

**\*-> Software Revision Number field is split into Revision and Service Pack for some products. Please look into Product Specific Document for more information.**

## 6.5.8 Waveform Data Response

If Waveform Data Mode is enabled, a Waveform Data Response will be transmitted every 400 mS. Six blocks of ten data samples taken every 40 mS will be sent with each message. Each data value is a 3-digit, zero filled, right justified ASCII Hex representation of a 12 bit binary value. If a block is requested with an invalid character, the waveform data values for that block are filled with zeroes.

Each entry is zero filled and right justified – i.e. 95 expressed in three bytes is 095.

Waveform Data Response always contains six waveform blocks (unlike Ohmeda Com 1.0).

If the requested waveform data is not available, data is zeroed.

Byte(s)	Waveform Data Name	Units and/or Description
0-3	Header	:VTw
4-6	Waveform 1 1 <sup>st</sup> 40 ms waveform sample	hexadecimal "000" – "FFF" (see section 6.5.8.1 Waveform Data Description)
7-9	Waveform 1 2 <sup>nd</sup> 40 ms waveform sample	hexadecimal "000" – "FFF" (see section 6.5.8.1 Waveform Data Description)
.	.	.
28-30	Waveform 1 9 <sup>th</sup> 40 ms waveform sample	hexadecimal "000" – "FFF" (see section 6.5.8.1 Waveform Data Description)
31-33	Waveform 1 10 <sup>th</sup> 40 ms waveform sample	hexadecimal "000" – "FFF" (see section 6.5.8.1 Waveform Data Description)
34-36	Waveform 2 1 <sup>st</sup> 40 ms waveform sample	hexadecimal "000" – "FFF" (see section 6.5.8.1 Waveform Data Description)
37-39	Waveform 2 2 <sup>nd</sup> 40 ms waveform sample	hexadecimal "000" – "FFF" (see section 6.5.8.1 Waveform Data Description)
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.	.	.
58-60	Waveform 2 9 <sup>th</sup> 40 ms waveform sample	hexadecimal "000" – "FFF" (see section <b>6.5.8.1 Waveform Data Description</b> )
61-63	Waveform 2 10 <sup>th</sup> 40 ms waveform sample	hexadecimal "000" – "FFF" (see section <b>6.5.8.1 Waveform Data Description</b> )
64-66	Waveform 3 1 <sup>st</sup> 40 ms waveform sample	hexadecimal "000" – "FFF" (see section <b>6.5.8.1 Waveform Data Description</b> )
67-69	Waveform 3 2 <sup>nd</sup> 40 ms waveform sample	hexadecimal "000" – "FFF" (see section <b>6.5.8.1 Waveform Data Description</b> )
.	.	.
88-90	Waveform 3 9 <sup>th</sup> 40 ms waveform sample	hexadecimal "000" – "FFF" (see section <b>6.5.8.1 Waveform Data Description</b> )
91-93	Waveform 3 10 <sup>th</sup> 40 ms waveform sample	hexadecimal "000" – "FFF" (see section <b>6.5.8.1 Waveform Data Description</b> )
94-96	Waveform 4 1 <sup>st</sup> 40 ms waveform sample	hexadecimal "000" – "FFF" (see section <b>6.5.8.1 Waveform Data Description</b> )
97-99	Waveform 4 2 <sup>nd</sup> 40 ms waveform sample	hexadecimal "000" – "FFF" (see section <b>6.5.8.1 Waveform Data Description</b> )
.	.	.
118-120	Waveform 4 9 <sup>th</sup> 40 ms waveform sample	hexadecimal "000" – "FFF" (see section <b>6.5.8.1 Waveform Data Description</b> )
121-123	Waveform 4 10 <sup>th</sup> 40 ms waveform sample	hexadecimal "000" – "FFF" (see section <b>6.5.8.1 Waveform Data Description</b> )
124-126	Waveform 5 1 <sup>st</sup> 40 ms waveform sample	hexadecimal "000" – "FFF" (see section <b>6.5.8.1 Waveform Data Description</b> )
127-129	Waveform 5	hexadecimal "000" – "FFF" (see



	2 <sup>nd</sup> 40 ms waveform sample	section <b>6.5.8.1 Waveform Data Description</b> )
.	.	.
.	.	.
.	.	.
148-150	Waveform 5 9 <sup>th</sup> 40 ms waveform sample	hexadecimal "000" – "FFF" (see section <b>6.5.8.1 Waveform Data Description</b> )
151-153	Waveform 5 10 <sup>th</sup> 40 ms waveform sample	hexadecimal "000" – "FFF" (see section <b>6.5.8.1 Waveform Data Description</b> )
154-156	Waveform 6 1 <sup>st</sup> 40 ms waveform sample	hexadecimal "000" – "FFF" (see section <b>6.5.8.1 Waveform Data Description</b> )
157-159	Waveform 6 2 <sup>nd</sup> 40 ms waveform sample	hexadecimal "000" – "FFF" (see section <b>6.5.8.1 Waveform Data Description</b> )
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.	.	.
.	.	.
178-180	Waveform 6 9 <sup>th</sup> 40 ms waveform sample	hexadecimal "000" – "FFF" (see section <b>6.5.8.1 Waveform Data Description</b> )
181-183	Waveform 6 10 <sup>th</sup> 40 ms waveform sample	hexadecimal "000" – "FFF" (see section <b>6.5.8.1 Waveform Data Description</b> )
184	breath end/start index to waveform sample at start of spirometry loop	0-9, -
185	Checksum	See Software Interface section.
186	Carriage return	<CR>

### 6.5.8.1 Waveform Data Description

Each waveform data sample shall be scaled as follows:

<p style="text-align: center;"><b>Pressure</b></p> <p style="text-align: center;">Range: -20 to 120 cmH<sub>2</sub>O</p>
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Raw Data	Scaled value	Transmitted
-20	0	"000"
0	512	"200"
120	3584	"E00"

Flow		
Range: -100 to 100 L/min		
Raw Data	Scaled value	Transmitted
-100	512	"200"
0	2048	"800"
100	3584	"E00"

Volume		
Range: 0 to 2000 mL		
Raw Data	Scaled value	Transmitted
0	512	"200"
2000	3584	"E00"

Anesthetic Agent		
Range: 0 – 20 %		
Raw Data	Scaled value	Transmitted
0	512	"200"
20	3584	"E00"

CO <sub>2</sub>		
Range: 0 – 35 %		
Raw Data	Scaled value	Transmitted
0	512	"200"
35	3584	"E00"



O <sub>2</sub> Range: 0 – 100 %		
Raw Data	Scaled value	Transmitted
0	512	"200"
100	3584	"E00"

### 6.5.9 Spiro Dynamics Data Response

If Spiro Dynamics Data Mode is enabled, a Spiro Dynamics Data Response will be transmitted every 400 mS. Two blocks of ten data samples taken every 40 mS will be sent with each message. Each data value is a 3-digit, zero filled, right justified ASCII Hex representation of a 12 bit binary value. If a block is requested with an invalid character, the waveform data values for that block are filled with ASCII zeroes.

Each entry is zero filled and right justified – i.e. 95 expressed in three bytes is 095.

Byte(s)	Waveform Data Name	Units and/or Description
0-3	Header	:VTh
4-6	Pressure Waveform 1 <sup>st</sup> 40 ms waveform sample	hexadecimal "000" – "FFF" (see section 6.5.9.1 Waveform Data Description)
7-9	Pressure Waveform 2 <sup>nd</sup> 40 ms waveform sample	hexadecimal "000" – "FFF" (see section 6.5.9.1 Waveform Data Description)
.	.	.
.	.	.
.	.	.
28-30	Pressure Waveform 9 <sup>th</sup> 40 ms waveform sample	hexadecimal "000" – "FFF" (see section 6.5.9.1 Waveform Data Description)
31-33	Pressure Waveform 10 <sup>th</sup> 40 ms waveform sample	hexadecimal "000" – "FFF" (see section 6.5.9.1 Waveform Data Description)
34-36	Volume Waveform 1 <sup>st</sup> 40 ms waveform sample	hexadecimal "000" – "FFF" (see section 6.5.9.1 Waveform Data Description)
37-39	Volume Waveform	hexadecimal "000" – "FFF" (see section 6.5.9.1 Waveform Data Description)