETS MATERNAL ECG AMPLITUDE TO 1mV
	*MAT SEN. 2mV	-SETS MATERNAL ECG AMPLITUDE TO 2mV
	*MAT RATE +20	-INCREASES MATERNAL RATE BY 20 BPM
	*MAT RATE -20	-DECREASES MATERNAL RATE BY 20 BPM
→UTERINE ACTIVITY		
	*SENS @ 5 μ V mmHg	-SETS PRESSURE SENS TO 5 μ V
	*SENS @40 μ V mmHg	-SETS PRESSURE SENS TO 40 μ V
	*UTERINE LVL =0	-SETS UTERINE LVL TO 0 (ZERO)
	*ANALOG TO +1 V	-SETS ANALOG UTERINE OUTPUT FROM 0 TO +1V. 1V=100mmHG
	*ANALOG TO -1V	-SETS ANALOG UTERINE OUTPUT FROM 0 TO -1V. -1V=100mmHG
	*UTERINE STATIC	-SETS UTERINE OUTPUT IN STEPS OF 20 mmHg
	*EXECUTE TOCO WA	-STARTS A TOCO WAVE, NOT VALID DURING TREND SELECTION.
	*UTERINE WV OFF	-STOPS TOCO WAVE, NOT VALID DURING TREND SELECTION.
	*UTERINE WV 0-25	-SETS STANDARD TOCO WAVE FROM 0 TO 25 UNITS
	*UTERINE WV 0-50	-SETS STANDARD TOCO WAVE FROM 0 TO 50 UNITS
	*UTERINE WV 0-100	-SETS STANDARD TOCO WAVE FROM 0 TO 100 UNITS
	*SHORT DURATION	-SELECTS SHORT DURATION TOCO WAVEFORM, NOT VALID DURING TREND
	*NORMAL DURATION	-SELECTS NORM DURATION TOCO WAVEFORM, NOT VALID DURING TREND

*INCREASED DURAT	-SELECTS LONG DURATION TOCO WAVEFORM, NOT VALID DURING TREND
*INCR. REST TONE	-SELECTS TOCO WAVEFORM WITH INCREASED BASELINE LEVEL, NOT VALID DURING TREND
*COUPLING	-SELECTS COUPLING TOCO WAVEFORM, NOT VALID DURING TREND
*TRIPLING	-SELECTS TRIPLING TOCO WAVEFORM, NOT VALID DURING TREND

→FETAL PATTERNS

*TREND #1	-SELECTS REAL PATIENT TREND OF FETAL HEARTRATE AND TOCO, OTHER TOCO SELECTIONS NOT VALID DURING THIS SELECTION
*NORMAL	-SELECTS NORMAL PATTERN
*BRADYCARDIA	-SELECTS BRADYCARDIA PATTERN
*TACHYCARDIA	-SELECTS TACHYCARDIA PATTERN
*ARRHYTHMIAS	-SELECTS ARRHYTHMIA PATTERN
*LATE DECELERATI	-SELECTS LATE DECELERATION PATTERN
*EARLY DECELERAT	-SELECTS EARLY DECELERATION PATTERN
*MODERATE DECELE	-SELECTS MODERATE DECELERATION PATTERN
*ACCELERATION #1	-SELECTS ACCELERATION PATTERN #1
*ACCELERATION #2	-SELECTS ACCELERATION PATTERN #2
*SINUSOIDAL, HIGH	-SELECTS HIGH LEVEL SINUSOIDAL PATTERN
*SINUSOIDAL, LOW	-SELECTS LOW LEVEL SINUSOIDAL PATTERN
*COMPENS ACCEL.	-SELECTS COMPENSATORY ACCELERATION PATTERN
*LONG DECELERATI	-SELECTS LONG DECELERATION PATTERN
*PROLONGED DEC.	-SELECTS PROLONGED DECELERATION PATTERN
*DEC. (POSITION)	-SELECTS POSITION DECELERATION PATTERN
*VAR. DECELERATI	-SELECTS VARIABLE DECELERATION PATTERN
*VAR. DEC. (POST)	-SELECTS POST VARIABLE DECELERATION
*VAR. DECEL. (V)	-SELECTS "V" SHAPED VARIABLE DECELERATION PATTERN
*SEV VAR. DEC.#1	-SELECTS SEVERE VARIABLE DECELERATION PATTERN
*VAR. DECEL TACH	-SELECTS VARIABLE DECELERATION TACHYCARDIA PATTERN
*VAR. DECEL. (U)	-SELECTS "U" SHAPED VARIABLE DECELERATION PATTERN
*NON-UNIFORM DEC	-SELECTS NON-UNIFORM DECELERATION PATTERN
*EXAGGERATED DEC	-SELECTS EXAGGERATED DECELERATION PATTERN
*BIPAHASIC DECEL.	-SELECTS BIPHASIC DECELERATION PATTERN
*ABSENT VARIABIL	-SELECTS NO VARIABILITY IN THE FETAL HEART RATE PATTERN
*LOW VARIABILITY	-SELECTS LOW VARIABILITY IN THE FETAL HEART RATE PATTERN
*MILD VARIABILIT	-SELECTS MILD VARIABILITY IN THE FETAL HEART RATE PATTERN
*HIGH VARIABILIT	-SELECTS HIGH VARIABILITY IN THE FETAL HEART RATE PATTERN
*SEVERE VARIABIL	-SELECTS SEVERE VARIABILITY IN THE FETAL HEART RATE PATTERN
*LONG TERM VARIB	-SELECTS LONG TERM VARIABILITY IN THE FETAL HEART RATE PATTERN

→AUXILIARY

*REVISION 1.22	-DISPLAYS SOFTWARE REVISION
*POWER ON 40 μ V	-ENABLES 40 μ V UTERINE PRESSURE ON POWER UP
*POWER ON 5 μ V	-ENABLES 5 μ V UTERINE PRESSURE ON POWER UP
*LCD ADJUST+	-ADJUSTS LCD CONTRAST HIGH
*LCD ADJUST-	-ADJUSTS LCD CONTRAST LOW
*ECG SQ .125Hz	-SELECTS .125Hz ECG SQUARE WAVE

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5. Calibration

This chapter describes PS-320 calibration procedures.

5.1 Equipment

Coming soon

5.2 Fetal ECG

The fetal ECG amplitude should be set to 1 mV. Connect a voltmeter (HP34401A recommended) with the common lead to the reference terminal and the input lead on the Fetal ECG output. Use the RS232 command " 25" or the front panel in Auxiliary and select the .125 Hz square wave. When the output is at the low value null the meter and wait for the high level. The high level should be adjusted to 1.00 mV $\pm$ 0.005 mV with the R8 potentiometer. The unit may have to be nulled again and the high level measured and adjusted several times if necessary. The other fetal amplitudes may be checked but once the 1 mV setting is OK they should fall within specs. The specs for the amplitude for this product are $\pm$ 5% of setting. The square wave amplitude will be very close to the peak amplitude of the R-wave measured from the baseline.

5.3 Maternal ECG

The maternal ECG amplitude should be set to 1 mV. Connect a voltmeter (HP34401A recommended) with the common lead to the reference terminal and the input lead on the Maternal ECG output. Use the RS232 command " 25" or the front panel in Auxiliary and select the .125 Hz square wave. When the output is at the low value null the meter and wait for the high level. The high level should be adjusted to 1.00 mV $\pm$ 0.005 mV with the R7 potentiometer. The unit may have to be nulled again and the high level measured and adjusted several times if necessary. The other maternal amplitudes may be checked but once the 1 mV setting is OK they should fall within specs. The specs for the amplitude for this product are $\pm$ 5% of setting. The square wave amplitude will be very close to the peak amplitude of the R-wave measured from the baseline.

5.4 TOCO Channel

The TOCO channel can be calibrated the same as a pressure channel. Apply a 5V excitation voltage across the excitation pins of the TOCO connector. The +ext is pin 1 and the -ext is pin 4. Using a voltmeter connect to the + and - signal pins, 3 and 6. With the sensitivity set at 5 microV and a zero TOCO setting (code 29 or use front panel TOCO key), null the meter. Set the TOCO to 100 (code 34 or use the front TOCO key) and adjust R17 for a reading of 2.50 mV $\pm$ 0.005 mV. After adjustment check the zero level and null meter if necessary and adjust at 100 until necessary.

5.5 Other Tests

1. Check for a pulse train (4 pulses) on pins 6 and 1 with a scope grounded to pin 8 or battery ground, on the Ultrasound channels 1

and 2 connectors.

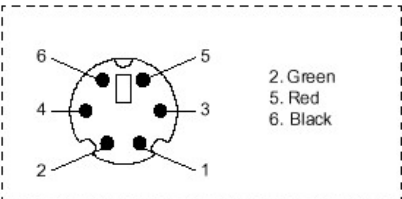
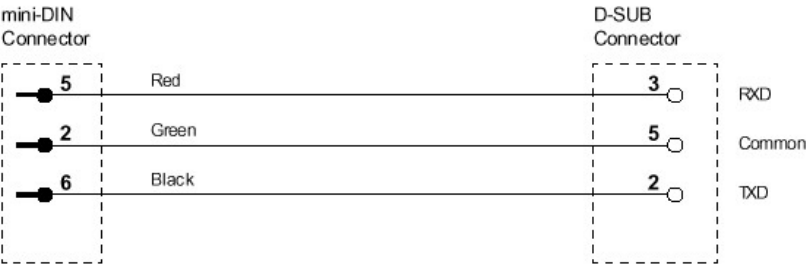
2. Check the Ultrasound channels with a fetal monitor if possible. The analog switch simply provides a short between common (ie. COM4, COM3) and NO4 and NO3 of the MAX313 (IC15).

Appendix A - Cable Connection Matrices

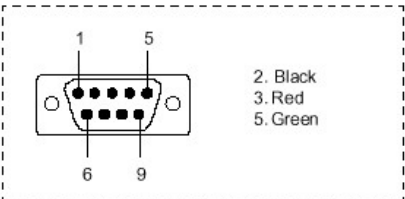
A-1 PS-320/420/440 RS-232 Cable

RS-232 Cable

PS-320, PS-420, PS-440



mini-DIN Connector (seen from solder side)



D-SUB Connector (seen from solder side)

Order no.: 17291

Component list:

mini-DIN Connector: male, 6 pole, black
D-sub Connector: female, 9 pole
Cable: 4 x 0.14 mm²/w shield, 1.6m, grey

Metron AS
Travbaneveien 1
N-7044 Trondheim, NORWAY
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Fax: +47 73 91 70 09
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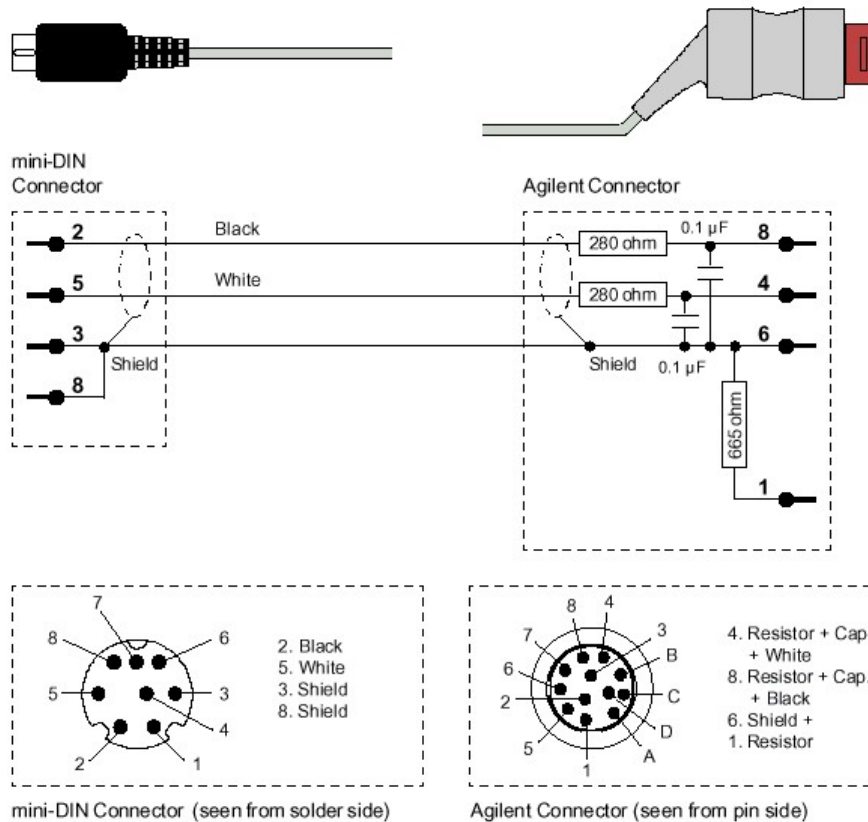
METRON AS Norway	RS-232 cable, PS-320	
	Schematic diagram	
PS-320	20.08.2000	1 av 1



A-2 PS-320 Agilent 50 Series – Ultrasound Cable

Agilent 50 Series - Ultrasound Cable

PS-320



Order no.: 17482

Component list:

mini-DIN Connector: male, 8 pole, black
 Agilent Connector: HP PN 1252-4830 (Rose)
 Cable: 4 x 0.14 mm² w/shield
 1.75 m, grey
 Resistor: 280 ohms 2 ea
 Resistor: 665 ohms 1 ea
 Capacitors: Cer. 01, μ F 2 ea

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 E-mail: support@metron.no

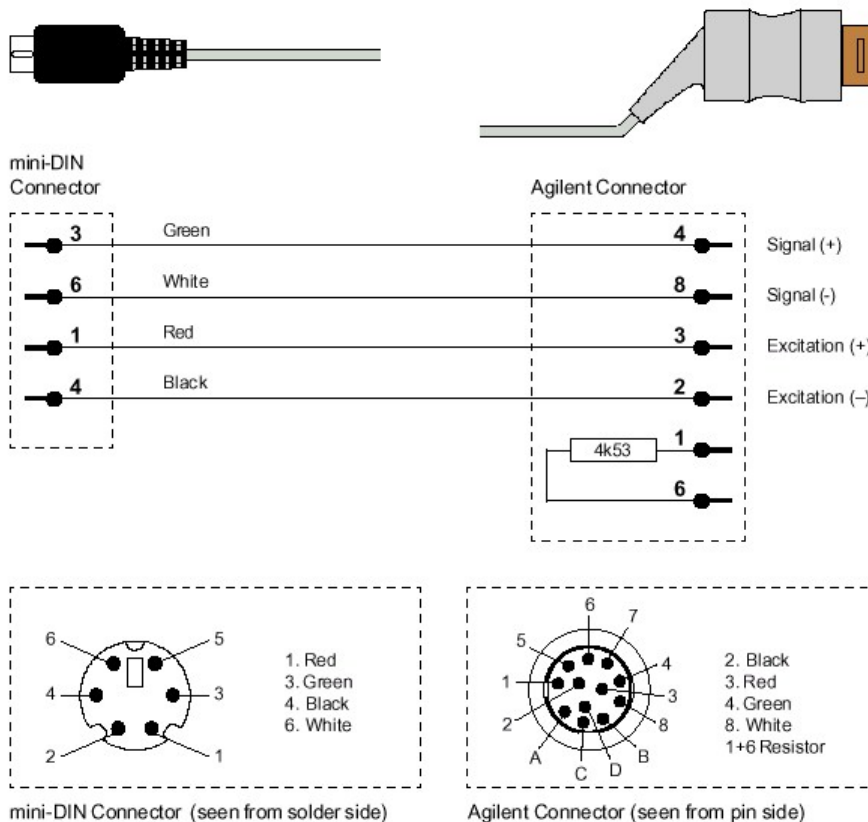
METRON AS Norway	Agilent 50 Series - Ultrasound Cable	
	Schematic diagram	
PS-320	20.08.2000	1 av 1

METRON

A-3 PS-320 Agilent 50 Series Toco – External Cable

Agilent 50 Series Toco - External Cable

PS-320



Order no.: 17484

Component list:

mini-DIN Connector: male, 6 pole, black
 Agilent Connector: HP PN 1251-6887 (brown)
 Cable: 4 x 0.14 mm² w/shield
 1.75 m, grey
 Resistor: 4k53 1 ea

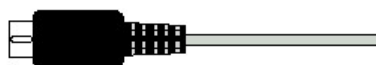
METRON AS Norway	Agilent 50 Series Toco - External Cable	
	Schematic diagram	
PS-320	20.06.2000	1 av 1

Metron AS
 Travbaneveien 1
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 Fax: +47 73 91 70 09
 E-mail: support@metron.no

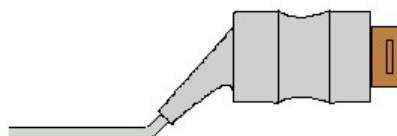
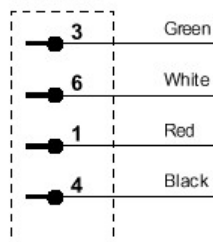
METRON

Agilent 50 Series Toco - IUP Cable

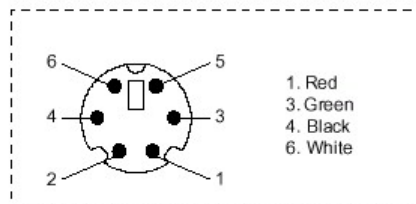
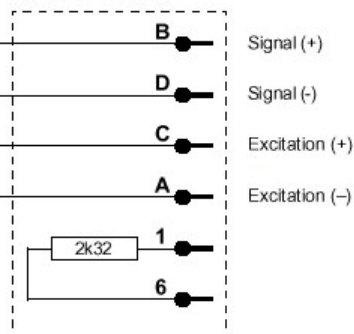
PS-320



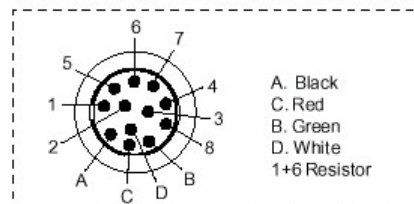
mini-DIN
Connector



Agilent Connector



mini-DIN Connector (seen from solder side)



Agilent Connector (seen from pin side)

Order no.: 17487

Component list:

mini-DIN Connector: male, 6 pole, black
Agilent Connector: HP PN 1251-6887 (brown)
Cable: 4 x 0.14 mm² w/shield
1.75 m, grey
Resistor: 2k32 1 ea

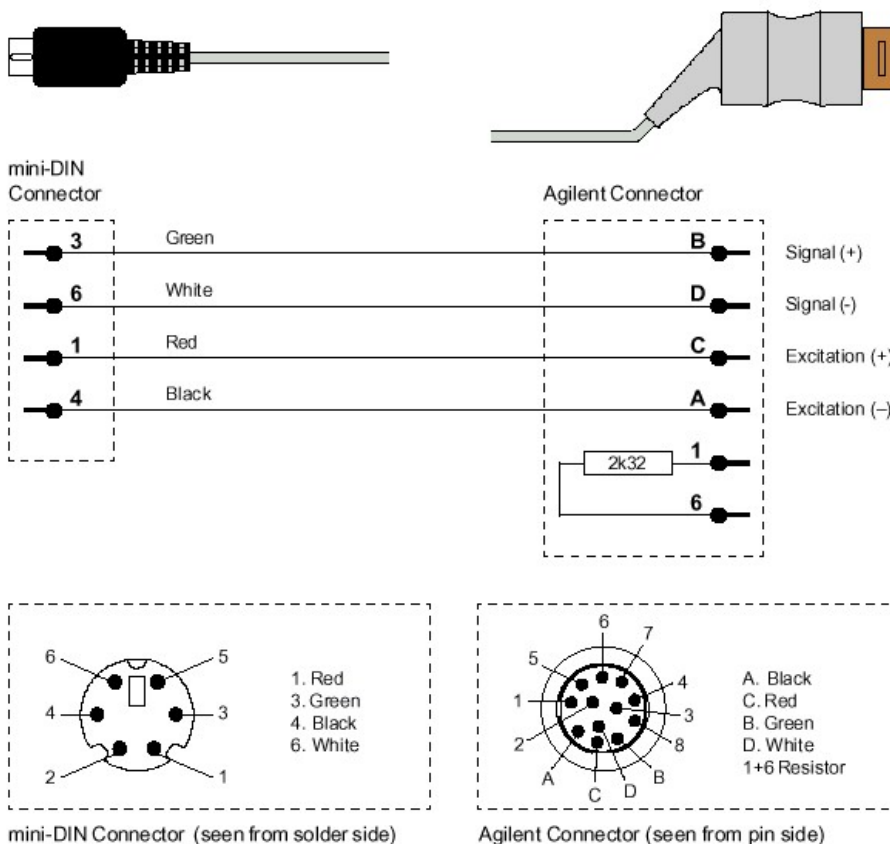
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Fax: +47 73 91 70 09
E-mail: support@metron.no

METRON AS Norway	Agilent 50 Series Toco - IUP Cable	
	Schematic diagram	
PS-320	20.08.2000	1 av 1

METRON

Agilent 8040 Toco - IUP Cable

PS-320



Order no.: 17488

Component list:

mini-DIN Connector: male, 6 pole, black
 Agilent Connector: HP PN 1251-6887 (brown)
 Cable: 4 x 0.14 mm² w/shield
 1.75 m, grey
 Resistor: 2k32 1 ea

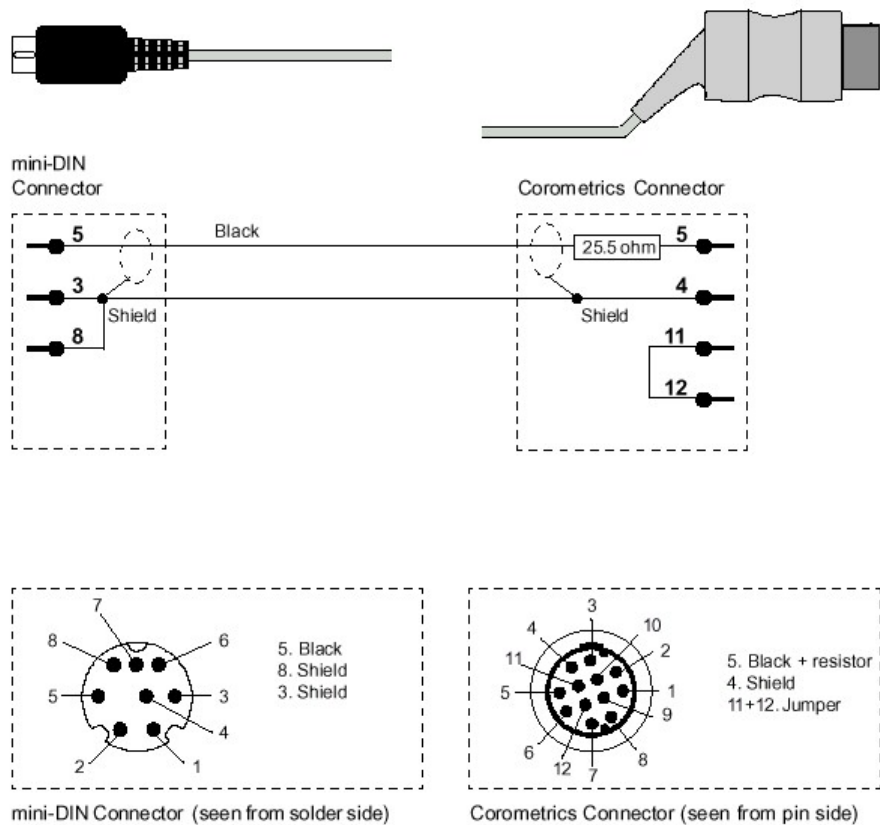
METRON AS Norway	Agilent 8040 Toco - IUP Cable	
	Schematic diagram	
PS-320	20.08.2000	1 av 1

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METRON

Corometrics - Ultrasound Cable

PS-320



Order no.: 17483

Component list:

mini-DIN Connector: male, 8 pole, black
Corometrics Conn.: 12 pin male
Cable: 4 x 0.14 mm² w/shield
1.75 m, grey
Resistor: 25.5 ohm 1 ea

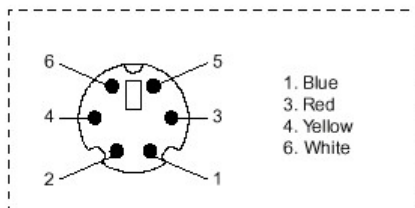
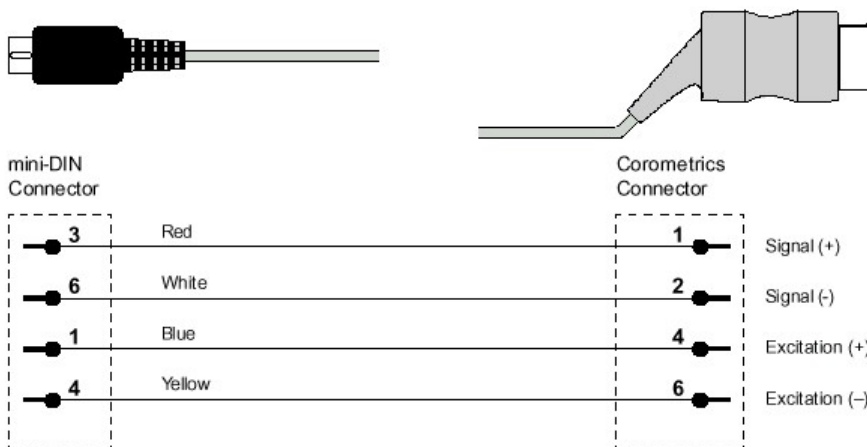
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METRON AS Norway	Corometric - Ultrasound Cable	
	Schematic diagram	
PS-320	20.08.2000	1 av 1

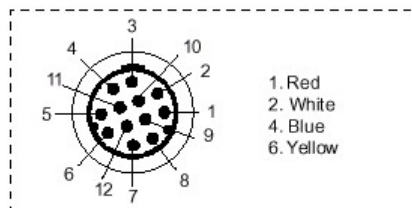
METRON

Corometrics Toco - External Cable

PS-320



mini-DIN Connector (seen from solder side)



Corometrics Connector (seen from pin side)

Order no.: 17481

Component list:

mini-DIN Connector: male, 6 pole, black
 Corometrics Conn.: 12 pin male (white)
 Cable: 4 x 0.14 mm² w/shield
 1.75 m, grey

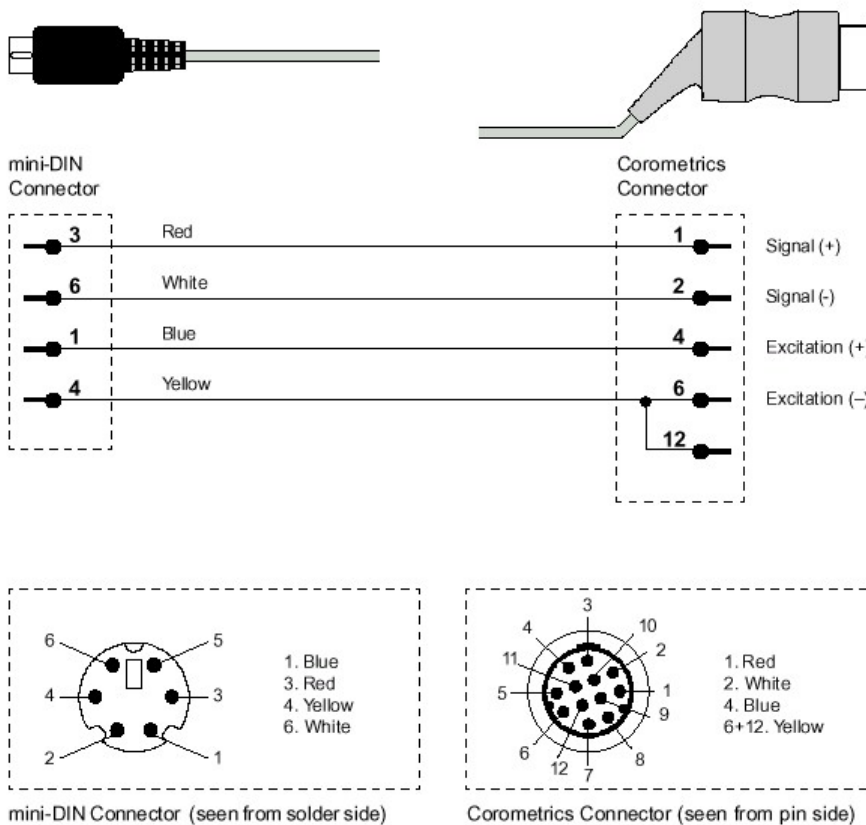
Metron AS
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METRON AS Norway	Corometrics Toco - External Cable	
	Schematic diagram	
PS-320	20.08.2000	1 av 1

METRON

Corometrics Toco - IUP Cable

PS-320



Order no.: 17486

Component list:

mini-DIN Connector: male, 6 pole, black
 Corometrics Conn.: 12 pin male (white)
 Cable: 4 x 0.14 mm² w/shield
 1.75 m, grey

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METRON AS Norway	Corometrics Toco - IUP Cable	
	Schematic diagram	
PS-320	20.08.2000	1 av 1

METRON

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 Fax: (+47) 7391 7009
 E-mail: support@metron.no



From: (name)

Address:

Phone:

Fax:

E-mail:

Date:

Error Report

Product:

Version:

Serial no.:

Description of the situation prior to the error:

Description of the error:

(METRON AS internally)

Comments:

Received date:

Correction date:

Ref No.



Critical



Normal



Minor

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E-mail: support@metron.no



From: (name)

Address:

Phone:

Fax:

E-mail:

Date:

Improvement Suggestion

Product:

Version:

Description of the suggested improvement:

(METRON AS internally)

Comments:

Received date:

Correction date:

Ref No.

☐

Critical

☐

Normal

☐

Minor

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