Motor-Driven Metering Pump Sigma X Control Type – Sigma/ 1 - S1Cb

The new Sigma X range – reliable, smart and connectible



Capacity range S1Cb: 21 – 117 l/h, 12 – 4 bar

The Sigma X diaphragm metering pump covers a capacity range of 21 to 1,040 l/h in versions S1Cb, S2Cb and S3Cb. Its patented multi-layer safety diaphragm guarantees maximum process reliability. Efficient protection of the power end from overloading by means of an integral frequency converter with microprocessor control(ler).

One highlight is the standardised operating concept with click wheel and 4 additional operating keys on a removable operating unit. A large illuminated LCD and a 3-LED display for operating, warning and error messages, visible from all sides, offers additional operating convenience.

The Sigma, like all smart ProMinent metering pumps, can be flexibly connected to various bus systems.

It has a large adjustment range thanks to a combination of frequency and stroke length adjustment. The pump works with high precision across the entire frequency range. Accurate and complication-free metering of viscous and gaseous media by adjustment of the movement profile.

Operating statuses are simply remotely transmitted via an additional output or relay module. A built-in timer, included as standard, controls time-dependent metering cycles.

Relevant spare parts can be shown in the display. The integral log book significantly improves process management, optimisation and troubleshooting.

Your benefits

- Safe: In the event of an accident, the feed chemical does not escape to the outside nor into the pump's power end, thanks to the patented multi-layer safety diaphragm with optical (optionally electric) signalling.
- Integrated relief valve protects the pump against overloading and reliable operation by means of a bleed option during the metering process.
- External control is scalable via potential-free contacts with pulse step-up and step-down, batch mode or via a 0/4-20 mA standard signal.
- Flexibly connectible: Connection to process management systems via integral PROFIBUS®, CANopen interface.
- Integral log book saves up to 300 events and simplifies troubleshooting and analysis of the cause.

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Technical Data

Field of application

- All industrial applications, either as a stand-alone unit or integrated in a complete system
- Volume-proportional addition of chemicals in water treatment, e.g. sodium-calcium hypochlorite for the disinfection of potable water
- Neutralisation in waste water treatment
- Pulse-controlled metering in the bottling of different volumes e.g. glycerin filling of manometers
- With an integrated timer as a control unit for simple processes, e.g. biocide metering in cooling water

Operating unit

One highlight is the standardised operating concept with gamma and Sigma metering pumps with click wheel and 4 additional operating keys on a removable operating unit. A large illuminated LCD and a 3-LED display for operating, warning and error messages, visible from all sides, offers additional operating convenience.

The Sigma metering pump (control type), like all smart ProMinent metering pumps, can be flexibly connected to various bus systems. Operating statuses are simply remotely transmitted via an additional output or relay module. A built-in timer, included as standard, controls time-dependent metering cycles.

Relevant spare parts can be shown in the display. The integral log book significantly improves process management, optimisation and troubleshooting.

Multi-layer safety diaphragm

The Sigma X represents a durable motor-driven metering pump with integral control and patented multi-layer safety diaphragm, standing out on account of its excellent process reliability. In the event of an accident, the feed chemical does not escape to the outside nor into the pump's power end, thanks to the multi-layer safety diaphragm with optical (optionally electric) signalling.

An additional rear PTFE layer prevents medium from leaking in the event of a diaphragm rupture. In the event of a diaphragm rupture, a simple contact is mechanically triggered by the multi-layer diaphragm. The dosing head remains leak-free during this time, ensuring emergency operation. Simpler technology than the double diaphragm system and independent of the feed chemical, hence a benefit for maintenance / service.

The optical diaphragm rupture warning system is available in the standard scope of delivery.

Metering profiles

Metering profiles guarantee optimum metering results by adapting the metering behaviour of the metering pump to the application or chemical used.

The combination of frequency and stroke length adjustment permits a large adjustment range, with the pump working with excellent precision over the entire frequency range. Adjustment of the movement profile also guarantees precise and trouble-free metering even with viscous and gaseous media.

The stroke motion of the displacement body is continually recorded and regulated so that the stroke is made in line with the desired metering profile. The pump can be operated in normal mode (Diagram 1), with optimised discharge stroke (Diagram 2) or with optimised suction stroke (Diagram 3).

Three typical metering profiles are shown schematically with progress over time.

"Physiologically safe (FDA) in respect of wetted materials" design

All wetted materials in the "Physiologically safe (FDA) in respect of wetted materials" design comply with the FDA guidelines (Version F).

FDA guidelines:

- Material PTFE: FDA-No. 21 CFR § 177.1550
- Material PVDF: FDA-No. 21 CFR § 177.2510

Available for material versions PV and SS.

Identity code example: S1CbH07042PV **F** S010S0DE.

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Sigma/ X (Control) design "liquid end on left"

This version offers additional adaptability to special installation situations, e.g. in combination with storage tanks, brackets, etc.

Identity code example: S1CbH07042PVTS01 **5** UA1000DE

Type S1Cb	Delivery rate at max. back pressure			Max. stroke rate	Delivery rate at max. back pressure		Suction lift	Perm. pre-pressure suction side	Connection, suction/ discharge side	Shipping weight
	bar	l/h	ml/stroke	Strokes/min	psi	gph (US)	m WC	bar	G–DN	kg
12017 PVT	10	21	3.8	90	145	5.5	7	1	3/4–10	9
12017 SST	12	21	3.8	90	174	5.5	7	1	3/4–10	12
12035 PVT	10	42	4.0	170	145	11.1	7	1	3/4–10	9
12035 SST	12	42	4.0	170	174	11.1	7	1	3/4–10	12
10050 PVT	10	49	4.0	200	145	12.9	7	1	3/4–10	9
10050 SST	10	49	4.0	200	145	12.9	7	1	3/4–10	12
10022 PVT	10	27	5.0	90	145	7.1	6	1	3/4–10	9
10022 SST	10	27	5.0	90	145	7.1	6	1	3/4–10	12
10044 PVT	10	53	5.1	170	145	14.0	6	1	3/4–10	9
10044 SST	10	53	5.1	170	145	14.0	6	1	3/4–10	12
07065 PVT	7	63	5.2	200	102	16.6	6	1	3/4–10	9
07065 SST	7	63	5.2	200	102	16.6	6	1	3/4–10	12
07042 PVT	7	52	9.5	90	102	13.7	3	1	1–15	10
07042 SST	7	52	9.5	90	102	13.7	3	1	1–15	14
04084 SST	4	101	9.7	170	58	26.7	3	1	1–15	14
04084 PVT	4	101	9.7	170	58	26.7	3	1	1–15	10
04120 PVT	4	117	9.7	200	58	30.9	3	1	1–15	10
04120 SST	4	117	9.7	200	58	30.9	3	1	1–15	14

Materials in Contact With the Medium

Material	Dosing head	Suction/pressure connector	Seals/ball seat	Balls	Integral relief valve
PVT	PVDF	PVDF	PTFE/PTFE	Ceramic	PVDF/FKM or EPDM
SST	Stainless steel 1.4404	Stainless steel 1.4581	PTFE/PTFE	Stainless steel 1.4404	Stainless steel/FKM or EPDM

With "F" sealing material design – "physiologically safe - FDA", the ball seat is made of PVDF

Motor Data

Identity code specification		Power supply			Remarks
U	1-phase, IP 65	100 – 230 V ±10 % / 240 V ±6 %	50/60 Hz	220 W	

Motors less than 0.75 kW and motors designed for speed-controllable operation are not subject to the IE3 standard in compliance with the Ecodesign Directive 2009/125/EC.

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