

Innovian Anesthesia



WARNING

To properly use this software, read and comply with the Instructions for Use and this guide.

Device Protocol Support Guide

Trademarks

Trademarks owned by Dräger

Trademark
Apollo®
Fabius®
Innovian®
MEDIBUS.X®
Perseus®
Primus
Titus
Vamos®
Zeus

Listed trademarks are only registered in certain countries and not necessarily in the country in which this material is released. The following web page provides a list of the countries in which the trademarks are registered:
www.draeger.com/trademarks

Trademarks owned by third-party manufacturers

Trademark	Trademark owner
Baxter	Baxter International Inc.
Bayer	Bayer Aktiengesellschaft Medrad and Veris - Bayer Healthcare LLC
Medrad	
Veris	
TwitchView	Blink Device Company
CASMED	CAS Medical Systems, Inc.
FORE-SIGHT	
NICOM	Cheetah Medical, Inc.
Starling	
INVOS	Covidien LP
Edwards	Edwards Lifesciences Corporation
Edwards Lifesciences	
EV1000	
HemoSphere	
Vigilance	
Vigilance II	
Vigileo	
Datex-Ohmeda	GE Healthcare Finland Oy
GE Healthcare	General Electric Company
MAQUET FLOW-i	Maquet Critical Care AB
Maquet	Maquet GmbH
Masimo	Masimo Corporation
ToFscan	IDMED SAS
IDMED	

Contents

Overview	5	Purpose of this release	76
Introduction	6	Compatibility	76
Innovian Parameter Labels	6	Supported parameters	78
MEDIBUS SW 6.0.6.13	7	MAQUET FLOW-i Protocol SW 7.0.24.3	79
Purpose of this release	8	Purpose of this release	80
Compatibility	8	Compatibility	80
Software 6.0.6.13 updates	8	Supported parameters	81
Supported parameters	11	Cheetah Protocol SW 7.0.26.9	85
MEDIBUS SW 7.0.26.12	17	Purpose of this release	86
Purpose of this release	18	Compatibility	86
Compatibility	18	Supported parameters	88
SW 7.0.26.12 deprecated parameters	18	Masimo ASCII 1 Protocol SW 2.2.5.1	89
SW 7.0.26.12 extended parameter support	18	Purpose of this release	90
MEDIBUS SW 8.0.41.9	21	Compatibility	90
Purpose of this release	22	Supported parameters	91
Compatibility	22	Masimo IAP Protocol SW 8.0.3.3	93
SIEMENS Export Protocol SW 6.0.6.15	25	Purpose of this release	94
Purpose of this release	26	Compatibility	94
Compatibility	26	Supported parameters	96
Software 6.0.6.15 updates	27	Edwards/Baxter SW 8.0.43.8	103
Supported parameters	31	Purpose of this release	104
Medrad Veris 8600 SW 6.1.1.3	43	Compatibility	104
Purpose of this release	44	Supported device types	104
Compatibility	44	Supported parameters	105
Supported parameters	44	Blink TwitchView SW 9.0.21.4	107
Covidien INVOS Protocol	49	Purpose of this release	108
Purpose of this release	50	Compatibility	108
Compatibility	50	New parameters	109
Supported parameters	51	Measured parameter updates	109
Philips Intellivue Protocol SW 6.5.0.0	59	Supported parameters	109
Purpose of this release	60	Datex AS 3/5 SW 9.0.27.2	111
Compatibility	60	Purpose of this release	112
Supported parameters	62	Compatibility	112
CASMED Protocol SW 6.5.1.0	75	Supported parameters	113
		Datex AS 3/5 SW 9.0.53.0	127

Contents

Purpose of this release.	128
Compatibility.	128
Supported parameters	129
ToFscan Protocol Interface SW 9.0.40.0.	131
Purpose of this release.	132
Compatibility.	132
New parameters.	133
Measured parameter updates	133
Supported parameters	133

Overview

Introduction	6
Innovian Parameter Labels	6

Introduction

This guide provides information about the following Innovian Anesthesia device protocol support releases:

- [MEDIBUS SW 6.0.6.13](#)
- [MEDIBUS SW 7.0.26.12](#)
- [MEDIBUS SW 8.0.41.9](#)
- [SIEMENS Export Protocol SW 6.0.6.15](#)
- [Medrad Veris 8600 SW 6.1.1.3](#)
- [Covidien INVOS Protocol](#)
- [Philips Intellivue Protocol SW 6.5.0.0](#)
- [CASMED Protocol SW 6.5.1.0](#)
- [MAQUET FLOW-i Protocol SW 7.0.24.3](#)
- [Cheetah Protocol SW 7.0.26.9](#)
- [Masimo ASCII 1 Protocol SW 2.2.5.1](#)
- [Masimo IAP Protocol SW 8.0.3.3](#)
- [Edwards/Baxter SW 8.0.43.8](#)
- [Blink TwitchView SW 9.0.21.4](#)
- [Datex AS 3/5 SW 9.0.27.2](#)
- [Datex AS 3/5 SW 9.0.53.0](#)
- [ToFscan Protocol Interface SW 9.0.40.0](#)

NOTE

Dräger releases enhancements to device interfaces separately from the Innovian Anesthesia software.

Dräger provides a new edition of this document when it enhances support for a device protocol.

For information about updates to this document or anything related to Innovian Anesthesia, contact your Dräger representative.

Innovian Parameter Labels

Innovian may display a parameter label that is different from a displayed label on a particular device.

The Innovian parameter label is intended to provide a generic but meaningful and clear representation of a particular parameter while showing consistency across the connected devices.

MEDIBUS SW 6.0.6.13

Purpose of this release	8
Compatibility	8
Software 6.0.6.13 updates	8
Supported legacy MEDIBUS device types	8
Supported MEDIBUS.X device types	9
Cardiac output parameters for which Innovian Anesthesia no longer supports intermittent readings	9
Other parameters that Innovian Anesthesia no longer supports	9
Unit of measure (UOM) conversion for pressure	11
Supported parameters	11
Ventilation	11
Respiratory Volume	12
Respiratory Gas Concentration	12
Freshgas	13
Respiratory Pressure	13
Hemodynamic	13
Neuro	14
Respiratory Rate	14
Blood Pressure	14
Airway	15
Temperature	15
Electrocardio	15
Hemoglobin Oxygen Saturation	15

Purpose of this release

The Innovian Anesthesia MEDIBUS Device Interface SW 6.0.6.13 provides compatibility with both the MEDIBUS and MEDIBUS.X devices profile and continues to support many devices running the original MEDIBUS protocols.

For a list of supported devices, see "[Supported legacy MEDIBUS device types](#)" on page 8 and "[Supported MEDIBUS.X device types](#)" on page 9.

Innovian Anesthesia no longer supports some parameters for devices used outside the perioperative environment.

Compatibility

You can use the MEDIBUS Device Interface SW 6.0.6.13 at any Innovian Anesthesia site having supported devices that communicate through MEDIBUS.X or an original MEDIBUS protocol.

The software automatically detects the protocol version used by the device.

Do *not* connect unsupported devices to Innovian Anesthesia.

Software 6.0.6.13 updates

Supported legacy MEDIBUS device types

Device	Identifier
Apollo	8057
Cato	8051
Cicero B	8020
Cicero EM, Cicero EM Colour	8060
Fabius GS/GS premium, Fabius MRI Fabius plus, Fabius OS, Fabius Tiro	8088
Julian	8055
Pallas	8057
PM8014 (see NOTE)	Undefined
PM8050, SA2, Sulla, Trajan, Titus	8050
PM 8060, PM 8060 Colour	8061
PM8060 Vitara	8062

Device	Identifier
Primus IE	8056
Vamos	9017
Zeus	8064

NOTE

PM8014 data can be accessed through another device *only*. These parameters are appended to those sent by the Cicero C, Sulla, etc.

Supported MEDIBUS.X device types

The MEDIBUS.X Device Interface SW 6.0.6.13 supports the Primus family, Zeus, and Perseus anesthesia device types.

For information about Innovian Anesthesia support for other anesthesia device types that use MEDIBUS.X, contact your Dräger representative.

Cardiac output parameters for which Innovian Anesthesia no longer supports intermittent readings

Innovian Anesthesia no longer automatically collects the following MEDIBUS cardiac output parameters, even if selected, because they *cannot* always be correctly charted:

- Cardiac Index
- CO
- CO Mean
- Left Ventricle Stroke Index

- Right Ventricle Stroke Index
- Stroke Index
- Stroke Volume
- SVR

If necessary, you can record these parameters in Innovian Anesthesia manually. For more information about the MEDIBUS cardiac output parameters, contact your Dräger representative.

Other parameters that Innovian Anesthesia no longer supports

Innovian Anesthesia no longer automatically collects the following MEDIBUS parameters, even if the parameter is selected. These parameters generally are *not* used in the perioperative environment.

- Ambient Humidity
- Ambient Temp
- Amp Perf Index
- Apnea per Hour
- Arrhythmia Code
- ASB Insp Duration
- Carriergas Flow
- Chamber Temp
- Consumption Xenon
- Correlation Factor
- Dead Space VDS
- Early Rate
- ECG ST 1
- ECG ST 2
- Econometer Level
- EEG Left Alpha Amp
- EEG Left Alpha Rel Power
- EEG Left Beta Amp
- EEG Left Beta Rel Power
- EEG Left Burst Suppr ratio
- EEG Left Delta Amp
- EEG Left Delta Ratio
- EEG Left Delta Rel Power
- EEG Left EMG
- EEG Left Frontal Impedance
- EEG Left Lateral Impedance
- EEG Left Mean Amp
- EEG Left SEF50
- EEG Left SEF90
- EEG Left SEF95
- EEG Left Theta Amp
- EEG Left Theta Rel Power
- EEG Left Total Power
- EEG Right Alpha Amp
- EEG Right Alpha Rel Power
- EEG Right Beta Amp
- EEG Right Beta Rel Power
- EEG Right Burst Suppr ratio
- EEG Right Delta Amp

- EEG Right Delta Ratio
- EEG Right Delta Rel Power
- EEG Right EMG
- EEG Right Frontal Impedance
- EEG Right Lateral Impedance
- EEG Right Mean Amp
- EEG Right SEF50
- EEG Right SEF90
- EEG Right SEF95
- EEG Right Theta Amp
- EEG Right Theta Rel Power
- EEG Right Total Power
- Exp Peak Flow
- Exp Xenon
- Gas Transport Coefficient
- Heating Power
- High Freq Tidal Volume
- Insp Mandatory Minute Volume
- Insp Peak Flow
- Insp Xenon
- Inspiratory Time
- Intrinsic Peep Breath Pressure
- Leakage
- Lung Time Constant
- Mandatory Trigger Freq
- Mattress Temp
- Measured I:E E-Part
- Measured I:E I-Part
- Min Airway Press
- Negative Insp Force
- No pulse duration
- Occlusion Press
- P4 Dias
- P4 Sys
- Pair Rate
- Peripheral Pulse
- Prol Rate
- Pulse 3
- Pulse 4
- Pulse-Resp Rate Coincidence Duration
- Rapid Shallow Breath Index
- Relative Dead Space
- Resp Rate (Vol/Flow Pediat)
- Resp Rate ECG
- Resp Rate Thermistor
- Respiratory Quotient
- Respiratory R/V Ratio
- Spontaneous Exp Time
- Spontaneous Fraction MV
- Spontaneous Insp Time
- ST Slope 1
- ST Slope 2
- Svpb
- Trapped Volume
- Vpb
- Vrun Time
- Vtach Time

Unit of measure (UOM) conversion for pressure

The legacy MEDIBUS and MEDIBUS.X protocols specify transmitting pressure values in mbar or bar, volumes and flow in milliliters (ml) or liters (l), and temperature in degrees Celsius.

To accommodate physician preferences in the USA, the Innovian Anesthesia MEDIBUS interface performs the following conversions:

Measurement	UOM specified by MEDIBUS	Converted to
Flow	Liter per millibar (l/mbar)	Liter per cm H2O (l/cm H2O)
	Milliliter per mbar (ml/mbar)	Milliliter per cm H2O (ml/cm H2O)
O2 supply pressure	Millibar (mbar)	Pounds per square inch (psi)
Pressure	Millibar (mbar)	Centimeter of water (cm H2O)
Temperature	Degrees Celsius	Degrees Fahrenheit

NOTE

For the pressure conversion, the Innovian Anesthesia MEDIBUS interface uses the ratio 1.00000-to-1.00000 of mbar to cm H2O rather than the exact ratio 1.00000-to-1.01972. This is consistent with the devices that use the protocol.

Supported parameters

The following subsections list the supported MEDIBUS protocol parameters, organized by Innovian Anesthesia group.

NOTE

If Innovian Anesthesia receives an unsupported or unknown parameter identifier, an entry is added to the DITSystem.Log file.

Ventilation

- Leakage (ml/min)
- Resistance (mbar/l/s)
- Resistance (cm H2O/l/s)
- Correlation Factor (—)
- Elastance (mbar/l)
- Elastance (cm H2O/l)
- Time Constant (S)

Respiratory Volume

- Insp Mandatory Tidal Volume (l)
- Insp Mandatory Tidal Volume (ml)
- Insp Spontaneous Tidal Volume (l)
- Insp Spontaneous Tidal Volume (ml)
- Exp Spontaneous Tidal Volume (l)
- Exp Spontaneous Tidal Volume (ml)
- Exp Tidal Vol (ml)
- Exp Tidal Vol (l)
- Insp Tidal Vol (ml)
- Insp Tidal Vol (l)
- Tidal Volume (l)
- Tidal Volume (ml)
- Spontaneous Tidal Vol (ml)
- Spontaneous Tidal Vol (l)
- Mandatory Tidal Vol (ml)
- Mandatory Tidal Vol (l)
- Exp Mandatory Tidal Volume (l)
- Exp Mandatory Tidal Volume (ml)
- Exp Spontaneous Minute Volume (l)
- Exp Spontaneous Minute Volume (ml)
- Minute Volume (ml)
- Minute Volume (l)
- Mandatory Minute Vol (ml)
- Mandatory Minute Vol (l)
- Exp Mandatory Minute Volume (l)
- Exp Mandatory Minute Volume (ml)
- Spontaneous Minute Vol (l)
- Spontaneous Minute Vol (ml)
- Compliance (ml/mbar)
- Compliance (l/mbar)
- Compliance (ml/cm H2O)
- Dynamic Compliance (l/bar)

Respiratory Gas Concentration

- Insp N2O (%)
- Exp N2O (%)
- Insp O2 (%)
- Exp O2 (%)
- Insp CO2 (%)
- Insp CO2 (mm Hg)
- Insp CO2 (kPa)
- Delta O2 (%)
- CO2 Production (ml/min)
- etCO2 (mm Hg)
- etCO2 (%)
- etCO2 (kPa)
- Consumption Air (l)
- Consumption N2O (l)
- Consumption O2 (l)
- Consumption HAL (ml)
- Consumption ENF (ml)
- Consumption ISO (ml)
- Consumption DES (ml)
- Consumption SEV (ml)
- Consumption Gas Total (ml)
- FG HAL (%)
- FG ENF (%)
- FG ISO (%)
- FG Agent (%)
- Insp Agent (kPa)
- Exp Agent (kPa)
- Insp Agent 2nd (kPa)
- Exp Agent 2nd (kPa)
- Insp HAL (kPa)
- Exp HAL (kPa)
- Insp ENF (kPa)
- Exp ENF (kPa)
- Insp ISO (kPa)
- Exp ISO (kPa)
- Insp DES (kPa)
- Exp DES (kPa)
- Insp SEV (kPa)
- Exp SEV (kPa)
- Insp HAL (%)
- Exp HAL (%)
- Insp ENF (%)
- Exp ENF (%)
- Insp ISO (%)
- Exp ISO (%)
- Insp DES (%)
- Exp DES (%)
- Insp SEV (%)

- Exp SEV (%)
- Insp Agent (%)
- Exp Agent (%)
- Insp Agent 2nd (%)
- Exp Agent 2nd (%)
- HAL Total Uptake (ml)
- DES Total Uptake (ml)
- ISO Total Uptake (ml)
- SEV Total Uptake (ml)
- ENF Total Uptake (ml)
- O2 Uptake (10ml/min)
- Insp MAC (—)
- Exp MAC (—)

Freshgas

- FG Flow (l/min)
- FG N2O Flow (ml/min)
- FG N2O Flow (l/min)
- FG AIR Flow (ml/min)
- FG AIR Flow (l/min)
- FG O2 Flow (ml/min)
- FG O2 Flow (l/min)

Respiratory Pressure

- O2 Supply Pressure (mbar)
- O2 Supply Pressure (psi)
- Mean Brth Press (mbar)
- Mean Brth Press (cm H2O)
- Plateau Pressure (mbar)
- Plateau Pressure (cm H2O)
- PEEP (mbar)
- PEEP (cm H2O)
- Peak Press (mbar)
- Peak Press (cm H2O)

Hemodynamic

- RA (mm Hg)
- LAP (mm Hg)
- PA1 Sys (mm Hg)
- PA1 Mean (mm Hg)
- PA1 Dias (mm Hg)
- PA1 Pulse (bpm)
- PA2 Sys (mm Hg)
- PA2 Mean (mm Hg)
- PA2 Dias (mm Hg)
- PA2 Pulse (bpm)
- PA3 Sys (mm Hg)
- PA3 Mean (mm Hg)
- PA3 Dias (mm Hg)
- PA3 Pulse (bpm)
- PA4 Sys (mm Hg)
- PA4 Mean (mm Hg)
- PA4 Dias (mm Hg)
- PA4 Pulse (bpm)
- LV Dias (mm Hg)
- LV Sys (mm Hg)
- LV Mean (mm Hg)
- RV Dias (mm Hg)
- RV Sys (mm Hg)
- RV Mean (mm Hg)
- P1 Sys (mm Hg)
- P1 Mean (mm Hg)
- P2 Sys (mm Hg)
- P2 Dias (mm Hg)
- P2 Mean (mm Hg)

Neuro

- ICP (mm Hg)
- ICP1 Mean (mm Hg)
- ICP2 Mean (mm Hg)
- ICP3 Mean (mm Hg)
- ICP4 Mean (mm Hg)
- CPP (mm Hg)
- TOF Ratio (%)
- TOF Count (—)
- BIS Index (—)
- BIS EMG (dB)
- BIS SEF95 (Hz)
- BIS Total Power (dB)
- Burst Count (—)
- SQI (%)
- BSR (%)
- PTC Count (—)
- NMT Temp (C)
- NMT Temp (F)
- NMT Single (%)

Respiratory Rate

- Mandatory Resp Rate (bpm)
- Resp Rate Press (bpm)
- Spontaneous Resp Rate (bpm)
- Resp Rate CO2 (bpm)
- Resp Rate Vol (bpm)
- Resp Rate (bpm)

Blood Pressure

- NIBP Sys (mm Hg)
- NIBP Mean (mm Hg)
- NIBP Dias (mm Hg)
- NIBP Pulse (bpm)
- NIBP Sys (kPa)
- NIBP Dias (kPa)
- NIBP Mean (kPa)
- Pulse (bpm)
- Pulse 1 (bpm)
- Pulse 2 (bpm)
- P1 Sys (mm Hg)
- P1 Mean (mm Hg)
- P1 Dias (mm Hg)
- P2 Sys (mm Hg)
- P2 Mean (mm Hg)
- P2 Dias (mm Hg)
- P3 Sys (mm Hg)
- P3 Mean (mm Hg)
- P3 Dias (mm Hg)
- P4 Mean (mm Hg)
- ART 1 Sys (mm Hg)
- ART 1 Mean (mm Hg)
- ART 1 Dias (mm Hg)
- ART 1 Pulse (bpm)
- ART 2 Sys (mm Hg)
- ART 2 Mean (mm Hg)
- ART 2 Dias (mm Hg)
- ART 2 Pulse (bpm)
- ART 3 Sys (mm Hg)
- ART 3 Mean (mm Hg)
- ART 3 Dias (mm Hg)
- ART 3 Pulse (bpm)
- ART 4 Sys (mm Hg)
- ART 4 Mean (mm Hg)
- ART 4 Dias (mm Hg)
- ART 4 Pulse (bpm)
- CVP1 Mean (mm Hg)
- CVP1 Pulse (bpm)
- CVP2 Mean (mm Hg)
- CVP2 Pulse (bpm)
- CVP3 Mean (mm Hg)
- CVP3 Pulse (bpm)
- CVP4 Mean (mm Hg)
- CVP4 Pulse (bpm)
- ABP1 Sys (mm Hg)
- ABP1 Mean (mm Hg)
- ABP1 Dias (mm Hg)
- ABP1 Pulse (bpm)
- ABP2 Sys (mm Hg)
- ABP2 Mean (mm Hg)

- ABP2 Dias (mm Hg)
- ABP2 Pulse (bpm)
- ABP4 Sys (mm Hg)
- ABP4 Mean (mm Hg)
- ABP4 Dias (mm Hg)
- ABP4 Pulse (bpm)
- ICP1 Pulse (bpm)
- ICP2 Pulse (bpm)
- ICP3 Pulse (bpm)
- ICP4 Pulse (bpm)

Airway

- Apnea Duration (S)

Temperature

- Temp 2 (C)
- Temp 2 (F)
- Airway Temp (C)
- Airway Temp (F)
- Delta Temp (C)
- Delta Temp (F)
- Temp 1 (C)
- Temp 1 (F)

Electrocardio

- Pulse Deficit (bpm)
- Asystolic time (S)
- Beat to Beat (bpm)
- Heart Rate (bpm)
- ECG ST I (mm)
- ECG ST II (mm)
- ECG ST III (mm)
- ECG ST AVL (mm)
- ECG ST AVF (mm)
- ECG ST AVR (mm)
- ECG ST V (mm)
- ECG ST V+ (mm)

Hemoglobin Oxygen Saturation

- SpO2 Pulse (bpm)
- SpO2 (%)

This page intentionally left blank

MEDIBUS SW 7.0.26.12

Purpose of this release	18
Compatibility	18
SW 7.0.26.12 deprecated parameters	18
SW 7.0.26.12 extended parameter support	18
Misc	19
Ambient	19
Ventilation	19
Respiratory Volume	20
Respiratory Gas Concentration	20
Respiratory Pressure	20
Respiratory Rate	20

Purpose of this release

The Innovian Anesthesia MEDIBUS Device Interface SW 7.0.26.12 release extends the supported parameter list of the Innovian Anesthesia MEDIBUS Device Interface SW 6.0.6.13 release IFU. These new parameters are listed in the SW 7.0.26.12 Extended Parameter Support section.

There is no change to the supported device profile defined in the Innovian Anesthesia SW 6.0.6.13 release.

The former Leakage labeled parameter of the SW 6.0.6.13 release is deprecated and replaced with "Leakage:Internal" labeled parameter. Refer to the SW 7.0.26.12 Notes section.

Compatibility

You can use the MEDIBUS Device Interface SW 7.0.26.10 at any Innovian Anesthesia site having supported devices that communicate through MEDIBUS.X or an original MEDIBUS protocol.

The software automatically detects the protocol version used by the device.

Do *not* connect unsupported devices to Innovian Anesthesia.

SW 7.0.26.12 deprecated parameters

The former "Leakage" labeled parameter is deprecated. Cases archived prior to installing SW 7.0.26.12 will continue to display "Leakage". After installation of SW 7.0.26.12 leakage will be dis-

played as "Leakage:Internal". Note that it is required to add the new parameter labeled "Leakage:Internal" to the Recorder environments.

SW 7.0.26.12 extended parameter support

The following subsections list the new supported MEDIBUS.X parameters introduced by SW 7.0.26.12 release. These are an extension of the parameter support list in the 6.0.6.13 release.

Organized by Innovian Anesthesia Group.

Misc

Parameter	UOM
Tcase	min

Ambient

Parameter	UOM
Amb Bar Press	mbar
Am Bar Press	psi

Ventilation

Parameter	UOM
Leakage:Internal ^{1) 2) 3)}	ml/min
Leakage:Total ⁴⁾	ml/min
SVC-TI	S
SVC-Trigger	l/min
Resistance:Total ⁵⁾	mbar/l/s
Resistance:Total ⁵⁾	cm H ₂ O/l/s
Delta VTi-VTe	ml

- 1) SW 7.0.26.12 deprecates the former "Leakage" labeled parameter. Cases archived prior to installing SW 7.0.26.12 will continue to display "Leakage". After installation of SW 7.0.26.12 leakage will be displayed as "Leakage:Internal". Note that it is required to add the new parameter labeled "Leakage:Internal" to the Recorder environment.
- 2) Leakage:Internal indicates leakage of the internal breathing system including Ventilator - piston, inspiratory hose, Y-piece, and exp. hose, peep valve. Completion of self-test is required.
- 3) This parameter replaces the former "Leakage" parameter of the SW 6.0.6.13 release.
- 4) Leakage:Total indicates total leakage of the complete breathing system which includes the external disposable breathing circuit, bag, soda lime absorber, manual breathing tube and manual breathing bag while in Man/Spont Mode. Computed from patient flow/volume and insp/exp.
- 5) Resistance:Total indicates resistance of the external disposable hoses. Completion of self-test is required. Resistance:Total differs from the existing SW 6.0.6.13 "Resistance" parameter. The SW 6.0.6.13 "Resistance" parameter indicates the patient resistance, excluding the hoses and breathing system. Completion of a self-test is required.

Respiratory Volume

Parameter	UOM
Compliance:Total ¹⁾	ml/h/Pa
Compliance:External ²⁾	ml/h/Pa
SVC-VT Low	ml/kg
SVC-VT High	ml/kg
SVC-VT	ml/kg
Cdyn Mean	l/bar

- 1) Compliance:Total indicates total compliance of the internal system plus external hoses and disposables. Completion of self-test is required.
- 2) Compliance:External indicates compliance of external disposable insp-exp hoses only. Self-test is required.

Respiratory Gas Concentration

Parameter	UOM
SVC-etCO2 High	mm Hg
SVC-etCO2 Low	mm Hg
SVC-etCO2	mm Hg

Respiratory Pressure

Parameter	UOM
SVC-Delta P _{supp}	mbar
SVC-P _{insp}	mbar

Respiratory Rate

Parameter	UOM
SVC-RR Total	bpm
SVC-RR Spon	bpm
SVC-Rrate	bpm
SVC-RRmin	bpm

MEDIBUS SW 8.0.41.9

Purpose of this release	22
Compatibility	22
Cabling	22
Software 8.0.41.9 extended parameter support	22
Software 8.0.41.9 notes	23

Purpose of this release

The MEDIBUS.X Protocol Device Interface SW 8.0.41.9 extends support for Zeus IV Pump Infusion and bolus drug parameters. This support is limited to the Zeus Infinity Empowered (IE) anesthesia device identified with the Medibus

device ID of #5501 and connected IV pumps connected to an Innovian workstation running Innovian Anesthesia version 8.X or higher.

Compatibility

The Innovian MEDIBUS.X Device Interface SW 8.0.41.9 is compatible at any Innovian Anesthesia site having supported devices that communicate through the Medibus protocol.

The following is required to support the IV Pump drug parameter output from the Zeus.

- Innovian Anesthesia version 8.X
- The Medibus.X protocol configuration setting is required
- The required serial port configuration:
 - Baud Rate: 38400
 - Data Bits: 8
 - Stop Bits: 1
 - Parity: Even

Do not connect unsupported devices to Innovian Anesthesia.

Innovian Anesthesia 8.X or greater is required for IV Pump Parameter support, only Device Parameters will be supported in earlier versions of Innovian.

Cabling

Innovian Anesthesia connects directly to Zeus through the MS 16598 straight through RS232 cable connected to COM1 or COM2 serial output port that is configured for Medibus X.

Software 8.0.41.9 extended parameter support

The new MEDIBUS.X parameters introduced by SW 8.0.41.9 release extend the parameter support list in the SW 7.0.26.10 release. These parameters become active when connected to a Zeus IE anesthesia device identified with the Medibus device ID of #5501 and connected IV pumps.

The new parameters support the IV Pump drug infusion rate and the bolus dose reported by the IV Pumps connected to the Zeus IE Anesthesia device. These parameters appear on the Innovian chart automatically per each active pump and are not listed in the Case View settings parameter list for selection.

It is not possible to give a list here of the supported drug parameter names and units of measure. This information is dependent on the configured drug list of the Zeus anesthesia device. The actual name of an infused drug parameter is not known until selected by the user on a Zeus installed pump at runtime. The drug name shown on Innovian is the abbreviated or short name of the selected drug provided by Zeus as displayed on the Zeus IV Pump control panel.

Please refer to the Zeus User Guide for the configured parameter names.

Software 8.0.41.9 notes

- It is advised to wait three seconds after the current bolus has ended on a pump before starting a new bolus on the same pump. To start a new bolus earlier may result in the Zeus starting the bolus with an incorrect dose.
- Medibus will inform Innovian that all active infusion is stopped when a Medibus communication fault is detected with the Zeus.
- Medibus will inform Innovian that all active infusion is resumed when Medibus recovers from a communication fault with the Zeus.

This page intentionally left blank

SIEMENS Export Protocol SW 6.0.6.15

Purpose of this release	26
Compatibility	26
Supported device types	26
Software 6.0.6.15 updates	27
Previously disabled ventilation parameters that are now restored	27
Substituted breathing pressure parameter labels	27
New SpO2 parameter label description	28
Alternative UOM conversion formulas	28
Innovian Anesthesia respiration rate label descriptions	29
Support for parameters sent by a Dräger anesthesia device through MEDIBUS.X to an IACS monitor	30
Supported parameters	31

Purpose of this release

Innovian Anesthesia SIEMENS Export Protocol Device Interface SW 6.0.6.15 is a maintenance release. The changes include the following:

- Support for parameters from Dräger anesthesia devices that send data to a monitor through MEDIBUS.X, with the monitor “forwarding” the data to Innovian Anesthesia through SIEMENS Export Protocol
- Restoration of support for ventilation parameters that had been disabled

Compatibility

You can use the SIEMENS Export Protocol Device Interface SW 6.0.6.15 at any Innovian Anesthesia site having supported devices that communicate through SIEMENS Export Protocol.

Supported device types

The SIEMENS Export Protocol Device Interface SW 6.0.6.15 supports the following monitors:

- Gamma
- Delta
- Kappa
- Vista
- IACS

Any future Dräger monitor compliant with SIEMENS Export Protocol is expected to be compatible. For information about Innovian Anesthesia support for other monitors that use SIEMENS Export Protocol, contact your Dräger representative.

Software 6.0.6.15 updates

Previously disabled ventilation parameters that are now restored

The following parameters were disabled in the previous Innovian Anesthesia SIEMENS Export Protocol Device Interface release.

An anesthesia device sends these parameters to a monitor through the MEDIBUS protocol. Then the monitor sends the data to Innovian Anesthesia through an RS232 interface.

- Minute Volume
- Tidal Volume
- PIP (previously “Peak Press”)
- Pause Press
- PEEP
- MAP (previously “Mean Brth Press”)
- Insp Tidal Vol
- Exp Tidal Vol
- Insp Minute Vol
- Exp Minute Vol
- Resp Rate Vol
- EEP
- Percent Inspiration
- Measured I:E I Part
- Measured I:E E Part

Substituted breathing pressure parameter labels

The following Innovian Anesthesia display labels are changed:

Disabled Label	Substituted Label
Mean Brth Press	MAP or Paw ¹⁾
Peak Press	PIP
Peak Insp Flow	PIF
Peak Exp Flow	PEF

1) "Paw" after installation of Innovian 7.0 or later, Cheetah NICOM protocol, or MAQUET FLOW-i protocol.

The disabled label displays when you review an archived case, but no new data is recorded with that label selection.

New SpO2 parameter label description

New SpO2 parameter labels having the number “2” appended to record data from the MICROII+ Oximeter device only.

Continue to use the existing SpO2 parameter labels (without the number “2” suffix) to record new data for or review old cases with data previously recorded from the monitor's SpO2 device.

Use for existing cases	Select for SpO2 measurements from MICROII+
Spo2	Spo2 2
Spo2 Pulse	Spo2 Pulse 2
No selection available	Spo2 Delta 2

Alternative UOM conversion formulas

Alternate unit of measure (UOM) options are added for the Flow, Temperature, Breathing/Ventilation Pressure and ECG ST parameter groups.

The table below describes the formula used to calculate the alternate UOM value

Convert from	Convert to	Formula
BAR	P.S.I	$1 \text{ PSI} = 1 \text{ BAR} * 14.5038$
cm H2O	mbar	$1 \text{ mbar} = 1 \text{ cm H2O}$
Mbar	cm H2O	$1 \text{ cm H2O} = 1 \text{ mbar}$
Temp C	Temp F	$1 \text{ degree F} = (1 \text{ degree C} * 1.8) + 32$
Milliliter	Liter	$1 \text{ liter} = 1 \text{ ml} * 0.001$
Liter	Milliliter	$1 \text{ ml} = 1 \text{ liter} * 1000$
ECG mm	ECG mV	$1 \text{ mV} = 1 \text{ mm} * 0.1$

Innovian Anesthesia respiration rate label descriptions

The following tables describe respiration rate parameters that are labeled differently on the monitor and in Innovian Anesthesia.

For an Apollo device through an IACS monitor

Innovian Anesthesia Label	Calculated from
Resp Rate	An undesignated source
Resp Rate CO2	CO2 plethysmograph Notes: <ul style="list-style-type: none"> – Reports ventilation respiration of ventilator rate when no CO2 breath is present. – Reports respiration rate based on CO2 breath when present.
Resp Rate ECG	Electrocardiography waveform
Resp Rate Press	Ventilation pressure waveform
Resp Rate Vol	Tidal volume waveform

For an Apollo device through a Delta monitor

Innovian Anesthesia Label	Calculated from
RRC 1 (RRC on monitor)	CO2 plethysmograph waveform Notes: <ul style="list-style-type: none"> – Reports a CO2 respiration rate when using the pod/cartridge in the Delta. – Select this label to record new RRC 1 case data; continue to select Respiration Rate CO2 to view saved case data.
RRC 2 (RRC* on monitor)	Respiratory rate from MGM device Notes: <ul style="list-style-type: none"> – Reports respiratory rate based on ECG until CO2 breath is introduced. – Reports respiratory rate based on CO2 when present. – Not reported during CO2 apnea once CO2 is introduced. – Select this label to record new RRC 2 case data; continue to select Resp Rate to view saved case data.
RRV (RRV on monitor)	Respiratory rate of ventilator flow Notes: <ul style="list-style-type: none"> – Reports the ECG respiratory rate in the absence of ventilator respiration rate. – Report the Ventilator respiration rate when present. – Select this label to record new RRV case data; continue to select Resp Rate Vol to view saved case data.

Support for parameters sent by a Dräger anesthesia device through MEDIBUS.X to an IACS monitor

Dräger monitors such as the IACS can directly communicate with Dräger anesthesia devices such as the Apollo, which are compatible with the Dräger MEDIBUS.X protocol.

The monitor receives the following parameters from the anesthesia device and passes them to Innovian Anesthesia, which communicates with the monitor through the RS232 interface. Innovian Anesthesia also can receive these parameters directly from the anesthesia device through MEDIBUS.X.

- Apnea Duration
- CO2 Production
- Consumption Air
- Consumption DES
- Consumption ENF
- Consumption HAL
- Consumption ISO
- Consumption N2O
- Consumption O2
- Consumption SEV
- Correlation Factor
- Delta O2
- Dynamic Compliance
- Elastance
- etCO2
- Exp Agent
- Exp Agent 2nd
- Exp DES
- Exp ENF
- Exp HAL
- Exp ISO
- Exp MAC
- Exp Mandatory Tidal Volume
- Exp N2O
- Exp O2
- Exp SEV
- Exp Spontaneous Tidal Volume
- FG Air Flow
- FG N2O Flow
- FG O2 Flow
- FIO2
- Insp Agent
- Insp Agent 2nd
- Insp CO2
- Insp DES
- Insp ENF
- Insp HAL
- Insp ISO
- Insp MAC
- Insp Mandatory Tidal Volume
- Insp N2O
- Insp SEV
- Insp Spontaneous Tidal Volume
- Leakage
- Mandatory Minute Vol
- Mandatory Tidal Vol
- MAP
- Min Airway Press
- Minute Volume
- O2 Uptake
- Occlusion Press
- PEEP
- PIP
- Plateau Pressure
- Resistance
- Resp Rate
- Resp Rate CO2
- Resp Rate Mandatory
- Resp Rate Press
- Resp Rate Spontaneous
- Resp Rate Vol
- Spontaneous Insp Time
- Spontaneous Minute Vol
- Tidal Volume
- Time Constant

Supported parameters

The following table lists the supported SIEMENS Export Protocol Rev. 1.0 parameters by Innovian Anesthesia group. The table provides the label and unit of measure (UOM) displayed in Innovian Anesthesia.

NOTE

If Innovian Anesthesia receives an unsupported or unknown parameter identifier, an entry is added to the DITSystem.Log file.

Group	Label	UOM
Airway	Apnea Duration	S
Airway	MAC	%
Airway	Min Airway Press	mbar
Airway	Occlusion Press	mbar
Blood Pressure	Art Dias	mm Hg
Blood Pressure	Art Mean	mm Hg
Blood Pressure	Art Sys	mm Hg
Blood Pressure	CNIBP Dias	mm Hg
Blood Pressure	CNIBP Mean	mm Hg
Blood Pressure	CNIBP Sys	mm Hg
Blood Pressure	CVP Mean	mm Hg
Blood Pressure	NIBP Dias	mm Hg
Blood Pressure	NIBP Mean	mm Hg
Blood Pressure	NIBP Sys	mm Hg
Blood Test	SpCO	%
Blood Test	spHb	g/dl
Blood Test	spHb	mmol/l
Blood Test	SpHbv	g/dl
Blood Test	SpHbv	mmol/l
Blood Test	SpMET	%
Blood Test	SpOc	ml/dl
Electrocardio	ECG ST	mm
Electrocardio	ECG ST	mV
Electrocardio	ECG ST AVF	mm
Electrocardio	ECG ST AVF	mV
Electrocardio	ECG ST AVL	mm
Electrocardio	ECG ST AVL	mV

Group	Label	UOM
Electrocardio	ECG ST AVR	mm
Electrocardio	ECG ST AVR	mV
Electrocardio	ECG ST I	mm
Electrocardio	ECG ST I	mV
Electrocardio	ECG ST II	mm
Electrocardio	ECG ST II	mV
Electrocardio	ECG ST III	mm
Electrocardio	ECG ST III	mV
Electrocardio	ECG ST V+	mm
Electrocardio	ECG ST V+	mV
Electrocardio	ECG ST V1	mm
Electrocardio	ECG ST V1	mV
Electrocardio	ECG ST V3	mm
Electrocardio	ECG ST V3	mV
Electrocardio	ECG ST V4	mm
Electrocardio	ECG ST V4	mV
Electrocardio	ECG ST V5	mm
Electrocardio	ECG ST V5	mV
Electrocardio	ECG ST V6	mm
Electrocardio	ECG ST V6	mV
Electrocardio	ECG STd V1	mm
Electrocardio	ECG STd V1	mV
Electrocardio	ECG STd V3	mm
Electrocardio	ECG STd V3	mV
Electrocardio	ECG STd V4	mm
Electrocardio	ECG STd V4	mV
Electrocardio	ECG STd V6	mm
Electrocardio	ECG STd V6	mV
Electrocardio	ECG STVCM	mm
Electrocardio	ECG STVCM	mV
Electrocardio	ECG STVM	mm
Electrocardio	ECG STVM	mV
Electrocardio	Heart Rate	bpm
Electrocardio	PVC Rate	PVC/min

Group	Label	UOM
Electrocardio	Resp Rate ECG	bpm
Freshgas	FG Air Flow	l/min
Freshgas	FG Air Flow	ml/min
Freshgas	FG N2O Flow	l/min
Freshgas	FG N2O Flow	ml/min
Freshgas	FG O2 Flow	l/min
Freshgas	FG O2 Flow	ml/min
Hemodynamic	CCI	L/min/m2
Hemodynamic	CCO	l/min
Hemodynamic	GP1 Dias	mm Hg
Hemodynamic	GP1 Mean	mm Hg
Hemodynamic	GP1 Sys	mm Hg
Hemodynamic	GP2 Dias	mm Hg
Hemodynamic	GP2 Mean	mm Hg
Hemodynamic	GP2 Sys	mm Hg
Hemodynamic	IBP Dias	mm Hg
Hemodynamic	IBP Mean	mm Hg
Hemodynamic	IBP Sys	mm Hg
Hemodynamic	LA	mm Hg
Hemodynamic	LV Dias	mm Hg
Hemodynamic	LV Mean	mm Hg
Hemodynamic	LV Sys	mm Hg
Hemodynamic	P1A Dias	mm Hg
Hemodynamic	P1A Mean	mm Hg
Hemodynamic	P1A Sys	mm Hg
Hemodynamic	P1B Dias	mm Hg
Hemodynamic	P1B Mean	mm Hg
Hemodynamic	P1B Sys	mm Hg
Hemodynamic	P1C Dias	mm Hg
Hemodynamic	P1C Mean	mm Hg
Hemodynamic	P1C Sys	mm Hg
Hemodynamic	P1D Dias	mm Hg
Hemodynamic	P1D Mean	mm Hg
Hemodynamic	P1D Sys	mm Hg

Group	Label	UOM
Hemodynamic	P2A Dias	mm Hg
Hemodynamic	P2A Mean	mm Hg
Hemodynamic	P2A Sys	mm Hg
Hemodynamic	P2B Dias	mm Hg
Hemodynamic	P2B Mean	mm Hg
Hemodynamic	P2B Sys	mm Hg
Hemodynamic	P2C Dias	mm Hg
Hemodynamic	P2C Mean	mm Hg
Hemodynamic	P2C Sys	mm Hg
Hemodynamic	P2D Dias	mm Hg
Hemodynamic	P2D Mean	mm Hg
Hemodynamic	P2D Sys	mm Hg
Hemodynamic	P3A Dias	mm Hg
Hemodynamic	P3A Mean	mm Hg
Hemodynamic	P3A Sys	mm Hg
Hemodynamic	P3B Dias	mm Hg
Hemodynamic	P3B Mean	mm Hg
Hemodynamic	P3B Sys	mm Hg
Hemodynamic	P3C Dias	mm Hg
Hemodynamic	P3C Mean	mm Hg
Hemodynamic	P3C Sys	mm Hg
Hemodynamic	P3D Dias	mm Hg
Hemodynamic	P3D Mean	mm Hg
Hemodynamic	P3D Sys	mm Hg
Hemodynamic	PA Dias	mm Hg
Hemodynamic	PA Mean	mm Hg
Hemodynamic	PA Sys	mm Hg
Hemodynamic	PAWP	mm Hg
Hemodynamic	PCCI	L/min/m2
Hemodynamic	PCCO	l/min
Hemodynamic	PVI	%
Hemodynamic	RA	mm Hg
Hemodynamic	RV Dias	mm Hg
Hemodynamic	RV Mean	mm Hg

Group	Label	UOM
Hemodynamic	RV Sys	mm Hg
Hemoglobin Oxygen Saturation	Baseline RSO2 Left	%
Hemoglobin Oxygen Saturation	Baseline RSO2 Right	%
Hemoglobin Oxygen Saturation	Baseline S1rSO2	%
Hemoglobin Oxygen Saturation	Baseline S2rSO2	%
Hemoglobin Oxygen Saturation	LrSO2	%
Hemoglobin Oxygen Saturation	RrSO2	%
Hemoglobin Oxygen Saturation	S1rSO2	%
Hemoglobin Oxygen Saturation	S2rSO2	%
Hemoglobin Oxygen Saturation	SaO2	%
Hemoglobin Oxygen Saturation	SpO2	%
Hemoglobin Oxygen Saturation	SpO2 2	%
Hemoglobin Oxygen Saturation	SpO2 Delta 2	—
Hemoglobin Oxygen Saturation	SpO2 Pulse	bpm
Hemoglobin Oxygen Saturation	SpO2 Pulse 2	bpm
Hemoglobin Oxygen Saturation	SvO2	%
Neuro	BIS Index	—
Neuro	BSR	%
Neuro	Burst Count	—
Neuro	CPP	mm Hg
Neuro	CPP2	mm Hg
Neuro	CPP3	mm Hg
Neuro	CPP4	mm Hg
Neuro	EMG	dB
Neuro	EMG Current	mA
Neuro	EMG PTC Count	—
Neuro	EMG Single	%
Neuro	EMG Temp	C
Neuro	EMG TOF Count	—
Neuro	EMG TOF Ratio	%
Neuro	ICP	mm Hg
Neuro	ICP2	mm Hg
Neuro	ICP3	mm Hg
Neuro	ICP4	mm Hg

Group	Label	UOM
Neuro	SEF	Hz
Neuro	SQI	%
Neuro	Total Power	dB
Partial Pressure	TcPCO2	mm Hg
Partial Pressure	TcPCO2 2nd	mm Hg
Partial Pressure	TcPO2	mm Hg
Partial Pressure	TcPO2 2nd	mm Hg
Perfusion	PI	%
Respiratory Gas Concentration	Agent	%
Respiratory Gas Concentration	CO2	mm Hg
Respiratory Gas Concentration	CO2 Production	ml/min
Respiratory Gas Concentration	Consumption Air	l
Respiratory Gas Concentration	Consumption Air	ml
Respiratory Gas Concentration	Consumption DES	ml
Respiratory Gas Concentration	Consumption ENF	ml
Respiratory Gas Concentration	Consumption HAL	ml
Respiratory Gas Concentration	Consumption ISO	ml
Respiratory Gas Concentration	Consumption N2O	l
Respiratory Gas Concentration	Consumption N2O	ml
Respiratory Gas Concentration	Consumption O2	l
Respiratory Gas Concentration	Consumption O2	ml
Respiratory Gas Concentration	Consumption SEV	ml
Respiratory Gas Concentration	Delta O2	%
Respiratory Gas Concentration	DES	%
Respiratory Gas Concentration	ENF	%
Respiratory Gas Concentration	etCO2	mm Hg
Respiratory Gas Concentration	etCO2	%
Respiratory Gas Concentration	etCO2	kPa
Respiratory Gas Concentration	Exp Agent	%
Respiratory Gas Concentration	Exp Agent	kPa
Respiratory Gas Concentration	Exp Agent 2nd	kPa
Respiratory Gas Concentration	Exp Agent 2nd	%
Respiratory Gas Concentration	Exp DES	%
Respiratory Gas Concentration	Exp DES	kPa

Group	Label	UOM
Respiratory Gas Concentration	Exp ENF	%
Respiratory Gas Concentration	Exp ENF	kPa
Respiratory Gas Concentration	Exp HAL	%
Respiratory Gas Concentration	Exp HAL	kPa
Respiratory Gas Concentration	Exp ISO	%
Respiratory Gas Concentration	Exp ISO	kPa
Respiratory Gas Concentration	Exp MAC	—
Respiratory Gas Concentration	Exp N2O	%
Respiratory Gas Concentration	Exp O2	%
Respiratory Gas Concentration	Exp SEV	%
Respiratory Gas Concentration	Exp SEV	kPa
Respiratory Gas Concentration	FIO2	%
Respiratory Gas Concentration	HAL	%
Respiratory Gas Concentration	Insp Agent	%
Respiratory Gas Concentration	Insp Agent	kPa
Respiratory Gas Concentration	Insp Agent 2nd	kPa
Respiratory Gas Concentration	Insp Agent 2nd	%
Respiratory Gas Concentration	Insp CO2	mm Hg
Respiratory Gas Concentration	Insp CO2	%
Respiratory Gas Concentration	Insp CO2	kPa
Respiratory Gas Concentration	Insp DES	%
Respiratory Gas Concentration	Insp DES	kPa
Respiratory Gas Concentration	Insp ENF	%
Respiratory Gas Concentration	Insp ENF	kPa
Respiratory Gas Concentration	Insp HAL	%
Respiratory Gas Concentration	Insp HAL	kPa
Respiratory Gas Concentration	Insp ISO	%
Respiratory Gas Concentration	Insp ISO	kPa
Respiratory Gas Concentration	Insp MAC	—
Respiratory Gas Concentration	Insp N2O	%
Respiratory Gas Concentration	Insp O2	%
Respiratory Gas Concentration	Insp SEV	%
Respiratory Gas Concentration	Insp SEV	kPa
Respiratory Gas Concentration	ISO	%

Group	Label	UOM
Respiratory Gas Concentration	N2O	%
Respiratory Gas Concentration	O2	%
Respiratory Gas Concentration	O2 Uptake	10ml/min
Respiratory Gas Concentration	SEV	%
Respiratory Pressure	EEP	cm H2O
Respiratory Pressure	EEP	mbar
Respiratory Pressure	MAP	cm H2O
Respiratory Pressure	MAP	mbar
Respiratory Pressure	Pause Press	cm H2O
Respiratory Pressure	Pause Press	mbar
Respiratory Pressure	PEEP	cm H2O
Respiratory Pressure	PEEP	mbar
Respiratory Pressure	PEF	l/min
Respiratory Pressure	PEF	ml/min
Respiratory Pressure	PIF	l/min
Respiratory Pressure	PIF	ml/min
Respiratory Pressure	PIP	cm H2O
Respiratory Pressure	PIP	mbar
Respiratory Pressure	Plateau Pressure	mbar
Respiratory Pressure	Plateau Pressure	cm H2O
Respiratory Pressure	Tank AIR Press	bar
Respiratory Pressure	Tank AIR Press	psi
Respiratory Pressure	Tank N2O Press	bar
Respiratory Pressure	Tank N2O Press	psi
Respiratory Pressure	Tank O2 Press	bar
Respiratory Pressure	Tank O2 Press	psi
Respiratory Pressure	Wall Air Press	bar
Respiratory Pressure	Wall Air Press	psi
Respiratory Pressure	Wall N2O Press	bar
Respiratory Pressure	Wall N2O Press	psi
Respiratory Pressure	Wall O2 Press	bar
Respiratory Pressure	Wall O2 Press	psi
Respiratory Rate	Rapid Shallow Breath Index	bpm/l
Respiratory Rate	Resp Rate	bpm

Group	Label	UOM
Respiratory Rate	Resp Rate CO2	bpm
Respiratory Rate	Resp Rate Mandatory	bpm
Respiratory Rate	Resp Rate Press	bpm
Respiratory Rate	Resp Rate Spontaneous	bpm
Respiratory Rate	Resp Rate Vol	bpm
Respiratory Rate	RRC 1	bpm
Respiratory Rate	RRC 2	bpm
Respiratory Rate	RRV	bpm
Respiratory Volume	Alveolar Minute Vol	l
Respiratory Volume	Alveolar Minute Vol Mandatory	l
Respiratory Volume	Alveolar Minute Vol Spontaneous	l
Respiratory Volume	Alveolar Tidal Vol	ml
Respiratory Volume	Alveolar Tidal Vol Mandatory	ml
Respiratory Volume	Alveolar Tidal Vol Spontaneous	ml
Respiratory Volume	C20/Cd	—
Respiratory Volume	Dead Space	ml
Respiratory Volume	Dilution Ratio Airway	—
Respiratory Volume	Dynamic Compliance	l/bar
Respiratory Volume	Exp CO2 Mixed	mm Hg
Respiratory Volume	Exp CO2 MV	ml/min
Respiratory Volume	Exp CO2 TV	ml
Respiratory Volume	Exp Mandatory Minute Volume	l
Respiratory Volume	Exp Mandatory Minute Volume	ml
Respiratory Volume	Exp Mandatory Tidal Volume	ml
Respiratory Volume	Exp Mandatory Tidal Volume	l
Respiratory Volume	Exp Mandatory Tidal Volume	ml
Respiratory Volume	Exp Mandatory Tidal Volume	l
Respiratory Volume	Exp Minute Vol	l/min
Respiratory Volume	Exp Minute Vol	ml/min
Respiratory Volume	Exp Spontaneous Minute Volume	l
Respiratory Volume	Exp Spontaneous Minute Volume	ml
Respiratory Volume	Exp Spontaneous Tidal Volume	ml
Respiratory Volume	Exp Spontaneous Tidal Volume	l
Respiratory Volume	Exp Tidal Vol	ml

Group	Label	UOM
Respiratory Volume	Exp Tidal Vol	l
Respiratory Volume	Insp Mandatory Tidal Volume	ml
Respiratory Volume	Insp Mandatory Tidal Volume	l
Respiratory Volume	Insp Minute Vol	l/min
Respiratory Volume	Insp Minute Vol	ml/min
Respiratory Volume	Insp Spontaneous Tidal Volume	ml
Respiratory Volume	Insp Spontaneous Tidal Volume	l
Respiratory Volume	Insp Tidal Vol	ml
Respiratory Volume	Insp Tidal Vol	l
Respiratory Volume	Lung Compliance	ml/cm H2O
Respiratory Volume	Mandatory Minute Vol	l
Respiratory Volume	Mandatory Minute Vol	ml
Respiratory Volume	Mandatory Tidal Vol	l
Respiratory Volume	Mandatory Tidal Vol	ml
Respiratory Volume	Minute Volume	l/min
Respiratory Volume	Minute Volume	ml/min
Respiratory Volume	Spontaneous Minute Vol	l
Respiratory Volume	Spontaneous Minute Vol	ml
Respiratory Volume	Tidal Volume	ml
Respiratory Volume	Tidal Volume	l
Temperature	Blood Temp	C
Temperature	Blood Temp	F
Temperature	Delta Temp	C
Temperature	Delta Temp	F
Temperature	Temp 1 Delta	C
Temperature	Temp 1 Delta	F
Temperature	Temp 1a	C
Temperature	Temp 1a	F
Temperature	Temp 1b	C
Temperature	Temp 1b	F
Temperature	Temp 2 Delta	C
Temperature	Temp 2 Delta	F
Temperature	Temp 2a	C
Temperature	Temp 2a	F

Group	Label	UOM
Temperature	Temp 2b	C
Temperature	Temp 2b	F
Temperature	Temp 3 Delta	C
Temperature	Temp 3 Delta	F
Temperature	Temp 3a	C
Temperature	Temp 3a	F
Temperature	Temp 3b	C
Temperature	Temp 3b	F
Temperature	Temp A	C
Temperature	Temp A	F
Temperature	Temp B	C
Temperature	Temp B	F
Ventilation	Correlation Factor	%
Ventilation	Elastance	mbar/l
Ventilation	Elastance	cm H2O/l
Ventilation	Exp Time	S
Ventilation	Insp Percent	%
Ventilation	Inspiratory Time	S
Ventilation	Leakage	%
Ventilation	Leakage	ml/min
Ventilation	Measured I:E E-Part	—
Ventilation	Measured I:E I-Part	—
Ventilation	Raw Exp	cm H2O/l s
Ventilation	Raw Insp	cm H2O/l s
Ventilation	Resistance	mbar//s
Ventilation	Resistance	cm H2O//s
Ventilation	Spontaneous Insp Time	S
Ventilation	Time Constant	S

This page intentionally left blank

Medrad Veris 8600 SW 6.1.1.3

Purpose of this release	44
Compatibility	44
Supported parameters	44
Heart rate and pulse parameter updates	44
Non-invasive blood pressure (NIBP) monitor updates.	45
Supported parameter table.	45

Purpose of this release

The release provides support for Medrad Veris 8600 devices running Medrad software version 3.0B or newer *only*.

If you require a Medrad software upgrade to connect with Innovian Anesthesia, contact your Bayer Health Care representative.

Compatibility

You can use the Medrad Veris 8600 Device Interface SW 6.1.1.3 at any Innovian Anesthesia site having supported devices running compatible software.

A Medrad Remote Display device is required for connection to Innovian Anesthesia.

For more information about connections to Innovian Anesthesia, contact your Dräger representative. For information about the Medrad Remote Display, contact your Bayer Health Care representative.

Do *not* connect unsupported devices to Innovian Anesthesia.

Supported parameters

Heart rate and pulse parameter updates

The Medrad monitor can report the following parameters to Innovian Anesthesia only if the appropriate source is selected:

- ECG
- SpO2
- IBP
- NIBP

To enable the Medrad monitor to automatically determine the appropriate heart rate source to use based on the active parameters, select **Smart** from the **PARAMS** menu on the monitor.

Non-invasive blood pressure (NIBP) monitor updates

Innovian Anesthesia updates the following parameters only when a new measurement results in a value change:

- NIBP Dias
- NIBP MAP
- NIBP Pulse
- NIBP Sys

Innovian Anesthesia does *not* record update events for any NIBP measurements taken during the following periods:

- Before Innovian Anesthesia establishes communications with the Medrad monitor
- During a communication fault between Innovian Anesthesia and the Medrad monitor

Supported parameter table

The following table lists the supported Medrad protocol parameters by Innovian Anesthesia group. The table provides the label and unit of measure (UOM) displayed in Innovian Anesthesia.

Group	Label	UOM
Blood Pressure	ART1 Dias (Medrad)	mm Hg
Blood Pressure	ART1 Mean (Medrad)	mm Hg
Blood Pressure	ART1 Pulse (Medrad)	bpm
Blood Pressure	ART1 Sys (Medrad)	mm Hg
Blood Pressure	ART2 Dias (Medrad)	mm Hg
Blood Pressure	ART2 Mean (Medrad)	mm Hg
Blood Pressure	ART2 Pulse (Medrad)	bpm
Blood Pressure	ART2 Sys (Medrad)	mm Hg
Blood Pressure	LV1 Pulse (Medrad)	bpm
Blood Pressure	LV2 Pulse (Medrad)	bpm
Blood Pressure	NIBP Dias (Medrad)	mm Hg
Blood Pressure	NIBP Mean (Medrad)	mm Hg
Blood Pressure	NIBP Pulse (Medrad)	bpm

Group	Label	UOM
Blood Pressure	NIBP Sys (Medrad)	mm Hg
Blood Pressure	RV1 Pulse (Medrad)	bpm
Blood Pressure	RV2 Pulse (Medrad)	bpm
Electrocardio	Heart Rate (Medrad)	bpm
Hemodynamic	CVP1 Mean (Medrad)	mm Hg
Hemodynamic	CVP2 Mean (Medrad)	mm Hg
Hemodynamic	LAP1 Mean (Medrad)	mm Hg
Hemodynamic	LAP2 Mean (Medrad)	mm Hg
Hemodynamic	LV1 Dias (Medrad)	mm Hg
Hemodynamic	LV1 Mean (Medrad)	mm Hg
Hemodynamic	LV1 Sys (Medrad)	mm Hg
Hemodynamic	LV2 Dias (Medrad)	mm Hg
Hemodynamic	LV2 Mean (Medrad)	mm Hg
Hemodynamic	LV2 Sys (Medrad)	mm Hg
Hemodynamic	PA1 Dias (Medrad)	mm Hg
Hemodynamic	PA1 Mean (Medrad)	mm Hg
Hemodynamic	PA1 Pulse (Medrad)	bpm
Hemodynamic	PA1 Sys (Medrad)	mm Hg
Hemodynamic	PA2 Dias (Medrad)	mm Hg
Hemodynamic	PA2 Mean (Medrad)	mm Hg
Hemodynamic	PA2 Sys (Medrad)	mm Hg
Hemodynamic	RA1 Mean (Medrad)	mm Hg
Hemodynamic	RA2 Mean (Medrad)	mm Hg
Hemodynamic	RV1 Dias (Medrad)	mm Hg
Hemodynamic	RV1 Mean (Medrad)	mm Hg
Hemodynamic	RV1 Sys (Medrad)	mm Hg
Hemodynamic	RV2 Dias (Medrad)	mm Hg
Hemodynamic	RV2 Mean (Medrad)	mm Hg
Hemodynamic	RV2 Sys (Medrad)	mm Hg
Hemodynamic	PA2 Pulse (Medrad)	bpm
Hemoglobin Oxygen Saturation	SpO2 (Medrad)	%
Hemoglobin Oxygen Saturation	SpO2 Pulse (Medrad)	bpm
Respiratory Gas Concentration	etCO2 (Medrad)	%
Respiratory Gas Concentration	etCO2 (Medrad)	kPa

Group	Label	UOM
Respiratory Gas Concentration	etCO2 (Medrad)	mm Hg
Respiratory Gas Concentration	etCO2 (Medrad)	TORR
Respiratory Gas Concentration	etO2 (Medrad)	%
Respiratory Gas Concentration	Exp DES (Medrad)	%
Respiratory Gas Concentration	Exp ENF (Medrad)	%
Respiratory Gas Concentration	Exp HAL (Medrad)	%
Respiratory Gas Concentration	Exp ISO (Medrad)	%
Respiratory Gas Concentration	Exp N2O (Medrad)	%
Respiratory Gas Concentration	Exp SEV (Medrad)	%
Respiratory Gas Concentration	Insp CO2 (Medrad)	%
Respiratory Gas Concentration	Insp CO2 (Medrad)	kPa
Respiratory Gas Concentration	Insp CO2 (Medrad)	mm Hg
Respiratory Gas Concentration	Insp CO2 (Medrad)	TORR
Respiratory Gas Concentration	Insp DES (Medrad)	%
Respiratory Gas Concentration	Insp ENF (Medrad)	%
Respiratory Gas Concentration	Insp HAL (Medrad)	%
Respiratory Gas Concentration	Insp ISO (Medrad)	%
Respiratory Gas Concentration	Insp N2O (Medrad)	%
Respiratory Gas Concentration	Insp O2 (Medrad)	%
Respiratory Gas Concentration	Insp SEV (Medrad)	%
Respiratory Rate	Resp Rate CO2 (Medrad)	bpm
Temperature	Temp 1 (Medrad)	C
Temperature	Temp 1 (Medrad)	F
Temperature	Temp 2 (Medrad)	C
Temperature	Temp 2 (Medrad)	F

This page intentionally left blank

Covidien INVOS Protocol

Purpose of this release	50
Compatibility	50
Cabling	50
Third-party device configuration	50
Supported parameters	51
Data channels	51
Parameters for PC Link Format 1	51
Parameters for PC Link Formats 2 and 3	51
Supported parameter table (PC Link Format 1)	52
Supported parameter table (PC Link Formats 2 and 3)	58

Purpose of this release

The Innovian Anesthesia Covidien INVOS Interface supports devices running the following software (by manufacturer):

Device manufacturer	Software version
Medtronic	1.0.2.4 and newer
Covidien	7.2.5.0 and newer
Somanetics (legacy)	40.07.07 / 30.06.06 40.01.01 / 30.02.02 to 40.06.06B / 30.05.05B 30.01.01

Compatibility

You can use the Covidien INVOS Interface at any Innovian Anesthesia site having supported INVOS devices (see table above).

Do *not* connect unsupported devices to Innovian Anesthesia.

Cabling

Innovian Anesthesia connects directly to the RS232 Digital Output port on any supported device. This configuration prohibits any other device from receiving the digital output data. A compatible RS232 communication cable is provided by Dräger.

Third-party device configuration

Philips

Innovian Anesthesia is not able to connect to the supported device Digital Output when the device is connected to a Philips monitor.

Other devices

Innovian Anesthesia may be able to share the Digital Output data when the device is connected to other compatible devices using the PCLink configuration option on the device Digital Output port. The following restrictions apply:

- The PCLink option must be selected as the Digital Output format on the monitor.
- The other device must not enable RS232 hardware handshaking.
- Sharing the PCLink data signal with other devices is not a guaranteed solution provided by Innovian Anesthesia. No compatibility with such a configuration is implied.

Supported parameters

Data channels

The Covidien 5100c monitor has two measurement modes: two channel and four channel. Both modes are supported by PC Link Format 1 and PC Link Format 2. PC Link Format 3 reports only two channel measurements.

The Medtronic PM7100 will always send in four channel mode but it only supports PC Link Format 1 and PC Link Format 2.

The user can assign channel label options. The labels are transmitted by the monitor only in PC Link Format 1. The data channel label set on the device can be any letter from A to Z, S1, S2, S3, or S4. For information about setting the data channel label, see the documentation provided by the device manufacturer.

Parameters for PC Link Format 1

When the monitor is configured for PC Link Format 1, the protocol reports data for the following parameters. See "[Supported parameter table \(PC Link Format 1\)](#)" on page 52.

- baseline
- rSO₂
- AUC (area under curve)

The baseline parameter is updated only when the value of the parameter has changed since the last valid update was received from the monitor. A zero is an invalid value. The new value appears only in the column that covers the time-span period when the new baseline value was set.

In order for meaningful data to be recorded by Innovian Anesthesia, a valid baseline must first be set on the monitor. If the Innovian Anesthesia workstation is not recording when the baseline value is first set, the baseline will not be displayed in Innovian Anesthesia. However, if the baseline value was set

within 1 hour of the start of recording, the user can use the Innovian "rollback" feature to display the baseline parameter in the record. If the baseline was first set outside of the 1-hour rollback time period, the user can enter the baseline values as manual entries.

The rSO₂ parameter is not reported when the value is zero.

The AUC parameter is not reported when the rSO₂ value is zero.

Parameters for PC Link Formats 2 and 3

When the monitor is configured for PC Link Formats 2 or 3, the protocol reports data for rSO₂ only. See "[Supported parameter table \(PC Link Formats 2 and 3\)](#)" on page 58. Baseline and AUC data can be entered into Innovian Anesthesia by the user as manual entries.

The rSO₂ parameter is not reported when the value is zero.

NOTE

If Innovian Anesthesia detects an unknown protocol version number or there is no communication with the device, the following occur:

- The connection status indicator for the device on the Innovian Anesthesia status bar changes to red.
- An entry is added to the DITSystem.Log file.

The connection status indicator turns red if a communication failure lasts more than 90 seconds. Parameter values are not updated in Innovian Anesthesia during this time.

Supported parameter table (PC Link Format 1)

The following table lists the Covidien INVOS protocol parameters supported by the Innovian Anesthesia group for PC Link Format 1. The table provides the parameter labels and the units of measure (UOM) displayed in Innovian Anesthesia. Each parameter label consists of the user-selected data channel label, the parameter name, and the channel number.

Parameter label	UOM
A Baseline 1 (INVOS)	%
A rSO2 1 (INVOS)	%
A AUC 1 (INVOS)	minutes %
B Baseline 1 (INVOS)	%
B rSO2 1 (INVOS)	%
B AUC 1 (INVOS)	minutes %
C Baseline 1 (INVOS)	%
C rSO2 1 (INVOS)	%
C AUC 1 (INVOS)	minutes %
D Baseline 1 (INVOS)	%
D rSO2 1 (INVOS)	%
D AUC 1 (INVOS)	minutes %
E Baseline 1 (INVOS)	%
E rSO2 1 (INVOS)	%
E AUC 1 (INVOS)	minutes %
F Baseline 1 (INVOS)	%
F rSO2 1 (INVOS)	%
F AUC 1 (INVOS)	minutes %
G Baseline 1 (INVOS)	%
G rSO2 1 (INVOS)	%
G AUC 1 (INVOS)	minutes %
H Baseline 1 (INVOS)	%
H rSO2 1 (INVOS)	%
H AUC 1 (INVOS)	minutes %
I Baseline 1 (INVOS)	%

Parameter label	UOM
I rSO2 1 (INVOS)	%
I AUC 1 (INVOS)	minutes %
J Baseline 1 (INVOS)	%
J rSO2 1 (INVOS)	%
J AUC 1 (INVOS)	minutes %
K Baseline 1 (INVOS)	%
K rSO2 1 (INVOS)	%
K AUC 1 (INVOS)	minutes %
L Baseline 1 (INVOS)	%
L rSO2 1 (INVOS)	%
L AUC 1 (INVOS)	minutes %
M Baseline 1 (INVOS)	%
M rSO2 1 (INVOS)	%
M AUC 1 (INVOS)	minutes %
N Baseline 1 (INVOS)	%
N rSO2 1 (INVOS)	%
N AUC 1 (INVOS)	minutes %
O Baseline 1 (INVOS)	%
O rSO2 1 (INVOS)	%
O AUC 1 (INVOS)	minutes %
P Baseline 1 (INVOS)	%
P rSO2 1 (INVOS)	%
P AUC 1 (INVOS)	minutes %
Q Baseline 1 (INVOS)	%
Q rSO2 1 (INVOS)	%
Q AUC 1 (INVOS)	minutes %
R Baseline 1 (INVOS)	%
R rSO2 1 (INVOS)	%
R AUC 1 (INVOS)	minutes %
S Baseline 1 (INVOS)	%
S rSO2 1 (INVOS)	%
S AUC 1 (INVOS)	minutes %
T Baseline 1 (INVOS)	%
T rSO2 1 (INVOS)	%

Parameter label	UOM
T AUC 1 (INVOS)	minutes %
U Baseline 1 (INVOS)	%
U rSO2 1 (INVOS)	%
U AUC 1 (INVOS)	minutes %
V Baseline 1 (INVOS)	%
V rSO2 1 (INVOS)	%
V AUC 1 (INVOS)	minutes %
W Baseline 1 (INVOS)	%
W rSO2 1 (INVOS)	%
W AUC 1 (INVOS)	minutes %
X Baseline 1 (INVOS)	%
X rSO2 1 (INVOS)	%
X AUC 1 (INVOS)	minutes %
Y Baseline 1 (INVOS)	%
Y rSO2 1 (INVOS)	%
Y AUC 1 (INVOS)	minutes %
Z Baseline 1 (INVOS)	%
Z rSO2 1 (INVOS)	%
Z AUC 1 (INVOS)	minutes %
S1 Baseline 1 (INVOS)	%
S1 rSO2 1 (INVOS)	%
S1 AUC 1 (INVOS)	minutes %
S2 Baseline 1 (INVOS)	%
S2 rSO2 1 (INVOS)	%
S2 AUC 1 (INVOS)	minutes %
S3 Baseline 1 (INVOS)	%
S3 rSO2 1 (INVOS)	%
S3 AUC 1 (INVOS)	minutes %
S4 Baseline 1 (INVOS)	%
S4 rSO2 1 (INVOS)	%
S4 AUC 1 (INVOS)	minutes %
A Baseline 2 (INVOS)	%
A rSO2 2 (INVOS)	%
A AUC 2 (INVOS)	minutes %

Parameter label	UOM
B Baseline 2 (INVOS)	%
B rSO2 2 (INVOS)	%
B AUC 2 (INVOS)	minutes %
C Baseline 2 (INVOS)	%
C rSO2 2 (INVOS)	%
C AUC 2 (INVOS)	minutes %
D Baseline 2 (INVOS)	%
D rSO2 2 (INVOS)	%
D AUC 2 (INVOS)	minutes %
E Baseline 2 (INVOS)	%
E rSO2 2 (INVOS)	%
E AUC 2 (INVOS)	minutes %
F Baseline 2 (INVOS)	%
F rSO2 2 (INVOS)	%
F AUC 2 (INVOS)	minutes %
G Baseline 2 (INVOS)	%
G rSO2 2 (INVOS)	%
G AUC 2 (INVOS)	minutes %
H Baseline 2 (INVOS)	%
H rSO2 2 (INVOS)	%
H AUC 2 (INVOS)	minutes %
I Baseline 2 (INVOS)	%
I rSO2 2 (INVOS)	%
I AUC 2 (INVOS)	minutes %
J Baseline 2 (INVOS)	%
J rSO2 2 (INVOS)	%
J AUC 2 (INVOS)	minutes %
K Baseline 2 (INVOS)	%
K rSO2 2 (INVOS)	%
K AUC 2 (INVOS)	minutes %
L Baseline 2 (INVOS)	%
L rSO2 2 (INVOS)	%
L AUC 2 (INVOS)	minutes %
M Baseline 2 (INVOS)	%

Parameter label	UOM
M rSO2 2 (INVOS)	%
M AUC 2 (INVOS)	minutes %
N Baseline 2 (INVOS)	%
N rSO2 2 (INVOS)	%
N AUC 2 (INVOS)	minutes %
O Baseline 2 (INVOS)	%
O rSO2 2 (INVOS)	%
O AUC 2 (INVOS)	minutes %
P Baseline 2 (INVOS)	%
P rSO2 2 (INVOS)	%
P AUC 2 (INVOS)	minutes %
Q Baseline 2 (INVOS)	%
Q rSO2 2 (INVOS)	%
Q AUC 2 (INVOS)	minutes %
R Baseline 2 (INVOS)	%
R rSO2 2 (INVOS)	%
R AUC 2 (INVOS)	minutes %
S Baseline 2 (INVOS)	%
S rSO2 2 (INVOS)	%
S AUC 2 (INVOS)	minutes %
T Baseline 2 (INVOS)	%
T rSO2 2 (INVOS)	%
T AUC 2 (INVOS)	minutes %
U Baseline 2 (INVOS)	%
U rSO2 2 (INVOS)	%
U AUC 2 (INVOS)	minutes %
V Baseline 2 (INVOS)	%
V rSO2 2 (INVOS)	%
V AUC 2 (INVOS)	minutes %
W Baseline 2 (INVOS)	%
W rSO2 2 (INVOS)	%
W AUC 2 (INVOS)	minutes %
X Baseline 2 (INVOS)	%
X rSO2 2 (INVOS)	%

Parameter label	UOM
X AUC 2 (INVOS)	minutes %
Y Baseline 2 (INVOS)	%
Y rSO2 2 (INVOS)	%
Y AUC 2 (INVOS)	minutes %
Z Baseline 2 (INVOS)	%
Z rSO2 2 (INVOS)	%
Z AUC 2 (INVOS)	minutes %
S1 Baseline 2 (INVOS)	%
S1 rSO2 2 (INVOS)	%
S1 AUC 2 (INVOS)	minutes %
S2 Baseline 2 (INVOS)	%
S2 rSO2 2 (INVOS)	%
S2 AUC 2 (INVOS)	minutes %
S3 Baseline 2 (INVOS)	%
S3 rSO2 2 (INVOS)	%
S3 AUC 2 (INVOS)	minutes %
S4 Baseline 2 (INVOS)	%
S4 rSO2 2 (INVOS)	%
S4 AUC 2 (INVOS)	minutes %
A Baseline 3 (INVOS)	%
A rSO2 3 (INVOS)	%
A AUC 3 (INVOS)	minutes %
B Baseline 3 (INVOS)	%
B rSO2 3 (INVOS)	%
B AUC 3 (INVOS)	minutes %
C Baseline 3 (INVOS)	%
C rSO2 3 (INVOS)	%
C AUC 3 (INVOS)	minutes %
D Baseline 3 (INVOS)	%
D rSO2 3 (INVOS)	%
D AUC 3 (INVOS)	minutes %
E Baseline 3 (INVOS)	%
E rSO2 3 (INVOS)	%
E AUC 3 (INVOS)	minutes %

Parameter label	UOM
F Baseline 3 (INVOS)	%
F rSO2 3 (INVOS)	%
F AUC 3 (INVOS)	minutes %
G Baseline 3 (INVOS)	%
G rSO2 3 (INVOS)	%
G AUC 3 (INVOS)	minutes %
H Baseline 3 (INVOS)	%
H rSO2 3 (INVOS)	%
H AUC 3 (INVOS)	minutes %
I Baseline 3 (INVOS)	%
I rSO2 3 (INVOS)	%
I AUC 3 (INVOS)	minutes %
J Baseline 3 (INVOS)	%
J rSO2 3 (INVOS)	%
J AUC 3 (INVOS)	minutes %
K Baseline 3 (INVOS)	%
K rSO2 3 (INVOS)	%
K AUC 3 (INVOS)	minutes %
L Baseline 3 (INVOS)	%
L rSO2 3 (INVOS)	%
L AUC 3 (INVOS)	minutes %
M Baseline 3 (INVOS)	%
M rSO2 3 (INVOS)	%
M AUC 3 (INVOS)	minutes %
N Baseline 3 (INVOS)	%
N rSO2 3 (INVOS)	%
N AUC 3 (INVOS)	minutes %
O Baseline 3 (INVOS)	%
O rSO2 3 (INVOS)	%
O AUC 3 (INVOS)	minutes %
P Baseline 3 (INVOS)	%
P rSO2 3 (INVOS)	%
P AUC 3 (INVOS)	minutes %
Q Baseline 3 (INVOS)	%

Parameter label	UOM
Q rSO2 3 (INVOS)	%
Q AUC 3 (INVOS)	minutes %
R Baseline 3 (INVOS)	%
R rSO2 3 (INVOS)	%
R AUC 3 (INVOS)	minutes %
S Baseline 3 (INVOS)	%
S rSO2 3 (INVOS)	%
S AUC 3 (INVOS)	minutes %
T Baseline 3 (INVOS)	%
T rSO2 3 (INVOS)	%
T AUC 3 (INVOS)	minutes %
U Baseline 3 (INVOS)	%
U rSO2 3 (INVOS)	%
U AUC 3 (INVOS)	minutes %
V Baseline 3 (INVOS)	%
V rSO2 3 (INVOS)	%
V AUC 3 (INVOS)	minutes %
W Baseline 3 (INVOS)	%
W rSO2 3 (INVOS)	%
W AUC 3 (INVOS)	minutes %
X Baseline 3 (INVOS)	%
X rSO2 3 (INVOS)	%
X AUC 3 (INVOS)	minutes %
Y Baseline 3 (INVOS)	%
Y rSO2 3 (INVOS)	%
Y AUC 3 (INVOS)	minutes %
Z Baseline 3 (INVOS)	%
Z rSO2 3 (INVOS)	%
Z AUC 3 (INVOS)	minutes %
S1 Baseline 3 (INVOS)	%
S1 rSO2 3 (INVOS)	%
S1 AUC 3 (INVOS)	minutes %
S2 Baseline 3 (INVOS)	%
S2 rSO2 3 (INVOS)	%

Parameter label	UOM
S2 AUC 3 (INVOS)	minutes %
S3 Baseline 3 (INVOS)	%
S3 rSO2 3 (INVOS)	%
S3 AUC 3 (INVOS)	minutes %
S4 Baseline 3 (INVOS)	%
S4 rSO2 3 (INVOS)	%
S4 AUC 3 (INVOS)	minutes %
A Baseline 4 (INVOS)	%
A rSO2 4 (INVOS)	%
A AUC 4 (INVOS)	minutes %
B Baseline 4 (INVOS)	%
B rSO2 4 (INVOS)	%
B AUC 4 (INVOS)	minutes %
C Baseline 4 (INVOS)	%
C rSO2 4 (INVOS)	%
C AUC 4 (INVOS)	minutes %
D Baseline 4 (INVOS)	%
D rSO2 4 (INVOS)	%
D AUC 4 (INVOS)	minutes %
E Baseline 4 (INVOS)	%
E rSO2 4 (INVOS)	%
E AUC 4 (INVOS)	minutes %
F Baseline 4 (INVOS)	%
F rSO2 4 (INVOS)	%
F AUC 4 (INVOS)	minutes %
G Baseline 4 (INVOS)	%
G rSO2 4 (INVOS)	%
G AUC 4 (INVOS)	minutes %
H Baseline 4 (INVOS)	%
H rSO2 4 (INVOS)	%
H AUC 4 (INVOS)	minutes %
I Baseline 4 (INVOS)	%
I rSO2 4 (INVOS)	%
I AUC 4 (INVOS)	minutes %

Parameter label	UOM
J Baseline 4 (INVOS)	%
J rSO2 4 (INVOS)	%
J AUC 4 (INVOS)	minutes %
K Baseline 4 (INVOS)	%
K rSO2 4 (INVOS)	%
K AUC 4 (INVOS)	minutes %
L Baseline 4 (INVOS)	%
L rSO2 4 (INVOS)	%
L AUC 4 (INVOS)	minutes %
M Baseline 4 (INVOS)	%
M rSO2 4 (INVOS)	%
M AUC 4 (INVOS)	minutes %
N Baseline 4 (INVOS)	%
N rSO2 4 (INVOS)	%
N AUC 4 (INVOS)	minutes %
O Baseline 4 (INVOS)	%
O rSO2 4 (INVOS)	%
O AUC 4 (INVOS)	minutes %
P Baseline 4 (INVOS)	%
P rSO2 4 (INVOS)	%
P AUC 4 (INVOS)	minutes %
Q Baseline 4 (INVOS)	%
Q rSO2 4 (INVOS)	%
Q AUC 4 (INVOS)	minutes %
R Baseline 4 (INVOS)	%
R rSO2 4 (INVOS)	%
R AUC 4 (INVOS)	minutes %
S Baseline 4 (INVOS)	%
S rSO2 4 (INVOS)	%
S AUC 4 (INVOS)	minutes %
T Baseline 4 (INVOS)	%
T rSO2 4 (INVOS)	%
T AUC 4 (INVOS)	minutes %
U Baseline 4 (INVOS)	%

Parameter label	UOM
U rSO2 4 (INVOS)	%
U AUC 4 (INVOS)	minutes %
V Baseline 4 (INVOS)	%
V rSO2 4 (INVOS)	%
V AUC 4 (INVOS)	minutes %
W Baseline 4 (INVOS)	%
W rSO2 4 (INVOS)	%
W AUC 4 (INVOS)	minutes %
X Baseline 4 (INVOS)	%
X rSO2 4 (INVOS)	%
X AUC 4 (INVOS)	minutes %
Y Baseline 4 (INVOS)	%
Y rSO2 4 (INVOS)	%
Y AUC 4 (INVOS)	minutes %
Z Baseline 4 (INVOS)	%
Z rSO2 4 (INVOS)	%
Z AUC 4 (INVOS)	minutes %
S1 Baseline 4 (INVOS)	%
S1 rSO2 4 (INVOS)	%
S1 AUC 4 (INVOS)	minutes %
S2 Baseline 4 (INVOS)	%
S2 rSO2 4 (INVOS)	%
S2 AUC 4 (INVOS)	minutes %
S3 Baseline 4 (INVOS)	%
S3 rSO2 4 (INVOS)	%
S3 AUC 4 (INVOS)	minutes %
S4 Baseline 4 (INVOS)	%
S4 rSO2 4 (INVOS)	%
S4 AUC 4 (INVOS)	minutes %

Supported parameter table (PC Link Formats 2 and 3)

The following table lists the Covidien INVOS protocol parameters supported by the Innovian Anesthesia group for PC Link Formats 2 and 3. The table provides the parameter labels (which include the channel number) and the unit of measure (UOM) displayed in Innovian Anesthesia.

Parameter label	UOM
rSO2 1 (INVOS)	%
rSO2 2 (INVOS)	%
rSO2 3 (INVOS)	%
rSO2 4 (INVOS)	%

Philips Intellivue Protocol SW 6.5.0.0

Purpose of this release	60
Compatibility	60
Parameter name change	60
Supported device types	60
Cabling	60
UOM (Unit of Measure) conversion of ml (millimeter) to cc (cubic centimeter)	60
Innovian's Intellivue parameter data acceptance criteria	61
Supported parameters	62
Supported parameter table	62

Purpose of this release

The Innovian Anesthesia Philips Intellivue Device Interface SW 6.5.0.0 is a maintenance release. The changes include the following:

- Expand parameter support to include Philips devices supporting the Rev K or newer protocol versions
- Maintain compatibility with Philips devices supporting all pre-Rev K protocol versions

Compatibility

The Philips Intellivue Device Interface can be used at any Innovian Anesthesia site and is compatible with supported Philips devices that communicate through the Philips Intellivue Data Export Fixed RS232 Protocol. Refer to [Supported device types](#) below.

Parameter name change

The P1 Sys, P1 Dias, and P1 Mean parameter names are changed to P Sys, P Dias, and P Mean.

Supported device types

The Philips Intellivue Device Interface supports the following devices:

- X2, MP Series, MX Series and FM Series

Any future Philips monitor compliant with Intellivue Data Export Protocol is expected to be compatible, but changes made by Philips may break compatibility. For information about Innovian Anesthesia support for other monitors that use Philips Intellivue Data Export Protocol, contact your Dräger representative.

Do *not* connect unsupported devices to Innovian Anesthesia.

Cabling

Innovian Anesthesia connects directly to the MIB/RS232 Digital Output port on the Philips Intellivue device. A compatible RS232 communication cable is provided by Dräger.

Dräger does not have a compatible MP5 cable for the MP5 device. Please contact your Philips representative.

UOM (Unit of Measure) conversion of ml (millimeter) to cc (cubic centimeter)

The parameters listed having a "cc" UOM contain a data value conversion derived from the corresponding parameter having an "ml" UOM as received from the Philips device. This conversion is a 1:1 conversion where 1 ml equals 1 cc.

Innovian's Intellivue parameter data acceptance criteria

This release modifies the acceptance criteria defined by Innovian's Intellivue interface for presenting parameter data reported by the Philips device to Innovian for inclusion in the patient record. This acceptance criterion is dependent on certain data validity states indicated for a given parameter by the Philips device protocol. Parameter data is now rejected or accepted as indicated below.

Accept parameter data when:

- Accept parameter data when the data is indicated by the monitor to be manually validated.
- Accept parameter data when the data is indicated by the monitor to be produced while in the "Demo Data" mode. Philips defines this as the monitor runs in demonstration mode; the signal is automatically generated and is not a valid patient signal. The value is not suitable for patient diagnosis. This data is accepted to facilitate Sales and Customer Service. To activate the Philips Demo Mode a special menu function must be activated and a Demo Mode service code entered on the device.
- Accept parameter data when none of the reasons for data rejection are indicated as defined in the reject parameter data list below.

Reject parameter data when:

- Reject parameter data indicated by the monitor as "Invalid": Philips defines this as when the device detects a sufficient measurement degradation to render the data meaningless.
- Reject parameter data indicated by the monitor as "Questionable": Philips defines this as a problem exists, but it is still appropriate to present the data. This occurs when either the degradation in the data is marginal or the source cannot make a definite judgment on the reliability of the data.
- Reject parameter data indicated by the monitor as "Unavailable": Philips defines this as the measurement does not permit derivation of the numeric in question. This could be a transient state (e.g., first breath detected after an apnea, no rate available), or a continuous state (no etCO₂ detection possible on a flat CO₂ wave).
- Reject parameter data indicated by the monitor as "Calibration Ongoing": Philips defines this as when the parameter measurement is currently being calibrated.
- Reject parameter data indicated by the monitor as "Test Data": Philips defines this as the signal is an automatically generated test signal only and is not a valid patient signal. The value is not suitable for patient diagnosis.
- Reject parameter data indicated by the monitor as "Early Indication": Philips defines this as the value represents an early estimate of the actual signal (the Non-Invasive Blood Pressure measurement e.g., sets this bit as soon as it has derived a systolic value, even if mean and diastolic values are still missing).

Supported parameters

Supported parameter table

The following table lists the Philips Intellivue protocol parameters supported by the Innovian Anesthesia group. The table provides the label and the unit of measure (UOM) displayed in Innovian Anesthesia.

Note: An entry will be made in the Innovian System log to identify parameters received from the Philips device that do not meet the supported parameter definitions listed below.

Group	Label	UOM
Airway	MAC	%
Airway	MAC	—
Ambient	Amb Bar Press	mm Hg
Ambient	Amb Bar Press	kPa
Ambient	Ambient Temp	C
Ambient	Ambient Temp	F
Blood Pressure	PPV	%
Blood Pressure	ABP Sys	mm Hg
Blood Pressure	ABP Dias	mm Hg
Blood Pressure	ABP Mean	mm Hg
Blood Pressure	ABP Sys	kPa
Blood Pressure	ABP Dias	kPa
Blood Pressure	ABP Mean	kPa
Blood Pressure	Art Sys	mm Hg
Blood Pressure	Art Dias	mm Hg
Blood Pressure	Art Mean	mm Hg
Blood Pressure	Art Sys	kPa
Blood Pressure	Art Dias	kPa
Blood Pressure	Art Mean	kPa
Blood Pressure	CVP Sys	mm Hg
Blood Pressure	CVP Dias	mm Hg
Blood Pressure	CVP Mean	mm Hg
Blood Pressure	CVP Sys	kPa
Blood Pressure	CVP Dias	kPa
Blood Pressure	CVP Mean	kPa

Group	Label	UOM
Blood Pressure	Fem Sys	mm Hg
Blood Pressure	Fem Dias	mm Hg
Blood Pressure	Fem Mean	mm Hg
Blood Pressure	Fem Sys	kPa
Blood Pressure	Fem Dias	kPa
Blood Pressure	Fem Mean	kPa
Blood Pressure	NIBP Sys	mm Hg
Blood Pressure	NIBP Dias	mm Hg
Blood Pressure	NIBP Mean	mm Hg
Blood Pressure	NIBP Sys	kPa
Blood Pressure	NIBP Dias	kPa
Blood Pressure	NIBP Mean	kPa
Blood Pressure	Pulse	bpm
Blood Pressure	UAP Sys	mm Hg
Blood Pressure	UAP Dias	mm Hg
Blood Pressure	UAP Mean	mm Hg
Blood Pressure	UAP Sys	kPa
Blood Pressure	UAP Dias	kPa
Blood Pressure	UAP Mean	kPa
Blood Pressure	ICP Sys	mm Hg
Blood Pressure	ICP Dias	mm Hg
Blood Pressure	ICP Mean	mm Hg
Blood Pressure	ICP Sys	kPa
Blood Pressure	ICP Dias	kPa
Blood Pressure	ICP Mean	kPa
Blood Pressure	ICP1 Sys	mm Hg
Blood Pressure	ICP1 Dias	mm Hg
Blood Pressure	ICP1 Mean	mm Hg
Blood Pressure	ICP1 Sys	kPa
Blood Pressure	ICP1 Dias	kPa
Blood Pressure	ICP1 Mean	kPa
Blood Pressure	ICP2 Sys	mm Hg
Blood Pressure	ICP2 Dias	mm Hg
Blood Pressure	ICP2 Mean	mm Hg

Group	Label	UOM
Blood Pressure	ICP2 Sys	kPa
Blood Pressure	ICP2 Dias	kPa
Blood Pressure	ICP2 Mean	kPa
Blood Pressure	P Sys	mm Hg
Blood Pressure	P Dias	mm Hg
Blood Pressure	P Mean	mm Hg
Blood Pressure	P Sys	kPa
Blood Pressure	P Dias	kPa
Blood Pressure	P Mean	kPa
Blood Pressure	BAP Sys	mm Hg
Blood Pressure	BAP Dias	mm Hg
Blood Pressure	BAP Mean	mm Hg
Blood Pressure	BAP Sys	kPa
Blood Pressure	BAP Dias	kPa
Blood Pressure	BAP Mean	kPa
Electrocardio	Heart Rate	bpm
Electrocardio	Resp Rate ECG	bpm
Electrocardio	PVC Rate	bpm
Electrocardio	ECG ST I	mm
Electrocardio	ECG ST II	mm
Electrocardio	ECG ST III	mm
Electrocardio	ECG ST V1	mm
Electrocardio	ECG ST V2	mm
Electrocardio	ECG ST V3	mm
Electrocardio	ECG ST V4	mm
Electrocardio	ECG ST V5	mm
Electrocardio	ECG ST V6	mm
Electrocardio	ECG ST AVR	mm
Electrocardio	ECG ST AVL	mm
Electrocardio	ECG ST AVF	mm
Electrocardio	ECG ST V	mm
Electrocardio	ECG ST MCL	mm
Electrocardio	ECG ST AS	mm
Electrocardio	ECG ST ES	mm

Group	Label	UOM
Electrocardio	ECG ST AI	mm
Freshgas	FG Air Flow	l/min
Freshgas	FG Air Flow	ml/min
Freshgas	FG Air Flow	cc/min
Freshgas	FG Flow	l/min
Freshgas	FG Flow	ml/min
Freshgas	FG Flow	cc/min
Freshgas	FG O2	%
Hemodynamic	CCO	l/min
Hemodynamic	CO	l/min
Hemodynamic	Ao Sys	mm Hg
Hemodynamic	Ao Dias	mm Hg
Hemodynamic	Ao Mean	mm Hg
Hemodynamic	Ao Sys	kPa
Hemodynamic	Ao Dias	kPa
Hemodynamic	Ao Mean	kPa
Hemodynamic	LAP Sys	mm Hg
Hemodynamic	LAP Dias	mm Hg
Hemodynamic	LAP Mean	mm Hg
Hemodynamic	LAP Sys	kPa
Hemodynamic	LAP Dias	kPa
Hemodynamic	LAP Mean	kPa
Hemodynamic	P1 Sys	mm Hg
Hemodynamic	P1 Dias	mm Hg
Hemodynamic	P1 Mean	mm Hg
Hemodynamic	P1 Sys	kPa
Hemodynamic	P1 Dias	kPa
Hemodynamic	P1 Mean	kPa
Hemodynamic	P1 Sys NS	mm Hg
Hemodynamic	P1 Dias NS	mm Hg
Hemodynamic	P1 Mean NS	mm Hg
Hemodynamic	P1 Sys NS	kPa
Hemodynamic	P1 Dias NS	kPa
Hemodynamic	P1 Mean NS	kPa

Group	Label	UOM
Hemodynamic	P2 Sys NS	mm Hg
Hemodynamic	P2 Dias NS	mm Hg
Hemodynamic	P2 Mean NS	mm Hg
Hemodynamic	P2 Sys NS	kPa
Hemodynamic	P2 Dias NS	kPa
Hemodynamic	P2 Mean NS	kPa
Hemodynamic	P3 Sys NS	mm Hg
Hemodynamic	P3 Dias NS	mm Hg
Hemodynamic	P3 Mean NS	mm Hg
Hemodynamic	P3 Sys NS	kPa
Hemodynamic	P3 Dias NS	kPa
Hemodynamic	P3 Mean NS	kPa
Hemodynamic	P4 Sys NS	mm Hg
Hemodynamic	P4 Dias NS	mm Hg
Hemodynamic	P4 Mean NS	mm Hg
Hemodynamic	P4 Sys NS	kPa
Hemodynamic	P4 Dias NS	kPa
Hemodynamic	P4 Mean NS	kPa
Hemodynamic	P5 Sys NS	mm Hg
Hemodynamic	P5 Dias NS	mm Hg
Hemodynamic	P5 Mean NS	mm Hg
Hemodynamic	P5 Sys NS	kPa
Hemodynamic	P5 Dias NS	kPa
Hemodynamic	P5 Mean NS	kPa
Hemodynamic	P6 Sys NS	mm Hg
Hemodynamic	P6 Dias NS	mm Hg
Hemodynamic	P6 Mean NS	mm Hg
Hemodynamic	P6 Sys NS	kPa
Hemodynamic	P6 Dias NS	kPa
Hemodynamic	P6 Mean NS	kPa
Hemodynamic	P7 Sys NS	mm Hg
Hemodynamic	P7 Dias NS	mm Hg
Hemodynamic	P7 Mean NS	mm Hg
Hemodynamic	P7 Sys NS	kPa

Group	Label	UOM
Hemodynamic	P7 Dias NS	kPa
Hemodynamic	P7 Mean NS	kPa
Hemodynamic	P8 Sys NS	mm Hg
Hemodynamic	P8 Dias NS	mm Hg
Hemodynamic	P8 Mean NS	mm Hg
Hemodynamic	P8 Sys NS	kPa
Hemodynamic	P8 Dias NS	kPa
Hemodynamic	P8 Mean NS	kPa
Hemodynamic	PA Sys	mm Hg
Hemodynamic	PA Dias	mm Hg
Hemodynamic	PA Mean	mm Hg
Hemodynamic	PA Sys	kPa
Hemodynamic	PA Dias	kPa
Hemodynamic	PA Mean	kPa
Hemodynamic	RA Sys	mm Hg
Hemodynamic	RA Dias	mm Hg
Hemodynamic	RA Mean	mm Hg
Hemodynamic	RA Sys	kPa
Hemodynamic	RA Dias	kPa
Hemodynamic	RA Mean	kPa
Hemodynamic	PAWP	mm Hg
Hemodynamic	PAWP	kPa
Hemodynamic	SVR	Dyne x sec/cm5
Hemodynamic	VO2	ml/min
Hemodynamic	Cardiac Index	L/min/m2
Hemodynamic	Left Cardiac Work	Kg-m
Hemodynamic	Left Cardiac Work Index	Kg-m/m2
Hemodynamic	Right Cardiac Work	Kg-m
Hemodynamic	Right Cardiac Work Index	Kg-m/m2
Hemodynamic	Stroke Volume	ml
Hemodynamic	Stoke Volume Index	ml/m2
Hemodynamic	Left Ventrical Stroke Work	g x m
Hemodynamic	Left Ventrical Stroke Index	g-m/m2
Hemodynamic	Right Ventrical Stroke Work	g x m

Group	Label	UOM
Hemodynamic	Right Ventrical Stroke Index	g-m/m2
Hemodynamic	REF	%
Hemodynamic	PVR	dyne/sec/cm-5
Hemodynamic	PVRI	dyne x sec x m2/cm5
Hemodynamic	PvO2	mm Hg
Hemodynamic	Injectate Vol	ml
Hemodynamic	Injectate Vol	cc
Hemodynamic	End Diastolic Vol	ml
Hemodynamic	End Diastolic Vol	cc
Hemodynamic	End Diastolic Vol Index	ml/m2
Hemodynamic	End Systolic Vol	ml
Hemodynamic	End Systolic Vol	cc
Hemodynamic	End Sys Vol Index	ml/m2
Hemodynamic	Global end Dias Vol	ml
Hemodynamic	EF Global	%
Hemoglobin Oxygen Saturation	SpO2	%
Hemoglobin Oxygen Saturation	SvO2	%
Hemoglobin Oxygen Saturation	rSO2 1	%
Hemoglobin Oxygen Saturation	rSO2 2	%
Hemoglobin Oxygen Saturation	rSO2 3	%
Hemoglobin Oxygen Saturation	rSO2 4	%
Neuro	BIS Index	—
Neuro	EMG	dB
Neuro	EEG SR	%
Neuro	SQI	%
Neuro	CPP	mm Hg
Neuro	CPP	kPa
Respiratory Gas Concentration	FiCO2	%
Respiratory Gas Concentration	etCO2	%
Respiratory Gas Concentration	etCO2	kPa
Respiratory Gas Concentration	etCO2	mm Hg
Respiratory Gas Concentration	Insp CO2	%
Respiratory Gas Concentration	Insp CO2	kPa
Respiratory Gas Concentration	Insp CO2	mm Hg

Group	Label	UOM
Respiratory Gas Concentration	Exp Agent	%
Respiratory Gas Concentration	Exp Agent	kPa
Respiratory Gas Concentration	Exp Agent	mm Hg
Respiratory Gas Concentration	Insp Agent	%
Respiratory Gas Concentration	Insp Agent	kPa
Respiratory Gas Concentration	Insp Agent	mm Hg
Respiratory Gas Concentration	Agent Delta	%
Respiratory Gas Concentration	FG DES	%
Respiratory Gas Concentration	Exp DES	%
Respiratory Gas Concentration	Exp DES	kPa
Respiratory Gas Concentration	Exp DES	mm Hg
Respiratory Gas Concentration	Insp DES	%
Respiratory Gas Concentration	Insp DES	kPa
Respiratory Gas Concentration	Insp DES	mm Hg
Respiratory Gas Concentration	DES Delta	%
Respiratory Gas Concentration	FG ENF	%
Respiratory Gas Concentration	Exp ENF	%
Respiratory Gas Concentration	Exp ENF	kPa
Respiratory Gas Concentration	Exp ENF	mm Hg
Respiratory Gas Concentration	Insp ENF	%
Respiratory Gas Concentration	Insp ENF	kPa
Respiratory Gas Concentration	Insp ENF	mm Hg
Respiratory Gas Concentration	FG HAL	%
Respiratory Gas Concentration	Exp HAL	%
Respiratory Gas Concentration	Exp HAL	kPa
Respiratory Gas Concentration	Exp HAL	mm Hg
Respiratory Gas Concentration	Insp HAL	%
Respiratory Gas Concentration	Insp HAL	kPa
Respiratory Gas Concentration	Insp HAL	mm Hg
Respiratory Gas Concentration	FG ISO	%
Respiratory Gas Concentration	Exp ISO	%
Respiratory Gas Concentration	Exp ISO	kPa
Respiratory Gas Concentration	Exp ISO	mm Hg
Respiratory Gas Concentration	Insp ISO	%

Group	Label	UOM
Respiratory Gas Concentration	Insp ISO	kPa
Respiratory Gas Concentration	Insp ISO	mm Hg
Respiratory Gas Concentration	ISO Delta	%
Respiratory Gas Concentration	FG SEV	%
Respiratory Gas Concentration	Exp SEV	%
Respiratory Gas Concentration	Exp SEV	kPa
Respiratory Gas Concentration	Exp SEV	mm Hg
Respiratory Gas Concentration	Insp SEV	%
Respiratory Gas Concentration	Insp SEV	kPa
Respiratory Gas Concentration	Insp SEV	mm Hg
Respiratory Gas Concentration	FG N2O	%
Respiratory Gas Concentration	Exp N2O	%
Respiratory Gas Concentration	Exp N2O	kPa
Respiratory Gas Concentration	Exp N2O	mm Hg
Respiratory Gas Concentration	Insp N2O	%
Respiratory Gas Concentration	Insp N2O	kPa
Respiratory Gas Concentration	Insp N2O	mm Hg
Respiratory Gas Concentration	N2O Delta	%
Respiratory Gas Concentration	FIO2	%
Respiratory Gas Concentration	Exp O2 Fast	%
Respiratory Gas Concentration	Exp O2 Fast	kPa
Respiratory Gas Concentration	Exp O2 Fast	mm Hg
Respiratory Gas Concentration	Insp O2 Fast	%
Respiratory Gas Concentration	Insp O2 Fast	kPa
Respiratory Gas Concentration	Insp O2 Fast	mm Hg
Respiratory Gas Concentration	Exp N2	%
Respiratory Gas Concentration	Exp N2	kPa
Respiratory Gas Concentration	Exp N2	mm Hg
Respiratory Gas Concentration	Insp N2	%
Respiratory Gas Concentration	Insp N2	kPa
Respiratory Gas Concentration	Insp N2	mm Hg
Respiratory Pressure	PIP	cm H2O
Respiratory Pressure	PIP	mbar
Respiratory Pressure	PIP	hPa

Group	Label	UOM
Respiratory Pressure	PEEP	cm H2O
Respiratory Pressure	PEEP	mbar
Respiratory Pressure	PEEP	hPa
Respiratory Pressure	Plateau Pressure	cm H2O
Respiratory Pressure	Plateau Pressure	mbar
Respiratory Pressure	Plateau Pressure	hPa
Respiratory Pressure	Plateau Time	S
Respiratory Pressure	Intrinsic Peep Breath Press	cm H2O
Respiratory Pressure	Intrinsic Peep Breath Press	mbar
Respiratory Pressure	CPAP	cm H2O
Respiratory Pressure	CPAP	mbar
Respiratory Pressure	CPAP	hPa
Respiratory Pressure	Airway Press	cm H2O
Respiratory Pressure	Airway Press	mbar
Respiratory Pressure	Airway Press	hPa
Respiratory Volume	Minute Volume	l
Respiratory Volume	Exp Minute Vol	l
Respiratory Volume	Exp Minute Vol	ml
Respiratory Volume	Exp Minute Vol	cc
Respiratory Volume	Insp Minute Vol	l
Respiratory Volume	Insp Minute Vol	ml
Respiratory Volume	Insp Minute Vol	cc
Respiratory Volume	Spontaneous Minute Vol	L
Respiratory Volume	Spontaneous Minute Vol	ml
Respiratory Volume	Spontaneous Minute Vol	cc
Respiratory Volume	Mandatory Minute Vol	L
Respiratory Volume	Mandatory Minute Vol	ml
Respiratory Volume	Mandatory Minute Vol	cc
Respiratory Volume	Tidal Volume	L
Respiratory Volume	Tidal Volume	ml
Respiratory Volume	Tidal Volume	cc
Respiratory Volume	Exp Tidal Vol	L
Respiratory Volume	Exp Tidal Vol	ml
Respiratory Volume	Exp Tidal Vol	cc

Group	Label	UOM
Respiratory Volume	Insp Tidal Vol	L
Respiratory Volume	Insp Tidal Vol	ml
Respiratory Volume	Insp Tidal Vol	cc
Respiratory Volume	Spontaneous Tidal Vol	L
Respiratory Volume	Spontaneous Tidal Vol	ml
Respiratory Volume	Spontaneous Tidal Vol	cc
Respiratory Volume	Mandatory Tidal Vol	L
Respiratory Volume	Mandatory Tidal Vol	ml
Respiratory Volume	Mandatory Tidal Vol	cc
Respiratory Volume	Exp Spontaneous Tidal Volume	L
Respiratory Volume	Exp Spontaneous Tidal Volume	ml
Respiratory Volume	Exp Spontaneous Tidal Volume	cc
Respiratory Volume	Exp Peak Flow	l/s
Respiratory Volume	Exp Peak Flow	ml/s
Respiratory Volume	Dead Space	ml
Respiratory Volume	Dead Space	cc
Resp Rate	Resp Rate	bpm
Resp Rate	Mandatory Resp Rate	bpm
Resp Rate	Spontaneous Resp Rate	bpm
Temperature	Blood Temp	C
Temperature	Blood Temp	F
Temperature	Injectate Temp	C
Temperature	Injectate Temp	F
Temperature	Airway Temp	C
Temperature	Airway Temp	F
Temperature	Delta Temp	C
Temperature	Delta Temp	F
Temperature	Temp 1	C
Temperature	Temp 1	F
Temperature	Temp 2	C
Temperature	Temp 2	F
Temperature	Temp 3	C
Temperature	Temp 3	F
Temperature	Temp 4	C

Group	Label	UOM
Temperature	Temp 4	F
Temperature	Temp Skin 1	C
Temperature	Temp Rectal 1	F
Temperature	Temp Naso 1	C
Temperature	Temp Naso 1	F
Temperature	Temp Oesophagus	C
Temperature	Temp Oesophagus	F
Temperature	Temp Core	C
Temperature	Temp Core	F
Temperature	Temp Core 1	C
Temperature	Temp Core 1	F
Temperature	Temp Core 2	C
Temperature	Temp Core 2	F
Temperature	Temp Arterial 1	C
Temperature	Temp Arterial 1	F
Temperature	Temp Venous 1	C
Temperature	Temp Venous 1	F
Temperature	Temp Tympanic	C
Temperature	Temp Tympanic	F
Temperature	Temp Cerebral	C
Temperature	Temp Cerebral	F
Temperature	Temp Body	C
Temperature	Temp Body	F
Temperature	Temp Urine	C
Temperature	Temp Urine	F
Temperature	Temperature	C
Temperature	Temperature	F
Temperature	Temp Infrared	C
Temperature	Temp Infrared	F
Temperature	Temp Core Infrared	C
Temperature	Temp Core Infrared	F
Temperature	Temp Rectal Infrared	C
Temperature	Temp Rectal Infrared	F
Temperature	Temp Oral Infrared	C

Group	Label	UOM
Temperature	Temp Oral Infrared	F
Temperature	Temp Tympanic Infrared	C
Temperature	Temp Tympanic Infrared	F
Temperature	Temp Axil Infrared	C
Temperature	Temp Axil Infrared	F
Ventilation	Leakage	ml/min
Ventilation	Leakage	cc/min
Ventilation	Exp Time	S
Ventilation	Negative Insp Press	cm H2O
Ventilation	Negative Insp Press	mbar
Ventilation	Intermittent Mandatory Ventilation	ml
Ventilation	Intermittent Mandatory Ventilation	cc
Ventilation	Expiratory Resistance	cm H2O/l/s
Ventilation	Expiratory Resistance	kPa/l/s
Ventilation	Inspiratory Resistance	cm H2O/l/s
Ventilation	Inspiratory Resistance	kPa/l/s

CASMED Protocol SW 6.5.1.0

- Purpose of this release** 76

- Compatibility** 76
 - Supported device types 76
 - Software 6.5.1.0 updates 76
 - Substituted sctO2 parameter labels 76
 - Innovian Anesthesia displayed labels per
the selected CASMED CSV output protocol
option 77
 - Cabling 77

- Supported parameters** 78
 - Supported parameter table. 78

Purpose of this release

The Innovian Anesthesia CASMED FORE-SIGHT Protocol Device Interface SW 6.5.1.0 is a maintenance release. The changes include the following:

- Add support for the CASMED Elite 4-Channel FORE-SIGHT CSV protocol and parameters.

Compatibility

The CASMED FORE-SIGHT CSV interface can be used at any Innovian Anesthesia site and is compatible with supported devices that communicate through the CASMED FORE-SIGHT 2-channel or 4-channel CSV protocol options. Refer to [Supported device types](#) below.

Supported device types

The CASMED FORE-SIGHT CSV protocol interface supports the following CASMED monitors:

- CASMED FORE-SIGHT Tissue Oximeter Series MC-2000, SW Rev 6.6.0 or higher.
- CASMED FORE-SIGHT Elite Tissue Oximeter Series MC-3000, SW package revision 1.1.3 or higher.

Any future CASMED monitor compliant with the CASMED FORE-SIGHT CSV Protocol is expected to be compatible. For information about Innovian Anesthesia support for other monitors that use CASMED FORE-SIGHT CSV Protocol interface, contact your Dräger representative.

Software 6.5.1.0 updates

New parameters are added to support the new 4-Channel parameter measurements. These parameters are labeled on Innovian Anesthesia as "rSO2", with an appended number to identify the measured source channel number ("rSO2 1").

Substituted sctO2 parameter labels

The following Innovian Anesthesia display labels are disabled and substituted with new labels.

Disabled Label	Substituted Label	UOM
sctO2_left	rSO2 1	%
sctO2_right	rSO2 2	%
sctO2_avg	rSO2 Avg	%

The disabled label displays when you review an archived case, but no new data is recorded with that label selection.

Innovian Anesthesia displayed labels per the selected CASMED CSV output protocol option

The table below identifies the parameter labels displayed on Innovian per the CASMED CSV output protocol option selected on the CASMED monitor.

Innovian Anesthesia Display Label	Unit of Measure	CASMED 2-Channel CSV Protocol Selection	CASMED 4-Channel CSV Protocol Selection
rSO2 1	%	sctO2_left (Channel 1)	Channel 1
rSO2 2	%	sctO2_right (Channel 2)	Channel 2
rSO2 3	%	N/A	Channel 3
rSO2 4	%	N/A	Channel 4
rSO2 Avg	%	sctO2_avg	N/A

Cabling

Innovian Anesthesia connects directly to the RS232 output port on the compatible CASMED devices. A compatible RS232 communication cable is provided by Dräger.

Supported parameters

Supported parameter table

The following table lists the CASMED FORE-SIGHT protocol parameters by the Innovian Anesthesia group. The table provides the label and the unit of measure (UOM) displayed in Innovian Anesthesia.

Group	Label	UOM
Hemoglobin Oxygen Saturation	rSO2 1	%
Hemoglobin Oxygen Saturation	rSO2 2	%
Hemoglobin Oxygen Saturation	rSO2 3	%
Hemoglobin Oxygen Saturation	rSO2 14	%
Hemoglobin Oxygen Saturation	rSO2 Avg	%

MAQUET FLOW-i Protocol SW 7.0.24.3

Purpose of this release	80
Compatibility	80
Supported device types	80
Software 7.0.24.3 updates	80
Cabling	81
Supported parameters	81
Supported parameter table	81

Purpose of this release

The Innovian Anesthesia MAQUET FLOW-i Protocol Device Interface release SW 7.0.24.3 introduces the new MAQUET FLOW-i Anesthesia System device interface to the Innovian Anesthesia system.

Compatibility

The MAQUET FLOW-i FCI interface can be used at any Innovian Anesthesia site and is compatible with the MAQUET FLOW-i Anesthesia System device having the FLOW-i Communication Interface FCI Protocol version 0007. Refer to [Supported device types](#) below.

Supported device types

The MAQUET FLOW-i protocol interface supports the MAQUET FLOW-i Anesthesia System device, but is restricted to those with the MAQUET FLOW-i FCI Protocol version 0007 installed.

Any future version of the MAQUET FLOW-i Anesthesia System device that maintains support of the FCI Protocol version 0007 protocol interface is expected to remain compatible.

NOTE

Maquet currently maintains support of earlier versions of their FCI Protocol in the FLOW-i Anesthesia System device, even though a newer version may be installed in the device. However, changes made by MAQUET FLOW-i may break compatibility.

For information about Innovian Anesthesia support for MAQUET FLOW-i Anesthesia System devices that use the FCI Protocol version 0007 protocol, contact your Dräger representative.

Do *not* connect unsupported devices to Innovian Anesthesia.

Software 7.0.24.3 updates

New parameters are introduced to the Innovian Anesthesia system to support the MAQUET FLOW-i Anesthesia System parameter measurements. These parameters are labeled on Innovian Anesthesia as shown in the table in [Supported parameters](#) on page 81.

Modifies the Siemens Export "MAP" parameter label name

NOTE

Note to the users of the Siemens Export device interface having a pre-7.x release of Innovian Anesthesia.

This MAQUET FLOW-i software update modifies the existing "MAP" label displayed on Recorder for the Mean Airway Pressure parameter reported by the Siemens Export interface. (See [SIEMENS Export Protocol SW 6.0.6.15](#) on page page 25.)

Cabling

Innovian Anesthesia connects directly to the serial output port on the MAQUET FLOW-i Anesthesia System device through a 9-pin RS232 null modem cable.

Supported parameters

Supported parameter table

The following table lists the MAQUET FLOW-i Anesthesia System parameters by the Innovian Anesthesia group. The table provides the label and the unit of measure (UOM) displayed in Innovian Anesthesia.

NOTE

Parameter update is available only while the MAQUET FLOW-i device is actively delivering anesthesia during a new case. The MAQUET FLOW-i device is in a standby mode when a case is not currently active. During standby, measured parameter data is not available and the Innovian Anesthesia interface will indicate a port error for the MAQUET FLOW-i connection.

Group	Label	UOM
Airway	MAC	—
Ambient	Amb Bar Press	hPa
Ambient	Amb Bar Press	cm H2O
Ambient	Amb Bar Press	mm Hg
Patient	Vte/PBW	ml/kg
Resistance	Elastance	cm H2O
Respiratory Gas Concentration	Consumption DES	ml
Respiratory Gas Concentration	Consumption ISO	ml
Respiratory Gas Concentration	Consumption SEV	ml
Respiratory Gas Concentration	etN2O	%
Respiratory Gas Concentration	etO2	%
Respiratory Gas Concentration	etO2	kPa
Respiratory Gas Concentration	etO2	mm Hg
Respiratory Gas Concentration	Exp DES	%
Respiratory Gas Concentration	Exp ISO	%
Respiratory Gas Concentration	Exp SEV	%
Respiratory Gas Concentration	FICO2	%

Group	Label	UOM
Respiratory Gas Concentration	FiCO2	kPa
Respiratory Gas Concentration	FiCO2	mmHg
Respiratory Gas Concentration	FiN2O	%
Respiratory Gas Concentration	FIO2	%
Respiratory Gas Concentration	Insp DES	%
Respiratory Gas Concentration	Insp ISO	%
Respiratory Gas Concentration	Insp SEV	%
Respiratory Pressure	Air Inlet Press	bar
Respiratory Pressure	Air Inlet Press	kPa * 100
Respiratory Pressure	Air Inlet Press	psi
Respiratory Pressure	Mean Brth Press	cm H2O
Respiratory Pressure	Mean Brth Press	mbar
Respiratory Pressure	N2O Inlet Press	bar
Respiratory Pressure	N2O Inlet Press	kPa * 100
Respiratory Pressure	N2O Inlet Press	psi
Respiratory Pressure	O2 Inlet Press	bar
Respiratory Pressure	O2 Inlet Press	kPa * 100
Respiratory Pressure	O2 Inlet Press	psi
Respiratory Pressure	Peak	cm H2O
Respiratory Pressure	Peak	mbar
Respiratory Pressure	PEEP	cm H2O
Respiratory Pressure	PEEP	mbar
Respiratory Pressure	Plateau Press	cm H2O
Respiratory Pressure	Plateau Press	mbar
Respiratory Pressure	Total PEEP	cm H2O
Respiratory Pressure	Total PEEP	mm Hg
Respiratory Rate	Resp rate	bpm
Respiratory Volume	Dynamic Compliance	ml/cm H2O
Respiratory Volume	Dynamic Compliance	ml/mbar
Respiratory Volume	End Exp Flow	l/s
Respiratory Volume	End Exp Flow	l/min
Respiratory Volume	Exp Minute Vol	l/min
Respiratory Volume	Exp Tidal Vol	ml
Respiratory Volume	Insp Minute Vol	l/min

Group	Label	UOM
Respiratory Volume	Insp Tidal Vol	ml
Respiratory Volume	Static Compliance	ml/cm H2O
Respiratory Volume	Static Compliance	ml/mbar
Ventilation	I :E Ratio	—
Ventilation	Insp Time :Breath Cycle	—
Ventilation	Insufflation time	S
Ventilation	Time Constant	S

This page intentionally left blank

Cheetah Protocol SW 7.0.26.9

Purpose of this release	86
Compatibility	86
Supported device types	86
Cabling	86
Software 7.0.26.9 updates	86
Supported parameters	88
Supported parameter table	88

Purpose of this release

The Innovian Anesthesia Cheetah NICOM Protocol Device Interface SW 7.0.26.9 introduces the new Cheetah NICOM device interface to the Innovian Anesthesia system.

Compatibility

The Cheetah NICOM device interface can be used at any Innovian Anesthesia site and is compatible with supported devices using the Cheetah NICOM External Connectivity protocol, R-IFU-07/Revisions 1 and 2 over an RS232 serial connection. Refer to [Supported device types](#) below.

Supported device types

The Cheetah NICOM protocol interface supports the following Cheetah Medical monitors:

- Starling SV, SW Rev 5.1.1.0.

Any future version of the Starling SV or other Cheetah NICOM medical device that supports the Cheetah NICOM External Connectivity RS232 serial protocol interface is expected to be compatible. However, changes made by Cheetah Medical may break compatibility. For information about Innovian Anesthesia support for other monitors that use the Cheetah NICOM External Connectivity RS232 Protocol, contact your Dräger representative.

Do *not* connect unsupported devices to Innovian Anesthesia.

Cabling

Innovian Anesthesia connects directly to the serial output port on the Cheetah Starling SV device through a compatible RS232 D-9 male to female modem communication cable.

Software 7.0.26.9 updates

New parameters

New parameters are introduced to the Innovian Anesthesia system to support the Starling SV parameter measurements. These parameters are labeled on Innovian Anesthesia as shown in the supported parameter table below.

Modifies the Siemens Export "MAP" parameter label name

NOTE

Note to the users of the Siemens Export device interface having a pre-7.x release of Innovian Anesthesia.

This Cheetah NICOM software update modifies the existing "MAP" label displayed on Recorder for the Mean Airway Pressure parameter reported by the Siemens Export interface. (See [SIEMENS Export Protocol SW 6.0.6.15](#) on page page 25.)

Measured parameter updates

The Cheetah NICOM device transmits parameter data at ~30 (thirty) second intervals per instructions to the user of this interface. The Cheetah NICOM device begins transmission of parameter value updates after completion of the sensor calibration. The value of the measured Cardiac Output parameters are updated at ~30 (thirty) second intervals. These parameter include: CO, CI, HR, SV, SVI, SVV and TFC.

All other parameter values are updated only when their value changes. These include the user entered values for Hgb, SpO2 and MAP and the measured parameters for BP Sys, BP Mean, BP Dias, TPR, TPRI, DO2I, TFC and SpO2.

NOTE

User entered values made prior to communications between this protocol and the Cheetah NICOM device, will not be included on the Innovian Anesthesia record.

Supported parameters

Supported parameter table

The following table lists the Cheetah Medical Starling SV parameters by the Innovian Anesthesia group. The table provides the label and the unit of measure (UOM) displayed in Innovian Anesthesia.

Group	Label	UOM
Blood Pressure	MAP	mm Hg
Blood Pressure	MAP (man)	mm Hg
Blood Pressure	P Sys	mm Hg
Blood Pressure	P Dias	mm Hg
Electrocardio	Heart Rate	bpm
Hemodynamic	Cardiac Index	l/min/m ²
Hemodynamic	CO	l/min
Hemodynamic	DO ₂ I	ml/min/m ²
Hemodynamic	Stroke Volume	ml
Hemodynamic	Stroke Volume Index	ml/m ²
Hemodynamic	SVV	%
Hemodynamic	TFC	kOhm
Hemodynamic	TPR	dyne x sec/cm ⁵
Hemodynamic	TPRI	dyne x sec/cm ⁵ /m ²
Hemoglobin	Hgb	g/dl
Hemoglobin Oxygen Saturation	SpO ₂ (man)	%
Hemoglobin Oxygen Saturation	SpO ₂	%

Masimo ASCII 1 Protocol SW 2.2.5.1

Purpose of this release	90
Compatibility	90
Supported device types	90
Cabling	90
Software 2.2.5.1 updates	90
Supported parameters	91
Supported parameter table	91

Purpose of this release

The Innovian Anesthesia Masimo Ascii 1 Protocol Device Interface SW 2.2.5.1 introduces the Masimo Ascii 1 device interface to the Innovian Anesthesia system.

Compatibility

The Masimo Ascii 1 device interface can be used at any Innovian Anesthesia site and is compatible with supported devices using the Masimo Radical-7 ASCII 1 protocol (RAD1), defined in the Masimo CSD-1192 Rev C protocol specification over a RS232 serial connection. Refer to [Supported device types](#) below.

Supported device types

The Masimo Ascii 1 protocol interface supports the following Masimo monitors and docking stations:

- Masimo Docking Station 5.1.2.6 both RadNet and non RadNet capable
- Masimo Portable both Rev 7615 and 7618

Any future version of the listed Masimo devices or other Masimo devices supporting revision C or higher of the Masimo Ascii 1 RS232 serial protocol interface is expected to be compatible. However, changes made by Masimo may break compatibility. For information about Innovian Anesthesia support for other Masimo monitors or docking stations that use the Masimo Ascii RS232 Protocol, contact your Dräger representative.

Do *not* connect unsupported devices to Innovian Anesthesia.

Cabling

Innovian Anesthesia connects directly to the output port on the aforementioned Masimo Ascii 1 compatible devices using these Draeger supplied RS232 cables:

- MS 16598 8' straight thru
- MS 16892 30' straight thru.

Software 2.2.5.1 updates

New parameters

New parameters are introduced to the Innovian Anesthesia system to support the Masimo Ascii 1 (RAD1) parameter measurements. These parameters are labeled on Innovian Anesthesia as shown in the supported parameter table below.

Measured parameter updates

Masimo measured parameters are updated at 1 (one) second intervals.

Supported parameters

Supported parameter table

The following table lists the Masimo ASCII 1 parameters supported by the Innovian Anesthesia group. The table provides the label and the unit of measure (UOM) displayed in Innovian Anesthesia.

Group	Label	UOM
Blood Test	SpOC	ml/dl
Blood Test	SpMET	%
Blood Test	SpHGB	g/dl
Blood Test	SpCBH	%
Hemodynamic	PVI	—
Hemoglobin Oxygen Saturation	SpO2	%
Hemoglobin Oxygen Saturation	SpO2 Pulse	bpm
Perfusion	PI	—

This page intentionally left blank

Masimo IAP Protocol SW 8.0.3.3

Purpose of this release	94
Compatibility	94
Supported device types	94
Cabling	94
Software 8.0.3.3 updates	94
Supported parameters	96
Supported parameter table	96

Purpose of this release

The Innovian Anesthesia Masimo Protocol Device Interface SW 8.0.3.3 introduces the new Masimo IAP device interface to the Innovian Anesthesia system.

Compatibility

The Masimo IAP device interface can be used at any Innovian Anesthesia site and is compatible with Masimo supported device types that use the Masimo Instrument Auxiliary Protocol (IAP) over a RS232 serial connection. Refer to [Supported device types](#) below.

The device's Masimo IAP protocol revision must be revision 1.0.3.2 or higher. Contact your Masimo representative for IAP protocol revision upgrade.

Compatibility with future Masimo IAP revisions is not guaranteed due to changes introduced by Masimo.

Supported device types

The following Masimo instruments support IAP:

- Masimo Radical 7-2012:
The Radical Docking Station (RDS) used with the Radical 7-2012 has a standard serial DB-9 female interface in the rear of the docking station that can be used to communicate with the instrument.
- Masimo Root:
A multi-parameter monitor. The Root instrument has a rear USB interface that can be used with a USB to Serial adapter to support IAP.
- Masimo Rad-97:
The Rad-97 instrument has a rear USB interface that can be used with a USB to Serial adapter to support IAP.

Do *not* connect unsupported devices to Innovian Anesthesia.

Cabling

Innovian Anesthesia connects directly to the designated output port of these Masimo IAP compatible devices:

- Masimo Root, Masimo Rad-97: FTDI USB to RS232 Serial Null Modem Adapter Cable. This is an off-the-shelf cable and not supplied by Draeger Medical.
- Radical Docking Station (RDS) used with Radical 7-2012: Existing Draeger RS232 serial cable MS 16598 8' or MS 16892 30' Straight thru.

Software 8.0.3.3 updates

New parameters

New parameters are introduced to the Innovian Anesthesia system to support the Masimo ROOT and Radical 7 parameter measurements. These parameters are labeled on Innovian Anesthesia as shown in the [Supported parameters](#) table on page 96.

Measured parameter updates

Masimo measured parameters are updated at 10 second intervals.

Low confidence measurement conditions

The Masimo device may indicate issues with the quality of certain parameter measurement conditions. These conditions are indicated on the Masimo ROOT by displaying the cause on the top of the displayed window box for the affected parameter(s), and an exception will be noted with the data output from the device. The color of the window is also changed to draw the user's attention. Innovian Anesthesia does not have the capability to indicate such questionable conditions on the patient record, therefore, in consultation with Masimo, it is decided that Innovian will not display a parameter value where such a quality of measurement is questioned.

The Low Confidence exception conditions are:

- High Impedance signal condition
- Low Confidence
- Low Perfusion Index
- Invalid Smooth PI
- Bad Sensor Placement
- Invalid Parameter Data
- Startup State
- Low Signal IQ

Supported parameters

Supported parameter table

The following table lists the Masimo IAP parameters supported by the Innovian Anesthesia group. The table provides the label and the unit of measure (UOM) displayed in Innovian Anesthesia.

Group	Label	UOM
Airway	Resp Rate Acoustic	bpm
Airway	MAC	—
Blood Pressure	NIBP Sys	mm Hg
Blood Pressure	NIBP Dias	mm Hg
Blood Pressure	NIBP Mean	mm Hg
Blood Pressure	NIBP Pulse	bpm
Blood Test	SpCO	%
Blood Test	SpOC	ml/dl
Blood Test	SpMET	%
Blood Test	SpHGB	g/dl
Blood Test	SpHGB	mmol/l
Blood Test	SpHGB	g/l
Hemodynamic	Pleth Var Index	—
Hemodynamic	Oxygen Reserve Index	—
Hemodynamic	RPVI	—
Hemoglobin Oxygen Saturation	rSO2 1 Unassigned	%
Hemoglobin Oxygen Saturation	rSO2 2 Unassigned	%
Hemoglobin Oxygen Saturation	rSO2 3 Unassigned	%
Hemoglobin Oxygen Saturation	rSO2 4 Unassigned	%
Hemoglobin Oxygen Saturation	SpO2	%
Hemoglobin Oxygen Saturation	SpO2 Pulse	bpm
Hemoglobin Oxygen Saturation	rSO2 Head L	%
Hemoglobin Oxygen Saturation	rSO2 Head R	%
Hemoglobin Oxygen Saturation	rSO2 Renal L	%
Hemoglobin Oxygen Saturation	rSO2 Renal R	%
Hemoglobin Oxygen Saturation	rSO2 Abd L	%

Group	Label	UOM
Hemoglobin Oxygen Saturation	rSO2 Abd R	%
Hemoglobin Oxygen Saturation	rSO2 Chest L	%
Hemoglobin Oxygen Saturation	rSO2 Chest R	%
Hemoglobin Oxygen Saturation	rSO2 Forearm L	%
Hemoglobin Oxygen Saturation	rSO2 Forearm R	%
Hemoglobin Oxygen Saturation	rSO2 ULL	%
Hemoglobin Oxygen Saturation	rSO2 ULR	%
Hemoglobin Oxygen Saturation	rSO2 Calf L	%
Hemoglobin Oxygen Saturation	rSO2 Calf R	%
Hemoglobin Oxygen Saturation	rSO2 Upr Calf L	%
Hemoglobin Oxygen Saturation	rSO2 Upr Calf R	%
Hemoglobin Oxygen Saturation	AUC 1 Unassigned	—
Hemoglobin Oxygen Saturation	AUC 2 Unassigned	—
Hemoglobin Oxygen Saturation	AUC 3 Unassigned	—
Hemoglobin Oxygen Saturation	AUC 4 Unassigned	—
Hemoglobin Oxygen Saturation	AUC Head L	%
Hemoglobin Oxygen Saturation	AUC Head R	%
Hemoglobin Oxygen Saturation	AUC Renal L	%
Hemoglobin Oxygen Saturation	AUC Renal R	%
Hemoglobin Oxygen Saturation	AUC Abd L	%
Hemoglobin Oxygen Saturation	AUC Abd R	%
Hemoglobin Oxygen Saturation	AUC Chest L	%
Hemoglobin Oxygen Saturation	AUC Chest R	%
Hemoglobin Oxygen Saturation	AUC Forearm L	%
Hemoglobin Oxygen Saturation	AUC Forearm R	%
Hemoglobin Oxygen Saturation	AUC ULL	%
Hemoglobin Oxygen Saturation	AUC ULR	%
Hemoglobin Oxygen Saturation	AUC Calf L	%
Hemoglobin Oxygen Saturation	AUC Calf R	%
Hemoglobin Oxygen Saturation	AUC Upr Calf L	%
Hemoglobin Oxygen Saturation	AUC Upr Calf R	%
Hemoglobin Oxygen Saturation	Base rSO2 1 Unassigned	%
Hemoglobin Oxygen Saturation	Base rSO2 2 Unassigned	%
Hemoglobin Oxygen Saturation	Base rSO2 3 Unassigned	%

Group	Label	UOM
Hemoglobin Oxygen Saturation	Base rSO2 4 Unassigned	%
Hemoglobin Oxygen Saturation	Base rSO2 Head L	%
Hemoglobin Oxygen Saturation	Base rSO2 Head R	%
Hemoglobin Oxygen Saturation	Base rSO2 Renal L	%
Hemoglobin Oxygen Saturation	Base rSO2 Renal R	%
Hemoglobin Oxygen Saturation	Base rSO2 Abd L	%
Hemoglobin Oxygen Saturation	Base rSO2 Abd R	%
Hemoglobin Oxygen Saturation	Base rSO2 Chest L	%
Hemoglobin Oxygen Saturation	Base rSO2 Chest R	%
Hemoglobin Oxygen Saturation	Base rSO2 Forearm L	%
Hemoglobin Oxygen Saturation	Base rSO2 Forearm R	%
Hemoglobin Oxygen Saturation	Base rSO2 ULL	%
Hemoglobin Oxygen Saturation	Base rSO2 ULR	%
Hemoglobin Oxygen Saturation	Base rSO2 Calf L	%
Hemoglobin Oxygen Saturation	Base rSO2 Calf R	%
Hemoglobin Oxygen Saturation	Base rSO2 Upr Calf L	%
Hemoglobin Oxygen Saturation	Base rSO2 Upr Calf R	%
Hemoglobin Oxygen Saturation	Delta rSO2 1 Unassigned	%
Hemoglobin Oxygen Saturation	Delta rSO2 2 Unassigned	%
Hemoglobin Oxygen Saturation	Delta rSO2 3 Unassigned	%
Hemoglobin Oxygen Saturation	Delta rSO2 4 Unassigned	%
Hemoglobin Oxygen Saturation	Delta rSO2 Head L	%
Hemoglobin Oxygen Saturation	Delta rSO2 Head R	%
Hemoglobin Oxygen Saturation	Delta rSO2 Renal L	%
Hemoglobin Oxygen Saturation	Delta rSO2 Renal R	%
Hemoglobin Oxygen Saturation	Delta rSO2 Abd L	%
Hemoglobin Oxygen Saturation	Delta rSO2 Abd R	%
Hemoglobin Oxygen Saturation	Delta rSO2 Chest L	%
Hemoglobin Oxygen Saturation	Delta rSO2 Chest R	%
Hemoglobin Oxygen Saturation	Delta rSO2 Forearm L	%
Hemoglobin Oxygen Saturation	Delta rSO2 Forearm R	%
Hemoglobin Oxygen Saturation	Delta rSO2 ULL	%
Hemoglobin Oxygen Saturation	Delta rSO2 ULR	%
Hemoglobin Oxygen Saturation	Delta rSO2 Calf L	%

Group	Label	UOM
Hemoglobin Oxygen Saturation	Delta rSO2 Calf R	%
Hemoglobin Oxygen Saturation	Delta rSO2 Upr Calf L	%
Hemoglobin Oxygen Saturation	Delta rSO2 Upr Calf R	%
Hemoglobin Oxygen Saturation	Delta SpO2 1 Unassigned	%
Hemoglobin Oxygen Saturation	Delta SpO2 2 Unassigned	%
Hemoglobin Oxygen Saturation	Delta SpO2 3 Unassigned	%
Hemoglobin Oxygen Saturation	Delta SpO2 4 Unassigned	%
Hemoglobin Oxygen Saturation	Delta SpO2 Head L	%
Hemoglobin Oxygen Saturation	Delta SpO2 Head R	%
Hemoglobin Oxygen Saturation	Delta SpO2 Renal L	%
Hemoglobin Oxygen Saturation	Delta SpO2 Renal R	%
Hemoglobin Oxygen Saturation	Delta SpO2 Abd L	%
Hemoglobin Oxygen Saturation	Delta SpO2 Abd R	%
Hemoglobin Oxygen Saturation	Delta SpO2 Chest L	%
Hemoglobin Oxygen Saturation	Delta SpO2 Chest R	%
Hemoglobin Oxygen Saturation	Delta SpO2 Forearm L	%
Hemoglobin Oxygen Saturation	Delta SpO2 Forearm R	%
Hemoglobin Oxygen Saturation	Delta SpO2 ULL	%
Hemoglobin Oxygen Saturation	Delta SpO2 ULR	%
Hemoglobin Oxygen Saturation	Delta SpO2 Calf L	%
Hemoglobin Oxygen Saturation	Delta SpO2 Calf R	%
Hemoglobin Oxygen Saturation	Delta SpO2 Upr Calf L	%
Hemoglobin Oxygen Saturation	Delta SpO2 Upr Calf R	%
Neuro	EEG PSi	—
Neuro	EMG	%
Neuro	EEG Suppr Ratio	—
Neuro	SEFL	Hz
Neuro	SEFR	Hz
Neuro	ARTF	%
Perfusion	PI	—
Respiratory Gas Concentration	FiCO2	%
Respiratory Gas Concentration	FiCO2	kPa
Respiratory Gas Concentration	FiCO2	mm Hg
Respiratory Gas Concentration	etCO2	%

Group	Label	UOM
Respiratory Gas Concentration	etCO2	kPa
Respiratory Gas Concentration	etCO2	mm Hg
Respiratory Gas Concentration	fiN2O	%
Respiratory Gas Concentration	etN2O	%
Respiratory Gas Concentration	FiO2	%
Respiratory Gas Concentration	etO2	%
Respiratory Gas Concentration	FiAgent 1	%
Respiratory Gas Concentration	etAgent 1	%
Respiratory Gas Concentration	FiHAL 1	%
Respiratory Gas Concentration	etHAL 1	%
Respiratory Gas Concentration	FiENF 1	%
Respiratory Gas Concentration	etENF 1	%
Respiratory Gas Concentration	FiISO 1	%
Respiratory Gas Concentration	etISO 1	%
Respiratory Gas Concentration	FiSEV 1	%
Respiratory Gas Concentration	etSEV 1	%
Respiratory Gas Concentration	FiDES 1	%
Respiratory Gas Concentration	etDES 1	%
Respiratory Gas Concentration	FiAgent 2	%
Respiratory Gas Concentration	etAgent 2	%
Respiratory Gas Concentration	FiHAL 2	%
Respiratory Gas Concentration	etHAL 2	%
Respiratory Gas Concentration	FiENF 2	%
Respiratory Gas Concentration	etENF 2	%
Respiratory Gas Concentration	FiISO 2	%
Respiratory Gas Concentration	etISO 2	%
Respiratory Gas Concentration	FiSEV 2	%
Respiratory Gas Concentration	etSEV 2	%
Respiratory Gas Concentration	FiDES 2	%
Respiratory Gas Concentration	etDES 2	%
Respiratory Rate	Resp Rate Pleth	bpm
Respiratory Rate	Resp Rate CO2	bpm
Temperature	Temperature	F
Temperature	Temperature	C

Group	Label	UOM
Temperature	TEMP (spot)	F
Temperature	TEMP (spot)	C

This page intentionally left blank

Edwards/Baxter SW 8.0.43.8

Purpose of this release	104
Compatibility	104
Supported device types	104
Protocol serial port configuration	104
Supported parameters	105
Supported parameters table	105

Purpose of this release

The Innovian Anesthesia Edwards/Baxter IFMout Protocol Device Interface SW 8.0.43.8 device interface is a maintenance release. Baxter is now owned by Edwards Lifesciences. The Innovian Baxter Vigilance protocol selection name is now Edwards/Baxter.

The changes include the following:

- Expand support to include Edwards Lifesciences Vigilance, Vigilance II, Vigileo, EV1000 & HemoSphere monitors and select parameters. See [Supported parameters](#) on page 105.
- Maintain backwards compatibility with the Baxter Vigilance monitor, now owned by Edwards Lifesciences.

Compatibility

The Edwards/Baxter device interface can be used at any Innovian Anesthesia site and is compatible with supported Edwards Lifesciences devices that communicate through the Edwards IFMout Communication Protocol, Revision AD.

Support of future Edwards Lifesciences devices may require an update to this protocol.

Do not connect unsupported devices to Innovian Anesthesia.

Supported device types

The Edwards/Baxter Interface supports the following devices:

- Edwards Lifesciences Vigilance, Vigilance II, Vigileo, EV1000 & HemoSphere.
- Any future Edwards Lifesciences monitor compliant with the Edwards IFMout protocol is expected to be compatible, but changes made by Edwards may break compatibility.
- For information about Innovian Anesthesia support for other Edwards Lifesciences monitors that use the Edwards IFMout protocol, contact your Dräger representative.
- Contact your Edwards Lifesciences representative to upgrade your device to the IFMout, revision AD protocol revision.

Protocol serial port configuration

Innovian Edwards/Baxter protocol selection

The protocol name selection on Innovian is changed to Edwards/Baxter. The serial port configuration is also changed to the following:

- BAUD: 19200
- PARITY: None
- STOP BITS: 1
- DATA BITS: 8

Edwards Device

The Edwards device should have a Settings selection menu. Within this menu should be one for Connectivity and/or Serial Port Setup. These options may reside within the Advanced Setup menu option. The Edwards Lifesciences service representative can advise the proper setup for the device in use.

It is important that the Serial Port Configuration is setup to match the Innovian configuration:

- BAUD: 19200
- PARITY: None
- STOP BITS: 1
- DATA BITS: 8

In addition, the Edwards device should have a FLOW configuration setting option to set the time interval of the parameter data output updates via the serial port. Set this option to 2 seconds.

Supported parameters

Supported parameters table

The following table lists the Innovian display label for the supported Edwards parameters and Unit of Measure (UOM). Innovian expects parameter updates to occur at 2 second intervals.

Group	Label	UOM
Blood Pressure	CVP Mean	mm Hg
Blood Pressure	CVP Mean	kPa
Blood Pressure	Delta Pressure Percent	%
Hemodynamic	Cardiac Index (This value is the average value for the set of Bolus measurement samples.)	l/min/m ²
Hemodynamic	Cardiac Index (This value is the average value for the set of Bolus measurement samples.)	ml/min/m ²
Hemodynamic	CCO	l/min
Hemodynamic	CCO	ml/min
Hemodynamic	CO (This value is the average value for the set of Bolus measurement samples.)	l/min
Hemodynamic	CO (This value is the average value for the set of Bolus measurement samples.)	ml/min
Hemodynamic	DO ₂	ml/min

Group	Label	UOM
Hemodynamic	DO2	l/min
Hemodynamic	dP/dt	mm Hg/sec
Hemodynamic	Ea dyn	—
Hemodynamic	HPI	—
Hemodynamic	Stroke Volume Index	ml/beat/m2
Hemodynamic	Stroke Volume Index	l/beat/m2
Hemodynamic	SV	ml/beat
Hemoglobin Oxygen Saturation	SvO2	%
Hemodynamic	SVR	dyne x sec/cm5
Hemodynamic	SVRI	dyne x sec x m2/cm5
Hemodynamic	SVV	%
Hemoglobin Oxygen Saturation	SaO2	%
Hemoglobin Oxygen Saturation	StO2 A1 Unassigned	%
Hemoglobin Oxygen Saturation	StO2 A2 Unassigned	%
Hemoglobin Oxygen Saturation	StO2 B1 Unassigned	%
Hemoglobin Oxygen Saturation	StO2 B2 Unassigned	%
Hemoglobin Oxygen Saturation	StO2 Abdomen	%
Hemoglobin Oxygen Saturation	StO2 Arm L	%
Hemoglobin Oxygen Saturation	StO2 Arm R	%
Hemoglobin Oxygen Saturation	StO2 Calf L	%
Hemoglobin Oxygen Saturation	StO2 Calf R	%
Hemoglobin Oxygen Saturation	StO2 Deltoid L	%
Hemoglobin Oxygen Saturation	StO2 Deltoid R	%
Hemoglobin Oxygen Saturation	StO2 Quad L	%
Hemoglobin Oxygen Saturation	StO2 Quad R	%
Temperature	Blood Temp	C
Temperature	Blood Temp	F

The BXT suffix to the displayed parameter name is changed to EDW for new case data. The BXT suffix is still displayed for the existing case date, with EDW used when the new case data is appended to the existing case.

Blink TwitchView SW 9.0.21.4

Purpose of this release	108
Compatibility	108
Protocol serial port configuration	108
Cabling	108
New parameters	109
Measured parameter updates	109
Supported parameters	109
Supported parameters table	109

Purpose of this release

The Innovian Anesthesia Blink TwitchView Protocol Device Interface SW 9.0.21.4 introduces the new TwitchView device interface to the Innovian Anesthesia system.

Compatibility

The TwitchView device interface can be used at any Innovian Anesthesia site and is compatible with TwitchView device types that use the Blink Device Company TwitchView MKT18004 C Serial protocol over a RS232 serial connection. The appropriate TwitchView output format can be selected by entering a configuration code into the TwitchView device. Contact your local Blink Device Company sales representative or email contact@blinkdc.com for details.

Select *Serial* from the following options:

- Serial
- IntelliBridge
- Ethernet-UDP
- Ethernet-TCP

Compatibility with future TwitchView devices is not guaranteed due to changes introduced by the Blink Device Company.

Protocol serial port configuration

Innovian TwitchView protocol selection

The protocol name selection on Innovian is TwitchView. The serial port configuration is also changed to the following:

- BAUD: 19200
- PARITY: None
- STOP BITS: 1
- DATA BITS: 8

Cabling

Innovian Anesthesia connects directly to the RJ45 output port of the TwitchView device. The RS232 cable is TwitchView to Capsule cable model #TVCP01. The RS232 cable is provided by the Blink Device Company.

New parameters

New parameters are introduced to the Innovian Anesthesia system to support the TwitchView parameter measurements. These parameters are labeled on Innovian Anesthesia as shown in the [Supported parameters](#) on page 109.

Measured parameter updates

TwitchView measured parameters are updated at the completion of a TOF or PTC measurement.

Supported parameters

Supported parameters table

The following table lists the TwitchView parameters supported by the Innovian Anesthesia group. The table provides the label and the unit of measure (UOM) displayed in Innovian Anesthesia.

Group	Label	UOM
Neuro	NMT TOF Ratio (TVW)	%
Neuro	NMT TOF Count (TVW)	—
Neuro	NMT PTC Count (TVW)	—
Neuro	NMT Current (TVW)	mA

This page intentionally left blank

Datex AS 3/5 SW 9.0.27.2

Purpose of this release	112
Compatibility	112
Protocol serial port configuration	112
Cabling	112
Supported parameters	113
Supported parameters table	113

Purpose of this release

Identify the Innovian Anesthesia supported parameters of the Datex AS 3/5 Protocol.

This release supports conversion of Temperature values from C to F. Earlier versions of this protocol do not support conversions of Temperature values from C to F.

Compatibility

The Datex AS 3/5 interface can be used at any Innovian Anesthesia site and is compatible with Datex-Ohmeda and GE Healthcare devices that use the Datex AS 3/5 interface. Innovian Anesthesia connects directly to the device's RS232 serial port.

Release 9.0.27.2 is compatible with GE devices with Software Platform 2 installed.

Protocol serial port configuration

Innovian Datex AS 3/5 protocol selection

The protocol name selection on Innovian is Datex AS 3/5. The serial port configuration is:

- BAUD: 19200
- PARITY: Even
- STOP BITS: 1
- DATA BITS: 8

Cabling

Use the Innovian RS232 cable part number 4112477-001.

Supported parameters

Supported parameters table

The following table lists the Datex AS 3/5 protocol parameters supported by the Innovian Anesthesia group. The table provides the label and the unit of measure (UOM) displayed in Innovian Anesthesia.

Group	Label	UOM
Airway	MAC	%
Airway	MAC Age Sum	—
Ambient	Amb Bar Press	mm Hg
Blood Pressure	ABP Dias	mm Hg
Blood Pressure	ABP Mean	mm Hg
Blood Pressure	ABP Pulse	bpm
Blood Pressure	ABP Sys	mm Hg
Blood Pressure	Art Dias	mm Hg
Blood Pressure	Art Mean	mm Hg
Blood Pressure	Art Pulse	bpm
Blood Pressure	Art Sys	mm Hg
Blood Pressure	CVP Dias	mm Hg
Blood Pressure	CVP Mean	mm Hg
Blood Pressure	CVP Pulse	bpm
Blood Pressure	CVP Sys	mm Hg
Blood Pressure	Fem Dias	mm Hg
Blood Pressure	Fem Mean	mm Hg
Blood Pressure	Fem Pulse	bpm
Blood Pressure	Fem Sys	mm Hg
Blood Pressure	FemV Dias	mm Hg
Blood Pressure	FemV Mean	mm Hg
Blood Pressure	FemV Pulse	bpm
Blood Pressure	FemV Sys	mm Hg
Blood Pressure	ICP Pulse	bpm
Blood Pressure	ICP2 Pulse	bpm
Blood Pressure	Inv Pulse	bpm

Group	Label	UOM
Blood Pressure	LAP Pulse	bpm
Blood Pressure	NIBP Dias	mm Hg
Blood Pressure	NIBP Mean	mm Hg
Blood Pressure	NIBP Pulse	bpm
Blood Pressure	NIBP Sys	mm Hg
Blood Pressure	P1 Pulse	bpm
Blood Pressure	P2 Pulse	bpm
Blood Pressure	P3 Pulse	bpm
Blood Pressure	P4 Pulse	bpm
Blood Pressure	P5 Pulse	bpm
Blood Pressure	P6 Pulse	bpm
Blood Pressure	P7 Pulse	bpm
Blood Pressure	P8 Pulse	bpm
Blood Pressure	PPV	%
Blood Pressure	RA Pulse	bpm
Blood Pressure	RV Pulse	bpm
Blood Pressure	SP Dias	mm Hg
Blood Pressure	SP Mean	mm Hg
Blood Pressure	SP Pulse	bpm
Blood Pressure	SP Sys	mm Hg
Blood Pressure	SPV	mm Hg
Blood Pressure	UAP Dias	mm Hg
Blood Pressure	UAP Mean	mm Hg
Blood Pressure	UAP Pulse	bpm
Blood Pressure	UAP Sys	mm Hg
Blood Pressure	UVP Dias	mm Hg
Blood Pressure	UVP Mean	mm Hg
Blood Pressure	UVP Pulse	bpm
Blood Pressure	UVP Sys	mm Hg
Electrocardio	ECG ST 1	mm
Electrocardio	ECG ST 2	mm
Electrocardio	ECG ST 3	mm
Electrocardio	ECG ST AVF	mm
Electrocardio	ECG ST AVL	mm

Group	Label	UOM
Electrocardio	ECG ST AVR	mm
Electrocardio	ECG ST I	mm
Electrocardio	ECG ST II	mm
Electrocardio	ECG ST III	mm
Electrocardio	ECG ST V	mm
Electrocardio	ECG ST V1	mm
Electrocardio	ECG ST V2	mm
Electrocardio	ECG ST V3	mm
Electrocardio	ECG ST V4	mm
Electrocardio	ECG ST V5	mm
Electrocardio	ECG ST V6	mm
Electrocardio	Heart Rate	bpm
Electrocardio	PVC Rate	PVC/min
Electrocardio	R to R	ms
Electrocardio	Resp Rate ECG	bpm
Hemodynamic	CO	l/min
Hemodynamic	IBP Dias	mm Hg
Hemodynamic	IBP Mean	mm Hg
Hemodynamic	IBP Sys	mm Hg
Hemodynamic	LAP Dias	mm Hg
Hemodynamic	LAP Mean	mm Hg
Hemodynamic	LAP Sys	mm Hg
Hemodynamic	P1 Dias	mm Hg
Hemodynamic	P1 Mean	mm Hg
Hemodynamic	P1 Sys	mm Hg
Hemodynamic	P2 Dias	mm Hg
Hemodynamic	P2 Mean	mm Hg
Hemodynamic	P2 Sys	mm Hg
Hemodynamic	P3 Dias	mm Hg
Hemodynamic	P3 Mean	mm Hg
Hemodynamic	P3 Sys	mm Hg
Hemodynamic	P4 Dias	mm Hg
Hemodynamic	P4 Mean	mm Hg
Hemodynamic	P4 Sys	mm Hg

Group	Label	UOM
Hemodynamic	P5 Dias	mm Hg
Hemodynamic	P5 Mean	mm Hg
Hemodynamic	P5 Sys	mm Hg
Hemodynamic	P6 Dias	mm Hg
Hemodynamic	P6 Mean	mm Hg
Hemodynamic	P6 Sys	mm Hg
Hemodynamic	P7 Dias	mm Hg
Hemodynamic	P7 Mean	mm Hg
Hemodynamic	P7 Sys	mm Hg
Hemodynamic	P8 Dias	mm Hg
Hemodynamic	P8 Mean	mm Hg
Hemodynamic	P8 Sys	mm Hg
Hemodynamic	PA Dias	mm Hg
Hemodynamic	PA Mean	mm Hg
Hemodynamic	PA Pulse	bpm
Hemodynamic	PA Sys	mm Hg
Hemodynamic	PCWP	mm Hg
Hemodynamic	RA Dias	mm Hg
Hemodynamic	RA Mean	mm Hg
Hemodynamic	RA Sys	mm Hg
Hemodynamic	REF	%
Hemodynamic	RV Dias	mm Hg
Hemodynamic	RV Mean	mm Hg
Hemodynamic	RV Sys	mm Hg
Hemodynamic	VO2	ml/min
Hemoglobin Oxygen Saturation	Pulse Amp	%
Hemoglobin Oxygen Saturation	Pulse Amp (2)	%
Hemoglobin Oxygen Saturation	SaO2	%
Hemoglobin Oxygen Saturation	SaO2 (2)	%
Hemoglobin Oxygen Saturation	SO2	%
Hemoglobin Oxygen Saturation	SO2 (2)	%
Hemoglobin Oxygen Saturation	SpO2	%
Hemoglobin Oxygen Saturation	SpO2 (2)	%
Hemoglobin Oxygen Saturation	SpO2 Pulse	bpm

Group	Label	UOM
Hemoglobin Oxygen Saturation	SpO2 Pulse (2)	bpm
Hemoglobin Oxygen Saturation	SvO2	%
Hemoglobin Oxygen Saturation	SvO2 (2)	%
Neuro	BIS Index	—
Neuro	BSR	%
Neuro	CPP	mm Hg
Neuro	CPP2	mm Hg
Neuro	DB Count	—
Neuro	DB PTC	—
Neuro	DB Ratio	%
Neuro	DB T1	%
Neuro	EEG1 Alpha Rel Power	%
Neuro	EEG1 Beta Rel Power	%
Neuro	EEG1 Burst Suppr ratio	%
Neuro	EEG1 Delta Rel Power	%
Neuro	EEG1 Median Freq	Hz
Neuro	EEG1 RMS	μv
Neuro	EEG1 SEF	Hz
Neuro	EEG1 Theta Rel Power	%
Neuro	EEG2 Alpha Rel Power	%
Neuro	EEG2 Beta Rel Power	%
Neuro	EEG2 Burst Suppr ratio	%
Neuro	EEG2 Delta Rel Power	%
Neuro	EEG2 Median Freq	Hz
Neuro	EEG2 RMS	μv
Neuro	EEG2 SEF	Hz
Neuro	EEG2 Theta Rel Power	%
Neuro	EEG3 Alpha Rel Power	%
Neuro	EEG3 Beta Rel Power	%
Neuro	EEG3 Burst Suppr ratio	%
Neuro	EEG3 Delta Rel Power	%
Neuro	EEG3 Median Freq	Hz
Neuro	EEG3 RMS	μv
Neuro	EEG3 SEF	Hz

Group	Label	UOM
Neuro	EEG3 Theta Rel Power	%
Neuro	EEG4 Alpha Rel Power	%
Neuro	EEG4 Beta Rel Power	%
Neuro	EEG4 Burst Suppr ratio	%
Neuro	EEG4 Delta Rel Power	%
Neuro	EEG4 Median Freq	Hz
Neuro	EEG4 RMS	µV
Neuro	EEG4 SEF	Hz
Neuro	EEG4 Theta Rel Power	%
Neuro	EMG	dB
Neuro	EMG Current	mA
Neuro	EMG T1	—
Neuro	EMG T2	—
Neuro	EMG T3	—
Neuro	EMG T4	—
Neuro	Energy Expenditure	kCal/d
Neuro	Entropy (RE)	—
Neuro	Entropy (SE)	—
Neuro	Entropy BSR	%
Neuro	FEMG	µV
Neuro	ICP Dias	mm Hg
Neuro	ICP Mean	mm Hg
Neuro	ICP Sys	mm Hg
Neuro	ICP2 Dias	mm Hg
Neuro	ICP2 Mean	mm Hg
Neuro	ICP2 Sys	mm Hg
Neuro	PTC Count	—
Neuro	PTC PTC	—
Neuro	PTC Ratio	%
Neuro	PTC T1	%
Neuro	Single Count	—
Neuro	Single PTC	—
Neuro	Single Ratio	%
Neuro	Single T1	%

Group	Label	UOM
Neuro	SQI	%
Neuro	TOF Count	—
Neuro	TOF PTC	—
Neuro	TOF Ratio	%
Neuro	TOF T1	%
Respiratory Gas Concentration	CO2 Production	ml/min
Respiratory Gas Concentration	etCO2	%
Respiratory Gas Concentration	etCO2	kPa
Respiratory Gas Concentration	etCO2	mm Hg
Respiratory Gas Concentration	Exp Agent	%
Respiratory Gas Concentration	Exp Balance Gas	%
Respiratory Gas Concentration	Exp DES	%
Respiratory Gas Concentration	Exp ENF	%
Respiratory Gas Concentration	Exp HAL	%
Respiratory Gas Concentration	Exp ISO	%
Respiratory Gas Concentration	Exp N2O	%
Respiratory Gas Concentration	Exp O2 Slow	%
Respiratory Gas Concentration	Exp SEV	%
Respiratory Gas Concentration	FIO2	%
Respiratory Gas Concentration	Insp Agent	%
Respiratory Gas Concentration	Insp Balance Gas	%
Respiratory Gas Concentration	Insp CO2	%
Respiratory Gas Concentration	Insp CO2	kPa
Respiratory Gas Concentration	Insp CO2	mm Hg
Respiratory Gas Concentration	Insp DES	%
Respiratory Gas Concentration	Insp ENF	%
Respiratory Gas Concentration	Insp HAL	%
Respiratory Gas Concentration	Insp ISO	%
Respiratory Gas Concentration	Insp N2O	%
Respiratory Gas Concentration	Insp O2 Slow	%
Respiratory Gas Concentration	Insp SEV	%
Respiratory Gas Concentration	Respiratory Quotient	—
Respiratory Pressure	Extrinsic Peep Breath Press	cm H2O
Respiratory Pressure	Intrinsic Peep Breath Press	cm H2O

Group	Label	UOM
Respiratory Pressure	Mean Brth Press	cm H2O
Respiratory Pressure	PEEP	cm H2O
Respiratory Pressure	PIP	cm H2O
Respiratory Pressure	Plateau Pressure	cm H2O
Respiratory Pressure	Static PEEPe	cm H2O
Respiratory Pressure	Static PEEPi	cm H2O
Respiratory Pressure	Static Plateau Pressure	cm H2O
Respiratory Rate	Resp Rate	bpm
Respiratory Rate	Resp Rate CO2	bpm
Respiratory Rate	Resp Rate Vol	bpm
Respiratory Volume	Compliance	ml/cm H2O
Respiratory Volume	Exp Minute Vol	l/min
Respiratory Volume	Exp Tidal Vol	ml
Respiratory Volume	Insp Minute Vol	l/min
Respiratory Volume	Insp Tidal Vol	ml
Respiratory Volume	Spontaneous Minute Vol	l/min
Respiratory Volume	Static Compliance	ml/cm H2O
Temperature	Blood Temp	C
Temperature	Blood Temp	F
Temperature	Temp 1	C
Temperature	Temp 1	F
Temperature	Temp 2	C
Temperature	Temp 2	F
Temperature	Temp 3	C
Temperature	Temp 3	F
Temperature	Temp 4	C
Temperature	Temp 4	F
Temperature	Temp 5	C
Temperature	Temp 5	F
Temperature	Temp 6	C
Temperature	Temp 6	F
Temperature	Temp Airway 1	C
Temperature	Temp Airway 1	F
Temperature	Temp Airway 2	C

Group	Label	UOM
Temperature	Temp Airway 2	F
Temperature	Temp Airway 3	C
Temperature	Temp Airway 3	F
Temperature	Temp Airway 4	C
Temperature	Temp Airway 4	F
Temperature	Temp Airway 5	C
Temperature	Temp Airway 5	F
Temperature	Temp Airway 6	C
Temperature	Temp Airway 6	F
Temperature	Temp Axil 1	C
Temperature	Temp Axil 1	F
Temperature	Temp Axil 2	C
Temperature	Temp Axil 2	F
Temperature	Temp Axil 3	C
Temperature	Temp Axil 3	F
Temperature	Temp Axil 4	C
Temperature	Temp Axil 4	F
Temperature	Temp Axil 5	C
Temperature	Temp Axil 5	F
Temperature	Temp Axil 6	C
Temperature	Temp Axil 6	F
Temperature	Temp Bladder 1	C
Temperature	Temp Bladder 1	F
Temperature	Temp Bladder 2	C
Temperature	Temp Bladder 2	F
Temperature	Temp Bladder 3	C
Temperature	Temp Bladder 3	F
Temperature	Temp Bladder 4	C
Temperature	Temp Bladder 4	F
Temperature	Temp Bladder 5	C
Temperature	Temp Bladder 5	F
Temperature	Temp Bladder 6	C
Temperature	Temp Bladder 6	F
Temperature	Temp Core 1	C

Group	Label	UOM
Temperature	Temp Core 1	F
Temperature	Temp Core 2	C
Temperature	Temp Core 2	F
Temperature	Temp Core 3	C
Temperature	Temp Core 3	F
Temperature	Temp Core 4	C
Temperature	Temp Core 4	F
Temperature	Temp Core 5	C
Temperature	Temp Core 5	F
Temperature	Temp Core 6	C
Temperature	Temp Core 6	F
Temperature	Temp Myo 1	C
Temperature	Temp Myo 1	F
Temperature	Temp Myo 2	C
Temperature	Temp Myo 2	F
Temperature	Temp Myo 3	C
Temperature	Temp Myo 3	F
Temperature	Temp Myo 4	C
Temperature	Temp Myo 4	F
Temperature	Temp Myo 5	C
Temperature	Temp Myo 5	F
Temperature	Temp Myo 6	C
Temperature	Temp Myo 6	F
Temperature	Temp Naso 1	C
Temperature	Temp Naso 1	F
Temperature	Temp Naso 2	C
Temperature	Temp Naso 2	F
Temperature	Temp Naso 3	C
Temperature	Temp Naso 3	F
Temperature	Temp Naso 4	C
Temperature	Temp Naso 4	F
Temperature	Temp Naso 5	C
Temperature	Temp Naso 5	F
Temperature	Temp Naso 6	C

Group	Label	UOM
Temperature	Temp Naso 6	F
Temperature	Temp Oesophagus 1	C
Temperature	Temp Oesophagus 1	F
Temperature	Temp Oesophagus 2	C
Temperature	Temp Oesophagus 2	F
Temperature	Temp Oesophagus 3	C
Temperature	Temp Oesophagus 3	F
Temperature	Temp Oesophagus 4	C
Temperature	Temp Oesophagus 4	F
Temperature	Temp Oesophagus 5	C
Temperature	Temp Oesophagus 5	F
Temperature	Temp Oesophagus 6	C
Temperature	Temp Oesophagus 6	F
Temperature	Temp Rectal 1	C
Temperature	Temp Rectal 1	F
Temperature	Temp Rectal 2	C
Temperature	Temp Rectal 2	F
Temperature	Temp Rectal 3	C
Temperature	Temp Rectal 3	F
Temperature	Temp Rectal 4	C
Temperature	Temp Rectal 4	F
Temperature	Temp Rectal 5	C
Temperature	Temp Rectal 5	F
Temperature	Temp Rectal 6	C
Temperature	Temp Rectal 6	F
Temperature	Temp Room 1	C
Temperature	Temp Room 1	F
Temperature	Temp Room 2	C
Temperature	Temp Room 2	F
Temperature	Temp Room 3	C
Temperature	Temp Room 3	F
Temperature	Temp Room 4	C
Temperature	Temp Room 4	F
Temperature	Temp Room 5	C

Group	Label	UOM
Temperature	Temp Room 5	F
Temperature	Temp Room 6	C
Temperature	Temp Room 6	F
Temperature	Temp Skin 1	C
Temperature	Temp Skin 1	F
Temperature	Temp Skin 2	C
Temperature	Temp Skin 2	F
Temperature	Temp Skin 3	C
Temperature	Temp Skin 3	F
Temperature	Temp Skin 4	C
Temperature	Temp Skin 4	F
Temperature	Temp Skin 5	C
Temperature	Temp Skin 5	F
Temperature	Temp Skin 6	C
Temperature	Temp Skin 6	F
Temperature	Temp Surf 1	C
Temperature	Temp Surf 1	F
Temperature	Temp Surf 2	C
Temperature	Temp Surf 2	F
Temperature	Temp Surf 3	C
Temperature	Temp Surf 3	F
Temperature	Temp Surf 4	C
Temperature	Temp Surf 4	F
Temperature	Temp Surf 5	C
Temperature	Temp Surf 5	F
Temperature	Temp Surf 6	C
Temperature	Temp Surf 6	F
Temperature	Temp Tymp 1	C
Temperature	Temp Tymp 1	F
Temperature	Temp Tymp 2	C
Temperature	Temp Tymp 2	F
Temperature	Temp Tymp 3	C
Temperature	Temp Tymp 3	F
Temperature	Temp Tymp 4	C

Group	Label	UOM
Temperature	Temp Tymp 4	F
Temperature	Temp Tymp 5	C
Temperature	Temp Tymp 5	F
Temperature	Temp Tymp 6	C
Temperature	Temp Tymp 6	F
Tonometry	CPMA	mbar
Tonometry	Gastric Amb Press	mm Hg
Tonometry	P(g - a)CO2 gap	kPa
Tonometry	P(g - a)CO2 gap	mm Hg
Tonometry	P(g - Et)CO2 gap	kPa
Tonometry	P(g - Et)CO2 gap	mm Hg
Tonometry	PaCO2 Delay	min
Tonometry	PgCO2	kPa
Tonometry	PgCO2	mm Hg
Tonometry	pHi	—
Tonometry	pHi Delay	min
Ventilation	Exp Time	s
Ventilation	I:E Time Ratio	—
Ventilation	Inspiratory Time	s
Ventilation	Resistance	cm H2O/(l/s)

This page intentionally left blank

Datex AS 3/5 SW 9.0.53.0

- Purpose of this release** 128

- Compatibility** 128
 - Protocol serial port configuration 128
 - Cabling 128

- Supported parameters** 129
 - Supported parameters table 129

Purpose of this release

The purpose of release 9.0.53.0 is to account for a software change made by GE in their Software Platform 3, which may be installed on GE devices.

Compatibility

The Datex AS 3/5 interface can be used at any Innovian Anesthesia site and is compatible with Datex-Ohmeda and GE Healthcare devices that use the Datex AS 3/5 interface. Innovian Anesthesia connects directly to the device's RS232 serial port.

Release 9.0.53.0 is compatible with GE devices with either Software Platform 2 or Software Platform 3. There is no change to support any additional parameters between releases 9.0.27.2 and 9.0.53.0.

Protocol serial port configuration

Innovian Datex AS 3/5 protocol selection

The protocol name selection on Innovian is Datex AS 3/5. The serial port configuration is:

- BAUD: 19200
- PARITY: Even
- STOP BITS: 1
- DATA BITS: 8

Cabling

Use the Innovian RS232 cable part number 4112477-001.

Supported parameters

Supported parameters table

See the [Supported parameters](#) section on page 113 in the Datex AS 3/5 SW 9.0.27.2 chapter.

This page intentionally left blank

ToFscan Protocol Interface SW 9.0.40.0

Purpose of this release	132
Compatibility	132
Protocol serial port configuration	132
Cabling	132
New parameters	133
Measured parameter updates	133
Supported parameters	133
Supported parameters table	133

Purpose of this release

Identify the Innovian Anesthesia supported parameters of the IDMED ToFscan Protocol.

Compatibility

The ToFscan interface can be used at any Innovian Anesthesia site and is compatible with the IDMED ToFscan device. Innovian connects directly to the ToFscan device through its RS232 Serial port. Compatibility with future IDMED devices using the ToFscan protocol is not guaranteed due to changes introduced by IDMED.

Protocol serial port configuration

Innovian ToFscan protocol selection

The protocol name selection on Innovian is ToFscan. The serial port configuration is:

- BAUD: 19200
- PARITY: None
- STOP BITS: 1
- DATA BITS: 8

Cabling

Innovian Anesthesia connects directly to the optical port of the ToFscan device. The Optic Serial RS232 cable (part number is #MS32156) is supplied with the ToFscan device.

New parameters

New parameters are introduced to the Innovian Anesthesia system to support the ToFscan parameter measurements. These parameters are labeled on Innovian Anesthesia as shown in [Supported parameters](#) below.

Measured parameter updates

The ToFscan parameters for a selected measurement event type are updated at the completion of a new measurement.

Supported parameters


Supported parameters table




The following table lists the ToFscan protocol parameters supported by the Innovian Anesthesia group. The table provides the label and the unit of measure (UOM) displayed in Innovian Anesthesia.

Group	Label	UOM
Neuro	NMT TOF Ratio (TFS)	%
Neuro	NMT TOF Count (TFS)	—
Neuro	NMT DBS Ratio (TFS)	%
Neuro	NMT DBS Count (TFS)	—
Neuro	NMT PTC Count (TFS)	—
Neuro	NMT Current (TFS)	mA

This page intentionally left blank

This page intentionally left blank

 **Manufacturer**

 **Draeger Medical Systems, Inc.**
3135 Quarry Road
Telford, PA 18969-1042
U.S.A.
 (215) 721-5400
(800) 4DRAGER
(800) 437-2437
FAX (215) 723-5935
 <http://www.draeger.com>

Distributed in US by

 **Draeger, Inc.**
3135 Quarry Road
Telford, PA 18969-1042
U.S.A.
 (215) 721-5400
(800) 4DRAGER
(800) 437-2437
FAX (215) 723-5935
 <http://www.draeger.com>

Distributed in Canada by

 **Draeger Medical Canada, Inc.**
2425 Skymark Avenue
Mississauga, Ontario, L4W 4Y6
Canada
 (905) 736 3702
(866) 343-2273
FAX (905) 763-1890
 canada.support@draeger.com

Distributed in Europe by

 **Drägerwerk AG & Co. KGaA**
 Moislinger Allee 53 – 55
D-23542 Lübeck
Deutschland
 +49 451 8 82-0
FAX +49 451 8 82-20 80
 <http://www.draeger.com>

MS32037 – 6013.066 en

© Drägerwerk AG & Co. KGaA

Edition 20 – 2024-06

(Edition 1 – 2014-05)

Dräger reserves the right to make modifications
to the equipment without prior notice.