

**CS300® IABP**  
**PRODUCT FEATURES**

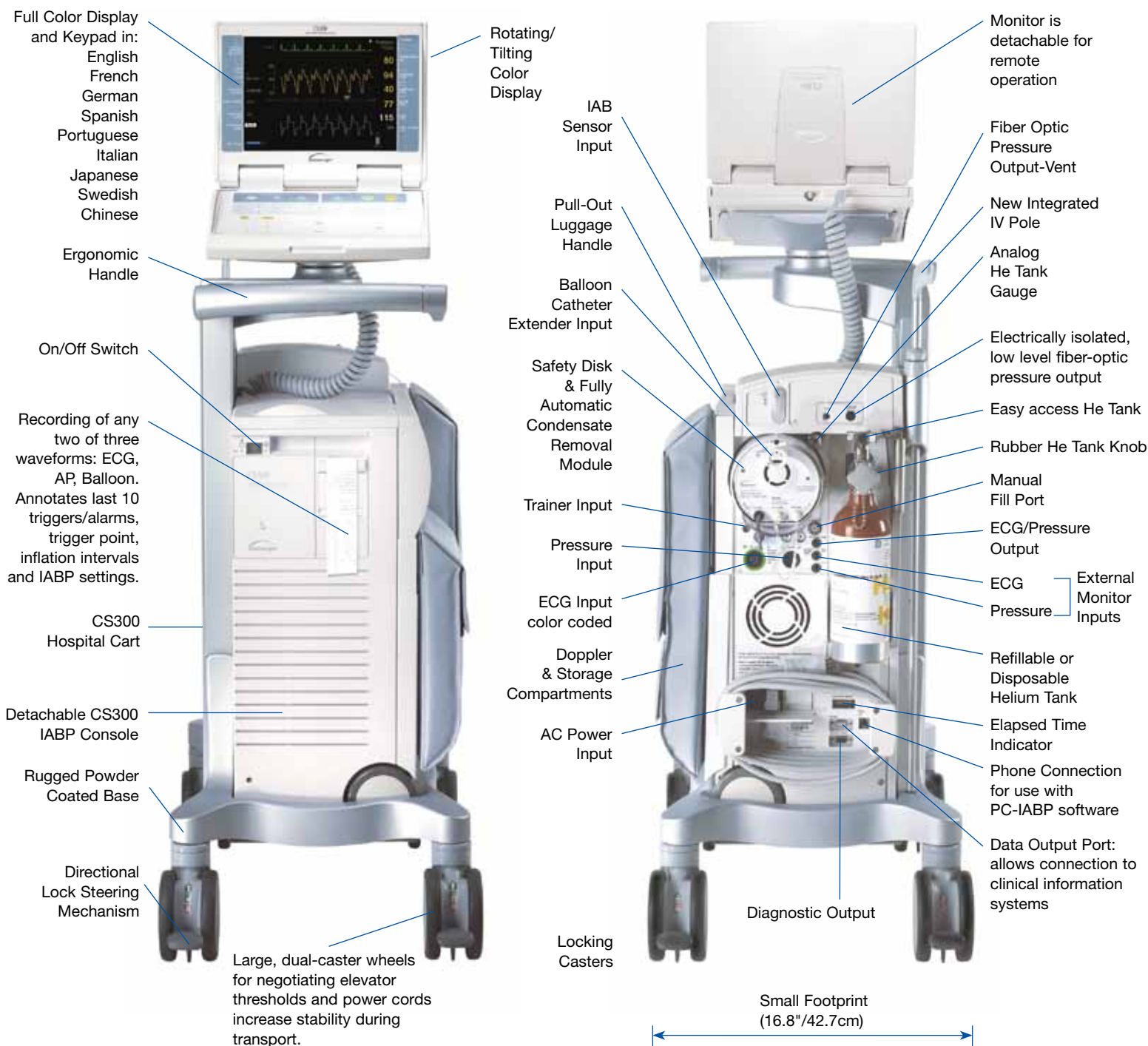
CARDIOVASCULAR

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The **CS300 with IntelliSense™** combines fiber-optic speed with automatic *in vivo* calibration. The result is faster time to therapy, faster signal acquisition, and faster adaptation to rate and rhythm changes.

Optimal therapy for all your IABP patients.



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# CS300 SOFTWARE, COLOR DISPLAY AND KEYPAD CONTROLS

The **CS300 with IntelliSense software** is designed to emulate an experienced user, allowing you more time to focus on your patient. This sophisticated algorithm automatically selects the best lead and trigger source, sets optimal inflation and deflation timing, and still allows the clinician the ability to fine tune deflation timing. The CS300 quickly adapts to rate or rhythm changes in order to optimize augmentation and support during diastole.

**Bright Full Color Display**  
High contrast screen with wide viewing angle and easy rotation/tilt.

**Alarms**  
are posted here and are differentiated into high, medium, and low priority status

**Fast Inflation Speeds**

**Fast Deflation Speeds**

**Operation Mode Indicator:**  
Auto, Semi Auto, Manual

**Time-in-Standby**  
Posted (here) after 1 minute in standby. Advisory message/tone posted after 10 minutes.

**Intuitive IAB Status Indicator**

**Built-in Service Diagnostics Software**  
Display/keypad convert to diagnostic program.

**Fully automated operational mode**

**Intuitive arrow key trigger** selection controls

**Fewer keys** for simple operation.

**"Laptop style"** display and keypad can be detached for remote operation

**Easier selection** of available help menu screens.

**Fast QRS Recognition**  
Enhanced R-Wave deflation performance.

**Color-coded trigger source indicator**  
corresponds to signal waveform.

**Large, crisp labeling**

**Automatic Scaling of AP and ECG waveforms.**

**Unassisted Systolic and Diastolic Pressures**  
Posted in 1:2 or 1:3 assist frequency.

**Timing control indicators**  
display inflate and deflate settings.

**Low Augmentation Alarm**

**Helium and Battery Level Icons**

**Help Screen Availability Indicator**

**ZERO PRESSURE**  
for zeroing of fluid-filled IAB or manual calibration of Sensation fiber-optic IAB.

**One-Button Start-Up.**  
Press START key and CS300 automatically conducts autofill, selects lead and trigger source, sets timing, initiates 1:1 assist and increases augmentation to MAX. When using a Sensation IAB catheter, calibration is also automatic on Start-Up.

**STANDBY key**  
now separate control from START key.

**Timing control keys**  
replace sliders. Settings displayed on-screen for easier viewing.



**New, intuitive menu navigation** system and controls.

**Convenient Signal Source Selection,** switching between direct patient and external signals.

**User Preferences.** Allows user to set individual parameters such as waveforms displayed, alarm volume, and printer preferences, including the ability to print strips at specific time intervals.

**One-button printing.** Fully annotated printout, user-configurable waveforms and strip length.

## CS300 WITH INTELLISENSE SUMMARY TECHNICAL SPECIFICATIONS

<b>Color Display:</b>	Color TFT Liquid Crystal Display (LCD) 8.3"(21cm)W x 6.2"(15.8cm)H; up 45°, 10.4" diagonal (26.4 cm) down 55°, right 70°, left 70° viewing angle; Rotates 330°; Tilts 180°; Detachable; Laptop-like closure for storage and protection; Remote monitor mount (optional)	<b>WIN-IABP (optional):</b>	Software for remote clinical assistance and training
<b>Preferences Menu:</b>	User may select display <i>sweep speed</i> (25 or 50 mm/sec), <i>brightness</i> (low, med., high); <i>balloon waveform</i> (on/off); ECG <i>inflation markers</i> (on/off); <i>flashing alarms</i> (on/off); printer preferences, set date and time)	<b>Service Diagnostics:</b>	Built-in software for system analysis and troubleshooting
<b>Operation Modes:</b>	Auto, Semi Auto, Manual	<b>Modem Data Rate:</b>	Up to 9,600 baud
<b>ECG Trigger:</b>	Threshold dynamically adjusted by system for high sensitivity and selectivity of the R-wave detection; Minimum = 120µV ± 20µV at normal gain; 40µV at max. gain	<b>Modem Certifications:</b>	Registered with FCC and accepted in ≥ 89 countries
<b>Pressure Trigger:</b>	Default trigger threshold is automatically adjusted to 38% of the systolic pulse height; 7 mm minimum <i>Manual threshold mode:</i> User adjustable between 7 and 30 mmHg ± 3 mmHg	<b>Size on Cart:</b>	43.1" H x 22.3" D x 16.8" W (109 cm H x 56.6 cm D x 42.7 cm W)
<b>Pacer A Trigger:</b>	R-wave detection (as above) except pacer blanking is extended to 100 ms	<b>Size off Cart:</b>	26.9" H x 20.5" D x 10.8" W (68.3 cm H x 52.1 cm D x 27.4 cm W)
<b>Pacer V/A-V Trigger:</b>	<i>V Pacer:</i> fixed at rate up to 185 bpm (no demand pacing) <i>A-V Pacer:</i> fixed at rate up to 125 bpm (no demand pacing) with A-V intervals between 80-224 ms <i>Variable mode:</i> 40-120 bpm; <i>Normal mode:</i> 80 ± 1 bpm	<b>Console Weight:</b>	84.8 lbs. (38.4 Kg) nominal (includes S.D., CRM, and He tank)
<b>Internal Trigger:</b>	Rejects all T-Waves where Q-T interval is <300 ms and the amplitude is <70% of QRS input amplitude	<b>Monitor:</b>	9.5 lbs. (4.3 Kg) nominal
<b>Tall T-Wave Rejection:</b> (ECG and Pacer A mode)	Rejects all pulses of amplitude ± 2.0 mV to ± 700 mV and durations between 0.1 ms to 2.0 ms with: 1) No tail; 2) 100 ms time constant tail < 1 mV; 3) 25 ms time constant tail < 1 mV; 4) 4 ms time constant tail < 2 mV	<b>Hospital Cart Weight:</b>	52.4 lbs. (23.8 Kg) nominal
<b>Pacer Rejection:</b> (ECG and Pacer A mode)		<b>Internal Battery:</b>	34 lbs. (15.4 Kg) nominal
<b>ECG Leads:</b>	In Auto Operation Mode: I, II, III, External In Semi-Auto Mode: I, II, III, AVR, AVL, AVF, V, External (12 lead compatibility)	<b>Storage Bag:</b>	4.6 lbs. (2.1 Kg) nominal (includes doppler and doppler holder)
<b>ECG Gain (default):</b>	1 V output per 1 mV input ±5% (waveform automatically scaled to occupy ECG display window)	<b>UTS Version:</b>	Rugged base which attaches to docking station (DS)
<b>Gain (variable):</b>	0.15 to 3.0 cm/mV ±20% (autoscaling disabled)	<b>Dimensions:</b>	30.0" H x 22.5" D x 13.2" W (76.2 cm H x 57.2 cm D x 33.5 cm W)
<b>Frequency Response:</b>	0.5-12 Hz (display); 0.5-135 Hz (Output to External Monitor)	<b>Console Weight:</b>	135.3 lbs. (61.4 Kg) (includes S.D., CRM, He tank, Monitor, Battery)
<b>Defibrillator Protection:</b>	Discharge level ≤ 360 J (trace returns to screen in 5 sec max)	<b>Lightweight DS*:</b>	17.8" (45.1 cm) x 20.0" (50.8 cm); 16.3 lbs <i>*(Suggested Option)</i>
<b>ESIS:</b>	Automatic suppression with internal ECG amplifier	<b>Op. Temp.:</b>	10°C - 40°C
<b>AP Source Selection:</b>	Direct/External (menu based)	<b>Op. Humidity:</b>	5 - 95% (R.H.) non-condensing
<b>AP Input Sensitivity:</b>	5.0µV/V/mmHg	<b>Op. Altitude:</b>	0 - 12,000 feet (3,657 m); automatic altitude correction for IAB pressure
<b>Excitation:</b>	+5 VDC ± 5% @ 130 mA (max)	<b>Printer Type:</b>	Thermal array - 50 mm wide
<b>Frequency Response:</b>	DC to 12 Hz (display)	<b>Printer Menu:</b>	On-screen selection of waveforms; strip length, timed print, print on alarm and alarm/trigger log
<b>Fiber-optic signal acquisition:</b>	Detected when sensor is connected to receptacle	<b>Waveforms (any 1 or 2):</b>	ECG (lead number & size labeled), arterial pressure, BPW
<b>Low-level Fiber-optic Pressure Output:</b>	Enacted when appropriate cable plugged in (electrically isolated)	<b>Annotation:</b>	Event Markers: Trigger pulse, inflation interval Additional Data: Space for patient I.D.; Date; Time; Alarm and Advisory messages; Timing mode; Trigger; HR, Frequency; Syst/Dias (in 1:1); Assisted and Unassisted Syst/Dias (in 1:2 or 1:3); Augmented Pressure; Mean Pressure; Operation Mode
<b>Pressure Range:</b>	0 to +300 mmHg (minimum)	<b>ACCESSORIES</b>	
<b>Accuracy:</b>	4 mmHg or 4%, whichever is greater	<b>Doppler:</b>	8 MHz non-directional probe
<b>Frequency Response:</b>	DC to 26Hz ± 15% (+0 to -3dB)	<b>Saline Pole:</b>	Height adjustable
<b>Excitation:</b>	4 to 8 Volts DC minimum	<b>Simulator*:</b>	Emulates ventricular rhythms; Pacers; HR; A-fib
<b>Noise:</b>	.2 mmHg rms (0 to 26Hz bandwidth)	<b>Remote Mount*:</b>	Mounts keypad/monitor on bypass pump
<b>External Mon. Inputs:</b>	ECG: 1 V/mV (nominal); AP: 1 V/100 mmHg (nominal)	<b>Storage Case:</b>	Holds cables and spare items
<b>ECG/BP Output:</b>	Phone Jack: ECG 1V / mV, BP 1V/100 mmHg	<b>Pump Cover*:</b>	Padded vinyl with pocket
<b>Mains Voltage:</b>	100-120 VAC ± 10% or 220-240 VAC ± 10%	<b>Ext Cable*:</b>	Monitor extension cable
<b>Mains Frequency:</b>	50/60 Hz ± 3 Hz	<b>REGULATORY COMPLIANCE</b>	
<b>Internal Battery:</b>	24 VDC (nominal), 17.2 Amp-hour, approx. 3 hrs. @ 90 bpm	■ <b>Safety</b>	
<b>Battery Type:</b>	Maintenance free; Sealed lead-acid	IEC 60601-1: 1998 / EN 60601: 1990,	
<b>System Compressor:</b>	Dual head diaphragm pump with brushless DC motor	IEC 60601-2-27: 1994 / EN 60601-2-27: 1994,	
<b>IAB Helium (He+):</b>	Medical-grade; 99L Refillable (2200 psi) or 140L Disposable (2200 psi)	IEC 60601-2-34: 2000 / EN 60601-2-34 : 2000,	
<b>He+ Endurance (nominal)</b>	2 mos. continuous operation - 24 hrs./day	IEC 60601-1-8:2003,	
<b>Condensate Removal:</b>	Fully automatic condensate removal and disposal	UL 60601-1:2003, CSA C22.2 - No. 601.1S1 - 94,	
		EC Medical Device Directive 93/42/EEC	
		CSA C22.2 No. 601.1-M90	
		EMC	
		IEC 60601-1-2:2001 / EN 60601-1-2: 2001	
		RTCA/DO-160D Sect. 21 Cat. B	
		RTCA/DO-160D Sect. 20 Cat. T	
		■ <b>Shock &amp; Vibration</b>	
		EN 1789:1999	
		RTCA/DO-160D Sect. 7 Cat. B	
		RTCA/DO-160D Sect. 8 Cat. U	
		MIL-STD-810F	
		IEC 68-2-27	
		IEC 68-2-34	
		■ <b>LCD Screen</b>	
		Complies to NEC spec (NEC: EL-LCD0034 (2))	