LABORATORY PUMPS

PERISTALTIC PUMPS

SEE STARRED PRODUCTS FOR **TOP SELLERS!**

EN.CO. Srl
Apparecchi Scientifici

Via Filande, 13 - 30038 Spinea (VE) - ITALY
Tel. +390415411133 Fax +390415411090
email commerciale@encosrl.com
service@encosrl.com
web http://www.encosrl.com

Reglo ICC Independent-Channel Control Peristaltic Pump

- Continuous pumping or precision dispensing
- Flexibility of bi-directional flow in each channel
- Easy-to-use tubing cassettes allow quick changeovers
- Independent channel calibration minimizes the tube to tube differences resulting in the best calibration accuracy possible in a multichannel peristaltic pump
- New easy-to-use USB interface makes connections quickly
- Windows® software is included. Control up to eight Reglo ICC pumps. Time based routines allow for complex experiment development.

Expand the power of your peristaltic pumping application! By providing individually addressable control of each fluidic channel, the new Ismatec® Reglo ICC eliminates the clutter of multiple pumps on the bench top as well as allowing you, the scientist, to solve your application complexity in a single pump.

Long hailed in Europe as the gold standard of Swiss precision, Ismatec drives will now power up to four channels — flowing, dispensing, starting, stopping, reversing, aspirating, and calibrating — all working independently at the command of your PC or keypad. Plus the precision and accuracy of Ismatec's traditional peristaltic pumps for low-volume applications. For the first time, you'll be able to perform multiple precision fluidic tasks — at multiple flow rates — all from a single space-saving pump.

NEW!

ISM4408
Reglo ICC
4-Channel Pump

NEW!

ISM4308
Reglo ICC
3-Channel Pump

SPECIFICATIONS & DETAILS

Reglo ICC

Motor Type	Stepper Motor (1/channel)
Speed Range	0.1–100 rpm
Speed Setting	rpm (Resolution = 0.01 rpm)
Flow Rate Range	0.0002–35 mL/min/channel (tubing dependent)
Number of Channels	2-4
Number of Rollers	8 Ertalyte® rollers standard; 6 and 12-roller options also available
Cassettes	MS/CA Click'n'Go (POM-C; alternatives available)
Dimensions (HxWxD)	6.7" (170 mm) x 5" (125 mm) x 8.1" (205 mm)* (*=for 3-channel model)
Weight	6 lbs. (2.7 kg)
Power Consumption	30 W (Max.) Main Voltage: 100–264 V AC/50/60 Hz (Requires use of included power supply, cables)
Protection Rating	IP 30
Differential Pressure	1.0 bar/14.5 psi (Max.)

FLOW RATES & TUBING

Tubing ID (mm)	Flow Rate (mL/min per channel)	
	0.1 rpm	**100 rpm**
	Min.	**Max.**
0.13	0.0002	0.11
0.25	0.0005	0.41
0.51	0.0017	1.7
0.76	0.0036	3.6
1.02	0.0063	6.3
1.22	0.0088	8.8
1.52	0.013	13
1.85	0.017	17
2.54	0.027	27
3.17	0.035	35

Part No.	Description	Flow rates mL/min	Channels	Rollers	Speed rpm
REGLO ICC					
ISM4308	Reglo ICC	0.0002–35	3	8	100
ISM4408	Reglo ICC	0.0002–35	4	8	100

Peristaltic Pumps & Tubing

The pumps presented on pages 94–108 require peristaltic tubing to operate. Flow rate of a given fluid through a peristaltic tubing pump depends on two variables:

1. The speed of the pump, measured in revolutions per minute (rpm)

2. The volume held within the internal diameter (ID) of the selected tubing

Variable Speed Pump Flow Rates

For a variable speed pump, such as the products on pages 93–103, 112–115, and 117–118, the flow rate of a channel can be changed by varying the pump rpm, or by using tubing with different IDs, or a combination of both.

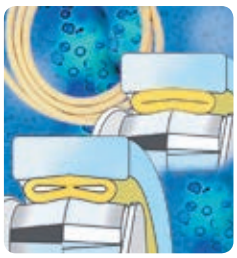
Fixed Speed Pump Flow Rates

Single-channel and multichannel peristaltic tubing pumps are available in this catalog. The number of channels refers to how many pieces of tubing that can be used simultaneously. Tubing with different IDs can be used in each channel to deliver varying flow rates at any given pump speed.

Convex Rollers and Concave Tube-Bed

- Treat the liquid gently (e.g. living cells)
- Improve the delivery stability
- Increase the repeatability
- Guarantee optimum tube centering

The tube is progressively closed, starting from the center outwards.



CELL SENSITIVE PUMPING

Pump heads with this sign are ideal for cell and media sensitive pumping.

RELATED PRODUCTS

Accessories	Page 109
Tubing	Pages 75–89

NOTE

All microprocessor controlled drives are LabVIEW™ compatible and can easily be integrated into process control systems. The LabVIEW drivers can be downloaded from the website: www.idex-hs.com/ismatec

PUMP SERIES		CHANNELS	FLOW RANGE	DRIVE OPTIONS	INTERFACE	PAGE
REGLO		1–4	0.001–230 mL/min	Variable	Digital = RS-232 only interface Analog = Analog only	**95**
FLOWMASTER®		Single channel only	37–13,000 mL/min	Variable	Analog	**98**
ECOLINE		1–8	0.005–5,400 mL/min	Variable	Analog	**99**
IP / IPC		4–24	0.001–44 mL/min	Variable	RS-232, Analog	**101**
BVP/MCP		1–24	0.001–3,700 mL/min	Variable	RS-232, Analog	**103**

Reglo Analog/Digital

The Smallest Dispensing Pump with Calibration Features

Reglo Analog
without dispensing functions
0.002–68 mL/min (per channel)
Variable speed drive

DISPENSING & CALIBRATING

Reglo Digital
with dispensing functions
0.001–68 mL/min (per channel)
Microprocessor controlled

SPECIFICATIONS & DETAILS

Reglo Analog

Motor Type	DC motor	
Speed	2-channel	3.2–160 rpm
	4-channel	2.0–100 rpm
Speed Setting	2–99%, resolution 1% 2-digit potentiometer	
Power Consumption	20 W	
Mains Connection	230 V AC/50 Hz,115 V AC/60 Hz, selectable	
Protection Rating	IP 30	
Depth/Width/Height	2-channel 178 x 100 x 143 mm 4-channel 190 x 100 x 143 mm	
Weight	2-channel 2.0 kg 4-channel 2.1 kg	

Reglo Digital

Motor Type	DC motor	
Speed	2-channel	1.6–160 rpm
	4-channel	1.0–100 rpm
Speed Setting	rpm, resolution 0.1 rpm	
Flow Rate Setting	µL/min or mL/min	
Power Consumption	75 W	
Mains Connection	100–230 V AC/50–60 Hz, selectable	
Protection Rating	IP 30	
Depth/Width/Height	2-channel 178 x 100 x 135 mm 4-channel 190 x 100 x 135 mm	
Weight	2-channel 2.0 kg 4-channel 2.1 kg	

Interfaces

RPM ANALOG

Reglo Analog

- Speed control (0–5 or 0–10 V, 0–20 or 4–20 mA)
- Speed output 2-channel: 0–8 kHz 4-channel: 0–5 kHz
- Start/Stop
- Rotation direction

Reglo Analog
2-digit potentiometer
2–99%, resolution 1% (for speed setting)

RS232

RPM ANALOG

Reglo Digital

- PC-controllable
- Digital is RS-232 only

Reglo Digital
6-button membrane key-pad, LED-display
Flow rate setting in µL/min and mL/min

FLOW RATES & TUBING

Model		Reglo Analog+Digital		Reglo Analog+Digital		Reglo Analog+Digital		Reglo Analog+Digital		Reglo Analog+Digital		Reglo Analog+Digital	
Channels		2		2		2		4		4		4	
Rollers		6		8		12		6		8		12	
Speed rpm		1.61	160	1.61	160	1.61	160	1.0[1]	100	1.0[1]	100	1.0[1]	100
Tygon® ST R-3603/R-3607 Part No.	Tubing ID mm	mL/min per channel		mL/min per channel		mL/min per channel		mL/min per channel		mL/min per channel		mL/min per channel	
		min.[1]	max.[2]	min.[1]	max.[2]	min.[1]	max.[2]	min.[1]	max.[2]	min.[1]	max.[2]	min.[1]	max.[2]
SC0189	0.13	0.003	0.22	0.002	0.17	0.002	0.15	0.002	0.14	0.002	0.11	0.001	0.093
SC0050	0.25	0.008	0.76	0.007	0.65	0.007	0.61	0.005	0.48	0.005	0.41	0.004	0.38
SC0053	0.51	0.031	3.1	0.027	2.7	0.025	2.5	0.019	1.9	0.017	1.7	0.016	1.6
SC0056	0.76	0.067	6.7	0.058	5.8	0.053	5.3	0.042	4.2	0.036	3.6	0.033	3.3
SC0059	1.02	0.12	12	0.10	10	0.090	9.0	0.073	7.3	0.063	6.3	0.056	5.6
SC0062	1.22	0.16	16	0.14	14	0.12	12	0.10	10	0.088	8.8	0.075	7.5
SC0065	1.52	0.24	24	0.20	20	0.17	17	0.15	15	0.13	13	0.10	10
SC0068	1.85	0.34	34	0.28	28	0.21	21	0.21	21	0.17	17	0.13	13
SC0071	2.54	0.53	53	0.44	44	0.31	31	0.33	33	0.27	27	0.19	19
SC0224	3.17	0.68	68	0.57	57	0.38	38	0.43	43	0.35	35	0.24	24

Approx. values: determined with water, at 22 °C, no differential pressure, Tygon tubing.
[1] Min. flow rates shown are for the Reglo Digital. Min. flow rate for Reglo Analog =2% of max. flow rate.
[2] Max. flow rates shown are for both the Reglo Analog and Digital pumps.

APPLICATION NOTE

- Addition of a reagent to a reactor and simultaneous removal of the reaction product from the upper fraction. Ramp control combined with a thermostat to maintain the ΔT during the reaction.
- Simultaneous addition of both components of a 2-component adhesive in ratio 1:10 with two different tubing sizes.

Part No.	Model	Flow rates mL/min per channel	Channels	Rollers	Speed rpm
REGLO ANALOG					
ISM830	MS-2/06	0.005–68	2	6	1.6–160
ISM829	MS-2/08	0.004–57	2	8	1.6–160
ISM795	MS-2/12	0.003–38	2	12	1.6–160
ISM828	MS-4/06	0.003–43	4	6	1.0–100
ISM827	MS-4/08	0.003–35	4	8	1.0–100
ISM796	MS-4/12	0.002–24	4	12	1.0–100
REGLO DIGITAL					
ISM831	MS-2/06	0.003–68	2	6	3.2–160
ISM832	MS-2/08	0.002–57	2	8	3.2–160
ISM596	MS-2/12	0.002–38	2	12	3.2–160
ISM833	MS-4/06	0.002–43	4	6	2.0–100
ISM834	MS-4/08	0.002–35	4	8	2.0–100
ISM597	MS-4/12	0.001–24	4	12	2.0–100

ACCESSORIES	
Part No.	**Description**
ISM891	Reglo Analog Foot switch, see page 109
ISM894	Reglo Digital Foot switch, see page 109

LabVIEW™ driver for Reglo Digital download for free: www.idex-hs.com/ismatec

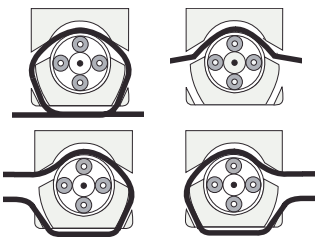
RELATED PRODUCTS

Accessories	Page 109
Tubing	Pages 75–89

Reglo Quick™

Very Fast Tubing Change-Over

Reglo *Quick*
2.1–230 mL/min
Easily accessible tube-bed thanks to wide opening angle.



TIP Flexible layout for tubing appropriate to your application

APPLICATION NOTE

Single-channel delivery processes with variable flow rates where frequent tubing change-over is required e.g.:

- Addition of dye stuffs with tubing exchange after each dispensing process.
- Flushing cylinder heads of HPLC pumps.

SPECIFICATIONS & DETAILS

Reglo *Quick*

Motor Type	DC motor
Speed	3.2–160 rpm
Speed Setting	1–99 %, resolution 1% 2-digit potentiometer
Power Consumption	30 W
Mains Connection	230 V AC /50 Hz,115 V AC /60 Hz, selectable
Protection Rating	IP 30
Depth/Width/Height	178 x 100 x 143 mm (pump head closed)
Weight	2.2 kg

Interfaces

RPM ANALOG

- Speed control (0–5 or 0–10 V, 0–20 or 4–20 mA)
- Speed output (0–8 kHz)
- Start/stop
- Rotation direction

Reglo *Quick*
2-digit potentiometer
1–99%, resolution 1% (for speed setting)

FLOW RATES & TUBING

		Model/Type	Reglo *Quick*	
		Channels	1	
		Rollers	4	
		Speed rpm	3.2	160
Tygon® ST R-3603/R-3607 Part No.	**Wall (mm)**	**Tubing ID (mm)**	**mL/min minimum**	**mL/min maximum**
MF0030	1.6	3.2	2.1	103
SC0379	1.6	4.8	4.6	230

Approx. values: determined with water, at 22°C, no differential pressure, Tygon tubing.

Part No.	Flow rates mL/min per channel	Channels max.	Rollers	Speed rpm
REGLO QUICK				
ISM897	2.1–230	1	4	3.2–160

Flowmaster®

Ideal for Heavy-Duty Processes

- Ideal for dispensing and filling applications in a dusty, humid or corrosive environment and in clean room areas
- Protection rating of IP 65

Optimized for Increased Hygienic Requirements

- Stainless steel housing
- Tube-loading under sterile conditions without aspirating air
- Easy disassembly of the pump head
- Thorough cleaning thanks to easy disassembly and reassembly of the pump head

Safety

- Pump Stops When Opening the Tube-Bed
- Multiple Overload Protection

Flowmaster FMT300

37 mL/min–13 L/min

- 1 channel
- 3 convex stainless steel rollers
- Automatic tube retention
- Standard tubing 6.4–15.9 mm ID, wall thickness 3.2 mm, differential pressure max. 2 bar (30 psi) — depends on tubing material used

TIP TUBE EXCHANGE IN 5 SECONDS!!

- Insert the Tube (Easily and Fast)
- Press Down the Lever (Automatically Correct Pressure Setting of the Tube)
- Start the Pump!

SPECIFICATIONS & DETAILS

Motor type	DC motor
Speed	5 to 500 rpm
Speed setting	Resolution 0.1 rpm membrane key-pad, LED display
Power consumption	500 W
Mains connection	230 V AC/50 Hz,115 V AC/60 Hz, selectable
Protection rating	IP 65
Depth/Width/Height	500 x 220 x 262 mm
Weight	26 kg

Interfaces

PLC compatible interface with status information for process control systems (the level of the inputs can be configured: 5, 12, or 24 V).

RPM ANALOG

- Speed control (0–5 or 0–10 V, 0–20 or 4–20 mA)
- Start/stop, rotation direction
- Autostart
- Speed output
- Digital output (potential free) (error, okay, busy)

Settings menu

- Configuration of analog interface
- Entry of basic settings, e.g. rpm, time, etc.
- Foot switch control
- Rotation speed (% or rpm)
- Service life of tubing
- Timer function, etc.

RELATED PRODUCTS

Accessories	Page 109
Tubing	Pages 75–89

Part No.	Description	Flow rates mL/min	Channels	Rollers	Speed rpm
FLOWMASTER					
ISM1020A	Flowmaster FMT300 230 V 50 Hz	37–13,000	1	3	5–500
ISM1022A	Flowmaster FMT300 115 V 60 Hz	37–13,000	1	3	5–500
ACCESSORIES					
IS10279	Foot switch, see page 109				

FLOW RATES & TUBING

Tubing Information				Flow Rates in L/min							
Tygon® E-LFL Part No.	PharMed® Part No.	Wall (mm)	Tubing ID (mm)	rpm 5	rpm 10	rpm 50	rpm 100	rpm 200	rpm 300	rpm 400	rpm 500
SCE0393	MF0015	3.2	6.4	0.037	0.074	0.37	0.74	1.5	2.2	3.1	3.7
SCE0395	MF0016	3.2	9.5	0.08	0.16	0.80	1.6	3.2	4.8	6.4	8.0
SCE0396	MF0034	3.2	12.7	0.10	0.20	1.0	2.0	4.0	6.0	8.0	10.0
	SC0696	3.2	15.9	0.13	0.26	1.3	2.6	5.2	7.8	10.4	13.0

Approx. values: determined with water, at 22 °C, no differential pressure, PharMed tubing.

Ecoline VC-MS/CA8-6

0.005–150 mL/min

- 8 channels
- 6 rollers
- 3-stop tubing
- Differential pressure 1.0 bar[1] (15 psi)

Ecoline VC-MS/CA4–12

0.003–83 mL/min

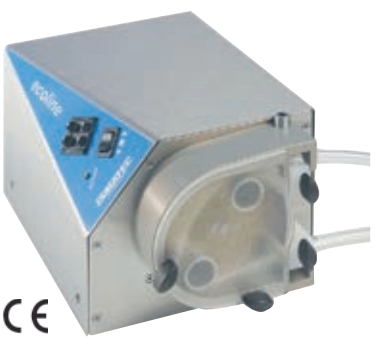
- 4 channels
- 12 rollers (low pulsation)
- Click'n'Go cassettes with automatic pressure setting
- 3-stop tubing
- Differential pressure 1.0 bar[1] (15 psi)

[1] Possible with appropriate tubing material; tubing with small ID's and/or cassettes with the pressure lever (see page 109) may enable higher pressures.

Ecoline VC-280 (1.7–5,400 mL/min) and Ecoline VC-380 (1.6–5,000 mL/min)

- 1 channel
- 2 or 3 convex rollers treat the liquid and tubing gently
- With exchangeable rotor e.g. for lower pulsation, higher flow rates, or elevated differential pressures
- Standard tubing 1.6 mm wall thickness (WT)
- Differential pressure 1.5 bar[1] (22 psi)

[1] Differential pressure depends on tubing material; tubing with small ID's may enable higher pressures.



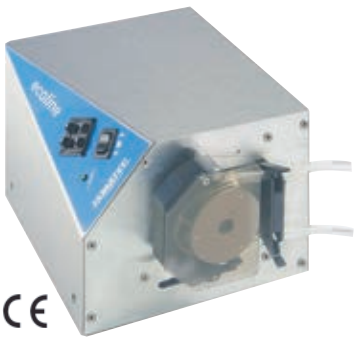
CELL SENSITIVE PUMPING

Ecoline VC-360

0.25–1,300 mL/min

- 1 channel
- 3 convex rollers treat the liquid and tubing gently
- Hinged tube-bed for easy and rapid tube change-over
- Standard tubing 1.6 mm WT
- Differential pressure 1.5 bar[1] (22 psi)

[1] Differential pressure depends on tubing material; tubing with small ID's may enable higher pressures.



CELL SENSITIVE PUMPING

APPLICATION NOTE

- **Ecoline VC-280**
  To apply protective lacquer to cartons
- **Ecoline VC-380**
  As recirculating pump for coolant in thermostat bath
- **Ecoline VC-360**
  Externally controlled spectrophotometer cuvette filling
- **Ecoline VC-MS/CA8-6**
  8-channel flushing of the tubing system of a digital fabric printing machine

SPECIFICATIONS & DETAILS

Motor Type	DC motor
Speed	3.5–350 rpm
Speed Setting	1–99%, resolution 1% 2-digit potentiometer
Power Consumption	100 W
Mains Connection	230 V AC/50 Hz,115 V AC/60 Hz, selectable
Protection Rating	IP 30

Size and Weight

Model	Depth x Width x Height	Weight
Ecoline VC-280	256 x 169 x 138 mm	5.2 kg
Ecoline VC-380	256 x 169 x 138 mm	5.3 kg
Ecoline VC-360	238 x 169 x 138 mm	4.9 kg
Ecoline VC-Easy-Load™	285 x 169 x 138 mm	5.2 kg
Ecoline VC-MS/CA8-6	313 x 169 x 138 mm	5.5 kg
Ecoline VC-MS/CA4-12	281 x 169 x 138 mm	5.4 kg

Interfaces

RPM ANALOG

- Speed control (0–5 or 0–10 V, 0–20 or 4–20 mA)
- Start/stop, rotation direction

FLOW RATES & TUBING

3-Stop Tubing

	Model Type	Ecoline VC-MS / CA8-6		Ecoline VC-MS / CA4-12	
	Channels	8		4	
	Rollers	6		12	
	Speed rpm	3.5	350	3.5	350
Tygon® ST R-3603/R-3607 Part No.	**Tubing ID (mm)**	**mL/min per channel**		**mL/min per channel**	
		min.	**max.**	**min.**	**max.**
SC0189	0.13	0.005	0.49	0.003	0.32
SC0050	0.25	0.017	1.7	0.013	1.3
SC0053	0.51	0.067	6.7	0.055	5.5
SC0056	0.76	0.15	15	0.12	12
SC0059	1.02	0.26	26	0.20	20
SC0062	1.22	0.36	36	0.26	26
SC0065	1.52	0.53	53	0.36	36
SC0068	1.85	0.73	73	0.47	47
SC0071	2.54	1.2	120	0.68	68
SC0224	3.17	1.5	150	0.83	83

Approx. values: determined with water at 22 °C, no differential pressure, Tygon ST tubing.

Standard Tubing

	Model Type	Ecoline VC-280		Ecoline VC-380		Ecoline VC-260	
	Channels	1		1		1	
	Rollers	2		3		3	
	Speed rpm	3.5	350	3.5	350	3.5	350
Tygon ST R-3603/R-3607 Part No.	**WT (mm)**	**Tubing ID (mm)**	**mL/min per channel**		**mL/min per channel**		**mL/min per channel**	
			min.	**max.**	**min.**	**max.**	**min.**	**max.**
MF0001	1.6	0.8					0.25	25
MF0028	1.6	1.6	1.7	170	1.6	160	0.9	90
MF0030	1.6	3.2	6.6	660	5.9	590	3.5	350
SC0379	1.6	4.8	5.1	1,500	13	1,300	7.7	770
MF0031	1.6	6.4	25	2,500	23	2,300	13	1,300
MF0032	1.6	8.0	37	3,700	34	3,400		
SC0383	1.6	9.5	48	4,800	44	4,400		
SC0384	1.6	11.1	54	5,400	50	5,000		

Approx. values: determined with water at 22 °C, no differential pressure, Tygon ST tubing.

Part No.	Model	Flow rates mL/min per channel	Channels max.	Rollers
COMPLETE ECOLINE PUMPS				
ISM1063	Ecoline VC-MS/CA8-6	0.005-150	8	6
ISM1076A	Ecoline VC-360	0.25–1,300	1	3
ISM1078B	Ecoline VC-280 WT 1.6	1.7–5,400	1	2
ISM1079B	Ecoline VC-380 WT 1.6	1.6–5,000	1	3
ISM1090	Ecoline VC-MS/CA4-12	0.003–82	4	12
ISM1091	Ecoline EasyLoad I	0.23–1,600	1	3
ISM1091B	Ecoline EasyLoad II	0.24–1,000	1	4

**For standard tubing 2.4 mm wall thickness 4.8–9.5 mm (3/16–3/8") inner diameter.*

RELATED PRODUCTS

Accessories	Page 109
Tubing	Pages 75–89

IPC/IP & IPC-N/IP-N

IPC (and IP)

- 0.002–44 mL/min (Per Channel)

IPC-N (and IP-N)

- 0.4 µL/min–11 mL/min (Per Channel)

DISPENSING & CALIBRATING

SPECIFICATIONS & DETAILS

Specifications IPC and IPC-N

Motor Type	DC motor
Speed	IPC 0.4–44 rpm IPC-N 0.11–11.25 rpm
Speed Setting	1–100 %, resolution 0.1%
Flow Rate Setting	µL/min or mL/min
Power Consumption	30 W
Mains Connection	230 V AC/50 Hz,115 V AC/60 Hz, selectable
Protection Rating	IP 30

Specifications IP and IP-N

Motor Type	DC motor
Speed	IP 0.4–44 rpm IP-N 0.11–11.25 rpm
Speed Setting	1–100 %, resolution 0.1% IP rpm, resolution 0.1 rpm IP-N rpm, resolution 0.03 rpm
Power Consumption	30 W
Mains Connection	230 V AC/50 Hz,115 V AC/60 Hz, selectable
Protection Rating	IP 30

Dimensions/Weight

4 Channels	
Depth/Width/Height	180 x 175 x 130 mm
Weight	4.6 kg
8 Channels	
Depth/Width/Height	220 x 175 x 130 mm
Weight	5.1 kg
12 Channels	
Depth/Width/Height	260 x 175 x 130 mm
Weight	5.8 kg
16 Channels	
Depth/Width/Height	300 x 175 x 130 mm
Weight	6.5 kg
24 Channels	
Depth/Width/Height	380 x 175 x 130 mm
Weight	7.9 kg

Interfaces

RS232

RPM ANALOG

IPC, IPC-N

- PC-controllable
- Analog: same as IP, IP-N

RPM ANALOG

IP, IP-N

- Speed control (0–5 or 0–10 V, 0–20 or 4–20 mA)
- Speed output (0–10 V or 0–11 kHz)
- Start/stop
- Rotation direction
- Autostart

Standard Speed (IPC)

FLOW RATES & TUBING

	Model	IPC / IP		IPC-N / IP-N	
	Channels	4 / 8 / 12 / 16 / 24		4 / 8 / 12 / 16 / 24	
	Rollers	8		8	
	Speed rpm	0.4	44.0	0.11	11.25
Tygon® ST R-3603/R-3607 Part No.	**Tubing ID (mm)**	**mL/min per channel min.**	**mL/min per channel max.**	**mL/min per channel min.**	**mL/min per channel max.**
SC0188	0.13	0.002	0.15	0.0004	0.039
SC0002	0.25	0.005	0.41	0.001	0.10
SC0005	0.51	0.015	1.5	0.004	0.38
SC0008	0.76	0.032	3.2	0.009	0.81
SC0011	1.02	0.057	5.7	0.041	1.4
SC0014	1.22	0.079	7.9	0.020	2.0
SC0017	1.52	0.12	12	0.030	3.0
SC0020	1.85	0.17	17	0.043	4.3
SC0023	2.54	0.30	30	0.075	7.5
SC0222	3.17	0.44	44	0.11	11

Approx. values: determined with water, at 22 °C, no differential pressure, Tygon tubing.

4 channels | 8 channels | 12 channels | 16 channels | 24 channels

Planetary Drive System

With the planetary drive system each roller is directly driven by the sun wheel. This prevents axial push-pull friction on the tubing.

Result: increased service-life of the tubing, lower pulsation, high repeatability.

APPLICATION NOTE

- Toxicological in-vitro use.
- Perfusion of animal tissue samples.
- Sampling from tablet dissolution systems.
- Environmental applications.

Part No.	Model	Flow rates mL/min per channel	Channels	Speed rpm
IPC AND IPC-N				
ISM930	IPC 4	0.002–44	4	0.4–45
ISM931	IPC 8	0.002–44	8	0.4–45
ISM932	IPC 12	0.002–44	12	0.4–45
ISM933	IPC 16	0.002–44	16	0.4–45
ISM934	IPC 24	0.002–44	24	0.4–45
ISM935	IPC-N 4	0.0004–11	4	0.11–11.25
ISM936	IPC-N 8	0.0004–11	8	0.11–11.25
ISM937	IPC-N 12	0.0004–11	12	0.11–11.25
ISM938	IPC-N 16	0.0004–11	16	0.11–11.25
ISM939	IPC-N 24	0.0004–11	24	0.11–11.25
IP AND IP-N				
ISM940	IP 4	0.002–44	4	0.4–45
ISM941	IP 8	0.002–44	8	0.4–45
ISM942	IP 12	0.002–44	12	0.4–45
ISM943	IP 16	0.002–44	16	0.4–45
ISM944	IP 24	0.002–44	24	0.4–45
ISM945	IP-N 4	0.0004–11	4	0.11–11.25
ISM946	IP-N 8	0.0004–11	8	0.11–11.25
ISM947	IP-N 12	0.0004–11	12	0.11–11.25
ISM948	IP-N 16	0.0004–11	16	0.11–11.25
ISM949	IP-N 24	0.0004–11	24	0.11–11.25

LabVIEW™ driver, download for free www.idex-hs.com/ismatec

RELATED PRODUCTS

Accessories	Page 109
Tubing	Pages 75–89

BVP *Standard*

Economical

- Robust, powerful drive
- Variable speed

Without Dispensing Functions

- 3-digit potentiometer for speed setting
- 20 pump head configurations available
- Bayonet coupling system enables a system change without tools
- Flow rates, channels, rollers and differential pressure depend on the mounted pump head (see pages 105 to 108)

BVP *Standard* Drive
(pump heads on pages 105 to 108)

BVP *Process*

Washdown

- Protection rating of IP 65
- Extremely robust drive
- Microprocessor controlled
- Ideal for applications in a dusty, humid or corrosive environment and in clean room areas (IP 65, dust-tight and protected against water jets)

Without Dispensing Functions

Flow rates, channels, rollers and differential pressure depend on the mounted pump head (see pages 105 to 108)

- Membrane key-pad for speed setting, LED display
- Stainless steel housing
- More than 20 pump heads available
- Bayonet coupling system enables a system change without tools

BVP *Process* drive
(pump heads on pages 105 to 108)

SPECIFICATIONS & DETAILS

	BVP *Standard*	BVP *Process*
Motor Type	DC motor	DC motor
Speed	2.4–240 rpm	1–240 rpm
Speed Setting	1–99.9%, resolution 0.1% 3-digit potentiometer	rpm, resolution 0.1 rpm
Power Consumption	100 W	120 W
Mains Connection	230 V AC/50 Hz,115 V AC/60 Hz, selectable	230 V AC/50 Hz,115 V AC/60 Hz, selectable
Protection Rating	IP 30	IP 65
Depth/Width/Height	220 x 155 x 260 mm (without pump head)	220 x 155 x 260 mm (without pump head)
Weight	5.7 kg (without pump head)	6.9 kg (without pump head)

Interfaces

RPM ANALOG

BVP *Standard*

- Speed control (0–5 or 0–10 V, 0–20 or 4–20 mA)
- Speed output (0–10 V DC or 0–12 kHz)
- Start/stop, rotation direction

RPM ANALOG

BVP *Process*

- Speed control (0–5 or 0–10 V, 0–20 or 4–20 mA)
- Speed output (0–10 V DC or 0–7.2 kHz)
- Start/stop, rotation direction, autostart

RELATED PRODUCTS

Accessories	Page 109
Tubing	Pages 75–89

Part No.	Includes
THE COMPLETE PUMP SYSTEM BVP *PROCESS* CONSISTS OF:	
ISM920A	Drive, page 103
Order the Following to Complete the BVP *Process* Pump System	
	Pump head, pages 105–108
	Tubing, pages 61–89
	Accessories, page 109
IS10039	Foot switch, page 109
THE COMPLETE PUMP SYSTEM BVP *STANDARD* CONSISTS OF:	
ISM444B	Drive, page 103
Order the Following to Complete the BVP *Standard* Pump System	
	Pump head, pages 105–108
	Tubing, pages 61–89
	Accessories, page 109
IS10039	Foot switch, page 109

MCP *Standard*

Multi-Purpose

- Saves individual application parameters
- Robust, powerful drive
- Ideal for dispensing and filling
- Pre-programmed tube sizes and pump heads allow you to work with flow rates
- Membrane key-pad, LED display
- 4 program memories for saving individual application parameters
- More than 20 pump heads available
- Bayonet coupling system enables a system change without tools
- Flow rates, channels, rollers and differential pressure depend on the pump head mounted (see pages 105 to 108)

MCP *Standard* Drive
(pump heads on pages 104–107)

DISPENSING & CALIBRATING

MCP *Process*

Programmable

- Programs can be carried out on the spot independently of a PC
- Protection rating of IP 65
- Extremely robust drive, suitable for industries
- Ideal for dispensing and filling applications in a dusty, humid or corrosive environment, and in clean room areas
- Pre-programmed tube sizes and pump heads allow you to work with flow rates
- Stainless steel housing, membrane key-pad, LED display
- 4 program memories for saving individual application parameters or PC programmed command sequences
- More than 20 pump heads available
- Bayonet coupling system enables a system change without tools
- Flow rates, channels, rollers and differential pressure depend on the pump head mounted (see pages 105 to 108)

MCP *Process* Drive
(pump heads on pages 105 to 108)

DISPENSING & CALIBRATING

SPECIFICATIONS & DETAILS

	MCP *Process*	MCP *Standard*
Motor Type	DC motor	DC motor
Speed	1–240 rpm	1–240 rpm
Speed Setting	rpm, resolution 0.1 rpm	rpm, resolution 0.1 rpm
Flow Rate Settings	µL/min, mL/min, L/min	µL/min, mL/min, L/min
Power Consumption	100 W	100 W
Mains Connection	100–230 V AC/50–60 Hz, selectable	230 V AC/50 Hz, 115 V AC/60 Hz, selectable
Protection Rating	IP 65	IP 30
Depth/Width/Height	220 x 155 x 260 mm (without pump head)	220 x 155 x 260 mm (without pump head)
Weight	6.9 kg (without pump head)	6.4 kg (without pump head)

Interfaces

RS232
RPM
ANALOG

MCP *Standard*

- PC controllable
- RS-232
- Speed control (0–5 or 0–10 V, 0–20 or 4–20 mA)
- Speed output (0–10 V DC or 0–12 kHz)
- Start/stop, rotation direction, autostart

MCP *Process*

- PC controllable
- RS-232
- Speed control (0–5 or 0–10 V, 0–20 or 4–20 mA)
- Speed output (0–10 V DC or 0–7.2 kHz)
- Start/stop, rotation direction, autostart
- 2 universal inputs
- 2 universal outputs

Part No.	Includes
THE COMPLETE PUMP SYSTEM MCP ***PROCESS*** CONSISTS OF:	
ISM915A	Drive, page 104
Order the Following to Complete the MCP *Process* Pump System	
	Pump head, pages 105 to 108
	Tubing, pages 61–89
	Accessories, page 109
IS10039	Foot switch, page 109
THE COMPLETE PUMP SYSTEM MCP ***STANDARD*** CONSISTS OF:	
ISM404B	Drive, page 104
Order the Following to Complete the MCP *Standard* Pump System	
	Pump head, pages 105 to 108
	Tubing, pages 62–89
	Accessories, page 109
IS10039	Foot switch, page 109

LabVIEW™ driver download for free: www.idex-hs.com/ismatec

Drive (MCP or BVP) + Pump Head + Tubing = Complete Pump System

BVP/MCP — an Investment for the Future

Instantly Interchangeable Pump Systems

BVP *Standard*
ISM444

MCP *Standard*
ISM404B

BVP *Process*
ISM920A
IP 65

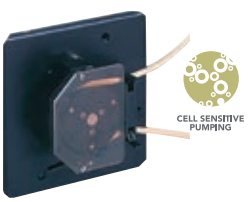
MCP *Process*
ISM915A
IP 65

Easy Interchangeable Pump Heads

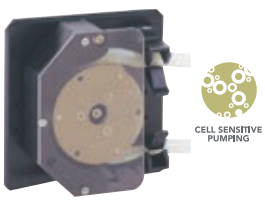
- Mount the pump head without using a tool

The MCP and BVP drives enable the user to choose individually from a large variety of different pump heads. These heads are interchangeable and can be mounted or exchanged within seconds.

Single-Channel



ISM719A
0.072–530 mL/min
Type 360



ISM718A
0.44–2,800 mL/min
Type 380

ISM785A
0.49–3,700 mL/min
Type Pro-280
For 1.6 mm Wall Thickness

ISM793A
3.6–3,100 mL/min
Type Pro-281
For 2.4 mm Wall Thickness

ISM791A
0.45–3,400 mL/min
Type Pro-380
For 1.6 mm Wall Thickness

ISM797A
3.3–2,900 mL/min
Type Pro-381
For 2.4 mm Wall Thickness

MF0313
0.07–1,100 mL/min
Type MF Easy-Load®

MF0446
0.24–1,000 mL/min
Type MF Easy-Load II
(with adjustable pressure setting)

Multi-Channel

SB 2V (2 channel)
ISM734B + ISM010A
1.1–1,100 mL/min

SB 3V (3 channel)
ISM734B + ISM011A
0.09–530 mL/min

ISM721A (4 channel)
ISM732B (8 channel)
ISM733A (12 channel)
0.002–230 mL/min
4–12 channels
Type CA 4, CA 8, and CA 12

ISM735A (4 channel)
(ISM737A 4 channel extension block)
0.001–57 mL/min
Type MS/CA 4–12
(Combine up to 3 extension blocks of 4 channels each)

ISM724B (8 channel)
(ISM185A 8 channel extension block)
0.002–100 mL/min
Type MS/CA 8-6
(Combine up to 2 extension blocks of 8 channels each)

Single-Channel for Corrosive Media

Rigid PTFE Tubing Pump Head

MF0330
0.07–15 mL/min
PTFE tubing 2 mm ID

0.19–45 mL/min
PTFE tubing 4 mm ID

BVP/MCP Pump Heads

Pro-280

ISM785A

CELL SENSITIVE PUMPING

0.49–3,700 mL/min

- Coated aluminum pump head
- Can be dismantled for cleaning
- Self-centering tube-track thanks to concave tube-bed and convex rollers, which lengthens the tube-life
- 2 stainless steel rollers (higher max. flow rate but more pulsation than with 3 rollers)
- For tubing with 1.6 mm wall thickness
- 1.5 bar (22 psi) differential pressure[1]

Pro-281

ISM793A

3.6–3,100 mL/min

Same pump head as Pro-280, but

- For tubing with 2.4 mm wall thickness
- 2.5 bar (36 psi) differential pressure[1]

Pro-380

ISM791A

CELL SENSITIVE PUMPING

0.45–3,400 mL/min

Same pump head as Pro-280, but

- 3 stainless steel rollers (less pulsation but lower max. flow rate than with 2 rollers)

Pro-381

ISM797A

3.3–2,900 mL/min

Same pump head design as Pro-280, but

- 3 stainless steel rollers (less pulsation but lower max. flow rate than with 2 rollers)
- For tubing with 2.4 mm wall thickness
- 2.5 bar (36 psi) differential pressure[1]

[1] Differential pressure depends on tubing material; tubing with small ID's enable higher pressures.

The flow rates are based on a drive speed of 1 (or 2.4) to 240 rpm. For the BVP Standard drive the indicated min. flow rates must be multiplied by factor 2.4.

Approx. values: determined with water, at 22 °C, no differential pressure, Tygon tubing.

APPLICATION NOTE

- Chemical, biotechnological, and pharmaceutical applications.
- Food industry.
- Elevated differential pressures (Pro-281 and Pro-381).
- Viscous fluids.
- Fluids containing a high content of sensitive solids.
- Applications requiring hygienic conditions, durability, and reliability.
- Comparisons to gear, piston and centrifugal pumps proved that peristaltic pumps are the only suitable and sterilizable pump system for gently pumping media containing living cells.

RELATED PRODUCTS

Accessories	Page 109
Tubing	Pages 75–89

FLOW RATES & TUBING

Tygon® ST R-3603/R-3607 Part No.	Wall (mm)	Tubing ID (mm)	mL/min min.	mL/min max.
MODEL PRO-280				
MF0028	1.6	1.6	0.49	120
MF0030	1.6	3.2	1.9	450
SC0379	1.6	4.8	4.2	1,000
MF0031	1.6	6.4	7.2	1,700
MF0032	1.6	8.0	11	2,600
SC0383	1.6	9.5	14	3,300
SC0384	1.6	11.1	16	3,700
MODEL PRO-281				
MF0029	2.4	4.8	3.6	870
MF0033	2.4	6.4	6.5	1,600
SC0502	2.4	8.0	9.9	2,400
SC0503	2.4	9.5	13	3,100
MODEL PRO-380				
MF0028	1.6	1.6	0.45	110
MF0030	1.6	3.2	1.7	400
SC0379	1.6	4.8	3.7	890
MF0031	1.6	6.4	6.5	1,600
MF0032	1.6	8.0	9.7	2,300
SC0383	1.6	9.5	13	3,000
SC0384	1.6	11.1	14	3,400
MODEL PRO-381				
MF0029	2.4	4.8	3.3	800
MF0033	2.4	6.4	5.8	1,400
SC0502	2.4	8.0	8.8	2,100
SC0503	2.4	9.5	12	2,900

BVP/MCP Pump Heads

360[1]

0.072–530 mL/min

- Easily accessible flip-up tube-bed guarantees easy and rapid tube change-over
- Transparent protection cover allows monitoring the tube and the revolving rotor
- Self-centering tube-track design thanks to the concave tube-bed and convex rollers (lengthens tube-life)
- Rotor accepts tubing ID from 0.8 to 6.4 mm with 1.6 mm wall thickness
- 3 stainless steel rollers
- 1.5 bar (22 psi) differential pressure[2]

ISM719A

380[1]

0.44–2,800 mL/min

Same design as pump head 360, but larger size

- For tubing ID from 1.6 to 9.5 mm with 1.6 mm wall thickness
- 1.5 bar (22 psi) differential pressure[2]
- Ideal for sterile media

ISM791A

[1] An OEM version of this pump head is also available. Ask for the detailed data sheet.

[2] Differential pressure depends on tubing material; tubing with small ID's may enable higher pressures.

NOTE

The flow rates are based on a drive speed of 1 (or 2.4) to 240 rpm. For the BVP Standard drive the indicated min. flow rates must be multiplied by factor 2.4. Approx. values: determined with water, at 22 °C, no differential pressure, and Tygon® tubing.

BVP/MCP Pump Heads

Easy-Load®[1]

MF0313

0.07–1,100 mL/min

- Easily accessible pump head
- Allows rapid tube change-over
- PSF housing (polysulfone)
- Rotor designed for tubing with 1.6 mm wall thickness
- Rotor with 3 stainless steel rollers
- 0.7 bar (10 psi) differential pressure[2]

Easy-Load II[1]

MF0446

0.24–1,000 mL/min

Same specifications as Easy-Load, but

- Adjustable pressure setting
- Improved, automatic tubing retention
- PPS housing (polyphenylene sulfide)
- Rotor with 4 stainless steel rollers
- 0.7 bar (10 psi) differential pressure[2]

[1] Two pump heads can be mounted on one drive. (Special mounting sets must be ordered separately).

[2] Differential pressure depends on tubing material; tubing with small ID's may enable higher pressures.

FLOW RATES & TUBING

Tygon® ST R-3603/R-3607 Part No.	Wall (mm)	Tubing ID (mm)	mL/min min.	mL/min max.
MODEL 360				
MF0001	1.6	0.8	0.072	17
MF0028	1.6	1.6	0.26	62
MF0030	1.6	3.2	1.0	240
SC0379	1.6	4.8	2.0	530
MODEL 380				
MF0028	1.6	1.6	0.44	100
MF0030	1.6	3.2	1.7	400
SC0379	1.6	4.8	3.6	860
MF0031	1.6	6.4	6.0	1,400
MF0032	1.6	8.0	8.8	2,100
SC0383	1.6	9.5	12	2,800
MODEL 380AD				
MF0028	1.6	1.6	0.4	99
MF0030	1.6	3.2	1.5	370
SC0379	1.6	4.8	3.4	830
MF0031	1.6	6.4	6.2	1,500
MF0032	1.6	8.0	9.5	2,300
SC0383	1.6	9.5	13.0	3,000
SC0384	1.6	11.1	15.0	3,600
MF0029	2.4	4.8	3.4	830
MF0033	2.4	6.4	6.2	1,500
MODEL EASY-LOAD				
MF0001	1.6	0.8	0.066	16
MF0028	1.6	1.6	0.25	59
MF0030	1.6	3.2	0.91	220
SC0379	1.6	4.8	1.9	450
MF0031	1.6	6.4	3.1	730
MF0032	1.6	8.0	4.7	1,100
MODEL EASY-LOAD II				
MF0028	1.6	1.6	0.24	58
MF0030	1.6	3.2	0.92	220
SC0379	1.6	4.8	1.9	460
MF0031	1.6	6.4	3.0	730
MF0032	1.6	8.0	4.2	1,000

RELATED PRODUCTS

Accessories	Page 109
Tubing	Pages 75–89

Tubing Cassettes

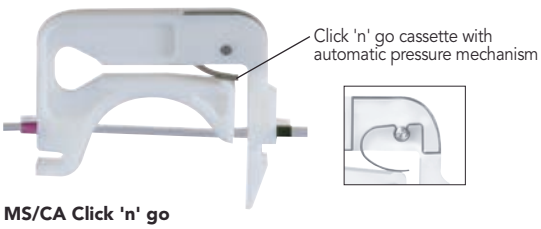
- Developed and consistently improved by Ismatec®

Click 'n' go Cassettes (Standard)[1]

Advantages:

- Automatic tubing pressure; no readjustment necessary
- Ideal for non-monitored, long-time use

Please Note: Click 'n' go cassettes are not suitable for differential pressure greater than 1 bar (15 psi). For these conditions you should choose the pressure lever cassettes.

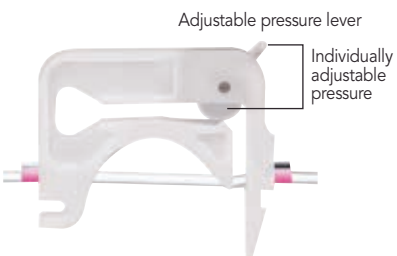


MS/CA Click 'n' go

CA Click 'n' go

Pressure Lever Cassettes (Optional)

The optional pressure lever allows you to set a different tubing pressure for each channel. Depending on the application, tubing material and diameter, an optimally adjusted tubing pressure can be set. To maintain constant flow rates it may be necessary to periodically adjust the tubing pressure.



MS/CA Pressure Lever (Optional)

CA Pressure Lever (Optional)

EN.CO. Srl
Apparecchi Scientifici
Via Filande, 13 - 30038 Spinea (VE) - ITALY
Tel. +390415411133 Fax +390415411090
email commerciale@encosrl.com
service@encosrl.com
web http://www.encosrl.com

Foot Switch

The Ismatec foot switch for start/stop is very practical for use with pumps as dispensing systems, e.g. for filling tubes, bottles etc. A foot switch provides the start/stop signal required, allowing hands-free activation of the filling system. The switch's protection rating is IP21. A 6-foot (1.8 m) cable is included.

Part No.	Model	Material	Adapters Required?	Qty.
TUBING CASSETTES AND ADAPTERS				
Click'n' go Spare Cassettes[1]				
IS3510A	MS/CA Click 'n' go	POM-C[4]	No	1
IS3710A	CA Click 'n' go	POM-C[4]	Yes[2]	1
Pressure Lever Optional Cassettes				
IS0649A	MS/CA Pressure Lever	POM-C[4]	No	1
IS3629A	MS/CA Pressure Lever	PVDF[3,4]	No	1
IS0122A	CA Pressure Lever	POM-C[4]	Yes[2]	1
IS3820A	CA Pressure Lever	PVDF[3,4]	Yes[2]	1
Replacement Adapters for CA Cassettes[2]				
IS0123A	Adapter for CA Cassettes	POM-C[4]		1
IS0123A-4	Insert Adapter Packs	POM-C[4]		4-pk
IS0123A-8	Insert Adapter Packs	POM-C[4]		8-pk
IS0123A-12	Insert Adapter Packs	POM-C[4]		12-pk
IS3861A	Adapter for CA Cassettes	PVDF[3,4]		
FOOT SWITCH				
Part No.	**Foot switch suitable for pump models:**			
ISM016	IPC and IPC-N (firmware version older than 4.00)			
IS10039	IPC and IPC-N (from firmware version 4.00)			
ISM891	Reglo Analog, Reglo *Quick*™			
ISM894	Reglo Digital			

[1] *One set is included with all Ismatec cassette-style pumps.*
[2] *When ordering replacement CA Cassettes, two Adapters per cassette must also be ordered.*
[3] *PVDF offers higher chemical resistance.*
[4] *POM-C = Polyoxymethylene Copolymer, PVDF = Polyvinylidene Fluoride*