

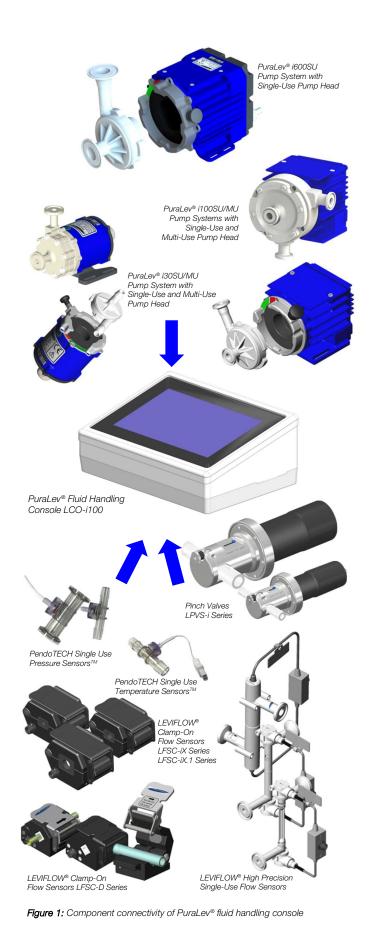
LEVITRONIX



LCO-i100

For PuraLev[®] i30SU/MU & PuraLev[®] i100SU/MU & PuraLev[®] i600SU

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 or pressure control 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 or pressure control (or control with custom signal), system configuration and monitoring of various sensors. The console can operate the pump drivers of the PuraLev[®] i30, PuraLev[®] i100 or PuraLev[®] i600 pump system. 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-touchscreen.
- Data collection capabilities.
- Easily configurable and customizable by software.
- Custom recipe control for process automation.
- Configurable user rights.

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, microfiltration, ultrafiltration, diafiltration, sterile filtration.
- Mixing, blending, dilution and filling.
- Filter integrity testing.

STAND-ALONE PUMP SYSTEM CONFIGURATION

With the standard stand-alone pump system configuration, as illustrated in *Figure 7* (for *PuraLev® i30* and *i100* pump system) and *Figure 8* (for *PuraLev® i600* pump system), 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-touchscreen 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.



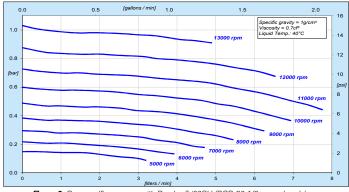
Figure 2: Start-up menu of touch screen

ADVANCED FLUID HANDLING CONFIGURATIONS

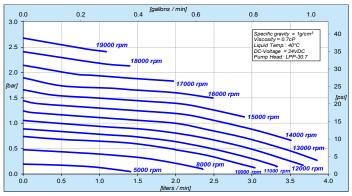
Figure 9 illustrates the extended monitoring capabilities of the *PuraLev*[®] console for advanced fluid handling applications such as depth filtration, microfiltration, ultrafiltration, diafiltration, tangential flow filtration (TFF), sterile filtration or pressure control for filling stations.

The *PuraLev®* console includes two flow sensor connections and gauge amplifiers for connection of up to three single-use pressure sensors and an additional circuit for the connection of a temperature sensor. Furthermore, there is a generic analog input for connection of further external signals.

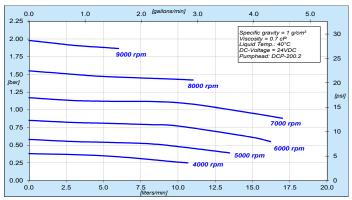
Figure 11 and *Figure 12* illustrate configurations with two pumps, which can be used for example for blending applications or increasing pressure with two pumps in series.



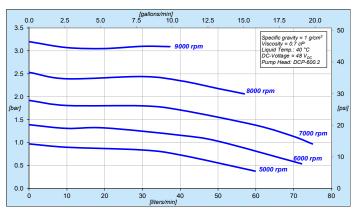














SYSTEM CONFIGURATIONS

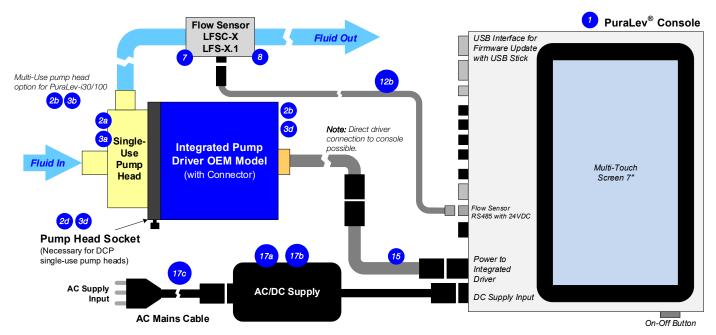


Figure 7: Stand-alone pump system configuration of LCO-i100 console and PuraLev® i30/i100 pump systems with flow control or flow monitoring

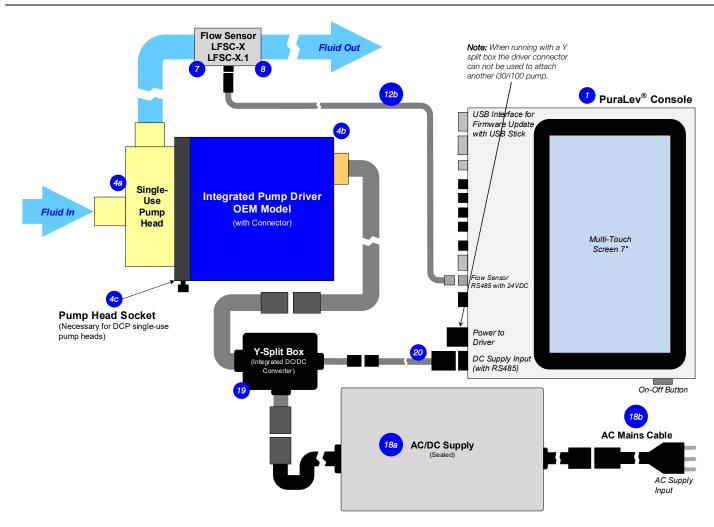


Figure 8: Stand-alone pump system configuration of LCO-i100 console and PuraLev® i600 pump system with flow control or flow monitoring

SYSTEM CONFIGURATIONS

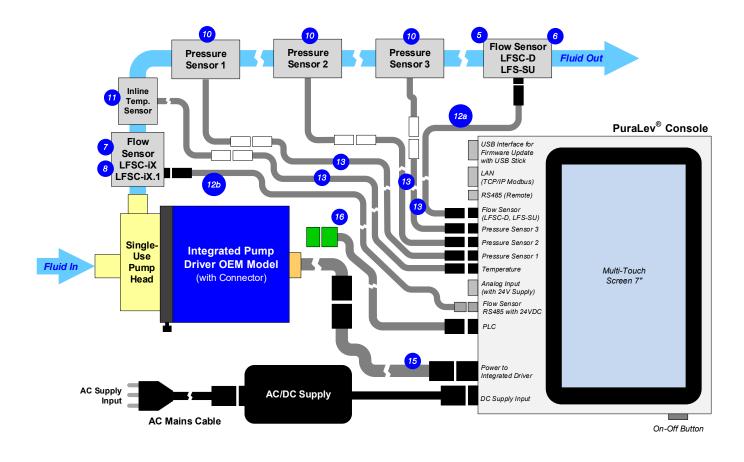
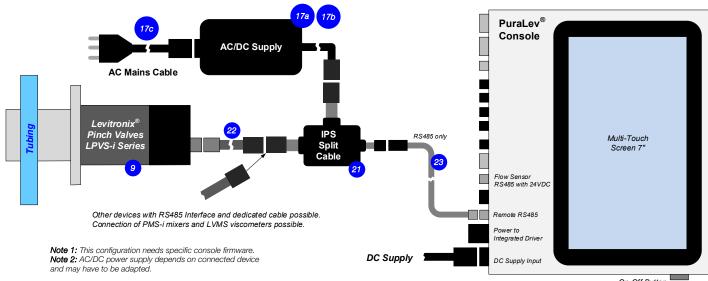


Figure 9: Extended monitoring configuration of console LCO-i100 for advanced fluid handling in bioprocessing applications Note 1: For the PuraLev® i600 pump system the power supply and console connection concept shown in Figure 8 has to be used.



On-Off Button

Figure 10: Connection of LVPS-i pinch valves and other devices to RS485 Remote Port

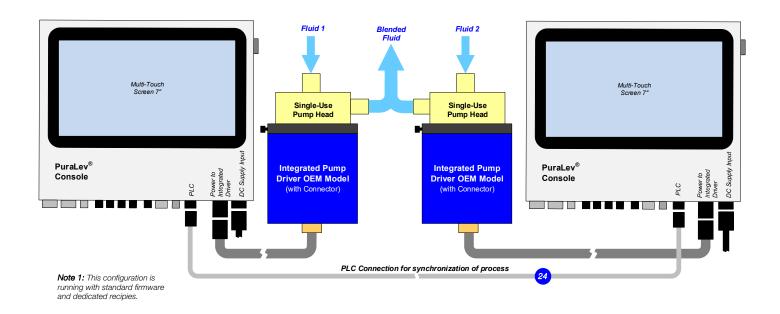


Figure 11: Configuration with two console and pumps for example for blending applications

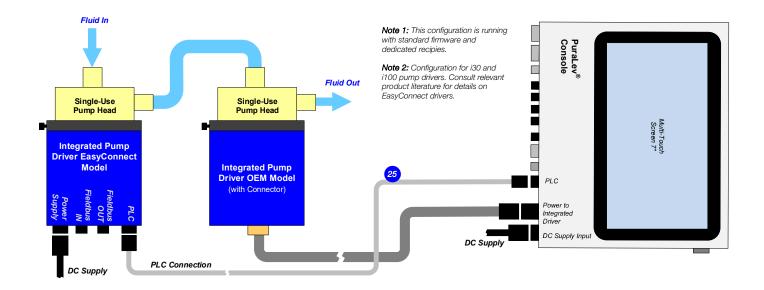
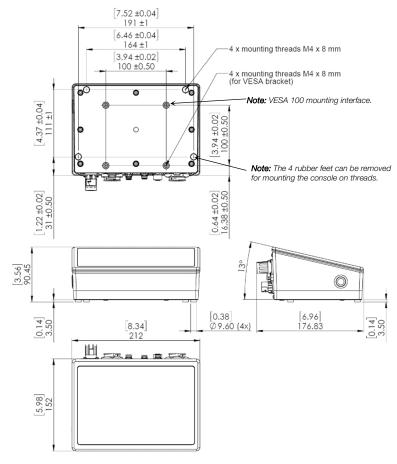


Figure 12: Configuration with one console and two pumps in series.

DIMENSIONS AND INTERFACES



PuraLev® Console LCO-i100.1

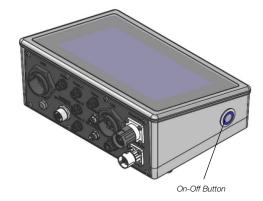
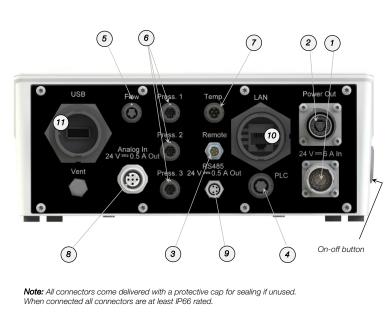


Figure 13: Dimensions of PuraLev® console LCO-i100.1 Note 1: Dimensions in mm and [inch]. Un-tolerated dimensions are for reference only.



#	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. RS485 for connection of PuraLev-i600 with Y split cable
2	Pump Driver	Power connector for IPD-30 and IPD-100 drivers.	
3	Remote	RS485 for future purposes.	For pinch valves or other RS485 devices.
4	PLC	Remote control. Configurable designations.	2x digital outputs (outputs software configurable to 24VDC), 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 <i>LFS-SU</i> and <i>LFSC-D</i> 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 <i>Table 8</i>) Circular 6 pin snap-in connector. Purpose: pressure monitoring.
7	Temperature Sensor	Connection for 1 single-use temperature sensor.	Needs adaptor cable (see <i>Table 8</i>). 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/iX.1	RS485 bus with 24 VDC supply.
10	LAN Interface	TCP/IP Modbus	For connection to OPC devices or Levitronix® Service Software.
11	USB Interface	Connection of USB stick.	Connection with protective cover. Purpose: Data collection and software update.

Figure 14: Interfaces of PuraLev® console LCO-i100.1

Pos.	Component	Article Name	Article #	Characteristics	Value / Feature
				Supply Voltage / Power	24 VDC with 50 W or 160 W supply (see Table 8)
		LCO-i100.1-01	100-30501	Housing Rating / Weight	IP65 ² / 1.6 kg
1 PuraLev [®] Cor		LOU-1100.1-01	100-30301	Interfaces	Multi-touch screen 7", 3 pressure sensors, 2 flow sensors, 1 temp. sensor
	PuraLev [®] Console	I CO-i100.3-01	100-30539		IP65 ² / 1.6 kg
		(FDA CFR 21 Part 11 ready)	100 00000	Pump Motors	
				Certifications	CE, IECEE CB scheme, ETL (NRTL) listed.

 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 according to Table 8.
 Note 2: Tested and designed for IP66.

Pos.	Component ²	Article Name	Article #	Characteristics	Value / Feature
2a	Single-Use Pump Head (needs pump head socket)	DCP-30.2 (Barb 3/8") ^{7 3} DCP-30.1 (Triclamp 3/8") ⁷ DCP-30.5 (Barb 1/4")	100-90968 100-90959 100-91691	Wet Materials Sterilization Methods	PP (FDA, USP Class VI, BSE/TSE/animal-free) Gamma radiation up to 40 kGy.
2b	Multi-Use Pump Head	LPP-30.7 (no drain port)	100-91557	Wet Materials / Fittings Sterilization Methods	PEEK, PTFE, EPDM (FDA, USP Class VI, BSE/TSE/animal-free) / Triclamp 3/8") CIP (clean in place), Autoclaving
2c	Driver	IPD-30.8-03-02 (SU) IPD-30.8-03-07 (SU) IPD-30.8-03-06 (MU)	100-10104 100-10246 100-10212	Housing Cable / Connectors Note SU Drivers	Epoxy (anti-corrosive) coated aluminum, IP65 (tested for IP67) 1 x 0.3m cable with PVC jacket / circular connector IPD-30.8-03-02 for pump heads DCP-30.1/2, IPD-30.8-03-07 for DCP-30.5
2d	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 (needs pump head socket)	DCP-200.2 (Triclamp) ¹ DCP-200.3 (Barb) ^{1 3}	100-90734 100-90792	Wet Materials Max. Flow / Max. DiffPressure Sterilization Methods	PP (FDA, USP Class VI, BSE/TSE/animal-free) / Triclamp or Barb ½" 17.4 liters/min (4.6 gallons/min) / 2 bar (29 psi) Gamma radiation up to 40 kGy.
Зb	Multi-Use Pump Head	LPP-200.17 (with drain port) LPP-200.16 (no drain port)	100-90864 100-90863	Wet Materials / Fittings Max. Flow / Max. DiffPressure Sterilization Methods	PVDF, PFA and EPDM (FDA, USP Class VI, BSE/TSE/animal-free) / Triclamp ½" 17.4 liters/min (4.6 gallons/min) / 2.4 bar (35 psi) CIP (clean in place), Autoclaving
Зс	Driver	IPD-100.3-03-02 (SU) IPD-100.3-03-03 (MU)	100-10105 100-10137	Housing Cable / Connectors	Epoxy (anti-corrosive) coated aluminum, IP65 (tested for IP67) 1x 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
4a	Single-Use Pump Head (needs pump head socket)	DCP-600.2 (Triclamp) ^{1 3}	100-90784	Wet Materials Max. Flow / Max. DiffPressure Sterilization Methods	PP (FDA, USP Class VI, BSE/TSE/animal-free) / Triclamp 1" 75 liters/min (20 gallons/min) / 3.1 bar (45 psi) Gamma radiation up to 40 kGy.
4b	Driver	IPD-600.3-30-02	100-10197	Housing Cable / Connectors	Epoxy (anti-corrosive) coated aluminum, IP65 (tested for IP67) 1x 3m cable with PVC jacket / circular connector
4c	Pump Head Socket	PHS-600.1	100-90696	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/i30MU/i100SU/i100MU/i600SU for detailed specifications and other configurations.
 Note 3: Sterile fitting options available.





Figure 15: LCO-i100 console with compatible drivers and pump heads

Pos.	Component	Article Name	Article #	Fitting	Wet Material	Note
5a 5b 5c 5d 5e 5f 5g 5h 5i 5j	LEVIFLOW [®] Single-Use Flow Sensors	LFS-03SU-Z (0.8 lpm) LFS-03SU-Z-SC1 (0.8 lpm) ¹ LFS-06SU-Z (8 lpm) LFS-06SU-Z (8 lpm) ¹ LFS-10SU-Z (20 lpm) LFS-10SU-Z (20 lpm) ¹ LFS-15SU-Z (50 lpm) LFS-15SU-Z-SC1 (50 lpm) ¹ LFS-20SU-Z-SC1 (80 lpm) ¹	100-30375 100-30418 100-30377 100-30394 100-30397 100-30408 100-30412 100-30483 100-30483 100-30464	Triclamp 3/8" Triclamp 3/8" Triclamp 3/8" Triclamp 1/2" Triclamp 1/2" Triclamp 1" Triclamp 1" Triclamp 1" Triclamp 1"	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.

 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
6a 6b 6c 6d 6e	LEVIFLOW [®] Clamp-On Flow Sensors LFSC-D	LFSC-05D-001 (1 lpm) LFSC-08D-001 (4 lpm) LFSC-12D-007 (20 lpm) LFSC-22D-005 (80 lpm) LFSC-30D-001 (160 lpm)	100-30407 100-30396 100-30390 100-30391 100-30414	Water @ 20°C/37°C	Silicone CFlex [®] ⁷	1/8" x 1/4" 1/4" x 3/8" 3/8" x 9/16" 3/4" x 1" 1" x 13/8"	See Levitronix® technical brochures of
7a 7b 7c 7d 7e 7f	LEVIFLOW [®] Clamp-On Flow Sensors LFSC-iX	LFSC-i06X-002 (1 lpm) LFSC-i10X-001 (4 lpm) LFSC-i16X-001 (20 lpm) LFSC-i19X-001 (50 lpm) LFSC-i25X-001 (80 lpm) LFSC-i35X-001 (160 lpm)	100-30485 100-30477 100-30482 100-30479 100-30480 100-30481	Water @ 20°C/37°C	Silicone CFlex® TPE	1/8" x 1/4" 1/4" x 3/8" 3/6" x 5/8" 1/2" x 3/4" 3/4" x 1" 1" x 13/8"	 LFSC-D and LFSC-IX of clamp-on sensor series for more detailed specifications and other sensor sizes.

 Table 4: Specification of LEVIFLOW® clamp-on flow sensors for flexible tubings 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 #	Calibrated Liquid	SU Flow Pipe	Fitting, ID	Note
8a 8b 8c 8d 8e 8f 8g	LEVIFLOW® Clamp-On Flow Sensors LFSC-IX.1	LFSC-i05X.1-001 (0.2/1 lpm) LFSC-i09X.1-001 (4 lpm) LFSC-i13X.1-001 (20 lpm) LFSC-i16X.1-001 (50 lpm) LFSC-i20X.1-001 (80 lpm) LFSC-i23X.1-001 (160 lpm) LFSC-i36X.1-001 (400 lpm)	100-30490 100-30491 100-30492 100-30498 100-30499 100-30509 100-30487	Water @ 20/37°C	LFP-05SU / 05SU.1 LFP-09SU LFP-13SU LFP-16SU LFP-20SU LFP-20SU / 23SU.1 LFP-36SU	Barb, 1/8" Barb, 1/4" Barb, 3/8" Barb, 1/2" Triclamp / 3/4" Triclamp / 7/8+1" Triclamp / 13/8"	See relevant Levitronix [®] technical brochures for more details on flow pipes, specifications, other sensor sizes and configurations.

Table 5: Specification of LEVIFLOW® clamp-on flow converters LFSC-ixxX.1 (for single-use flow pipes of the LFP-SU series) compatible with LCO-i100 console.



Figure 16: LEVIFLOW® flow sensors compatible with LCO-i100 console.

Pos.	Part Name	Article #	Normal Tubing OD Range	Standard Firmware	Note
9a	LPVS-i100.1	100-30556	Up to 0.375"	P1.48x	
9b	LPVS-i200.1	100-30495	Up to 0.625"	P2.48x	Inserts for various tubing geometries to be ordered separately. Default position is "normally closed" and can be changed with Levitronix [®] Service Software or with
9c 9d	LPVS-i400.1 LPVS-i400P.1	100-30496 100-30562	Up to 1" Up to 1.405"	P4.48x P4.48x	the user panel LUI-B.1. Consult the pinch valve manual or technical brochure for more details on specifications and accessories like inserts.
9e	LPVS-i800.1	100-30497	Up to 1.5"	P8.48x	

Table 6: Basic specifications of pinch valves of the LPVS-i series compatible with console LCO-i100.

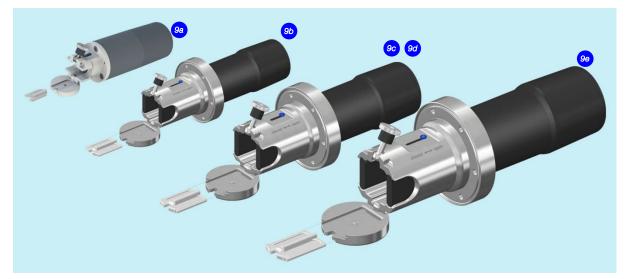


Figure 17: Pinch valves of the LPVS-i series compatible with LCO-i100 console.

Pos.	Component	Article Name	Article #	Fittings	Specification	Wet Material	Note
10a 10b 10c 10d 10e 10f 10g	PendoTECH Single-Use Pressure Sensors	PREPS-N-000 PREPS-N-012 PREPS-N-025 PREPS-N-038 PREPS-N-5-5 PREPS-N-1-1 PREPS-N-15-15	190-10572 190-10570 190-10571 190-10375 190-10373 190-10374 190-10478	1/8" Luer Port 1/8" Hose Barb 1/4" Hose Barb 3/8" Hose Barb 1/2" Sanitary Clamp 1" Sanitary Clamp 1.5" Sanitary Clamp '	Pressure range: -0.79 to 5.2 bar	Polysulfone	See PendoTECH literature for more detailed specifications and other sizes.
11a 11b	Single-Use Temperature Sensor	TEMPS-N-038 TEMPS-N-050	190-10377 190-10376	3/8" Hose Barb 1/2" Hose Barb	Temp. range: 0 – 70°C	Polysulfone Stainless steel	See PendoTECH literature for more detailed specifications and other sizes.

 Table 7: Specification of single-use pressure and temperature sensors compatible with console LCO-i100.

 Note 1: ID is 13/8".

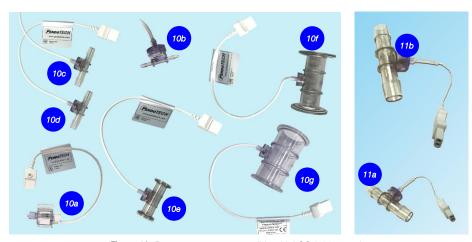


Figure 18: Pressure sensors compatible with LCO-i100 console.

Pos.	Component	Article Name	Part #	Characteristics	Special Feature / Description	
12a	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.	
12b	IP Cable Signal 4 Wires	ICS-3.1-30 (3m)	190-10447	Cable Jacket Material Main Purpose	PUR Connection between LFSC-IX/IX.1 flow sensors and console.	
13	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.	
14	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 temp. sensors to console. For barb sensors and dip probe.	
15	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.	
16	IP Cable Signal 12 Wires	ICS-2.1-50 (5 m)	190-10347	Cable Material / Wires Connection In / Out Main Purpose	PVC jacket / 12x0.14 mm² and shielding Connector with screw type plug for open wire connection / Circular Hirose type General connection to PLC of console.	
17a	Desktop AC/DC Power Supply	VEC50US24 IC915	100-40019	Voltage Output / Input Basic Dim. / Standards Note	24VDC, 50W / 90 – 264 VAC, 47-63 Hz 116 x 52 x 31 mm / IES60950-1, EN60950-1, UL/cUL60950-1 Connector for direct connection to supply of console with cable length 1.2 m.	
17b	Desktop AC/DC Power Supply	GST160A24-R7B IC915	100-40020	Voltage Output / Input Basic Dim. / Standards 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 supply of console with cable length 1.2 m.	
17c	AC Mains Cables (for Desktop power supply 16a/b)	AMC-1.1 (2m) / AMC-1.2 (2.5m) AMC-1.3 / AMC-1.4 (2.5m) AMC-1.5 (2.5m)	190-103 31 / 32 190-103 33 / 34 190-103 35	Country Country Country	US, Canada / Germ., Denm., Norw., Finl., Belg., Netherland, Sweden, Austria Japan / Switzerland United Kingdom	
18a	AC/DC Power Supply (for Stand-Alone configuration)	DDP-600-US48-SC	100-40026	Voltage Output / Input Basic Dimensions Certifications, Standards	48 VDC (600 W) / 100 – 277 VAC 250 x 125 x 60 mm / 2 x 200 mm CB, CSAVLL, IP65	
18b	AC Mains Cables (for power supply 17a)	AMC-2.1 / AMC-2.2 AMC-2.3 / AMC-2.4/-ACM-2.5	190-103 36 /37 190-103 38 /39 /40	Country Country Cable Specifications	US, Canada / Germ., Denm., Norw., Finl., Belg., Netherl., Sweden, Austria Japan / Switzeland / United Kingdom Length - 3m, black color, watertight connector on power supply side	
19	IP Y-Split Cable	ICY-4.1-02	190-10476	Specifications Main Purpose	PVC cable jacket with PC split box, PUR sealing, circular type connectors. Integrated DC/DC converter for 48 VDC to 24 VDC / 20 W. Splits cable to connect power supply (3a) and console to driver IPD-600.	
20	IP Cable Signal 4 Wires	ICS-1.5-30 (3 m)	190-10468	Specifications Main Purpose	PVC jacket, connectors: circular type to circular type. Fieldbus connection of IPD-600 driver from Y-split cable to console.	
21	IPS Split Cable	ICY-2.1-02 (0.2 m)	190-10466	Description Main Purpose	PVC cable jacket with PA+GF split block, TPE sealing, circular type connectors Splits pinch valve to power supply and console.	
22	IP Cable Signal 12 Wires	ICS-6.3-30 (3 m)	190-10551	Description Main Purpose	Circular to circular connector, watertight. Connection of pinch valves with cable splitting box.	
23	IP Cable Signal 5 Wires	ICS-3.3-30 (3 m)	190-10583	Specifications Main Purpose	Circular to circular connector. Connection of pinch valves or other RS485 devices to Remote port of console.	
24	IP Cable Signal 12 Wires	ICS-2.8-30 (3 m)	190-10580	Specifications Main Purpose	Connection of pinch raises of other history devices to herrote port of console. Circular to circular connector. For connection of PLC of two consoles.	
25	IP Cable Signal 12 Wires	ICS-2.5-30 (3 m)	190-10554	Specifications Main Purpose	Circular to circular connector. For connection of EasyConnect drivers of i30/i100 pump systems to console PLC.	

 Table 8: Specification of standard cables and AC/DC desktop supplies for console.



Figure 19: Accessories (Cables and AC/DC supplies).

LEVITRONIX® THE COMPANY

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.



Headquarter and European Contact

Levitronix GmbH Bändliweg 30 CH-8048 Zurich Switzerland

Phone: +41 44 974 4000 E-Mail: <u>salesEurope@levitronix.com</u>

US Contact

Levitronix Technologies Inc. 10 Speen Street, Suite 102 Framingham, Massachusetts 01701 USA

Phone: +1 508 861 3800 E-Mail: salesUS@levitronix.com

Japan Contact

Levitronix Japan K.K. Wing Eight 5floor, 4-16-4 Asakusabashi, Taito-ku Tokyo, 111-0053 Japan

Phone: +81 3 5823 4193 E-Mail: <u>salesJapan@levitronix.com</u>

Taiwan Contact

Levitronix Taiwan 5F, No. 251, Dong Sec. 1, Guangming 6th Rd., Chu Pei City, Hsin-Chu 302, Taiwan, R.O.C.

Phone: +886 3 657 6209 E-Mail: <u>salesAsia@levitronix.com</u>

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