VIASYS®
HEALTHCARE
RESPIRATORY CARE

Specification

Consolidated VOXP

L2987
Revision C

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Introduction

1.1 Purpose

This document provides the specifications of a flexible, extensible data communication protocol for interchange of digital data with VIASYS Healthcare ventilators. It is intended for software engineers developing software for VIASYS ventilators and any third party who may wish to develop host applications which exchange digital data with VIASYS ventilators.

1.2 Scope

The information contained in this document applies to any development, ventilator or host, which uses the VIASYS Comm (VOXP) Protocol for digital communication.

1.3 Definitions/Abbreviations

This section identifies terms, abbreviations and acronyms which are used in this document that are not commonly known or otherwise require clarification.

XML: Extensible Markup Language.

VOXP: VIASYS Open XML Protocol used to communicate information from a VIASYS Respiratory Care medical device to an external host system.

Big-endian: Big-endian and little-endian are terms that describe the order in which a sequence of bytes are stored in computer memory. Big-endian is an order in which the "big end" (most significant value in the sequence) is stored first (at the lowest storage address).

10BaseT: 10Mbps baseband data transmission over twisted-pair copper wire.

CRC: Cyclic Redundancy Check is a number derived from, and stored or transmitted with, a block of data in order to detect corruption.

ER: Engineering Report.

MIB: Medical Information Buss – see IEEE 1073 Medical Information Buss.

RJ: Registered Jack (e.g. RJ-45, RJ-11, etc.).

RS: Recommended Standard (e.g. RS-232, RS-422, etc.)

RxD: Receive data.

STP: Shielded Twisted Pair.

TxD: Transmit data.

VOXP: VIASYS Open XML Protocol

1.4 References

Identified below are documents which are referenced throughout or which must be used to interpret this document:

Extensible Markup Language (XML) V1.0

ISO 8601:2004 - Representation of Dates and Times

1.5 Overview / Design Considerations

This document defines digital data communication between a VIASYS ventilator and a host computer system. This specification is intended to provide the flexibility required to support any ventilator model and configuration as well as any host application. To achieve this flexibility, the protocol is based on a point to point, stream oriented exchange of data using only the printable ASCII character set. Messages are formatted using a subset of XML to provide a standardized method of structuring data. Instrument capability is negotiated with the host upon connection to allow generalization of the host compatibility across ventilator product models.

The document presents the specification of the protocol in a number of sections. First, a section describing the probable host applications will help ensure that the protocol will meet the needs of the uses identified. Secondly, the characteristics of the physical connection are described followed by a section with definitions that apply to multiple other sections. The syntax of properly formatted messages is defined along with the sequence that must be exchanged between the ventilator and host. Finally, a lexicon of nomenclature is presented that provides the identification and description of data entities that may be exchanged using the protocol.

NOTE: CLIENT SYSTEMS THAT SUPPORT THE VOXP PROTOCOL SHOULD BE DESIGNED IN SUCH A WAY THAT THESE AND FUTURE ENHANCEMENTS DO NOT RESULT IN FAILURE OF THE SYSTEM TO FUNCTION PROPERLY.

For example, some ventilators may support the “query-all” command and others may not, or some may support the EtCO2 semantics and others not. The presence or absence of these protocol enhancements should not necessarily cause failure of other client system capabilities.
Also, the commands and semantics specified in this document were not supported in previous versions of the VOX Protocol.

2 Use Cases

2.1 Immediate Patient Care

- Integration of patient data with a vital signs monitor at the bedside.
- Central station monitoring of patient data.
- Remote Alarm monitoring – outside room, central station, mobile with care provider.

2.2 Link Control

- Automatic recording of Flow Sheet.
- Record of Alarm Log in central patient record.
- Record of Event Log in central patient record.
- Locally recorded patient chart information.

2.3 Service / Maintenance

- Fault Log.

2.4 Asset Management

- Asset location tracking.
- Asset use tracking.
- Service tracking.

2.5 Manufacturing

- Automated test.

3 Physical Requirements

This protocol is intended not to be constrained to any particular physical link. Any point-to-point connection from a ventilator to a single host, logical or physical, that can support the General Characteristics, should be adequate. This may include, for example, RS-232, TCP/IP, USB, etc.

4 General Characteristics

This section defines characteristics of this communication protocol which apply generally.

Only printing ASCII characters shall be transmitted in either direction between the ventilator and host. However, whitespace (SP, TAB, CR, and LF) shall be allowed, but should be ignored by the receiver. Also, XON/XOFF shall be allowed for flow control only. Note, however, that the use of XON/XOFF while the keep-alive mechanism is activated can cause the link to disconnect and return the session to the discovery state. This will occur if XOFF lasts longer than the expected 5 second link.ack() reply message.

The transmission of characters shall be stream oriented with XML element tags being the delimiters of a message and values shall be transmitted in big-endian order.

Consumption of communication channel bandwidth is the responsibility of the host application. It should not configure more data access than the channel will support.

Each message shall assume but not include the following XML Declaration statement:
<?xml version=”1.0” encoding=”UTF-8” ?>

Protocol extensions (e.g., additional data classes or types) may be added in the future. Though “backwards compatibility” is the goal of all protocol additions, client applications must be designed in a manner that allows them to ignore content that is syntactically correct but not recognized; otherwise, a new data class, message type or alarm level, for example, may cause the application to fail because it isn’t recognized.

5 Message Format

Messages consist of a well-formed XML Element, which may contain child elements. Whitespace is optional and should be ignored in a received message. The following examples have ample whitespace to more clearly depict the message structure.

Four primary message types are defined: Profile, Config, Link and Data. Profile and Config types are used to negotiate the capabilities of the ventilator and capabilities the

host intends to use. Data messages transport the requested data between ventilator and host. Link messages stimulate, acknowledge or control in some way the exchange of all the messages of other types.

Each message type (i.e. Profile, Config, Link, and Data) may contain a message identifier (msgID) element attribute. The msgID shall be a 16-bit value encoded as four ASCII HEX characters that the message exchange originator can use to uniquely identify a response message containing the echoed msgID. It may be implemented as a fixed value for each exchange sequence or, may be implemented as a simple counter across all messages that are sent (i.e. one counter for all message types). In the case where only one exchange is active at a time, the simpler fixed msgID approach may be used. However, when multiple exchanges may be active in parallel, the msgID mechanism provides the means for sorting out which response (esp. ACK and NAK messages) are associated with which command. A message with a negative acknowledgement (NAK), shall echo the msgID in its message to the originator. For example, if a link (send-profile) message originated by the Host and has an msgID=”5A5A”, and the ventilator identifies that the message has an error, the ventilator will respond with a link(nak) with an msgID=”5A5A”. The table below summarizes the VOXP message exchange between various command types:

VOXP Message Exchange

Version Released	Command Type	Response Type	Originator*	Responder	Status
1.0	link(ping)	link(ack)	M/V	M/V	Mandatory
1.0	link(send-profile)	profile	M	V	Mandatory
3.1	link(send-profile-info)	profileInfo	M	V	Optional
3.1	link(set)	link(ack)	M	V	Optional
1.0	config	link(ack)	M	V	Mandatory
1.0	link(query)	data	M	V	Mandatory
3.1	link(query-all)	dataSnapshot	M	V	Optional
1.0	data**	link(ack)	V	M	Mandatory
1.0	link(restart)		M/V		Mandatory

* M=Manager (or external host); V=Ventilator

** Active mode only

5.1 Profile

The profile message identifies the capabilities of the ventilator to the host system and is signified by the XML element tag “<profile>“. The profile element contains a number of child elements which describe the attributes of each data unit available for exchange and are signified by the XML element tag “<unit>“. Unit elements are presented in Attribute Normal Form. The order in which the unit elements appear establishes the order in which the ventilator will send data. For sets of data items that have a priority relationship (e.g., alarm indicators), higher priority units precede lower priority units.

Units that represent enumerated values have a data type of ENUM and may contain one or more child elements that map a specific enumerated value to a textual label, signified by an <enum> XML element tag. Enum elements are presented in Attribute Normal Form.

Profile Element Attributes

model — Identifies the basic ventilator name and defines the context for the subsequent profileVersion attribute value. For example: model="Avea". The value of this attribute is defined in the ventilator's VOXP "SysInfoModel" parameter.

profileVersion — The version number (major.minor) associated with the configuration of the subsequently defined information profile. Updates to the major number indicate either significant additions and modifications of content or backwards compatibility issues. Minor version updates indicate relatively small additions or modifications to the information content. (See also voxpVersion attribute.) The value of this attribute is defined in the ventilator's Major/Minor Version Number Assignments tables (see Section 10.2).

textEncoding — Specifies the character encoding for the TEXT attribute data type (see below). This attribute shall comply to the character set encodings supported by XML, as defined by IANA (cf. www.iana.org/assignments/character-sets). Supported character sets include:

"UTF-16" 16-bit characters (default, if not otherwise specified)
"UTF-32" 32-bit characters

Unicode character sets are per Unicode Version 4.0.0 or more recent. For example: textEncoding="UTF-32"

voxpVersion — Version number (major.minor) of the baseline VOX Protocol specification is used by this device. Major number changes typically indicate syntactic changes to the protocol that may require parser modifications on the client application receiving the message. Minor number changes typically indicate content changes, such as additional nomenclature terms that are available. The value of this attribute is defined in the ventilator's Major/Minor Version Number Assignments tables (see Section 10.2). For example: voxpVersion="1.2"

Unit & Enum Element Attributes

class: “setting” | “monitor” | “alarm” | “scalar” | “info” | “trend” | “log” | “pragma”
The “class” attribute provides a grouping of unit data by similar characteristics. All unit data available for a class, except “trend” and “log” classes are grouped together and transmitted in a single message. Data in “trend” and “log” is record oriented and transmitted one record at a time. Any unit in the “pragma” class is generally for special functions or is instrument specific and should be ignored by the host.

ID: May be any of the Parameter ID’s from the Nomenclature (see §7).
Parameter identification establishes a common reference of meaning and intent for unit data between the ventilator and host.

type: BOOL | BYTE | UBYTE | WORD | UWORD | INT | UINT | FLOAT | TEXT | ENUM

BOOL: A Boolean value represented as “0” | “1”.

BYTE: Eight bit signed integer, represented in two's complement hexadecimal “00”..”FF”.

UBYTE: Eight bit unsigned integer, represented in hexadecimal “00”..”FF”.

WORD: Sixteen bit signed integer, represented in two's complement hexadecimal “0000”..”FFFF”.

UWORD: Sixteen bit unsigned integer, represented in hexadecimal “0000”..”FFFF”.

INT: Thirty-two bit signed integer, represented in two's complement hex. “00000000”..”FFFFFFFF”.

UINT: Thirty-two bit unsigned integer, represented in hexadecimal “00000000”..”FFFFFFFF”.

FLOAT: Single precision IEEE floating point, represented in hexadecimal “xxxxxxxx”.

TEXT: A NULL terminated character string represented as a sequence of ASCII Hex digits. The number of ASCII Hex digits per character depends on the character encoding specified for the profile (See “textEncoding” attribute above). For example, if UTF-16 is specified, then each character requires 16 bits: “ABC” = “0041004200430000”.

ENUM: A UWORD type with an associated label (see <enum> element).

scale: “E-99” .. “E+99”

“E” signifies the exponent of 10 by which the transmitted data is multiplied. If this attribute is omitted, the scaling is assumed to be 10^0. E.g. “E+2” is 10^2 = 100. In this case, transmitted data is represented x100, therefore should be divided by 100 to return to actual scale.

range: A pair of values, separated by “:”, of the type and scale specified by the “type” and “scale” attributes respectively. The left value indicates the minimum valid value of the unit data and the right value indicates the maximum valid value of the unit data transmitted. E.g. “0064:03E8” specifies a valid range of 100..1000 for a WORD parameter.

resolution: A value of the type and scale specified by the “type” and “scale” attributes respectively. The value indicates the coarseness of the unit data values. E.g. “0005” specifies a WORD parameter should only have values in multiples of 5 (0, 5, 10, 15, etc.). This value is only relevant to the “settings class”. The “monitor class” resolution is one (1).

epoch: Specifies the time duration of an epoch of scalar data in milliseconds. Scalar data is continuous, but must be transmitted at discrete intervals, so samples are collected over a time period (epoch) and transmitted as a unit. The value is expressed as a hexadecimal value. E.g. “01F4” specifies each epoch of scalar data contains 500ms of data samples.

size: Specifies the number of data samples per epoch of scalar data. Expressed as a hexadecimal value.

level: HIGH | MED | LOW | ALERT

Indicates the severity of Alarm unit data[1]. Priority is determined by the order in which Alarms appear in the profile, highest priority first.

units: A string that may be displayed to identify Units of Measure of the associated data. Represented as type TEXT. E.g. “mL” would be represented as: units=“006D004C”.

label: A string that may be displayed to capture the associated data. Represented as type TEXT. E.g. “Volume” would be represented as: label=“0056006F006C0075006D0065”.

value: Identifies a specific enumerated value to be associated with a text label.

[1] Consult the ventilator’s operator documentation for the proper interpretation of the severity levels.

Example

```
<profile voxpVersion=”3.0” profileVersion=”1.2” textEncoding=”UTF-16” msgID=”5A5A”>

    <unit class="setting" ID="SetFlowBias" type="WORD" scale="E+1"
        resolution="0001" range="0004:0032" units="004C002F006D0069006E"
        label="00420069006100730020004600 6C006F0077"/>

    <unit class="setting" ID="SetPatSize" type="ENUM"
        label="00500041005400490045004E00540020005300490 05A0045002000530
        045004C004500430054">
            <enum value="0000" label="004E0065006F"/>
            <enum value="0001" label="005000650064"/>
            <enum value="0002" label="004100640075006C0074"/>
    </unit>

    <unit class="monitor" ID="MntrVte" type="INT" scale="E+8"
        range="00000000:3B8B87C0" units="004C" label="005600740065"/>

    <unit class="scalar" ID="WavePaw" type="WORD" range="FDA8:04B0"
        epoch="01F4" size="0032" units="0063006D00480032004F"
        label="005000610077"/>

    <unit class="info" ID="SysInfoTimeSession" type="UINT"/>

    <unit class=“trend” ID=“TrendVte” type=“WORD” scale=“E+1”  range=“0000:2344”
        units=“006D004C” label=“005600740065”/>

    <unit class="alarm" ID="AlarmPpeakHigh" type="BOOL" level="HIGH"
        label="00480049004700480020005000700650061006B"/>

    <unit class=“log” ID=“LogAlarm” type=“TEXT”/>

    <unit class=“pragma” ID=“Password” type=“INT”/>
</profile>
```

5.2 Profile Info

The “profileInfo” message is identical to the Profile message with the exception that it only provides basic profile information and not detailed data <unit> specifications. This message is sent in response to a link(send-profile-info) command. The main purpose for this message is to allow manager systems to quickly determine the VOXP profile supported by the ventilator without having to retrieve the entire Profile message (a difference of a few dozen characters vs. a 25k byte or greater message length).

The syntax for this message is the same as that for the <profile> message described above. For example,

<profile voxpVersion=”3.1” profileVersion=”1.3” textEncoding=”UTF-16” msgID=”5A5A”/>

or

<profile voxpVersion=”3.1” profileVersion=”1.3” textEncoding=”UTF-32” msgID=”5A5A”/>

5.3 Configuration

The “config” message is the host response to the profile. It is the means by which the host informs the ventilator of the data units it intends to use. Only those data units configured will be available. To configure a data unit, its “unit” element from the profile is returned with only the class and ID attributes.

In addition, the config message establishes the pattern of interaction between host and ventilator. In the ACTIVE mode, the ventilator sends new data as soon as it becomes available. In the PASSIVE mode, the host must request all data transactions pertinent to the profile. The mode applies to classes “setting”, “monitor”, “alarm” and “scalar”. All other classes are by host request only.

As in any communication between two or more devices, there may be the potential for insufficient bandwidth or delays of various types of messages due to the specifics in the transmission scheme for each communication device (i.e. ventilator).

Config Attributes

mode: “ACTIVE” | “PASSIVE”

ACTIVE: Ventilator sends new data when available.
PASSIVE: Ventilator remains quiet until host requests data.

Unit Attributes

class: Identifies the class of unit data that will be configured for availability to the host system. Must be of a class appearing in the profile.

ID: Identifies the specific data units that will be configured for availability to the host system. Must correspond to a unit appearing in the profile.

Example

This example configures all data specified in the profile example above.

```
<config mode=“PASSIVE” msgID=”5A5A”>
    <unit class="setting" ID="SetVol"/>
    <unit class=“monitor” ID=“MntrVte”/>
```

```
        <unit class="scalar" ID="WavePaw"/>
        <unit class="info" ID="SysInfoTimeSession"/>
        <unit class="trend" ID="TrendVte"/>
        <unit class="alarm" ID="AlarmPpeakHigh"/>
        <unit class="log" ID="LogAlarm"/>
    </config>
```

5.4 Link Control

Link messages stimulate, acknowledge or control in some way the exchange of all the messages of other types. Link messages are always transmitted in Attribute Normal Form. In ACTIVE Mode (where the ventilator originates data messages) when a data message is sent by the ventilator, a timeout period is activated and a reply message with the msgID is expected within that timeout period. If the reply message is not received within the timeout period, the ventilator will sent out a link(nak–timeout) message with the same msgID. The timeout period is defined as the following:

timeout period = (message size (bytes) * byte TxTime) + 2seconds

This timeout period will allow longer timeout period for slower BAUD rates. The host system will effectively have approximately 2 seconds to respond to the message.

Link Attributes

cmd: "ack" | "nak" | "ping" | "send-profile" | "send-profile-info" | "query" | "query-all" | "restart" | "set" |

ack:
Acknowledge successful receipt of a data message.
nak:
Negative acknowledges receipt of data message. Errors, etc.
ping:
Discovery or connection keep-alive.
send-profile:
Host request for ventilator to send profile message.
send-profile-info:
Allows a Host to request for only the profile version information; not the complete profile specification as provided by the "send-profile" message.
query:
Host request for data.
query-all:
Allows the host to request all data elements in every class configured to return in a single "dataSnapshot" message response.
restart:
Indication that link will change characteristics, i.e. disconnect, change in profile, change in config. Either the ventilator or host can initiate a link restart message. During this phase the ventilator will need some time to

reinitialize its system parameters, and the host system must wait until the Discovery phase has started (i.e. wait for the link ping messages subsequent to initiation of the link restart message).

set:
Allows the host to request the target device (ventilator) to configure operational link parameters such as the keep-alive period.

error: Associated with “nak”. Indicates type of error. Valid error values are as follows:
“nos” – Non Otherwise Specified.
“config” – Query before valid configuration.
“crc” – CRC of data doesn’t match attribute value.
“na” – Data not available.
“seq” – Message not expected or out of sequence.
“timeout” – Complete message not received before timeout end of period.
"syntax" – There was a general protocol syntax error in a received message.
"too many elements" – A received message contained too many XML elements.
"too many element attributes" – A received message element contained too many XML

Attributes:
"message too long" – The overall length of a received message was too long
"invalid message type" – The message type (e.g., “config”) is unsupported
"invalid link command" – A “link” message command type was unrecognized
"not configured" – a query for data that is not configured.
"invalid config unit element" – one or more data items are not recognized as a valid config unit element.
“value out of range” – a specified value (e.g., a target keep-alive period) is not in the allowable range.

class: Associated with “query”. Identifies class of data host is requesting. May be any class value specified in a profile.

ID: Required only to differentiate between “log” data units configured from the profile.

time: Indicates a time after which log records are reported. If omitted, all records are reported. Format follows the ISO 8601 standard for representing dates and times and should include full field separators (e.g. “2001-11-01T16:35:45”).

keepAlivePeriod:
Specifies the time period (in seconds) for the keep-alive interval once a connection is established. The default period is 10 seconds. The maximum period settable by this command is 999 seconds or 16 minutes, 39 seconds. The minimum is 5 seconds.

Examples
Following are examples of a variety of different Link messages.

<link cmd="ack" msgID="5A5A"/>
<link cmd="nak" msgID="5A5A"/>
<link cmd="nak" error="crc"msgID="5A5A"/>
<link cmd="ping" msgID="5A5A"/>
<link cmd="send-profile" msgID="5A5A"/>
<link cmd="send-profile-info" msgID="5A5A"/>
<link cmd="query" class="log" msgID="5A5A"/>
<link cmd="query" class="log" ID="LogAlarm" msgID="5A5A"/>
<link cmd="query" class="log" ID="LogAlarm" time="20041127T235807" msgID="5A5A"/>
<link cmd="query-all" msgID="5A5A"/>
<link cmd="restart"/>
<link cmd="set" keepAlivePeriod="999" msgID="5A5A />
<link cmd="ack" keepAlivePeriod="999" msgID="5A5A"/>

5.5 Data Exchange

The essence of digital communication is that data can be exchanged between the ventilator and a host system. Data messages are the transport mechanism that achieves this exchange. Other message types influence the content and format of data messages. Except for Log and Trend class data, all unit data for a configured class is appended one after the next in the body of the data message in the order they appear in the profile. For Scalar class data, all samples in an epoch for a data unit are appended, then the samples for the next data unit, etc. For Log and Trend classes, each data message includes one record from the identified unit.

Data Attributes

class: Identifies the class data contained in the body of the message. Must be of a class configured in the config message.

ID: Required only to differentiate between "log" data units in response to a query.

time: Indicates the time that a log record was recorded. Format follows the ISO 8601 standard for representing dates and times.

rec: Identifies individual record from a log. The format of the attribute value is "*n/m*" where *n* and *m* are both hexadecimal values and indicate the n^{th} record of *m* records being reported.

code: If the data being transmitted is discrete, there may be an associated numerical code that is an alias to the data. E.g., an "Intubation" event may alternatively be referred to as "Event 128" as follows:
<data class="log", ID="LogEvent", time="20041127T235807", code="0080",
rec="01/03">0049006E00740075006200610074006900 6F006E</data>

crc: Optional attribute for error detection in the data stream. CRC is of type UWORD indicating the 16-bit CRC of the ASCII characters representing the data in the body of the message. Its calculation is performed on the message encoded character content. For example, given the message <data…>1234567890ABCDEF</data>, the CRC will be calculated for the ASCII characters between the '>' and '<' characters. See Appendix A for a detailed description of the CRC algorithm used for this protocol.

seq: The seq attribute is a 16-bit ASCII HEX encoded value which identifies the scalar/wave epoch update sequence that is being returned. The seq increments monotonically once a connection is established and allows polled data retrieval to determine whether the same epoch has been retrieved or whether epoch updates have been missed (possibly due to the slow polling frequency).

units: A string that may be displayed to identify Units of Measure the associated data. Represented as type TEXT. E.g. "mL" would be represented as: units="006D004C".

label: A string that may be displayed to capture the associated data. Represented as type TEXT. E.g. "Volume" would be represented as: label="0056006F006C0075006D0065".

Examples

Following are examples of a variety of different Data messages.

Four settings of type WORD have been configured:

<data class="setting">012E08A961F03010</data>

Four settings of type WORD have been configured, with CRC:

<data class="setting" crc="9F37">012E08A961F03010</data>

Two monitors of type WORD and two of type INT have been configured:

<data class="monitor">012E08A9000361F000203010</data>

Two scalar waveforms and the scalar 'Wave Metric' of type WORD with 500ms epochs of 50 samples each have been configured:

<data class="scalar" crc="CB01" seq="0070"
msgID="0EBE">0021003E01220402060E06EB0749076C07710760074407240
71106F406DB06BE06A00682066C064C062C061505F805DC05C705AF05970
57E056805530538052305 0D04F304D604B3049704840472045A04440428033
D002EFE5DFE11FD45FC95FC00FB8902730275028202A70324033C037C03
8403A703B003C503CD03DD03E803F60402040C04180422042B0438044404
4E0454045D0468046E04770483048C0494049D04A804AF04B704BE04C404
CB04D204D804DF04E204E704AD048F0495047A045D044304260032000200
08002700400066007F00A600BF00E500FD01210139015C0174019601AC01C
D01E3020302170236024A0268027B029802AB02C702D902F4030603200331
034A035A03710381039803A703BD03CB03E003E803DF03D303C803BF03A
B039B0383</data>

An Alarm log has been configured:

<data class="log" ID="LogAlarm" time="20041127T235807" code="0135"
rec="03/1F">0053006F006D00650020004C006F006700200045006E0074007
20079</data>

The above alarm log example contains a code="0135", which represents "Alarm 309" in the list of potential alarms associated with this device. The "03/1F" after "rec=". This represents the 3rd of 31 individual log entries that are being transmitted as part of the Alarm log. The information, there after represents the description for this log message (i.e. alarm log message) in ASCII text.

5.6 Data Snapshot

When the manager system seeks to capture a "snapshot" of the currently configured data – that is a single data update set – it can issue a link(query-all) and receive back the "dataSnapshot" message. This simplifies the communication requirements in that a single command is required vs. multiple query requests for each desired data class.

This message simply wraps one or more "data" messages as defined above, within a single "dataSnapshot" message element. The syntax for the contained "data" elements is identical to what would be returned from the ventilator if they were retrieved using single link(query) requests. The only difference is that if the triggering link(query-all) contained a message ID (msgID), this will be echoed back in the "dataSnapshot" element, and not in the contained "data" elements. All "crc" attributes shall be contained in the individual "data" class elements (see the example below).

Note that though this does result in a larger single message size (than individual link(query) commands), the data is guaranteed to be internally consistent and cohesive, addressing potential issues that may result from, for example, ventilator setting changes taking effect during multiple data class poll requests (i.e., if it takes 30 seconds to poll all the various classes of data, the monitored values may not match those indicated by the retrieved settings).

Example

<dataSnapshot msgID="0007" >
<data class="setting" crc="67EA">
0015001400000019000100C80000000F000F000600030006000000C0005000
5000500280000000000004B00140000004B000A001E03E800000BB80000000000
0000140003002800080004B01F400320BB8000000000003700961000000000D00
0000000007402F8004F0003</data>
<data class="monitor" crc="3A99">
8000800080000067800005C58000800080008000001 5FF9D000A80008000800
00029001E000604218000023F000800000248000800080000008000800008000
0800000608000800002A9004502FCC25500000000013F02A43E5D0260170B8
000800000000000000002F52A7C8000800080000098</data>
<data class="alarm" crc="059C">
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a>
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0000</data>
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0000000000000000000000000000000000000000000000000000000000000000
0002000000000000000000000000000000000000000000000000000000000000
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BFEF9FEF8FEFBFEFAFEFBFEFAFEFFFEFBFEF7FEF8FEF8FEF8FEFBFEFB
FEFBFEFBFEFAFEF9FEF8FEF9FEF8FEF8FEFDFEFCFEFBFEFBFEF8FEF9F
EF7FEF9FEFAFEF9FEF9FEF9FEF8FEF8FEFAFEFAFEF70110011701160115
01170110010B011201160115011101 0D0114010E011401140110011 2010E011
401190117011501140110011501110112011201110114011001150111010C011
5011401150115010D011201170117010E011001110117011601150114FFFDFF
FDFFFEFFFEFFFDFFFEFFFDFFFBFFF8FFFEFFFDFFF8FFF8FFFCFFFCFFF
CFFFDFFFEFFFBFFF6FFFDFFFDFFFBFFFDFFFCFFFFFFFDFFFEFFFEFFFB
FFFDFFFBFFFCFFF9FFFDFFFFFFFEFFFDFFFEFFFCFFF2FFFAFFFAFFFEF
FFEFFFEFFFEFFFDFFFEFFFE00220022002200220022002200220022002200
2200220022002200220022002200220022002200220022002200220022002200
2200220022002200220022002200220022002200220022002200220022002200
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B012D012801270129012E012D012C012B012A012B012A012B0000000000000
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182017C017E0183017B017D018101820180018101820180018201830181017F
01800182017F017E01810181017C017C017E018301820181017F017F0180017
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80159015901590159015901590159015901590159015901570158015901590159015
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90159015901580158015900000000000000000000000000000000000000000
00000000000000000000000000000000000000000000000000000000000000
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00000000000000000000000000</data>
</dataSnapshot>

6 State Diagrams and Message Sequence

This section describes the sequence of messages necessary to manage the connection and exchange of data between ventilator and host. Once a logical connection is established, communication is effected with a succession of transactions, each consisting of a stimulus and response. Each transaction must complete before the next commences. Some common examples of transactions are:

Vent: link.ping()	replied by	Host: link.ack()
Vent: data(monitor)	replied by	Host: link.ack()
Host: link.query(settings)	replied by	Vent: data(settings)

The sequence diagrams, starting in section 6.2, assume some data is configured in all classes.

6.1 Protocol States

The next two sub-sections displays the various states of the VOX Protocol (Figure 1 VOXP Protocol State Model) as well as the states while monitoring a connection (Figure 2 Connection Monitoring State Model).

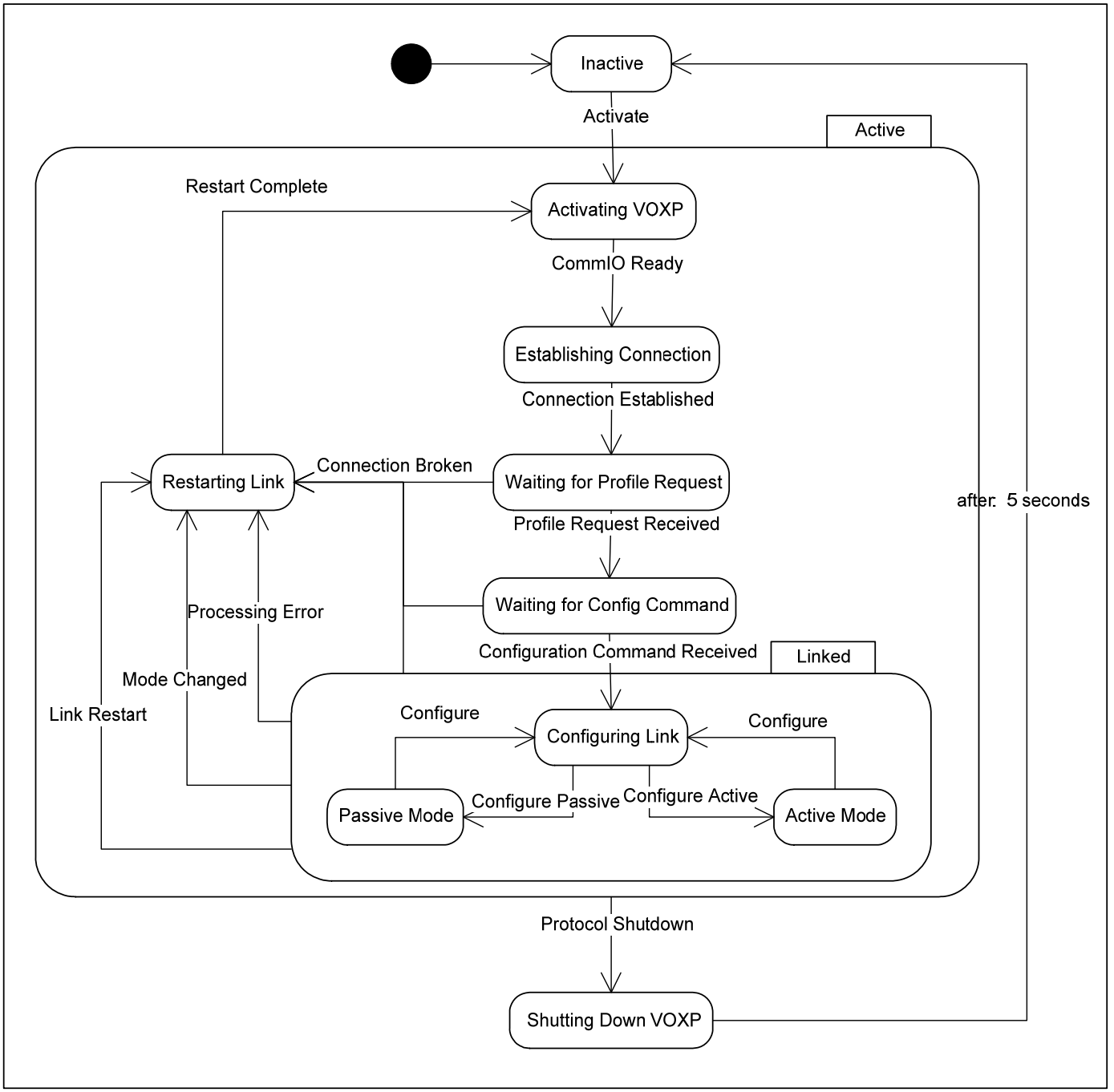


Figure 1 VOXP Protocol State Model

Notes:

- Processing Error – Could be error indication from the communication port or a timeout in receiving an ACK/NAK to a sent message.

VOX Protocol State Definitions

Inactive	Start-up state for the protocol, in which all connections with the transport and port hardware are broken and another protocol may be running.
Activating VOXP	Performs all initialization necessary to prepare the protocol stack to receive and process commands from an external system. This includes data member initialization and configuration of the Comm I/O transport.
Establishing Connection	The VIConnection object is started and begins to try and establish a connection with an external host. See the object's description for more details
Waiting for Profile Request	Once a connection has been established, the protocol waits for the host to request the device's communications profile, a list of all available (and configurable) information and services.
Waiting for Config Command	The system is waiting for a configuration message, ignoring all other messages save keep-alive pings and ACK's.
Configuring Link	When a valid "configuration" message is received, the protocol stack configures itself accordingly (e.g., active or passive mode), and transitions to the appropriate operational state.
Passive Mode	In this mode, the system responds to requests but does not automatically send updates.
Active Mode	In this mode, the system both responds to requests, as well as automatically sends data updates as they become available.
Restarting Link	The connection is restarting and being reconfigured as a result of changes that may, for example, change the information that may be communicated to the external system.
Shutting Down VOXP	All VOXP communications activities are terminated and any acquired resources (e.g., communication port) released.

VOX Protocol Event Definitions

Activate	The protocol has been activated, either during startup initialization or dynamically by the operator.
CommIo Ready	The communication port has been configured for the VOXP protocol and is ready to send and receive application level messages.

Connection Established	The VIConnection object has successfully established a connection with a remote system.
Profile Request Received	A “profile request” message has been received.
Configuration Command Received	A “configuration command” message has been received.
Configure Passive	The external system has selected passive mode operation.
Configure Active	The external system has selected active mode operation.
Configure	A “configuration command” has been received.
Connection Broken	Indicates that an active connection has been broken.
Processing Error	A problem was encountered either processing VOXP messages or data update messages, in either case requiring the connection to be broken and reestablished.
Mode Changed	A new language, patient size, or communication parameters (e.g., BAUD rate) needs to be supported on the VOXP connection, requiring cycling of the connection.
Link Restart	A “link restart” command message has been received.
Restart Complete	The transport and protocol have been initialized and reconfigured.
Protocol Shutdown	A different protocol has been selected, requiring VOXP processing to be shutdown.

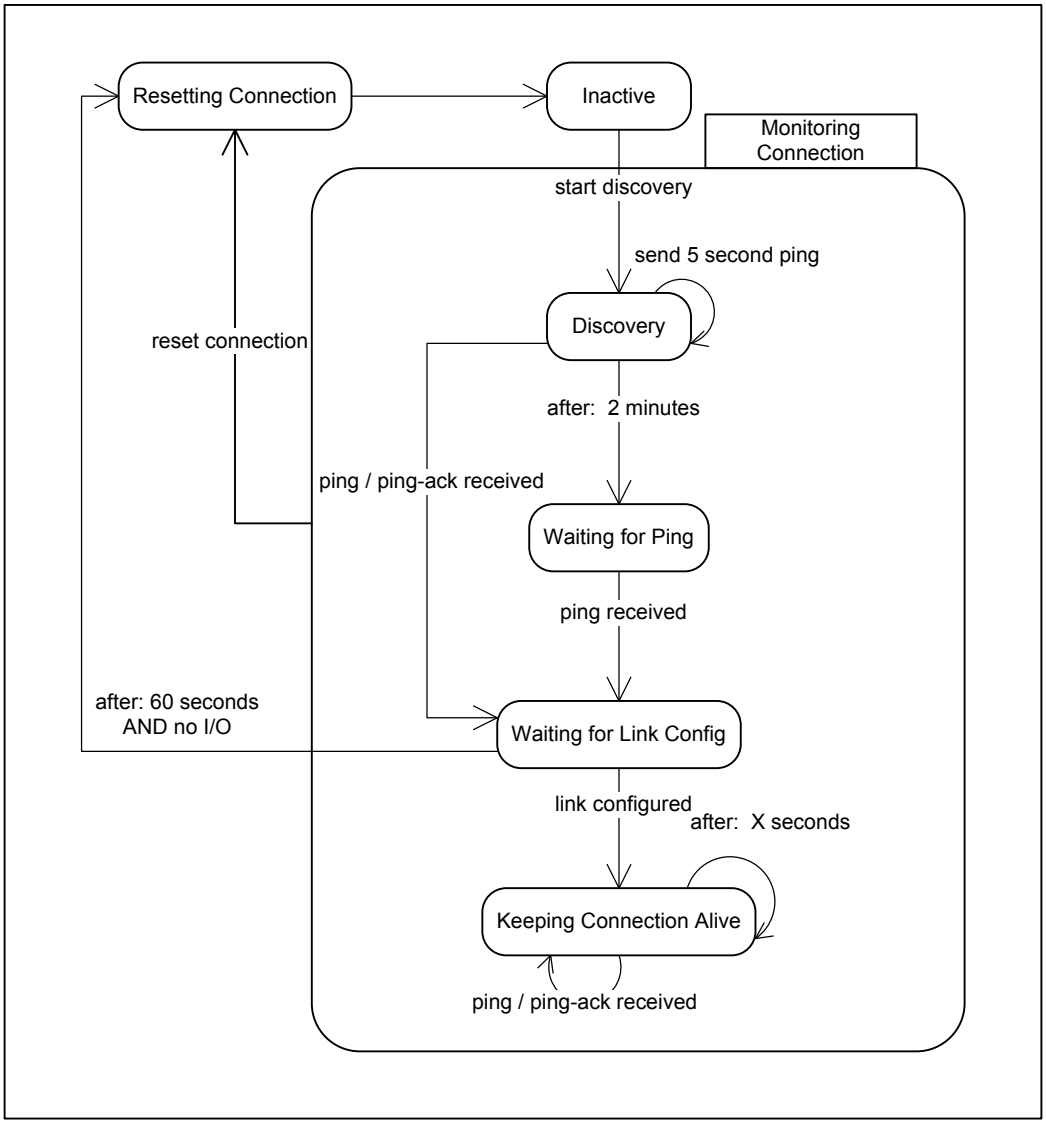


Figure 2 Connection Monitoring State Model

Connection Monitoring State Definitions

Inactive	The state when the VOXP Protocol is also inactive.
Monitoring Connection	State during which the object is trying to establish and maintain a connection.
Discovery	For 2 minutes the object sends a “ping” message every few seconds until an external system responds with an “ack” to the “ping”.
Waiting for Ping	After the 2 minute discover period, the object stops sending “pings” and waits until it receives a “ping” message from an external system.
Waiting for Link Config	Once a connection has been established, the ventilator waits for the link to be configured (i.e., exchange of a “profile” and

"config" message pair, at which point it transitions to the keep-alive state. If 60 seconds elapses without receipt of any messages, the connection is reset. Depending on the selected BAUD rate and the length of the "config" message, completion of link configuration can require a significant period of time.

Keeping Connection Alive Once the link has been configured, the object sends periodic keep-alive pings, and waits to receive the "ack". If an "ack" isn't received in time, the object initiates a resetting of the connection.

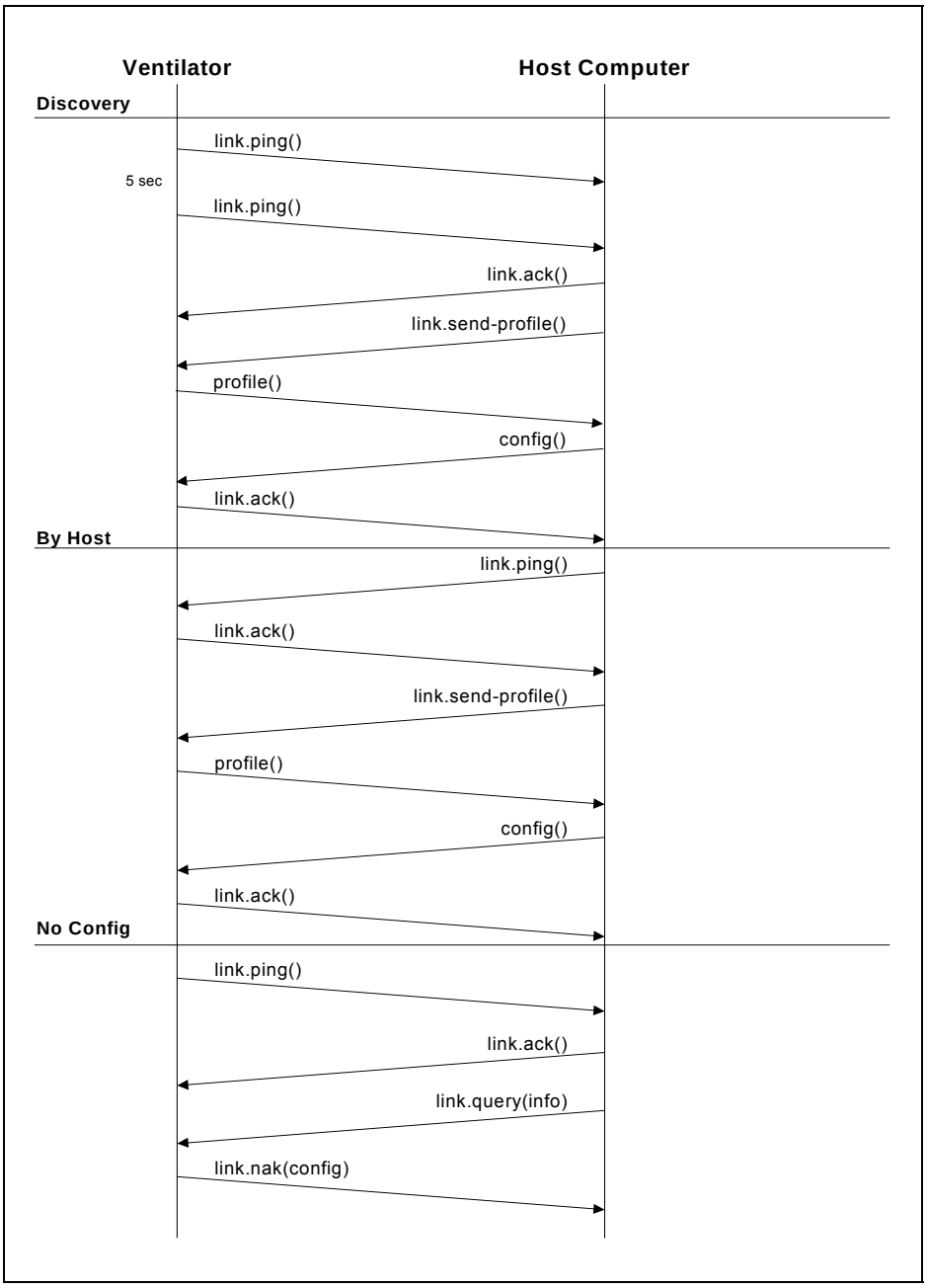
Resetting Connection The object stops the timer, signals that the connection is closed, and transitions automatically to the Inactive state.

Connection Monitoring Event Definitions

Start Discovery	Event from the VOX Protocol indicating that connection discovery and monitoring should be initiated.
Send 5 second ping	Timer event to send another ping.
Ping received	A link.ping() message was received.
Ack received	A link.ack() message was received.
Reset connection	Either an ack wasn't received for the ping in the required time or the VOX Protocol has determined that the connection needs to be reset (e.g., a change in mode).
After: X seconds	If a message has not been received from the manager system within "X" seconds, a link.ping() message is issued. "X" defaults to 10 seconds but is configurable using the link.set_ka_period() function.

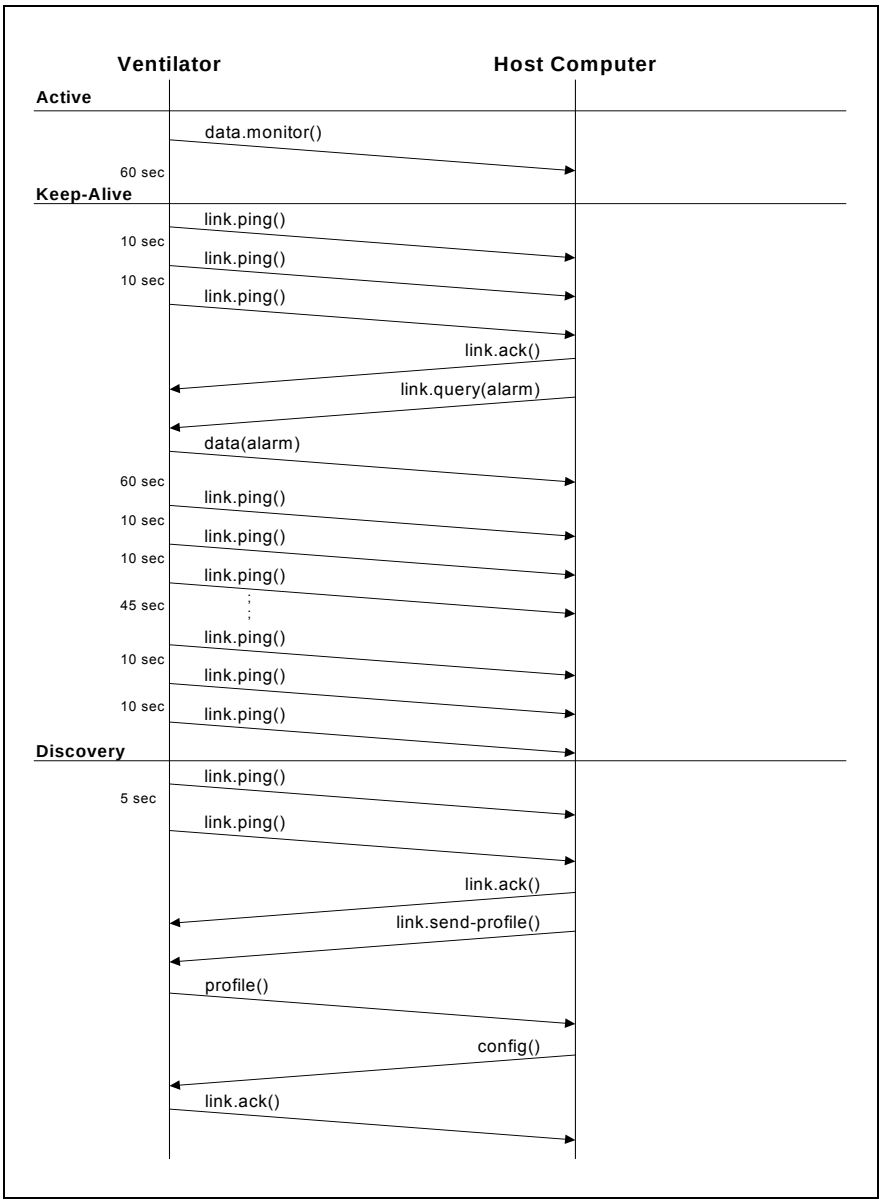
6.2 Discovery

When the ventilator is first powered on or when the VIASYS Comm (VOXP) protocol is selected as the communication protocol, the ventilator will attempt to discover a host. Every 5 seconds for the first 2 minutes, or until a reply is received, a link message with the ping attribute will be transmitted. Any reply will establish the link, but queries will be responded with link.nak() until configuration is complete. If connected to a host after the initial two minute period, the host may initiate the connection by sending a link.ping().

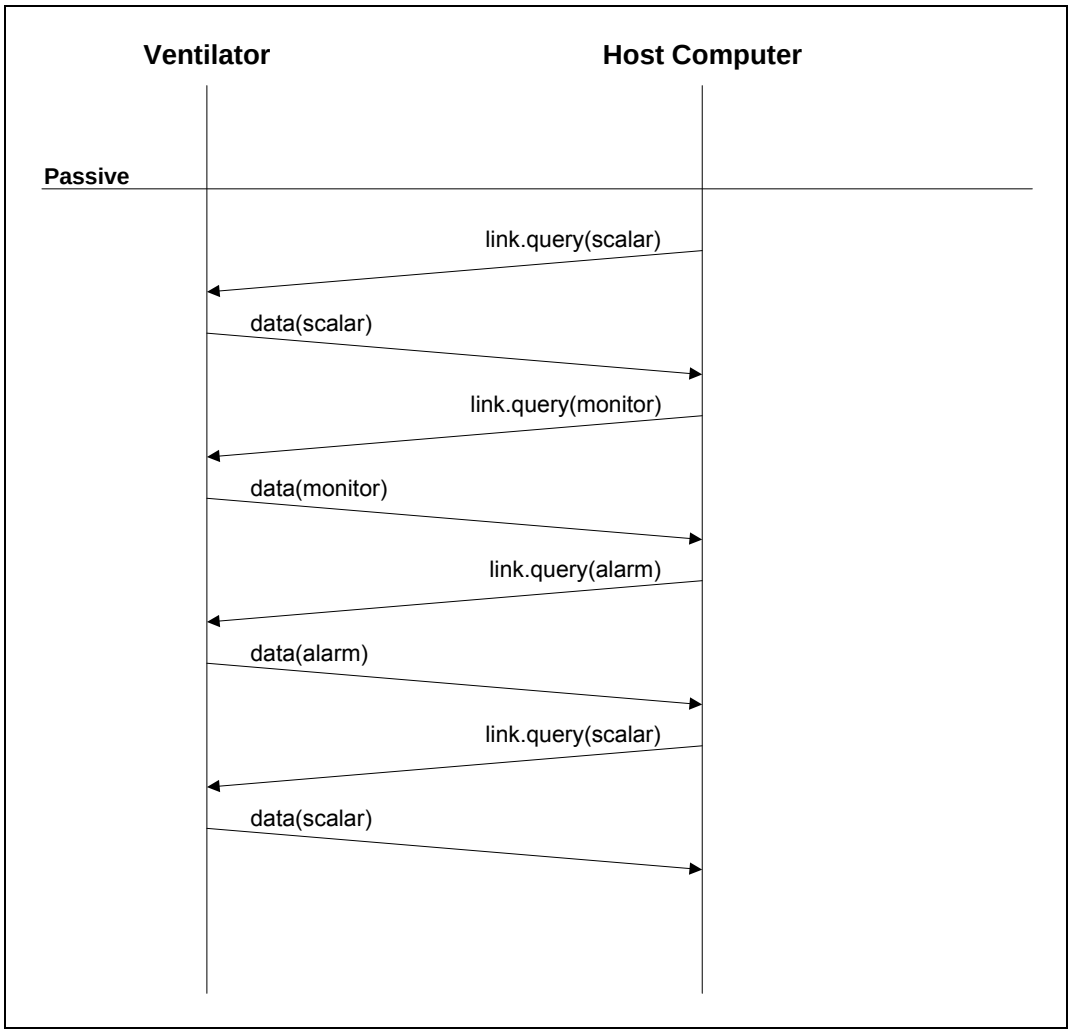


6.3 Keep-Alive Exchange

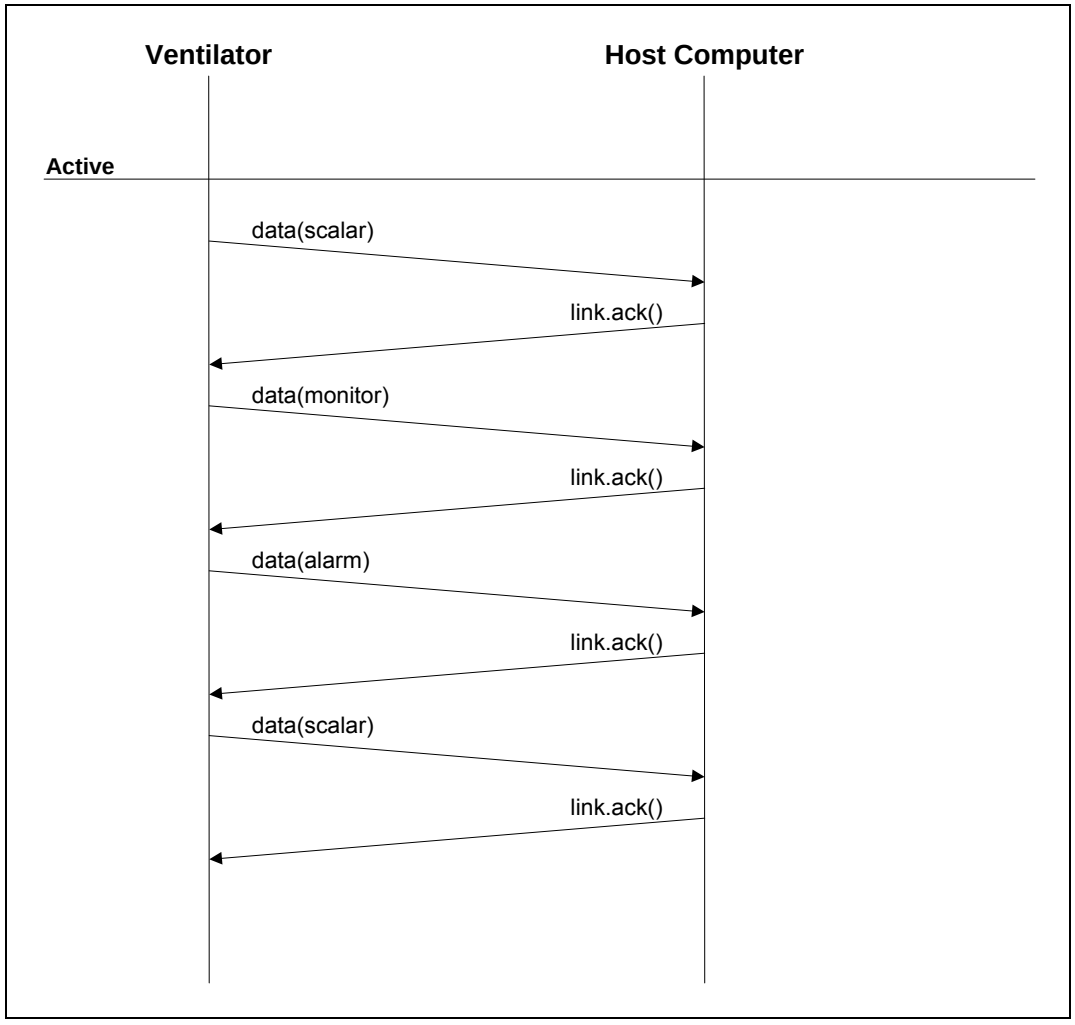
When the ventilator is first powered on or when the VIASYS Comm (VOXP) protocol is selected as the communication protocol, the ventilator will attempt to discover a host. Every 5 seconds for the first 2 minutes, or until a reply is received, a link message with the ping attribute will be transmitted. Any reply will establish the link, but queries will be responded with link.nak() until configuration is complete. If connected to a host after the initial two minute period, the host may initiate the connection by sending a link.ping().



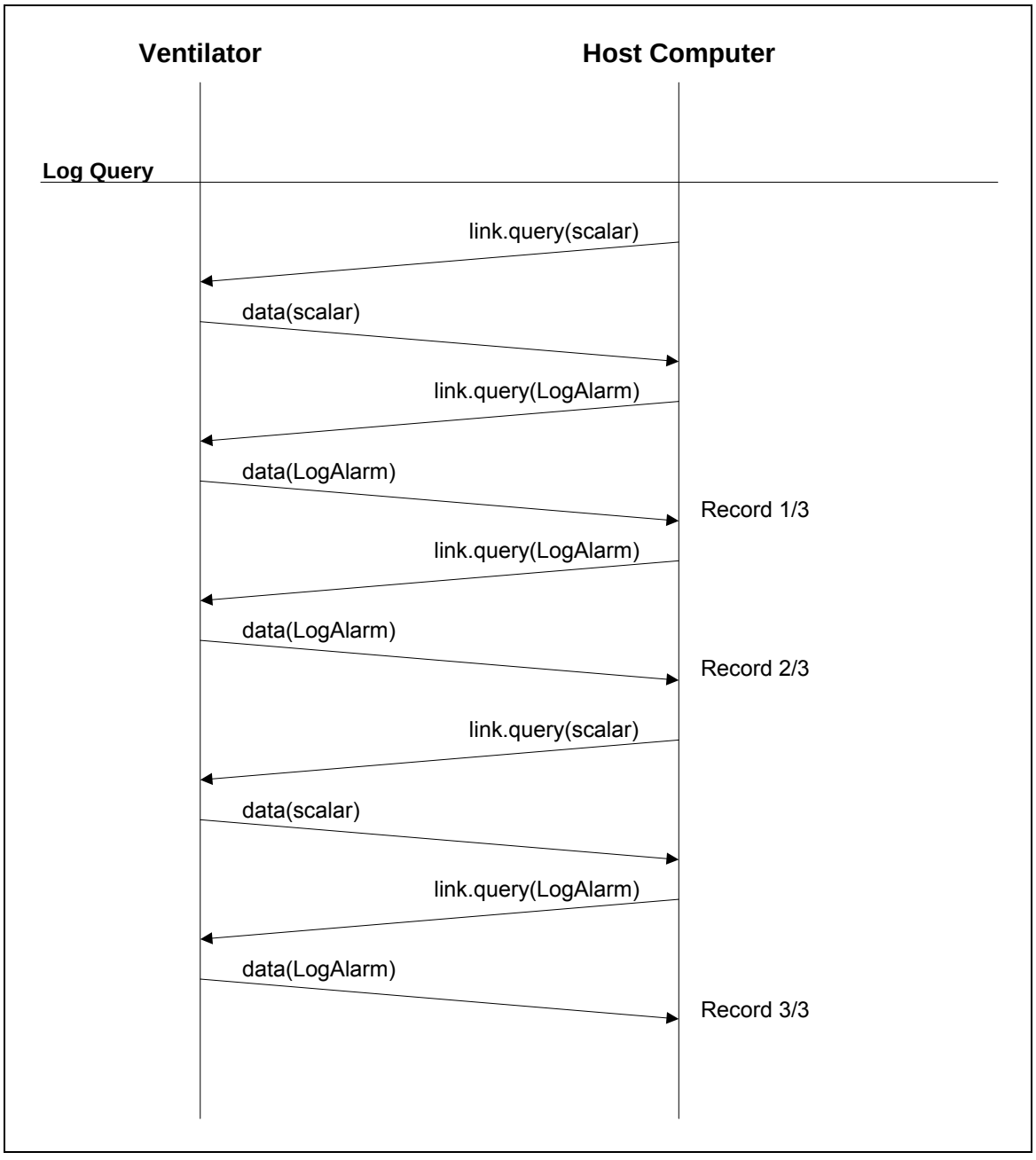
6.4 Passive Mode Exchange


Ventilator
Host Computer
Passive
link.query(scalar)
data(scalar)
link.query(monitor)
data(monitor)
link.query(alarm)
data(alarm)
link.query(scalar)
data(scalar)

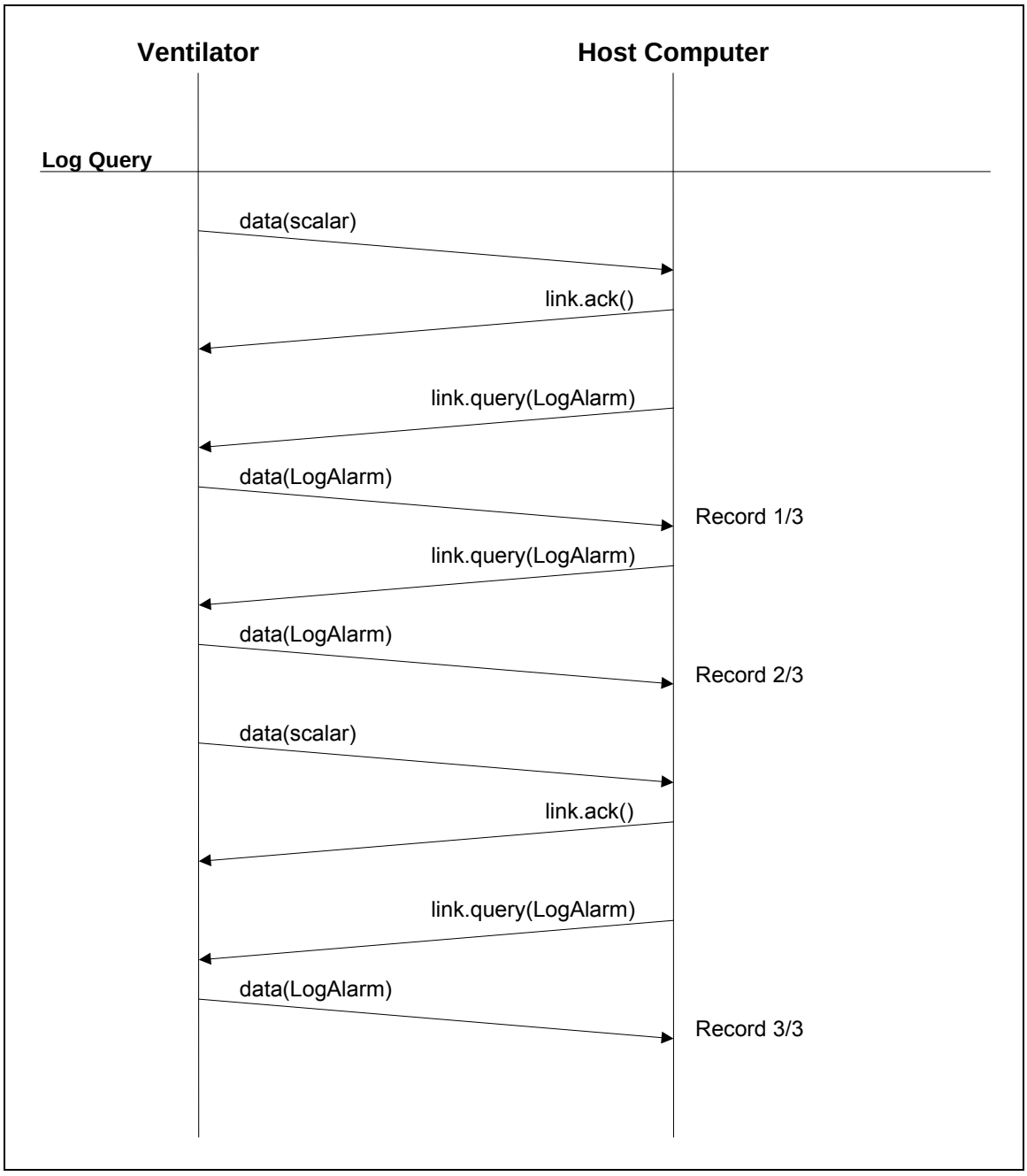
6.5 Active Mode Exchange



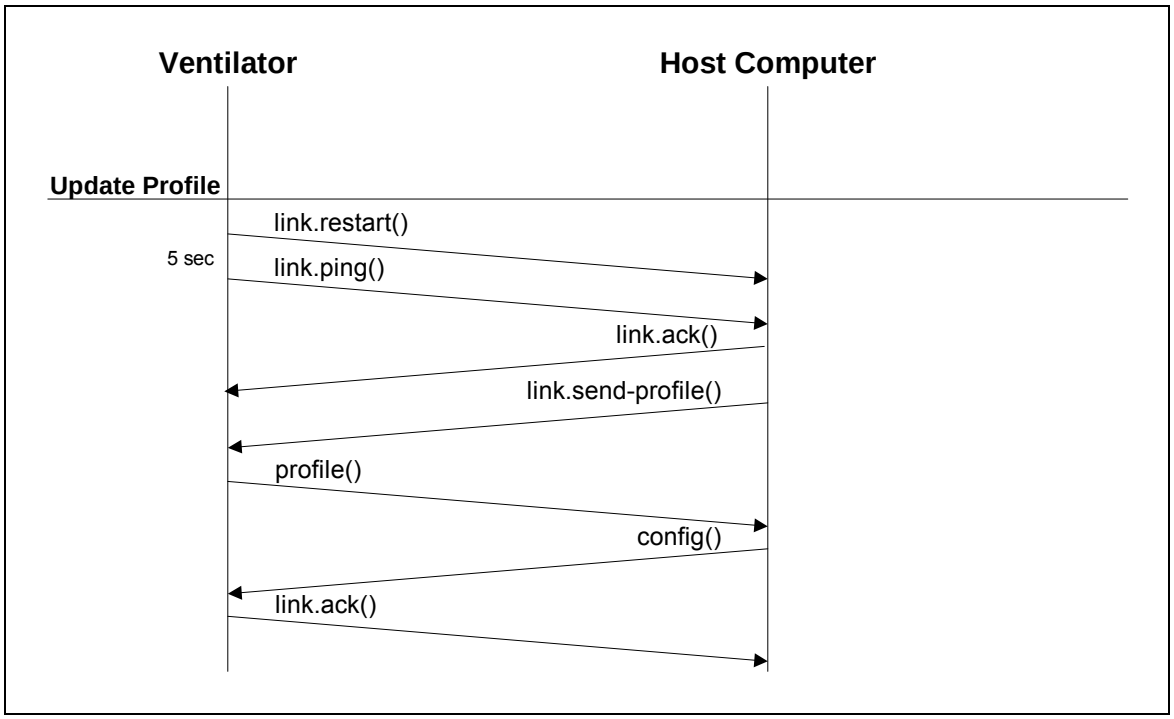
6.6 Log Query, Passive Mode



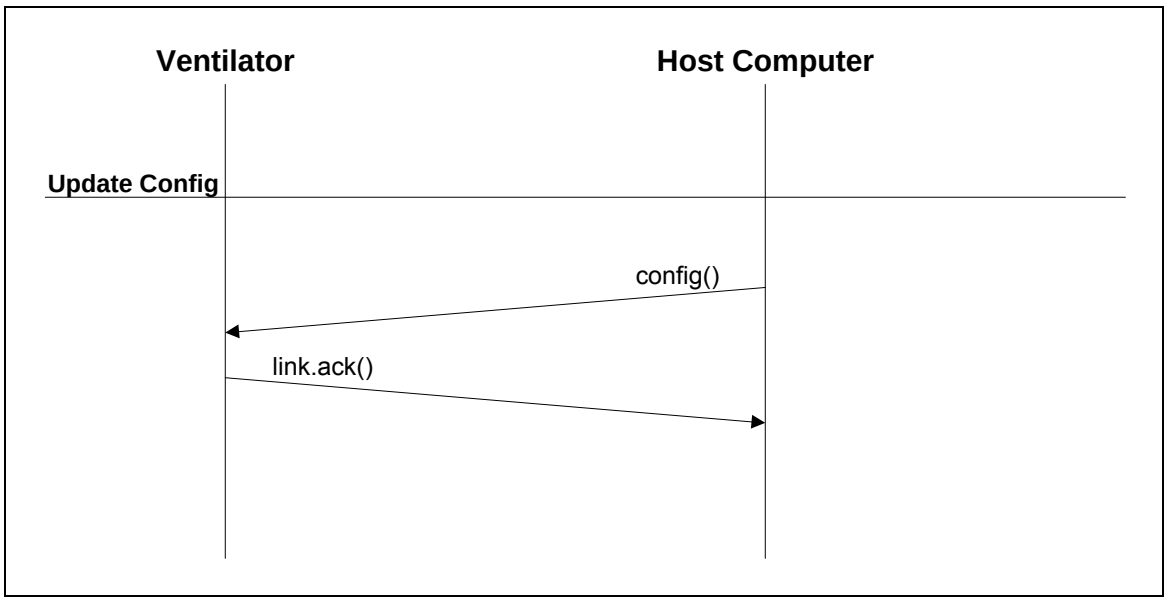
6.7 Query, Active Mode



6.8 Update Profile

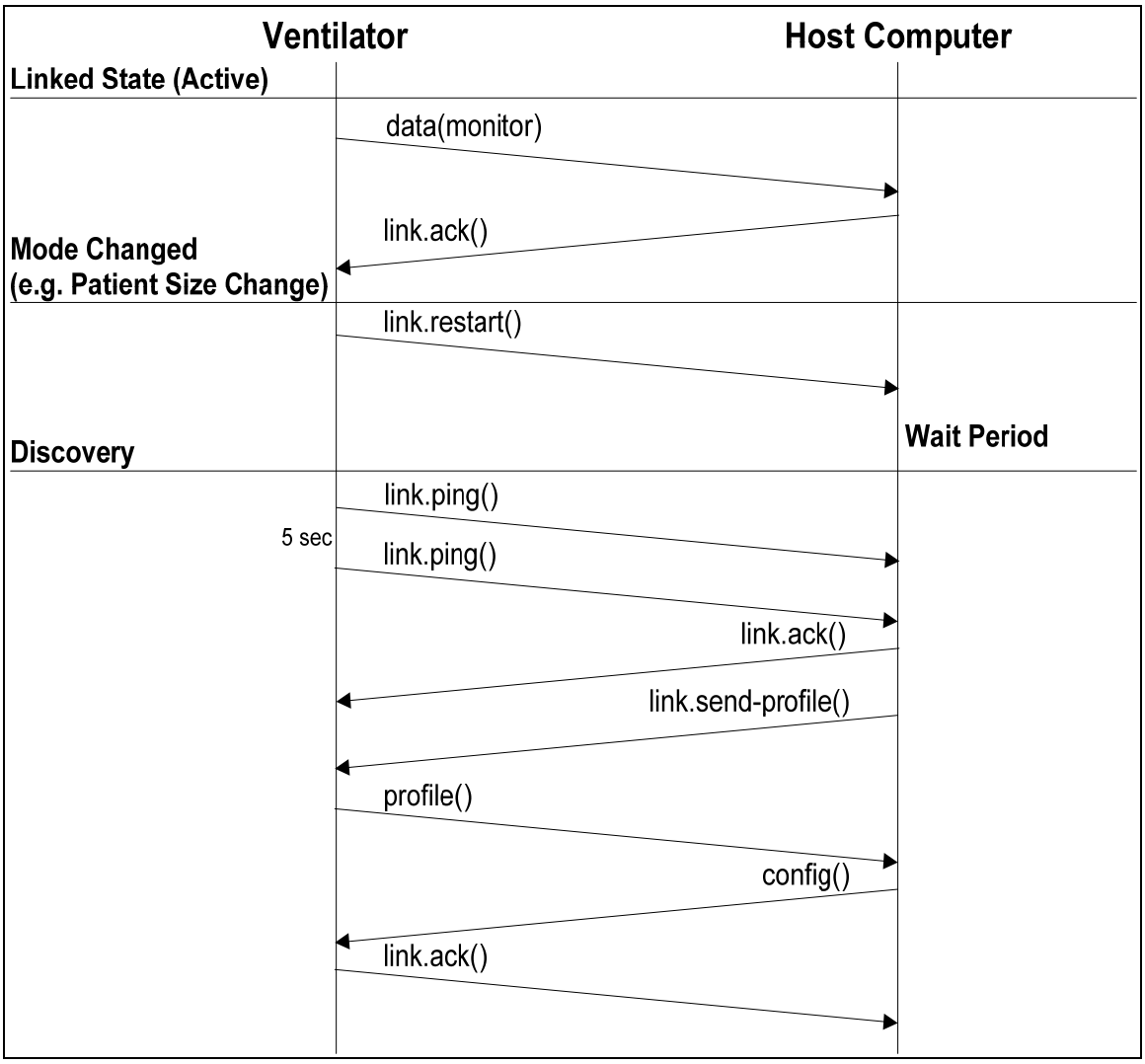


6.9 Update Configuration



6.10 Link Restart

The following diagrams illustrate that a link.restart() command is exchanged (in either direction), the vent will go through a reconfiguration/initialization phase and eventually restart the connection discovery phase. The manager system should wait until the vent starts sending link.ping() messages before reconfiguring the link.


Ventilator
Host Computer
Linked State (Active)
data(monitor)
link.ack()
Mode Changed
(e.g. Patient Size Change)
link.restart()
Wait Period
Discovery
link.ping()
5 sec
link.ping()
link.ack()
link.send-profile()
profile()
config()
link.ack()

7 Nomenclature

This section defines several groups of identifiers in the nomenclature which are used in the VOXP protocol. However, the implementation specifics relating to any identifier in this nomenclature can be found in the target ventilator specification complying with the VOXP protocol. These details in the ventilator specifications include, but are not limited to, data type and domain values.

7.1 Operational Settings

	Parameter ID	Description
1	SetCO2MonitoringEnable	Enable or Disable CO2 Monitoring
2	SetEndTidalCO2Average	Number of breaths EtCO2 is averaged over.
3	SetFiO2	FiO2
4	SetFiO2AutoControlEnable	Activates and de-activates the Automatic FiO2 Control system.
5	SetFiO2IncreaseActive	Increase FiO2 Activated (SetFiO2 + SetIncrFiO2)
6	SetFlowBias	Bias Flow
7	SetFlowCycle	Flow Cycle % of PIFR
8	SetFlowCyclePsv	PSV Flow Cycle
9	SetFlowDemand	Intrabreath Demand Flow OFF/ON
10	SetFlowInsp	Inspiratory Flow
11	SetNebulizerActive	Nebulizer Active / Inactive
12	SetPanelLockActive	Panel Lock Active / Inactive
13	SetPauseInsp	Inspiratory Pause
14	SetPresHigh	APRV/BiPhasic High Phase Pressure
15	SetPresInsp	Inspiratory Pressure
16	SetPresInspNPPV	Inspiratory Pressure, Non-Invasive
17	SetPresLow	APRV/BiPhasic Low Phase Pressure
18	SetPresNasalCPAP	Nasal CPAP pressure level
19	SetPresPeep	Positive End-Expiratory Pressure
20	SetPresPsv	Pressure Level, Pressure Support Ventilation
21	SetPresPsvNPPV	Pressure level, Pressure Support Ventilation, Non-Invasive
22	SetRate	Breath Rate
23	SetRiseInsp	Pressure Control Rise Time
24	SetRisePsv	PSV Rise Time
25	SetRiseVsync	Vsync Rise Time
26	SetSpO2AlarmDelay	Determines the duration that a High or Low SpO2alarm or “SpO2 Invalid” alarm must persist before the alarm is activated.
27	SetSpO2AveragingTime	Determines the time period for averaging the output of the SpO2 readings.
28	SetSpO2Enable	Enable or Disables Pulse Oximeter related functions.
29	SetSpO2Mode	Configures the pulse oximeter module to a specified operating mode.

	Parameter ID	Description
30	SetTimeHigh	APRV/BiPhasic High Phase Time
31	SetTimeHighPsv	APRV/BiPhasic High Phase PSV OFF/ON
32	SetTimeHighSync	APRV/BiPhasic Low Phase Sync Window % of Time High
33	SetTimeInsp	Inspiratory Time
34	SetTimeLow	APRV/BiPhasic Low Phase Time
35	SetTimeLowSync	APRV/BiPhasic Low Phase Sync Window % of Time Low
36	SetTmaxPsv	PSV Maximum Inspiratory Time
37	SetTrigFlow	Flow Trigger Sensitivity
38	SetTrigPres	Pressure Trigger Sensitivity
39	SetVCO2Average	Patient's exhaled minute volume of CO2
40	SetVol	Tidal Volume
41	SetVolAssured	Machine Volume
42	SetVolLimit	Volume Limit
43	SetVolSigh	Sigh Volume Breath OFF/ON
44	SetVolWave	Volume Control Waveform.
45	SetVsync	Vsync mode OFF/ON

7.2 Alarm Limit Settings

	Parameter ID	Description
1	LimitApnea	Apnea Interval
2	LimitEndTidalCO2High	High End Tidal CO2 limit
3	LimitEndTidalCO2Low	Low End Tidal CO2 limit
4	LimitFiO2AutoHigh	Upper bound for the High Auto FiO2 Limit to trigger alarm.
5	LimitFiO2AutoLow	Lower bound for the Low Auto FiO2 Limit to trigger alarm.
6	LimitFiO2BaselineHigh	Upper bound for the Baseline FiO2 to trigger an alarm.
7	*LimitLowPpeak*	*Low Peak Airway Pressure* – **DEPRECATED**[2] (See LimitPpeakLow)
8	LimitPeepLow	Low PEEP
9	LimitPpeakHigh	High Peak Airway Pressure
10	LimitPpeakLow	Low Peak Airway Pressure
11	LimitPulseRateHigh	Upper bound of pulse rate to trigger an alarm
12	LimitPulseRateLow	Lower bound of pulse rate to trigger an alarm
13	LimitRateHigh	High Breath Rate
14	LimitSpO2High	Upper bound SpO2 to trigger an alarm
15	LimitSpO2Low	Low bound SpO2 to trigger an alarm
16	LimitVeHigh	High Minute Volume
17	LimitVeLow	Low Minute Volume
18	LimitVteHigh	High Tidal Volume
19	LimitVteLow	Low Tidal Volume

7.3 Session Settings

	Parameter ID	Description
1	SetAAC	Automatic Airway Compensation OFF/ON
2	SetAltitude	Altitude at which the device is being operated
3	SetCircComp	Circuit Compliance Compensation Constant
4	SetEttDia	Endotracheal Tube Diameter
5	SetEttLen	Endotracheal Tube Length
6	SetFiO2Monitoring	FiO2 monitoring OFF/ON
7	SetHumidifier	Active Humidifier OFF/ON
8	SetLanguage	Local Language for User Interface
9	SetLeakComp	Leak Compensation OFF/ON
10	SetMode	Breath delivery mode used
11	SetModeIlv	Independent Lung Ventilation configuration
12	SetNebulizerTime	Time the nebulizer is active
13	SetPanelLockEnable	Enable/disable front panel user input lockout availability
14	SetPatSize	Patient size setting
15	SetPatWt	Patient weight setting
16	SetPresBaro	Barometric pressure setting
17	SetIncrFiO2	Added percentage of oxygen concentration delivered to the patient for a specified time based on the FiO2 setting.
18	SetSensitivityLowVte	The number of consecutive breaths that is in violation of the low Vte threshold.
19	SetSpO2TargetHigh	Auto FiO2 Cmd is greater than or equal to the preset High Auto FiO2 Limit for a period of 60 seconds or more.
20	SetSpO2TargetLow	Auto FiO2 Cmd is less than or equal to the preset Low Auto FiO2 Limit for a period of 60 seconds or more.
21	SetVeLowOffEnable	Low Ve Limit Alert OFF setting is OFF/ON

7.4 Patient Information

	Parameter ID	Description
1	PatInfoID	Patient identification

7.5 Digital Monitors

	Parameter ID	Description
1	MntrAutoPEEP	Airway Auto PEEP
2	MntrAutoPEEPdelta	Delta Airway Auto PEEP
3	MntrAutoPEEPesoph	Esophageal Auto PEEP
4	MntrPresBaro	Barometric Pressure
5	MntrC20	Compliance Ratio
6	MntrCcw	Chestwall Compliance
7	MntrCdyn	Dynamic System Compliance
8	MntrCdynNorm	Dynamic System Compliance, Normalized
9	MntrClung	Lung Compliance

	Parameter ID	Description
10	MntrVentilationCO2	The patient's exhaled minute volume of CO2, calculated over the "VCO2 Average" interval.
11	MntrCstat	Static System Compliance
12	MntrCstatNorm	Static System Compliance, Normalized
13	MntrEndTidalCO2	Patient's peak expired CO2 level as measured and reported by the CO2 analyzer.
14	MntrFiO2	FiO2 – Fractional Inspiratory Oxygen Concentration
15	MntrFiO2Baseline	Average FiO2 required in order to maintain the patient in stable normoxemia over time.
16	MntrIE	Inspiratory:Expiratory Time Ratio
17	MntrLeak	(Vti-Vte)/Vti*100
18	*MntrlVeTotalNorm*	*Minute Volume, Normalized* - **DEPRECATED**[2] (See MntrVeTotalNorm)
19	MntrMIP	Maximum Inspiratory Pressure
20	MntrNcpapMeanFlow	Nasal CPAP mean inspiratory flow
21	MntrNcpapPres	Nasal CPAP pressure
22	MntrP100	Respiratory Drive
23	MntrPair	Air Supply Pressure
24	MntrPawDelta	Delta Airway Pressure
25	MntrPeep	Positive End Expiratory Pressure
26	MntrPefr	Peak Expiratory Flow Rate
27	MntrPesDelta	Delta Esophageal Pressure
28	MntrPifr	Peak Inspiratory Flow Rate
29	MntrPmean	Mean Airway Pressure
30	MntrPO2	Oxygen Supply Pressure
31	MntrPpeak	Peak Airway Pressure
32	MntrPplat	Plateau Airway Pressure
33	MntrPplatPtp	Transpulmonary Pressure at Airway Pressure Plateau
34	MntrPtpPEEP	Transpulmonary Pressure at Auto PEEP
35	MntrRate	Total Breath Rate
36	MntrRateMand	Mandatory Breath Rate
37	MntrRateSpon	Spontaneous Breath Rate
38	MntrRimp	Imposed Resistance
39	MntrRlung	Lung Resistance
40	MntrRpeak	Peak Expiratory Airway Resistance
41	MntrRrs	Respiratory System Resistance
42	MntrRSBIndex	Rapid Shallow Breathing Index
43	MntrSpO2	Patient's SpO2 as measured and reported by the pulse oximeter.

[2] "DEPRECATED" indicates that this term is no longer supported in new VOXP software releases.

	Parameter ID	Description
44	MntrSpO2PerfusionIndex	Percentage of pulsatile signal to non-pulsatile signal (pulse strength).
45	MntrSpO2PulseRate	Patient's pulse rate as measured and reported by the pulse oximeter.
46	MntrTe	Expiratory Time
47	MntrTi	Inspiratory Time
48	MntrVentilationAnatomicalDeadSpace	The patient's anatomical dead space, measured on each breath, and averaged over the "VCO2 Average" time interval.
49	MntrVentilationAnatomicalDeadSpaceVtRatio	The patient's airway dead space to tidal volume ratio, measured on each breath, and averaged over the "VCO2 Average" time interval.
50	MntrVdel	Machine Delivered Volume
51	MntrVeSpon	Spontaneous Minute Volume
52	MntrVeSponNorm	Spontaneous Minute Volume, Normalized
53	MntrVeTotal	Minute Volume
54	MntrVeTotalNorm	Minute Volume, Normalized
55	MntrVtCO2	The patient's exhaled tidal volume of CO2, calculated on a breath-by-breath basis.
56	MntrVte	Exhaled Tidal Volume
57	MntrVteMand	Mandatory Tidal Volume
58	MntrVteMandNorm	Mandatory Tidal Volume, Normalized
59	MntrVteNorm	Exhaled Tidal Volume, Normalized
60	MntrVteSpon	Spontaneous Tidal Volume
61	MntrVteSponNorm	Spontaneous Tidal Volume, Normalize
62	MntrVti	Inspired Tidal Volume
63	MntrVtiNorm	Inspired Tidal Volume, Normalized
64	MntrWobImposed	Work of Breathing, Imposed
65	MntrWobPatient	Work of Breathing, Patient
66	MntrWobVent	Work of Breathing, Ventilator

7.6 Trended Parameters

	Parameter ID	Description
1	TrendO2Index	Oxygen Index
2	TrendAutoPEEP	Airway Auto PEEP
3	TrendAutoPEEPdelta	Delta Airway Auto PEEP
4	TrendAutoPEEPesoph	Esophageal Auto PEEP
5	TrendC20	Compliance Ratio
6	TrendCcw	Chestwall Compliance
7	TrendCdyn	Dynamic System Compliance
8	TrendCdynNorm	Dynamic System Compliance, Normalized
9	TrendClung	Lung Compliance
10	TrendCPAPFlow	Continuous Positive Airway Pressure

	Parameter ID	Description
		Flow
11	TrendCstat	Static System Compliance
12	TrendCstatNorm	Static System Compliance, Normalized
13	TrendFiO2	FiO2 – Fractional Inspiratory Oxygen Concentration
14	TrendIE	Inspiratory:Expiratory Time Ratio
15	TrendLeak	(Vti-Vte)/Vti*100
16	TrendlVeTotalNorm	Minute Volume, Normalized
17	TrendMIP	Maximum Inspiratory Pressure
18	TrendNcpapMeanFlow	Nasal Continuous Positive Airway Pressure Mean Flow.
19	TrendNcpapPres	Nasal Continuous Positive Airway Pressure
20	TrendP100	Respiratory Drive
21	TrendPaCO2	Arterial CO2 set by the operator.
22	TrendPair	Air Supply Pressure
23	TrendPaO2	Arterial Oxygen set by the operator.
24	TrendPawDelta	Delta Airway Pressure
25	TrendPeep	Positive End Expiratory Pressure
26	TrendPefr	Peak Expiratory Flow Rate
27	TrendPesDelta	Delta Esophageal Pressure
28	TrendPFRatio	PaO2/FiO2 Ratio
29	TrendPifr	Peak Inspiratory Flow Rate
30	TrendPmean	Mean Airway Pressure
31	TrendPO2	Oxygen Supply Pressure
32	TrendPpeak	Peak Airway Pressure
33	TrendPplat	Plateau Airway Pressure
34	TrendPplatPtp	Transpulmonary Pressure at Airway Pressure Plateau
35	TrendPtpPEEP	Transpulmonary Pressure at Auto PEEP
36	TrendRate	Total Breath Rate
37	TrendRateMand	Mandatory Breath Rate
38	TrendRateSpon	Spontaneous Breath Rate
39	TrendRimp	Imposed Resistance
40	TrendRlung	Lung Resistance
41	TrendRpeak	Peak Expiratory Airway Resistance
42	TrendRrs	Respiratory System Resistance
43	TrendRSBIndex	Rapid Shallow Breathing Index
44	TrendTe	Expiratory Time
45	TrendTi	Inspiratory Time
46	TrendVdel	Machine Delivered Volume
47	TrendVentilationAlveolar	Alveolar Ventilation

	Parameter ID	Description
48	TrendVentilationAlveolarDeadSpace	Alveolar Dead Space
49	TrendVentilationPhysiologicalDeadSpace	Physiological Dead Space
50	TrendVentilationPhysiologicalDeadSpaceVtRatio	Physiological Dead Space / Tidal Volume Ratio
51	TrendVeSpon	Spontaneous Minute Volume
52	TrendVeSponNorm	Spontaneous Minute Volume, Normalized
53	TrendVeTotal	Minute Volume
54	TrendVte	Exhaled Tidal Volume
55	TrendVteMand	Mandatory Tidal Volume
56	TrendVteMandNorm	Mandatory Tidal Volume, Normalized
57	TrendVteNorm	Exhaled Tidal Volume, Normalized
58	TrendVteSpon	Spontaneous Tidal Volume
59	TrendVteSponNorm	Spontaneous Tidal Volume, Normalize
60	TrendVti	Inspired Tidal Volume
61	TrendVtiNorm	Inspired Tidal Volume, Normalized
62	TrendWobImposed	Work of Breathing, Imposed
63	TrendWobPatient	Work of Breathing, Patient
64	TrendWobVent	Work of Breathing, Ventilator

7.7 Alarms

7.7.1 Active Alarm Indicators

	String ID	Description
1	AlarmActive	Indicates whether any alarms are currently being annunciated
2	AlarmActivePriority	Indicates the highest priority of all active alarm conditions
3	AlarmApnea	Apnea Interval Exceeded
4	AlarmCO2CheckAirwayAdapter	CO2 device reported a CO2 Airway Adapter needs to be checked.
5	AlarmCheckEvents	Check event notifications on the ventilator
6	AlarmCircDisc	Patient Circuit Disconnect
7	AlarmClockBattLow	Clock Battery Low
8	AlarmCO2CommunicationError	CO2 device reported a communication error.
9	AlarmCO2OutOfRange	CO2 device reported a CO2 range error condition.
10	AlarmCO2SensorFault	CO2 device reported a fault condition with CO2 sensor.
11	AlarmCO2SensorOverTemp	CO2 device reported a fault condition due to temperature.
12	AlarmCO2ZeroRequired	CO2 device reported sensor requires to be initialized to zero.
13	AlarmDefaults	Ventilator set to factory defaults
14	AlarmDirtyFilter	Check for a dirty filter
15	AlarmEEPROMFault	EEPROM failure detected
16	AlarmFanFail	Fan failure

	String ID	Description
17	AlarmFiO2AutoLimitHigh	The High Auto FiO_2 Alarm" will alarm if Auto FiO_2 Cmd $\geq$ preset High Auto FiO_2 Limit for a period of 60 seconds or greater.
18	AlarmFiO2AutoLimitLow	The output Auto FiO_2 Cmd shall not be allowed to be less than the Low Auto FiO_2 Limit. The "Low Auto FiO_2 Limit" will alarm if Auto FiO_2 Cmd $\leq$ preset Low Auto FiO_2 Limit for a period of 60 seconds or greater.
19	AlarmFiO2BaselineLimitHigh	Alarm if the Baseline FiO_2 $\geq$ High Baseline FiO_2 Alarm setting.
20	AlarmFiO2Cal	FiO2 Sensor needs calibration
21	AlarmFiO2High	High FiO2
22	AlarmFiO2Low	Low FiO2
23	AlarmFiO2Range	FiO2 out of upper & lower limits
24	AlarmFiO2SensorFail	FiO2 Sensor failure
25	AlarmFlowSensorDisc	Flow sensor disconnect
26	AlarmHwFault	A hardware failure has been detected
27	AlarmIlvSlaveDisc	ILV slave disconnect detected
28	AlarmInop	Vent Inoperable
29	AlarmEndTidalCO2High	Exceeded EtCO2 High Limit
30	AlarmEndTidalCO2Invalid	Invalid EtCO2.
31	AlarmEndTidalCO2Low	Below EtCO2 Low Limit
32	AlarmInvalidGasId	Invalid Gas ID
33	AlarmInvalidSN	Invalid Serial Number
34	AlarmLimitIE	I:E Ratio Limit
35	AlarmLimitTi	Inspiratory Time Limit
36	AlarmLimitVol	Volume Limit
37	AlarmLossAir	Loss of Air Supply
38	AlarmLossGas	Loss of All Gas Supply
39	AlarmLossHeliox	Loss of Heliox Supply
40	AlarmLossO2	Loss of O2 Supply
41	AlarmMotorFault	The turbine motor has failed
42	AlarmNcpapHigh	Nasal CPAP high pressure
43	AlarmNcpapHighPresLimit	Nasal CPAP high pressure (time) limit
44	AlarmNcpapLow	Nasal CPAP low pressure
45	AlarmNoCalData	No calibration data is available
46	AlarmO2PressHigh	High O2 Inlet Pressure
47	AlarmOcclusion	Patient Circuit Occlusion
48	AlarmOpenSV	Safety Valve Open
49	AlarmPatientDefaults	Configured with patient default settings
50	AlarmPeepHigh	High PEEP
51	AlarmPeepLow	Low PEEP
52	AlarmPpeakHigh	High Peak Airway Pressure
53	AlarmPpeakHighExt	Extended High Peak Airway Pressure
54	AlarmPpeakLow	Low Peak Airway Pressure
55	AlarmPulseRateHigh	Pulse rate is greater than the High Pulse Rate alarm setting.
56	AlarmPulseRateLow	Pulse rate is less than the Low Pulse Rate alarm setting.

	String ID	Description
57	AlarmPwrAcLoss	Loss of AC Power
58	AlarmPwrBattLow	Low Battery
59	AlarmPwrBattMed	Medium Battery
60	AlarmRateHigh	High Breath Rate
61	AlarmSilence	Alarm annunciation is temporarily suspended on the device
62	AlarmSpO2Failure	High priority alarm is issued when the MS-aa PCB reports a board failure (see Masimo CSD-1086 Rev C).
63	AlarmSpO2High	Monitored SpO2 is greater than the preset High SpO2 Alarm for more than the SpO2 Alarm Delay period.
64	AlarmSpO2Low	Monitored SpO2 is less than the preset Low SpO2 Alarm for more than the SpO2 Alarm Delay period.
65	AlarmSpO2NotConnected	High priority alarm is issued when the pulse oximeter is not connected to the ventilator (i.e. RS-232 not connected).
66	AlarmSpO2SensorDefective	High priority alarm is issued when the MS-11 PCB (see Masimo CSD-1086 Rev C) detects the SpO2 Sensor is Defective.
67	AlarmSpO2SensorNotConnected	High priority alarm is issued when the MS-11 PCB (see Masimo CSD-1086 Rev C) detects the SpO2 Sensor is Not Connected.
68	AlarmSpO2SensorUnrecognized	High priority alarm is issued when the MS-11 PCB (see Masimo CSD-1086 Rev C) detects the SpO2 Sensor is Unrecognized.
69	AlarmSpO2SignalAmbientLight	Low priority alarm is issued when the MS-11 PCB (see Masimo CSD-1086 Rev C) detects the SpO2 Signal Ambient Light.
70	AlarmSpO2SignalAmbientLightExt	High priority alarm is issued when the MS-11 PCB (see Masimo CSD-1086 Rev C) detects the SpO2 Signal Ambient Light for an extended period.
71	AlarmSpO2SignalInterference	Low priority alarm is issued when the MS-11 PCB (see Masimo CSD-1086 Rev C) detects the SpO2 Signal Interference.
72	AlarmSpO2SignalInterferenceExt	High priority alarm is issued when the MS-11 PCB (see Masimo CSD-1086 Rev C) detects the SpO2 Signal Interference for an extended period.
73	AlarmSpO2SignalLowSIQ	Low priority alarm is issued when the MS-11 PCB (see Masimo CSD-1086 Rev C) detects the SpO2 Signal is Low.
74	AlarmSpO2SignalLowSIQExt	High priority alarm is issued when the MS-11 PCB (see Masimo CSD-1086 Rev C) detects the SpO2 Signal is Low for an extended period.
75	AlarmSpO2SignalLowPerfusion	Low priority alarm is issued when the MS-11 PCB (see Masimo CSD-1086 Rev C) detects the SpO2 Signal Perfusion is Low.

	String ID	Description
76	AlarmSpO2SignalLowPerfusionExt	High priority alarm is issued when the MS-11 PCB (see Masimo CSD-1086 Rev C) detects the SpO2 Signal Perfusion is Low for an extended period.
77	AlarmSpO2SignalPulseSearch	Low priority alarm is issued when the MS-11 PCB (see Masimo CSD-1086 Rev C) detects the SpO2 Signal Pulse Search is Low.
78	AlarmSpO2SignalPulseSearchExt	High priority alarm is issued when the MS-11 PCB (see Masimo CSD-1086 Rev C) detects the SpO2 Signal Pulse Search is Low for an extended period.
79	AlarmSpO2SignalSensorOff	Low priority alarm is issued when the MS-11 PCB (see Masimo CSD-1086 Rev C) detects the SpO2 Signal Sensor is off.
80	AlarmSpO2SignalSensorOffExt	High priority alarm is issued when the MS-11 PCB (see Masimo CSD-1086 Rev C) detects the SpO2 Signal Sensor is off for an extended period.
81	AlarmTest	Audible Alarm Test, High Priority
82	AlarmTransducerFault	Transducer failure detected
83	AlarmVeHigh	High Minute Volume
84	AlarmVeLow	Low Minute Volume
85	AlarmVteLow	Low Tidal Volume
86	AlarmVtHigh	High Tidal Volume

7.7.2 History Alarm Indicators

The following table of nomenclature terms represent alarm conditions that are no longer being actively asserted but still require operator confirmation.

	String ID	Description
1	AlarmHistApnea	Apnea Interval Exceeded (historical / not cleared)
2	AlarmHistCO2CheckAirwayAdapter	CO2 device reported a CO2 Airway Adapter needs to be checked (historical / not cleared).
3	AlarmHistCheckEvents	Check event notifications on the ventilator (historical / not cleared)
4	AlarmHistCircDisc	Patient Circuit Disconnect (historical / not cleared)
5	AlarmHistClockBattLow	Clock Battery Low (historical / not cleared)
6	AlarmHistCO2CommunicationError	CO2 device reported a communication error (historical / not cleared).
7	AlarmHistCO2OutOfRange	CO2 device reported a CO2 range error condition (historical / not cleared).
8	AlarmHistCO2SensorFault	CO2 device reported a fault condition with CO2 sensor (historical / not cleared).
9	AlarmHistCO2SensorOverTemp	CO2 device reported a fault condition due to temperature (historical / not cleared).
10	AlarmHistCO2ZeroRequired	CO2 device reported sensor requires to be initialized to zero (historical / not cleared).
11	AlarmHistDefaults	Ventilator set to factory defaults (historical / not cleared)

	String ID	Description
12	AlarmHistDirtyFilter	Check for a dirty filter (historical / not cleared)
13	AlarmHistEEPROMFault	EEPROM failure detected (historical / not cleared)
14	AlarmHistEndTidalCO2High	Exceeded EtCO2 High Limit (historical / not cleared)
15	AlarmHistEndTidalCO2Invalid	Invalid EtCO2 (historical / not cleared).
16	AlarmHistEndTidalCO2Low	Below EtCO2 Low Limit (historical / not cleared).
17	AlarmHistFanFail	Fan failure (historical / not cleared)
18	AlarmHistFiO2AutoLimitHigh	Auto FiO2 Cmd is greater than or equal to the preset High Auto FiO2 Limit for a period of 60 seconds or more (historical / not cleared).
19	AlarmHistFiO2AutoLimitLow	Auto FiO2 Cmd is less than or equal to the preset Low Auto FiO2 Limit for a period of 60 seconds or more (historical / not cleared).
20	AlarmHistFiO2BaselineLimitHigh	Baseline FiO2 is greater than or equal to the High Baseline FiO2 Alarm setting sensor (historical / not cleared).
21	AlarmHistFiO2Cal	FiO2 Sensor needs calibration (historical / not cleared)
22	AlarmHistFiO2High	High FiO2 (historical / not cleared)
23	AlarmHistFiO2Low	Low FiO2 (historical / not cleared)
24	AlarmHistFiO2Range	FiO2 out of upper & lower limits (historical / not cleared)
25	AlarmHistFiO2SensorFail	FiO2 Sensor failure (historical / not cleared)
26	AlarmHistFlowSensorDisc	Flow sensor disconnect (historical / not cleared)
27	AlarmHistHwFault	A hardware failure has been detected (historical / not cleared)
28	AlarmHistIlvSlaveDisc	ILV slave disconnect detected (historical / not cleared)
29	AlarmHistInop	Vent Inoperable (historical / not cleared)
30	AlarmHistInvalidGasId	Invalid Gas ID (historical / not cleared)
31	AlarmHistInvalidSN	Invalid Serial Number (historical / not cleared)
32	AlarmHistLimitIE	I:E Ratio Limit (historical / not cleared)
33	AlarmHistLimitTi	Inspiratory Time Limit (historical / not cleared)
34	AlarmHistLimitVol	Volume Limit (historical / not cleared)
35	AlarmHistLossAir	Loss of Air Supply (historical / not cleared)
36	AlarmHistLossGas	Loss of All Gas Supply (historical / not cleared)
37	AlarmHistLossHeliox	Loss of Heliox Supply (historical / not cleared)
38	AlarmHistLossO2	Loss of O2 Supply (historical / not cleared)
39	AlarmHistMotorFault	The turbine motor has failed (historical / not cleared)
40	AlarmHistNcpapHigh	Nasal CPAP high pressure
41	AlarmHistNcpapHighPresLimit	Nasal CPAP high pressure (time) limit
42	AlarmHistNcpapLow	Nasal CPAP low pressure
43	AlarmHistNoCalData	No calibration data is available (historical / not cleared)
44	AlarmHistO2PressHigh	High O2 Inlet Pressure (historical / not cleared)
45	AlarmHistOcclusion	Patient Circuit Occlusion (historical / not cleared)
46	AlarmHistOpenSV	Safety Valve Open (historical / not cleared)
47	AlarmHistPatientDefaults	Configured with patient default settings (historical / not cleared)
48	AlarmHistPeepHigh	High PEEP (historical / not cleared)
49	AlarmHistPeepLow	Low PEEP (historical / not cleared)

	String ID	Description
50	AlarmHistPpeakHigh	High Peak Airway Pressure (historical / not cleared)
51	AlarmHistPpeakHighExt	Extended High Peak Airway Pressure (historical / not cleared)
52	AlarmHistPpeakLow	Low Peak Airway Pressure (historical / not cleared)
53	AlarmHistPulseRateHigh	Pulse rate is greater than the High Pulse Rate alarm setting (historical / not cleared).
54	AlarmHistPulseRateLow	Pulse rate is less than the Low Pulse Rate alarm setting (historical / not cleared).
55	AlarmHistPwrAcLoss	Loss of AC Power (historical / not cleared)
56	AlarmHistPwrBattLow	Low Battery (historical / not cleared)
57	AlarmHistPwrBattMed	Medium Battery (historical / not cleared)
58	AlarmHistRateHigh	High Breath Rate (historical / not cleared)
59	AlarmHistSpO2Failure	High priority alarm is issued when the MS-aa PCB reports a board failure (see Masimo CSD-1086 Rev C) - (historical / not cleared).
60	AlarmHistSpO2High	Monitored SpO2 is greater than the preset High SpO2 Alarm for more than the SpO2 Alarm Delay period (historical / not cleared).
61	AlarmHistSpO2Low	Monitored SpO2 is less than the preset Low SpO2 Alarm for more than the SpO2 Alarm Delay period (historical / not cleared).
62	AlarmHistSpO2NotConnected	High priority alarm is issued when the pulse oximeter is not connected to the ventilator (i.e. RS-232 not connected) - (historical / not cleared).
63	AlarmHistSpO2SensorDefective	High priority alarm is issued when the MS-11 PCB (see Masimo CSD-1086 Rev C) detects the SpO2 Sensor is Defective (historical / not cleared).
64	AlarmHistSpO2SensorNotConnected	High priority alarm is issued when the MS-11 PCB (see Masimo CSD-1086 Rev C) detects the SpO2 Sensor is Not Connected (historical / not cleared).
65	AlarmHistSpO2SensorUnrecognized	High priority alarm is issued when the MS-11 PCB (see Masimo CSD-1086 Rev C) detects the SpO2 Sensor is Unrecognized (historical / not cleared).
66	AlarmHistSpO2SignalAmbientLight	Low priority alarm is issued when the MS-11 PCB (see Masimo CSD-1086 Rev C) detects the SpO2 Signal Ambient Light (historical / not cleared).
67	AlarmHistSpO2SignalAmbientLightExt	High priority alarm is issued when the MS-11 PCB (see Masimo CSD-1086 Rev C) detects the SpO2 Signal Ambient Light for an extended period (historical / not cleared).
68	AlarmHistSpO2SignalInterference	Low priority alarm is issued when the MS-11 PCB (see Masimo CSD-1086 Rev C) detects the SpO2 Signal Interference (historical / not cleared).
69	AlarmHistSpO2SignalInterferenceExt	High priority alarm is issued when the MS-11 PCB (see Masimo CSD-1086 Rev C) detects the SpO2

	String ID	Description
		Signal Interference for an extended period (historical / not cleared).
70	AlarmHistSpO2SignalLowPerfusion	Low priority alarm is issued when the MS-11 PCB (see Masimo CSD-1086 Rev C) detects the SpO2 Signal Perfusion is Low (historical / not cleared).
71	AlarmHistSpO2SignalLowPerfusionExt	High priority alarm is issued when the MS-11 PCB (see Masimo CSD-1086 Rev C) detects the SpO2 Signal Perfusion is Low for an extended period (historical / not cleared).
72	AlarmHistSpO2SignalLowSIQ	Low priority alarm is issued when the MS-11 PCB (see Masimo CSD-1086 Rev C) detects the SpO2 Signal is Low (historical / not cleared).
73	AlarmHistSpO2SignalLowSIQExt	High priority alarm is issued when the MS-11 PCB (see Masimo CSD-1086 Rev C) detects the SpO2 Signal is Low for an extended period (historical / not cleared).
74	AlarmHistSpO2SignalPulseSearch	Low priority alarm is issued when the MS-11 PCB (see Masimo CSD-1086 Rev C) detects the SpO2 Signal Pulse Search is Low (historical / not cleared).
75	AlarmHistSpO2SignalPulseSearchExt	High priority alarm is issued when the MS-11 PCB (see Masimo CSD-1086 Rev C) detects the SpO2 Signal Pulse Search is Low for an extended period (historical / not cleared).
76	AlarmHistSpO2SignalSensorOff	Low priority alarm is issued when the MS-11 PCB (see Masimo CSD-1086 Rev C) detects the SpO2 Signal Sensor is off (historical / not cleared).
77	AlarmHistSpO2SignalSensorOffExt	High priority alarm is issued when the MS-11 PCB (see Masimo CSD-1086 Rev C) detects the SpO2 Signal Sensor is off for an extended period (historical / not cleared).
78	AlarmHistTest	Audible Alarm Test, High Priority (historical / not cleared)
79	AlarmHistTransducerFault	Transducer failure detected (historical / not cleared)
80	AlarmHistVeHigh	High Minute Volume (historical / not cleared)
81	AlarmHistVeLow	Low Minute Volume (historical / not cleared)
82	AlarmHistVteLow	Low Tidal Volume (historical / not cleared)
83	AlarmHistVtHigh	High Tidal Volume (historical / not cleared)

7.8 Scalars

	Parameter ID	Description
1	WaveAnlg0	Analog Input Channel 0
2	WaveAnlg1	Analog Input Channel 1
3	WaveFexp	Expiratory Sensor Flow
4	WaveFinsp	Inspiratory Sensor Flow
5	WaveFlow	Airway Flow

	Parameter ID	Description
6	WaveMetric	Phase, Trigger, Type, etc.
7	WavePaw	Airway Pressure
8	WavePCO2	Measured CO2 level
9	WavePes	Esophageal Pressure
10	WavePinsp	Inspiratory Sensor Pressure
11	WavePtp	Transpulmonary Pressure
12	WavePtr	Tracheal Pressure
13	WaveSpO2Pleth	Raw IR signal over time from the MS-11 PCB. The range value is inverted and scaled from the raw data sent by the oximeter (oximeter +127 = 0%, oximeter – 128 = 100%).
14	WaveVt	Tidal Volume

7.9 System Information

	Parameter ID	Description
1	SysInfoConfig	Model Configuration
2	SysInfoDateTime	Current Date & Time Setting
3	SysInfoModel	Base Model
4	SysInfoOUI	Organizationally Unique Identifier
5	SysInfoSerial	Serial Number
6	SysInfoSwVer	Software Version
7	SysInfoSwVerBootLoader	Boot Loader Software Version Number
8	SysInfoTimeSession	Hours operated since Power ON
9	SysInfoTimeTotal	System Lifetime Hours Operated
10	SysInfoTurbineSerial	Turbine Serial Number

8 Constant Definitions

The following constant values are defined for this protocol:

VOXP Constant Definitions		
Constant	**Value**	**Description**
Parameter Not Available	+(MAX_NEG_INT)	Indicates that the associated parameter is either not currently available (e.g., due to the operational mode of the device) or is out-of-range and thus a valid value cannot be provided. For 32-bit integers, the value is 0x80000000; for 16-bit integers, 0x8000; and for 8-bit integers, 0x80
Parameter Off	+(MAX_NEG_INT + 1)	Indicates that a signed integer parameter is Off; typically used for settings that may be turned Off as opposed to On but with a zero value. For 32-bit integers, the value is 0x80000001; for 16-bit integers, 0x8001; and for 8-bit integers, 0x81

9 Appendix A – CRC Definition and Algorithm

To calculate the 16 bit CRC the message bits are considered to be the coefficients of a polynomial. This message polynomial is first multiplied by X^16 and then divided by the generator polynomial *(X^16 + X^12 + X^5 +1)* using modulo two arithmetic. The remainder left after the division is the desired CRC. Since a message block in the Modem Protocol is 128 bytes or 1024 bits, the message polynomial will be of order X^1023. The hi order bit of the first byte of the message block is the coefficient of X^1023 in the message polynomial. The lo order bit of the last byte of the message block is the coefficient of X^0 in the message polynomial.

16-bit CRC Algorithm in C++:

```
unsigned short
usCalcCRC( unsigned char *pBuffer, unsigned short usLength ) {
    unsigned short usCRC = 0;

// Note:  CRC-CCITT Polynomial
    const unsigned short usGeneratorPolynom = 0x1021;

    int iCarry;

    for( ; usLength > 0; usLength--, pBuffer++ )
    {
        usCRC ^= (unsigned short)*pBuffer << 8;
        for( int i = 0; i < 8; i++)
        {
            if( iCarry = ((usCRC & 0x8000) != 0))
            {
                usCRC ^= usGeneratorPolynom;
            }
            usCRC = ( usCRC << 1 ) + iCarry;
        }
    }
    return usCRC ;
}
```

10 VIASYS VOXP Compliant Ventilators and Supported Data Set

As described in earlier sections, the VOX Protocol is a flexible and extensible communication protocol that supports any VIASYS ventilator conforming to the protocol. The external host system shall conform and be able to handle the specific communication supported on the various ventilators, including the ventilator supported data set using the common nomenclature.

10.1 Ventilator Configuration / Setup

This section describes the system level interface, controls, and other items required for an external host system using the VOXP communication protocol to communicate with the AVEA or VELA ventilator.

10.1.1 System Configuration Requirements

Communication is established between a ventilator and an external system with a properly configured set of system level items from physical cables, adapters, communication parameters to application protocols. This section will describe the interface communication layers and the tasks that must be performed in order to establish proper communication to a ventilator from an external host system.

10.1.2 Physical and Link Layer

The AVEA and VELA VOXP interface shall use the ventilator's external communication (or "MIB") port to communicate to an external host system. The physical interface is an RJ-45 connector with RS-232 signaling levels. Only the following pins are required:

External Host to AVEA MIB Cable			
External Host Label	**Direction**	**MIB**	
		RJ45 Pin	**Label**
RxD	⇦	5	dTxD
TxD	⇨	7	dRxD
Digital GND	⇔	4	dGND

In order to make the connection to an external host system and AVEA or VELA ventilator, a 10BaseT STP cable, and RJ45 to DB-9 or DB-25 adapter shall be used to convert from the external host's serial cable to the standard connection used by the ventilator[3]. There is no configuration required of the external host system other than the proper cabling and serial data communication parameters:

Serial data communication parameters shall be configurable to the following:

BAUD Rate: 115200, 57600, 38400 (default), 19200, 9600
Data Bits: 8 (default) or 7
Stop Bits: 1
Parity: None (default), Odd, Even

[3] Defined in ISO/IEEE 11073-30200-2004.

Note: the maximum number of waveforms that can be selected is 4. It is recommended to always select Wave Metric when another waveform is selected. When a waveform is selected, the baud rate should be 57600 or higher.

10.1.3 Ventilator Configuration – Setup / Communication Protocol

This section defines several groups of identifiers in the nomenclature that are used in the VOXP protocol. However, the implementation specifics relating to any identifier in this nomenclature can be found in the target ventilator specification complying with the VOXP protocol. These ventilator specification details include, but are not limited to, data type and domain values.

10.1.4 Logical Connections, Link State, and Link Restarting

Although the protocol is not “technically” connection-oriented , it simulates a “connected” state to ensure the protocol setup information is not modified while there is an active connection with an external host.

The ventilator will indicate that a connection is active when it receives a valid reply message (i.e. link.ack()) from the external serial port. After the first 2-minutes of sending a link message (i.e. link.ping()) every 5-seconds, and not receiving a response from the host with a link.ack() message, the connection will be indicated as broken, enabling the communication settings or protocol selection to be modified.

The ventilator shall transmit a link.restart() message to the connected host system upon an acceptance of a change of any one of the following supported parameters:

a) Language (English, Chinese, Spanish, etc.)
b) Communication Parameter Change (i.e. Baud rate, data bit, parity, etc.)
c) Patient Size (Neonate, Pediatric, or Adult)

10.2 VOXP Message, Syntax, and Sequence Description

Each VOXP compliant ventilator shall conform to the message format, syntax, and exchange sequence specified in the previous sections of this document. The protocol provides the flexibility to define the values for the “profile” message’s voxpVersion and profileVersion attributes, thus enabling the host system to support current and future versions of the VOXP protocol (e.g. new commands, data-sets, message types, etc.) on any VOXP compliant ventilator.

10.2.1 Epoch Data

The AVEA and VELA epoch wave data shall be updated every 500msec.

10.2.2 CRC Attribute

All data messages shall contain a cyclic redundancy check (CRC) on the data portion of the message.
For example:

<data class="monitor" crc="3A99"
msgID="0005">8000800080000067800005C58000800080008000001 5FF9D000A8000800
0800000290 01E000604218000023F0008000000248000800080000008000800080008000
0006080008000 02A9004502FCC25500000000013F02A43E5D0260170B8000800000000
000000002F52A7C8000800080000098</data>

10.2.3 AVEA Ventilator Specific Message, Syntax and Sequence

The table below defines the values for the "profile" message's voxpVersion and profileVersion attributes for an AVEA ventilator.

The Profile message's "model" attribute shall be set to Avea. For example: <profile model="Avea">.

For the TEXT data type, unless otherwise specified (in the profile element's textEncoding attribute), the character encoding shall be UTF-16 (16-bit characters).

The VOXP "profile" message includes the attributes "voxpVersion" and "profileVersion" (see section 5.1). The following table correlates values for these attributes, namely major and minor specialization profile version numbers, identified by part number (PN) and revision of the respective specification.

AVEA Major/Minor Version Number Assignments					
PN / Revision	AVEA Profile[4]		VOXP[5] Version		Rationale for Version
	Major	Minor	Major	Minor	
91316/A					
91316/B	1	0	2	1	Initial release
91316/C	2	0	3	0	Updated for nasal CPAP semantics; harmonized with latest version of the base VOXP specification; synchronized format and content with the VELA VOXP specialization document.
ER-1908/A	2	1	3	2	

10.2.4 VELA Ventilator Specific Message, Syntax and Sequence

The table below defines the values for the "profile" message's voxpVersion and profileVersion attributes for an VELA ventilator.

VELA Major/Minor Version Number Assignments					
PN / Revision	VELA Profile[6]		VOXP[7]		Rationale for Version
	Major	Minor	Major	Minor	
91415/A	1	0	3	1	Initial release
ER-1908/A	1	1	3	2	

[4] For example, the attribute in the profile message could be: profileVersion="2.0"
[5] For example, the attribute in the profile message could be: voxpVersion="3.2"
[6] For example, the attribute in the profile message would be: profileVersion="1.0"
[7] For example, the attribute in the profile message would be: voxpVersion="3.0"

The Profile message's "model" attribute shall be set to 'Vela (space) Model'.
For example: <profile model="Vela Comprehensive">
<profile model="Vela Plus">
<profile model="Vela Plus International">
<profile model="Vela Basic">

For the TEXT data type, unless otherwise specified (in the profile element's textEncoding attribute), the character encoding shall be UTF-32 (32-bit characters).

10.2.5 AVEA Ventilator Data type, and Bit Map Representation

The following identifiers shall conform to the respective data type, bit map definitions, and algorithms:

a) ***SysInfoConfig***: A UWORD type that describes the options on the specified model.

Bit	Type	Identifier	Description
0	unsigned int	bCompressor	0=compressor option not installed; 1=compressor option installed.
1	unsigned int	bHeliOx	0=heliox option not installed; 1=heliox option installed.
2	unsigned int	bHeliOxNeb	0=heliox and nebulizer option installed; 1= heliox and nebulizer option not installed.
3	unsigned int	bPflex	0=pressure inflexion option not installed; 1=pressure inflexion option installed.
4	unsigned int	bNeo	0=neonate functions not available; 1=neonate functions available.
5	unsigned int	bPed	0=pediatric functions not available; 1=pediatric functions available.
6	unsigned int	bAdult	0=adult function not available; 1=adult functions available.
7	unsigned int	bManeuvers	0=maneuver options not available; 1=maneuver options available.
8	unsigned int	bNcpap	0=Nasal CPAP not available; 1=Nasal CPAP available
9-15	unused		Not used.

b) ***WaveMetric***: A UWORD type with structure described below:

Bit	Type	Identifier	Description
0-2	enum	VpBreathPhase	0=NOS*_PHASE; 1=INSP_PHASE; 2=EXP_PHASE; 3=INSP_PAUSE_PHASE; 4=EXP_PAUSE_PHASE.
3-4	enum	VpBreathType	0=NOS*_BREATH TYPE; 1=SPONTANEOUS_BREATH_TYPE; 2=MANDATORY_BREATH_TYPE; 3=SPECIAL_BREATH TYPE.

Bit	Type	Identifier	Description
5-6	enum	VpBreathTrigger	0=PATIENT_TRIGGERED; 1=VENTILATOR_TRIGGER.
7	bool	VpSpO2SignalIQPresent	0=Signal IQ Not Included; 1=Signal IQ Included
8-9	unused		Not used.
10-15	unsigned int	VpSpO2SignalIQ	SpO2 Signal IQ Value (6 bits)

*NOS = “Not otherwise specified”

10.2.6 VELA Ventilator Data type, and Bit Map Representation

The following identifiers shall conform to the respective data type, bit map definitions, and algorithms:

a) ***SysInfoConfig***: A UWORD type that describes the options on the specified model.

Bit	Type	Identifier	Description
15	unsigned int	bLeakCompensation	0=Leak Compensation option not available; 1=Leak Compensation available.
14	unsigned int	bMIPNIF[8]	0=MIP/NIF option not available; 1= MIP/NIF option available.
13	unsigned int	bNPPV	1=NPPV option available; 0= NPPV option not available.
12	unsigned int	bAPRV	0=APRV option not available; 1=APRV option available.
11	unsigned int	bPRVC	0=PRVC not available; 1=PRVC available.
10	unsigned int	bVSYNC	0=VSync not available; 1= VSync available.
9	unsigned int	bSquareWaveform	0=Square Waveform not available; 1=Square Waveform available.
8	unsigned int	bAssuredVolumeVAPS	0=Assured Volume VAPS not available; 1=Assured Volume VAPS available.
7	unsigned int	bLoops	0=“Loop” breath displays are not available; 1=“Loop” breath displays are available
6	unsigned int	bTrends	0=Trended monitors are not available; 1=Trended monitors are available
5-0	unused		Not used.

b) ***WaveMetric***: A UWORD type with structure described below:

Bit	Type	Identifier	Description
0-2	enum	VpBreathPhase	0=NOS*_PHASE; 1=INSP_PHASE; 2=EXP_PHASE; 3=INSP_PAUSE_PHASE; 4=EXP_PAUSE_PHASE.

[8] MIP/NIF = Maximum Inspiratory Pressure / Negative Inspiratory Force; related to a VELA Maneuver.

3-4	enum	VpBreathType	0=NOS*_BREATH TYPE; 1=SPONTANEOUS_BREATH_TYPE; 2=MANDATORY_BREATH_TYPE.
5-6	enum	VpBreathTrigger	0=PATIENT_TRIGGERED; 1=VENTILATOR_TRIGGERED.
7	bool	VpSpO2SignalIQPresent	0=Signal IQ Not Included; 1=Signal IQ Included
8-9	unused		Not used.
10-15	unsigned int	VpSpO2SignalIQ	SpO2 Signal IQ Value (6 bits)

*NOS = “Not otherwise specified”

10.3 VOXP Data Support

The AVEA and VELA graphical user interface (GUI) nomenclature shall support and be mapped to the VOXP nomenclature as presented in the class descriptions below. The ventilators will support 5-classes of data:

a. Info These parameters represent general information that are typically unique to the system or may relate to the patient (e.g., patient identifier).

b. Setting These parameters represent the operational control values that the caregiver has accepted for the ventilator.

c. Monitor These parameters represent information that the ventilator/system is monitoring, and will be dynamic based on the specific parameter.

d. Alarm These parameters indicate operational conditions of the ventilator that may require operator review and corrective action.

e. Scalar These parameters are updated every 500ms and are typically represented graphically on a two-dimensional scale.

VOXP messages are queued for transmission according to a prioritization of the classes. The classes are prioritized as follows:

1) Alarms,
2) Scalars / Waves
3) Monitors
4) Settings
5) Info

Where the Alarm class has the highest priority, and the Info class has the lowest.

In the following sections, ‘ID’ is the nomenclature from the various tables in section 7 with the label of Parameter ID or String ID. ‘VELA GUI / Membrane’ or ‘AVEA GUI / Membrane’ refer to the nomenclature displayed on the respective ventilator touch screen or display membrane, thus providing a map to the corresponding VOXP nomenclature for the same item. ‘Description’ provides a brief definition for each specific item.

10.4 Info Class

10.4.1 AVEA Ventilator – Info Class

10.4.1.1 ID: SysInfoConfig

Description: Describes the options that are installed/available on the AVEA ventilator (see section on Data type and Bit Map Representation for details.).
Type: UWORD
AVEA GUI/Membrane: none

10.4.1.2 ID: SysInfoModel

Description: The base model configuration
Label: “Base Model”
Type: ENUM
Enum value=label: 0=“Invalid”; 1=“Avea Comp”; 2=”Avea +”; 3= “Avea”
AVEA GUI/Membrane: none

10.4.1.3 ID: SysInfoOUI

Description: The Organizationally Unique Identifier ('OUI") is a 64-bit value that uniquely identifies each VIASYS Respiratory Care device. The upper 24 bits is a unique value assigned to VIASYS by the IEEE Registration Authority (00-07-A1 hexadecimal). The lower 40 bits are used as a serialization number by VIASYS. Given that the AVEA OUI would consist of the following ASCII HEX bytes: 0007A100B9E92A00 the conversion to a 16-bit character would look like:
0030003000300037004100310030003000420039004500390032004100300030000
Type: TEXT
AVEA GUI/Membrane: none

10.4.1.4 ID: SysInfoTimeTotal

Description: The cumulative amount of time in 100^{th} of an hour (i.e. a value of 1=36 seconds) since the ventilator has been in operation.
Type: UINT
Scale: 2
Range (Adult/Ped/Neo): 0 – 9,999,999
AVEA GUI/Membrane:

10.4.1.5 ID: SysInfoSerial

Description: AVEA serial number – consists of 3-alphabet characters and 5-digits (e.g. AEV01001).
Type: TEXT
AVEA GUI/Membrane: see back panel

10.4.1.6 ID: SysInfoSwVer

Description: SysInfoSwVer describes the AVEA's software version release that is executing on the ventilator.
Type: TEXT
AVEA GUI/Membrane: On-power-up

10.4.1.7 ID: PatInfoID

Description: This is an identifier corresponding to the patient identification.
Type: TEXT
Label: IDENTIFICATION
AVEA GUI/Membrane: Patient Identification

10.4.2 VELA Ventilator – Info Class

10.4.2.1 ID: PatInfoID

Description: This is an identifier corresponding to the patient identification.
Label: IDENTIFICATION
Type: TEXT
VELA GUI/Membrane: Patient Identification

10.4.2.2 ID: SysInfoConfig

Description: This describes the options that are installed/available on the VELA ventilator (see Data type, and Bit Map Representation section).
Type: UWORD
VELA GUI/Membrane: none

10.4.2.3 ID: SysInfoDateTime

Description: The ventilator's current date & time setting (string with a format of: YYYY-MM-DDTHH:MM:SS.SSS)
Type: TEXT
VELA GUI/Membrane: Date/Time Screen

10.4.2.4 ID: SysInfoModel

Description: The base model configuration.
Label: "VENT MODEL"
Type: ENUM

Enum value=label: 0=”Vela Comprehensive”; 1=”Vela Plus”; 2=”Vela Plus International”; 3=”Vela Basic”.
VELA GUI/Membrane: Model

10.4.2.5 ID: SysInfoOUI

Description: The Organizationally Unique Identifier ('OUI") is a 64-bit value that uniquely identifies each VIASYS Respiratory Care device. The upper 24 bits is a unique value assigned to VIASYS by the IEEE Registration Authority (00-07-A1 hexadecimal). The lower 40 bits are used as a serialization number by VIASYS. Given that the VELA OUI would consist of the following ASCII HEX bytes: 0007A100B9E92A00 the conversion to a 16-bit character would look like: 003000300030003700410031003000300042003900450039003200410030003000000.
Type: TEXT
VELA GUI/Membrane: EUI[9]

10.4.2.6 ID: SysInfoSerial

Description: VELA serial number – consists of 3-alphabet characters and 5-digits (e.g. AET01230).
Type: TEXT
VELA GUI/Membrane: VENT S/N

10.4.2.7 ID: SysInfoSwVer

Description: SysInfoSwVer describes the VELA’s software version release that is executing on the ventilator.
Type: TEXT
VELA GUI/Membrane: MAIN S/W VERSION

10.4.2.8 ID: SysInfoSwVerBootLoader

Description: VELA’s boot loader software version release identifier.
Type: TEXT
VELA GUI/Membrane: BOOTLOADER VERSION

10.4.2.9 ID: SysInfoTimeTotal

Description: The cumulative amount of time in 100th of an hour (i.e. a value of 1=36 seconds) since the ventilator has been in operation.
Type: UINT
Scale: 2
Range (Adult/Ped/Neo): 0 – 9,999,999
Label: VENT HOURS

[9] Select Extended Functions screen and then Version Info screen.

VELA GUI/Membrane: VENT HOURS

10.4.2.10 ID: SysInfoTurbineSerial

Description: Serial number for the ventilator's turbine subsystem.
Type: TEXT
VELA GUI/Membrane: TURB S/N

10.5 Setting Class

10.5.1 AVEA Ventilator – Setting Class

10.5.1.1 ID: SetCO2MonitoringEnable

Description: Enable or Disable CO2 Monitoring
Type: ENUM
Enum value = label: 0=Disabled; 1=Enabled
Label: CO2
AVEA GUI/Membrane: CO2

10.5.1.2 ID: SetEndTidalCO2Average

Description: Number of breaths EtCO2 is averaged over.
Type: WORD
Resolution: 1
Range: 1 - 8
Units: breath
Label: EtCO2 Avg.
AVEA GUI/Membrane: EtCO2 Avg.

10.5.1.3 ID: SetFiO2

Description: Percent of oxygen that the ventilator is set to administer.
Type: WORD
Resolution: 1
Range: 21 – 100
Units: %
Label: FiO2
AVEA GUI/Membrane: FiO2

10.5.1.4 ID: SetFlowBias

Description: Flow delivered to the breathing circuit during the expiratory phase.
Type: WORD
Scale: 1
Resolution: 1
Range: 4 - 50
Units: L/min
Label: Bias Flow
AVEA GUI/Membrane: Bias Flow

10.5.1.5 ID: SetFlowCycle

Description:	Percent of the peak inspiratory flow (Peak Flow), at which the inspiratory phase of Pressure Controlled (including TCPL) breaths are terminated.
Type:	WORD
Resolution:	5
Range:	0 - 45
Units:	%
Label:	Flow Cycle
AVEA GUI/Membrane:	Flow Cycle

10.5.1.6 ID: SetFlowCyclePsv

Description:	Percent of peak inspiratory flow at which the inspiratory phase of a PSV breath is terminated
Type:	WORD
Resolution:	5
Range (Adult/Ped/Neo):	5 - 45
Units:	%
Label:	PSV Cycle
AVEA GUI/Membrane:	Psv Cycle

10.5.1.7 ID: SetFlowDemand

Description:	Enabled/Disabled state for the Intra-Breath Demand Flow feature for Volume Controlled breaths.
Type:	WORD
Resolution:	1
Range (Adult/Ped/Neo):	0 - 1
Units:	0=Off 1=On
Label:	Demand Flow
AVEA GUI/Membrane:	Demand Flow

10.5.1.8 ID: SetFlowInsp

Description:	Flow targeted by the ventilator during the inspiratory phase of flow controlled breaths.
Type:	WORD
Scale:	1
Resolution (Adult/Ped):	10
Resolution (Neonate):	2
Range (Adult):	30 - 1500
Range (Pediatric):	10 - 750
Range (Neonate):	4 - 300
Units:	L/min
Label:	Peak Flow
AVEA GUI/Membrane:	Peak Flow

10.5.1.9 ID: SetPauseInsp

Description:	Time Inspiration is extended before exhalation occurs after a volume breath is delivered.
Type:	WORD
Scale:	2
Resolution:	1
Range (Adult/Ped/Neo):	0 - 300
Units:	sec
Label:	Insp Pause
AVEA GUI/Membrane:	Insp Pause

10.5.1.10 ID: SetPresHigh

Description:	Baseline target for the “high” phase of APRV/BiPhasic mode
Type:	WORD
Resolution:	1
Range (Adult/Ped/Neo):	0 - 90
Units:	cmH2O
Label:	Pres High
AVEA GUI/Membrane:	Pres High

10.5.1.11 ID: SetPresInsp

Description:	Pressure target for mandatory Pressure Controlled breaths.
Type:	WORD
Resolution:	1
Range (Adult/Ped):	0 - 90
Range (Neonate):	0 - 80
Units:	cmH2O
Label:	Insp Pres
AVEA GUI/Membrane:	Insp Pres

10.5.1.12 ID: SetPresLow

Description:	Baseline target for the “low” phase of APRV/BiPhasic mode.
Type:	WORD
Resolution:	1
Range (Adult/Ped/Neo):	0 - 45
Units:	cmH2O
Label:	Pres Low
AVEA GUI/Membrane:	Pres Low

10.5.1.13 ID: SetPresNasalCPAP

Description:	Nasal CPAP level. Applies to neonates only.
Type:	WORD
Resolution:	1
Range:	2 - 10
Units:	cmH2O

Label: nCPAP
AVEA GUI/Membrane: nCPAP

10.5.1.14 ID: SetPresPeep

Description: Positive End Expiratory Pressure. I.e., target pressure to be maintained at the end of exhalation.
Type: WORD
Resolution: 1
Range (Adult/Ped/Neo): 0 - 50
Units: cmH2O
Label: PEEP
AVEA GUI/Membrane: PEEP

10.5.1.15 ID: SetPresPsv

Description: Pressure target for spontaneous (PSV or Pressure Support Ventilation) breaths.
Type: WORD
Resolution: 1
Range (Adult/Ped): 0 – 90
Range (Neonate): 0 – 80
Units: cmH2O
Label: PSV
AVEA GUI/Membrane: PSV

10.5.1.16 ID: SetRate

Description: Mandatory breath rate setting.
Type: WORD
Resolution: 1
Range (Adult): 1 - 120
Range (Ped/Neo): 1 - 150
Units: bpm
Label: Rate
AVEA GUI/Membrane: Rate

10.5.1.17 ID: SetRiseInsp

Description: Setting controls the slope of the pressure rise during a Pressure Controlled breath. (Fastest Rise =1 and Slowest Rise=9).
Type: WORD
Resolution: 1
Range (Adult/Ped/Neo): 1 - 9
Label: Insp Rise
AVEA GUI/Membrane: Insp Rise

10.5.1.18 ID: SetRisePsv

Description: Setting controls the slope of the pressure rise during Pressure Supported (PSV) breaths. (Fastest Rise =1 and Slowest Rise=9).
Type: WORD
Resolution: 1
Range (Adult/Ped/Neo): 1 - 9
Label: PSV Rise
AVEA GUI/Membrane: PSV Rise

10.5.1.19 ID: SetRiseVsync

Description: Setting controls the slope of the pressure rise during Vsync breaths (Vsync is a Pressure Controlled, Volume Targeted modification of Volume Control) (Fastest Rise =1 and Slowest Rise=9).
Type: WORD
Resolution: 1
Range (Adult/Ped/Neo): 1 - 9
Label: Vsync Rise
AVEA GUI/Membrane: Vsync Rise

10.5.1.20 ID: SetTimeHigh

Description: Time duration setting for the “high” phase of APRV/BiPhasic mode.
Type: WORD
Scale: 1
Resolution: 1
Range (Adult/Ped/Neo): 2 - 300
Units: sec
Label: Time High
AVEA GUI/Membrane: Time High

10.5.1.21 ID: SetTimeHighPsv

Description: Enabled/Disabled state of PSV breaths is available during Time High by activating T High PSV (an advanced setting of Time High).
Type: WORD
Resolution: 1
Range (Adult/Ped/Neo): 0 - 1
Units: 0=Off 1=On
Label: T High PSV
AVEA GUI/Membrane: T High PSV

10.5.1.22 ID: SetTimeHighSync

Description: Percentage of Time High in APRV/BiPhasic mode allowed at the end of the Time High period for

synchronizing the high to low baseline transition with a patient exhalation.

Type: WORD
Resolution: 5
Range (Adult/Ped/Neo): 0 - 50
Units: %
Label: T High Sync
AVEA GUI/Membrane: T High Sync

10.5.1.23 ID: SetTimeInsp

Description: Time duration setting for the inspiratory phase of Pressure Controlled (including TCPL) mandatory breaths.
Type: WORD
Scale: 2
Resolution: 1
Range (Adult/Ped): 20 - 500
Range (Neonate): 15 -300
Units: sec
Label: Insp Time
AVEA GUI/Membrane: Insp Time

10.5.1.24 ID: SetTimeLow

Description: Time duration setting for the “low” phase of APRV/BiPhasic mode.
Type: WORD
Scale: 1
Resolution: 1
Range (Adult/Ped/Neo): 2 - 300
Units: sec
Label: Time Low
AVEA GUI/Membrane: Time Low

10.5.1.25 ID: SetTimeLowSync

Description: Percentage of Time Low in APRV/BiPhasic mode allowed at the end of the Time Low period for synchronizing the low to high baseline transition with a patient inspiration.
Type: WORD
Resolution: 5
Range (Adult/Ped/Neo): 0 - 50
Units: %
Label: T Low Sync
AVEA GUI/Membrane: T Low Sync

10.5.1.26 ID: SetTmaxPsv

Description:	Maximum time duration allowed for the inspiratory phase of a Pressure Supported breath.
Type:	WORD
Scale:	2
Resolution:	1
Range (Adult/Ped):	20 - 500
Range (Neonate):	15 - 300
Units:	sec
Label:	PSV Tmax
AVEA GUI/Membrane:	PSV Tmax

10.5.1.27 ID: SetTrigFlow

Description:	Flow Trigger level (i.e. Net Flow level at which inspiration is triggered).
Type:	WORD
Scale:	1
Resolution:	1
Range (Adult/Ped/Neo):	1 - 200
Units:	L/min
Label:	Flow Trig
AVEA GUI/Membrane:	Flow Trig

10.5.1.28 ID: SetTrigPres

Description:	Pressure Trigger level. I.e., Pressure drop below PEEP at which inspiration is triggered.
Type:	WORD
Scale:	1
Resolution:	1
Range (Adult/Ped/Neo):	1 - 200
Units:	cmH2O
Label:	Pres Trig
AVEA GUI/Membrane:	Pres Trig

10.5.1.29 ID: SetVCO2Average

Description:	Patient’s exhaled minute volume of CO2.
Type:	WORD
Resolution:	3
Range (Adult/Ped/Neo):	3 - 12
Units:	Minute
Label:	VCO2 Avg.
AVEA GUI/Membrane:	VCO2 Avg.

10.5.1.30 ID: SetVol

Description:	Volume targeted by the ventilator for delivery of Volume Controlled breaths.

Type:	WORD
Scale (Adult):	4
Scale (Pediatric/Neo):	1
Resolution (Adult):	100
Resolution (Pediatric):	10
Resolution (Neonate):	1
Range (Adult):	1000 – 25000
Range (Pediatric):	250 - 5000
Range (Neonate):	20 - 3000
Units (Adult):	L
Units (Pediatric/Neo):	mL
Label:	Volume
AVEA GUI/Membrane:	Volume

10.5.1.31 ID: SetVolAssured

Description:	Minimum Volume desired from delivery of a Pressure Controlled breath.
Type:	WORD
Scale (Adult):	4
Scale (Pediatric/Neo):	1
Resolution (Adult):	100
Resolution (Pediatric):	10
Resolution (Neonate):	1
Range (Adult):	0 - 25000
Range (Pediatric):	0 - 5000
Range (Neonate):	0 - 3000
Units (Adult):	L
Units (Pediatric/Neo):	mL
Label:	Mach Vol
AVEA GUI/Membrane:	Mach Vol

10.5.1.32 ID: SetVolLimit

Description:	Maximum Volume Limit for a Pressure Controlled breath.
Type:	WORD
Scale (Adult):	4
Scale (Pediatric/Neo):	1
Resolution (Adult):	100
Resolution (Pediatric):	10
Resolution (Neonate):	1
Range (Adult):	1000 - 25000
Range (Pediatric):	250 – 7500
Range (Neonate):	20 – 3000
Units (Adult):	L
Units (Pediatric/Neo):	mL
Label:	Vol Limit
AVEA GUI/Membrane:	Vol Limit

10.5.1.33 ID: SetVolSigh

Description: Enabled/Disabled state for the Sigh feature for Volume Controlled breaths. (Periodically delivers a proportionally higher volume than set.)
Type: WORD
Resolution: 1
Range (Adult/Ped/Neo): 0 - 1
Units: 0=Off 1=On
Label: Sigh
AVEA GUI/Membrane: Sigh

10.5.1.34 ID: SetVolWave

Description: Enumeration for the selected waveform shape (e.g., square or decelerating).
Type: ENUM
Enum value = label: 0=SQUARE; 1=DECELERATING
Label: Waveform
AVEA GUI/Membrane: Waveform

10.5.1.35 ID: SetVsync

Description: Enabled/Disabled state for the Vsync feature for Volume Controlled breaths. (Vsync is a Pressure Controlled, Volume Targeted modification of Volume Control.)
Type: WORD
Resolution: 1
Range (Adult/Ped/Neo): 0 - 1
Units: 0=Off 1=On
Label: Vsync
AVEA GUI/Membrane: Vsync

10.5.1.36 ID: LimitApnea

Description: Time duration limit from the last onset of inspiration until the APNEA INTERVAL alarm is asserted.
Type: WORD
Resolution: 1
Range (Adult/Ped/Neo): 6 - 60
Units: sec
Label: Apnea Interval
AVEA GUI/Membrane: Apnea Interval

10.5.1.37 ID: LimitEndTidalCO2High

Description: High End Tidal CO2 limit.
Type: WORD
Scale: 0 (mmHg); 1 (kPa)
Resolution: 1
Range (Adult/Ped/Neo): 6 – 150 (mmHg); 8 – 200 (kPa)

Units: mmHg; kPa
Label: High EtCO2
AVEA GUI/Membrane: High EtCO2

10.5.1.38 ID: LimitEndTidalCO2Low

Description: Low End Tidal CO2 limit.
Type: WORD
Scale: 0 (mmHg); 1 (kPa)
Resolution: 1
Range (Adult/Ped/Neo): 1 – 145 (mmHg); 1 – 193 (kPa)
Units: mmHg; kPa
Label: Low EtCO2
AVEA GUI/Membrane: Low EtCO2

10.5.1.39 ID: LimitFiO2AutoHigh

Description: Upper bound for the High Auto FiO2 Limit to trigger alarm.
Type: WORD
Resolution: 1
Range (Adult/Ped/Neo): 21 – 100
Units: %
Label: High Auto FiO2
AVEA GUI/Membrane: High Auto FiO2

10.5.1.40 ID: LimitFiO2AutoLow

Description: Lower bound for the Low Auto FiO2 Limit to trigger alarm.
Type: WORD
Resolution: 1
Range (Adult/Ped/Neo): 21 – 100
Units: %
Label: Low Auto FiO2
AVEA GUI/Membrane: Low Auto FiO2

10.5.1.41 ID: LimitFiO2BaselineHigh

Description: Upper bound for the Baseline FiO2 to trigger an alarm.
Type: WORD
Resolution: 1
Range (Adult/Ped/Neo): 21 – 100
Units: %
Label: High Base FiO2
AVEA GUI/Membrane: High Base FiO2

10.5.1.42 ID: LimitPeepLow

Description: Pressure limit for the LOW PEEP alarm. Alarm asserts when the airway pressure drops below the pressure limit.
Type: WORD

Resolution: 1
Range (Adult/Ped/Neo): 0 - 60
Units: cmH2O
Label: Low PEEP
AVEA GUI/Membrane: Low PEEP

10.5.1.43 ID: LimitPpeakHigh

Description: Pressure limit for the HIGH P_{PEAK} alarm. Alarm is asserted when airway pressure exceeds the pressure limit.
Type: WORD
Resolution: 1
Range (Adult/Ped): 10 - 105
Range (Neonate): 10 - 85
Units: cmH2O
Label: High Ppeak
AVEA GUI/Membrane: High Ppeak

10.5.1.44 ID: LimitPpeakLow

Description: Pressure limit for the LOW P_{PEAK} alarm. Alarm is asserted if Peak Pressure (P_{PEAK}) does not exceed the pressure limit by the end of the breath cycle.
Type: WORD
Resolution: 1
Range (Adult/Ped): 1 – 99
Range (Neo): 1 – 80
Units: cmH2O
Label: Low Ppeak
AVEA GUI/Membrane: Low Ppeak

10.5.1.45 ID: LimitPulseRateHigh

Description: Upper bound of pulse rate to trigger an alarm
Type: WORD
Resolution: 5
Range (Adult/Ped/Neo): 30 – 240
Units: bpm
Label: High Pulse Limit
AVEA GUI/Membrane: High Pulse Limit

10.5.1.46 ID: LimitPulseRateLow

Description: Lower bound of pulse rate to trigger an alarm
Type: WORD
Resolution: 5
Range (Adult/Ped/Neo): 25 – 235
Units: bpm
Label: Low Pulse Limit

AVEA GUI/Membrane: Low Pulse Limit

10.5.1.47 ID: LimitRateHigh

Description: Rate (breaths per minute) limit for the High Rate alarm. Alarm is asserted when monitored total breath rate exceeds the rate limit.
Type: WORD
Resolution: 1
Range (Adult/Ped/Neo): 1 - 200
Units: bpm
Label: High Rate
AVEA GUI/Membrane: High Rate

10.5.1.48 ID: LimitSpO2High

Description: Upper bound SpO2 to trigger an alarm
Type: WORD
Resolution: 1
Range (Adult/Ped/Neo): 3 – 99
Units: %
Label: High SpO2
AVEA GUI/Membrane: High SpO2

10.5.1.49 ID: LimitSpO2Low

Description: Lower bound SpO2 to trigger an alarm
Type: WORD
Resolution: 1
Range (Adult/Ped/Neo): 2 – 98
Units: %
Label: Low SpO2
AVEA GUI/Membrane: Low SpO2

10.5.1.50 ID: LimitVeHigh

Description: Volume limit for the HIGH Ve (High Exhaled Minute Volume) alarm. Alarm is asserted when the monitored Minute Volume exceeds the volume limit.
Type: WORD
Scale: 2
Resolution (Adult): 100
Resolution (Pediatric): 10
Resolution (Neo): 1
Range (Adult): 0 – 7500
Range (Pediatric): 0 – 3000
Range (Neo): 0 – 500
Units: L
Label: High Ve
AVEA GUI/Membrane: High Ve

10.5.1.51 ID: LimitVeLow

Description:	Volume limit for the LOW Ve (Low Exhaled Minute Volume) alarm. Alarm is asserted when the monitored Minute Volume drops below the volume limit.
Type:	WORD
Scale:	2
Resolution (Adult):	100
Resolution (Pediatric):	10
Resolution (Neo):	1
Range (Adult):	0 – 5000
Range (Pediatric):	0 – 3000
Range (Neonate):	0 - 500
Units:	L
Label:	Low Ve
AVEA GUI/Membrane:	Low Ve

10.5.1.52 ID: LimitVteHigh

Description:	Volume limit for the HIGH Vte (High Exhaled Tidal Volume) alarm. Alarm is asserted when the monitored Tidal Volume exceeds the volume limit.
Type:	WORD
Scale (Adult):	4
Scale (Pediatric/Neo):	1
Resolution (Adult):	100
Resolution (Pediatric):	10
Resolution (Neo):	1
Range (Adult):	1000 - 30000
Range (Pediatric):	250 - 10000
Range (Neonate):	20 - 3000
Units (Adult):	L
Units (Pediatric/Neo):	mL
Label:	High Vte
AVEA GUI/Membrane:	High Vte

10.5.1.53 ID: LimitVteLow

Description:	Volume limit for the LOW Vte (Low Exhaled Tidal Volume) alarm. Alarm is asserted when the monitored Tidal Volume is less than volume limit for the number of consecutive breaths set by the Low Vte Sensitivity setting.
Type:	WORD
Scale (Adult):	4
Scale (Pediatric/Neo):	1
Resolution (Adult):	100
Resolution (Pediatric):	10
Resolution (Neo):	1

Range (Adult): 0 - 30000
Range (Pediatric): 0 - 10000
Range (Neonate): 0 - 3000
Units (Adult): L
Units (Pediatric/Neo): mL
Label: Low Vte
AVEA GUI/Membrane: Low Vte

10.5.1.54 ID: SetAAC

Description: Enabled/Disabled state for AAC (Artificial Airway Compensation) which augments pressures to compensate for ET Tube pressure drop.
Type: BOOL
Resolution: 1
Range (Adult/Ped/Neo): 0 - 1
Label: ACC On
AVEA GUI/Membrane: ACC (On/Off)

10.5.1.55 ID: SetCircComp

Description: Constant setting for Circuit Compliance Compensation. Defines volume stored in the patient circuit per unit pressure.
Type: WORD
Scale: 1
Resolution: 1
Range (Adult/Ped/Neo): 0 - 75
Units: mL/cmH2O
Label: Circ Comp
AVEA GUI/Membrane: Circ Comp

10.5.1.56 ID: SetEttDia

Description: Diameter of the patient Endotracheal Tube.
Type: WORD
Scale: 1
Resolution: 5
Range (Adult/Ped/Neo): 20 - 100
Units: mm
Label: Diameter
AVEA GUI/Membrane: Diameter

10.5.1.57 ID: SetEttLen

Description: Length of the patient Endotracheal Tube.
Type: WORD
Scale: 1
Resolution: 1
Range (Adult): 20 - 300

Range (Pediatric): 20 - 260
Range (Neonate): 20 - 150
Units: cm
Label: Length
AVEA GUI/Membrane: Length

10.5.1.58 ID: SetHumidifier

Description: Active/Passive state of the airway humidifier selection. I.e. Active Humidifier selected or Passive Humidifier selected
Type: BOOL
Resolution: 1
Range (Adult/Ped/Neo): 0 - 1
Label: HUMIDIFIER
AVEA GUI/Membrane: Active (On/Off)

10.5.1.59 ID: SetLanguage

Description: Identifies the natural language of the user interface that has been selected.
Type: ENUM
Enum value = label: 0=English; 1=汉语; 2= Čeština; 3=Nederlands; 4=Français; 5=Deutsch; 6=Αγγλικά; 7=Magyar; 8=Italiano; 9=日本語; 10=Polski; 11=Português; 12=Русский; 13=Español; 14=Türkçe
Label: Language:
AVEA GUI/Membrane: Language

10.5.1.60 ID: SetLeakComp

Description: Enabled/Disabled state for airway Leak Compensation. When enabled, adds flow during exhalation to maintain PEEP.
Type: BOOL
Resolution: 1
Range (Adult/Ped/Neo): 0 - 1
Label: Leak Comp On
AVEA GUI/Membrane: Leak Comp (On/Off)

10.5.1.61 ID: SetMode

Description: Identifies the ventilation mode and breath-type that the ventilator is set to deliver.
Type: ENUM
Enum value = label: 1=APRV / BIPHASIC; 2=APRV / BIPHASIC; 3= PRVC SIMV; 4=PRVC A/C; 5=CPAP / PSV; 6=TCPL SIMV; 7=TCPL A/C; 8=CPAP / PSV; 9=PRESSURE SIMV;

		10=PRESSURE A/C; 11=CPAP / PSV; 12=VOLUME SIMV; 13=VOLUME A/C; 14=Nasal CPAP; 15=SiPAP
	Label:	MODE SELECT
	AVEA GUI/Membrane:	Mode

10.5.1.62 ID: SetModeIlv

Description:	Identifies the activity and role (i.e. OFF/Master/Slave) of the Independent Lung Ventilation feature.
Type:	ENUM
Enum value = label:	0=Off; 1=Master; 2=Slave
Label:	ILV Mode
AVEA GUI/Membrane:	ILV Mode

10.5.1.63 ID: SetPatSize

Description:	Identifies the size of the patient – neonate, pediatric, or adult.
Type:	ENUM
Enum value = label:	0=Neo; 1=Ped; 2=Adult
Label:	Patient Size
AVEA GUI/Membrane:	Patient Size

10.5.1.64 ID: SetPatWt

Description:	Weight of the patient.
Type:	WORD
Scale (Adult/Ped/Neo):	2
Resolution (Adult):	100
Resolution (Pediatric):	10
Resolution (Neonate):	1
Range (Adult):	100 - 30000
Range (Pediatric):	10 - 7500
Range (Neonate):	10 - 1600
Units:	kg
Label:	Pt Weight
AVEA GUI/Membrane:	Pt Weight

10.5.1.65 ID: SetPresBaro

Description:	Barometric Pressure. Absolute pressure of the ambient environment.
Type:	WORD
Resolution:	1
Range (Adult/Ped/Neo):	545 – 760
Units:	mmHg
Label:	Baro Pres
AVEA GUI/Membrane:	Baro Pres

10.5.1.66 ID: SetIncrFiO2

Description:	Percentage increase in delivered FiO2 when front membrane panel button “Increase O2” is activated.
Type:	WORD
Resolution:	1
Range (Adult/Ped/Neo):	0 - 79
Units:	%
Label:	Increase FiO2 % Increment
AVEA GUI/Membrane:	Increase FiO2 % Increment

10.5.1.67 ID: SetSensitivityLowVte

Description:	The number of consecutive breaths that are in violation of the Low Vte alarm limit that are required to assert the Low Vte Alarm.
Type:	WORD
Resolution:	1
Range (Adult/Ped/Neo):	1 - 5
Label:	Low Vte Alarm:
AVEA GUI/Membrane:	Low Vte Alarm Sensitivity

10.5.1.68 ID: SetSpO2AlarmDelay

Description:	Determines the duration that a High or Low SpO2alarm or “SpO2 Invalid” alarm must persist before the alarm is activated.
Type:	WORD
Range:	0 - 120
Resolution:	5
Units:	seconds
Label:	SpO2 Alrm Delay
AVEA GUI/Membrane:	SpO2 Alrm Delay

10.5.1.69 ID: SetFiO2AutoControlEnable

Description:	Activates and de-activates the Automatic FiO2 Control system.
Type:	ENUM
Enum value = label:	0=Disabled; 1=Enabled
Label:	Auto FiO2
AVEA GUI/Membrane:	Auto FiO2

10.5.1.70 ID: SetSpO2AveragingTime

Description:	Determines the time period for averaging the output of the SpO2 readings.
Type:	WORD
Range:	2 - 16
Resolution:	2
Units:	seconds

Label:	Oximeter Averaging
AVEA GUI/Membrane:	Oximeter Averaging

10.5.1.71 ID: SetSpO2Enable

Description:	Enable or Disables Pulse Oximeter related functions.
Type:	ENUM
Enum value = label:	0=Disabled; 1=Enabled
Label:	Oximeter Enable
AVEA GUI/Membrane:	Oximeter Enable

10.5.1.72 ID: SetSpO2Mode

Description:	Configures the pulse oximeter module to a specified operating mode.
Type:	ENUM
Enum value = label:	1=Maximum; 2=Normal; 3=APOD
Label:	Oximeter Algorithm
AVEA GUI/Membrane:	Oximeter Algorithm

10.5.1.73 ID: SetSpO2TargetHigh

Description:	Auto FiO2 Cmd is greater than or equal to the preset High Auto FiO2 Limit for a period of 60 seconds or more.
Type:	WORD
Range:	82 – 100
Resolution:	1
Units:	%
Label:	High SpO2 Trgt
AVEA GUI/Membrane:	High SpO2 Trgt

10.5.1.74 ID: SetSpO2TargetLow

Description:	Auto FiO2 Cmd is less than or equal to the preset Low Auto FiO2 Limit for a period of 60 seconds or more.
Type:	WORD
Range:	80 – 98
Resolution:	1
Units:	%
Label:	Low SpO2 Trgt
AVEA GUI/Membrane:	Low SpO2 Trgt

10.5.2 VELA Ventilator – Setting Class

10.5.2.1 ID: SetCO2MonitoringEnable

Description:	Enable or Disable CO2 Monitoring
Type:	ENUM
Enum value = label:	0=Disabled; 1=Enabled
Label:	CO2
VELA GUI/Membrane:	CO2

10.5.2.2 ID: SetEndTidalCO2Average

Description:	Number of breaths EtCO2 is averaged over.
Type:	WORD
Resolution:	1
Range (Adult/Ped/Neo):	1 - 8
Units:	breath
Label:	EtCO2 Avg.
VELA GUI/Membrane:	EtCO2 Avg.

10.5.2.3 ID: SetFiO2

Description:	Percent of oxygen that the ventilator is set to administer.
Type:	WORD
Resolution:	1
Range:	21 - 100
Units:	%
Label:	FiO2
VELA GUI/Membrane:	O2

10.5.2.4 ID: SetFiO2IncreaseActive

Description:	Flow delivered to the breathing circuit during the expiratory phase.
Type:	BOOL
Resolution:	1
Range:	0 - 1
Units:	0=Off 1=On
Label:	100% O2
VELA GUI/Membrane:	100% O2

10.5.2.5 ID: SetFlowBias

Description:	Flow delivered to the breathing circuit during the expiratory phase.
Type:	WORD
Scale:	1
Resolution:	10
Range:	100 - 200
Units:	L/min
Label:	Bias Flow
VELA GUI/Membrane:	Bias Flow

10.5.2.6 ID: SetFlowCycle

Description:	Percent of the peak inspiratory flow (Peak Flow), at which the inspiratory phase of Pressure Controlled (including TCPL) breaths are terminated.
Type:	WORD
Resolution:	5
Range:	5 - 70

	Units:	%
	Label:	PC Flow Cycle
	VELA GUI/Membrane:	PC Flow Cycle

10.5.2.7 ID: SetFlowCyclePsv

Description:	Percent of peak inspiratory flow at which the inspiratory phase of a PSV breath is terminated.
Type:	WORD
Resolution:	5
Range:	5 - 30
Units:	%
Label:	PSV Cycle
VELA GUI/Membrane:	PSV Cycle

10.5.2.8 ID: SetFlowInsp

Description:	Flow targeted by the ventilator during the inspiratory phase of flow controlled breaths.
Type:	WORD
Scale:	1
Resolution:	1
Range:	100 - 1400
Units:	L/min
Label:	Peak Flow
VELA GUI/Membrane:	Peak Flow

10.5.2.9 ID: SetPanelLockActive

Description:	The front panel is locked for user input.
Type:	BOOL
Resolution:	1
Range:	0 - 1
Units:	0=Off 1=On
Label:	PANEL LOCK
VELA GUI/Membrane:	PANEL LOCK

10.5.2.10 ID: SetPauseInsp

Description:	Time Inspiration is extended before exhalation occurs after a volume breath is delivered.
Type:	WORD
Scale:	2
Resolution:	10
Range:	0 - 200
Units:	Sec
Label:	Insp Pause
VELA GUI/Membrane:	Insp Pause

10.5.2.11 ID: SetPresHigh

Description:	Baseline target for the “high” phase of APRV/BiPhasic mode.
Type:	WORD
Resolution:	1
Range:	0 - 60
Units:	cmH2O
Label:	Pres High
VELA GUI/Membrane:	Pres High

10.5.2.12 ID: SetPresInsp

Description:	Pressure target for mandatory Pressure Controlled breaths.
Type:	WORD
Resolution:	1
Range:	1 - 100
Units:	cmH2O
Label:	Insp Pres
VELA GUI/Membrane:	Insp Pres

10.5.2.13 ID: SetPresInspNPPV

Description:	Pressure target for mandatory Pressure Controlled breaths, NPPV mode.
Type:	WORD
Resolution:	1
Range:	1 - 40
Units:	cmH2O
Label:	NPPV Pinsp
VELA GUI/Membrane:	NPPV Pinsp

10.5.2.14 ID: SetPresLow

Description:	Baseline target for the “low” phase of APRV/BiPhasic mode.
Type:	WORD
Resolution:	1
Range:	0 - 45
Units:	cmH2O
Label:	Pres Low
VELA GUI/Membrane:	Pres Low

10.5.2.15 ID: SetPresPeep

Description:	Positive End Expiratory Pressure. I.e., target pressure to be maintained at the end of exhalation.
Type:	WORD
Resolution:	1
Range:	0 - 35

	Units:	cmH2O
	Label:	PEEP
	VELA GUI/Membrane:	PEEP

10.5.2.16 ID: SetPresPsv

Description:	Pressure target for spontaneous (PSV or Pressure Support Ventilation) breaths.
Type:	WORD
Resolution:	1
Range:	0 - 60
Units:	cmH2O
Label:	PSV
VELA GUI/Membrane:	PSV

10.5.2.17 ID: SetPresPsvNPPV

Description:	Pressure target for spontaneous (PSV or Pressure Support Ventilation) breaths, NPPV mode.
Type:	WORD
Resolution:	1
Range:	0 - 40
Units:	cmH2O
Label:	NPPV PSV
VELA GUI/Membrane:	NPPV PSV

10.5.2.18 ID: SetRate

Description:	Mandatory breath rate setting.
Type:	WORD
Resolution:	1
Range:	2 - 80
Units:	bpm
Label:	Rate
VELA GUI/Membrane:	Rate

10.5.2.19 ID: SetTimeHigh

Description:	Time duration setting for the inspiratory phase of Pressure Controlled (including TCPL) mandatory breaths.
Type:	WORD
Scale:	1
Resolution:	1
Range:	3 - 300
Units:	Sec
Label:	Time High
VELA GUI/Membrane:	Time High

10.5.2.20 ID: SetTimeHighPsv

Description:	Enabled/Disabled state of PSV breaths is available during Time High by activating T High PSV (an advanced setting of Time High).
Type:	BOOL
Resolution:	1
Range:	0 - 1
Units:	0=Off 1=On
Label:	T High PSV
VELA GUI/Membrane:	T High PSV

10.5.2.21 ID: SetTimeHighSync

Description:	Percentage of Time High in APRV/BiPhasic mode allowed at the end of the Time High period for synchronizing the high to low baseline transition with a patient exhalation.
Type:	WORD
Resolution:	5
Range:	0 - 50
Units:	%
Label:	T High Sync
VELA GUI/Membrane:	T High Sync

10.5.2.22 ID: SetTimeInsp

Description:	Time duration setting for the inspiratory phase of Pressure Controlled (including TCPL) mandatory breaths.
Type:	WORD
Scale:	2
Resolution:	10
Range:	30 - 1000
Units:	Sec
Label:	Insp Time
VELA GUI/Membrane:	Insp Time

10.5.2.23 ID: SetTimeLow

Description:	Time duration setting for the “low” phase of APRV/BiPhasic mode.
Type:	WORD
Scale:	1
Resolution:	1
Range:	3 - 300
Units:	Sec
Label:	Time Low
VELA GUI/Membrane:	Time Low

10.5.2.24 ID: SetTimeLowSync

Description:	Percentage of Time Low in APRV/BiPhasic mode allowed at the end of the Time Low period for synchronizing the low to high baseline transition with a patient inspiration.
Type:	WORD
Resolution:	5
Range:	0 - 50
Units:	%
Label:	T Low Sync
VELA GUI/Membrane:	T Low Sync

10.5.2.25 ID: SetTmaxPsv

Description:	Maximum time duration allowed for the inspiratory phase of a Pressure Supported breath.
Type:	WORD
Scale:	2
Resolution:	10
Range:	30 - 3000
Units:	Sec
Label:	PSV Tmax
VELA GUI/Membrane:	PSV Tmax

10.5.2.26 ID: SetTrigFlow

Description:	Flow Trigger level. I.e., Net Flow level at which inspiration is triggered.
Type:	WORD
Scale:	1
Resolution:	1
Range:	10 - 200
Units:	L/min
Label:	Flow Trig
VELA GUI/Membrane:	Flow Trig

10.5.2.27 ID: SetVCO2Average

Description:	Patient’s exhaled minute volume of CO2.
Type:	WORD
Resolution:	3
Range (Adult/Ped/Neo):	3 - 12
Units:	Minute
Label:	VCO2 Avg.
VELA GUI/Membrane:	VCO2 Avg.

10.5.2.28 ID: SetVol

Description:	Volume targeted by the ventilator for delivery of Volume Controlled breaths.

Type:	WORD
Scale:	1
Resolution:	50
Range:	500 - 20000
Units:	ml
Label:	Volume
VELA GUI/Membrane:	Volume

10.5.2.29 ID: SetVolAssured

Description:	Minimum Volume desired from delivery of a Pressure Controlled breath.
Type:	WORD
Scale:	1
Resolution:	50
Range:	500 - 20000
Units:	ml
Label:	Assured Vol
VELA GUI/Membrane:	Assured Vol

10.5.2.30 ID: SetVolLimit

Description:	Maximum Volume Limit for a Pressure Controlled breath.
Type:	WORD
Scale:	1
Resolution:	50
Range:	500 - 25000
Units:	ml
Label:	Vol Limit
VELA GUI/Membrane:	Vol Limit

10.5.2.31 ID: SetVolSigh

Description:	Enabled/Disabled state for the Sigh feature for Volume Controlled breaths. (Periodically delivers a proportionally higher volume than set.)
Type:	BOOL
Resolution:	1
Range:	0 - 1
Units:	0=Off 1=On
Label:	Sigh
VELA GUI/Membrane:	Sigh

10.5.2.32 ID: SetVolWave

Description:	Enumeration for the selected waveform shape (e.g., square or decelerating).
Type:	ENUM
Enum value=label:	0=SQUARE; 1=DECELERATING
Label:	Waveform

VELA GUI/Membrane: Waveform

10.5.2.33 ID: SetVsync

Description: Enabled/Disabled state for the Vsync feature for Volume Controlled breaths. (Vsync is a Pressure Controlled, Volume Targeted modification of Volume Control.)
Type: BOOL
Resolution: 1
Range: 0 - 1
Units: 0=Off 1=On
Label: Vsync
VELA GUI/Membrane: Vsync

10.5.2.34 ID: LimitApnea

Description: Time duration limit from the last onset of inspiration until the APNEA INTERVAL alarm is asserted.
Type: WORD
Resolution: 1
Range: 10 - 60
Units: Sec
Label: Apnea Interval
VELA GUI/Membrane: Apnea Interval

10.5.2.35 ID: LimitEndTidalCO2High

Description: High End Tidal CO2 limit.
Type: WORD
Scale: 0 (mmHg); 1 (kPa)
Resolution: 1
Range (Adult/Ped/Neo): 6 – 150 (mmHg); 8 - 200 (kPa)
Units: mmHg, kPa
Label: High EtCO2
VELA GUI/Membrane: High EtCO2

10.5.2.36 ID: LimitEndTidalCO2Low

Description: Low End Tidal CO2 limit.
Type: WORD
Scale: 0 (mmHg); 1 (kPa)
Resolution: 1
Range (Adult/Ped/Neo): 1 – 145 (mmHg); 1 – 193 (kPa)
Units: mmHg; kPa
Label: Low EtCO2
VELA GUI/Membrane: Low EtCO2

10.5.2.37 ID: LimitPpeakHigh

Description:	Pressure limit for the HIGH P_{PEAK} alarm. Alarm is asserted when airway pressure exceeds the pressure limit.
Type:	WORD
Resolution:	1
Range:	5 - 120
Units:	cmH2O
Label:	High Ppeak
VELA GUI/Membrane:	High Ppeak

10.5.2.38 ID: LimitPpeakLow

Description:	Pressure limit for the LOW P_{PEAK} alarm. Alarm is asserted if Peak Pressure (P_{PEAK}) does not exceed the pressure limit by the end of the breath cycle.
Type:	WORD
Resolution:	1
Range:	2 - 60
Units:	cmH2O
Label:	Low Ppeak
VELA GUI/Membrane:	Low Ppeak

10.5.2.39 ID: LimitRateHigh

Description:	Rate (breaths per minute) limit for the High Rate alarm. Alarm is asserted when monitored total breath rate exceeds the rate limit.
Type:	WORD
Resolution:	1
Range:	3 - 150
Units:	bpm
Label:	High Rate
VELA GUI/Membrane:	High Rate

10.5.2.40 ID: LimitVeLow

Description:	Volume limit for the LOW Ve (Low Exhaled Minute Volume) alarm. Alarm is asserted when the monitored Minute Volume drops below the volume limit.
Type:	WORD
Scale:	2
Resolution:	10
Range:	10 - 9990
Units:	L
Label:	Low Ve
VELA GUI/Membrane:	Low Ve

10.5.2.41 ID: SetAltitude

Description:	Altitude at which the ventilator will be operating.
Type:	WORD
Resolution:	30
Range:	300 – 3060
Units:	Meters
Label:	Altitude
VELA GUI/Membrane:	Altitude

10.5.2.42 ID: SetFiO2Monitoring

Description:	Enable / disable FiO2 monitoring.
Type:	ENUM
Enum value=label:	0=FiO2 Monitor Disabled; 1=FiO2 Monitor Enabled
Label:	FiO2 Monitor Enabled
VELA GUI/Membrane:	FiO2 Monitor (Enabled/Disabled)

10.5.2.43 ID: SetHumidifier

Description:	Active/Passive state of the airway humidifier selection. I.e. Active Humidifier selected or Passive Humidifier selected
Type:	BOOL
Resolution:	1
Range:	0 - 1
Units:	0=Off 1=On
Label:	Humidifier
VELA GUI/Membrane:	Humidifier

10.5.2.44 ID: SetLanguage

Description:	Identifies the natural language of the user interface that has been selected.
Type:	ENUM
Enum value=label:	0=Deutsch; 1=English; 2=中文; 3= Español; 4= Français; 5=Italiano; 6=日本語; 7=Polski; 8=Türkçe; 9=Русский; 10= Nederlands; 11=Magyar; 12=Čeština
Label:	Language
VELA GUI/Membrane:	Language

10.5.2.45 ID: SetLeakComp

Description:	Enabled/Disabled state for airway Leak Compensation. When enabled, adds flow during exhalation to maintain PEEP.
Type:	BOOL
Resolution:	1
Range:	0 - 1
Units:	0=Off 1=On

	Label:	Lk Comp
	VELA GUI/Membrane:	Lk Comp

10.5.2.46 ID: SetMode

Description:	Identifies the ventilation mode and breath-type that the ventilator is set to deliver.
Type:	ENUM
Enum value=label:	1=NPPV A/C; 2=NPPV SIMV; 3=NPPVCPAP PSV-Volume; 4= NPPVCPAP PSV-Pressure; 5=APRV BiPhasic-Volume; 6=APRV BiPhasic-Pressure; 7=PRVC SIMV; 8=PRVC A/C; 9=CPAP PSV-Pressure; 10=PRESSURE SIMV; 11= PRESSURE A/C; 12=CPAP PSV-Volume; 13=VOLUME SIMV; 14=VOLUME A/C
Label:	MODE SELECT
VELA GUI/Membrane:	MODE SELECT

10.5.2.47 ID: SetNebulizerActive

Description:	Enable / disable the nebulizer (button on the front panel)
Type:	BOOL
Resolution:	1
Range:	0 - 1
Units:	0=Off 1=On
Label:	NEBULIZER
VELA GUI/Membrane:	NEBULIZER

10.5.2.48 ID: SetNebulizerTime

Description:	Specify the number of minutes the nebulizer will be active.
Type:	WORD
Resolution:	1
Range:	1 - 60
Units:	Minutes
Label:	Neb Time
VELA GUI/Membrane:	Neb Time

10.5.2.49 ID: SetPanelLockEnable

Description:	Enable / disable the ability to lock the front panel from user input.
Type:	ENUM
Enum value = label:	0=Locks Disabled; 1=Locks Enabled
Label:	Locks Enabled
VELA GUI/Membrane:	Locks Enabled

10.5.2.50 ID: SetVeLowOffEnable

Description:	Enable / disable the ability to turn OFF the Low Ve alarm limit

Type:	ENUM
Enum value = label:	0=Low Min Vol Off Disabled; 1=Low Min Vol Off Enabled. NOTE: There is a line feed character between the “Vol” and “Off” strings.
Label:	Low Min Vol Off Enabled
VELA GUI/Membrane:	Low Min Vol Off (Disabled / Enabled)

10.6 Monitor Class

10.6.1 AVEA Ventilator – Monitor Class

10.6.1.1 ID: MntrAutoPEEP

Description:	AutoPEEP. Pressure measured in the airway resulting from performance of an AutoPEEP Maneuver or Expiratory Hold
Type:	WORD
Range:	0 - 50
Units:	cmH2O
Label:	AutoPEEP
AVEA GUI/Membrane:	AutoPEEP

10.6.1.2 ID: MntrAutoPEEPdelta

Description:	Differential AutoPEEP. Pressure difference between baseline pressure (PEEP) and AutoPEEP at the time AutoPEEP was measured.
Type:	WORD
Range:	0 - 50
Units:	cmH2O
Label:	dAutoPEEP
AVEA GUI/Membrane:	dAutoPEEP

10.6.1.3 ID: MntrAutoPEEPesoph

Description:	Esophageal AutoPEEP. Pressure measured via an Esophageal Balloon and processed to calculate result.
Type:	WORD
Range:	0 - 50
Units:	cmH2O
Label:	AutoPEEPes
AVEA GUI/Membrane:	AutoPEEPes

10.6.1.4 ID: MntrC20

Description:	Compliance Ratio. The ratio of the dynamic compliance during the last 20% of inspiration (C_{20}) to the total dynamic compliance (C).
Type:	WORD
Scale:	2

Range:	0 - 500
Label:	C20/C
AVEA GUI/Membrane:	C20/C

10.6.1.5 ID: MntrCcw

Description:	Chestwall Compliance. The ratio of exhaled tidal volume to the Delta Esophageal Pressure (dP_{ES}).
Type:	WORD
Range:	0 – 300
Units:	mL/cmH2O
Label:	Ccw
AVEA GUI/Membrane:	Ccw

10.6.1.6 ID: MntrCdyn

Description:	Dynamic Compliance. Volume capacity of patient per unit pressure measured while system is not at equilibrium.
Type:	WORD
Scale (Neo):	2
Range (Adult/Ped):	0 – 300
Range (Neo):	0 – 30000
Units:	mL/cmH2O
Label:	Cdyn
AVEA GUI/Membrane:	Cdyn

10.6.1.7 ID: MntrCdynNorm

Description:	Normalized Dynamic Compliance. Ratio of C_{DYN} to Patient Weight.
Type:	WORD
Scale:	2
Range:	0 - 500
Units:	mL/cmH2O/kg
Label:	Cdyn/kg
AVEA GUI/Membrane:	Cdyn/kg

10.6.1.8 ID: MntrClung

Description:	Lung Compliance. Volume capacity of patient's lungs per unit pressure.
Type:	WORD
Range:	0 – 300
Units:	mL/cmH2O
Label:	Clung
AVEA GUI/Membrane:	Clung

10.6.1.9 ID: MntrCstat

Description:	Static Compliance. A.k.a. Respiratory System Compliance (C_{RS}). Volume capacity of patient per unit pressure measured while system is at equilibrium (i.e. Inspiratory Hold, Inspiratory Pause, Pressure Plateau, etc.).
Type:	WORD
Scale (Neo):	2
Range (Adult/Ped):	0 – 300
Range (Neo):	0 – 30000
Units:	mL/cmH2O
Label:	Cstat
AVEA GUI/Membrane:	Cstat

10.6.1.10 ID: MntrCstatNorm

Description:	Normalized Static Compliance. Ratio of Cstat to patient Weight.
Type:	WORD
Scale:	2
Range:	0 - 500
Units:	mL/cmH2O/kg
Label:	Cstat/kg
AVEA GUI/Membrane:	Cstat/kg

10.6.1.11 ID: MntrEndTidalCO2

Description:	Patient's peak expired CO2 level as measured and reported by the CO2 analyzer.
Type:	WORD
Scale:	1 (mmHg); 2 (kPa)
Range:	0 – 1500 (mmHg); 0 – 2000 (kPa)
Units:	mmHg; kPa
Label:	EtCO2
AVEA GUI/Membrane:	EtCO2

10.6.1.12 ID: MntrFiO2

Description:	Fractional (percent) O_2 measured in inspiratory flow stream to patient.
Type:	WORD
Range:	0 – 106
Units:	%
Label:	FiO2
AVEA GUI/Membrane:	FiO2

10.6.1.13 ID: MntrFiO2Baseline

Description:	Average FiO2 required in order to maintain the patient in stable normoxemia over time.

Type:	WORD
Range:	21 – 100
Units:	%
Label:	FiO2 Baseline
AVEA GUI/Membrane:	FiO2 Baseline

10.6.1.14 ID: MntrIE

Description:	Inspiratory/Expiratory Ratio. Ratio of time spent in the inspiratory phase of a breath cycle to the time spent in the expiratory phase.
Type:	WORD
Scale:	1
Range:	-999 - 999
Units:	
Label:	I:E
AVEA GUI/Membrane:	I:E

10.6.1.15 ID: MntrLeak

Description:	Leak. Expressed as the percentage difference between the inspired and exhaled tidal volumes.
Type:	WORD
Range:	0 - 100
Units:	%
Label:	Leak
AVEA GUI/Membrane:	Leak

10.6.1.16 ID: MntrMIP

Description:	Maximum Inspiratory Pressure. A.k.a. Negative Inspiratory Force (NIF). The maximum negative airway pressure that is achieved by the patient during a MIP/P100 Maneuver or expiratory hold.
Type:	WORD
Range:	-60 - 120
Units:	cmH2O
Label:	MIP
AVEA GUI/Membrane:	MIP

10.6.1.17 ID: MntrNcpapMeanFlow

Description:	Nasal CPAP mean inspiratory flow
Type:	WORD
Scale:	1
Range:	0 - 3000
Units:	L/min
Label:	CPAP Flow
AVEA GUI/Membrane:	CPAP Flow

10.6.1.18 ID: MntrNcpapPres

Description:	Nasal CPAP pressure
Type:	WORD
Range:	0 - 120
Units:	cmH2O
Label:	nCPAP
AVEA GUI/Membrane:	nCPAP

10.6.1.19 ID: MntrP100

Description:	Inspiratory Drive. The negative pressure measured 100ms after onset of a MIP/P100 Maneuver or expiratory hold.
Type:	WORD
Range:	-60 - 120
Units:	cmH2O
Label:	P100
AVEA GUI/Membrane:	P100

10.6.1.20 ID: MntrPair

Description:	Air Supply Pressure. Pressure measured at the air inlet of the ventilator.
Type:	WORD
Range:	0 - 80
Units:	psig
Label:	Air Inlet
AVEA GUI/Membrane:	Air Inlet

10.6.1.21 ID: MntrPawDelta

Description:	Differential Airway Pressure. The difference between peak airway pressure and baseline airway pressure throughout an entire breath cycle.
Type:	WORD
Range:	-120 - 120
Units:	cmH2O
Label:	dPaw
AVEA GUI/Membrane:	dPaw

10.6.1.22 ID: MntrPeep

Description:	Positive End Expiratory Pressure. Airway pressure at the end of the expiratory phase of a breath cycle.
Type:	WORD
Range:	0 - 60
Units:	cmH2O
Label:	PEEP
AVEA GUI/Membrane:	PEEP

10.6.1.23 ID: MntrPefr

Description:	Peak Expiratory Flow Rate. Highest flow rate measured during the expiratory phase of a breath cycle.
Type:	WORD
Scale (Neo):	1
Range (Adult/Ped):	0 – 300
Range (Neo):	0 – 3000
Units:	L/min
Label:	PEFR
AVEA GUI/Membrane:	PEFR

10.6.1.24 ID: MntrPesDelta

Description:	Differential Esophageal Pressure. The pressure difference between peak esophageal pressure and baseline esophageal pressure throughout an entire breath cycle.
Type:	WORD
Range:	-120 - 120
Units:	cmH2O
Label:	dPes
AVEA GUI/Membrane:	dPes

10.6.1.25 ID: MntrPifr

Description:	Peak Inspiratory Flow Rate. Highest flow rate measured during the inspiratory phase of a breath cycle.
Type:	WORD
Scale (Neo):	1
Range (Adult/Ped):	0 – 300
Range (Neo):	0 – 3000
Units:	L/min
Label:	PIFR
AVEA GUI/Membrane:	PIFR

10.6.1.26 ID: MntrPmean

Description:	Mean Airway Pressure. Average airway pressure measured throughout an entire breath cycle.
Type:	WORD
Range:	0 - 120
Units:	cmH2O
Label:	Pmean
AVEA GUI/Membrane:	Pmean

10.6.1.27 ID: MntrPO2

Description:	Oxygen Supply Pressure. Pressure measured at the oxygen inlet of the ventilator.
Type:	WORD

Range:	0 - 80
Units:	psig
Label:	O2 Inlet
AVEA GUI/Membrane:	O2 Inlet

10.6.1.28 ID: MntrPpeak

Description:	Peak Airway Pressure. Highest airway pressure measured throughout an entire breath cycle.
Type:	WORD
Range:	0 - 120
Units:	cmH2O
Label:	Ppeak
AVEA GUI/Membrane:	Ppeak

10.6.1.29 ID: MntrPplat

Description:	Plateau Pressure. Airway pressure measured when the pressure plateaus (i.e. pressure is neither increasing nor decreasing).
Type:	WORD
Range:	0 - 120
Units:	cmH2O
Label:	Pplat
AVEA GUI/Membrane:	Pplat

10.6.1.30 ID: MntrPplatPtp

Description:	Transpulmonary Pressure, Plateau. Transpulmonary Pressure (Airway Pressure – Esophageal Pressure) measured at the time a Plateau Pressure is measured.
Type:	WORD
Range:	-60 - 120
Units:	cmH2O
Label:	Ptp Plat
AVEA GUI/Membrane:	Ptp Plat

10.6.1.31 ID: MntrPresBaro

Description:	Barometric Pressure
Type:	WORD
Scale:	0 (mmHg); 1 (kPa)
Range:	545 – 760 (mmHg); 727 – 1013 (kPa)
Units:	mmHg, kPa
Label:	Pbaro
AVEA GUI/Membrane:	Pbaro

10.6.1.32 ID: MntrPtpPEEP

Description:	Transpulmonary Pressure, PEEP. Transpulmonary Pressure (Airway Pressure – Esophageal Pressure)

		measured at the time an AutoPEEP measurement is taken.
	Type:	WORD
	Range:	-60 - 120
	Units:	cmH2O
	Label:	Ptp PEEP
	AVEA GUI/Membrane:	Ptp PEEP

10.6.1.33 ID: MntrRate

Description:	Breath Rate. Number of inspirations per minute of all breath types.
Type:	WORD
Range:	0 - 200
Units:	bpm
Label:	Rate
AVEA GUI/Membrane:	Rate

10.6.1.34 ID: MntrRateMand

Description:	Mandatory Breath Rate. Number of inspirations per minute of machine controlled breath types.
Type:	WORD
Range:	0 - 200
Units:	bpm
Label:	Mand Rate
AVEA GUI/Membrane:	Mand Rate

10.6.1.35 ID: MntrRateSpon

Description:	Spontaneous breath rate. Number of inspirations per minute of patient controlled breath types.
Type:	WORD
Range:	0 - 200
Units:	bpm
Label:	Spon Rate
AVEA GUI/Membrane:	Spon Rate

10.6.1.36 ID: MntrRimp

Description:	Imposed Resistance. Resistance imposed by the artificial airway situated between the circuit wye and the trachea.
Type:	WORD
Scale:	1
Range:	0 - 1000
Units:	cmH2O/L/Sec
Label:	Rimp
AVEA GUI/Membrane:	Rimp

10.6.1.37 ID: MntrRlung

Description:	Lung Resistance. Resistance attributed solely to structures within the lung.
Type:	WORD
Scale:	1
Range:	0 - 1000
Units:	cmH2O/L/Sec
Label:	Rlung
AVEA GUI/Membrane:	Rlung

10.6.1.38 ID: MntrRpeak

Description:	Peak Expiratory Resistance. Highest airway resistance measured throughout the expiratory phase of a breath cycle.
Type:	WORD
Scale:	1
Range:	0 - 1000
Units:	cmH2O/L/Sec
Label:	Rpeak
AVEA GUI/Membrane:	Rpeak

10.6.1.39 ID: MntrRrs

Description:	Respiratory System Resistance. Resistance measured during the inspiratory phase of a breath cycle.
Type:	WORD
Scale:	1
Range:	0 - 1000
Units:	cmH2O/L/Sec
Label:	Rrs
AVEA GUI/Membrane:	Rrs

10.6.1.40 ID: MntrRSBIndex

Description:	Rapid Shallow Breathing Index. Ratio of Rate to Tidal Volume
Type:	WORD
Range:	0 - 500
Units:	b2/min/L
Label:	f/Vt
AVEA GUI/Membrane:	f/Vt

10.6.1.41 ID: MntrSpO2

Description:	Patient’s SpO2 as measured and reported by the pulse oximeter.
Type:	WORD
Range:	1 – 100
Resolution:	1

	Units:	%
	Label:	SpO2
	AVEA GUI/Membrane:	SpO2

10.6.1.42 ID: MntrSpO2PerfusionIndex

Description:	Percentage of pulsatile signal to non-pulsatile signal (pulse strength).
Type:	WORD
Scale:	2
Range:	2 – 2000
Units:	%
Label:	P.I.
AVEA GUI/Membrane:	P.I.

10.6.1.43 ID: MntrSpO2PulseRate

Description:	The patient's pulse rate as measured and reported by the pulse oximeter.
Type:	WORD
Range:	25 – 240
Units:	bpm
Label:	Pulse Rate
AVEA GUI/Membrane:	Pulse Rate

10.6.1.44 ID: MntrTe

Description:	Exhalation Time. Measured time duration of the expiratory phase of a breath cycle.
Type:	WORD
Scale:	2
Range:	0 - 9999
Units:	sec
Label:	Te
AVEA GUI/Membrane:	Te

10.6.1.45 ID: MntrTi

Description:	Inspiratory time. Measured time duration of the inspiratory phase of a breath cycle.
Type:	WORD
Scale:	2
Range:	0 - 9999
Units:	sec
Label:	Ti
AVEA GUI/Membrane:	Ti

10.6.1.46 ID: MntrVdel

Description:	Delivered Volume. Total volume of gas delivered to the patient circuit by the ventilator flow control valve.

Type:	INT
Scale (Adult):	2
Scale (Pediatric):	0
Scale (Neo):	1
Range (Adult):	0 – 400
Range (Pediatric):	0 – 1999
Range (Neo):	0 – 9999
Units (Adult):	L
Units (Pediatric/Neo):	mL
Label:	Vdel
AVEA GUI/Membrane:	Vdel

10.6.1.47 ID: MntrVentilationAnatomicalDeadSpace

Description:	The patient's anatomical dead space, measured on each breath, and averaged over the "VCO2 Average" time interval.
Type:	WORD
Scale:	1
Range:	0 – 9990
Units:	ml
Label:	Vd ana
AVEA GUI/Membrane:	Vd ana

10.6.1.48 ID: MntrVentilationAnatomicalDeadSpaceVtRatio

Description:	The patient's airway dead space to tidal volume ratio, measured on each breath, and averaged over the "VCO2 Average" time interval.
Type:	WORD
Range:	0 – 99
Units:	%
Label:	Vd ana / Vt
AVEA GUI/Membrane:	Vd ana / Vt

10.6.1.49 ID: MntrVentilationCO2

Description:	The patient's exhaled minute volume of CO2, calculated over the "VCO2 Average" interval.
Type:	WORD
Scale:	1
Range:	0 – 9990
Units:	ml/min
Label:	VCO2
AVEA GUI/Membrane:	VCO2

10.6.1.50 ID: MntrVeSpon

Description:	Spontaneous minute volume. Volume of gas exhaled over the period of one minute from patient controlled breath types.
Type:	WORD
Scale (Adult/Ped):	1
Scale (Neo):	2
Range (Adult/Ped):	0 - 999
Range (Neo):	0 - 9990
Units:	L
Label:	Spon Ve
AVEA GUI/Membrane:	Spon Ve

10.6.1.51 ID: MntrVeSponNorm

Description:	Normalized Spontaneous Minute Volume. Ratio of Spon Ve to Patient Weight.
Type:	WORD
Range:	0 - 999
Units:	mL/kg
Label:	Spon Ve/kg
AVEA GUI/Membrane:	Spon Ve/kg

10.6.1.52 ID: MntrVeTotal

Description:	Total Minute Volume. Volume of gas exhaled over the period of one minute from all breath types.
Type:	WORD
Scale (Adult/Ped):	1
Scale (Neo):	2
Range (Adult/Ped):	0 - 999
Range (Neo):	0 - 9990
Units:	L
Label:	Total Ve
AVEA GUI/Membrane:	Total Ve

10.6.1.53 ID: MntrVeTotalNorm

Description:	Normalized Total Minute Volume. Ratio of Total Ve to Patient Weight.
Type:	WORD
Range:	0 - 999
Units:	mL/kg
Label:	Total Ve/kg
AVEA GUI/Membrane:	Total Ve/kg

10.6.1.54 ID: MntrVtCO2

Description:	Physiological Dead Space / Tidal Volume Ratio.
Type:	WORD

Scale:	1
Range:	0 – 2990
Units:	ml
Label:	VtCO2
AVEA GUI/Membrane:	VtCO2

10.6.1.55 ID: MntrVte

Description:	Exhaled Tidal Volume. Volume of gas exhaled in one breath. cycle.
Type:	INT
Scale (Adult):	2
Scale (Pediatric):	0
Scale (Neo):	1
Range (Adult):	0 – 400
Range (Pediatric):	0 – 1999
Range (Neo):	0 – 9999
Units (Adult):	L
Units (Pediatric/Neo):	mL
Label:	Vte
AVEA GUI/Membrane:	Vte

10.6.1.56 ID: MntrVteMand

Description:	Mandatory Exhaled Tidal Volume. Volume of gas exhaled in one machine controlled breath type cycle.
Type:	INT
Scale (Adult):	2
Scale (Pediatric):	0
Scale (Neo):	1
Range (Adult):	0 – 400
Range (Pediatric):	0 – 1999
Range (Neo):	0 – 9999
Units (Adult):	L
Units (Pediatric/Neo):	mL
Label:	Mand Vte
AVEA GUI/Membrane:	Mand Vte

10.6.1.57 ID: MntrVteMandNorm

Description:	Normalized Mandatory Exhaled Tidal Volume. Ratio of Mand Vte to Patient Weight.
Type:	WORD
Scale:	1
Range:	0 - 300
Units:	mL/kg
Label:	Mand Vte/kg
AVEA GUI/Membrane:	Mand Vte/kg

10.6.1.58 ID: MntrVteNorm

Description:	Normalized Exhaled Tidal Volume. Ratio of Vte to Patient Weight.
Type:	WORD
Scale:	1
Range:	0 - 300
Units:	mL/kg
Label:	Vte/kg
AVEA GUI/Membrane:	Vte/kg

10.6.1.59 ID: MntrVteSpon

Description:	Spontaneous Exhaled Tidal Volume. Volume of gas exhaled in one patient controlled breath type cycle.
Type:	INT
Scale (Adult):	2
Scale (Pediatric):	0
Scale (Neo):	1
Range (Adult):	0 – 400
Range (Pediatric):	0 – 1999
Range (Neo):	0 – 9999
Units (Adult):	L
Units (Pediatric/Neo):	mL
Label:	Spon Vte
AVEA GUI/Membrane:	Spon Vte

10.6.1.60 ID: MntrVteSponNorm

Description:	Normalized Spontaneous Exhaled Tidal Volume. Ratio of Spon Vte to Patient Weight.
Type:	WORD
Scale:	1
Range:	0 - 300
Units:	mL/kg
Label:	Spon Vte/kg
AVEA GUI/Membrane:	Spon Vte/kg

10.6.1.61 ID: MntrVti

Description:	Inspired Tidal Volume. Volume of gas inspired in one breath cycle.
Type:	INT
Scale (Adult):	2
Scale (Pediatric):	0
Scale (Neo):	1
Range (Adult):	0 – 400
Range (Pediatric):	0 – 1999
Range (Neo):	0 – 9999
Units (Adult):	L

Units (Pediatric/Neo):	mL
Label:	Vti
AVEA GUI/Membrane:	Vti

10.6.1.62 ID: MntrVtiNorm

Description:	Normalized Inspired Tidal Volume. Ratio of Vti to Patient Weight.
Type:	WORD
Scale:	1
Range:	0 - 300
Units:	mL/kg
Label:	Vti/kg
AVEA GUI/Membrane:	Vti/kg

10.6.1.63 ID: MntrWobImposed

Description:	Imposed Work of Breathing. The additional energy imposed by the breathing apparatus during a patient's spontaneous breath.
Type:	WORD
Scale:	2
Range:	0 - 2000
Units:	joules/L
Label:	WOBi
AVEA GUI/Membrane:	WOBi

10.6.1.64 ID: MntrWobPatient

Description:	Patient Work of Breathing. Energy expended by the patient (lung and chest wall) by spontaneous breathing.
Type:	WORD
Scale:	2
Range:	0 - 2000
Units:	joules/L
Label:	WOBp
AVEA GUI/Membrane:	WOBp

10.6.1.65 ID: MntrWobVent

Description:	Ventilator Work of Breathing. Energy required to deliver the tidal volume to the patient.
Type:	WORD
Scale:	2
Range:	0 - 2000
Units:	joules/L
Label:	WOBv
AVEA GUI/Membrane:	WOBv

10.6.2 VELA Ventilator – Monitor Class

10.6.2.1 ID: MntrEndTidalCO2

Description:	Patient's peak expired CO2 level as measured and reported by the CO2 analyzer.
Type:	WORD
Scale:	1 (mmHg); 2 (kPa)
Range:	0 – 1500 (mmHg); 0 – 2000 (kPa)
Units:	mmHg; kPa
Label:	EtCO2
VELA GUI/Membrane:	EtCO2

10.6.2.2 ID: MntrFiO2

Description:	Fractional (percent) O_2 (measured in inspiratory flow stream) delivered to the patient.
Type:	WORD
Range:	0 - 100
Units:	%
Label:	FiO2
VELA GUI/Membrane:	FiO2

10.6.2.3 ID: MntrIE

Description:	Inspiratory/Expiratory Ratio. Ratio of time spent in the inspiratory phase of a breath cycle to the time spent in the expiratory phase.
Type:	WORD
Scale:	1
Range:	-999 - 999
Label:	I:E
VELA GUI/Membrane:	I:E

10.6.2.4 ID: MntrPeep

Description:	Positive End Expiratory Pressure. Airway pressure at the end of the expiratory phase of a breath cycle.
Type:	WORD
Range:	0 - 99
Units:	cmH2O
Label:	PEEP
VELA GUI/Membrane:	PEEP

10.6.2.5 ID: MntrPmean

Description:	Mean Airway Pressure. Average airway pressure measured throughout an entire breath cycle.
Type:	WORD
Range:	0 - 99
Units:	cmH2O

	Label:	Pmean
	VELA GUI/Membrane:	Pmean

10.6.2.6 ID: MntrPO2

Description:	Oxygen Supply Pressure. Pressure measured at the oxygen inlet of the ventilator.
Type:	WORD
Range:	0 – 85
Units:	psig
Label:	O2 Inlet
VELA GUI/Membrane:	O2 Inlet

10.6.2.7 ID: MntrPpeak

Description:	Peak Airway Pressure. Highest airway pressure measured throughout an entire breath cycle.
Type:	WORD
Range:	0 - 140
Units:	cmH2O
Label:	Ppeak
VELA GUI/Membrane:	Ppeak

10.6.2.8 ID: MntrPresBaro

Description:	Barometric Pressure
Type:	WORD
Scale:	0 (mmHg); 1 (kPa)
Range:	545 – 760 (mmHg); 727 – 1013 (kPa)
Units:	mmHg, kPa
Label:	Pbaro
VELA GUI/Membrane:	Pbaro

10.6.2.9 ID: MntrRate

Description:	Breath Rate. Number of inspirations per minute of all breath types.
Type:	WORD
Range:	0 - 250
Units:	bpm
Label:	Rate
VELA GUI/Membrane:	Rate

10.6.2.10 ID: MntrRateSpon

Description:	Spontaneous breath rate. Number of inspirations per minute of patient controlled breath types.
Type:	WORD
Range:	0 - 250
Units:	bpm
Label:	Spon Rate

VELA GUI/Membrane: Spon Rate

10.6.2.11 ID: MntrTe

Description: Exhalation Time. Measured time duration of the expiratory phase of a breath cycle.
Type: WORD
Scale: 2
Range: 0 - 999
Units: Sec
Label: Te
VELA GUI/Membrane: Te

10.6.2.12 ID: MntrTi

Description: Inspiratory time. Measured time duration of the inspiratory phase of a breath cycle.
Type: WORD
Scale: 2
Range: 0 - 999
Units: Sec
Label: Ti
VELA GUI/Membrane: Ti

10.6.2.13 ID: MntrVeSpon

Description: Spontaneous minute volume. Volume of gas exhaled over the period of one minute from patient controlled breath types.
Type: WORD
Scale: 1
Range: 0 - 999
Units: L
Label: Spon Ve
VELA GUI/Membrane: Spon Ve

10.6.2.14 ID: MntrVeTotal

Description: Total Minute Volume. Volume of gas exhaled over the period of one minute from all breath types.
Type: WORD
Scale: 1
Range: 0 - 999
Units: L
Label: Ve
VELA GUI/Membrane: Ve

10.6.2.15 ID: MntrVte

Description: Exhaled Tidal Volume. Volume of gas exhaled in one breath cycle.

Type:	INT
Range:	0 - 4000
Units:	ml
Label:	Vte
VELA GUI/Membrane:	Vte

10.6.2.16 ID: MntrVteMand

Description:	Mandatory Exhaled Tidal Volume. Volume of gas exhaled in one breath cycle for machine controlled breath types.
Type:	INT
Range:	0 - 4000
Units:	ml
Label:	Mand Vt
VELA GUI/Membrane:	Mand Vt

10.6.2.17 ID: MntrVteSpon

Description:	Spontaneous Exhaled Tidal Volume. Volume of gas exhaled in one breath cycle for patient controlled breath types.
Type:	INT
Range:	0 - 4000
Units:	ml
Label:	Spon Vt
VELA GUI/Membrane:	Spon Vt

10.6.2.18 ID: MntrVti

Description:	Inspired Tidal Volume. Volume of gas inspired in one breath cycle.
Type:	INT
Range:	0 - 4000
Units:	ml
Label:	Vti
VELA GUI/Membrane:	Vti

10.7 Alarm Class

10.7.1 AVEA Ventilator – Alarm Class

10.7.1.1 ID: AlarmActive

Description:	Active/Inactive state of alarms in general. Active if any alarm is asserted.
Type:	BOOL
Label:	
AVEA GUI/Membrane:	

10.7.1.2 **ID:** **AlarmActivePriority**

Description:	Highest priority across all active alarm conditions.
Type:	ENUM
Enum value = label:	1=HIGH; 2=MED; 3=LOW; 4=VISUAL ALERT
Label:	
AVEA GUI/Membrane:	

10.7.1.3 **ID:** **AlarmApnea**

Description:	Ventilator does not detect a breath initiation within the Apnea Interval time of the previous breath initiation.
Type:	BOOL
Level:	HIGH
Label:	APNEA INTERVAL
AVEA GUI/Membrane:	APNEA INTERVAL

10.7.1.4 **ID:** **AlarmCO2CheckAirwayAdapter**

Description:	CO2 device reported the CO2 Airwary Adapter needs to be checked.
Type:	BOOL
Level:	MED
Label:	CO2 Check Adapter
AVEA GUI/Membrane:	CO2 Check Adapter

10.7.1.5 **ID:** **AlarmCircDisc**

Description:	Patient circuit disconnected from the ventilator or patient.
Type:	BOOL
Level:	HIGH
Label:	CIRCUIT DISCONNECT
AVEA GUI/Membrane:	CIRCUIT DISCONNECT

10.7.1.6 **ID:** **AlarmCO2CommunicationError**

Description:	CO2 device reported a communication error.
Type:	BOOL
Level:	MED
Label:	CO2 Comms Error
AVEA GUI/Membrane:	CO2 Comms Error

10.7.1.7 **ID:** **AlarmCO2OutOfRange**

Description:	CO2 device reported a CO2 range error condition.
Type:	BOOL
Level:	MED
Label:	CO2 Out Of Range
AVEA GUI/Membrane:	CO2 Out Of Range

10.7.1.8 **ID:** **AlarmCO2SensorFault**

Description:	CO2 device reported a fault condition with CO2 sensor.

	Type:	BOOL
	Level:	MED
	Label:	CO2 Sensor Fault
	AVEA GUI/Membrane:	CO2 Sensor Fault
10.7.1.9	**ID:**	**AlarmCO2SensorOverTemp**
	Description:	CO2 device reported a fault condition due to temperature.
	Type:	BOOL
	Level:	MED
	Label:	CO2 Sensor Temp
	AVEA GUI/Membrane:	CO2 Sensor Temp
10.7.1.10	**ID:**	**AlarmCO2ZeroRequired**
	Description:	CO2 device reported sensor requires to be initialized to zero.
	Type:	BOOL
	Level:	MED
	Label:	CO2 Zero Reqd
	AVEA GUI/Membrane:	CO2 Zero Reqd
10.7.1.11	**ID:**	**AlarmFanFail**
	Description:	Internal cooling/enclosure ventilation fan has failed.
	Type:	BOOL
	Level:	LOW
	Label:	FAN FAILURE
	AVEA GUI/Membrane:	FAN FAILURE
10.7.1.12	**ID:**	**AlarmFiO2AutoLimitHigh**
	Description:	Measured FiO_2 exceeded the high oxygen concentration limit.
	Type:	BOOL
	Level:	HIGH
	Label:	High Auto FiO2
	AVEA GUI/Membrane:	High Auto FiO2
10.7.1.13	**ID:**	**AlarmFiO2AutoLimitLow**
	Description:	The output Auto FiO_2 Cmd shall not be allowed to be less than the Low Auto FiO_2 Limit. The “Low Auto FiO_2 Limit” will alarm if Auto FiO_2 Cmd $\leq$ preset Low Auto FiO_2 Limit for a period of 60 seconds or greater.
	Type:	BOOL
	Level:	HIGH
	Label:	Low Auto FiO2
	AVEA GUI/Membrane:	Low Auto FiO2

10.7.1.14 ID: AlarmFiO2BaselineLimitHigh

Description:	Alarm if the Baseline $FiO_2 \geq$ High Baseline FiO_2 Alarm setting.
Type:	BOOL
Level:	LOW
Label:	High Base FiO2
AVEA GUI/Membrane:	High Base FiO2

10.7.1.15 ID: AlarmFiO2High

Description:	Measured FiO_2 exceeded the high oxygen concentration limit.
Type:	BOOL
Level:	HIGH
Label:	HIGH FiO2
AVEA GUI/Membrane:	HIGH FiO2

10.7.1.16 ID: AlarmFiO2Low

Description:	Measured FiO_2 dropped below the low oxygen concentration limit.
Type:	BOOL
Level:	HIGH
Label:	LOW FiO2
AVEA GUI/Membrane:	LOW FiO2

10.7.1.17 ID: AlarmIlvSlaveDisc

Description:	Lost detection of slave ventilator during Independent Lung Ventilation.
Type:	BOOL
Level:	HIGH
Label:	ILV DISCONNECT
AVEA GUI/Membrane:	ILV DISCONNECT

10.7.1.18 ID: AlarmInop

Description:	Indicates ventilator is unable to ventilate the patient. Most commonly due to detection of an unrecoverable internal problem or failure.
Type:	BOOL
Level:	HIGH
Label:	VENT INOP
AVEA GUI/Membrane:	VENT INOP

10.7.1.19 ID: AlarmEndTidalCO2Invalid

Description:	Invalid EtCO2.
Type:	BOOL
Level:	MED
Label:	Invalid EtCO2

AVEA GUI/Membrane: Invalid EtCO2

10.7.1.20 ID: AlarmEndTidalCO2High

Description: Exceeded EtCO2 High Limit
Type: BOOL
Level: LOW
Label: High EtCO2
AVEA GUI/Membrane: High EtCO2

10.7.1.21 ID: AlarmEndTidalCO2Low

Description: Below EtCO2 Low Limit
Type: BOOL
Level: LOW
Label: Low EtCO2
AVEA GUI/Membrane: Low EtCO2

10.7.1.22 ID: AlarmInvalidGasId

Description: Missing or defective Gas Type Identifier plug on ventilator rear panel.
Type: BOOL
Level: MED
Label: INVALID GAS ID
AVEA GUI/Membrane: INVALID GAS ID

10.7.1.23 ID: AlarmLimitIE

Description: Maximum I:E Ratio limit exceeded.
Type: BOOL
Level: LOW
Label: I:E LIMIT
AVEA GUI/Membrane: I:E LIMIT

10.7.1.24 ID: AlarmLimitTi

Description: Maximum inspiratory time limit exceeded.
Type: BOOL
Level: LOW
Label: MAX INSP TIME
AVEA GUI/Membrane: MAX INSP TIME

10.7.1.25 ID: AlarmLimitVol

Description: Pressure Control Volume Limit was invoked. The pressure controlled breath was terminated when the volume limit was exceeded without achieving the set pressure.
Type: BOOL
Level: VISUAL ALERT
Label: VOLUME LIMIT

AVEA GUI/Membrane: VOLUME LIMIT

10.7.1.26 ID: AlarmLossAir

Description: Ventilator cannot detect a source of air supply. Not connected, insufficient pressure, no functional internal compressor or the compressor output is insufficient to meet demand.
Type: BOOL
Level: HIGH
Label: LOSS OF AIR
AVEA GUI/Membrane: LOSS OF AIR

10.7.1.27 ID: AlarmLossGas

Description: Ventilator cannot detect any source of gas supply including Air, Oxygen, Heliox, or Internal Compressor. Not connected or insufficient pressure.
Type: BOOL
Level: HIGH
Label: LOSS OF GAS
AVEA GUI/Membrane: LOSS OF GAS

10.7.1.28 ID: AlarmLossHeliox

Description: Ventilator cannot detect a source of Heliox gas supply. Not connected or insufficient pressure.
Type: BOOL
Level: HIGH
Label: LOSS OF HELIOX
AVEA GUI/Membrane: LOSS OF HELIOX

10.7.1.29 ID: AlarmLossO2

Description: Ventilator cannot detect a source of oxygen gas supply. Not connected or insufficient pressure.
Type: BOOL
Level: HIGH
Label: LOSS OF O2
AVEA GUI/Membrane: LOSS OF O2

10.7.1.30 ID: AlarmNcpapHigh

Description: Nasal CPAP high pressure
Type: BOOL
Level: HIGH
Label: HIGH nCPAP PRES
AVEA GUI/Membrane: HIGH nCPAP PRES

10.7.1.31 ID: AlarmNcpapHighPresLimit

Description: Nasal CPAP high pressure (time) limit

Type:	BOOL
Level:	HIGH
Label:	nCPAP PRES LIMIT
AVEA GUI/Membrane:	nCPAP PRES LIMIT

10.7.1.32 ID: AlarmNcpapLow

Description:	Nasal CPAP low pressure
Type:	BOOL
Level:	HIGH
Label:	LOW nCPAP PRES
AVEA GUI/Membrane:	LOW nCPAP PRES

10.7.1.33 ID: AlarmOcclusion

Description:	Differential pressure across the Inspiratory/Expiratory systems of the ventilator indicates excessive resistance or occlusion.
Type:	BOOL
Level:	HIGH
Label:	CIRCUIT OCCLUSION
AVEA GUI/Membrane:	CIRCUIT OCCLUSION

10.7.1.34 ID: AlarmOpenSV

Description:	Asserts whenever system conditions cause the Safety Valve to open.
Type:	BOOL
Level:	HIGH
Label:	SAFETY VALVE
AVEA GUI/Membrane:	SAFETY VALVE

10.7.1.35 ID: AlarmPeepLow

Description:	Airway pressure has dropped below the low baseline pressure limit.
Type:	BOOL
Level:	HIGH
Label:	LOW PEEP
AVEA GUI/Membrane:	LOW PEEP

10.7.1.36 ID: AlarmPpeakHigh

Description:	Airway pressure has exceeded the high peak pressure limit.
Type:	BOOL
Level:	HIGH
Label:	HIGH Ppeak
AVEA GUI/Membrane:	HIGH Ppeak

10.7.1.37 ID: AlarmPpeakHighExt

Description:	High P_{PEAK} or Occlusion persistent for greater than 5 seconds.
Type:	BOOL
Level:	HIGH
Label:	EXT HIGH Ppeak
AVEA GUI/Membrane:	EXT HIGH Ppeak

10.7.1.38 ID: AlarmPpeakLow

Description:	Airway pressure did not exceed the low peak pressure limit for the previous breath cycle.
Type:	BOOL
Level:	HIGH
Label:	LOW Ppeak
AVEA GUI/Membrane:	LOW Ppeak

10.7.1.39 ID: AlarmPulseRateHigh

Description:	Pulse rate is greater than the High Pulse Rate alarm setting.
Type:	BOOL
Level:	MED
Label:	High Pulse
AVEA GUI/Membrane:	High Pulse

10.7.1.40 ID: AlarmPulseRateLow

Description:	Pulse rate is less than the Low Pulse Rate alarm setting.
Type:	BOOL
Level:	MED
Label:	Low Pulse
AVEA GUI/Membrane:	Low Pulse

10.7.1.41 ID: AlarmPwrAcLoss

Description:	AC power has been removed from the ventilator (i.e. power cord disconnect or loss of supply power).
Type:	BOOL
Level:	HIGH
Label:	LOSS OF A/C
AVEA GUI/Membrane:	LOSS OF A/C

10.7.1.42 ID: AlarmPwrBattLow

Description:	Batteries have been depleted to a level that indicates two minutes or less of safe operation.
Type:	BOOL
Level:	HIGH
Label:	LOW BATTERY
AVEA GUI/Membrane:	LOW BATTERY

10.7.1.43 ID: AlarmRateHigh

Description:	Respiratory Rate exceeded the high inspirations per minute limit.
Type:	BOOL
Level:	MED
Label:	HIGH RATE
AVEA GUI/Membrane:	HIGH RATE

10.7.1.44 ID: AlarmSilence

Description:	Active/Inactive state of the capability to locally silence the audible ventilator alarms.
Type:	BOOL
Label:	ALARM SILENCE
AVEA GUI/Membrane:	ALARM SILENCE

10.7.1.45 ID: AlarmSpO2Failure

Description:	High priority alarm is issued when the MS-11 PCB reports a board failure (see Masimo CSD-1086 Rev C).
Type:	BOOL
Level:	HIGH
Label:	Oximeter Failure
AVEA GUI/Membrane:	Oximeter Failure

10.7.1.46 ID: AlarmSpO2High

Description:	Monitored SpO2 is greater than the preset High SpO2 Alarm for more than the SpO2 Alarm Delay period.
Type:	BOOL
Level:	HIGH
Label:	High SpO2
AVEA GUI/Membrane:	High SpO2

10.7.1.47 ID: AlarmSpO2Low

Description:	Monitored SpO2 is less than the preset Low SpO2 Alarm for more than the SpO2 Alarm Delay period.
Type:	BOOL
Level:	HIGH
Label:	Low SpO2
AVEA GUI/Membrane:	Low SpO2

10.7.1.48 ID: AlarmSpO2NotConnected

Description:	High priority alarm is issued when the pulse oximeter is not connected to the ventilator (i.e. RS-232 not connected).
Type:	BOOL
Level:	HIGH
Label:	Oximeter Disconnect

AVEA GUI/Membrane: Oximeter Disconnect

10.7.1.49 ID: AlarmSpO2SensorDefective

Description: High priority alarm is issued when the MS-11 PCB (see Masimo CSD-1086 Rev C) detects the SpO2 Sensor is Defective.
Type: BOOL
Level: HIGH
Label: Defective Sensor
AVEA GUI/Membrane: Defective Sensor

10.7.1.50 ID: AlarmSpO2SensorNotConnected

Description: High priority alarm is issued when the MS-11 PCB (see Masimo CSD-1086 Rev C) detects the SpO2 Sensor is Not Connected.
Type: BOOL
Level: HIGH
Label: No Sensor Connected
AVEA GUI/Membrane: No Sensor Connected

10.7.1.51 ID: AlarmSpO2SensorUnrecognized

Description: High priority alarm is issued when the MS-11 PCB (see Masimo CSD-1086 Rev C) detects the SpO2 Sensor is Unrecognized.
Type: BOOL
Level: HIGH
Label: Unrecognized Sensor
AVEA GUI/Membrane: Unrecognized Sensor

10.7.1.52 ID: AlarmSpO2SignalAmbientLight

Description: Low priority alarm is issued when the MS-11 PCB (see Masimo CSD-1086 Rev C) detects the SpO2 Signal Ambient Light.
Type: BOOL
Level: LOW
Label: Ambient Light
AVEA GUI/Membrane: Ambient Light

10.7.1.53 ID: AlarmSpO2SignalAmbientLightExt

Description: High priority alarm is issued when the MS-11 PCB (see Masimo CSD-1086 Rev C) detects the SpO2 Signal Ambient Light for an extended period.
Type: BOOL
Level: HIGH
Label: Ambient Light
AVEA GUI/Membrane: Ambient Light

10.7.1.54 ID: AlarmSpO2SignalInterference

Description:	Low priority alarm is issued when the MS-11 PCB (see Masimo CSD-1086 Rev C) detects the SpO2 Signal Interference.
Type:	BOOL
Level:	LOW
Label:	Interference
AVEA GUI/Membrane:	Interference

10.7.1.55 ID: AlarmSpO2SignalInterferenceExt

Description:	High priority alarm is issued when the MS-11 PCB (see Masimo CSD-1086 Rev C) detects the SpO2 Signal Interference for an extended period.
Type:	BOOL
Level:	HIGH
Label:	Interference
AVEA GUI/Membrane:	Interference

10.7.1.56 ID: AlarmSpO2SignalLowPerfusion

Description:	Low priority alarm is issued when the MS-11 PCB (see Masimo CSD-1086 Rev C) detects the SpO2 Signal Perfusion is Low.
Type:	BOOL
Level:	LOW
Label:	Low Perfusion
AVEA GUI/Membrane:	Low Perfusion

10.7.1.57 ID: AlarmSpO2SignalLowPerfusionExt

Description:	High priority alarm is issued when the MS-11 PCB (see Masimo CSD-1086 Rev C) detects the SpO2 Signal Perfusion is Low for an extended period.
Type:	BOOL
Level:	HIGH
Label:	Low Perfusion
AVEA GUI/Membrane:	Low Perfusion

10.7.1.58 ID: AlarmSpO2SignalLowSIQ

Description:	Low priority alarm is issued when the MS-11 PCB (see Masimo CSD-1086 Rev C) detects the SpO2 Signal is Low.
Type:	BOOL
Level:	LOW
Label:	Low SIQ
AVEA GUI/Membrane:	Low SIQ

10.7.1.59 ID: AlarmSpO2SignalLowSIQExt

Description:	High priority alarm is issued when the MS-11 PCB (see Masimo CSD-1086 Rev C) detects the SpO2 Signal is Low for an extended period.
Type:	BOOL
Level:	HIGH
Label:	Low SIQ
AVEA GUI/Membrane:	Low SIQ

10.7.1.60 ID: AlarmSpO2SignalPulseSearch

Description:	Low priority alarm is issued when the MS-11 PCB (see Masimo CSD-1086 Rev C) detects the SpO2 Signal Pulse Search is Low.
Type:	BOOL
Level:	LOW
Label:	Pulse Search
AVEA GUI/Membrane:	Pulse Search

10.7.1.61 ID: AlarmSpO2SignalPulseSearchExt

Description:	High priority alarm is issued when the MS-11 PCB (see Masimo CSD-1086 Rev C) detects the SpO2 Signal Pulse Search is Low for an extended period.
Type:	BOOL
Level:	HIGH
Label:	Pulse Search
AVEA GUI/Membrane:	Pulse Search

10.7.1.62 ID: AlarmSpO2SignalSensorOff

Description:	Low priority alarm is issued when the MS-11 PCB (see Masimo CSD-1086 Rev C) detects the SpO2 Signal Sensor is off.
Type:	BOOL
Level:	LOW
Label:	Sensor Off
AVEA GUI/Membrane:	Sensor Off

10.7.1.63 ID: AlarmSpO2SignalSensorOffExt

Description:	High priority alarm is issued when the MS-11 PCB (see Masimo CSD-1086 Rev C) detects the SpO2 Signal Sensor is off for an extended period.
Type:	BOOL
Level:	HIGH
Label:	Sensor Off
AVEA GUI/Membrane:	Sensor Off

10.7.1.64 ID: AlarmTest

Description:	Operator demand to test audible and visual indications of the Alarm system (e.g. during Alarm Loudness Increase/Decrease).
Type:	BOOL
Level:	HIGH
Label:	ALARM TEST
AVEA GUI/Membrane:	ALARM TEST

10.7.1.65 ID: AlarmVeHigh

Description:	Minute Volume exceeded the high minute volume limit.
Type:	BOOL
Level:	MED
Label:	HIGH Ve
AVEA GUI/Membrane:	HIGH Ve

10.7.1.66 ID: AlarmVeLow

Description:	Exhaled tidal volume was less than the low tidal volume limit for the number of consecutive breaths set by the Low Vte Sensitivity setting.
Type:	BOOL
Level:	HIGH
Label:	LOW Ve
AVEA GUI/Membrane:	LOW Ve

10.7.1.67 ID: AlarmVteLow

Description:	Exhaled tidal volume was less than the low tidal volume limit for the number of consecutive breaths set by the Low Vte Sensitivity setting.
Type:	BOOL
Level:	HIGH
Label:	LOW Vte
AVEA GUI/Membrane:	LOW Vte

10.7.1.68 ID: AlarmVtHigh

Description:	Exhaled tidal volume was higher than the high tidal volume limit for the previous breath cycle.
Type:	BOOL
Level:	LOW
Label:	HIGH Vte
AVEA GUI/Membrane:	HIGH Vte

10.7.1.69 ID: AlarmHistApnea

Description:	Indication that alarm asserted in the past, is no longer active and has not been reset. See AlarmApnea for description.

Type: BOOL
Level: HIGH
Label: APNEA INTERVAL
AVEA GUI/Membrane: APNEA INTERVAL

10.7.1.70 ID: AlarmHist CO2CheckAirwayAdapter

Description: CO2 device reported a CO2 Airway Adapter needs to be checked (historical / not cleared).
Type: BOOL
Level: MED
Label: CO2 Check Adapter
AVEA GUI/Membrane: CO2 Check Adapter

10.7.1.71 ID: AlarmHistCO2CommunicationError

Description: CO2 device reported a communication error (historical / not cleared).
Type: BOOL
Level: MED
Label: CO2 Comms Error
AVEA GUI/Membrane: CO2 Comms Error

10.7.1.72 ID: AlarmHistCO2OutOfRange

Description: CO2 device reported a CO2 range error condition (historical / not cleared).
Type: BOOL
Level: MED
Label: CO2 Out Of Range
AVEA GUI/Membrane: CO2 Out Of Range

10.7.1.73 ID: AlarmHistCO2SensorFault

Description: CO2 device reported a fault condition with CO2 sensor (historical / not cleared).
Type: BOOL
Level: MED
Label: CO2 Sensor Fault
AVEA GUI/Membrane: CO2 Sensor Fault

10.7.1.74 ID: AlarmHistCO2SensorOverTemp

Description: CO2 device reported a fault condition due to temperature (historical / not cleared).
Type: BOOL
Level: MED
Label: CO2 Sensor Temp
AVEA GUI/Membrane: CO2 Sensor Temp

10.7.1.75 ID: AlarmHistCO2ZeroRequired

Description:	CO2 device reported sensor requires to be initialized to zero (historical / not cleared).
Type:	BOOL
Level:	MED
Label:	CO2 Zero Reqd
AVEA GUI/Membrane:	CO2 Zero Reqd

10.7.1.76 ID: AlarmHistEndTidalCO2High

Description:	Exceeded EtCO2 High Limit (historical / not cleared).
Type:	BOOL
Level:	LOW
Label:	High EtCO2
AVEA GUI/Membrane:	High EtCO2

10.7.1.77 ID: AlarmHistEndTidalCO2Low

Description:	Below EtCO2 Low Limit(historical / not cleared).
Type:	BOOL
Level:	LOW
Label:	Low EtCO2
AVEA GUI/Membrane:	Low EtCO2

10.7.1.78 ID: AlarmHistCircDisc

Description:	Indication that alarm asserted in the past, is no longer active and has not been reset. See AlarmCircDisc description above.
Type:	BOOL
Level:	HIGH
Label:	CIRCUIT DISCONNECT
AVEA GUI/Membrane:	CIRCUIT DISCONNECT

10.7.1.79 ID: AlarmHistEndTidalCO2Invalid

Description:	Invalid EtCO2 (historical / not cleared).
Type:	BOOL
Level:	MED
Label:	Invalid EtCO2
AVEA GUI/Membrane:	Invalid EtCO2

10.7.1.80 ID: AlarmHistFanFail

Description:	Indication that alarm asserted in the past, is no longer active and has not been reset. See AlarmFanFail description above.
Type:	BOOL
Level:	LOW
Label:	FAN FAILURE
AVEA GUI/Membrane:	FAN FAILURE

10.7.1.81 ID: AlarmHistFiO2AutoLimitHigh

Description: Auto FiO2 Cmd is greater than or equal to the preset High Auto FiO2 Limit for a period of 60 seconds or more (historical / not cleared).
Type: BOOL
Level: HIGH
Label: High Auto FiO2
AVEA GUI/Membrane: High Auto FiO2

10.7.1.82 ID: AlarmHistFiO2AutoLimitLow

Description: Auto FiO2 Cmd is less than or equal to the preset Low Auto FiO2 Limit for a period of 60 seconds or more (historical / not cleared).
Type: BOOL
Level: HIGH
Label: Low Auto FiO2
AVEA GUI/Membrane: Low Auto FiO2

10.7.1.83 ID: AlarmHistFiO2BaselineLimitHigh

Description: Baseline FiO2 is greater than or equal to the High Baseline FiO2 Alarm setting sensor (historical / not cleared).
Type: BOOL
Level: LOW
Label: High Base FiO2
AVEA GUI/Membrane: High Base FiO2

10.7.1.84 ID: AlarmHistFiO2High

Description: Indication that alarm asserted in the past, is no longer active and has not been reset. See AlarmFiO2High description above.
Type: BOOL
Level: HIGH
Label: HIGH FiO2
AVEA GUI/Membrane: HIGH FiO2

10.7.1.85 ID: AlarmHistFiO2Low

Description: Indication that alarm asserted in the past, is no longer active and has not been reset. See AlarmFiO2Low description above.
Type: BOOL
Level: HIGH
Label: LOW FiO2
AVEA GUI/Membrane: LOW FiO2

10.7.1.86 ID: AlarmHistIlvSlaveDisc

Description:	Indication that alarm asserted in the past, is no longer active and has not been reset. See AlarmIvsSlaveDisc description above.
Type:	BOOL
Level:	HIGH
Label:	ILV DISCONNECT
AVEA GUI/Membrane:	ILV DISCONNECT

10.7.1.87 ID: AlarmHistInop

Description:	Indication that alarm asserted in the past, is no longer active, and has not been reset. See AlarmInop description above.
Type:	BOOL
Level:	HIGH
Label:	VENT INOP
AVEA GUI/Membrane:	VENT INOP

10.7.1.88 ID: AlarmHistInvalidGasId

Description:	Indication that alarm asserted in the past, is no longer active and has not been reset. See AlarmInvalidGasId description above.
Type:	BOOL
Level:	MED
Label:	INVALID GAS ID
AVEA GUI/Membrane:	INVALID GAS ID

10.7.1.89 ID: AlarmHistLimitIE

Description:	Indication that alarm asserted in the past, is no longer active and has not been reset. See AlarmLimitIE description above.
Type:	BOOL
Level:	LOW
Label:	I:E LIMIT
AVEA GUI/Membrane:	I:E LIMIT

10.7.1.90 ID: AlarmHistLimitTi

Description:	Indication that alarm asserted in the past, is no longer active and has not been reset. See AlarmLimitTi description above.
Type:	BOOL
Level:	LOW
Label:	MAX INSP TIME
AVEA GUI/Membrane:	MAX INSP TIME

10.7.1.91 ID: AlarmHistLimitVol

Description: Indication that alarm asserted in the past, is no longer active and has not been reset. See AlarmLimitVol description above.
Type: BOOL
Level: VISUAL ALERT
Label: VOL LIMIT
AVEA GUI/Membrane: VOL LIMIT

10.7.1.92 ID: AlarmHistLossAir

Description: Indication that alarm asserted in the past, is no longer active and has not been reset. See AlarmLossAir description above.
Type: BOOL
Level: HIGH
Label: LOSS OF AIR
AVEA GUI/Membrane: LOSS OF AIR

10.7.1.93 ID: AlarmHistLossGas

Description: Indication that alarm asserted in the past, is no longer active and has not been reset. See AlarmLossGas description above.
Type: BOOL
Level: HIGH
Label: LOSS OF GAS
AVEA GUI/Membrane: LOSS OF GAS

10.7.1.94 ID: AlarmHistLossHeliox

Description: Indication that alarm asserted in the past, is no longer active and has not been reset. See AlarmLossHeliox description above.
Type: BOOL
Level: HIGH
Label: LOSS OF HELIOX
AVEA GUI/Membrane: LOSS OF HELIOX

10.7.1.95 ID: AlarmHistLossO2

Description: Indication that alarm asserted in the past, is no longer active and has not been reset. See AlarmLossO2 description above.
Type: BOOL
Level: HIGH
Label: LOSS OF O2
AVEA GUI/Membrane: LOSS OF O2

10.7.1.96 ID: AlarmHistNcpapHigh

Description:	Indication that alarm asserted in the past, is no longer active and has not been reset. See AlarmNcpapHigh description above.
Type:	BOOL
Level:	HIGH
Label:	HIGH nCPAP PRES
AVEA GUI/Membrane:	HIGH nCPAP PRES

10.7.1.97 ID: AlarmHistNcpapHighPresLimit

Description:	Indication that alarm asserted in the past, is no longer active and has not been reset. See AlarmNcpapHighPresLimit description above.
Type:	BOOL
Level:	HIGH
Label:	nCPAP PRES LIMIT
AVEA GUI/Membrane:	nCPAP PRES LIMIT

10.7.1.98 ID: AlarmHistNcpapLow

Description:	Indication that alarm asserted in the past, is no longer active and has not been reset. See AlarmNcpapLow description above.
Type:	BOOL
Level:	HIGH
Label:	LOW nCPAP PRES
AVEA GUI/Membrane:	LOW nCPAP PRES

10.7.1.99 ID: AlarmHistOcclusion

Description:	Indication that alarm asserted in the past, is no longer active and has not been reset. See AlarmOcclusion description above.
Type:	BOOL
Level:	HIGH
Label:	CIRCUIT OCCLUSION
AVEA GUI/Membrane:	CIRCUIT OCCLUSION

10.7.1.100 ID: AlarmHistOpenSV

Description:	Indication that alarm asserted in the past, is no longer active and has not been reset. See AlarmOpenSV description above.
Type:	BOOL
Level:	HIGH
Label:	SAFETY VALVE
AVEA GUI/Membrane:	SAFETY VALVE

10.7.1.101 ID: AlarmHistPeepLow

Description:	Indication that alarm asserted in the past, is no longer active and has not been reset. See AlarmPeepLow description above.
Type:	BOOL
Level:	HIGH
Label:	LOW PEEP
AVEA GUI/Membrane:	LOW PEEP

10.7.1.102 ID: AlarmHistPpeakHigh

Description:	Indication that alarm asserted in the past, is no longer active and has not been reset. See AlarmPpeakHigh description above.
Type:	BOOL
Level:	HIGH
Label:	HIGH Ppeak
AVEA GUI/Membrane:	HIGH Ppeak

10.7.1.103 ID: AlarmHistPpeakHighExt

Description:	Indication that alarm asserted in the past, is no longer active and has not been reset. See AlarmPpeakHighExt description above.
Type:	BOOL
Level:	HIGH
Label:	EXT HIGH Ppeak
AVEA GUI/Membrane:	EXT HIGH Ppeak

10.7.1.104 ID: AlarmHistPpeakLow

Description:	Indication that alarm asserted in the past, is no longer active and has not been reset. See AlarmPpeakLow description above.
Type:	BOOL
Level:	HIGH
Label:	LOW Ppeak
AVEA GUI/Membrane:	LOW Ppeak

10.7.1.105 ID: AlarmHistPulseRateHigh

Description:	Pulse rate is greater than the High Pulse Rate alarm setting (historical / not cleared).
Type:	BOOL
Level:	MED
Label:	High Pulse
AVEA GUI/Membrane:	High Pulse

10.7.1.106 ID: AlarmHistPulseRateLow

Description:	Pulse rate is less than the Low Pulse Rate alarm setting (historical / not cleared).
Type:	BOOL
Level:	MED
Label:	Low Pulse
AVEA GUI/Membrane:	Low Pulse

10.7.1.107 ID: AlarmHistPwrAcLoss

Description:	Indication that alarm asserted in the past, is no longer active and has not been reset. See AlarmPwrAcLoss description above.
Type:	BOOL
Level:	HIGH
Label:	LOSS OF A/C
AVEA GUI/Membrane:	LOSS OF A/C

10.7.1.108 ID: AlarmHistPwrBattLow

Description:	Indication that alarm asserted in the past, is no longer active and has not been reset. See AlarmPwrBattLow description above.
Type:	BOOL
Level:	HIGH
Label:	LOW BATTERY
AVEA GUI/Membrane:	LOW BATTERY

10.7.1.109 ID: AlarmHistRateHigh

Description:	Indication that alarm asserted in the past, is no longer active and has not been reset. See AlarmRateHigh description above.
Type:	BOOL
Level:	MED
Label:	HIGH RATE
AVEA GUI/Membrane:	HIGH RATE

10.7.1.110 ID: AlarmHistSpO2Failure

Description:	High priority alarm is issued when the MS-11 PCB reports a board failure (see Masimo CSD-1086 Rev C) - (historical / not cleared).
Type:	BOOL
Level:	HIGH
Label:	Oximeter Failure
AVEA GUI/Membrane:	Oximeter Failure

10.7.1.111 ID: AlarmHistSpO2High

Description:	Monitored SpO2 is greater than the preset High SpO2 Alarm for more than the SpO2 Alarm Delay period (historical / not cleared).
Type:	BOOL
Level:	HIGH
Label:	High SpO2
AVEA GUI/Membrane:	High SpO2

10.7.1.112 ID: AlarmHistSpO2Low

Description:	Monitored SpO2 is less than the preset Low SpO2 Alarm for more than the SpO2 Alarm Delay period (historical / not cleared).
Type:	BOOL
Level:	HIGH
Label:	Low SpO2
AVEA GUI/Membrane:	Low SpO2

10.7.1.113 ID: AlarmHistSpO2NotConnected

Description:	High priority alarm is issued when the pulse oximeter is not connected to the ventilator (i.e. RS-232 not connected) - (historical / not cleared).
Type:	BOOL
Level:	HIGH
Label:	Oximeter Disconnect
AVEA GUI/Membrane:	Oximeter Disconnect

10.7.1.114 ID: AlarmHistSpO2SensorDefective

Description:	High priority alarm is issued when the MS-11 PCB (see Masimo CSD-1086 Rev C) detects the SpO2 Sensor is Defective (historical / not cleared).
Type:	BOOL
Level:	HIGH
Label:	Defective Sensor
AVEA GUI/Membrane:	Defective Sensor

10.7.1.115 ID: AlarmHistSpO2SensorNotConnected

Description:	High priority alarm is issued when the MS-11 PCB (see Masimo CSD-1086 Rev C) detects the SpO2 Sensor is Not Connected (historical / not cleared).
Type:	BOOL
Level:	HIGH
Label:	No Sensor Connected
AVEA GUI/Membrane:	No Sensor Connected

10.7.1.116 **ID:** **AlarmHistSpO2SensorUnrecognized**

Description:	High priority alarm is issued when the MS-11 PCB (see Masimo CSD-1086 Rev C) detects the SpO2 Sensor is Unrecognized (historical / not cleared).
Type:	BOOL
Level:	HIGH
Label:	Unrecognized Sensor
AVEA GUI/Membrane:	Unrecognized Sensor

10.7.1.117 **ID:** **AlarmHistSpO2SignalAmbientLight**

Description:	Low priority alarm is issued when the MS-11 PCB (see Masimo CSD-1086 Rev C) detects the SpO2 Signal Ambient Light (historical / not cleared).
Type:	BOOL
Level:	LOW
Label:	Ambient Light
AVEA GUI/Membrane:	Ambient Light

10.7.1.118 **ID:** **AlarmHistSpO2SignalAmbientLightExt**

Description:	High priority alarm is issued when the MS-11 PCB (see Masimo CSD-1086 Rev C) detects the SpO2 Signal Ambient Light for an extended period (historical / not cleared).
Type:	BOOL
Level:	HIGH
Label:	Ambient Light
AVEA GUI/Membrane:	Ambient Light

10.7.1.119 **ID:** **AlarmHistSpO2SignalInterference**

Description:	Low priority alarm is issued when the MS-11 PCB (see Masimo CSD-1086 Rev C) detects the SpO2 Signal Interference (historical / not cleared).
Type:	BOOL
Level:	LOW
Label:	Interference
AVEA GUI/Membrane:	Interference

10.7.1.120 **ID:** **AlarmHistSpO2SignalInterferenceExt**

Description:	High priority alarm is issued when the MS-11 PCB (see Masimo CSD-1086 Rev C) detects the SpO2 Signal Interference for an extended period (historical / not cleared).
Type:	BOOL
Level:	HIGH
Label:	Interference
AVEA GUI/Membrane:	Interference

10.7.1.121 ID: AlarmHistSpO2SignalLowPerfusion

Description:	Low priority alarm is issued when the MS-11 PCB (see Masimo CSD-1086 Rev C) detects the SpO2 Signal Perfusion is Low (historical / not cleared).
Type:	BOOL
Level:	LOW
Label:	Low Perfusion
AVEA GUI/Membrane:	Low Perfusion

10.7.1.122 ID: AlarmHistSpO2SignalLowPerfusionExt

Description:	High priority alarm is issued when the MS-11 PCB (see Masimo CSD-1086 Rev C) detects the SpO2 Signal Perfusion is Low for an extended period (historical / not cleared).
Type:	BOOL
Level:	HIGH
Label:	Low Perfusion
AVEA GUI/Membrane:	Low Perfusion

10.7.1.123 ID: AlarmHistSpO2SignalLowSIQ

Description:	Low priority alarm is issued when the MS-11 PCB (see Masimo CSD-1086 Rev C) detects the SpO2 Signal is Low (historical / not cleared).
Type:	BOOL
Level:	LOW
Label:	Low SIQ
AVEA GUI/Membrane:	Low SIQ

10.7.1.124 ID: AlarmHistSpO2SignalLowSIQExt

Description:	High priority alarm is issued when the MS-11 PCB (see Masimo CSD-1086 Rev C) detects the SpO2 Signal is Low for an extended period (historical / not cleared).
Type:	BOOL
Level:	HIGH
Label:	Low SIQ
AVEA GUI/Membrane:	Low SIQ

10.7.1.125 ID: AlarmHistSpO2SignalPulseSearch

Description:	Low priority alarm is issued when the MS-11 PCB (see Masimo CSD-1086 Rev C) detects the SpO2 Signal Pulse Search is Low (historical / not cleared).
Type:	BOOL
Level:	LOW
Label:	Pulse Search
AVEA GUI/Membrane:	Pulse Search

10.7.1.126 ID: AlarmHistSpO2SignalPulseSearchExt

Description:	High priority alarm is issued when the MS-11 PCB (see Masimo CSD-1086 Rev C) detects the SpO2 Signal Pulse Search is Low for an extended period (historical / not cleared).
Type:	BOOL
Level:	HIGH
Label:	Pulse Search
AVEA GUI/Membrane:	Pulse Search

10.7.1.127 ID: AlarmHistSpO2SignalSensorOff

Description:	Low priority alarm is issued when the MS-11 PCB (see Masimo CSD-1086 Rev C) detects the SpO2 Signal Sensor is off (historical / not cleared).
Type:	BOOL
Level:	LOW
Label:	Sensor Off
AVEA GUI/Membrane:	Sensor Off

10.7.1.128 ID: AlarmHistSpO2SignalSensorOffExt

Description:	High priority alarm is issued when the MS-11 PCB (see Masimo CSD-1086 Rev C) detects the SpO2 Signal Sensor is off for an extended period (historical / not cleared).
Type:	BOOL
Level:	HIGH
Label:	Sensor Off
AVEA GUI/Membrane:	Sensor Off

10.7.1.129 ID: AlarmHistTest

Description:	Indication that alarm asserted in the past, is no longer active and has not been reset. See AlarmTest description above.
Type:	BOOL
Level:	HIGH
Label:	ALARM TEST
AVEA GUI/Membrane:	ALARM TEST

10.7.1.130 ID: AlarmHistVeHigh

Description:	Indication that alarm asserted in the past, is no longer active and has not been reset. See AlarmVeHigh description above.
Type:	BOOL
Level:	MED
Label:	HIGH Ve
AVEA GUI/Membrane:	HIGH Ve

10.7.1.131 ID: AlarmHistVeLow

Description: Indication that alarm asserted in the past, is no longer active and has not been reset. See AlarmVeLow description above.
Type: BOOL
Level: HIGH
Label: LOW Ve
AVEA GUI/Membrane: LOW Ve

10.7.1.132 ID: AlarmHistVteLow

Description: Indication that alarm asserted in the past, is no longer active and has not been reset. See AlarmVteLow description above.
Type: BOOL
Level: HIGH
Label: LOW Vte
AVEA GUI/Membrane: LOW Vte

10.7.1.133 ID: AlarmHistVtHigh

Description: Indication that alarm asserted in the past, is no longer active and has not been reset. See AlarmVtHigh description above.
Type: BOOL
Level: LOW
Label: HIGH Vte
AVEA GUI/Membrane: HIGH Vte

10.7.2 VELA Ventilator – Alarm Class

10.7.2.1 ID: AlarmActive

Description: Active/Inactive state of alarms in general. Active if any alarm is asserted.
Type: BOOL
VELA GUI/Membrane:

10.7.2.2 ID: AlarmActivePriority

Description: Highest priority across all active alarm conditions.
Type: ENUM
Enum value = label: 1=HIGH; 2=MED; 3=LOW; 4=ALERT
Label:
VELA GUI/Membrane:

10.7.2.3 ID: AlarmApnea

Description: Ventilator does not detect a breath initiation within the Apnea Interval time of the previous breath initiation.
Type: BOOL

	Level:	HIGH
	Label:	APNEA INTERVAL
	VELA GUI/Membrane:	APNEA INTERVAL
10.7.2.4	**ID:**	**AlarmCO2CheckAirwayAdapter**
	Description:	CO2 device reported a CO2 Airway Adapter needs to be checked.
	Type:	BOOL
	Level:	MED
	Label:	CO2 Check Adapter
	VELA GUI/Membrane:	CO2 Check Adapter
10.7.2.5	**ID:**	**AlarmCheckEvents**
	Description:	Indicates that an unacceptable number of anomalous software detected events have occurred.
	Type:	BOOL
	Level:	MED
	Label:	CHECK EVENTS
	VELA GUI/Membrane:	CHECK EVENTS
10.7.2.6	**ID:**	**AlarmCircDisc**
	Description:	Indicates that the patient circuit is disconnected from the ventilator or patient.
	Type:	BOOL
	Level:	HIGH
	Label:	CIRCUIT FAULT
	VELA GUI/Membrane:	CIRCUIT FAULT
10.7.2.7	**ID:**	**AlarmClockBattLow**
	Description:	The battery for the real-time clock is low and should be replaced.
	Type:	BOOL
	Level:	MED
	Label:	LOW CLOCK BATTERY
	VELA GUI/Membrane:	LOW CLOCK BATTERY
10.7.2.8	**ID:**	**AlarmCO2CommunicationError**
	Description:	CO2 device reported a communication error.
	Type:	BOOL
	Level:	MED
	Label:	CO2 Comms Error
	VELA GUI/Membrane:	CO2 Comms Error
10.7.2.9	**ID:**	**AlarmCO2OutOfRange**
	Description:	CO2 device reported a CO2 range error condition.
	Type:	BOOL

Level:	MED
Label:	CO2 Out Of Range
VELA GUI/Membrane:	CO2 Out Of Range

10.7.2.10 ID: AlarmCO2SensorFault

Description:	CO2 device reported a fault condition with CO2 sensor.
Type:	BOOL
Level:	MED
Label:	CO2 Sensor Fault
VELA GUI/Membrane:	CO2 Sensor Fault

10.7.2.11 ID: AlarmCO2SensorOverTemp

Description:	CO2 device reported a fault condition due to temperature.
Type:	BOOL
Level:	MED
Label:	CO2 Sensor Temp
VELA GUI/Membrane:	CO2 Sensor Temp

10.7.2.12 ID: AlarmCO2ZeroRequired

Description:	CO2 device reported sensor requires to be initialized to zero.
Type:	BOOL
Level:	MED
Label:	CO2 Zero Reqd
VELA GUI/Membrane:	CO2 Zero Reqd

10.7.2.13 ID: AlarmDefaults

Description:	A condition has occurred which has caused the ventilator to use default patient settings.
Type:	BOOL
Level:	MED
Label:	DEFAULTS
VELA GUI/Membrane:	DEFAULTS

10.7.2.14 ID: AlarmDirtyFilter

Description:	The inlet air filter may need to be cleaned.
Type:	BOOL
Level:	ALERT
Label:	CHECK FILTER
VELA GUI/Membrane:	CHECK FILTER

10.7.2.15 ID: AlarmEEPROMFault

Description:	The EEPROM can no longer be written.
Type:	BOOL

	Level:	ALERT
	Label:	EEPROM FAULT
	VELA GUI/Membrane:	EEPROM FAULT

10.7.2.16 ID: AlarmEndTidalCO2High

Description:	Exceeded EtCO2 High Limit
Type:	BOOL
Level:	LOW
Label:	High EtCO2
VELA GUI/Membrane:	High EtCO2

10.7.2.17 ID: AlarmEndTidalCO2Invalid

Description:	Invalid EtCO2.
Type:	BOOL
Level:	MED
Label:	Invalid EtCO2
VELA GUI/Membrane:	Invalid EtCO2

10.7.2.18 ID: AlarmEndTidalCO2Low

Description:	Below EtCO2 Low Limit
Type:	BOOL
Level:	LOW
Label:	Low EtCO2
VELA GUI/Membrane:	Low EtCO2

10.7.2.19 ID: AlarmFanFail

Description:	Internal cooling/enclosure ventilation fan has failed.
Type:	BOOL
Level:	MED
Label:	FAN FAILURE
VELA GUI/Membrane:	FAN FAILURE

10.7.2.20 ID: AlarmFiO2Range

Description:	The O_2 reading is outside the range of the delivered setting on the front panel.
Type:	BOOL
Level:	HIGH
Label:	%O2 RANGE ERROR
VELA GUI/Membrane:	%O2 RANGE ERROR

10.7.2.21 ID: AlarmFlowSensorDisc

Description:	Tidal volume accuracy has been degraded to the lowest accuracy supported by the ventilator.
Type:	BOOL
Level:	ALERT
Label:	FLOW SENSOR DISC

VELA GUI/Membrane: FLOW SENSOR DISC

10.7.2.22 ID: AlarmHwFault

Description: A general equipment failure condition has been detected
Type: BOOL
Level: HIGH
Label: H/W FAULT
VELA GUI/Membrane: H/W FAULT

10.7.2.23 ID: AlarmInop

Description: Indicates ventilator is unable to ventilate the patient. Most likely due to detection of an unrecoverable internal problem or failure.
Type: BOOL
Level: HIGH
Label: VENT INOP
VELA GUI/Membrane: VENT INOP

10.7.2.24 ID: AlarmInvalidSN

Description: The ventilator's internal serial number setting is not correct.
Type: BOOL
Level: LOW
Label: INVALID SERIAL NUMBER
VELA GUI/Membrane: INVALID SERIAL NUMBER

10.7.2.25 ID: AlarmLossO2

Description: Ventilator cannot detect a source of oxygen gas supply. Not connected or insufficient pressure.
Type: BOOL
Level: HIGH
Label: O2 Inlet LOW
VELA GUI/Membrane: O2 Inlet LOW

10.7.2.26 ID: AlarmMotorFault

Description: Turbine motor has indicated a failure condition.
Type: BOOL
Level: HIGH
Label: Motor Fault
VELA GUI/Membrane: MOTOR FAULT

10.7.2.27 ID: AlarmNoCalData

Description: The transducer calibration data contained in the EEPROM is invalid.
Type: BOOL
Level: LOW

Label: NO CAL DATA
VELA GUI/Membrane: NO CAL DATA

10.7.2.28 ID: AlarmFiO2Cal

Description: The O_2 reading is outside the range of the delivered setting on the front panel.
Type: BOOL
Level: MED
Label: CHECK O2 CAL
VELA GUI/Membrane: CHECK O2 CAL

10.7.2.29 ID: AlarmO2PressHigh

Description: Indicates that the pressure measured at the regulated oxygen outlet is too high.
Type: BOOL
Level: MED
Label: O2 INLET HIGH
VELA GUI/Membrane: O2 INLET HIGH

10.7.2.30 ID: AlarmFiO2SensorFail

Description: A failure has been detected in the FiO_2 monitor sensor.
Type: BOOL
Level: MED
Label: O2 SENSOR FAILURE
VELA GUI/Membrane: O2 SENSOR FAILURE

10.7.2.31 ID: AlarmPatientDefaults

Description: A condition has occurred which has caused the ventilator to use default patient settings.
Type: BOOL
Level: ALERT
Label: PATIENT DEFAULTS
VELA GUI/Membrane: PATIENT DEFAULTS

10.7.2.32 ID: AlarmPeepHigh

Description: Indicates that the circuit pressure is not returning to the set PEEP level during exhalation.
Type: BOOL
Level: HIGH
Label: HIGH PEEP
VELA GUI/Membrane: HIGH PEEP

10.7.2.33 ID: AlarmPpeakHigh

Description: Airway pressure has exceeded the high peak pressure limit.
Type: BOOL

	Level:	HIGH
	Label:	HIGH PIP
	VELA GUI/Membrane:	HIGH PIP

10.7.2.34 ID: AlarmPpeakHighExt

Description:	High P_{PEAK} or occlusion persistent for greater than 5 seconds.
Type:	BOOL
Level:	HIGH
Label:	HIGH PIP, SUST.
VELA GUI/Membrane:	HIGH PIP, SUST.

10.7.2.35 ID: AlarmPpeakLow

Description:	Airway pressure did not exceed the low peak pressure limit for the previous breath cycle.
Type:	BOOL
Level:	HIGH
Label:	LOW PIP
VELA GUI/Membrane:	LOW PIP

10.7.2.36 ID: AlarmPwrAcLoss

Description:	AC power has been removed from the ventilator (i.e. power cord disconnect or loss of supply power).
Type:	BOOL
Level:	MED
Label:	ON BATTERY POWER
VELA GUI/Membrane:	ON BATTERY POWER

10.7.2.37 ID: AlarmPwrBattLow

Description:	Batteries have been depleted to a level that indicates two minutes or less of safe operation.
Type:	BOOL
Level:	HIGH
Label:	LOW BATTERY
VELA GUI/Membrane:	LOW BATTERY

10.7.2.38 ID: AlarmPwrBattMed

Description:	The power available in the main battery has dropped below the medium power threshold.
Type:	BOOL
Level:	MED
Label:	MED BATTERY
VELA GUI/Membrane:	MED BATTERY

10.7.2.39 ID: AlarmRateHigh

Description:	Respiratory Rate exceeded the high inspirations per minute limit.
Type:	BOOL
Level:	MED
Label:	HIGH RATE
VELA GUI/Membrane:	HIGH RATE

10.7.2.40 ID: AlarmTransducerFault

Description:	Invalid range detected during the zero-pressure test readings.
Type:	BOOL
Level:	MED
Label:	XDCR FAULT
VELA GUI/Membrane:	XDCR FAULT

10.7.2.41 ID: AlarmVeLow

Description:	Minute Volume dropped below the low minute volume limit.
Type:	BOOL
Level:	HIGH
Label:	LOW Ve
VELA GUI/Membrane:	LOW Ve

10.7.2.42 ID: AlarmHistApnea

Description:	Indication that alarm asserted in the past, is no longer active and has not been reset. See AlarmApnea description above.
Type:	BOOL
Level:	HIGH
Label:	APNEA INTERVAL
VELA GUI/Membrane:	APNEA INTERVAL

10.7.2.43 ID: AlarmHistCheckEvents

Description:	Indication that alarm asserted in the past, is no longer active and has not been reset. See AlarmCheckEvents description above.
Type:	BOOL
Level:	MED
Label:	CHECK EVENTS
VELA GUI/Membrane:	CHECK EVENTS

10.7.2.44 ID: AlarmHistCircDisc

Description:	Indication that alarm asserted in the past, is no longer active and has not been reset. See AlarmCircDisc description above.

Type:	BOOL
Level:	HIGH
Label:	CIRCUIT FAULT
VELA GUI/Membrane:	CIRCUIT FAULT

10.7.2.45 ID: AlarmHistClockBattLow

Description:	Indication that alarm asserted in the past, is no longer active and has not been reset. See AlarmClockBattLow description above.
Type:	BOOL
Level:	MED
Label:	LOW CLOCK BATTERY
VELA GUI/Membrane:	LOW CLOCK BATTERY

10.7.2.46 ID: AlarmHistCO2CheckAirwayAdapter

Description:	CO2 device reported a CO2 Airway Adapter needs to be checked (historical / not cleared).
Type:	BOOL
Level:	MED
Label:	CO2 Check Adapter
VELA GUI/Membrane:	CO2 Check Adapter

10.7.2.47 ID: AlarmHistCO2CommunicationError

Description:	CO2 device reported a communication error (historical / not cleared).
Type:	BOOL
Level:	MED
Label:	CO2 Comms Error
VELA GUI/Membrane:	CO2 Comms Error

10.7.2.48 ID: AlarmHistCO2OutOfRange

Description:	CO2 device reported a CO2 range error condition (historical / not cleared).
Type:	BOOL
Level:	MED
Label:	CO2 Out Of Range
VELA GUI/Membrane:	CO2 Out Of Range

10.7.2.49 ID: AlarmHistCO2SensorFault

Description:	CO2 device reported a fault condition with CO2 sensor (historical / not cleared).
Type:	BOOL
Level:	MED
Label:	CO2 Sensor Fault
VELA GUI/Membrane:	CO2 Sensor Fault

10.7.2.50 ID: AlarmHistCO2SensorOverTemp

Description:	CO2 device reported a fault condition due to temperature (historical / not cleared).
Type:	BOOL
Level:	MED
Label:	CO2 Sensor Temp
VELA GUI/Membrane:	CO2 Sensor Temp

10.7.2.51 ID: AlarmHistCO2ZeroRequired

Description:	CO2 device reported sensor requires to be initialized to zero (historical / not cleared).
Type:	BOOL
Level:	MED
Label:	CO2 Zero Reqd
VELA GUI/Membrane:	CO2 Zero Reqd

10.7.2.52 ID: AlarmHistDefaults

Description:	Indication that alarm asserted in the past, is no longer active and has not been reset. See AlarmDefaults description above.
Type:	BOOL
Level:	MED
Label:	DEFAULTS
VELA GUI/Membrane:	DEFAULTS

10.7.2.53 ID: AlarmHistDirtyFilter

Description:	Indication that alarm asserted in the past, is no longer active and has not been reset. See AlarmDirtyFilter description above.
Type:	BOOL
Level:	ALERT
Label:	CHECK FILTER
VELA GUI/Membrane:	CHECK FILTER

10.7.2.54 ID: AlarmHistEEPROMFault

Description:	Indication that alarm asserted in the past, is no longer active and has not been reset. See AlarmEEPROMFault description above.
Type:	BOOL
Level:	ALERT
Label:	EEPROM FAULT
VELA GUI/Membrane:	EEPROM FAULT

10.7.2.55 ID: AlarmHistEndTidalCO2High

Description:	Exceeded EtCO2 High Limit (historical / not cleared).
Type:	BOOL

Level:	LOW
Label:	High EtCO2
VELA GUI/Membrane:	High EtCO2

10.7.2.56 ID: AlarmHistEndTidalCO2Invalid

Description:	Invalid EtCO2 (historical / not cleared).
Type:	BOOL
Level:	MED
Label:	Invalid EtCO2
VELA GUI/Membrane:	Invalid EtCO2

10.7.2.57 ID: AlarmHistEndTidalCO2Low

Description:	Below EtCO2 Low Limit (historical / not cleared).
Type:	BOOL
Level:	LOW
Label:	Low EtCO2
VELA GUI/Membrane:	Low EtCO2

10.7.2.58 ID: AlarmHistFanFail

Description:	Indication that alarm asserted in the past, is no longer active and has not been reset. See AlarmFanFail description above.
Type:	BOOL
Level:	MED
Label:	FAN FAILURE
VELA GUI/Membrane:	FAN FAILURE

10.7.2.59 ID: AlarmHistFiO2Range

Description:	Indication that alarm asserted in the past, is no longer active and has not been reset. See AlarmFiO2Range description above.
Type:	BOOL
Level:	HIGH
Label:	%O2 RANGE ERROR
VELA GUI/Membrane:	%O2 RANGE ERROR

10.7.2.60 ID: AlarmHistFlowSensorDisc

Description:	Indication that alarm asserted in the past, is no longer active and has not been reset. See AlarmFlowSensorDisc description above.
Type:	BOOL
Level:	ALERT
Label:	FLOW SENSOR DISC
VELA GUI/Membrane:	FLOW SENSOR DISC

10.7.2.61 ID: AlarmHistHwFault

Description:	Indication that alarm asserted in the past, is no longer active and has not been reset. See AlarmHwFault description above.
Type:	BOOL
Level:	HIGH
Label:	H/W FAULT
VELA GUI/Membrane:	H/W FAULT

10.7.2.62 ID: AlarmHistInop

Description:	Indication that alarm asserted in the past, is no longer active and has not been reset. See AlarmInop description above.
Type:	BOOL
Level:	HIGH
Label:	VENT INOP
VELA GUI/Membrane:	VENT INOP

10.7.2.63 ID: AlarmHistInvalidSN

Description:	Indication that alarm asserted in the past, is no longer active and has not been reset. See AlarmInvalidSN description above.
Type:	BOOL
Level:	LOW
Label:	INVALID SERIAL NUMBER
VELA GUI/Membrane:	INVALID SERIAL NUMBER

10.7.2.64 ID: AlarmHistLossO2

Description:	Indication that alarm asserted in the past, is no longer active and has not been reset. See AlarmLossO2 description above.
Type:	BOOL
Level:	HIGH
Label:	O2 Inlet LOW
VELA GUI/Membrane:	O2 Inlet LOW

10.7.2.65 ID: AlarmHistMotorFault

Description:	Indication that alarm asserted in the past, is no longer active and has not been reset. See AlarmMotorFault description above.
Type:	BOOL
Level:	HIGH
Label:	Motor Fault
VELA GUI/Membrane:	MOTOR FAULT

10.7.2.66 ID: AlarmHistNoCalData

Description:	Indication that alarm asserted in the past, is no longer active and has not been reset. See AlarmNoCalData description above.
Type:	BOOL
Level:	LOW
Label:	NO CAL DATA
VELA GUI/Membrane:	NO CAL DATA

10.7.2.67 ID: AlarmHistFiO2Cal

Description:	Indication that alarm asserted in the past, is no longer active and has not been reset. See AlarmFiO2Cal description above.
Type:	BOOL
Level:	MED
Label:	CHECK O2 CAL
VELA GUI/Membrane:	CHECK O2 CAL

10.7.2.68 ID: AlarmHistO2PressHigh

Description:	Indication that alarm asserted in the past, is no longer active and has not been reset. See AlarmO2PressHigh description above.
Type:	BOOL
Level:	MED
Label:	O2 INLET HIGH
VELA GUI/Membrane:	O2 INLET HIGH

10.7.2.69 ID: AlarmHistFiO2SensorFail

Description:	Indication that alarm asserted in the past, is no longer active and has not been reset. See AlarmFiO2SensorFail description above.
Type:	BOOL
Level:	MED
Label:	O2 SENSOR FAILURE
VELA GUI/Membrane:	O2 SENSOR FAILURE

10.7.2.70 ID: AlarmHistPatientDefaults

Description:	Indication that alarm asserted in the past, is no longer active and has not been reset. See AlarmPatientDefaults description above.
Type:	BOOL
Level:	ALERT
Label:	PATIENT DEFAULTS
VELA GUI/Membrane:	PATIENT DEFAULTS

10.7.2.71 ID: AlarmHistPeepHigh

Description:	Indication that alarm asserted in the past, is no longer active and has not been reset. See AlarmPeepHigh description above.
Type:	BOOL
Level:	HIGH
Label:	HIGH PEEP
VELA GUI/Membrane:	HIGH PEEP

10.7.2.72 ID: AlarmHistPpeakHigh

Description:	Indication that alarm asserted in the past, is no longer active and has not been reset. See AlarmPpeakHigh description above.
Type:	BOOL
Level:	HIGH
Label:	HIGH PIP
VELA GUI/Membrane:	HIGH PIP

10.7.2.73 ID: AlarmHistPpeakHighExt

Description:	Indication that alarm asserted in the past, is no longer active and has not been reset. See AlarmPpeakHighExt description above.
Type:	BOOL
Level:	HIGH
Label:	HIGH PIP, SUST.
VELA GUI/Membrane:	HIGH PIP, SUST.

10.7.2.74 ID: AlarmHistPpeakLow

Description:	Indication that alarm asserted in the past, is no longer active and has not been reset. See AlarmPpeakLow description above.
Type:	BOOL
Level:	HIGH
Label:	LOW PIP
VELA GUI/Membrane:	LOW PIP

10.7.2.75 ID: AlarmHistPwrAcLoss

Description:	Indication that alarm asserted in the past, is no longer active and has not been reset. See AlarmPwrAcLoss description above.
Type:	BOOL
Level:	MED
Label:	ON BATTERY POWER
VELA GUI/Membrane:	ON BATTERY POWER

10.7.2.76 ID: AlarmHistPwrBattLow

Description:	Indication that alarm asserted in the past, is no longer active and has not been reset. See AlarmPwrBattLow description above.
Type:	BOOL
Level:	HIGH
Label:	LOW BATTERY
VELA GUI/Membrane:	LOW BATTERY

10.7.2.77 ID: AlarmHistPwrBattMed

Description:	Indication that alarm asserted in the past, is no longer active and has not been reset. See AlarmPwrBattMed description above.
Type:	BOOL
Level:	MED
Label:	MED BATTERY
VELA GUI/Membrane:	MED BATTERY

10.7.2.78 ID: AlarmHistRateHigh

Description:	Indication that alarm asserted in the past, is no longer active and has not been reset. See AlarmRateHigh description above.
Type:	BOOL
Level:	MED
Label:	HIGH RATE
VELA GUI/Membrane:	HIGH RATE

10.7.2.79 ID: AlarmHistTransducerFault

Description:	Indication that alarm asserted in the past, is no longer active and has not been reset. See AlarmTransducerFault description above.
Type:	BOOL
Level:	MED
Label:	XDCR FAULT
VELA GUI/Membrane:	XDCR FAULT

10.7.2.80 ID: AlarmHistVeLow

Description:	Indication that alarm asserted in the past, is no longer active and has not been reset. See AlarmVeLow description above.
Type:	BOOL
Level:	HIGH
Label:	LOW Ve
VELA GUI/Membrane:	LOW Ve

10.7.2.81 ID: AlarmSilence

Description:	Active/Inactive state of the capability to locally silence the audible ventilator alarms.
Type:	BOOL
Label:	ALARM SILENCE
VELA GUI/Membrane:	ALARM SILENCE

10.8 Scalar Class

10.8.1 AVEA Ventilator – Scalar Class

10.8.1.1 ID: WaveAnlg0

Description:	Echo of Analog Input Channel 0
Type:	WORD
Scale:	3
Range:	0 – 12000
Epoch:	500
Size:	50
Label:	Analog 0
AVEA GUI/Membrane:	Analog 0

10.8.1.2 ID: WaveAnlg1

Description:	Echo of Analog Input Channel 1
Type:	WORD
Scale:	3
Range:	0 – 12000
Epoch:	500
Size:	50
Label:	Analog 1
AVEA GUI/Membrane:	Analog 1

10.8.1.3 ID: WaveFexp

Description:	Expiratory Flow
Type:	WORD
Scale:	2
Range:	-30000 - 30000
Epoch:	500
Size:	50
Units:	L/min
Label:	Fexp
AVEA GUI/Membrane:	Fexp

10.8.1.4 ID: WaveFinsp

Description:	Inspiratory Flow
Type:	WORD

Scale:	2
Range:	-30000 - 30000
Epoch:	500
Size:	50
Units:	L/min
Label:	Finsp
AVEA GUI/Membrane:	Finsp

10.8.1.5 ID: WaveFlow

Description:	Airway Net Flow
Type:	WORD
Scale:	2
Range:	-30000 - 30000
Epoch:	500
Size:	50
Units:	L/min
Label:	Flow
AVEA GUI/Membrane:	Flow

10.8.1.6 ID: WaveMetric

Description:	Metrics with respect to waveforms - refer to section 10.2.5 for bit field definitions
Type:	UWORD
Epoch:	500
Size:	50
Units:	
Label:	
AVEA GUI/Membrane:	

10.8.1.7 ID: WavePaw

Description:	Airway Pressure
Type:	WORD
Scale:	2
Range:	-6000 - 12000
Epoch:	500
Size:	50
Units:	cmH2O
Label:	Paw
AVEA GUI/Membrane:	Paw

10.8.1.8 ID: WavePes

Description:	Esophageal Pressure
Type:	WORD
Scale:	2
Range:	-6000 - 12000
Epoch:	500

Size:	50
Units:	cmH2O
Label:	Pes
AVEA GUI/Membrane:	Pes

10.8.1.9 ID: WavePinsp

Description:	Airway Pressure at Machine Outlet
Type:	WORD
Scale:	2
Range:	-6000 - 12000
Epoch:	500
Size:	50
Units:	cmH2O
Label:	Pinsp
AVEA GUI/Membrane:	Pinsp

10.8.1.10 ID: WavePtp

Description:	Transpulmonary Pressure
Type:	WORD
Scale:	2
Range:	-6000 - 12000
Epoch:	500
Size:	50
Units:	cmH2O
Label:	Ptp
AVEA GUI/Membrane:	Ptp

10.8.1.11 ID: WavePtr

Description:	Tracheal Pressure
Type:	WORD
Scale:	2
Range:	-6000 - 12000
Epoch:	500
Size:	50
Units:	cmH2O
Label:	Ptr
AVEA GUI/Membrane:	Ptr

10.8.1.12 ID: WaveSpO2Pleth

Description:	Raw IR signal from the MS-11 PCB. The range value is inverted and scaled from the raw data sent by the oximeter (oximeter +127 = 0%, oximeter – 128 = 100%).
Type:	WORD
Range:	0 – 100
Resolution:	1
Epoch:	100

Size:	10
Units:	%
Label:	Pleth
AVEA GUI/Membrane:	Pleth

10.8.1.13 ID: WaveVt

Description:	Airway Tidal Volume
Type:	WORD
Scale:	1
Range:	-10000 - 30000
Epoch:	500
Size:	50
Units:	mL
Label:	Vt
AVEA GUI/Membrane:	Vt

10.8.2 VELA Ventilator – Scalar Class

10.8.2.1 ID: WaveFlow

Description:	Airway Net Flow
Type:	WORD
Scale:	2
Range:	-30000 - 30000
Epoch:	500
Size:	50
Units:	L/min
Label:	V (lpm)
VELA GUI/Membrane:	Flow

10.8.2.2 ID: WaveMetric

Description:	Metrics with respect to waveforms - refer to section 10.2. for bit field definitions.
Type:	UWORD
Range:	0 - 127
Epoch:	500
Size:	50
Units:	
Label:	
VELA GUI/Membrane:	

10.8.2.3 ID: WavePaw

Description:	Airway Pressure
Type:	WORD
Scale:	2
Range:	-6000 - 12000

Epoch:	500
Size:	50
Units:	cmH2O
Label:	Paw
VELA GUI/Membrane:	Paw

10.8.2.4 ID: WaveVt

Description:	Airway Tidal Volume
Type:	WORD
Scale:	1
Range:	-7000 - 21000
Epoch:	500
Size:	50
Units:	ml
Label:	Vt(ml)
VELA GUI/Membrane:	Vt(ml)

11 Foreign Language Support

The VOX Protocol shall support all languages selectable from the graphical user interface of both the AVEA and VELA ventilators.

12 VOXP Profile, Config, Data, and Link Messages

Below are AVEA VOXP messages examples, which have been provided for reference.

12.1 Profile Message – AVEA Adult

```
<profile model="Avea Comp" profileVersion="2.0" voxpVersion="3.0" textEncoding="UTF-16"
msgID="0003">
    <unit class="setting" ID="SetFiO2" type="WORD" resolution="0001" range="0015:0064"
        units="0025" label="00460069004F0032"/>
    <unit class="setting" ID="SetFlowBias" type="WORD" scale="E+1" resolution="0001"
        range="0004:0032" units="004C002F006D0069006E"
        label="00420069006100730020004600 6C006F0077"/>
    <unit class="setting" ID="SetFlowCycle" type="WORD" resolution="0005"
        range="0000:002D" units="0025"
        label="0046006C006F00770020004300790063006C0065"/>
    <unit class="setting" ID="SetFlowCyclePsv" type="WORD" resolution="0005"
        range="0005:002D" units="0025"
        label="00500053005600200043007900 63006C0065"/>
    <unit class="setting" ID="SetFlowDemand" type="WORD" resolution="0001"
        range="0000:0001" units="0030003D004F00660066002000310 03D004F006E"
        label="00440065006D0061006E00640020004600 6C006F0077"/>
    <unit class="setting" ID="SetFlowInsp" type="WORD" scale="E+1" resolution="0001"
        range="0003:0096" units="004C002F006D0069006E"
        label="005000650061006B00200046006C006F0077"/>
```

```
<unit class="setting" ID="SetPauseInsp" type="WORD" scale="E+2" resolution="0001"
    range="0000:012C" units="007300650063"
    label="0049006E00730070002000500061007500730065"/>
<unit class="setting" ID="SetPresHigh" type="WORD" resolution="0001"
    range="0000:005A" units="0063006D00480032004F"
    label="005000720065007300200048006900670068"/>
<unit class="setting" ID="SetPresInsp" type="WORD" resolution="0001"
    range="0000:005A" units="0063006D00480032004F"
    label="0049006E00730070002000500072006500730073"/>
<unit class="setting" ID="SetPresLow" type="WORD" resolution="0001"
    range="0000:002D" units="0063006D00480032004F"
    label="005000720065007300200004C006F0077"/>
<unit class="setting" ID="SetPresNasalCPAP" type="WORD" resolution="0001"
    range="0002:000A" units="0063006D00480032004F"
    label="006E0043005000410050"/>
<unit class="setting" ID="SetPresPeep" type="WORD" resolution="0001"
    range="0000:0032" units="0063006D00480032004F" label="0050004500450050"/>
<unit class="setting" ID="SetPresPsv" type="WORD" resolution="0001"
    range="0000:005A" units="0063006D00480032004F" label="005000530056"/>
<unit class="setting" ID="SetRate" type="WORD" resolution="0001" range="0001:0078"
    units="00620070006D" label="0052006100740065"/>
<unit class="setting" ID="SetRiseInsp" type="WORD" resolution="0001"
    range="0001:0009" units="" label="0049006E00730070002000520069007300650065"/>
<unit class="setting" ID="SetRisePsv" type="WORD" resolution="0001" range="0001:0009"
    units="" label="005000530056002000520069007300650065"/>
<unit class="setting" ID="SetRiseVsync" type="WORD" resolution="0001"
    range="0001:0009" units=""
    label="005600730079006E00630020005200690073006500650065"/>
<unit class="setting" ID="SetTimeHigh" type="WORD" scale="E+1" resolution="0001"
    range="0002:012C" units="007300650063"
    label="00540069006D00650020004800690067006800"/>
<unit class="setting" ID="SetTimeHighPsv" type="WORD" resolution="0001"
    range="0000:0001" units="0030003D004F006600660020003100 3D004F006E"
    label="005400200048006900670068002000500053005 6"/>
<unit class="setting" ID="SetTimeHighSync" type="WORD" resolution="0001"
    range="0000:0032" units="0025"
    label="00540020004800690067006800200053007900 6E0063"/>
<unit class="setting" ID="SetTimeInsp" type="WORD" scale="E+2" resolution="0001"
    range="0014:01F4" units="007300650063"
    label="0049006E00730070002000540069006D0065"/>
<unit class="setting" ID="SetTimeLow" type="WORD" scale="E+1" resolution="0001"
    range="0002:012C" units="007300650063"
    label="00540069006D00650020004C006F0077"/>
<unit class="setting" ID="SetTimeLowSync" type="WORD" resolution="0001"
    range="0000:0032" units="0025"
    label="00540020004C006F007700200053007900 6E0063"/>
```

```
<unit class="setting" ID="SetTmaxPsv" type="WORD" scale="E+2" resolution="0001"
    range="0014:01F4" units="007300650063"
    label="005000530056002000540060D00610078"/>
<unit class="setting" ID="SetTrigFlow" type="WORD" scale="E+1" resolution="0001"
    range="0001:00C8" units="004C002F006D0069006E"
    label="0046006C006F00770020005400720069006 7"/>
<unit class="setting" ID="SetTrigPres" type="WORD" scale="E+1" resolution="0001"
    range="0001:00C8" units="0063006D00480032004F"
    label="005000720065007300200054007200690067"/>
<unit class="setting" ID="SetVol" type="WORD" scale="E+4" resolution="0001"
    range="000A:00FA" units="004C" label="0056006F006C0075006D0065"/>
<unit class="setting" ID="SetVolAssured" type="WORD" scale="E+4" resolution="0001"
    range="0000:00FA" units="004C" label="004D006100630068002000560 06F006C"/>
<unit class="setting" ID="SetVolLimit" type="WORD" scale="E+4" resolution="0001"
    range="000A:00FA" units="004C"
    label="0056006F006C0020004C0069006D00690074"/>
<unit class="setting" ID="SetVolSigh" type="WORD" resolution="0001" range="0000:0001"
    units="0030003D004F006600660020003 1003D004F006E"
    label="0053006900670068"/>
<unit class="setting" ID="SetVolWave" type="ENUM"
    label="00570061007600650066006F0072006D">
        <enum value="0000" label="005300510055004100520045"/>
        <enum value="0001"
            label="00440045004300450 04C00450052004100540049004E0047"/>
</unit>
<unit class="setting" ID="SetVsync" type="WORD" resolution="0001" range="0000:0001"
    units="0030003D004F006600660020003 1003D004F006E"
    label="005600730079006E0063"/>
<unit class="setting" ID="LimitApnea" type="WORD" resolution="0001" range="0006:003C"
    units="007300650063"
    label="00410070006E00650061002000490 06E00740065007200760061006C"/>
<unit class="setting" ID="LimitPeepLow" type="WORD" resolution="0001"
    range="0000:003C" units="0063006D00480032004F"
    label="004C006F00770020005000450045 0050"/>
<unit class="setting" ID="LimitPpeakHigh" type="WORD" resolution="0001"
    range="000A:0069" units="0063006D00480032004F"
    label="00480069006700680020005000700650061006B"/>
<unit class="setting" ID="LimitPpeakLow" type="WORD" resolution="0001"
    range="0001:0063" units="0063006D00480032004F"
    label="004C006F00770020005000700650061006B"/>
<unit class="setting" ID="LimitRateHigh" type="WORD" resolution="0001"
    range="0001:00C8" units="00620070006D"
    label="00480069006700680020005200610074 0065"/>
<unit class="setting" ID="LimitVeHigh" type="WORD" scale="E+2" resolution="0001"
    range="0000:004B" units="004C" label="00480069006700680020005600 65"/>
```

```
<unit class="setting" ID="LimitVeLow" type="WORD" scale="E+2" resolution="0001"
    range="0000:0032" units="004C" label="004C006F0077002000560065"/>
<unit class="setting" ID="LimitVteHigh" type="WORD" scale="E+4" resolution="0001"
    range="000A:012C" units="004C" label="00480069006700680020005600740065"/>
<unit class="setting" ID="LimitVteLow" type="WORD" scale="E+4" resolution="0001"
    range="0000:012C" units="004C" label="004C006F00770020005600740065"/>
<unit class="setting" ID="SetAAC" type="BOOL" resolution="1" range="0:1" units=""
    label="004100410043000A004F006E"/>
<unit class="setting" ID="SetCircComp" type="WORD" scale="E+1" resolution="0001"
    range="0000:004B" units="006D004C002F0063006D00480032004F"
    label="00430069007200630020004300 6F006D0070"/>
<unit class="setting" ID="SetEttDia" type="WORD" scale="E+1" resolution="0001"
    range="0014:0064" units="006D006D"
    label="004400690061006D006500740065 0072"/>
<unit class="setting" ID="SetEttLen" type="WORD" scale="E+1" resolution="0001"
    range="0014:012C" units="0063006D" label="004C0065006E006700740068"/>
<unit class="setting" ID="SetHumidifier" type="BOOL" resolution="1" range="0:1" units=""
    label="00480055004D00490044004900460049004 50052"/>
<unit class="setting" ID="SetLanguage" type="ENUM"
    label="004C0061006E006700750061006700 65003A">
        <enum value="0000" label="0045006E0067006C006900730068"/>
        <enum value="0001" label="004600720061006E00E7006100690073"/>
        <enum value="0002" label="00440065007500740073006300 68"/>
        <enum value="0003" label="004900740061006C00690061006E006F"/>
        <enum value="0004" label="0050006F00720074007500670075 00EA0073"/>
        <enum value="0005" label="004500730070006100F1006F006C"/>
        <enum value="0006" label="6C498BED"/>
        <enum value="0007" label="004E006500640065007200 6C0061006E00640073"/>
</unit>
<unit class="setting" ID="SetLeakComp" type="BOOL" resolution="1" range="0:1" units=""
    label="004C00650061006B00200043006F006D0070000A004F006E"/>
<unit class="setting" ID="SetMode" type="ENUM"
    label="004D004F004400450020005300450 04C004500430054">
        <enum value="0001"
            label="00410050005200560020002F00200042004900500048004100530049004
            3"/>
        <enum value="0002"
            label="00410050005200560020002F00200042004900500048004100530049004
            3"/>
        <enum value="0003" label="00500052005600430020005300 49004D0056"/>
        <enum value="0004" label="00500052005600430020004100 2F0043"/>
        <enum value="0005" label="00430050004100500020002F0020005000530056"/>
        <enum value="0006" label="005400430050004C002000530049004D0056"/>
        <enum value="0007" label="005400430050004C00200041002F0043"/>
        <enum value="0008" label="00430050004100500020002F0020005000530056"/>
```

```
            <enum value="0009"
                label="005000520045005300530055005200450020005300490040D0056"/>
            <enum value="000A"
                label="00500052004500530053005500520045002000410002F0043"/>
            <enum value="000B" label="00430050004100500020002F0020005000530056"/>
            <enum value="000C"
                label="0056004F004C0055004D004500200053004900 4D0056"/>
            <enum value="000D" label="0056004F004C0055004D004500200041002F0043"/>
            <enum value="000E" label="004E006100730061006C00200043005000410050"/>
    </unit>
    <unit class="setting" ID="SetModeIlv" type="ENUM"
        label="0049004C00560020004D006F00640065003A">
            <enum value="0000" label="004F00660066"/>
            <enum value="0001" label="004D006100730074006500 72"/>
            <enum value="0002" label="0053006C006100760065"/>
    </unit>
    <unit class="setting" ID="SetPatSize" type="ENUM"
        label="00500041005400490045004E00540020005300490 05A0045002000530045004
        C004500430054">
            <enum value="0000" label="004E0065006F"/>
            <enum value="0001" label="005000650064"/>
            <enum value="0002" label="004100640075006C0074"/>
    </unit>
    <unit class="setting" ID="SetPatWt" type="WORD" scale="E+2" resolution="0001"
        range="0001:012C" units="006B0067"
        label="00500074002000570065006900 6700680074"/>
    <unit class="setting" ID="SetPresBaro" type="WORD" resolution="0001"
        range="0221:02F8" units="006D006D00480067"
        label="004200610072006F00200050007200650073"/>
    <unit class="setting" ID="SetIncrFiO2" type="WORD" resolution="0001"
        range="0000:004F" units="0025"
        label="0049006E00630072006500610073006500200046006900 4F0032003A"/>
    <unit class="setting" ID="SetSensitivityLowVte" type="WORD" resolution="0001"
        range="0001:0005" units=""
        label="004C006F00770020005600740065002000 41006C00610072006D003A"/>
    <unit class="monitor" ID="MntrAutoPEEP" type="WORD" range="0000:0032"
        units="0063006D00480032004F" label="004100750074006F0050004500450050"/>
    <unit class="monitor" ID="MntrAutoPEEPdelta" type="WORD" range="0000:0032"
        units="0063006D00480032004F"
        label="00640041007500740 06F0050004500450050"/>
    <unit class="monitor" ID="MntrAutoPEEPesoph" type="WORD" range="0000:0032"
        units="0063006D00480032004F"
        label="004100750074006F005000450045005000650073"/>
    <unit class="monitor" ID="MntrC20" type="WORD" scale="E+2" range="0000:01F4"
        units="" label="004300320030002F0043"/>
```

```
<unit class="monitor" ID="MntrCcw" type="WORD" scale="E+2" range="0000:7530"
    units="006D004C002F0063006D00480032004F" label="004300630077"/>
<unit class="monitor" ID="MntrCdyn" type="WORD" scale="E+2" range="0000:7530"
    units="006D004C002F0063006D00480032004F" label="004300640079006E"/>
<unit class="monitor" ID="MntrCdynNorm" type="WORD" scale="E+2" range="0000:01F4"
    units="006D004C002F0063006D00480032004F002F006B0067"
    label="004300640079006E002F006B0067"/>
<unit class="monitor" ID="MntrClung" type="WORD" scale="E+2" range="0000:7530"
    units="006D004C002F0063006D00480032004F" label="0043006C0075006E0067"/>
<unit class="monitor" ID="MntrCstat" type="WORD" scale="E+2" range="0000:7530"
    units="006D004C002F0063006D00480032004F" label="00430073007400610074"/>
<unit class="monitor" ID="MntrCstatNorm" type="WORD" scale="E+2" range="0000:01F4"
    units="006D004C002F0063006D00480032004F002F006B0067"
    label="004300730074006100740074002F006B0067"/>
<unit class="monitor" ID="MntrFiO2" type="WORD" range="0000:0064" units="0025"
    label="00460069004F0032"/>
<unit class="monitor" ID="MntrIE" type="WORD" scale="E+1" range="FC19:03E7" units=""
    label="0049003A0045"/>
<unit class="monitor" ID="MntrLeak" type="WORD" range="0000:0064" units="0025"
    label="004C00650061006B"/>
<unit class="monitor" ID="MntrMIP" type="WORD" range="FFC4:0078"
    units="0063006D00480032004F" label="004D00490050"/>
<unit class="monitor" ID="MntrNcpapMeanFlow" type="WORD" scale="E+1"
    range="0000:0BB8" units="004C002F006D0069006E"
    label="00430050004100500020004600 6C006F0077"/>
<unit class="monitor" ID="MntrNcpapPres" type="WORD" range="0000:0078"
    units="0063006D00480032004F" label="006E0043005000410050"/>
<unit class="monitor" ID="MntrP100" type="WORD" range="FFC4:0078"
    units="0063006D00480032004F" label="0050003100300030"/>
<unit class="monitor" ID="MntrPair" type="WORD" range="0000:0050"
    units="0070007300690067" label="00410069007200200049006E006C00650074"/>
<unit class="monitor" ID="MntrPawDelta" type="WORD" range="0000:0078"
    units="0063006D00480032004F" label="0064005000610077"/>
<unit class="monitor" ID="MntrPeep" type="WORD" range="0000:0032"
    units="0063006D00480032004F" label="0050004500450050"/>
<unit class="monitor" ID="MntrPefr" type="WORD" scale="E+1" range="0000:0BB8"
    units="004C002F006D0069006E" label="0050004500460052"/>
<unit class="monitor" ID="MntrPesDelta" type="WORD" range="0000:0078"
    units="0063006D00480032004F" label="0064005000650073"/>
<unit class="monitor" ID="MntrPifr" type="WORD" scale="E+1" range="0000:0BB8"
    units="004C002F006D0069006E" label="0050004900460052"/>
<unit class="monitor" ID="MntrPmean" type="WORD" range="0000:0078"
    units="0063006D00480032004F" label="0050006D00650061006E"/>
<unit class="monitor" ID="MntrPO2" type="WORD" range="0000:0050"
    units="0070007300690067" label="004F003200200049006E006C00650074"/>
```

```
<unit class="monitor" ID="MntrPpeak" type="WORD" range="0000:0078"
    units="0063006D00480032004F" label="005000700650061006B"/>
<unit class="monitor" ID="MntrPplat" type="WORD" range="0000:0078"
    units="0063006D00480032004F" label="00500070006C00610074"/>
<unit class="monitor" ID="MntrPplatPtp" type="WORD" range="FFC4:0078"
    units="0063006D00480032004F" label="005000740070002000500006C00610074"/>
<unit class="monitor" ID="MntrPtpPEEP" type="WORD" range="FFC4:0078"
    units="0063006D00480032004F" label="00500074007000200050004500450050"/>
<unit class="monitor" ID="MntrRate" type="WORD" range="0000:00C8"
    units="00620070006D" label="0052006100740065"/>
<unit class="monitor" ID="MntrRateMand" type="WORD" range="0000:00C8"
    units="00620070006D" label="004D0061006E00640020005200610074006 5"/>
<unit class="monitor" ID="MntrRateSpon" type="WORD" range="0000:00C8"
    units="00620070006D" label="00530070006F006E00200052006100740065"/>
<unit class="monitor" ID="MntrRimp" type="WORD" scale="E+1" range="0000:03E8"
    units="0063006D00480032004F002F004C002F005300650063"
    label="00520069006D0070"/>
<unit class="monitor" ID="MntrRlung" type="WORD" scale="E+1" range="0000:03E8"
    units="0063006D00480032004F002F004C002F005300650063"
    label="0052006C0075006E0067"/>
<unit class="monitor" ID="MntrRpeak" type="WORD" scale="E+1" range="0000:03E8"
    units="0063006D00480032004F002F004C002F005300650063"
    label="005200700650061006B"/>
<unit class="monitor" ID="MntrRrs" type="WORD" scale="E+1" range="0000:03E8"
    units="0063006D00480032004F002F004C002F005300650063"
    label="005200720073"/>
<unit class="monitor" ID="MntrRSBIndex" type="WORD" range="0000:01F4"
    units="00620032002F006D0069006E002F004C" label="0066002F00560074"/>
<unit class="monitor" ID="MntrTe" type="WORD" scale="E+2" range="0000:270F"
    units="007300650063" label="00540065"/>
<unit class="monitor" ID="MntrTi" type="WORD" scale="E+2" range="0000:270F"
    units="007300650063" label="00540069"/>
<unit class="monitor" ID="MntrVdel" type="INT" scale="E+8" range="00000000:3B8B87C0"
    units="004C" label="005600640065006C"/>
<unit class="monitor" ID="MntrVeSpon" type="WORD" scale="E+2" range="0000:2706"
    units="004C" label="00530070006F006E002000560065"/>
<unit class="monitor" ID="MntrVeSponNorm" type="WORD" range="0000:03E7"
    units="006D004C002F006B0067"
    label="00530070006F006E002000560065002F006B0067"/>
<unit class="monitor" ID="MntrVeTotal" type="WORD" scale="E+2" range="0000:2706"
    units="004C" label="0054006F00740061006C002000560065"/>
<unit class="monitor" ID="MntrVeTotalNorm" type="WORD" range="0000:03E7"
    units="006D004C002F006B0067"
    label="0054006F00740061006C002000560065002F006B0067"/>
<unit class="monitor" ID="MntrVte" type="INT" scale="E+8" range="00000000:3B8B87C0"
    units="004C" label="005600740065"/>
```

```
<unit class="monitor" ID="MntrVteMand" type="INT" scale="E+8"
    range="00000000:3B8B87C0" units="004C"
    label="004D0061006E00640020005600740065"/>
<unit class="monitor" ID="MntrVteMandNorm" type="WORD" scale="E+2"
    range="0000:0BB8" units="006D004C002F006B0067"
    label="004D0061006E00640020005600740065002F006B0067"/>
<unit class="monitor" ID="MntrVteNorm" type="WORD" scale="E+2" range="0000:0BB8"
    units="006D004C002F006B0067" label="005600740065002F006B0067"/>
<unit class="monitor" ID="MntrVteSpon" type="INT" scale="E+8"
    range="00000000:3B8B87C0" units="004C"
    label="00530070006F006E0020005600740065"/>
<unit class="monitor" ID="MntrVteSponNorm" type="WORD" scale="E+2"
    range="0000:0BB8" units="006D004C002F006B0067"
    label="00530070006F006E0020005600740065002F006B0067"/>
<unit class="monitor" ID="MntrVti" type="INT" scale="E+8" range="00000000:3B8B87C0"
    units="004C" label="005600740069"/>
<unit class="monitor" ID="MntrVtiNorm" type="WORD" scale="E+2" range="0000:0BB8"
    units="006D004C002F006B0067" label="005600740069002F006B0067"/>
<unit class="monitor" ID="MntrWobImposed" type="WORD" scale="E+2"
    range="0000:07D0" units="006A006F0075006C00650073002F004C"
    label="0057004F00420069"/>
<unit class="monitor" ID="MntrWobPatient" type="WORD" scale="E+2" range="0000:07D0"
    units="006A006F0075006C00650073002F004C" label="0057004F00420070"/>
<unit class="monitor" ID="MntrWobVent" type="WORD" scale="E+2" range="0000:07D0"
    units="006A006F0075006C00650073002F004C" label="0057004F00420076"/>
<unit class="alarm" ID="AlarmActive" type="BOOL" label=""/>
<unit class="alarm" ID="AlarmActivePriority" type="ENUM" label="">
        <enum value="0001" label="0048004900470048"/>
        <enum value="0002" label="004D00450044"/>
        <enum value="0003" label="004C004F0057"/>
        <enum value="0004" label="0041004C004500520054"/>
</unit>
<unit class="alarm" ID="AlarmApnea" type="BOOL" level="HIGH"
    label="00410050004E00450041002000490004E005400450052005600410040C"/>
<unit class="alarm" ID="AlarmCircDisc" type="BOOL" level="HIGH"
    label="00430049005200430055004900540020004400490053004300 4F004E004E0045
    00430054"/>
<unit class="alarm" ID="AlarmFanFail" type="BOOL" level="LOW"
    label="00460041004E00200046004100490040C005500520045"/>
<unit class="alarm" ID="AlarmFiO2High" type="BOOL" level="HIGH"
    label="00480049004700480020004600690040F0032"/>
<unit class="alarm" ID="AlarmFiO2Low" type="BOOL" level="HIGH"
    label="004C004F0057002000460069004F0032"/>
<unit class="alarm" ID="AlarmIlvSlaveDisc" type="BOOL" level="HIGH"
    label="0049004C00560020004400490053004300 4F004E004E004500430054"/>
```

```
<unit class="alarm" ID="AlarmInop" type="BOOL" level="HIGH"
    label="00560045004E005400200049004E004F0050"/>
<unit class="alarm" ID="AlarmInvalidGasId" type="BOOL" level="MED"
    label="0049004E00560041004C00490044002000470041005300200049004 4"/>
<unit class="alarm" ID="AlarmLimitIE" type="BOOL" level="LOW"
    label="0049003A00450020004C0049004D00490054"/>
<unit class="alarm" ID="AlarmLimitTi" type="BOOL" level="LOW"
    label="004D00410058002000490 04E00530050002000540049004D0045"/>
<unit class="alarm" ID="AlarmLimitVol" type="BOOL" level="LOW"
    label="0056004F004C0055004D00450020004C0049004D00490054"/>
<unit class="alarm" ID="AlarmLossAir" type="BOOL" level="HIGH"
    label="004C004F005300530020004F00460020004100490052"/>
<unit class="alarm" ID="AlarmLossGas" type="BOOL" level="HIGH"
    label="004C004F005300530020004F00460020004700410053"/>
<unit class="alarm" ID="AlarmLossHeliox" type="BOOL" level="HIGH"
    label="004C004F005300530020004F0046002000480045004C0049004F0058"/>
<unit class="alarm" ID="AlarmLossO2" type="BOOL" level="HIGH"
    label="004C004F005300530020004F00460020004F0032"/>
<unit class="alarm" ID="AlarmNcpapHigh" type="BOOL" level="HIGH"
    label="00480049004700480020006E00430050004100500020005 0005200450053"/>
<unit class="alarm" ID="AlarmNcpapHighPresLimit" type="BOOL" level="HIGH"
    label="006E00430050004100500020005000520045005300200 04C0049004D0049005
    4"/>
<unit class="alarm" ID="AlarmNcpapLow" type="BOOL" level="HIGH"
    label="004C004F00570020006E00430050004100500020005 0005200450053"/>
<unit class="alarm" ID="AlarmOcclusion" type="BOOL" level="HIGH"
    label="00430049005200430055004900540020004F00430043004C005500530049004F
    004E"/>
<unit class="alarm" ID="AlarmOpenSV" type="BOOL" level="HIGH"
    label="00530041004600450054005900200056004 1004C00560045"/>
<unit class="alarm" ID="AlarmPeepLow" type="BOOL" level="HIGH"
    label="004C004F005700200050004500450050"/>
<unit class="alarm" ID="AlarmPpeakHigh" type="BOOL" level="HIGH"
    label="00480049004700480020005000700065006 1006B"/>
<unit class="alarm" ID="AlarmPpeakHighExt" type="BOOL" level="HIGH"
    label="00450058005400200048004900470048002000500070006500 61006B"/>
<unit class="alarm" ID="AlarmPpeakLow" type="BOOL" level="HIGH"
    label="004C004F005700200050007000650061006B"/>
<unit class="alarm" ID="AlarmPwrAcLoss" type="BOOL" level="HIGH"
    label="004C004F005300530020004F004600200041002F0043"/>
<unit class="alarm" ID="AlarmPwrBattLow" type="BOOL" level="HIGH"
    label="004C004F005700200042004100540054004500520059"/>
<unit class="alarm" ID="AlarmRateHigh" type="BOOL" level="MED"
    label="00480049004700480020005200410054 0045"/>
<unit class="alarm" ID="AlarmSilence" type="BOOL" label=""/>
```

```
<unit class="alarm" ID="AlarmTest" type="BOOL" level="HIGH"
    label="0041004C00410052004D002000540045005300540"/>
<unit class="alarm" ID="AlarmVeHigh" type="BOOL" level="MED"
    label="00480049004700480020005600650"/>
<unit class="alarm" ID="AlarmVeLow" type="BOOL" level="HIGH"
    label="004C004F0057002000560065"/>
<unit class="alarm" ID="AlarmVteLow" type="BOOL" level="HIGH"
    label="004C004F00570020005600740065"/>
<unit class="alarm" ID="AlarmVtHigh" type="BOOL" level="LOW"
    label="0048004900470048002005600740065"/>
<unit class="alarm" ID="AlarmHistApnea" type="BOOL" level="HIGH"
    label="00410050004E00450041002000490004E00540045005200560041004C"/>
<unit class="alarm" ID="AlarmHistCircDisc" type="BOOL" level="HIGH"
    label="00430049005200430055004900540020004400490053004300 4F004E004E0045
    00430054"/>
<unit class="alarm" ID="AlarmHistFanFail" type="BOOL" level="LOW"
    label="00460041004E00200046004100490 04C005500520045"/>
<unit class="alarm" ID="AlarmHistFiO2High" type="BOOL" level="HIGH"
    label="00480049004700480020004600690 04F0032"/>
<unit class="alarm" ID="AlarmHistFiO2Low" type="BOOL" level="HIGH"
    label="004C004F00570020004600690 04F0032"/>
<unit class="alarm" ID="AlarmHistIlvSlaveDisc" type="BOOL" level="HIGH"
    label="0049004C00560020004400490053004 3004F004E004E004500430054"/>
<unit class="alarm" ID="AlarmHistInop" type="BOOL" level="HIGH"
    label="00560045004E005400200049004E004F0050"/>
<unit class="alarm" ID="AlarmHistInvalidGasId" type="BOOL" level="MED"
    label="0049004E00560041004C00490044002000470041005300 2000490044"/>
<unit class="alarm" ID="AlarmHistLimitIE" type="BOOL" level="LOW"
    label="0049003A00450020004C0049004D00490054"/>
<unit class="alarm" ID="AlarmHistLimitTi" type="BOOL" level="LOW"
    label="004D00410058002000490 04E00530050002000540049004D0045"/>
<unit class="alarm" ID="AlarmHistLimitVol" type="BOOL" level="LOW"
    label="0056004F004C0055004D00450020004C0049004D00490054"/>
<unit class="alarm" ID="AlarmHistLossAir" type="BOOL" level="HIGH"
    label="004C004F005300530020004F00460020004100490052"/>
<unit class="alarm" ID="AlarmHistLossGas" type="BOOL" level="HIGH"
    label="004C004F005300530020004F00460020004700410053"/>
<unit class="alarm" ID="AlarmHistLossHeliox" type="BOOL" level="HIGH"
    label="004C004F005300530020004F00460020004800450 04C0049004F0058"/>
<unit class="alarm" ID="AlarmHistLossO2" type="BOOL" level="HIGH"
    label="004C004F005300530020004F00460020004F0032"/>
<unit class="alarm" ID="AlarmHistNcpapHigh" type="BOOL" level="HIGH"
    label="00480049004700480020006E00430050004100500020005000520045 0053"/>
<unit class="alarm" ID="AlarmHistNcpapHighPresLimit" type="BOOL" level="HIGH"
    label="006E00430050004100500020005000520045 00530020004C0049004D0049005
    4"/>
```

```
<unit class="alarm" ID="AlarmHistNcpapLow" type="BOOL" level="HIGH"
    label="004C004F00570020006E00430050004100500020005005200450053"/>
<unit class="alarm" ID="AlarmHistOcclusion" type="BOOL" level="HIGH"
    label="00430049005200430055004900540020004F00430043004C005500530049004F
    004E"/>
<unit class="alarm" ID="AlarmHistOpenSV" type="BOOL" level="HIGH"
    label="005300410046004500540059002000560041004C00560045"/>
<unit class="alarm" ID="AlarmHistPeepLow" type="BOOL" level="HIGH"
    label="004C004F00570020005000450050050"/>
<unit class="alarm" ID="AlarmHistPpeakHigh" type="BOOL" level="HIGH"
    label="00480049004700480020005000700650061006B"/>
<unit class="alarm" ID="AlarmHistPpeakHighExt" type="BOOL" level="HIGH"
    label="00450058005400200048004900470048002000500070006500610006B"/>
<unit class="alarm" ID="AlarmHistPpeakLow" type="BOOL" level="HIGH"
    label="004C004F00570020005000700650061006B"/>
<unit class="alarm" ID="AlarmHistPwrAcLoss" type="BOOL" level="HIGH"
    label="004C004F005300530020004F004600200041002F0043"/>
<unit class="alarm" ID="AlarmHistPwrBattLow" type="BOOL" level="HIGH"
    label="004C004F00570020004200410054005400450052005 9"/>
<unit class="alarm" ID="AlarmHistRateHigh" type="BOOL" level="MED"
    label="00480049004700480020005200410054005"/>
<unit class="alarm" ID="AlarmHistTest" type="BOOL" level="HIGH"
    label="0041004C00410052004D00200054004500530054"/>
<unit class="alarm" ID="AlarmHistVeHigh" type="BOOL" level="MED"
    label="00480049004700480020005600 65"/>
<unit class="alarm" ID="AlarmHistVeLow" type="BOOL" level="HIGH"
    label="004C004F0057002000560065"/>
<unit class="alarm" ID="AlarmHistVteLow" type="BOOL" level="HIGH"
    label="004C004F00570020005600740065"/>
<unit class="alarm" ID="AlarmHistVtHigh" type="BOOL" level="LOW"
    label="00480049004700480020005600740065"/>
<unit class="scalar" ID="WaveAnlg0" type="WORD" scale="E+3" range="0000:2710"
    epoch="01F4" size="0032" units="" label="0041006E0061006C006F006700200030"/>
<unit class="scalar" ID="WaveAnlg1" type="WORD" scale="E+3" range="0000:2710"
    epoch="01F4" size="0032" units="" label="0041006E0061006C006F006700200031"/>
<unit class="scalar" ID="WaveFexp" type="WORD" scale="E+2" range="8AD0:7530"
    epoch="01F4" size="0032" units="004C002F006D0069006E"
    label="0046006500780070"/>
<unit class="scalar" ID="WaveFinsp" type="WORD" scale="E+2" range="8AD0:7530"
    epoch="01F4" size="0032" units="004C002F006D0069006E"
    label="00460069006E00730070"/>
<unit class="scalar" ID="WaveFlow" type="WORD" scale="E+2" range="8AD0:7530"
    epoch="01F4" size="0032" units="004C002F006D0069006E"
    label="0046006C006F0077"/>
<unit class="scalar" ID="WaveMetric" type="UWORD" range="0000:0000" epoch="01F4"
    size="0032" units="" label=""/>
```

```
    <unit class="scalar" ID="WavePaw" type="WORD" scale="E+2" range="E890:2EE0"
        epoch="01F4" size="0032" units="0063006D00480032004F" label="005000610077"/>
    <unit class="scalar" ID="WavePes" type="WORD" scale="E+2" range="E890:2EE0"
        epoch="01F4" size="0032" units="0063006D00480032004F" label="005000650073"/>
    <unit class="scalar" ID="WavePinsp" type="WORD" scale="E+2" range="E890:2EE0"
        epoch="01F4" size="0032" units="0063006D00480032004F"
        label="00500069006E00730070"/>
    <unit class="scalar" ID="WavePtp" type="WORD" scale="E+2" range="E890:2EE0"
        epoch="01F4" size="0032" units="0063006D00480032004F" label="005000740070"/>
    <unit class="scalar" ID="WavePtr" type="WORD" scale="E+2" range="E890:2EE0"
        epoch="01F4" size="0032" units="0063006D00480032004F" label="005000740072"/>
    <unit class="scalar" ID="WaveVt" type="WORD" scale="E+1" range="D8F0:7530"
        epoch="01F4" size="0032" units="006D004C" label="00560074"/>
    <unit class="info" ID="SysInfoConfig" type="UWORD"/>
    <unit class="info" ID="SysInfoModel" type="ENUM"
        label="00420061007300650020004D006F00640065006C">
            <enum value="0000" label="0049006E00760061006C00690064"/>
            <enum value="0001" label="004100760065006100200043006F006D0070"/>
            <enum value="0002" label="00410076006500610020002B"/>
            <enum value="0003" label="0041007600650061"/>
    </unit>
    <unit class="info" ID="SysInfoOUI" type="TEXT"/>
    <unit class="info" ID="SysInfoSerial" type="TEXT"/>
    <unit class="info" ID="SysInfoSwVer" type="TEXT"/>
    <unit class="info" ID="SysInfoTimeTotal" type="UINT" scale="E+2"
        range="00000000:0098967F"/>
    <unit class="info" ID="PatInfoID" type="TEXT"
        label="004900440045004E00540049004600490043004100540049004F004E"/>
    </profile>
```

12.2 Profile Message – AVEA Pediatric

```
<profile model="AVEA Comp" profileVersion="2.0" voxpVersion="3.0" textEncoding="UTF-16"
msgID="0002">
    <unit class="setting" ID="SetFiO2" type="WORD" resolution="0001" range="0015:0064"
        units="0025" label="00460069004F0032"/>
    <unit class="setting" ID="SetFlowBias" type="WORD" scale="E+1" resolution="0001"
        range="0004:0032" units="004C002F006D0069006E"
        label="00420069006100730020004600 6C006F0077"/>
    <unit class="setting" ID="SetFlowCycle" type="WORD" resolution="0005"
        range="0000:002D" units="0025"
        label="0046006C006F00770020004300790063006C0065"/>
    <unit class="setting" ID="SetFlowCyclePsv" type="WORD" resolution="0005"
        range="0005:002D" units="0025"
        label="00500053005600200043007900 63006C0065"/>
```

```
<unit class="setting" ID="SetFlowDemand" type="WORD" resolution="0001"
    range="0000:0001" units="0030003D004F006600660020003100 3D004F006E"
    label="00440065006D0061006E006400200046006C006F0077"/>
<unit class="setting" ID="SetFlowInsp" type="WORD" scale="E+1" resolution="0001"
    range="0001:004B" units="004C002F006D0069006E"
    label="005000650061006B00200046006C006F0077"/>
<unit class="setting" ID="SetPauseInsp" type="WORD" scale="E+2" resolution="0001"
    range="0000:012C" units="007300650063"
    label="0049006E00730070002000500061007500730065"/>
<unit class="setting" ID="SetPresHigh" type="WORD" resolution="0001"
    range="0000:005A" units="0063006D00480032004F"
    label="005000720065007300200048006900670068"/>
<unit class="setting" ID="SetPresInsp" type="WORD" resolution="0001"
    range="0000:005A" units="0063006D00480032004F"
    label="0049006E00730070002000500072006500 73"/>
<unit class="setting" ID="SetPresLow" type="WORD" resolution="0001"
    range="0000:002D" units="0063006D00480032004F"
    label="005000720065007300 20004C006F0077"/>
<unit class="setting" ID="SetPresNasalCPAP" type="WORD" resolution="0001"
    range="0002:000A" units="0063006D00480032004F"
    label="006E0043005000410050"/>
<unit class="setting" ID="SetPresPeep" type="WORD" resolution="0001"
    range="0000:0032" units="0063006D00480032004F" label="0050004500450050"/>
<unit class="setting" ID="SetPresPsv" type="WORD" resolution="0001"
    range="0000:005A" units="0063006D00480032004F" label="005000530056"/>
<unit class="setting" ID="SetRate" type="WORD" resolution="0001" range="0001:0096"
    units="00620070006D" label="0052006100740065"/>
<unit class="setting" ID="SetRiseInsp" type="WORD" resolution="0001"
    range="0001:0009" units="" label="0049006E00730070002000520069007300 65"/>
<unit class="setting" ID="SetRisePsv" type="WORD" resolution="0001" range="0001:0009"
    units="" label="005000530056002000520069007300 65"/>
<unit class="setting" ID="SetRiseVsync" type="WORD" resolution="0001"
    range="0001:0009" units=""
    label="005600730079006E006300200052006900730065"/>
<unit class="setting" ID="SetTimeHigh" type="WORD" scale="E+1" resolution="0001"
    range="0002:012C" units="007300650063"
    label="00540069006D006500200048006900670068"/>
<unit class="setting" ID="SetTimeHighPsv" type="WORD" resolution="0001"
    range="0000:0001" units="0030003D004F006600660020003100 3D004F006E"
    label="005400200048006900670068002000500053 0056"/>
<unit class="setting" ID="SetTimeHighSync" type="WORD" resolution="0001"
    range="0000:0032" units="0025"
    label="005400200048006900670068002000530079006E0063"/>
<unit class="setting" ID="SetTimeInsp" type="WORD" scale="E+2" resolution="0001"
    range="0014:01F4" units="007300650063"
    label="0049006E00730070002000540069006D0065"/>
```

```
<unit class="setting" ID="SetTimeLow" type="WORD" scale="E+1" resolution="0001"
    range="0002:012C" units="007300650063"
    label="00540069006D00650020004C006F0077"/>
<unit class="setting" ID="SetTimeLowSync" type="WORD" resolution="0001"
    range="0000:0032" units="0025"
    label="00540020004C006F00770020005300790006E0063"/>
<unit class="setting" ID="SetTmaxPsv" type="WORD" scale="E+2" resolution="0001"
    range="0014:01F4" units="007300650063"
    label="005000530056002000540006D00610078"/>
<unit class="setting" ID="SetTrigFlow" type="WORD" scale="E+1" resolution="0001"
    range="0001:00C8" units="004C002F006D0069006E"
    label="0046006C006F00770020005400720069006 7"/>
<unit class="setting" ID="SetTrigPres" type="WORD" scale="E+1" resolution="0001"
    range="0001:00C8" units="0063006D00480032004F"
    label="005000720065007300200054007200690067"/>
<unit class="setting" ID="SetVol" type="WORD" scale="E+1" resolution="0001"
    range="0019:01F4" units="006D004C" label="0056006F006C0075006D0065"/>
<unit class="setting" ID="SetVolAssured" type="WORD" scale="E+1" resolution="0001"
    range="0000:01F4" units="006D004C"
    label="004D006100630068002000 56006F006C"/>
<unit class="setting" ID="SetVolLimit" type="WORD" scale="E+1" resolution="0001"
    range="0019:02EE" units="006D004C"
    label="0056006F006C0020004C0069006D00690074"/>
<unit class="setting" ID="SetVolSigh" type="WORD" resolution="0001" range="0000:0001"
    units="0030003D004F00660066002000 31003D004F006E"
    label="0053006900670068"/>
<unit class="setting" ID="SetVolWave" type="ENUM"
    label="005700610076006500660 06F0072006D">
        <enum value="0000" label="00530051005500 4100520045"/>
        <enum value="0001"
            label="00440045004300450 04C00450052004100540049004E0047"/>
</unit>
<unit class="setting" ID="SetVsync" type="WORD" resolution="0001" range="0000:0001"
    units="0030003D004F00660066002000 31003D004F006E"
    label="005600730079006E0063"/>
<unit class="setting" ID="LimitApnea" type="WORD" resolution="0001" range="0006:003C"
    units="007300650063"
    label="00410070006E00650061002000 49006E00740065007200760061006C"/>
<unit class="setting" ID="LimitPeepLow" type="WORD" resolution="0001"
    range="0000:003C" units="0063006D00480032004F"
    label="004C006F00770020005000 4500450050"/>
<unit class="setting" ID="LimitPpeakHigh" type="WORD" resolution="0001"
    range="000A:0069" units="0063006D00480032004F"
    label="00480069006700680020005000700650061006B"/>
```

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<unit class="setting" ID="LimitPpeakLow" type="WORD" resolution="0001"
    range="0001:0063" units="0063006D00480032004F"
    label="004C006F00770020005000700650061006B"/>
<unit class="setting" ID="LimitRateHigh" type="WORD" resolution="0001"
    range="0001:00C8" units="00620070006D"
    label="00480069006700680020005200610074006 5"/>
<unit class="setting" ID="LimitVeHigh" type="WORD" scale="E+2" resolution="0001"
    range="0000:012C" units="004C" label="00480069006700680020005600 65"/>
<unit class="setting" ID="LimitVeLow" type="WORD" scale="E+2" resolution="0001"
    range="0000:012C" units="004C" label="004C006F0077002000560065"/>
<unit class="setting" ID="LimitVteHigh" type="WORD" scale="E+1" resolution="0001"
    range="0019:03E8" units="006D004C"
    label="00480069006700680020005600740065"/>
<unit class="setting" ID="LimitVteLow" type="WORD" scale="E+1" resolution="0001"
    range="0000:03E8" units="006D004C" label="004C006F0077002000560074 0065"/>
<unit class="setting" ID="SetAAC" type="BOOL" resolution="1" range="0:1" units=""
    label="004100410043000A004F006E"/>
<unit class="setting" ID="SetCircComp" type="WORD" scale="E+1" resolution="0001"
    range="0000:004B" units="006D004C002F0063006D00480032004F"
    label="00430069007200630020004300 6F006D0070"/>
<unit class="setting" ID="SetEttDia" type="WORD" scale="E+1" resolution="0001"
    range="0014:0064" units="006D006D"
    label="004400690061006D0065007400650072"/>
<unit class="setting" ID="SetEttLen" type="WORD" scale="E+1" resolution="0001"
    range="0014:0104" units="0063006D" label="004C0065006E006700740068"/>
<unit class="setting" ID="SetHumidifier" type="BOOL" resolution="1" range="0:1" units=""
    label="00480055004D00490044004900460049004 50052"/>
<unit class="setting" ID="SetLanguage" type="ENUM"
    label="004C0061006E006700750061006700650 03A">
        <enum value="0000" label="0045006E0067006C006900730068"/>
        <enum value="0001" label="004600720061006E00E7006100690073"/>
        <enum value="0002" label="0044006500750074007300630068"/>
        <enum value="0003" label="004900740061006C00690061006E006F"/>
        <enum value="0004" label="0050006F00720074007500670075 00EA0073"/>
        <enum value="0005" label="004500730070006100F1006F006C"/>
        <enum value="0006" label="6C498BED"/>
        <enum value="0007" label="004E006500640065007200 6C0061006E00640073"/>
</unit>
<unit class="setting" ID="SetLeakComp" type="BOOL" resolution="1" range="0:1" units=""
    label="004C00650061006B00200043006F006D0070000A004F006E"/>
<unit class="setting" ID="SetMode" type="ENUM"
    label="004D004F00440045002000530045004C004500430054">
        <enum value="0001"
            label="00410050005200560020002F00200042004900500048004100530049004
            3"/>
```

```
        <enum value="0002"
            label="00410050005200560020002F00200042004900500048004100530049004
            3"/>
        <enum value="0003" label="005000520056004300200053004900 4D0056"/>
        <enum value="0004" label="00500052005600430020004 1002F0043"/>
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        <enum value="0006" label="005400430050004C002000530049004D0056"/>
        <enum value="0007" label="005400430050004C00200041002F0043"/>
        <enum value="0008" label="00430050004100500020002F0020005000530056"/>
        <enum value="0009"
            label="00500052004500530053005500520045002000530049004D0056"/>
        <enum value="000A"
            label="0050005200450053005300550052004500200041002F0043"/>
        <enum value="000B" label="00430050004100500020002F0020005000530056"/>
        <enum value="000C"
            label="0056004F004C0055004D00450020005300 49004D0056"/>
        <enum value="000D" label="0056004F004C0055004D004500200041002F0043"/>
        <enum value="000E" label="004E006100730061006C00200043005000410050"/>
    </unit>
    <unit class="setting" ID="SetModeIlv" type="ENUM"
        label="0049004C00560020004D006F00640065003A">
        <enum value="0000" label="004F00660066"/>
        <enum value="0001" label="004D006100730074006500 72"/>
        <enum value="0002" label="0053006C006100760065"/>
    </unit>
    <unit class="setting" ID="SetPatSize" type="ENUM"
        label="00500041005400490045004E00540020005300490 05A0045002000530045004
        C004500430054">
        <enum value="0000" label="004E0065006F"/>
        <enum value="0001" label="005000650064"/>
        <enum value="0002" label="004100640075006C0074"/>
    </unit>
    <unit class="setting" ID="SetPatWt" type="WORD" scale="E+2" resolution="0001"
        range="0001:02EE" units="006B0067"
        label="00500074002000570065006900 6700680074"/>
    <unit class="setting" ID="SetPresBaro" type="WORD" resolution="0001"
        range="0221:02F8" units="006D006D00480067"
        label="004200610072006F00200050007200650073"/>
    <unit class="setting" ID="SetIncrFiO2" type="WORD" resolution="0001"
        range="0000:004F" units="0025"
        label="0049006E00630072006500610073006500200046006900 4F0032003A"/>
    <unit class="setting" ID="SetSensitivityLowVte" type="WORD" resolution="0001"
        range="0001:0005" units=""
        label="004C006F00770020005600740065002000 41006C00610072006D003A"/>
    <unit class="monitor" ID="MntrAutoPEEP" type="WORD" range="0000:0032"
        units="0063006D00480032004F" label="004100750074006F0050004500450050"/>
```

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<unit class="monitor" ID="MntrAutoPEEPdelta" type="WORD" range="0000:0032"
    units="0063006D00480032004F"
    label="00640041007500740006F0050004500450050"/>
<unit class="monitor" ID="MntrAutoPEEPesoph" type="WORD" range="0000:0032"
    units="0063006D00480032004F"
    label="004100750074006F005000450045005000650073"/>
<unit class="monitor" ID="MntrC20" type="WORD" scale="E+2" range="0000:01F4"
    units="" label="004300320030002F0043"/>
<unit class="monitor" ID="MntrCcw" type="WORD" scale="E+2" range="0000:7530"
    units="006D004C002F0063006D00480032004F" label="004300630077"/>
<unit class="monitor" ID="MntrCdyn" type="WORD" scale="E+2" range="0000:7530"
    units="006D004C002F0063006D00480032004F" label="004300640079006E"/>
<unit class="monitor" ID="MntrCdynNorm" type="WORD" scale="E+2" range="0000:01F4"
    units="006D004C002F0063006D00480032004F002F006B0067"
    label="004300640079006E002F006B0067"/>
<unit class="monitor" ID="MntrClung" type="WORD" scale="E+2" range="0000:7530"
    units="006D004C002F0063006D00480032004F" label="0043006C0075006E0067"/>
<unit class="monitor" ID="MntrCstat" type="WORD" scale="E+2" range="0000:7530"
    units="006D004C002F0063006D00480032004F" label="004300730074006100740074"/>
<unit class="monitor" ID="MntrCstatNorm" type="WORD" scale="E+2" range="0000:01F4"
    units="006D004C002F0063006D00480032004F002F006B0067"
    label="004300730074006100740074002F006B0067"/>
<unit class="monitor" ID="MntrFiO2" type="WORD" range="0000:0064" units="0025"
    label="00460069004F0032"/>
<unit class="monitor" ID="MntrIE" type="WORD" scale="E+1" range="FC19:03E7" units=""
    label="0049003A0045"/>
<unit class="monitor" ID="MntrLeak" type="WORD" range="0000:0064" units="0025"
    label="004C00650061006B"/>
<unit class="monitor" ID="MntrMIP" type="WORD" range="FFC4:0078"
    units="0063006D00480032004F" label="004D00490050"/>
<unit class="monitor" ID="MntrNcpapMeanFlow" type="WORD" scale="E+1"
    range="0000:0BB8" units="004C002F006D0069006E"
    label="00430050004100500020004600 6C006F0077"/>
<unit class="monitor" ID="MntrNcpapPres" type="WORD" range="0000:0078"
    units="0063006D00480032004F" label="006E0043005000410050"/>
<unit class="monitor" ID="MntrP100" type="WORD" range="FFC4:0078"
    units="0063006D00480032004F" label="0050003100300030"/>
<unit class="monitor" ID="MntrPair" type="WORD" range="0000:0050"
    units="0070007300690067" label="00410069007200200049006E006C00650074"/>
<unit class="monitor" ID="MntrPawDelta" type="WORD" range="0000:0078"
    units="0063006D00480032004F" label="0064005000610077"/>
<unit class="monitor" ID="MntrPeep" type="WORD" range="0000:0032"
    units="0063006D00480032004F" label="0050004500450050"/>
<unit class="monitor" ID="MntrPefr" type="WORD" scale="E+1" range="0000:0BB8"
    units="004C002F006D0069006E" label="0050004500460052"/>
```

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<unit class="monitor" ID="MntrPesDelta" type="WORD" range="0000:0078"
    units="0063006D00480032004F" label="0064005000650073"/>
<unit class="monitor" ID="MntrPifr" type="WORD" scale="E+1" range="0000:0BB8"
    units="004C002F006D0069006E" label="0050004900460052"/>
<unit class="monitor" ID="MntrPmean" type="WORD" range="0000:0078"
    units="0063006D00480032004F" label="0050006D00650061006E"/>
<unit class="monitor" ID="MntrPO2" type="WORD" range="0000:0050"
    units="0070007300690067" label="004F003200200049006E006C00650074"/>
<unit class="monitor" ID="MntrPpeak" type="WORD" range="0000:0078"
    units="0063006D00480032004F" label="005000700065006100 6B"/>
<unit class="monitor" ID="MntrPplat" type="WORD" range="0000:0078"
    units="0063006D00480032004F" label="00500070006C00610074"/>
<unit class="monitor" ID="MntrPplatPtp" type="WORD" range="FFC4:0078"
    units="0063006D00480032004F" label="005000740070002000500 06C00610074"/>
<unit class="monitor" ID="MntrPtpPEEP" type="WORD" range="FFC4:0078"
    units="0063006D00480032004F" label="00500074007000200050004500450050"/>
<unit class="monitor" ID="MntrRate" type="WORD" range="0000:00C8"
    units="00620070006D" label="0052006100740065"/>
<unit class="monitor" ID="MntrRateMand" type="WORD" range="0000:00C8"
    units="00620070006D" label="004D0061006E00640020005200 6100740065"/>
<unit class="monitor" ID="MntrRateSpon" type="WORD" range="0000:00C8"
    units="00620070006D" label="00530070006F006E00200052006100740065"/>
<unit class="monitor" ID="MntrRimp" type="WORD" scale="E+1" range="0000:03E8"
    units="0063006D00480032004F002F004C002F005300650063"
    label="00520069006D0070"/>
<unit class="monitor" ID="MntrRlung" type="WORD" scale="E+1" range="0000:03E8"
    units="0063006D00480032004F002F004C002F005300650063"
    label="0052006C0075006E0067"/>
<unit class="monitor" ID="MntrRpeak" type="WORD" scale="E+1" range="0000:03E8"
    units="0063006D00480032004F002F004C002F005300650063"
    label="005200700065006100 6B"/>
<unit class="monitor" ID="MntrRrs" type="WORD" scale="E+1" range="0000:03E8"
    units="0063006D00480032004F002F004C002F005300650063"
    label="005200720073"/>
<unit class="monitor" ID="MntrRSBIndex" type="WORD" range="0000:01F4"
    units="00620032002F006D0069006E002F004C" label="0066002F00560074"/>
<unit class="monitor" ID="MntrTe" type="WORD" scale="E+2" range="0000:270F"
    units="007300650063" label="00540065"/>
<unit class="monitor" ID="MntrTi" type="WORD" scale="E+2" range="0000:270F"
    units="007300650063" label="00540069"/>
<unit class="monitor" ID="MntrVdel" type="INT" scale="E+5" range="00000000:3B8B87C0"
    units="006D004C" label="005600640065006C"/>
<unit class="monitor" ID="MntrVeSpon" type="WORD" scale="E+2" range="0000:2706"
    units="004C" label="00530070006F006E002000560065"/>
```

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<unit class="monitor" ID="MntrVeSponNorm" type="WORD" range="0000:03E7"
    units="006D004C002F006B0067"
    label="00530070006F006E002000560065002F006B0067"/>
<unit class="monitor" ID="MntrVeTotal" type="WORD" scale="E+2" range="0000:2706"
    units="004C" label="0054006F00740061006C002000560065"/>
<unit class="monitor" ID="MntrVeTotalNorm" type="WORD" range="0000:03E7"
    units="006D004C002F006B0067"
    label="0054006F00740061006C002000560065002F006B0067"/>
<unit class="monitor" ID="MntrVte" type="INT" scale="E+5" range="00000000:3B8B87C0"
    units="006D004C" label="005600740065"/>
<unit class="monitor" ID="MntrVteMand" type="INT" scale="E+5"
    range="00000000:3B8B87C0" units="006D004C"
    label="004D0061006E00640020005600740065"/>
<unit class="monitor" ID="MntrVteMandNorm" type="WORD" scale="E+2"
    range="0000:0BB8" units="006D004C002F006B0067"
    label="004D0061006E00640020005600740065002F006B0067"/>
<unit class="monitor" ID="MntrVteNorm" type="WORD" scale="E+2" range="0000:0BB8"
    units="006D004C002F006B0067" label="005600740065002F006B0067"/>
<unit class="monitor" ID="MntrVteSpon" type="INT" scale="E+5"
    range="00000000:3B8B87C0" units="006D004C"
    label="00530070006F006E0020005600740065"/>
<unit class="monitor" ID="MntrVteSponNorm" type="WORD" scale="E+2"
    range="0000:0BB8" units="006D004C002F006B0067"
    label="00530070006F006E0020005600740065002F006B0067"/>
<unit class="monitor" ID="MntrVti" type="INT" scale="E+5" range="00000000:3B8B87C0"
    units="006D004C" label="005600740069"/>
<unit class="monitor" ID="MntrVtiNorm" type="WORD" scale="E+2" range="0000:0BB8"
    units="006D004C002F006B0067" label="005600740069002F006B0067"/>
<unit class="monitor" ID="MntrWobImposed" type="WORD" scale="E+2"
    range="0000:07D0" units="006A006F0075006C00650073002F004C"
    label="0057004F00420069"/>
<unit class="monitor" ID="MntrWobPatient" type="WORD" scale="E+2" range="0000:07D0"
    units="006A006F0075006C00650073002F004C" label="0057004F00420070"/>
<unit class="monitor" ID="MntrWobVent" type="WORD" scale="E+2" range="0000:07D0"
    units="006A006F0075006C00650073002F004C" label="0057004F00420076"/>
<unit class="alarm" ID="AlarmActive" type="BOOL" label=""/>
<unit class="alarm" ID="AlarmActivePriority" type="ENUM" label="">
        <enum value="0001" label="0048004900470048"/>
        <enum value="0002" label="004D00450044"/>
        <enum value="0003" label="004C004F0057"/>
        <enum value="0004" label="0041004C004500520054"/>
</unit>
<unit class="alarm" ID="AlarmApnea" type="BOOL" level="HIGH"
    label="00410050004E00450041002000490004E005400450052005600410 04C"/>
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<unit class="alarm" ID="AlarmCircDisc" type="BOOL" level="HIGH"
    label="00430049005200430055004900540020004400490053004300 4F004E004E0045
    00430054"/>
<unit class="alarm" ID="AlarmFanFail" type="BOOL" level="LOW"
    label="00460041004E00200046004100490004C005500520045"/>
<unit class="alarm" ID="AlarmFiO2High" type="BOOL" level="HIGH"
    label="00480049004700480020004600690004F0032"/>
<unit class="alarm" ID="AlarmFiO2Low" type="BOOL" level="HIGH"
    label="004C004F0057002000460069004F0032"/>
<unit class="alarm" ID="AlarmIlvSlaveDisc" type="BOOL" level="HIGH"
    label="0049004C00560020004400490053004300 4F004E004E004500430054"/>
<unit class="alarm" ID="AlarmInop" type="BOOL" level="HIGH"
    label="00560045004E005400200049004E004F0050"/>
<unit class="alarm" ID="AlarmInvalidGasId" type="BOOL" level="MED"
    label="0049004E00560041004C00490044002000470041005300 2000490044"/>
<unit class="alarm" ID="AlarmLimitIE" type="BOOL" level="LOW"
    label="0049003A00450020004C0049004D00490054"/>
<unit class="alarm" ID="AlarmLimitTi" type="BOOL" level="LOW"
    label="004D00410058002000 49004E00530050002000540049004D0045"/>
<unit class="alarm" ID="AlarmLimitVol" type="BOOL" level="LOW"
    label="0056004F004C0055004D00450020004C0049004D00490054"/>
<unit class="alarm" ID="AlarmLossAir" type="BOOL" level="HIGH"
    label="004C004F005300530020004F00460020004100490052"/>
<unit class="alarm" ID="AlarmLossGas" type="BOOL" level="HIGH"
    label="004C004F005300530020004F00460020004700410053"/>
<unit class="alarm" ID="AlarmLossHeliox" type="BOOL" level="HIGH"
    label="004C004F005300530020004F0046002000480045004C0049004F0058"/>
<unit class="alarm" ID="AlarmLossO2" type="BOOL" level="HIGH"
    label="004C004F005300530020004F00460020004F0032"/>
<unit class="alarm" ID="AlarmNcpapHigh" type="BOOL" level="HIGH"
    label="00480049004700480020006E00430050004100500020005000 5200450053"/>
<unit class="alarm" ID="AlarmNcpapHighPresLimit" type="BOOL" level="HIGH"
    label="006E00430050004100500020005000520045005300200 04C0049004D0049005
    4"/>
<unit class="alarm" ID="AlarmNcpapLow" type="BOOL" level="HIGH"
    label="004C004F00570020006E00430050004100500020005000 5200450053"/>
<unit class="alarm" ID="AlarmOcclusion" type="BOOL" level="HIGH"
    label="00430049005200430055004900540020004F00430043004C005500530049004F
    004E"/>
<unit class="alarm" ID="AlarmOpenSV" type="BOOL" level="HIGH"
    label="00530041004600450054005900200056004 1004C00560045"/>
<unit class="alarm" ID="AlarmPeepLow" type="BOOL" level="HIGH"
    label="004C004F00570020005000 4500450050"/>
<unit class="alarm" ID="AlarmPpeakHigh" type="BOOL" level="HIGH"
    label="00480049004700480020005000700650061006B"/>
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<unit class="alarm" ID="AlarmPpeakHighExt" type="BOOL" level="HIGH"
    label="0045005800540020004800490047004800200050007000650061006B"/>
<unit class="alarm" ID="AlarmPpeakLow" type="BOOL" level="HIGH"
    label="004C004F005700200050007000650061006B"/>
<unit class="alarm" ID="AlarmPwrAcLoss" type="BOOL" level="HIGH"
    label="004C004F005300530020004F004600200041002F0043"/>
<unit class="alarm" ID="AlarmPwrBattLow" type="BOOL" level="HIGH"
    label="004C004F00570020004200410054005400450052059"/>
<unit class="alarm" ID="AlarmRateHigh" type="BOOL" level="MED"
    label="00480049004700480020005200410054004 5"/>
<unit class="alarm" ID="AlarmSilence" type="BOOL" label=""/>
<unit class="alarm" ID="AlarmTest" type="BOOL" level="HIGH"
    label="0041004C00410052004D00200054004500530054"/>
<unit class="alarm" ID="AlarmVeHigh" type="BOOL" level="MED"
    label="00480049004700480020005600 5"/>
<unit class="alarm" ID="AlarmVeLow" type="BOOL" level="HIGH"
    label="004C004F0057002000560065"/>
<unit class="alarm" ID="AlarmVteLow" type="BOOL" level="HIGH"
    label="004C004F00570020005600740065"/>
<unit class="alarm" ID="AlarmVtHigh" type="BOOL" level="LOW"
    label="00480049004700480020005600740065"/>
<unit class="alarm" ID="AlarmHistApnea" type="BOOL" level="HIGH"
    label="00410050004E00450041002000 9004E00540045005200560041004C"/>
<unit class="alarm" ID="AlarmHistCircDisc" type="BOOL" level="HIGH"
    label="00430049005200430055004900540020004400490053004 004F004E004E0045
    00430054"/>
<unit class="alarm" ID="AlarmHistFanFail" type="BOOL" level="LOW"
    label="00460041004E00200046004 0049004C005500520045"/>
<unit class="alarm" ID="AlarmHistFiO2High" type="BOOL" level="HIGH"
    label="00480049004700480020004 0069004F0032"/>
<unit class="alarm" ID="AlarmHistFiO2Low" type="BOOL" level="HIGH"
    label="004C004F00570020004 0069004F0032"/>
<unit class="alarm" ID="AlarmHistIlvSlaveDisc" type="BOOL" level="HIGH"
    label="0049004C00560020004400490053004 004E004E004500430054"/>
<unit class="alarm" ID="AlarmHistInop" type="BOOL" level="HIGH"
    label="00560045004E005400200049004E004F0050"/>
<unit class="alarm" ID="AlarmHistInvalidGasId" type="BOOL" level="MED"
    label="0049004E00560041004C00490044002000470041005 002000490044"/>
<unit class="alarm" ID="AlarmHistLimitIE" type="BOOL" level="LOW"
    label="0049003A00450020004C0049004D00490054"/>
<unit class="alarm" ID="AlarmHistLimitTi" type="BOOL" level="LOW"
    label="004D00410058002000 9004E00530050002000540049004D0045"/>
<unit class="alarm" ID="AlarmHistLimitVol" type="BOOL" level="LOW"
    label="0056004F004C0055004D00450020004C0049004D00490054"/>
<unit class="alarm" ID="AlarmHistLossAir" type="BOOL" level="HIGH"
    label="004C004F005300530020004F0046002000 100490052"/>
```

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<unit class="alarm" ID="AlarmHistLossGas" type="BOOL" level="HIGH"
    label="004C004F005300530020004F00460020004700410053"/>
<unit class="alarm" ID="AlarmHistLossHeliox" type="BOOL" level="HIGH"
    label="004C004F005300530020004F00460020004800450004C0049004F0058"/>
<unit class="alarm" ID="AlarmHistLossO2" type="BOOL" level="HIGH"
    label="004C004F005300530020004F00460020004F0032"/>
<unit class="alarm" ID="AlarmHistNcpapHigh" type="BOOL" level="HIGH"
    label="004800490047004800200006E00430050004100500020005000520045005 3"/>
<unit class="alarm" ID="AlarmHistNcpapHighPresLimit" type="BOOL" level="HIGH"
    label="006E00430050004100500020005000520045005300200 04C0049004D0049005
    4"/>
<unit class="alarm" ID="AlarmHistNcpapLow" type="BOOL" level="HIGH"
    label="004C004F00570020006E00430050004100500020005000520045005 3"/>
<unit class="alarm" ID="AlarmHistOcclusion" type="BOOL" level="HIGH"
    label="00430049005200430055004900540020004F00430043004C005500530049004F
    004E"/>
<unit class="alarm" ID="AlarmHistOpenSV" type="BOOL" level="HIGH"
    label="005300410046004500540059002000560041004C00560045"/>
<unit class="alarm" ID="AlarmHistPeepLow" type="BOOL" level="HIGH"
    label="004C004F005700200050004500450050"/>
<unit class="alarm" ID="AlarmHistPpeakHigh" type="BOOL" level="HIGH"
    label="004800490047004800200050007000650061006B"/>
<unit class="alarm" ID="AlarmHistPpeakHighExt" type="BOOL" level="HIGH"
    label="00450058005400200048004900470048002000500070006500 1006B"/>
<unit class="alarm" ID="AlarmHistPpeakLow" type="BOOL" level="HIGH"
    label="004C004F005700200050007000650061006B"/>
<unit class="alarm" ID="AlarmHistPwrAcLoss" type="BOOL" level="HIGH"
    label="004C004F005300530020004F0046002000410 2F0043"/>
<unit class="alarm" ID="AlarmHistPwrBattLow" type="BOOL" level="HIGH"
    label="004C004F005700200042004100540054004500520059"/>
<unit class="alarm" ID="AlarmHistRateHigh" type="BOOL" level="MED"
    label="004800490047004800200052004100540045"/>
<unit class="alarm" ID="AlarmHistTest" type="BOOL" level="HIGH"
    label="0041004C00410052004D00200054004500530054"/>
<unit class="alarm" ID="AlarmHistVeHigh" type="BOOL" level="MED"
    label="004800490047004800200056006 5"/>
<unit class="alarm" ID="AlarmHistVeLow" type="BOOL" level="HIGH"
    label="004C004F005700200056006 5"/>
<unit class="alarm" ID="AlarmHistVteLow" type="BOOL" level="HIGH"
    label="004C004F00570020005600740065"/>
<unit class="alarm" ID="AlarmHistVtHigh" type="BOOL" level="LOW"
    label="004800490047004800200056007 0065"/>
<unit class="scalar" ID="WaveAnlg0" type="WORD" scale="E+3" range="0000:2710"
    epoch="01F4" size="0032" units="" label="0041006E0061006C006F006700200030"/>
<unit class="scalar" ID="WaveAnlg1" type="WORD" scale="E+3" range="0000:2710"
    epoch="01F4" size="0032" units="" label="0041006E0061006C006F006700200031"/>
```

```
    <unit class="scalar" ID="WaveFexp" type="WORD" scale="E+2" range="8AD0:7530"
        epoch="01F4" size="0032" units="004C002F006D0069006E"
        label="0046006500780070"/>
    <unit class="scalar" ID="WaveFinsp" type="WORD" scale="E+2" range="8AD0:7530"
        epoch="01F4" size="0032" units="004C002F006D0069006E"
        label="00460069006E00730070"/>
    <unit class="scalar" ID="WaveFlow" type="WORD" scale="E+2" range="8AD0:7530"
        epoch="01F4" size="0032" units="004C002F006D0069006E"
        label="0046006C006F0077"/>
    <unit class="scalar" ID="WaveMetric" type="UWORD" range="0000:0000" epoch="01F4"
        size="0032" units="" label=""/>
    <unit class="scalar" ID="WavePaw" type="WORD" scale="E+2" range="E890:2EE0"
        epoch="01F4" size="0032" units="0063006D00480032004F" label="005000610077"/>
    <unit class="scalar" ID="WavePes" type="WORD" scale="E+2" range="E890:2EE0"
        epoch="01F4" size="0032" units="0063006D00480032004F" label="005000650073"/>
    <unit class="scalar" ID="WavePinsp" type="WORD" scale="E+2" range="E890:2EE0"
        epoch="01F4" size="0032" units="0063006D00480032004F"
        label="00500069006E00730070"/>
    <unit class="scalar" ID="WavePtp" type="WORD" scale="E+2" range="E890:2EE0"
        epoch="01F4" size="0032" units="0063006D00480032004F" label="005000740070"/>
    <unit class="scalar" ID="WavePtr" type="WORD" scale="E+2" range="E890:2EE0"
        epoch="01F4" size="0032" units="0063006D00480032004F" label="005000740072"/>
    <unit class="scalar" ID="WaveVt" type="WORD" scale="E+1" range="F63C:1D4C"
        epoch="01F4" size="0032" units="006D004C" label="00560074"/>
    <unit class="info" ID="SysInfoConfig" type="UWORD"/>
    <unit class="info" ID="SysInfoModel" type="ENUM"
        label="004200610073006500200004D006F00640065006C">
            <enum value="0000" label="0049006E00760061006C00690064"/>
            <enum value="0001" label="004100760065006100200043006F006D0070"/>
            <enum value="0002" label="00410076006500610020002B"/>
            <enum value="0003" label="0041007600650061"/>
    </unit>
    <unit class="info" ID="SysInfoOUI" type="TEXT"/>
    <unit class="info" ID="SysInfoSerial" type="TEXT"/>
    <unit class="info" ID="SysInfoSwVer" type="TEXT"/>
    <unit class="info" ID="SysInfoTimeTotal" type="UINT" scale="E+2"
        range="00000000:0098967F"/>
    <unit class="info" ID="PatInfoID" type="TEXT"
        label="004900440045004E005400490046004900430041005400490004F004E"/>
    </profile>
```

12.3 Profile Message – AVEA Neonate

```
<profile model="Avea Comp" profileVersion="2.0" voxpVersion="3.0" textEncoding="UTF-16"
            msgID="0003">
    <unit class="setting" ID="SetFiO2" type="WORD" resolution="0001" range="0015:0064"
        units="0025" label="00460069004F0032"/>
```

```
<unit class="setting" ID="SetFlowBias" type="WORD" scale="E+1" resolution="0001"
    range="0004:0032" units="004C002F006D0069006E"
    label="00420069006100730020004600 6C006F0077"/>
<unit class="setting" ID="SetFlowCycle" type="WORD" resolution="0005"
    range="0000:002D" units="0025"
    label="0046006C006F007700200043007900 63006C0065"/>
<unit class="setting" ID="SetFlowCyclePsv" type="WORD" resolution="0005"
    range="0005:002D" units="0025"
    label="005000530056002000430079006 3006C0065"/>
<unit class="setting" ID="SetFlowDemand" type="WORD" resolution="0001"
    range="0000:0001" units="0030003D004F006600660020003 1003D004F006E"
    label="00440065006D0061006E006400200046006C006F0077"/>
<unit class="setting" ID="SetFlowInsp" type="WORD" scale="E+1" resolution="0001"
    range="0004:012C" units="004C002F006D0069006E"
    label="005000650061006B00200046006C006F0077"/>
<unit class="setting" ID="SetPauseInsp" type="WORD" scale="E+2" resolution="0001"
    range="0000:012C" units="007300650063"
    label="0049006E00730070002000500061007500730065"/>
<unit class="setting" ID="SetPresHigh" type="WORD" resolution="0001"
    range="0000:005A" units="0063006D00480032004F"
    label="005000720065007300200048006900670068"/>
<unit class="setting" ID="SetPresInsp" type="WORD" resolution="0001"
    range="0000:0050" units="0063006D00480032004F"
    label="0049006E00730070002000500072006500 73"/>
<unit class="setting" ID="SetPresLow" type="WORD" resolution="0001"
    range="0000:002D" units="0063006D00480032004F"
    label="00500072006500730020004C006F0077"/>
<unit class="setting" ID="SetPresNasalCPAP" type="WORD" resolution="0001"
    range="0002:000A" units="0063006D00480032004F"
    label="006E0043005000410050"/>
<unit class="setting" ID="SetPresPeep" type="WORD" resolution="0001"
    range="0000:0032" units="0063006D00480032004F" label="0050004500450050"/>
<unit class="setting" ID="SetPresPsv" type="WORD" resolution="0001" range="0000:0050"
    units="0063006D00480032004F" label="005000530056"/>
<unit class="setting" ID="SetRate" type="WORD" resolution="0001" range="0001:0096"
    units="00620070006D" label="0052006100740065"/>
<unit class="setting" ID="SetRiseInsp" type="WORD" resolution="0001"
    range="0001:0009" units="" label="0049006E00730070002000520069007 30065"/>
<unit class="setting" ID="SetRisePsv" type="WORD" resolution="0001" range="0001:0009"
    units="" label="005000530056002000520069007 30065"/>
<unit class="setting" ID="SetRiseVsync" type="WORD" resolution="0001"
    range="0001:0009" units=""
    label="005600730079006E006300200052006900730065"/>
<unit class="setting" ID="SetTimeHigh" type="WORD" scale="E+1" resolution="0001"
    range="0002:012C" units="007300650063"
    label="00540069006D006500200048006900670068"/>
```

```
<unit class="setting" ID="SetTimeHighPsv" type="WORD" resolution="0001"
    range="0000:0001" units="0030003D004F0066006600200031003D004F006E"
    label="005400200048006900670068002000500053005 6"/>
<unit class="setting" ID="SetTimeHighSync" type="WORD" resolution="0001"
    range="0000:0032" units="0025"
    label="00540020004800690067006800200053007900 6E0063"/>
<unit class="setting" ID="SetTimeInsp" type="WORD" scale="E+2" resolution="0001"
    range="000F:012C" units="007300650063"
    label="0049006E00730070002000540069006D0065"/>
<unit class="setting" ID="SetTimeLow" type="WORD" scale="E+1" resolution="0001"
    range="0002:012C" units="007300650063"
    label="00540069006D00650020004C006F0077"/>
<unit class="setting" ID="SetTimeLowSync" type="WORD" resolution="0001"
    range="0000:0032" units="0025"
    label="00540020004C006F007700200053007900 6E0063"/>
<unit class="setting" ID="SetTmaxPsv" type="WORD" scale="E+2" resolution="0001"
    range="000F:0BB8" units="007300650063"
    label="005000530056002000540 06D00610078"/>
<unit class="setting" ID="SetTrigFlow" type="WORD" scale="E+1" resolution="0001"
    range="0001:00C8" units="004C002F006D0069006E"
    label="0046006C006F00770020005400720069006 7"/>
<unit class="setting" ID="SetTrigPres" type="WORD" scale="E+1" resolution="0001"
    range="0001:00C8" units="0063006D00480032004F"
    label="00500072006500730020005400720069006 7"/>
<unit class="setting" ID="SetVol" type="WORD" scale="E+1" resolution="0001"
    range="0014:0BB8" units="006D004C" label="0056006F006C0075006D0065"/>
<unit class="setting" ID="SetVolAssured" type="WORD" scale="E+1" resolution="0001"
    range="0000:0BB8" units="006D004C"
    label="004D006100630068002000560 6F006C"/>
<unit class="setting" ID="SetVolLimit" type="WORD" scale="E+1" resolution="0001"
    range="0019:02EE" units="006D004C"
    label="0056006F006C0020004C0069006D00690074"/>
<unit class="setting" ID="SetVolSigh" type="WORD" resolution="0001" range="0000:0001"
    units="0030003D004F0066006600200031003D004F006E"
    label="0053006900670068"/>
<unit class="setting" ID="SetVolWave" type="ENUM"
    label="0057006100760065006600 6F0072006D">
        <enum value="0000" label="0053005100550041005200 45"/>
        <enum value="0001"
            label="00440045004300450 4C00450052004100540049004E0047"/>
</unit>
<unit class="setting" ID="SetVsync" type="WORD" resolution="0001" range="0000:0001"
    units="0030003D004F0066006600200031003D004F006E"
    label="005600730079006E0063"/>
```

```
<unit class="setting" ID="LimitApnea" type="WORD" resolution="0001" range="0006:003C"
    units="007300650063"
    label="00410070006E00650061002000490006E00740065007200760061006C"/>
<unit class="setting" ID="LimitPeepLow" type="WORD" resolution="0001"
    range="0000:003C" units="0063006D00480032004F"
    label="004C006F00770020005000450050"/>
<unit class="setting" ID="LimitPpeakHigh" type="WORD" resolution="0001"
    range="000A:0055" units="0063006D00480032004F"
    label="00480069006700680020005000700650061006B"/>
<unit class="setting" ID="LimitPpeakLow" type="WORD" resolution="0001"
    range="0001:0050" units="0063006D00480032004F"
    label="004C006F00770020005000700650061006B"/>
<unit class="setting" ID="LimitRateHigh" type="WORD" resolution="0001"
    range="0001:00C8" units="00620070006D"
    label="00480069006700680020005200610074006 5"/>
<unit class="setting" ID="LimitVeHigh" type="WORD" scale="E+2" resolution="0001"
    range="0000:01F4" units="004C" label="00480069006700680020005600 65"/>
<unit class="setting" ID="LimitVeLow" type="WORD" scale="E+2" resolution="0001"
    range="0000:01F4" units="004C" label="004C006F0077002000560065"/>
<unit class="setting" ID="LimitVteHigh" type="WORD" scale="E+1" resolution="0001"
    range="0002:0BB8" units="006D004C"
    label="00480069006700680020005600740065"/>
<unit class="setting" ID="LimitVteLow" type="WORD" scale="E+1" resolution="0001"
    range="0000:0BB8" units="006D004C" label="004C006F00770020005600740065"/>
<unit class="setting" ID="SetAAC" type="BOOL" resolution="1" range="0:1" units=""
    label="004100410043000A004F006E"/>
<unit class="setting" ID="SetCircComp" type="WORD" scale="E+1" resolution="0001"
    range="0000:004B" units="006D004C002F0063006D00480032004F"
    label="00430069007200630020004300 6F006D0070"/>
<unit class="setting" ID="SetEttDia" type="WORD" scale="E+1" resolution="0001"
    range="0014:0064" units="006D006D"
    label="004400690061006D0065007400650072"/>
<unit class="setting" ID="SetEttLen" type="WORD" scale="E+1" resolution="0001"
    range="0014:0096" units="0063006D" label="004C0065006E006700740068"/>
<unit class="setting" ID="SetHumidifier" type="BOOL" resolution="1" range="0:1" units=""
    label="00480055004D00490044004900460049004500 52"/>
<unit class="setting" ID="SetLanguage" type="ENUM"
    label="004C0061006E006700750061006700650 03A">
        <enum value="0000" label="0045006E0067006C006900730068"/>
        <enum value="0001" label="004600720061006E00E7006100690073"/>
        <enum value="0002" label="00440065007500740073006300 68"/>
        <enum value="0003" label="004900740061006C00690061006E006F"/>
        <enum value="0004" label="0050006F00720074007500670075 00EA0073"/>
        <enum value="0005" label="00450073007000610 0F1006F006C"/>
        <enum value="0006" label="6C498BED"/>
        <enum value="0007" label="004E00650064006500720 06C0061006E00640073"/>
```

```
</unit>
<unit class="setting" ID="SetLeakComp" type="BOOL" resolution="1" range="0:1" units=""
    label="004C00650061006B00200043006F006D0070000A004F006E"/>
<unit class="setting" ID="SetMode" type="ENUM"
    label="004D004F004400450020005300450040C004500430054">
        <enum value="0001"
            label="00410050005200560020002F00200042004900500048004100530049004
            3"/>
        <enum value="0002"
            label="00410050005200560020002F00200042004900500048004100530049004
            3"/>
        <enum value="0003" label="00500052005600430020005300490040D0056"/>
        <enum value="0004" label="00500052005600430020004100 2F0043"/>
        <enum value="0005" label="00430050004100500020002F0020005000530056"/>
        <enum value="0006" label="005400430050004C002000530049004D0056"/>
        <enum value="0007" label="005400430050004C00200041002F0043"/>
        <enum value="0008" label="00430050004100500020002F0020005000530056"/>
        <enum value="0009"
            label="00500052004500530053005500520045002000530049004D0056"/>
        <enum value="000A"
            label="0050005200450053005300550052004500200041002F0043"/>
        <enum value="000B" label="00430050004100500020002F0020005000530056"/>
        <enum value="000C"
            label="0056004F004C0055004D00450020005300490040D0056"/>
        <enum value="000D" label="0056004F004C0055004D00450020004100 2F0043"/>
        <enum value="000E" label="004E006100730061006C00200043005000410050"/>
</unit>
<unit class="setting" ID="SetModeIlv" type="ENUM"
    label="0049004C00560020004D006F00640065003A">
        <enum value="0000" label="004F00660066"/>
        <enum value="0001" label="004D00610073007400650072"/>
        <enum value="0002" label="0053006C006100760065"/>
</unit>
<unit class="setting" ID="SetPatSize" type="ENUM"
    label="00500041005400490045004E00540020005300490050045002000530045004
    C004500430054">
        <enum value="0000" label="004E0065006F"/>
        <enum value="0001" label="005000650064"/>
        <enum value="0002" label="004100640075006C0074"/>
</unit>
<unit class="setting" ID="SetPatWt" type="WORD" scale="E+2" resolution="0001"
    range="000A:0640" units="006B0067"
    label="00500074002000570065006900670068 0074"/>
<unit class="setting" ID="SetPresBaro" type="WORD" resolution="0001"
    range="0221:02F8" units="006D006D00480067"
    label="004200610072006F00200050007200650073"/>
```

```
<unit class="setting" ID="SetIncrFiO2" type="WORD" resolution="0001"
    range="0000:004F" units="0025"
    label="0049006E006300720065006100730065002000460069004F0032003A"/>
<unit class="setting" ID="SetSensitivityLowVte" type="WORD" resolution="0001"
    range="0001:0005" units=""
    label="004C006F00770020005600740065002000410060C00610072006D003A"/>
<unit class="monitor" ID="MntrAutoPEEP" type="WORD" range="0000:0032"
    units="0063006D00480032004F" label="004100750074006F0050004500450050"/>
<unit class="monitor" ID="MntrAutoPEEPdelta" type="WORD" range="0000:0032"
    units="0063006D00480032004F"
    label="00640041007500740060F0050004500450050"/>
<unit class="monitor" ID="MntrAutoPEEPesoph" type="WORD" range="0000:0032"
    units="0063006D00480032004F"
    label="004100750074006F005000450045005000650073"/>
<unit class="monitor" ID="MntrC20" type="WORD" scale="E+2" range="0000:01F4"
    units="" label="004300320030002F0043"/>
<unit class="monitor" ID="MntrCcw" type="WORD" scale="E+2" range="0000:7530"
    units="006D004C002F0063006D00480032004F" label="004300630077"/>
<unit class="monitor" ID="MntrCdyn" type="WORD" scale="E+2" range="0000:7530"
    units="006D004C002F0063006D00480032004F" label="004300640079006E"/>
<unit class="monitor" ID="MntrCdynNorm" type="WORD" scale="E+2" range="0000:01F4"
    units="006D004C002F0063006D00480032004F002F006B0067"
    label="004300640079006E002F006B0067"/>
<unit class="monitor" ID="MntrClung" type="WORD" scale="E+2" range="0000:7530"
    units="006D004C002F0063006D00480032004F" label="0043006C0075006E0067"/>
<unit class="monitor" ID="MntrCstat" type="WORD" scale="E+2" range="0000:7530"
    units="006D004C002F0063006D00480032004F" label="00430073007400610074"/>
<unit class="monitor" ID="MntrCstatNorm" type="WORD" scale="E+2" range="0000:01F4"
    units="006D004C002F0063006D00480032004F002F006B0067"
    label="004300730074006100740002F006B0067"/>
<unit class="monitor" ID="MntrFiO2" type="WORD" range="0000:0064" units="0025"
    label="00460069004F0032"/>
<unit class="monitor" ID="MntrIE" type="WORD" scale="E+1" range="FC19:03E7" units=""
    label="0049003A0045"/>
<unit class="monitor" ID="MntrLeak" type="WORD" range="0000:0064" units="0025"
    label="004C00650061006B"/>
<unit class="monitor" ID="MntrMIP" type="WORD" range="FFC4:0078"
    units="0063006D00480032004F" label="004D00490050"/>
<unit class="monitor" ID="MntrNcpapMeanFlow" type="WORD" scale="E+1"
    range="0000:0BB8" units="004C002F006D0069006E"
    label="00430050004100500020004600 6C006F0077"/>
<unit class="monitor" ID="MntrNcpapPres" type="WORD" range="0000:0078"
    units="0063006D00480032004F" label="006E0043005000410050"/>
<unit class="monitor" ID="MntrP100" type="WORD" range="FFC4:0078"
    units="0063006D00480032004F" label="0050003100300030"/>
```

```
<unit class="monitor" ID="MntrPair" type="WORD" range="0000:0050"
    units="0070007300690067" label="00410069007200200049006E006C00650074"/>
<unit class="monitor" ID="MntrPawDelta" type="WORD" range="0000:0078"
    units="0063006D00480032004F" label="0064005000610077"/>
<unit class="monitor" ID="MntrPeep" type="WORD" range="0000:0032"
    units="0063006D00480032004F" label="0050004500450050"/>
<unit class="monitor" ID="MntrPefr" type="WORD" scale="E+1" range="0000:0BB8"
    units="004C002F006D0069006E" label="0050004500460052"/>
<unit class="monitor" ID="MntrPesDelta" type="WORD" range="0000:0078"
    units="0063006D00480032004F" label="0064005000650073"/>
<unit class="monitor" ID="MntrPifr" type="WORD" scale="E+1" range="0000:0BB8"
    units="004C002F006D0069006E" label="0050004900460052"/>
<unit class="monitor" ID="MntrPmean" type="WORD" range="0000:0078"
    units="0063006D00480032004F" label="0050006D00650061006E"/>
<unit class="monitor" ID="MntrPO2" type="WORD" range="0000:0050"
    units="0070007300690067" label="004F003200200049006E006C00650074"/>
<unit class="monitor" ID="MntrPpeak" type="WORD" range="0000:0078"
    units="0063006D00480032004F" label="005000700650061006B"/>
<unit class="monitor" ID="MntrPplat" type="WORD" range="0000:0078"
    units="0063006D00480032004F" label="00500070006C00610074"/>
<unit class="monitor" ID="MntrPplatPtp" type="WORD" range="FFC4:0078"
    units="0063006D00480032004F" label="005000740070002000500006C00610074"/>
<unit class="monitor" ID="MntrPtpPEEP" type="WORD" range="FFC4:0078"
    units="0063006D00480032004F" label="00500074007000200050004500450050"/>
<unit class="monitor" ID="MntrRate" type="WORD" range="0000:00C8"
    units="00620070006D" label="0052006100740065"/>
<unit class="monitor" ID="MntrRateMand" type="WORD" range="0000:00C8"
    units="00620070006D" label="004D0061006E00640020005200610074006500650074"/>
<unit class="monitor" ID="MntrRateSpon" type="WORD" range="0000:00C8"
    units="00620070006D" label="00530070006F006E00200052006100740065"/>
<unit class="monitor" ID="MntrRimp" type="WORD" scale="E+1" range="0000:03E8"
    units="0063006D00480032004F002F004C002F005300650063"
    label="00520069006D0070"/>
<unit class="monitor" ID="MntrRlung" type="WORD" scale="E+1" range="0000:03E8"
    units="0063006D00480032004F002F004C002F005300650063"
    label="0052006C0075006E0067"/>
<unit class="monitor" ID="MntrRpeak" type="WORD" scale="E+1" range="0000:03E8"
    units="0063006D00480032004F002F004C002F005300650063"
    label="005200700650061006B"/>
<unit class="monitor" ID="MntrRrs" type="WORD" scale="E+1" range="0000:03E8"
    units="0063006D00480032004F002F004C002F005300650063"
    label="005200720073"/>
<unit class="monitor" ID="MntrRSBIndex" type="WORD" range="0000:01F4"
    units="00620032002F006D0069006E002F004C" label="0066002F00560074"/>
<unit class="monitor" ID="MntrTe" type="WORD" scale="E+2" range="0000:270F"
    units="007300650063" label="00540065"/>
```

```
<unit class="monitor" ID="MntrTi" type="WORD" scale="E+2" range="0000:270F"
    units="007300650063" label="00540069"/>
<unit class="monitor" ID="MntrVdel" type="INT" scale="E+5" range="00000000:3B8B87C0"
    units="006D004C" label="005600640065006C"/>
<unit class="monitor" ID="MntrVeSpon" type="WORD" scale="E+2" range="0000:2706"
    units="004C" label="00530070006F006E002000560065"/>
<unit class="monitor" ID="MntrVeSponNorm" type="WORD" range="0000:03E7"
    units="006D004C002F006B0067"
    label="00530070006F006E002000560065002F006B0067"/>
<unit class="monitor" ID="MntrVeTotal" type="WORD" scale="E+2" range="0000:2706"
    units="004C" label="0054006F00740061006C002000560065"/>
<unit class="monitor" ID="MntrVeTotalNorm" type="WORD" range="0000:03E7"
    units="006D004C002F006B0067"
    label="0054006F00740061006C002000560065002F006B0067"/>
<unit class="monitor" ID="MntrVte" type="INT" scale="E+5" range="00000000:3B8B87C0"
    units="006D004C" label="005600740065"/>
<unit class="monitor" ID="MntrVteMand" type="INT" scale="E+5"
    range="00000000:3B8B87C0" units="006D004C"
    label="004D0061006E00640020005600740065"/>
<unit class="monitor" ID="MntrVteMandNorm" type="WORD" scale="E+2"
    range="0000:0BB8" units="006D004C002F006B0067"
    label="004D0061006E00640020005600740065002F006B0067"/>
<unit class="monitor" ID="MntrVteNorm" type="WORD" scale="E+2" range="0000:0BB8"
    units="006D004C002F006B0067" label="005600740065002F006B0067"/>
<unit class="monitor" ID="MntrVteSpon" type="INT" scale="E+5"
    range="00000000:3B8B87C0" units="006D004C"
    label="00530070006F006E0020005600740065"/>
<unit class="monitor" ID="MntrVteSponNorm" type="WORD" scale="E+2"
    range="0000:0BB8" units="006D004C002F006B0067"
    label="00530070006F006E0020005600740065002F006B0067"/>
<unit class="monitor" ID="MntrVti" type="INT" scale="E+5" range="00000000:3B8B87C0"
    units="006D004C" label="005600740069"/>
<unit class="monitor" ID="MntrVtiNorm" type="WORD" scale="E+2" range="0000:0BB8"
    units="006D004C002F006B0067" label="005600740069002F006B0067"/>
<unit class="monitor" ID="MntrWobImposed" type="WORD" scale="E+2"
    range="0000:07D0" units="006A006F0075006C00650073002F004C"
    label="0057004F00420069"/>
<unit class="monitor" ID="MntrWobPatient" type="WORD" scale="E+2" range="0000:07D0"
    units="006A006F0075006C00650073002F004C" label="0057004F00420070"/>
<unit class="monitor" ID="MntrWobVent" type="WORD" scale="E+2" range="0000:07D0"
    units="006A006F0075006C00650073002F004C" label="0057004F00420076"/>
<unit class="alarm" ID="AlarmActive" type="BOOL" label=""/>
<unit class="alarm" ID="AlarmActivePriority" type="ENUM" label="">
        <enum value="0001" label="0048004900470048"/>
        <enum value="0002" label="004D00450044"/>
        <enum value="0003" label="004C004F0057"/>
```

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        <enum value="0004" label="0041004C004500520054"/>
    </unit>
    <unit class="alarm" ID="AlarmApnea" type="BOOL" level="HIGH"
        label="00410050004E00450041002000490004E005400450052005600410040"/>
    <unit class="alarm" ID="AlarmCircDisc" type="BOOL" level="HIGH"
        label="00430049005200430055004900540020004400490053004300 4F004E004E0045
        00430054"/>
    <unit class="alarm" ID="AlarmFanFail" type="BOOL" level="LOW"
        label="00460041004E00200046004100490040C005500520045"/>
    <unit class="alarm" ID="AlarmFiO2High" type="BOOL" level="HIGH"
        label="00480049004700480020004600690040F0032"/>
    <unit class="alarm" ID="AlarmFiO2Low" type="BOOL" level="HIGH"
        label="004C004F00570020004600690040F0032"/>
    <unit class="alarm" ID="AlarmIlvSlaveDisc" type="BOOL" level="HIGH"
        label="0049004C00560020004400490053004300 4F004E004E004500430054"/>
    <unit class="alarm" ID="AlarmInop" type="BOOL" level="HIGH"
        label="00560045004E005400200049004E004F0050"/>
    <unit class="alarm" ID="AlarmInvalidGasId" type="BOOL" level="MED"
        label="0049004E00560041004C00490044002000470041005300 2000490044"/>
    <unit class="alarm" ID="AlarmLimitIE" type="BOOL" level="LOW"
        label="0049003A00450020004C0049004D00490054"/>
    <unit class="alarm" ID="AlarmLimitTi" type="BOOL" level="LOW"
        label="004D00410058002000490 04E00530050002000540049004D0045"/>
    <unit class="alarm" ID="AlarmLimitVol" type="BOOL" level="LOW"
        label="0056004F004C0055004D00450020004C0049004D00490054"/>
    <unit class="alarm" ID="AlarmLossAir" type="BOOL" level="HIGH"
        label="004C004F005300530020004F00460020004100490052"/>
    <unit class="alarm" ID="AlarmLossGas" type="BOOL" level="HIGH"
        label="004C004F005300530020004F00460020004700410053"/>
    <unit class="alarm" ID="AlarmLossHeliox" type="BOOL" level="HIGH"
        label="004C004F005300530020004F0046002000480045004C0049004F0058"/>
    <unit class="alarm" ID="AlarmLossO2" type="BOOL" level="HIGH"
        label="004C004F005300530020004F00460020004F0032"/>
    <unit class="alarm" ID="AlarmNcpapHigh" type="BOOL" level="HIGH"
        label="00480049004700480020006E00430050004100500020005000520045 0053"/>
    <unit class="alarm" ID="AlarmNcpapHighPresLimit" type="BOOL" level="HIGH"
        label="006E00430050004100500020005000520045005300200 04C0049004D0049005
        4"/>
    <unit class="alarm" ID="AlarmNcpapLow" type="BOOL" level="HIGH"
        label="004C004F00570020006E00430050004100500020005000520045 0053"/>
    <unit class="alarm" ID="AlarmOcclusion" type="BOOL" level="HIGH"
        label="0043004900520043005500490054002000 4F00430043004C005500530049004F
        004E"/>
    <unit class="alarm" ID="AlarmOpenSV" type="BOOL" level="HIGH"
        label="00530041004600450054005900200056004 1004C00560045"/>
```

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<unit class="alarm" ID="AlarmPeepLow" type="BOOL" level="HIGH"
    label="004C004F00570020005000450050"/>
<unit class="alarm" ID="AlarmPpeakHigh" type="BOOL" level="HIGH"
    label="00480049004700480020005000700650061006B"/>
<unit class="alarm" ID="AlarmPpeakHighExt" type="BOOL" level="HIGH"
    label="00450058005400200048004900470048002000500070065006100 6B"/>
<unit class="alarm" ID="AlarmPpeakLow" type="BOOL" level="HIGH"
    label="004C004F00570020005000700650061006B"/>
<unit class="alarm" ID="AlarmPwrAcLoss" type="BOOL" level="HIGH"
    label="004C004F005300530020004F004600200041002F0043"/>
<unit class="alarm" ID="AlarmPwrBattLow" type="BOOL" level="HIGH"
    label="004C004F00570020004200410054005400450052005 9"/>
<unit class="alarm" ID="AlarmRateHigh" type="BOOL" level="MED"
    label="00480049004700480020005200410054004 5"/>
<unit class="alarm" ID="AlarmSilence" type="BOOL" label=""/>
<unit class="alarm" ID="AlarmTest" type="BOOL" level="HIGH"
    label="0041004C00410052004D00200054004500530054"/>
<unit class="alarm" ID="AlarmVeHigh" type="BOOL" level="MED"
    label="00480049004700480020005600 65"/>
<unit class="alarm" ID="AlarmVeLow" type="BOOL" level="HIGH"
    label="004C004F0057002000560065"/>
<unit class="alarm" ID="AlarmVteLow" type="BOOL" level="HIGH"
    label="004C004F00570020005600740065"/>
<unit class="alarm" ID="AlarmVtHigh" type="BOOL" level="LOW"
    label="00480049004700480020005600740065"/>
<unit class="alarm" ID="AlarmHistApnea" type="BOOL" level="HIGH"
    label="00410050004E00450041002000490 04E005400450052005600 41004C"/>
<unit class="alarm" ID="AlarmHistCircDisc" type="BOOL" level="HIGH"
    label="00430049005200430055004900540020004400490053004300 4F004E004E0045
    00430054"/>
<unit class="alarm" ID="AlarmHistFanFail" type="BOOL" level="LOW"
    label="00460041004E00200046004100490 04C005500520045"/>
<unit class="alarm" ID="AlarmHistFiO2High" type="BOOL" level="HIGH"
    label="00480049004700480020004600 69004F0032"/>
<unit class="alarm" ID="AlarmHistFiO2Low" type="BOOL" level="HIGH"
    label="004C004F00570020004600 69004F0032"/>
<unit class="alarm" ID="AlarmHistIlvSlaveDisc" type="BOOL" level="HIGH"
    label="0049004C00560020004400490053004 3004F004E004E004500430054"/>
<unit class="alarm" ID="AlarmHistInop" type="BOOL" level="HIGH"
    label="00560045004E005400200049004E004F0050"/>
<unit class="alarm" ID="AlarmHistInvalidGasId" type="BOOL" level="MED"
    label="0049004E00560041004C00490044002000470041005300 2000490044"/>
<unit class="alarm" ID="AlarmHistLimitIE" type="BOOL" level="LOW"
    label="0049003A00450020004C0049004D00490054"/>
<unit class="alarm" ID="AlarmHistLimitTi" type="BOOL" level="LOW"
    label="004D00410058002000490 04E00530050002000540049004D0045"/>
```

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<unit class="alarm" ID="AlarmHistLimitVol" type="BOOL" level="LOW"
    label="0056004F004C0055004D00450020004C0049004D00490054"/>
<unit class="alarm" ID="AlarmHistLossAir" type="BOOL" level="HIGH"
    label="004C004F005300530020004F00460020004100490052"/>
<unit class="alarm" ID="AlarmHistLossGas" type="BOOL" level="HIGH"
    label="004C004F005300530020004F00460020004700410053"/>
<unit class="alarm" ID="AlarmHistLossHeliox" type="BOOL" level="HIGH"
    label="004C004F005300530020004F00460020004800450049004C0049004F0058"/>
<unit class="alarm" ID="AlarmHistLossO2" type="BOOL" level="HIGH"
    label="004C004F005300530020004F00460020004F0032"/>
<unit class="alarm" ID="AlarmHistNcpapHigh" type="BOOL" level="HIGH"
    label="00480049004700480020006E00430050004100500020005000520045 0053"/>
<unit class="alarm" ID="AlarmHistNcpapHighPresLimit" type="BOOL" level="HIGH"
    label="006E00430050004100500020005000520045005300200 04C0049004D0049005
    4"/>
<unit class="alarm" ID="AlarmHistNcpapLow" type="BOOL" level="HIGH"
    label="004C004F00570020006E00430050004100500020005000520045 0053"/>
<unit class="alarm" ID="AlarmHistOcclusion" type="BOOL" level="HIGH"
    label="00430049005200430055004900540020004F00430043004C005500530049004F
    004E"/>
<unit class="alarm" ID="AlarmHistOpenSV" type="BOOL" level="HIGH"
    label="005300410046004500540059002000560041004C00560045"/>
<unit class="alarm" ID="AlarmHistPeepLow" type="BOOL" level="HIGH"
    label="004C004F005700200050004500450050"/>
<unit class="alarm" ID="AlarmHistPpeakHigh" type="BOOL" level="HIGH"
    label="00480049004700480020005000700650061006B"/>
<unit class="alarm" ID="AlarmHistPpeakHighExt" type="BOOL" level="HIGH"
    label="00450058005400200048004900470048002000500070006500 61006B"/>
<unit class="alarm" ID="AlarmHistPpeakLow" type="BOOL" level="HIGH"
    label="004C004F005700200050007000650061006B"/>
<unit class="alarm" ID="AlarmHistPwrAcLoss" type="BOOL" level="HIGH"
    label="004C004F005300530020004F004600200041002F0043"/>
<unit class="alarm" ID="AlarmHistPwrBattLow" type="BOOL" level="HIGH"
    label="004C004F00570020004200410054005400450052 0059"/>
<unit class="alarm" ID="AlarmHistRateHigh" type="BOOL" level="MED"
    label="00480049004700480020005200 4100540045"/>
<unit class="alarm" ID="AlarmHistTest" type="BOOL" level="HIGH"
    label="0041004C00410052004D00200054004500530054"/>
<unit class="alarm" ID="AlarmHistVeHigh" type="BOOL" level="MED"
    label="00480049004700480020005600 65"/>
<unit class="alarm" ID="AlarmHistVeLow" type="BOOL" level="HIGH"
    label="004C004F0057002000560065"/>
<unit class="alarm" ID="AlarmHistVteLow" type="BOOL" level="HIGH"
    label="004C004F005700200056007400 65"/>
<unit class="alarm" ID="AlarmHistVtHigh" type="BOOL" level="LOW"
    label="00480049004700480020005600740065"/>
```

```
<unit class="scalar" ID="WaveAnlg0" type="WORD" scale="E+3" range="0000:2710"
    epoch="01F4" size="0032" units="" label="0041006E0061006C006F006700200030"/>
<unit class="scalar" ID="WaveAnlg1" type="WORD" scale="E+3" range="0000:2710"
    epoch="01F4" size="0032" units="" label="0041006E0061006C006F006700200031"/>
<unit class="scalar" ID="WaveFexp" type="WORD" scale="E+2" range="8AD0:7530"
    epoch="01F4" size="0032" units="004C002F006D0069006E"
    label="0046006500780070"/>
<unit class="scalar" ID="WaveFinsp" type="WORD" scale="E+2" range="8AD0:7530"
    epoch="01F4" size="0032" units="004C002F006D0069006E"
    label="00460069006E00730070"/>
<unit class="scalar" ID="WaveFlow" type="WORD" scale="E+2" range="8AD0:7530"
    epoch="01F4" size="0032" units="004C002F006D0069006E"
    label="0046006C006F0077"/>
<unit class="scalar" ID="WaveMetric" type="UWORD" range="0000:0000" epoch="01F4"
    size="0032" units="" label=""/>
<unit class="scalar" ID="WavePaw" type="WORD" scale="E+2" range="E890:2EE0"
    epoch="01F4" size="0032" units="0063006D00480032004F" label="005000610077"/>
<unit class="scalar" ID="WavePes" type="WORD" scale="E+2" range="E890:2EE0"
    epoch="01F4" size="0032" units="0063006D00480032004F" label="005000650073"/>
<unit class="scalar" ID="WavePinsp" type="WORD" scale="E+2" range="E890:2EE0"
    epoch="01F4" size="0032" units="0063006D00480032004F"
    label="00500069006E00730070"/>
<unit class="scalar" ID="WavePtp" type="WORD" scale="E+2" range="E890:2EE0"
    epoch="01F4" size="0032" units="0063006D00480032004F" label="005000740070"/>
<unit class="scalar" ID="WavePtr" type="WORD" scale="E+2" range="E890:2EE0"
    epoch="01F4" size="0032" units="0063006D00480032004F" label="005000740072"/>
<unit class="scalar" ID="WaveVt" type="WORD" scale="E+1" range="F63C:1D4C"
    epoch="01F4" size="0032" units="006D004C" label="00560074"/>
<unit class="info" ID="SysInfoConfig" type="UWORD"/>
<unit class="info" ID="SysInfoModel" type="ENUM"
    label="004200610073006500200004D006F00640065006C">
        <enum value="0000" label="0049006E00760061006C00690064"/>
        <enum value="0001" label="004100760065006100200043006F006D0070"/>
        <enum value="0002" label="00410076006500610020002B"/>
        <enum value="0003" label="0041007600650061"/>
</unit>
<unit class="info" ID="SysInfoOUI" type="TEXT"/>
<unit class="info" ID="SysInfoSerial" type="TEXT"/>
<unit class="info" ID="SysInfoSwVer" type="TEXT"/>
<unit class="info" ID="SysInfoTimeTotal" type="UINT" scale="E+2"
    range="00000000:0098967F"/>
<unit class="info" ID="PatInfoID" type="TEXT"
    label="004900440045004E00540049004600490043004100540049004F004E"/>
</profile>
```

12.4 Profile Message – VELA

<profile model="Vela Comprehensive" profileVersion="1.0" voxpVersion="2.0"
textEncoding="UTF-32" msgID="0001">
<unit class="setting" ID="SetFiO2" type="WORD" resolution="0001" range="0015:0064"
units="00000025" label="0000004600000690000004F00000032"/>
<unit class="setting" ID="SetFiO2IncreaseActive" type="BOOL" resolution="1" range="0:1"
units="000000300000003D0000004F0000006600000066000000200000003100000003
D0000004F0000006E"
label="0000003100000030000000300000002500000020000004F00000032"/>
<unit class="setting" ID="SetFlowBias" type="WORD" scale="E+1" resolution="0001"
range="0064:00C8" units="0000004C0000002F0000006D000000690000006E"
label="0000004200000069000000610000007300000020000000460000006C0000006F
00000077"/>
<unit class="setting" ID="SetFlowCycle" type="WORD" resolution="0005"
range="0000:001E" units="00000025"
label="0000005000000043000000200000004600000006C0000006F0000007700000020
0000004300000079000000630000006C00000065"/>
<unit class="setting" ID="SetFlowCyclePsv" type="WORD" resolution="0005"
range="0005:001E" units="00000025"
label="0000005000000053000000560000002000000043000000790000006300000006C
00000065"/>
<unit class="setting" ID="SetFlowInsp" type="WORD" scale="E+1" resolution="0001"
range="0064:0578" units="0000004C0000002F0000006D000000690000006E"
label="0000005000000065000000610000006B000000200000004600000006C0000006F
00000077"/>
<unit class="setting" ID="SetNebulizerActive" type="BOOL" resolution="1" range="0:1"
units="000000300000003D0000004F0000006600000066000000200000003100000003
D0000004F0000006E" label="0000004E0000006500000062"/>
<unit class="setting" ID="SetPanelLockActive" type="BOOL" resolution="1" range="0:1"
units="000000300000003D0000004F0000006600000066000000200000003100000003
D0000004F0000006E" label=""/>
<unit class="setting" ID="SetPauseInsp" type="WORD" scale="E+2" resolution="0001"
range="0000:00C8" units="00000053000000650000006 3"
label="000000490000006E0000007300000070000000200000005000000061000000750
0000007300000065"/>
<unit class="setting" ID="SetPresHigh" type="WORD" resolution="0001"
range="0000:003C" units="000000630000006D000000480000003200000004F"
label="0000005000000072000000650000007300000020000000480000006900000067
00000068"/>
<unit class="setting" ID="SetPresInsp" type="WORD" resolution="0001"
range="0001:0064" units="000000630000006D000000480000003200000004F"
label="000000490000006E0000007300000070000000200000005000000072000000650
00000073"/>
<unit class="setting" ID="SetPresInspNPPV" type="WORD" resolution="0001"
range="0001:0028" units="000000630000006D000000480000003200000004F"

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    label="0000004E00000050000000500000005600000020000000500000006900000006E
    0000007300000070"/>
  <unit class="setting" ID="SetPresLow" type="WORD" resolution="0001"
    range="0000:002D" units="000000630000006D00000048000000320000004F"
    label="0000005000000072000000650000007300000020000004C0000006F00000077
    "/>
  <unit class="setting" ID="SetPresPeep" type="WORD" resolution="0001"
    range="0000:0023" units="000000630000006D00000048000000320000004F"
    label="00000050000000450000004500000050"/>
  <unit class="setting" ID="SetPresPsv" type="WORD" resolution="0001"
    range="0000:003C" units="000000630000006D00000048000000320000004F"
    label="00000050000005300000056"/>
  <unit class="setting" ID="SetPresPsvNPPV" type="WORD" resolution="0001"
    range="0000:0028" units="000000630000006D00000048000000320000004F"
    label="0000004E00000050000000500000005600000020000000500000005300000056
    "/>
  <unit class="setting" ID="SetRate" type="WORD" resolution="0001" range="0002:0050"
    units="00000062000000700000006D"
    label="00000052000000610000007400000065"/>
  <unit class="setting" ID="SetTimeHigh" type="WORD" scale="E+1" resolution="0001"
    range="0003:012C" units="00000053000000650000063"
    label="0000005400000069000006D00000065000000200000004800000069000000670
    00000068"/>
  <unit class="setting" ID="SetTimeHighPsv" type="BOOL" resolution="1" range="0:1"
    units="000000300000003D0000004F00000066000000660000002000000310000003
    D0000004F0000006E"
    label="0000005400000020000000480000006900000067000000680000002000000050
    0000005300000056"/>
  <unit class="setting" ID="SetTimeHighSync" type="WORD" resolution="0005"
    range="0000:0032" units="00000025"
    label="0000005400000020000000480000006900000067000000680000002000000053
    000000790000006E00000063"/>
  <unit class="setting" ID="SetTimeInsp" type="WORD" scale="E+2" resolution="0001"
    range="0003:03E8" units="00000053000000650000063"
    label="000000490000006E00000073000000700000002000000540000006900000006D
    00000065"/>
  <unit class="setting" ID="SetTimeLow" type="WORD" scale="E+1" resolution="0001"
    range="0003:012C" units="00000053000000650000063"
    label="0000005400000069000006D00000065000000200000004C0000006F0000007
    7"/>
  <unit class="setting" ID="SetTimeLowSync" type="WORD" resolution="0005"
    range="0000:0032" units="00000025"
    label="0000005400000020000004C0000006F00000077000000200000005300000079
    0000006E00000063"/>
  <unit class="setting" ID="SetTmaxPsv" type="WORD" scale="E+2" resolution="0001"
    range="001E:012C" units="00000053000000650000063"
```

```
    label="00000050000000530000005600000020000000540000006D0000006100000078
    "/>
  <unit class="setting" ID="SetTrigFlow" type="WORD" scale="E+1" resolution="0001"
    range="000A:00C8" units="0000004C0000002F0000006D000000690000006E"
    label="000000460000006C0000006F00000077000000200000005400000072000000690
    00000067"/>
  <unit class="setting" ID="SetVol" type="WORD" scale="E+1" resolution="0005"
    range="0032:07D0" units="0000006D0000006C"
    label="000000560000006F0000006C000000750000006D00000065"/>
  <unit class="setting" ID="SetVolAssured" type="WORD" scale="E+1" resolution="0005"
    range="01F4:4E20" units="0000006D0000006C"
    label="00000041000000730000007300000075000000720000006500000064000000200
    000000560000006F0000006C"/>
  <unit class="setting" ID="SetVolLimit" type="WORD" scale="E+1" resolution="0005"
    range="01F4:61A8" units="0000006D0000006C"
    label="000000560000006F0000006C000000200000004C000000690000006D0000006
    900000074"/>
  <unit class="setting" ID="SetVolSigh" type="BOOL" resolution="1" range="0:1"
    units="000000300000003D0000004F000000660000006600000020000000310000003
    D0000004F0000006E" label="00000053000000690000006700000068"/>
  <unit class="setting" ID="SetVolWave" type="ENUM"
    label="0000005700000061000000760000006500000066000006F000000720000006D
    ">
    <enum value="0000"
    label="00000053000000510000005500000041000000520000045"/>
    <enum value="0001"
      label="000000440000004500000043000000450000004C00000045000000520000
      041000000540000004900000004E00000047"/>
  </unit>
  <unit class="setting" ID="SetVsync" type="BOOL" resolution="1" range="0:1"
    units="000000300000003D0000004F000000660000006600000020000000310000003
    D0000004F0000006E" label="00000056000000730000007900000006E00000063"/>
  <unit class="setting" ID="LimitApnea" type="WORD" resolution="0001" range="000A:003C"
    units="000000530000006500000063"
    label="00000041000000700000006E00000065000000610000002000000049000000 6E
    000000740000006500000072000000760000006100000006C"/>
  <unit class="setting" ID="LimitPpeakHigh" type="WORD" resolution="0001"
    range="0005:0078" units="000000630000006D000000480000003200000004F"
    label="00000048000000690000006700000068000000200000005000000070000000650
    00000610000006B"/>
  <unit class="setting" ID="LimitPpeakLow" type="WORD" resolution="0001"
    range="0002:003C" units="000000630000006D000000480000003200000004F"
    label="0000004C0000006F00000077000000200000005000000070000000650000006 1
    0000006B"/>
  <unit class="setting" ID="LimitRateHigh" type="WORD" resolution="0001"
    range="0003:0096" units="00000062000000700000006D"
```

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    label="00000048000000690000006700000068000000200000005200000061000000740
    00000065"/>
  <unit class="setting" ID="LimitVeLow" type="WORD" scale="E+2" resolution="0001"
    range="0000:270F" units="0000004C"
    label="0000004C0000006F00000077000000200000005600000065"/>
  <unit class="setting" ID="SetAltitude" type="WORD" resolution="0001"
    range="FED4:0BF4"
    units="0000004D00000065000000740000006500000072000000073"
    label="00000041000006C00000074000000690000007400000075000000640000006 5
    "/>
  <unit class="setting" ID="SetFiO2Monitoring" type="ENUM"
    label="00000046000000690000004F00000032000000200000004D0000006F0000006
    E00000069000000740000006F00000720000000A000000450000006E000000610000
    00620000006C0000006500000064">
    <enum value="0000"
      label="00000046000000690000004F00000032000000200000004D0000006F00000
      06E00000069000000740000006F00000720000000A000000440000006900000007
      3000000610000006200000 6C0000006500000064"/>
    <enum value="0001"
      label="00000046000000690000004F00000032000000200000004D0000006F00000
      06E00000069000000740000006F00000720000000A000000450000006E0000006
      1000000620000006C0000006500000064"/>
  </unit>
  <unit class="setting" ID="SetHumidifier" type="BOOL" resolution="1" range="0:1"
    units="00000300000003D0000004F00000066000000660000002000000310000003
    D0000004F0000006E"
    label="00000048000000750000006D00000069000000640000006900000066000000 69
    0000006500000072"/>
  <unit class="setting" ID="SetLanguage" type="ENUM"
    label="0000004C000000610000006E00000067000000750000006100000067000000 65
    ">
    <enum value="0000"
      label="00000044000000650000007500000074000000730000006300000068"/>
    <enum value="0001"
      label="000000450000006E000000670000006C00000069000000 7300000068"/>
    <enum value="0002"
      label="00000043000000680000006900000 06E00000065000000 7300000065"/>
    <enum value="0003"
      label="00000045000000730000007000000061000000F10000006F0000006C"/>
    <enum value="0004"
      label="00000046000000720000006 10000006E000000E70000006 10000006900000
      073"/>
    <enum value="0005"
      label="000000500000006F0000006C000000730000006B00000069"/>
    <enum value="0006" label="00000044000000750000007400000063000000 68"/>
```

```
        <enum value="0007"
            label="00000048000000750000006E0000006700000061000000720000006900000
            0610000006E"/>
    </unit>
    <unit class="setting" ID="SetLeakComp" type="BOOL" resolution="1" range="0:1"
        units="000000300000003D0000004F0000006600000066000000200000003100000003
        D0000004F0000006E"
        label="0000004C0000006B000000200000004300000006F0000006D00000070"/>
    <unit class="setting" ID="SetMode" type="ENUM"
        label="0000004D0000004F0000004400000045000000200000005300000045000000 4
        C000000450000004300000054">
        <enum value="0001"
            label="0000004E0000002000000050000000200000005000000020000000560000000
            2000000020000000200000004100000020000002F0000002000000043"/>
        <enum value="0002"
            label="0000004E0000002000000050000000200000005000000020000000560000000
            2000000020000000200000005300000020000000490000002000000 4D0000002000000056"/>
        <enum value="0003"
            label="0000004E0000002000000050000000200000005000000020000000560000000
            2000000020000000200000005000000020000000530000002000000056"/>
        <enum value="0004"
            label="0000004E0000002000000050000000200000005000000020000000560000000
            2000000020000000200000005000000020000000530000002000000056"/>
        <enum value="0005"
            label="0000004100000050000000520000005600000020000000420000006900000
            0500000006800000061000000730000006900000063"/>
        <enum value="0006"
            label="0000004100000050000000520000005600000020000000420000006900000
            0500000006800000061000000730000006900000063"/>
        <enum value="0007"
            label="0000005000000052000000560000004300000020000000530000004900000
            04D00000056"/>
        <enum value="0008"
            label="0000005000000052000000560000004300000020000000410000002F00000
            043"/>
        <enum value="0009"
            label="0000004300000020000000500000002000000041000000200000005000000
            0200000002000000020000000500000002000000053000000 2000000056"/>
        <enum value="000A"
            label="0000005000000020000000520000002000000045000000200000005300000
            0200000005300000020000000550000002000000052000000200000045000000200
            0000002000000020000000530000002000000049000000200000004D0000002000000056"/>
        <enum value="000B"
            label="0000005000000020000000520000002000000045000000200000005300000
```

```
            020000000530000002000000055000000200000005200000020000000450000002000000020000000410000002000000F0000002000000043"/>
        <enum value="000C"
            label="000000430000002000000050000000200000004100000020000000500000002000000020000000500000002000000053000000200000056"/>
        <enum value="000D"
            label="0000005600000020000000 4F000000200000004C00000020000000550000002000000 04D000000200000004500000020000000200000002000000053000000200000049000000200000004D0000002000000056"/>
        <enum value="000E"
            label="0000005600000020000000 4F000000200000004C00000020000000550000002000000 04D000000200000004500000020000000200000002000000041000000200000002F0000002000000043"/>
    </unit>
    <unit class="setting" ID="SetNebulizerTime" type="WORD" resolution="0001"
        range="0001:003C"
        units="0000004D000000690000006E0000007500000074000000650000007 3"
        label="0000004E0000006500000062000000200000005400000069000000 6D00000065
        "/>
    <unit class="setting" ID="SetPanelLockEnable" type="ENUM"
        label="0000004C0000006F000000630000006B000000730000000A000000450000006
        E000000610000006200000 06C0000006500000064">
        <enum value="0000"
            label="0000004C0000006F000000630000006B000000730000000A0000004400000006900000073000000610000006200000 06C0000006500000064"/>
        <enum value="0001"
            label="0000004C0000006F000000630000006B000000730000000A0000004500000006E000000610000006200000 06C0000006500000064"/>
    </unit>
    <unit class="setting" ID="SetVeLowOffEnable" type="ENUM"
        label="0000004C0000006F000000770000002000000 4D000000690000006E0000002000000056000000 6F0000006C0000000A0000004F000000660000006600000020000000450000006E000000610000006200000 06C0000006500000064">
        <enum value="0000"
            label="0000004C0000006F000000770000002000000 4D000000690000006E0000002000000056000000 6F0000006C0000000A0000004F000000660000006600000020000000440000006900000073000000610000006200000 06C0000006500000064"/
            >
        <enum value="0001"
            label="0000004C0000006F000000770000002000000 4D000000690000006E0000002000000056000000 6F0000006C0000000A0000004F000000660000006600000020000000450000006E000000610000006200000 06C0000006500000064"/>
    </unit>
    <unit class="monitor" ID="MntrFiO2" type="WORD" range="0000:0064" units="00000025"
        label="0000004600000069000000 4F00000032"/>
```

```
<unit class="monitor" ID="MntrIE" type="WORD" scale="E+1" range="FC19:03E7" units=""
    label="000000490000003A00000045"/>
<unit class="monitor" ID="MntrPeep" type="WORD" range="0000:0063"
    units="000000630000006D0000004800000320000004F"
    label="00000050000000450000004500000050"/>
<unit class="monitor" ID="MntrPmean" type="WORD" range="0000:0063"
    units="000000630000006D0000004800000320000004F"
    label="00000050000000 6D0000006500000610000006E"/>
<unit class="monitor" ID="MntrPO2" type="WORD" range="0000:0050"
    units="00000070000000730000006900000067"
    label="0000004F000000320000002000000490000006E0000006C0000006500000074
    "/>
<unit class="monitor" ID="MntrPpeak" type="WORD" range="0000:008C"
    units="000000630000006D0000004800000320000004F"
    label="00000050000000700000006500000610000006B"/>
<unit class="monitor" ID="MntrRate" type="WORD" range="0000:00FA"
    units="0000006200000700000006D"
    label="00000052000000610000007400000065"/>
<unit class="monitor" ID="MntrRateSpon" type="WORD" range="0000:00FA"
    units="0000006200000700000006D"
    label="00000053000000700000006F0000006E000000200000005200000061000000074
    00000065"/>
<unit class="monitor" ID="MntrTe" type="WORD" scale="E+2" range="0000:03E7"
    units="00000053000000650000063" label="0000005400000065"/>
<unit class="monitor" ID="MntrTi" type="WORD" scale="E+2" range="0000:03E7"
    units="00000053000000650000063" label="0000005400000069"/>
<unit class="monitor" ID="MntrVeSpon" type="WORD" scale="E+1" range="0000:03E7"
    units="0000004C"
    label="00000053000000700000006F0000006E000000200000005600000065"/>
<unit class="monitor" ID="MntrVeTotal" type="WORD" scale="E+2" range="0000:03E7"
    units="0000004C" label="0000005600000065"/>
<unit class="monitor" ID="MntrVte" type="INT" scale="E+5" range="00000000:17D78400"
    units="0000006D0000006C" label="00000056000000 7400000065"/>
<unit class="monitor" ID="MntrVteMand" type="INT" scale="E+5"
    range="00000000:17D78400" units="0000006D0000006C"
    label="0000004D000000610000006E000000640000002000000056000000 74"/>
<unit class="monitor" ID="MntrVteSpon" type="INT" scale="E+5"
    range="00000000:17D78400" units="0000006D0000006C"
    label="00000053000000700000006F0000006E000000200000005600000074"/>
<unit class="monitor" ID="MntrVti" type="INT" scale="E+5" range="00000000:17D78400"
    units="0000006D0000006C" label="00000056000000 7400000069"/>
<unit class="alarm" ID="AlarmSilence" type="BOOL" label=""/>
<unit class="alarm" ID="AlarmActive" type="BOOL" label=""/>
<unit class="alarm" ID="AlarmActivePriority" type="ENUM" label="">
    <enum value="0001" label="00000048000000490000004700000048"/>
    <enum value="0002" label="0000004D0000004500000044"/>
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```
        <enum value="0003" label="0000004C0000004F00000057"/>
        <enum value="0004" label="000000410000004C00000045000000052000000054"/>
    </unit>
    <unit class="alarm" ID="AlarmInop" type="BOOL" level="HIGH"
        label="000000560000004500000004E0000005400000020000000490000004E0000004F
        00000050"/>
    <unit class="alarm" ID="AlarmMotorFault" type="BOOL" level="HIGH"
        label="0000004D0000006F000000740000006F00000072000000200000004600000061
        0000000750000006C00000074"/>
    <unit class="alarm" ID="AlarmApnea" type="BOOL" level="HIGH"
        label="00000041000000500000004E0000004500000041000000200000004900000004E
        0000005400000045000000520000005600000041000000 4C"/>
    <unit class="alarm" ID="AlarmHwFault" type="BOOL" level="HIGH"
        label="000000480000002F00000057000000200000004600000041000000550000004C
        00000054"/>
    <unit class="alarm" ID="AlarmCircDisc" type="BOOL" level="HIGH"
        label="0000004300000049000000520000004300000055000000490000005400000020
        0000004600000041000000550000004C00000054"/>
    <unit class="alarm" ID="AlarmPeepHigh" type="BOOL" level="HIGH"
        label="0000004800000049000000470000004800000020000000500000004500000045
        00000050"/>
    <unit class="alarm" ID="AlarmPwrBattLow" type="BOOL" level="HIGH"
        label="0000004C0000004F00000057000000200000004200000041000000540000005 4
        000000450000005200000059"/>
    <unit class="alarm" ID="AlarmLossO2" type="BOOL" level="HIGH"
        label="0000004F00000032000000200000004900000006E0000006C0000006500000074
        000000200000004C0000004F00000057"/>
    <unit class="alarm" ID="AlarmPpeakHighExt" type="BOOL" level="HIGH"
        label="0000004800000049000000470000004800000020000000500000004900000050
        0000002C000000200000005300000055000000530000005400000002E"/>
    <unit class="alarm" ID="AlarmPpeakHigh" type="BOOL" level="HIGH"
        label="0000004800000049000000470000004800000020000000500000004900000050
        "/>
    <unit class="alarm" ID="AlarmPpeakLow" type="BOOL" level="HIGH"
        label="0000004C0000004F00000057000000200000005000000049000000 50"/>
    <unit class="alarm" ID="AlarmFiO2Range" type="BOOL" level="HIGH"
        label="000000250000004F00000032000000200000005200000041000000 4E00000047
        000000450000002000000045000000520000005200000 04F00000052"/>
    <unit class="alarm" ID="AlarmDefaults" type="BOOL" level="MED"
        label="0000004400000045000000460000004100000055000000 4C0000005400000053
        "/>
    <unit class="alarm" ID="AlarmCheckEvents" type="BOOL" level="MED"
        label="0000004300000048000000450000004300000 04B000000200000004500000056
        000000450000004E0000005400000053"/>
```

<unit class="alarm" ID="AlarmPwrAcLoss" type="BOOL" level="MED"
label="0000004F0000004E0000002000000042000000410000005400000054000000450000005200000059000000200000005000000004F0000005700000045000000052"/>
<unit class="alarm" ID="AlarmTransducerFault" type="BOOL" level="MED"
label="0000005800000044000000430000005200000020000000460000004100000055000000 4C00000054"/>
<unit class="alarm" ID="AlarmPwrBattMed" type="BOOL" level="MED"
label="0000004D0000004500000044000000200000004200000041000000540000005400000045000000520000005900000020000000500000004F0000005700000045000000052"/>
<unit class="alarm" ID="AlarmO2PressHigh" type="BOOL" level="MED"
label="0000004F0000003200000020000000490000004E0000004C0000004500000054000000200000004800000049000000470000004800000020000000520000004100000054000000450000005200000059"/>
<unit class="alarm" ID="AlarmFanFail" type="BOOL" level="MED"
label="0000004600000041000000 4E0000002000000046000000410000004900000004C0000005500000052000000 45"/>
<unit class="alarm" ID="AlarmRateHigh" type="BOOL" level="MED"
label="0000004800000049000000470000004800000020000000520000004100000054000000 45"/>
<unit class="alarm" ID="AlarmVeLow" type="BOOL" level="MED"
label="0000004C0000004F0000005700000020000000560000006 5"/>
<unit class="alarm" ID="AlarmFiO2SensorFail" type="BOOL" level="MED"
label="0000004F0000003200000020000000530000004500000 04E000000530000004F0000005200000020000000460000004100000049000000 4C0000005500000052000000 45"/>
<unit class="alarm" ID="AlarmFiO2Cal" type="BOOL" level="MED"
label="0000004300000048000000450000004300000 04B000000200000004F0000003200000020000000430000004100000 04C"/>
<unit class="alarm" ID="AlarmNoCalData" type="BOOL" level="LOW"
label="0000004E0000004F0000002000000043000000410000004C0000002000000044000000410000005400000041"/>
<unit class="alarm" ID="AlarmInvalidSN" type="BOOL" level="LOW"
label="000000490000004E0000005600000041000000 4C0000004900000044000000200000005300000045000000520000004900000041000000 4C000000200000004E0000005500000004D0000004200000045000000 52"/>
<unit class="alarm" ID="AlarmEEPROMFault" type="BOOL" level="ALERT"
label="0000004500000045000000500000005200000 04F0000004D0000002000000046000000410000005500000004C00000054"/>
<unit class="alarm" ID="AlarmFlowSensorDisc" type="BOOL" level="ALERT"
label="0000004600000 04C0000004F0000005700000020000000530000004500000 04E000000530000004F0000005200000020000000440000004900000053000000 43"/>
<unit class="alarm" ID="AlarmDirtyFilter" type="BOOL" level="ALERT"
label="0000004300000048000000450000004300000 04B000000200000004600000049000000 4C0000005400000045000000 52"/>
<unit class="alarm" ID="AlarmPatientDefaults" type="BOOL" level="LOW"
label="0000005000000041000000540000004900000045000000 4E000000540000002000000044000000450000004600000041000000550000004C0000005400000053"/>

<unit class="alarm" ID="AlarmClockBattLow" type="BOOL" level="MED"
label="0000004C0000004F0000005700000020000000430000004C0000004F0000004
30000004B000000200000004200000041000000540000005400000045000000520000
0059"/>
<unit class="alarm" ID="AlarmHistInop" type="BOOL" level="HIGH"
label="000000560000004500000004E000000540000002000000049000000 4E0000004F
00000050"/>
<unit class="alarm" ID="AlarmHistMotorFault" type="BOOL" level="HIGH"
label="0000004D0000006F000000740000006F000000720000002000000046000000061
000000750000006C00000074"/>
<unit class="alarm" ID="AlarmHistApnea" type="BOOL" level="HIGH"
label="000000410000005000000004E000000450000004100000020000000490000004E
000000540000004500000052000000560000004 10000004C"/>
<unit class="alarm" ID="AlarmHistHwFault" type="BOOL" level="HIGH"
label="000000480000002F0000005700000020000000460000004100000055000000 4C
00000054"/>
<unit class="alarm" ID="AlarmHistCircDisc" type="BOOL" level="HIGH"
label="000000430000004900000052000000430000005500000049000000540000002 0
000000460000004100000055000000 4C00000054"/>
<unit class="alarm" ID="AlarmHistPeepHigh" type="BOOL" level="HIGH"
label="000000480000004900000047000000480000002000000050000000 4500000045
00000050"/>
<unit class="alarm" ID="AlarmHistPwrBattLow" type="BOOL" level="HIGH"
label="0000004C0000004F0000005700000020000000420000004100000054000000054
000000450000005200000059"/>
<unit class="alarm" ID="AlarmHistLossO2" type="BOOL" level="HIGH"
label="0000004F000000320000002000000490000006E0000006C0000006500000074
000000200000004C0000004F00000057"/>
<unit class="alarm" ID="AlarmHistPpeakHighExt" type="BOOL" level="HIGH"
label="000000480000004900000047000000480000002000000050000000 4900000050
0000002C000000200000005300000055000000530000005400000002E"/>
<unit class="alarm" ID="AlarmHistPpeakHigh" type="BOOL" level="HIGH"
label="000000480000004900000047000000480000002000000050000000 4900000050
"/>
<unit class="alarm" ID="AlarmHistPpeakLow" type="BOOL" level="HIGH"
label="0000004C0000004F0000005700000020000000500000004900000050"/>
<unit class="alarm" ID="AlarmHistFiO2Range" type="BOOL" level="HIGH"
label="000000250000004F000000320000002000000052000000410000004E00000047
000000450000002000000045000000520000005200000 4F00000052"/>
<unit class="alarm" ID="AlarmHistDefaults" type="BOOL" level="MED"
label="000000440000004500000046000000410000005500000 4C0000005400000053
"/>
<unit class="alarm" ID="AlarmHistCheckEvents" type="BOOL" level="MED"
label="000000430000004800000045000000430000004B000000200000004500000056
000000450000004E0000005400000053"/>

<unit class="alarm" ID="AlarmHistPwrAcLoss" type="BOOL" level="MED"
label="0000004F0000004E0000002000000042000000410000005400000054000000450000005200000059000000200000005000000004F0000005700000045000000052"/>
<unit class="alarm" ID="AlarmHistTransducerFault" type="BOOL" level="MED"
label="0000005800000044000000430000005200000020000000460000004100000055000004C00000054"/>
<unit class="alarm" ID="AlarmHistPwrBattMed" type="BOOL" level="MED"
label="0000004D0000004500000044000000200000004200000041000000540000005400000045000000520000005900000020000000500000004F0000005700000045000000052"/>
<unit class="alarm" ID="AlarmHistO2PressHigh" type="BOOL" level="MED"
label="0000004F0000003200000020000000490000004E0000004C0000004500000054000000200000004800000049000000470000004800000020000000520000004100000054000000450000005200000059"/>
<unit class="alarm" ID="AlarmHistFanFail" type="BOOL" level="MED"
label="0000004600000041000000 4E0000002000000046000000410000004900000004C0000005500000052000000450000005200000059"/>
<unit class="alarm" ID="AlarmHistRateHigh" type="BOOL" level="MED"
label="0000004800000049000000470000004800000020000000520000004100000054000000450000005200000059"/>
<unit class="alarm" ID="AlarmHistVeLow" type="BOOL" level="MED"
label="0000004C0000004F0000005700000020000000560000006 5"/>
<unit class="alarm" ID="AlarmHistFiO2SensorFail" type="BOOL" level="MED"
label="0000004F0000003200000020000000530000004500000004E000000530000004F0000005200000020000000460000004100000049000000 4C0000005500000005200000045"/>
<unit class="alarm" ID="AlarmHistFiO2Cal" type="BOOL" level="MED"
label="0000004300000048000000450000004300000004B000000200000004F0000003200000020000000430000004100000004C"/>
<unit class="alarm" ID="AlarmHistNoCalData" type="BOOL" level="LOW"
label="0000004E0000004F0000002000000043000000410000004C0000002000000044000000410000005400000041"/>
<unit class="alarm" ID="AlarmHistInvalidSN" type="BOOL" level="LOW"
label="000000490000004E0000005600000041000000 4C0000004900000044000000200000005300000045000000520000004900000041000000 4C000000200000004E000000550000004D0000004200000045000000 52"/>
<unit class="alarm" ID="AlarmHistEEPROMFault" type="BOOL" level="ALERT"
label="0000004500000045000000500000005200000 04F0000004D0000002000000046000000410000005500000004C00000054"/>
<unit class="alarm" ID="AlarmHistFlowSensorDisc" type="BOOL" level="ALERT"
label="0000004600000004C0000004F0000005700000020000000530000004500000004E000000530000004F0000005200000020000000440000004900000053000000 43"/>
<unit class="alarm" ID="AlarmHistDirtyFilter" type="BOOL" level="ALERT"
label="0000004300000048000000450000004300000004B000000200000004600000049000000 4C0000005400000045000000 52"/>
<unit class="alarm" ID="AlarmHistPatientDefaults" type="BOOL" level="LOW"
label="0000005000000041000000540000004900000045000000 4E000000540000002000000044000000450000004600000041000000550000004C0000005400000053"/>

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<unit class="alarm" ID="AlarmHistClockBattLow" type="BOOL" level="MED"
    label="0000004C0000004F0000005700000020000000430000004C0000004F0000004
    30000004B000000200000004200000041000000540000005400000045000000520000
    0059"/>
<unit class="scalar" ID="WaveFlow" type="WORD" scale="E+2" range="8AD0:7530"
    epoch="01F4" size="0032" units="0000004C0000002F0000006D000000690000006E"
    label="000000560000002000000280000006C000000700000006D00000029"/>
<unit class="scalar" ID="WaveMetric" type="UWORD" range="0000:007F" epoch="01F4"
    size="0032" units="" label=""/>
<unit class="scalar" ID="WavePaw" type="WORD" scale="E+2" range="E890:2EE0"
    epoch="01F4" size="0032" units="000000630000006D000000480000000320000004F"
    label="000000500000006100000077"/>
<unit class="scalar" ID="WaveVt" type="WORD" scale="E+1" range="E4A8:5208"
    epoch="01F4" size="0032" units="0000006D0000006C"
    label="000000560000007400000028000006D0000006C00000029"/>
<unit class="info" ID="SysInfoConfig" type="UWORD"/>
<unit class="info" ID="SysInfoDateTime" type="TEXT"/>
<unit class="info" ID="SysInfoModel" type="ENUM"
    label="000000560000004500000004E000000540000002000000004D0000004F00000044
    000000450000004C">
    <enum value="0000"
        label="000000560000006500000006C000000610000002000000043000000 6F00000
        06D000000700000007200000065000000680000006500000006E000000730000006
        900000007600000065"/>
    <enum value="0001"
        label="000000560000006500000006C000000610000002000000050000000 6C00000
        07500000073"/>
    <enum value="0002"
        label="000000560000006500000006C000000610000002000000050000000 6C00000
        075000000730000002000000049000000 6E000000740000006500000072000000 6E
        000000610000007400000069000000 6F0000006E000000610000006C"/>
    <enum value="0003"
        label="000000560000006500000006C000000610000002000000042000000 6100000
        0730000006900000063"/>
</unit>
<unit class="info" ID="SysInfoOUI" type="TEXT"/>
<unit class="info" ID="SysInfoSerial" type="TEXT"/>
<unit class="info" ID="SysInfoSwVer" type="TEXT"/>
<unit class="info" ID="SysInfoSwVerBootLoader" type="TEXT"/>
<unit class="info" ID="SysInfoTimeTotal" type="UINT" scale="E+2"
    range="00000000:0098967F"
    label="000000560000006500000006E000000740000002000000 680000006F00000075
    0000007200000073"/>
<unit class="info" ID="SysInfoTurbineSerial" type="TEXT"/>
```

```
    <unit class="info" ID="PatInfoID" type="TEXT"
        label="00000049000000440000004500000004E000000540000004900000046000000490000004300000041000000540000004900000004F0000004E"/>
    </profile>
```

12.5 Config Message

```
<config mode="ACTIVE" msgID="0004">
        <unit class="setting" ID="SetFiO2"/>
        <unit class="setting" ID="SetFlowBias"/>
        <unit class="setting" ID="SetFlowCycle"/>
        <unit class="setting" ID="SetFlowCyclePsv"/>
        <unit class="setting" ID="SetFlowDemand"/>
        <unit class="setting" ID="SetFlowInsp"/>
        <unit class="setting" ID="SetPauseInsp"/>
        <unit class="setting" ID="SetPresHigh"/>
        <unit class="setting" ID="SetPresInsp"/>
        <unit class="setting" ID="SetPresLow"/>
        <unit class="setting" ID="SetPresNasalCPAP"/>
        <unit class="setting" ID="SetPresPeep"/>
        <unit class="setting" ID="SetPresPsv"/>
        <unit class="setting" ID="SetRate"/>
        <unit class="setting" ID="SetRiseInsp"/>
        <unit class="setting" ID="SetRisePsv"/>
        <unit class="setting" ID="SetRiseVsync"/>
        <unit class="setting" ID="SetTimeHigh"/>
        <unit class="setting" ID="SetTimeHighPsv"/>
        <unit class="setting" ID="SetTimeHighSync"/>
        <unit class="setting" ID="SetTimeInsp"/>
        <unit class="setting" ID="SetTimeLow"/>
        <unit class="setting" ID="SetTimeLowSync"/>
        <unit class="setting" ID="SetTmaxPsv"/>
        <unit class="setting" ID="SetTrigFlow"/>
        <unit class="setting" ID="SetTrigPres"/>
        <unit class="setting" ID="SetVol"/>
        <unit class="setting" ID="SetVolAssured"/>
        <unit class="setting" ID="SetVolLimit"/>
        <unit class="setting" ID="SetVolSigh"/>
        <unit class="setting" ID="SetVolWave"/>
        <unit class="setting" ID="SetVsync"/>
        <unit class="setting" ID="LimitApnea"/>
        <unit class="setting" ID="LimitPeepLow"/>
        <unit class="setting" ID="LimitPpeakHigh"/>
        <unit class="setting" ID="LimitPpeakLow"/>
        <unit class="setting" ID="LimitRateHigh"/>
        <unit class="setting" ID="LimitVeHigh"/>
        <unit class="setting" ID="LimitVeLow"/>
```

```
<unit class="setting" ID="LimitVteHigh"/>
<unit class="setting" ID="LimitVteLow"/>
<unit class="setting" ID="SetAAC"/>
<unit class="setting" ID="SetCircComp"/>
<unit class="setting" ID="SetEttDia"/>
<unit class="setting" ID="SetEttLen"/>
<unit class="setting" ID="SetHumidifier"/>
<unit class="setting" ID="SetLanguage"/>
<unit class="setting" ID="SetLeakComp"/>
<unit class="setting" ID="SetMode"/>
<unit class="setting" ID="SetModeIlv"/>
<unit class="setting" ID="SetPatSize"/>
<unit class="setting" ID="SetPatWt"/>
<unit class="setting" ID="SetPresBaro"/>
<unit class="setting" ID="SetIncrFiO2"/>
<unit class="setting" ID="SetSensitivityLowVte"/>
<unit class="monitor" ID="MntrAutoPEEP"/>
<unit class="monitor" ID="MntrAutoPEEPdelta"/>
<unit class="monitor" ID="MntrAutoPEEPesoph"/>
<unit class="monitor" ID="MntrC20"/>
<unit class="monitor" ID="MntrCcw"/>
<unit class="monitor" ID="MntrCdyn"/>
<unit class="monitor" ID="MntrCdynNorm"/>
<unit class="monitor" ID="MntrClung"/>
<unit class="monitor" ID="MntrCstat"/>
<unit class="monitor" ID="MntrCstatNorm"/>
<unit class="monitor" ID="MntrFiO2"/>
<unit class="monitor" ID="MntrIE"/>
<unit class="monitor" ID="MntrLeak"/>
<unit class="monitor" ID="MntrMIP"/>
<unit class="monitor" ID="MntrNcpapMeanFlow"/>
<unit class="monitor" ID="MntrNcpapPres"/>
<unit class="monitor" ID="MntrP100"/>
<unit class="monitor" ID="MntrPair"/>
<unit class="monitor" ID="MntrPawDelta"/>
<unit class="monitor" ID="MntrPeep"/>
<unit class="monitor" ID="MntrPefr"/>
<unit class="monitor" ID="MntrPesDelta"/>
<unit class="monitor" ID="MntrPifr"/>
<unit class="monitor" ID="MntrPmean"/>
<unit class="monitor" ID="MntrPO2"/>
<unit class="monitor" ID="MntrPpeak"/>
<unit class="monitor" ID="MntrPplat"/>
<unit class="monitor" ID="MntrPplatPtp"/>
<unit class="monitor" ID="MntrPtpPEEP"/>
<unit class="monitor" ID="MntrRate"/>
```

```
<unit class="monitor" ID="MntrRateMand"/>
<unit class="monitor" ID="MntrRateSpon"/>
<unit class="monitor" ID="MntrRimp"/>
<unit class="monitor" ID="MntrRlung"/>
<unit class="monitor" ID="MntrRpeak"/>
<unit class="monitor" ID="MntrRrs"/>
<unit class="monitor" ID="MntrRSBIndex"/>
<unit class="monitor" ID="MntrTe"/>
<unit class="monitor" ID="MntrTi"/>
<unit class="monitor" ID="MntrVdel"/>
<unit class="monitor" ID="MntrVeSpon"/>
<unit class="monitor" ID="MntrVeSponNorm"/>
<unit class="monitor" ID="MntrVeTotal"/>
<unit class="monitor" ID="MntrVeTotalNorm"/>
<unit class="monitor" ID="MntrVte"/>
<unit class="monitor" ID="MntrVteMand"/>
<unit class="monitor" ID="MntrVteMandNorm"/>
<unit class="monitor" ID="MntrVteNorm"/>
<unit class="monitor" ID="MntrVteSpon"/>
<unit class="monitor" ID="MntrVteSponNorm"/>
<unit class="monitor" ID="MntrVti"/>
<unit class="monitor" ID="MntrVtiNorm"/>
<unit class="monitor" ID="MntrWobImposed"/>
<unit class="monitor" ID="MntrWobPatient"/>
<unit class="monitor" ID="MntrWobVent"/>
<unit class="alarm" ID="AlarmActive"/>
<unit class="alarm" ID="AlarmActivePriority"/>
<unit class="alarm" ID="AlarmApnea"/>
<unit class="alarm" ID="AlarmCircDisc"/>
<unit class="alarm" ID="AlarmFanFail"/>
<unit class="alarm" ID="AlarmFiO2High"/>
<unit class="alarm" ID="AlarmFiO2Low"/>
<unit class="alarm" ID="AlarmIlvSlaveDisc"/>
<unit class="alarm" ID="AlarmInop"/>
<unit class="alarm" ID="AlarmInvalidGasId"/>
<unit class="alarm" ID="AlarmLimitIE"/>
<unit class="alarm" ID="AlarmLimitTi"/>
<unit class="alarm" ID="AlarmLimitVol"/>
<unit class="alarm" ID="AlarmLossAir"/>
<unit class="alarm" ID="AlarmLossGas"/>
<unit class="alarm" ID="AlarmLossHeliox"/>
<unit class="alarm" ID="AlarmLossO2"/>
<unit class="alarm" ID="AlarmNcpapHigh"/>
<unit class="alarm" ID="AlarmNcpapHighPresLimit"/>
<unit class="alarm" ID="AlarmNcpapLow"/>
<unit class="alarm" ID="AlarmOcclusion"/>
```

```
<unit class="alarm" ID="AlarmOpenSV"/>
<unit class="alarm" ID="AlarmPeepLow"/>
<unit class="alarm" ID="AlarmPpeakHigh"/>
<unit class="alarm" ID="AlarmPpeakHighExt"/>
<unit class="alarm" ID="AlarmPpeakLow"/>
<unit class="alarm" ID="AlarmPwrAcLoss"/>
<unit class="alarm" ID="AlarmPwrBattLow"/>
<unit class="alarm" ID="AlarmRateHigh"/>
<unit class="alarm" ID="AlarmSilence"/>
<unit class="alarm" ID="AlarmTest"/>
<unit class="alarm" ID="AlarmVeHigh"/>
<unit class="alarm" ID="AlarmVeLow"/>
<unit class="alarm" ID="AlarmVteLow"/>
<unit class="alarm" ID="AlarmVtHigh"/>
<unit class="alarm" ID="AlarmHistApnea"/>
<unit class="alarm" ID="AlarmHistCircDisc"/>
<unit class="alarm" ID="AlarmHistFanFail"/>
<unit class="alarm" ID="AlarmHistFiO2High"/>
<unit class="alarm" ID="AlarmHistFiO2Low"/>
<unit class="alarm" ID="AlarmHistIlvSlaveDisc"/>
<unit class="alarm" ID="AlarmHistInop"/>
<unit class="alarm" ID="AlarmHistInvalidGasId"/>
<unit class="alarm" ID="AlarmHistLimitIE"/>
<unit class="alarm" ID="AlarmHistLimitTi"/>
<unit class="alarm" ID="AlarmHistLimitVol"/>
<unit class="alarm" ID="AlarmHistLossAir"/>
<unit class="alarm" ID="AlarmHistLossGas"/>
<unit class="alarm" ID="AlarmHistLossHeliox"/>
<unit class="alarm" ID="AlarmHistLossO2"/>
<unit class="alarm" ID="AlarmHistNcpapHigh"/>
<unit class="alarm" ID="AlarmHistNcpapHighPresLimit"/>
<unit class="alarm" ID="AlarmHistNcpapLow"/>
<unit class="alarm" ID="AlarmHistOcclusion"/>
<unit class="alarm" ID="AlarmHistOpenSV"/>
<unit class="alarm" ID="AlarmHistPeepLow"/>
<unit class="alarm" ID="AlarmHistPpeakHigh"/>
<unit class="alarm" ID="AlarmHistPpeakHighExt"/>
<unit class="alarm" ID="AlarmHistPpeakLow"/>
<unit class="alarm" ID="AlarmHistPwrAcLoss"/>
<unit class="alarm" ID="AlarmHistPwrBattLow"/>
<unit class="alarm" ID="AlarmHistRateHigh"/>
<unit class="alarm" ID="AlarmHistTest"/>
<unit class="alarm" ID="AlarmHistVeHigh"/>
<unit class="alarm" ID="AlarmHistVeLow"/>
<unit class="alarm" ID="AlarmHistVteLow"/>
<unit class="alarm" ID="AlarmHistVtHigh"/>
```

```
        <unit class="scalar" ID="WaveAnlg0"/>
        <unit class="scalar" ID="WaveAnlg1"/>
        <unit class="scalar" ID="WaveFexp"/>
        <unit class="scalar" ID="WaveFinsp"/>
        <unit class="scalar" ID="WaveFlow"/>
        <unit class="scalar" ID="WaveMetric"/>
        <unit class="scalar" ID="WavePaw"/>
        <unit class="scalar" ID="WavePes"/>
        <unit class="scalar" ID="WavePinsp"/>
        <unit class="scalar" ID="WavePtp"/>
        <unit class="scalar" ID="WavePtr"/>
        <unit class="scalar" ID="WaveVt"/>
        <unit class="info" ID="SysInfoConfig"/>
        <unit class="info" ID="SysInfoModel"/>
        <unit class="info" ID="SysInfoOUI"/>
        <unit class="info" ID="SysInfoSerial"/>
        <unit class="info" ID="SysInfoSwVer"/>
        <unit class="info" ID="SysInfoTimeTotal"/>
        <unit class="info" ID="PatInfoID"/>
    </config>
```

12.6 Data Message – AVEA

Alarm message request from the Host to the AVEA:

```
<link cmd="query" class="alarm" msgID="0007"/>
```

Alarm message reply from AVEA to Host:

```
<data class="alarm" crc="059C"
        msgID="0007">00000000000000000000000000000001000000000011000000000
        010000</data>
```

Monitor message request from Host to AVEA:

```
<link cmd="query" class="monitor" msgID="0005"/>
```

Monitor message reply from AVEA to Host:

```
<data class="monitor" crc="3A99"
        msgID="0005">8000800080000067800005C58000800080008000015FF9D000A8
        000800080000029001E000604218000023F000800000248000800080000008000 8
        000080008000006080008000 02A9004502FCC25500000000013F02A43E5D02601
        70B8000800000000000000002F52A7C8000800080000098</data>
```

Scalar message requested from Host to AVEA:

```
<link cmd="query" class="scalar" msgID="0006"/>
```

Scalar message reply from AVEA to Host:

<data class="scalar" crc="B501" seq="0391"
msgID="0006">00000000000000000000000001000000000000000000000000000000000
00000000000000000000000000000000000000000000000000000000000000000000000
00000000000000000000000000000000000000000000000000020000000000000000
00000000000000000000000000000000000000000000000000000000000000000000000
00000000000000000000000000000000000000000000000100000000000000000000000
00000000000000000002000000000000000FEFCFEF9FEF9FEFAFEF9FEFAFEFAFEFAF
EF9FEFAFEFBFEF9FEF8FEFBFEFAFEFBFEFAFEFFFEFBFEF7FEF8FEF8FEF8FEFBFEF
BFEFBFEFBFEFAFEF9FEF8FEF9FEF8FEF8FEFDFEFCFEFBFEFBFEF8FEF9FEF7FEF9FE
FAFEF9FEF9FEF9FEF8FEF8FEFAFEFAFEF701100117011601150117011001B011201160
1150111010D0114010E011401140110011201 0E011401190117011501140110011501110 11
201120111011401100115011101 0C011501140115011501 0D011201170117010E011001110
117011601150114FFFDFFFDFFFEFFFEFFFDFFFEFFFDFFFBFFF8FFFEFFFDFFF8FFF8F
FFCFFFCFFFCFFFDFFFEFFFBFFF6FFFDFFFDFFFBFFFDFFFCFFFFFFFDFFFEFFFEFFF
BFFFDFFFBFFFCFFF9FFFDFFFFFFFEFFFDFFFEFFFCFFF2FFFAFFFAFFFEFFFEFFFEFF
FEFFFDFFFEFFFE00220022002200220022002200220022002200220022002200220022002
20022002200220022002200220022002200220022002200220022002200220022002200
22002200220022002200220022002200220022002200220022002200220022002200220
12C012E012C012A012A012C012C0129012D0132012E012A012C012D012C012C012D012E01290129
012E01280128012B012D012B012C012E012B012C012E012D012A012B012E012B0129012B
012D012801270129012E012D012C012B012A012B012A012B0000000000000000000000000
00000000000000000000000000000000000000000000000000000000000000000000000
00000000000000000000000000000000000000000000000000000000000000000000000
00000000000000000000000018101820181017F018001810180017E018301860182017F01
800181018101810183018 2017C017E0183017B017D018101820180018101820180018201830
0181017F01800182017F017E01810181017C017C017E018301820181017F017F0180017F01
80000000000000000000000000000000000000000000000000000000000000000000000
00000000000000000000000000000000000000000000000000000000000000000000000
00000000000000000000000000000000000000000000000015901590158015B015A015
90159015901590159015901580158015901590159015901590159015901590159015701
58015901590159015901590157015801590159015901590157015A01590158015701590159
01590159015901580158015900000000000000000000000000000000000000000000000
00000000000000000000000000000000000000000000000000000000000000000000000
00000000000000000000000000000000000000000000000000000000000000000000000
00</data>

Setting message request from Host to AVEA:

<link cmd="query" class="setting" msgID="0007"/>

Setting message reply from AVEA to Host:

<data class="setting" crc="67EA"
msgID="0007">00150014000000190001 00C80000000F000F000600030006000000
0C0005000500050028000000000004B00140000004B000A001E03E800000BB8000

00000000000140003002800080004B01F400320BB8000000000037009610000000
0D00000000007402F8004F0003</data>

Info message request from Host to AVEA:
<link cmd="query" class="info" msgID="0004"/>

Info message reply from AVEA to Host:
<data class="info" crc="CA65"
msgID="0004">00FF000100300030003000370041003100300030003500390042004200340037003000300000004100420056003000310030003100370000003200000000260BF0000</data>

12.7 Data Message - VELA

Alarm message request from the Host to the VELA:
<link cmd="query" class="alarm" msgID="0003"/>

Alarm message reply from VELA to Host:
<data class="alarm" crc="E2E7"
msgID="0003">0100010000000100000000000000000000000000000000000000000000000000000000000000</data>

Monitor message request from Host to VELA:
<link cmd="query" class="monitor" msgID="0004"/>

Monitor message reply from VELA to Host:
<data class="monitor" crc="9B46"
msgID="0004">0014FFDF0000000580000016000C0000018000730000001C202424EE002424EE08000000002FAF080</data>

Scalar message requested from Host to VELA:
<link cmd="query" class="scalar" msgID="0005"/>

Scalar message reply from VELA to Host:
<data class="scalar" crc="AE76" seq="0094"
msgID="0005">0960094C0924090608E808C00898087A08480834080207DA07B2079E078A07620744058C0366FB46F60AF5ECF57EF3EEF394F40CF1DCF240F344F31CF2F4F394F402F47AF48EF506F56AF592F5F6F63CF68CF6F0F72CF79AF7E0F844F89EF902F970F9B600310031003100310031003100310031003100310031003100310031003100310031003200320032003200320032003200320032003200320032003200320032003200320032003200320032003200320032003200320032003200320032003207D607E907EF08020814081B082D083A0840085908530866087F087F08780898089E0885081B06AA057104C904390384032602A9020D01D401AF017001510132012501250125011F0113010600F300F300F300DA00D4

00CE00C800BB00B500B500B500A80FF71046109410E1112D117711C1120A1251129712D
D1321136313A513E614261465148F148F1482142513C0135E12F112791208118A1106108C
10150F990F220EB00E410DD50D6B0D050CA10C410BE30B870B2F0AD90A860A3609E809
9E0957091308D3</data>

Setting message request from Host to VELA:
<link cmd="query" class="setting" msgID="0006"/>

Setting message reply from VELA to Host:
<data class="setting" crc="37C2"
msgID="0006">00150006480010019015E008001000F000F000F000600008001800
1000C002800000001E00140000012C00141388800161A800001000140028000300
4B000500960001000010000E001E00000000</data>

Info message request from Host to VELA:
<link cmd="query" class="info" msgID="0007"/>

Info message reply from VELA to Host:
<data class="info" crc="6979"
msgID="0007">FFC0000000320000003000000030000000340000002D000000300000003
20000002D0000003100000030000000540000003000000034000003A000000350000003
90000003A0000003400000030000002E0000003000000032000000340000000000000000
0003000000030000000300000003700000041000000310000003000000030000000300000
0003000000042000000420000004200000037000000380000004300000000000000041000
0004500000054000000300000003200000032000000320000003000000000000000058000
000300000002E0000003000000030000002E0000003000000030000000000000000300000
000310000002E0000003000000030000002E0000003300000030000000000000009C000
0004100000045000000300000003000000032000000340000003400000033000000000000
00000</data>

12.8 Link Commands

Link Ping message request from the Host to AVEA:
<link cmd="ping" msgID="0002"/>

Link Ack message from AVEA to Host (i.e. for the above message – msgID=”0002”):
<link cmd="ack" msgID="0002"/>

Link Restart message request from the Host to AVEA:
<link cmd="restart"/>

Link Nak message from the AVEA to Host:
<link cmd="nak" error="seq" msgID="0002"/>

<link cmd="nak" error="seq" msgID="0002"/>

Link Ping message request from the Host to VELA:
<link cmd="ping" msgID="0002"/>

Link Ack message from VELA to Host (i.e. for the above message – msgID=”0002”):
<link cmd="ack" msgID="0002"/>

Link Restart message request from the Host to VELA:
<link cmd="restart"/>

Link Nak message from the VELA to Host:
<link cmd="nak" error="seq" msgID="0002"/>

<link cmd="nak" error="seq" msgID="0002"/>

13 Revision History

13.1 Rev A

This is the initial release of consolidating the VOXP Specification (91315 Rev D) with the AVEA VOXP Specialization, VELA VOXP Specialization, and the VOXP Specification Addendum (91316, 91415, and ER-1794, respectively). In addition, to Marketing’s request to consolidate the various documents into a single document, additional parameters were added that will support end tidal CO2, closed loop FiO2 , and SiPAP mode.

13.2 Rev B

10.4.2.9	Was:	“Label: “Vent hours””
10.5.1.1	Was:	“0=Disable; 1=Enable”
10.5.1.10	Was:	“cmH20”
10.5.1.11	Was:	“cmH20”
10.5.1.12	Was:	“cmH20”
10.5.1.13	Was:	“cmH20”
10.5.1.14	Was:	“cmH20”
10.5.1.15	Was:	“cmH20”
10.5.1.28	Was:	“cmH20”
10.5.1.30	Was:	“Adult/Ped/Neo)”
10.5.1.30	Inserted:	“Scale (Pediatric/Neo): 1”
10.5.1.30	Was:	“Resolution (Adult): 1”
10.5.1.30	Was:	“Range (Adult): 10 - 250”
10.5.1.30	Was:	“Units (Pediatric/Neo): L”
10.5.1.31	Was:	“Scale (Adult): 2”

10.5.1.31 Was: “Scale (Pediatric/Neo): 4”
10.5.1.31 Inserted: “Resolution (Adult): 100”
10.5.1.31 Was: Range (Adult): 0 - 250
10.5.1.31 Was: “Units (Pediatric/Neo): L”
10.5.1.32 Was: “Scale (Adult): 2”
10.5.1.32 Was: “Scale (Pediatric/Neo): 4”
10.5.1.32 Was: “Resolution (Adult): 1”
10.5.1.32 Was: Range (Adult): 10 - 250
10.5.1.32 Was: “Units (Pediatric/Neo): L”
10.5.1.38 Was: “Scale: 0; 1”
10.5.1.38 Was: “Range (Adult/Ped/Neo): 1-145;1-193”
10.5.1.42 Was: “cmH20”
10.5.1.43 Was: “cmH20”
10.5.1.44 Was: “cmH20”
10.5.1.52 Was: “Scale (Adult): 2”
10.5.1.52 Was: “Scale (Pediatric/Neo): 4”
10.5.1.52 Was: “Resolution (Adult): 1”
10.5.1.52 Was: “Range (Adult): 10 – 300”
10.5.1.52 Was: “Units (Pediatric/Neo): L”
10.5.1.53 Was: “Scale (Adult): 2”
10.5.1.53 Was: “Scale (Pediatric/Neo): 4”
10.5.1.52 Was: “Resolution (Adult): 1”
10.5.1.53 Was: “Range (Adult): 0 – 300”
10.5.1.53 Was: “Units (Pediatric/Neo): L”
10.5.1.54 Was: “SetAAC 2.2.2.1.3”
10.5.1.64 Was: “Scale (Adult): 0”
10.5.1.64 Was: “Scale (Pediatric): 1”
10.5.1.64 Was: “Resolution: 1”
10.5.1.64 Inserted: “Resolution (Pediatric): 10”
10.5.1.64 Inserted: “Resolution (Neonate): 1”
10.5.1.64 Was: “Range (Adult): 1 – 300”
10.5.1.64 Was: “Range (Pediatric): 10 – 7500”
10.5.1.72 Was: “Enum value = label: 0=Maximum; 1=Normal; 2=APOD”
10.5.2.6 Was: “Range: 5 - 30”
10.5.2.10 Was: “Scale: 1”
10.5.2.10 Was: “Resolution: 1”
10.5.2.10 Was: “Range: 0 - 200”
10.5.2.22 Was: “Scale: 1”
10.5.2.22 Was: “Resolution: 1”
10.5.2.22 Was: “Range: 3 - 100”
10.5.2.23 Was: “Scale: 1”
10.5.2.23 Was: “Resolution: 1”
10.5.2.23 Was: “Range: 30 - 3000”
10.5.2.25 Was: “Range: 30 - 300”
10.5.2.28 Was: “Range: 50 - 2000”
10.5.2.29 Was: “Range: 0 - 20000”

10.5.2.35 Was: “6 – 150 (mmHg); 8 – 200 (kPa)”
10.5.2.40 Was: “Scale: 1”
10.5.2.40 Was: “Resolution: 1”
10.5.2.40 Was: “0 - 999”
10.5.2.42 Was: “Label: FiO2 Monitor (Enabled/Disabled)
10.5.2.43 Was: “Label: Humidifier (On/Off)”
10.5.2.43 Was: “VELA GUI/Membrane: Humidifier (On/Off)”
10.5.2.45 Was: “Label: Leak Comp (On/Off)”
10.5.2.45 Was: “VELA GUI/Membrane: Leak Comp (On/Off)”
10.5.2.46 Was: “1=NPPV A/C; 2=NPPV SIMV; 3=NPPVCPAP PSV-Volume; 4= NPPVCPAP PSV-Pressure; 5=APRV BiPhasic-Volume; 6=APRV BiPhasic-Pressure; 7=PRVC SIMV; 8=PRVC A/C; 9=CPAP PSV-Pressure; 10=PRESSURE SIMV; 11= PRESSURE A/C; 12=CPAP PSV-Volume; 13=VOLUME SIMV; 14=VOLUME A/C”
10.5.2.46 Was: “Label: Mode”
10.5.2.46 Was: “VELA GUI/Membrane: Mode”
10.5.2.49 Was: “VELA GUI/Membrane: PANEL LOCK”
10.5.2.50 Was: “Enum value = label: 0=Low Min Vol Off Disabled; 1=Low Min Vol Off Enabled”
10.6.1.1 Was: “Resolution: 1”
10.6.1.2 Was: “Resolution: 1”
10.6.1.3 Was: “Resolution: 1”
10.6.1.4 Was: “Resolution: 1”
10.6.1.5 Was: “Scale: 2”
10.6.1.5 Was: “Resolution: 100”
10.6.1.5 Was: “Range: 30000”
10.6.1.6 Was: “Scale: 2”
10.6.1.6 Was: “Resolution (Adult): 100”
10.6.1.6 Was: “Resolution (Pediatric): 100”
10.6.1.6 Was: “Resolution (Neo): 1”
10.6.1.6 Was: “Range: 0 - 30000”
10.6.1.6 Inserted: “Range (Neo): 0 - 30000”
10.6.1.8 Was: “Scale: 2”
10.6.1.8 Was: “Resolution: 100”
10.6.1.8 Was: “Range: 0 - 30000”
10.6.1.9 Was: “Scale : 2”
10.6.1.9 Was: “Resolution (Adult): 100”
10.6.1.9 Was: “Resolution (Pediatric): 100”
10.6.1.9 Was: “Resolution (Neo): 1”
10.6.1.9 Was: “Range: 0 - 30000”
10.6.1.9 Inserted: “Range (Neo): 0 - 30000”
10.6.1.11 Was: “Scale : 1; 2”
10.6.1.11 Was: “Resolution: 1”
10.6.1.11 Was: “Range: 0 – 1500; 0 - 2000”
10.6.1.12 Was: “Resolution: 1”
10.6.1.12 Was: “Range: 0 – 100”

10.6.1.13 Was: “Resolution: 1”
10.6.1.13 Was: “Resolution: 1”
10.6.1.14 Was: “Resolution: 1”
10.6.1.15 Was: “Resolution: 1”
10.6.1.16 Was: “Resolution: 1”
10.6.1.17 Was: “Resolution: 1”
10.6.1.18 Was: “Resolution: 1”
10.6.1.19 Was: “Resolution: 1”
10.6.1.20 Was: “Resolution: 1”
10.6.1.21 Was: “Resolution: 1”
10.6.1.22 Was: “Resolution: 1”
10.6.1.23 Was: “Scale: 1”
10.6.1.23 Was: “Resolution (Adult): 10”
10.6.1.23 Was: “Resolution (Pediatric): 10”
10.6.1.23 Was: “Resolution (Neo): 1”
10.6.1.23 Was: “Range: 0 - 3000”
10.6.1.23 Inserted: “Range (Adult/Ped): 0 - 300”
10.6.1.24 Was: “Resolution: 1”
10.6.1.24 Was: “Range: should be -120 - 120”
10.6.1.25 Was: “Scale: 1”
10.6.1.25 Was: “Resolution (Adult): 10”
10.6.1.25 Was: “Resolution (Pediatric): 10”
10.6.1.25 Was: “Resolution (Neo): 1”
10.6.1.25 Was: “Range: 0 - 3000”
10.6.1.25 Inserted: “Range (Adult/Ped): 0 - 300”
10.6.1.26 Was: “Resolution: 1”
10.6.1.27 Was: “Resolution: 1”
10.6.1.28 Was: “Resolution: 1”
10.6.1.29 Was: “Resolution: 1”
10.6.1.30 Was: “Resolution: 1”
10.6.1.31 Was: “Resolution: 1”
10.6.1.31 Was: “Resolution: 1”
10.6.1.31 Was: “Scale: 0; 1”
10.6.1.31 Was: “Range: 545 – 760; 727 – 1013”
10.6.1.32 Was: “Resolution: 1”
10.6.1.33 Was: “Resolution: 1”
10.6.1.34 Was: “Resolution: 1”
10.6.1.35 Was: “Resolution: 1”
10.6.1.36 Was: “Resolution: 1”
10.6.1.37 Was: “Resolution: 1”
10.6.1.38 Was: “ID: MntrRpeak)”
10.6.1.38 Was: “Resolution: 1”
10.6.1.39 Was: “Resolution: 1”
10.6.1.40 Was: “Resolution: 1”
10.6.1.41 Was: “Resolution: 1”
10.6.1.42 Was: “Resolution: 1”

10.6.1.42 Was: “Resolution: 1”
10.6.1.43 Was: “Resolution: 1”
10.6.1.44 Was: “Resolution: 1”
10.6.1.45 Was: “Resolution: 1”
10.6.1.46 Was: “Scale (Adult): 8”
10.6.1.46 Was: “Scale (Pediatric/Neo): 8”
10.6.1.46 Inserted: “Scale (Neo): 1”
10.6.1.46 Was: “Resolution (Adult): 1000000”
10.6.1.46 Was: “Resolution (Pediatric): 100000”
10.6.1.46 Was: “Resolution (Neo): 10000”
10.6.1.46 Was: “Range (Adult): 0 - 400000000”
10.6.1.46 Was: “Range (Pediatric): 0 - 199900000”
10.6.1.46 Was: “Range (Neo): 0 - 99990000”
10.6.1.46 Was: “Units (Pediatric/Neo): L”
10.6.1.47 Was: “Resolution: 1”
10.6.1.48 Was: “Resolution: 1”
10.6.1.49 Was: “Resolution: 1”
10.6.1.50 Was: “Scale: 2”
10.6.1.50 Was: “Resolution (Adult/Ped): 10”
10.6.1.50 Was: “Resolution (Neo): 1”
10.6.1.50 Inserted: “Range (Adult/Ped): 0 - 999”
10.6.1.50 Was: “Range: 0 - 9990”
10.6.1.51 Was: “Resolution: 1”
10.6.1.52 Inserted: “Scale (Adult/Ped): 2”
10.6.1.52 Was: “Scale: 2”
10.6.1.52 Was: “Resolution (Adult): 10”
10.6.1.52 Was: “Resolution (Pediatric): 10”
10.6.1.52 Was: “Resolution (Neo): 1”
10.6.1.52 Inserted: “Range (Adult/Ped): 0 - 999”
10.6.1.52 Was: “Range: 0 - 9990”
10.6.1.53 Was: “Resolution: 1”
10.6.1.54 Was: “Resolution: 1”
10.6.1.55 Was: “Scale (Adult): 8”
10.6.1.55 Was: “Scale (Pediatric/Neo): 8”
10.6.1.55 Inserted: “Scale (Neo): 1”
10.6.1.55 Was: “Resolution (Adult): 1000000”
10.6.1.55 Was: “Resolution (Pediatric): 100000”
10.6.1.55 Was: “Resolution (Neo): 10000”
10.6.1.55 Was: “Range (Adult): 0 - 400000000”
10.6.1.55 Was: “Range (Pediatric): 0 - 199900000”
10.6.1.55 Was: “Range (Neo): 0 - 99900000”
10.6.1.55 Was: “Units (Pediatric/Neo): L”
10.6.1.56 Was: “Scale (Adult): 8”
10.6.1.56 Was: “Scale (Pediatric/Neo): 8”
10.6.1.56 Inserted: “Scale (Neo): 1”
10.6.1.56 Was: “Resolution (Adult): 1000000”

10.6.1.56 Was: “Resolution (Pediatric): 100000”
10.6.1.56 Was: “Resolution (Neo): 10000”
10.6.1.56 Was: “Range (Adult): 0 - 400000000”
10.6.1.56 Was: “Range (Pediatric): 0 - 199900000”
10.6.1.56 Was: “Range (Neo): 0 - 99900000”
10.6.1.56 Was: “Units (Pediatric/Neo): L”
10.6.1.57 Was: “Scale: 2”
10.6.1.57 Was: “Resolution: 1”
10.6.1.58 Was: “Scale: 2”
10.6.1.58 Was: “Resolution: 1”
10.6.1.59 Was: “Scale (Adult): 8”
10.6.1.59 Was: “Scale (Pediatric/Neo): 8”
10.6.1.59 Inserted: “Scale (Neo): 1”
10.6.1.59 Was: “Resolution (Adult): 1000000”
10.6.1.59 Was: “Resolution (Pediatric): 100000”
10.6.1.59 Was: “Resolution (Neo): 10000”
10.6.1.59 Was: “Range (Adult): 0 - 400000000”
10.6.1.59 Was: “Range (Pediatric): 0 - 199900000”
10.6.1.59 Was: “Range (Neo): 0 - 99900000”
10.6.1.59 Was: “Units (Pediatric/Neo): L”
10.6.1.60 Was: “Scale: 2”
10.6.1.60 Was: “Resolution: 1”
10.6.1.61 Was: “Scale (Adult): 8”
10.6.1.61 Was: “Scale (Pediatric/Neo): 8”
10.6.1.61 Inserted: “Scale (Neo): 1”
10.6.1.61 Was: “Resolution (Adult): 1000000”
10.6.1.61 Was: “Resolution (Pediatric): 100000”
10.6.1.61 Was: “Resolution (Neo): 10000”
10.6.1.61 Was: “Range (Adult): 0 - 400000000”
10.6.1.61 Was: “Range (Pediatric): 0 - 199900000”
10.6.1.61 Was: “Range (Neo): 0 - 99900000”
10.6.1.61 Was: “Units (Pediatric/Neo): L”
10.6.1.62 Was: “Scale: 2”
10.6.1.62 Was: “Resolution: 1”
10.6.1.63 Was: “Resolution: 1”
10.6.1.64 Was: “Resolution: 1”
10.6.1.65 Was: “Resolution: 1”
10.6.2.1 Was: “Resolution: 1”
10.6.2.2 Was: “Resolution: 1”
10.6.2.3 Was: “Resolution: 1”
10.6.2.4 Was: “Resolution: 1”
10.6.2.5 Was: “Resolution: 1”
10.6.2.6 Was: “Resolution: 1”
10.6.2.6 Was: “Range: 40 - 85”
10.6.2.7 Was: “Resolution: 1”
10.6.2.8 Was: “Resolution: 1”

10.6.2.9 Was: “Resolution: 1”
10.6.2.10 Was: “Resolution: 1”
10.6.2.11 Was: “Resolution: 1”
10.6.2.12 Was: “Resolution: 1”
10.6.2.13 Was: “Scale: 2”
10.6.2.13 Was: “Range: 0 - 9990”
10.6.2.14 Was: “Scale: 2”
10.6.2.14 Was: “Resolution: 1”
10.6.2.14 Was: “Range: 0 - 9990”
10.6.2.15 Was: “Scale: 5”
10.6.2.15 Was: “Resolution: 100000”
10.6.2.15 Was: “Range: 0 - 4000000000”
10.6.2.16 Was: “Scale: 5”
10.6.2.16 Was: “Resolution: 100000”
10.6.2.16 Was: “Range: 0 - 4000000000”
10.6.2.17 Was: “Scale: 5”
10.6.2.17 Was: “Resolution: 100000”
10.6.2.17 Was: “Range: 0 - 4000000000”
10.6.2.18 Was: “Resolution: 100000”
10.6.2.18 Was: “Scale: 5”
10.6.2.18 Was: “Range: 0 - 4000000000”
10.7.1.2 Was: “Enum value = label: 1=HIGH; 2=MED; 3=LOW;”
10.7.1.25 Was: “LOW;”
10.7.1.25 Was: “VOL LIMIT”
10.7.1.31 Was: “Label: nCPAP PRESSURE LIMIT”
10.7.1.31 Was: “AVEA GUI/Membrane: nCPAP PRESSURE LIMIT”
10.7.1.91 Was: “LOW”
10.7.1.134 Was: “AlarmHistPpeakHighExt
Description: Indication that alarm has asserted in the past, is no longer active and has not been reset. See AlarmPpeakHighExt description above.
Type: BOOL
Level: High
Label: EXT HIGH Ppeak
AVEA GUI/Membrane: EXT HIGH Ppeak”
10.7.2.3 Was: “Label: APNEA”
10.7.2.3 Was: “VELA GUI/Membrane: APNEA”
10.7.2.6 Was: “Label: CIRC FAULT”
10.7.2.6 Was: “VELA GUI/Membrane: CIRC FAULT”
10.7.2.7 Was: “Level: HIGH”
10.7.2.7 Was: “Label: LOW BATTERY”
10.7.2.7 Was: “VELA GUI/Membrane: LOW BATTERY”
10.7.2.19 Was: “Label: FAN FAULT”
10.7.2.19 Was: “VELA GUI/Membrane: FAN FAULT”
10.7.2.20 Was: “Label: O2 RANGE ERROR”
10.7.2.20 Was: “VELA GUI/Membrane: O2 RANGE ERROR”
10.7.2.21 Was: “Label: FLOW SENSOR DISCONNECT”

10.7.2.21	Was:	“VELA GUI/Membrane:	FLOW SENSOR DISCONNECT”
10.7.2.22	Was:	“Label:	HW FAULT”
10.7.2.22	Was:	“VELA GUI/Membrane:	HW FAULT”
10.7.2.24	Was:	“Label:	INVALID CONFIGURATION”
10.7.2.24	Was:	“VELA GUI/Membrane:	INVALID CONFIGURATION”
10.7.2.25	Was:	“Label:	LOW O2”
10.7.2.25	Was:	“VELA GUI/Membrane:	LOW O2”
10.7.2.28	Was:	“Label:	CHK O2 CAL”
10.7.2.28	Was:	“VELA GUI/Membrane:	CHK O2 CAL”
10.7.2.29	Was:	“Label:	HIGH O2”
10.7.2.29	Was:	“VELA GUI/Membrane:	HIGH O2”
10.7.2.30	Was:	“Label:	O2 SEN FAIL”
10.7.2.30	Was:	“VELA GUI/Membrane:	O2 SEN FAIL”
10.7.2.31	Was:	“Level:	MED”
10.7.2.34	Was:	“Label:	SUSTAINED HIGH PIP”
10.7.2.34	Was:	“VELA GUI/Membrane:	SUSTAINED HIGH PIP”
10.7.2.35	Was:	“Label:	LOW PRESS”
10.7.2.35	Was:	“VELA GUI/Membrane:	LOW PRESS”
10.7.2.36	Was:	“Label:	BATTERY ON”
10.7.2.36	Was:	“VELA GUI/Membrane:	BATTERY ON”
10.7.2.39	Was:	“Label:	HIGH BREATH”
10.7.2.39	Was:	“VELA GUI/Membrane:	HIGH BREATH”
10.7.2.41	Was:	“Level:	MED”
10.7.2.41	Was:	“Label:	LOW Ve”
10.7.2.41	Was:	“VELA GUI/Membrane:	LOW Ve”
10.7.2.42	Was:	“Label:	APNEA”
10.7.2.42	Was:	“VELA GUI/Membrane:	APNEA”
10.7.2.44	Was:	“Label:	CIRC FAULT”
10.7.2.44	Was:	“VELA GUI/Membrane:	CIRC FAULT”
10.7.2.45	Was:	“Label:	LOW BATTERY”
10.7.2.45	Was:	“VELA GUI/Membrane:	LOW BATTERY”
10.7.2.58	Was:	“Label:	FAN FAULT”
10.7.2.58	Was:	“VELA GUI/Membrane:	FAN FAULT”
10.7.2.59	Was:	“Label:	O2 RANGE ERROR”
10.7.2.59	Was:	“VELA GUI/Membrane:	O2 RANGE ERROR”
10.7.2.60	Was:	“Label:	FLOW SENSOR DISCONNECT”
10.7.2.60	Was:	“VELA GUI/Membrane:	FLOW SENSOR DISCONNECT”
10.7.2.61	Was:	“Label:	HW FAULT”
10.7.2.61	Was:	“VELA GUI/Membrane:	HW FAULT”
10.7.2.63	Was:	“Label:	INVALID CONFIGURATION”
10.7.2.63	Was:	“VELA GUI/Membrane:	INVALID CONFIGURATION”
10.7.2.64	Was:	“Label:	LOW O2”
10.7.2.64	Was:	“VELA GUI/Membrane:	LOW O2”
10.7.2.67	Was:	“Label:	CHK O2 CAL”
10.7.2.67	Was:	“VELA GUI/Membrane:	CHK O2 CAL”
10.7.2.68	Was:	“Label:	HIGH O2”

10.7.2.68	Was:	"VELA GUI/Membrane:	HIGH O2"
10.7.2.69	Was:	"Label:	O2 SEN FAIL"
10.7.2.69	Was:	"VELA GUI/Membrane:	O2 SEN FAIL"
10.7.2.70	Was:	"Level:	MED"
10.7.2.70	Was:	"Label:	PATIENT DEFAULTS"
10.7.2.70	Was:	"VELA GUI/Membrane:	PATIENT DEFAULTS"
10.7.2.73	Was:	"Label:	SUSTAINED HIGH PIP"
10.7.2.73	Was:	"VELA GUI/Membrane:	SUSTAINED HIGH PIP"
10.7.2.74	Was:	"Label:	LOW PRESS"
10.7.2.74	Was:	"VELA GUI/Membrane:	LOW PRESS"
10.7.2.75	Was:	"Label:	BATTERY ON"
10.7.2.75	Was:	"VELA GUI/Membrane:	BATTERY ON"
10.7.2.78	Was:	"Label:	HIGH BREATH"
10.7.2.78	Was:	"VELA GUI/Membrane:	HIGH BREATH"
10.7.2.80	Was:	"Level:	MED"
10.7.2.80	Was:	"Label:	LOW Ve"
10.7.2.80	Was:	"VELA GUI/Membrane:	LOW Ve"
Added:	10.7.2.81	ID:	AlarmSilence
		Description	Active/Inactive state of the capability to locally silence the audible ventilator alarms.
		Type:	BOOL
		Label:	ALARM SILENCE
		VELA GUI/Membrane:	ALARM SILENCE"
10.8.2.4	Was:	"Label:	Vt(ml)"
10.8.2.4	Was:	"VELA GUI/Membrane:	Vt(ml)"

13.3 Rev C

1.4	Removed the following references: VIASYS Open XML Protocol Specification Addendum – ER1794 Rev. A Specification, VOXP Avea Specialization – P/N 91316 Rev. C Specification, VOXP Vela Specialization – P/N 91415 Rev. A
5.5	Clarified the description for scalar example.
7.6	Added "TrendNcpapMeanFlow" and "Nasal Continuous Positive Airway Pressure Mean Flow."
7.6	was "TrendnCPAP"
10.1.1	Removed references to "Avea".
10.1.2	Added a limit to the number of waveforms and baud rate.
10.3	Removed references to class tables. The tables have been replaced with the text descriptions found in sections 10.4 – 10.8 prior to Rev A.
10.3	Added class priority scheme.
10.5.1.54	was "Label: ACC (On/Off)"
10.5.1.58	was "Label Active (On/Off)"
10.5.1.60	was "Label Leak Comp (On/Off)"
10.8.1.13	Added the parameter WaveVt.

Throughout the document, minor formatting and grammatical corrections per Marketing's request. For example, "Avea" was globally changed to "AVEA