

# PuraLev® Pump Console for Life Science Applications



## LCO-i100

For PuraLev® i30SU  
& PuraLev® i100SU/MU

## Advanced Ultrapure Fluid Handling!

## INTRODUCTION

The PuraLev® Console integrates Levitronix® MagLev pumps with LEVIFLOW® ultrasonic flow sensors and adds a sophisticated user interface with enhanced connectivity features. The system allows various operating modes including stand-alone pumping with flow monitoring or flow control, pressure monitoring with up to 3 pressure sensors and temperature monitoring.

The brain of the PuraLev® Console is an embedded PC with a 7" multi-touch screen and it comes with software for flow control, configuration and monitoring of various sensors. The console can operate a PuraLev® i30 or PuraLev® i100 integrated pump driver. Various integrated sensor signal converter circuits allow connection of LEVIFLOW® single-use and clamp-on flow sensors, and single-use pressure and temperature sensors from suppliers such as PendoTECH.

The console can be placed horizontally on a table or mounted vertically on a wall. The display is rotatable by software.

## SYSTEM BENEFITS

- Precise flow monitoring or control.
- Integrated signal converters for pressure & temperature monitoring.
- Precise pressure limitation to avoid potential tube ruptures.
- Plug and play stand-alone functionality.
- Intuitive user interface with 7" color multi-touch.
- Data collection capabilities.
- Easily configurable and customizable by software.

## APPLICATIONS

- Fluid transfer and recirculation in upstream and downstream bioprocessing.
- Single-use and multi-use components available.
- Ideal for RG2+ agents and toxic products due to inherent maximum pressure limitation.
- Depth filtration, ultrafiltration, diafiltration, sterile filtration.
- Mixing, blending, dilution and filling.

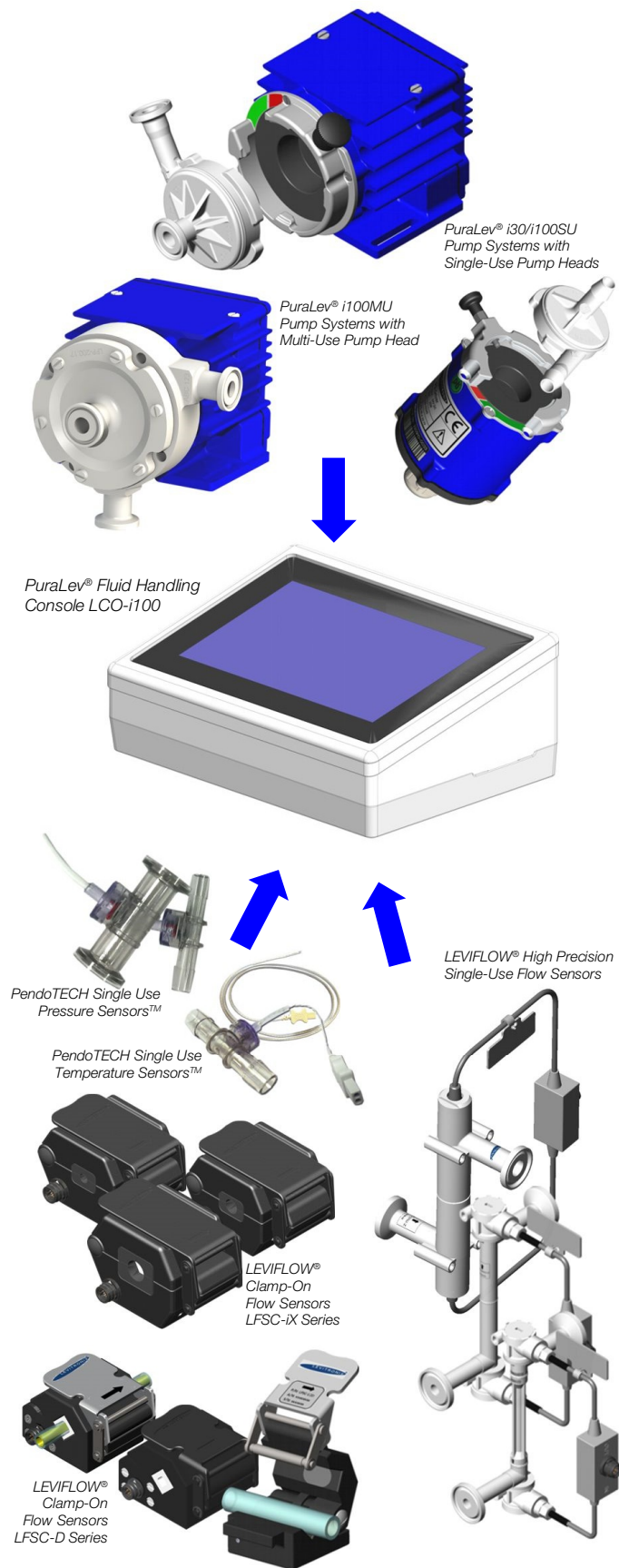


Figure 1: Component connectivity of PuraLev® fluid handling console

## STAND-ALONE PUMP SYSTEM CONFIGURATION

With the standard stand-alone pump system configuration, as illustrated in *Figure 6*, the speed of the pump can be set manually and the flow can be monitored with a *LEVIFLOW*® flow sensor. The mode of operation can be easily switched to a flow control setup, where the flow is set manually on the 7" multi-touch screen and is controlled by the integrated PC.

The USB interface on the rear side facilitates software updates or data collection for debugging with a USB stick.

The console comes with an intuitive software, which, in combination with the touch screen, simplifies the usage, configuration and monitoring of the system.

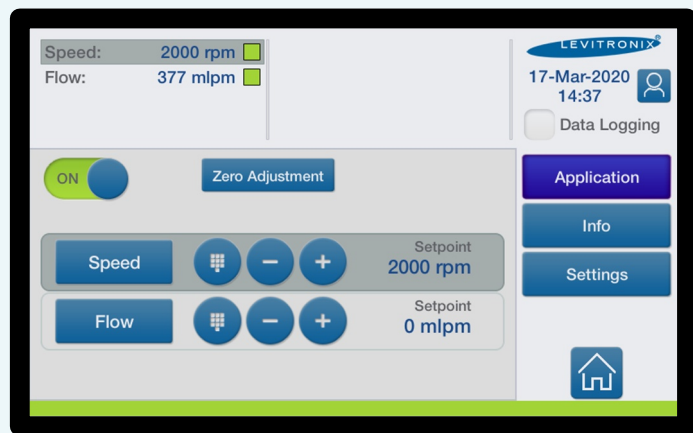


Figure 2: Start-up menu of touch screen

## ADVANCED FLUID HANDLING CONFIGURATION

*Figure 7* illustrates the extended monitoring capabilities of the *PuraLev*® console for advanced fluid handling applications such as depth filtration, ultrafiltration, diafiltration, sterile filtration or pressure control for filling stations.

The *PuraLev*® console includes to flow sensor connections and gauge amplifiers for connection of up to 3 single-use pressure sensors and an additional circuit for the connection of a temperature sensor.

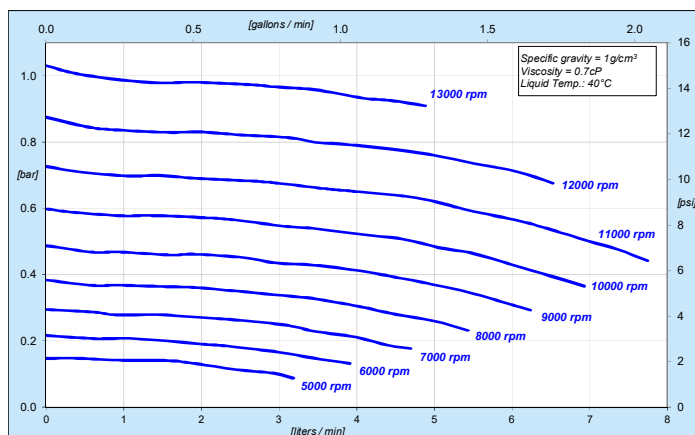


Figure 3: Pressure/flow curves with *PuraLev*® i30SU (DCP-30.1/2 pump heads)

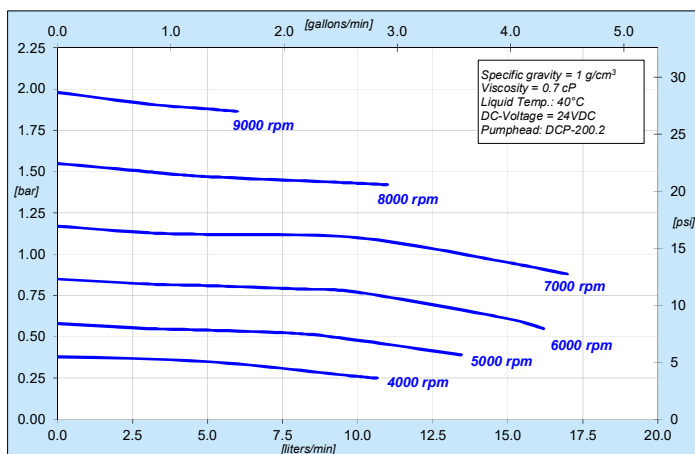


Figure 4: Pressure/flow curves with *PuraLev*® i100SU (DCP-200.2/3 pump heads)

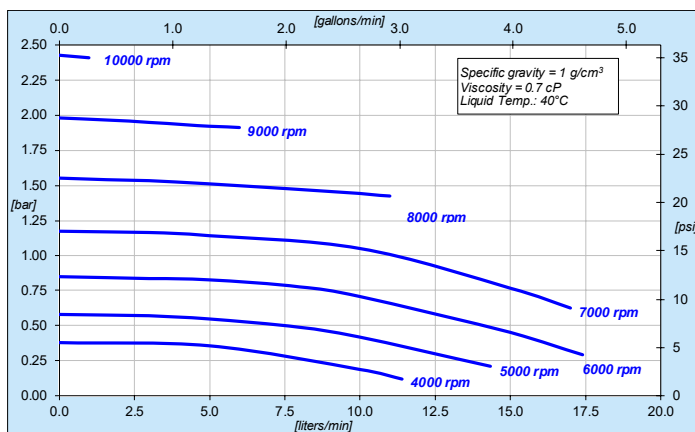
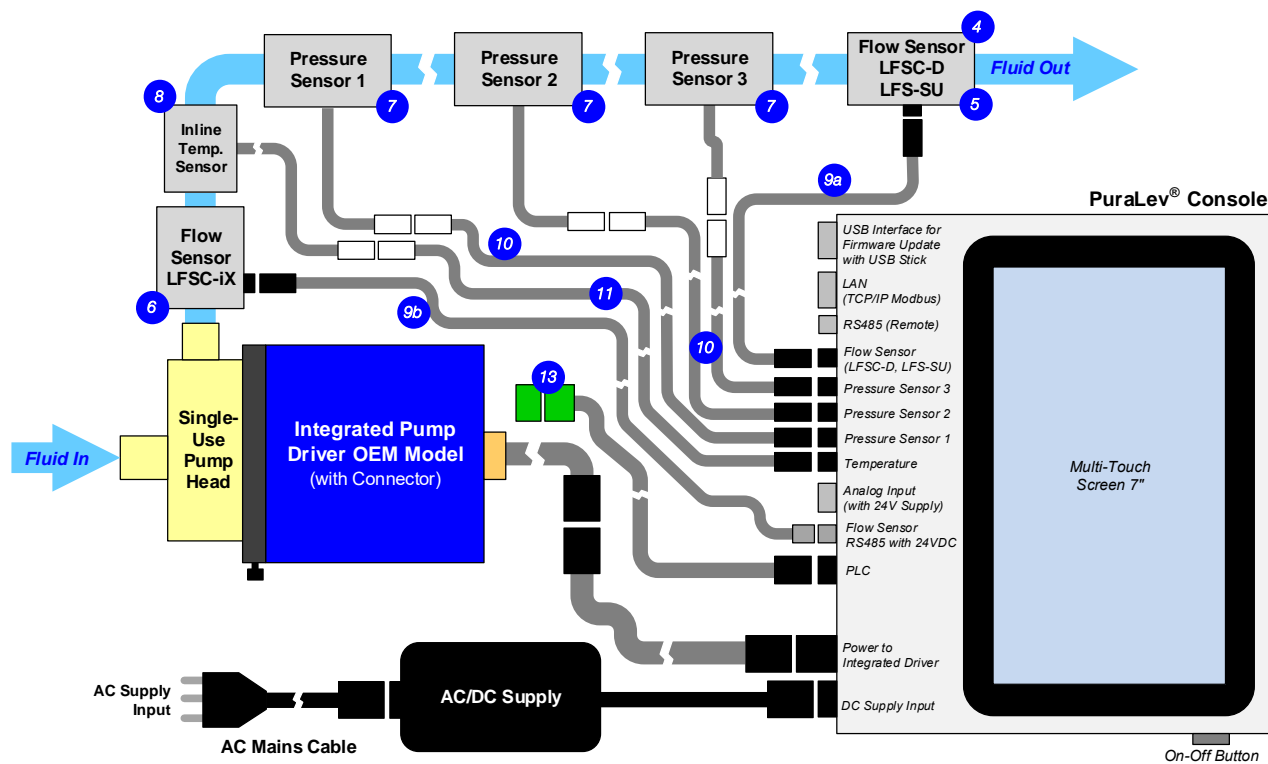
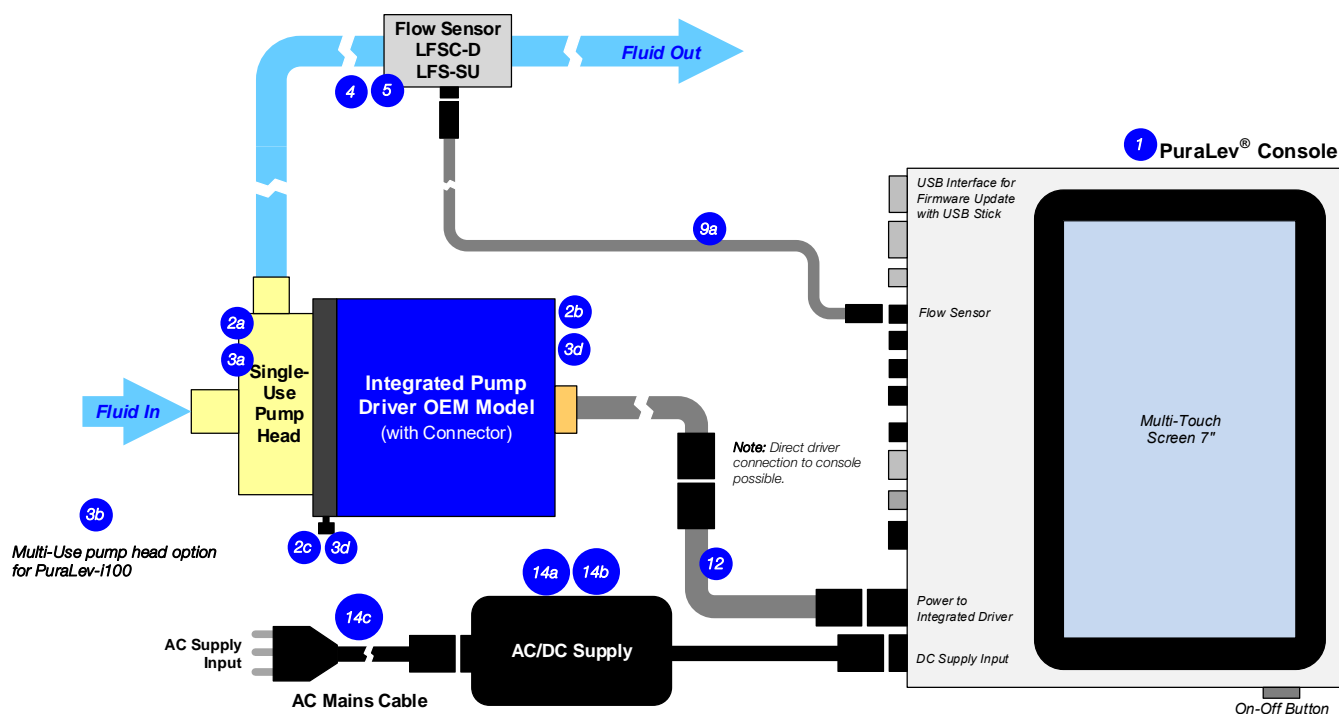


Figure 5: Pressure/flow curves with *PuraLev*® i100MU (LPP-200.16/17 pump heads)





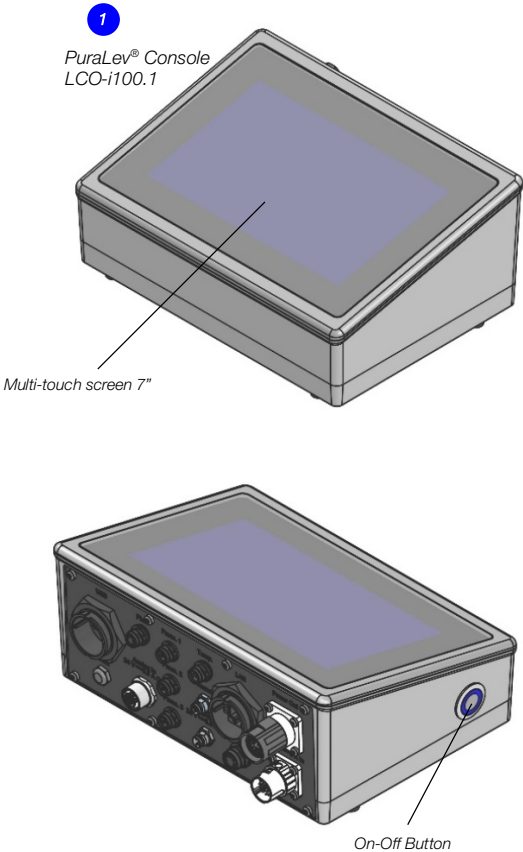
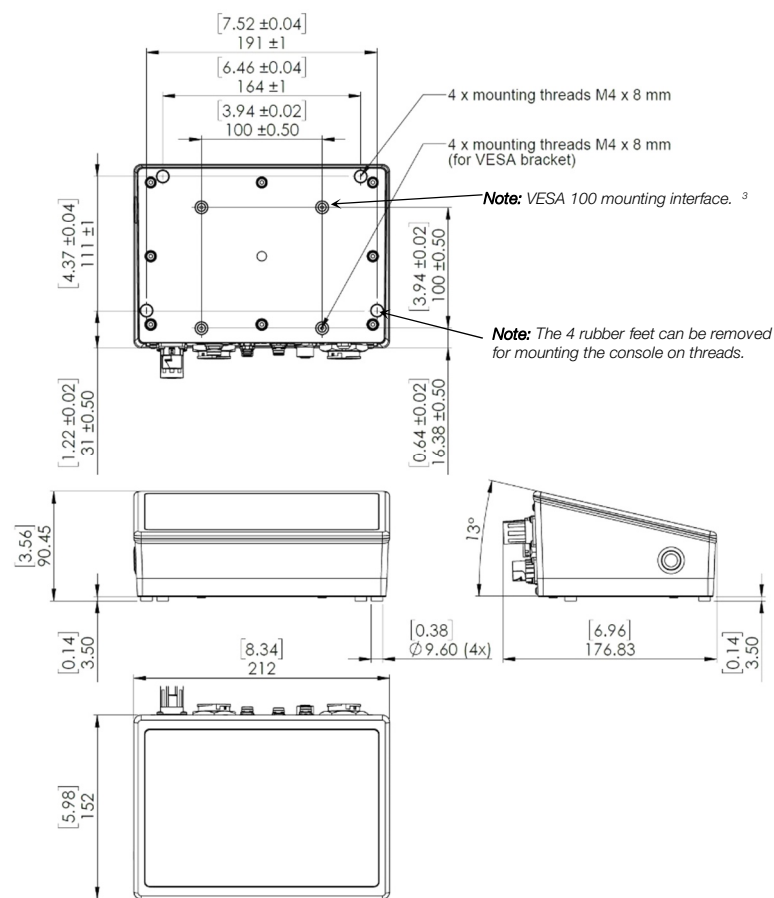
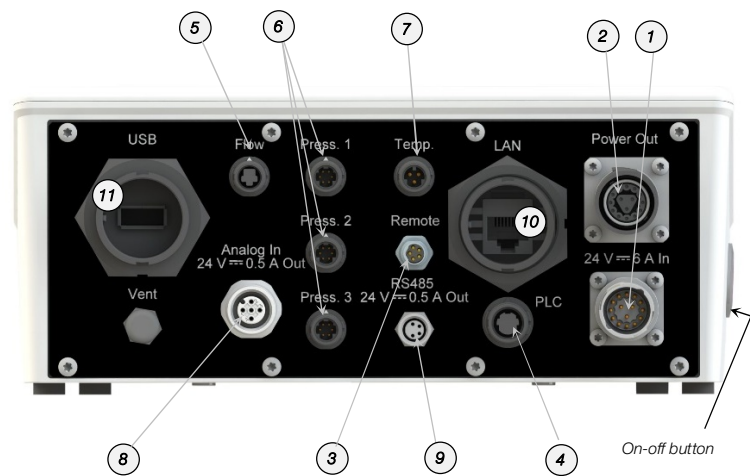


Figure 8: Dimensions of PuraLev® console LCO-i100.1

Note 1: Dimensions in mm and [inch]. Note 2: Mounting holes are different for units older than 2018/19. Note 3: Not available on units older than 2018/19.



Note: All connectors come delivered with a protective cap for sealing if unused. When connected all connectors are at least IP66 rated.

#	Interface Connector	Description	Specification/Purpose/Note
1	DC Supply Connector	Single phase DC connection.	24 VDC with external AC/DC supply. Software configurable Autoresume function. 3-pin connector.
2	Pump Driver	Power connector for IPD-30 and IPD-100 drivers.	--
3	Remote	RS485 for future purposes.	Not active.
4	PLC	Remote control. Configurable designations.	2x digital outputs (outputs software configurable to 24VDC 1), 2x digital inputs, 1 analog output (4-20 mA), 1x analog input (4-20mA) Note: All signals isolated.
5	Flow Sensor LEVIFLOW®	Connection of flow sensors from the LFS-SU and LFSC-D series.	Circular 6 pin snap-in connector. Purpose: Flow control or monitoring.
6a 6b 6c	Pressure Sensor 1 Pressure Sensor 2 Pressure Sensor 3	Connection for single-use pressure sensors 1, 2 and 3.	Needs adaptor cable (see Table 6). Circular 6 pin snap-in connector. Purpose: pressure monitoring.
7	Temperature Sensor	Connection for 1 single-use temperature sensor.	Needs adaptor cable (see Table 6). Circular 6 pin snap-in connector. Purpose: Temperature monitoring.
8	Analog In 24VDC Out	Multi purpose sensor input.	Current input 4-20 mA, 24 VDC supply.
9	RS485 24VDC Out	Sensor input for new clamp-on flow sensors LFSC-IX.	RS485 bus with 24 VDC supply.
10	LAN Interface	TCP/IP Modbus	For connection to OPC devices.
11	USB Interface	Connection of USB stick.	Connection with protective cover. Purpose: Data collection and software update.

Figure 9: Interfaces of PuraLev® console LCO-i100.1

Note 1: Not available on units older than 2018/19. Note 2: Location of connectors is different for units older than 2018/19.

# ORDER INFORMATION

Pos.	Component	Article Name	Article #	Characteristics	Value / Feature
1	PuraLev® Console	LCO-i100.1-01	100-30501	Supply Voltage / Power	24 VDC with 50 W or 160 W supply (see Table 6)
				Housing Rating / Weight	IP65 <sup>2</sup> / 1.6 kg
				Interfaces	Multi-touch screen 7", 3 pressure sensors, 2 flow sensors, 1 temperature sensor PLC (2 digital in/outputs, 1 analog in/output), LAN, USB
				Pump Motors	PuraLev® i30 / i100 integrated driver. (Only one driver can be connected at the same time).
				Certifications	CE, IECEx CB scheme, ETL (NRTL) listed. <sup>2</sup>

**Table 1:** Basic specifications of standard LCO-i100 console.  
 Note 1: AC/DC power supply and AC mains cable for various countries to be ordered separately according to Table 6.      Note 2: Tested and designed for IP66. Not available on units older than 2018/19.

Pos.	Component <sup>2</sup>	Article Name	Article #	Characteristics	Value / Feature
2a	Single-Use Pump Head	DCP-30.2 (Barb) <sup>1 3</sup>	100-90968	Wet Materials	Polypropylene (FDA, USP Class VI, BSE/TSE/animal-free) / Barb or Triclamp 3/8"
		DCP-30.1 (Triclamp) <sup>1</sup> (Needs pump head socket.)	100-90959	Max. Flow / Max. Diff.-Pressure Sterilization Methods	7.7 liters/min (2 gallons/min) / 1.0 bar (14.5 psi) Gamma radiation up to 40 kGy.
2b	Driver	IPD-30.8-03-02 (MBP-i30.1 included)	100-10104	Housing Cable / Connectors	Epoxy (anti-corrosive) coated aluminum, IP65 (tested for IP67) 1 x 0.3m cable with PVC jacket / circular connector
2c	Pump Head Socket	PHS-i30.1	100-90947	Mounting Type / Material	Bayonet mount with locking pin made of anodized aluminum
3a	Single-Use Pump Head	DCP-200.2 (Triclamp) <sup>1</sup>	100-90734	Wet Materials	Polypropylene (FDA, USP Class VI, BSE/TSE/animal-free) / Triclamp or Barb ½"
		DCP-200.3 (Barb) <sup>1 3</sup> (Needs pump head socket.)	100-90792	Max. Flow / Max. Diff.-Pressure Sterilization Methods	17.4 liters/min (4.6 gallons/min) / 2 bar (29 psi) Gamma radiation up to 40 kGy.
3b	Multi-Use Pump Head	LPP-200.17 (with drain port)	100-90864	Wet Materials / Fittings	PVDF, PFA and EPDM (FDA, USP Class VI, BSE/TSE/animal-free) / Triclamp ½"
		LPP-200.16 (no drain port)	100-90863	Max. Flow / Max. Diff.-Pressure Sterilization Methods	17.4 liters/min (4.6 gallons/min) / 2.4 bar (35 psi) CIP (clean in place), Autoclaving
3c	Driver	IPD-100.3-03-02 (SU)	100-10105	Housing	Epoxy (anti-corrosive) coated aluminum, IP65 (tested for IP67)
		IPD-100.3-03-03 (MU)	100-10137	Cable / Connectors	1 x 0.3m cable with PVC jacket / circular connector
3d	Pump Head Socket	PHS-i100.1	100-91053	Mounting Type / Material	Bayonet mount with locking pin made of anodized aluminum

**Table 2:** Specification of standard pump motors and single-use pump heads compatible with LCO-i100 console.  
 Note 1: Gamma irradiation option available.      Note 2: See Levitronix® technical brochures of PuraLev® i30SU, PuraLev® i100SU and PuraLev® i100MU for more detailed specifications and other configurations.      Note 3: Sterile fitting options available.

Pos.	Component	Article Name	Article #	Fitting	Wet Material	Note
4a	LEVIFLOW® Single-Use Flow Sensors	LFS-03SU-Z (0.8 lpm)	100-30375	Triclamp 3/8"	Polypropylene (FDA, USP Class VI, BSE/TSE/Animal free) Gamma stable for up to 40 kGy.	See Levitronix® technical brochure of LFS-SU single-use sensor series for more detailed specifications and for other configurations and sensor sizes.
4b		LFS-03SU-Z-SC1 (0.8 lpm) <sup>1</sup>	100-30418	Triclamp 3/8"		
4c		LFS-06SU-Z (8 lpm)	100-30377	Triclamp 3/8"		
4d		LFS-06SU-Z-SC1 (8 lpm) <sup>1</sup>	100-30394	Triclamp 3/8"		
4e		LFS-10SU-Z (20 lpm)	100-30397	Triclamp 1/2"		
4f		LFS-10SU-Z-SC1 (20 lpm) <sup>1</sup>	100-30408	Triclamp 1/2"		

**Table 3:** Specification of LEVIFLOW® single-use high-precision (1% accuracy of reading) flow sensors compatible with LCO-600 console.  
 Note 1: Extended calibration for wider 1% accuracy range.      Note 2: All flow sensors available with gamma irradiation (see LEVIFLOW® product literature for more details).

Pos.	Component	Article Name	Article #	Calibrated Liquid	Tubing	Tube: ID x OD	Note
5a	LEVIFLOW® Clamp-On Flow Sensors LFSC-D	LFSC-05D-001 (1 lpm)	100-30407	Water @ 20°C/37°C	Silicone CFlex® <sup>1</sup>	1/8" x 1/4"	See Levitronix® technical brochures of LFSC-D and LFSC-IX of clamp-on sensor series for more detailed specifications and other sensor sizes.
5b		LFSC-08D-001 (4 lpm)	100-30396			1/4" x 3/8"	
5c		LFSC-12D-007 (20 lpm)	100-30390			3/8" x 9/16"	
6a	LEVIFLOW® Clamp-On Flow Sensors LFSC-IX	LFSC-i06X-002 (1 lpm)	100-30485	Water @ 20°C/37°C	Silicone CFlex® TPE	1/8" x 1/4"	
6b		LFSC-i10X-001 (4 lpm)	100-30477			1/4" x 3/8"	
6c		LFSC-i16X-001 (20 lpm)	100-30482			3/8" x 5/8"	

**Table 4:** Specification of LEVIFLOW® clamp-on flow sensors compatible with LCO-i100 console.  
 Note 1: C-Flex® is a registered trademark of Saint Gobain Performance Plastics, 2015. All rights reserved.

Pos.	Component	Article Name	Article #	Fittings	Specification	Wet Material	Note
7a	PendoTECH Single-Use Pressure Sensors	PREPS-N-038	190-10375	3/8" Hose Barb	Pressure range: -0.48 to 5.2 bar	Polysulfone	See PendoTECH literature for more detailed specifications.
7b		PREPS-N-5-5	190-10373	3/4" Sanitary Clamp			
8a	Single-Use Temperature Sensor	TEMPS-N-038	190-10377	3/8" Hose Barb	Temp. range: 0 – 70°C	Polysulfone Stainless steel	See PendoTECH literature for more detailed specifications.
8b		TEMPS-N-050	190-10376	1/2" Hose Barb			
8c		TEMP-S-DP	190-10378	Dip Probe			

**Table 5:** Specification of single-use pressure and temperature sensors compatible with console LCO-i100.

Pos.	Component	Article Name	Part #	Characteristics	Special Feature / Description
9a	LEVIFLOW® Interconnect Cable	LFI-C.1-30 (3m)	190-10308	Cable Jacket Material Main Purpose	PVC Connection between LFSC-D and LFS-SU flow sensors and console.
9b	IP Cable Signal 4 Wires	ICS-3.1-30 (3m)	190-10447	Cable Jacket Material Main Purpose	PUR Connection between LFSC-IX flow sensors and console.
10	Pressure Sensor Adaptor Cable	LPE-1.1-30 (3m)	190-10354	General Specifications Main Purpose	Circular console connector, watertight on console side. Connection of single-use pressure sensors to console.
11	Temperature Sensor Adaptor Cable	LTE-1.1-30 (3m)	190-10353	General Specifications Main Purpose	Circular console connector, watertight on console side. Connect single-use temperature sensors to console. For barb sensors and dip probe.
12	IP Adaptor Cable Hybrid	ICH-1.2-30 (3m)	190-10329	General Specifications Main Purpose	Circular console and driver side connector, watertight. Extend cable of drivers.
13	IP Cable Signal 12 Wires	ICS-2.1-50 (5 m)	190-10347	Cable Material / Wires Connection In / Connection Out Main Purpose	PVC jacket / 12x 0.14 mm <sup>2</sup> and shielding Connector with screw type plug for open wire connection / Circular Hirose type General connection to PLC of console.
14a	Desktop AC/DC Power Supply	VEC50US24 IC915	100-40019	Voltage Output / Input Basic Dimensions Safety Approvals Note	24VDC, 50W / 90 – 264 VAC, 47-63 Hz 116 x 52 x 31 mm IEC60950-1, EN60950-1, UL/cUL60950-1 Connector for direct connection to power supply of console with cable length 1.2 m.
14b	Desktop AC/DC Power Supply	GST160A24-R7B IC915	100-40020	Voltage Output / Input Basic Dimensions Safety Approvals Note	24VDC, 160W / 85 – 264 VAC, 47-63 Hz 175 x 72 x 35 mm UL60950-1, CSA C22.2, TUV EN60950-1 Connector for direct connection to power supply of console with cable length 1.2 m.
14c	AC Mains Cables (for Desktop power supply)	AMC-1.1 (2m) / AMC-1.2 (2.5m) AMC-1.3 / AMC-1.4 (2.5m) AMC-1.5 (2.5m)	190-10331 / 32 190-10333 / 34 190-10335	Country Country Country	US, Canada / Germ., Denm., Norway, Finl., Belgium, Netherland, Sweden, Austria Japan / Switzerland United Kingdom

**Table 6:** Specification of standard cables and AC/DC desktop supplies for console.



Figure 10: LCO-i100 console with compatible drivers and pump heads

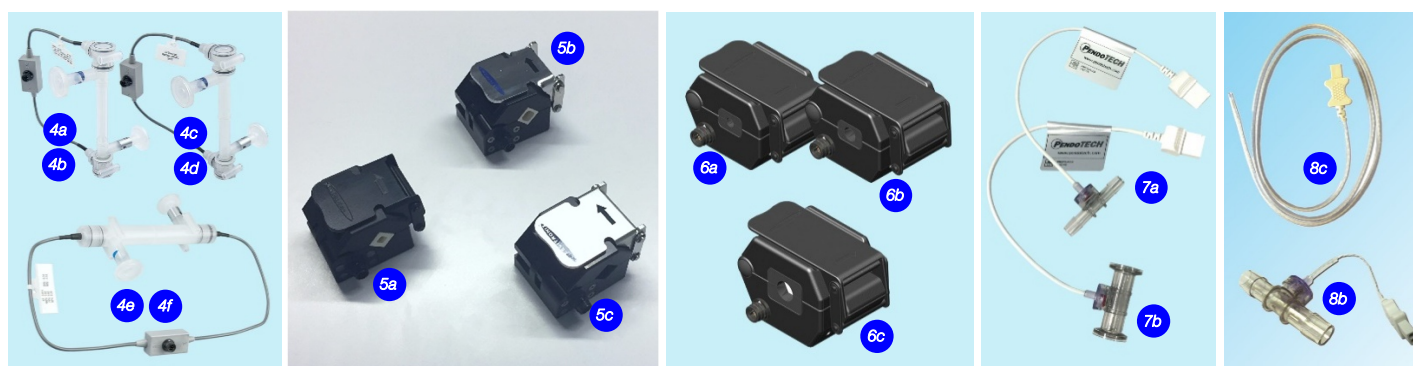


Figure 11: Sensors compatible with LCO-i100 console



Figure 12: Accessories (Cables and AC/DC supplies)

*Levitronix®* is the world-wide leader in magnetically levitated bearingless motor technology. *Levitronix®* was the first company to introduce bearingless motor technology to the Semiconductor, Medical and Life Science markets. The company is ISO 9001 certified. Production and quality control facilities are located in Switzerland. In addition, *Levitronix®* is committed to bring other highly innovative products like the *LEVIFLOW®* flowmeter series or the *PuraLev®* consoles to the market.



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