Microcontrollers for water treatment

The Softmaster® ROE controls a reverse-osmosis system

Controllers: Contents

Applications

Precise control attuned to the application can contribute to a significant improvement of the entire production process.
Therefore, we made it our mission decades ago to provide our customers with application-oriented solutions in which every individual component is attuned exactly to every other.

Monitoring and control of water treatment example: softening plant

The following parameters must be monitored:

- ❍ quality
- ❍ salt deficiency in the brine tank
- ❍ correct regeneration cycle

You can achieve this by using our controllers and measuring instruments in combination:

Testomat® 2000,
✚ **Softmaster® MMP2**,
✚ **EcoControl EC Dos Desalt**

Result:

- ❍ less waste water
- ❍ lower salt use
- ❍ cost savings thanks to lower energy requirements

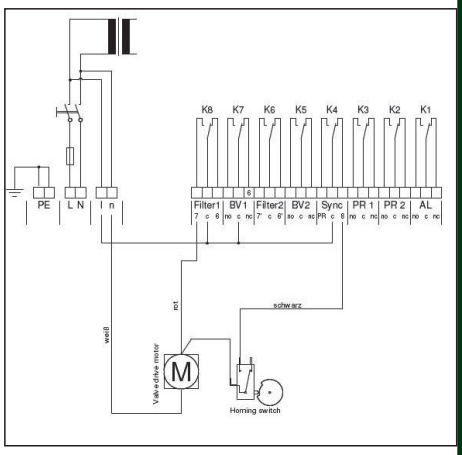
1- and 2-filter systems

All Softmaster MMP controllers can be connected to many current valves of 1- and 2-filter systems, e.g., valves from

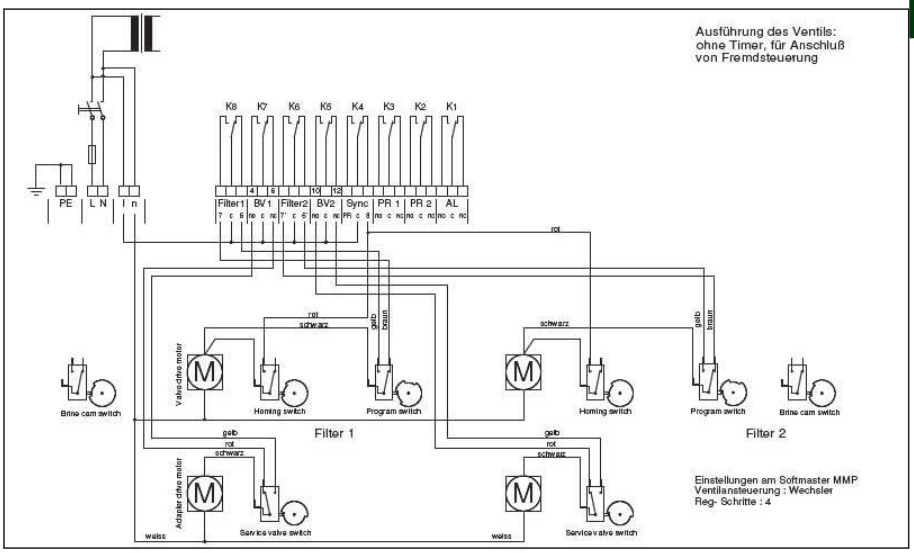
- ❍ Autotrol
- ❍ WWWS
- ❍ Fleck
- ❍ Siata

To support you, you can request connection diagrams for various valves from us or download the current operating instructions from our homepage.

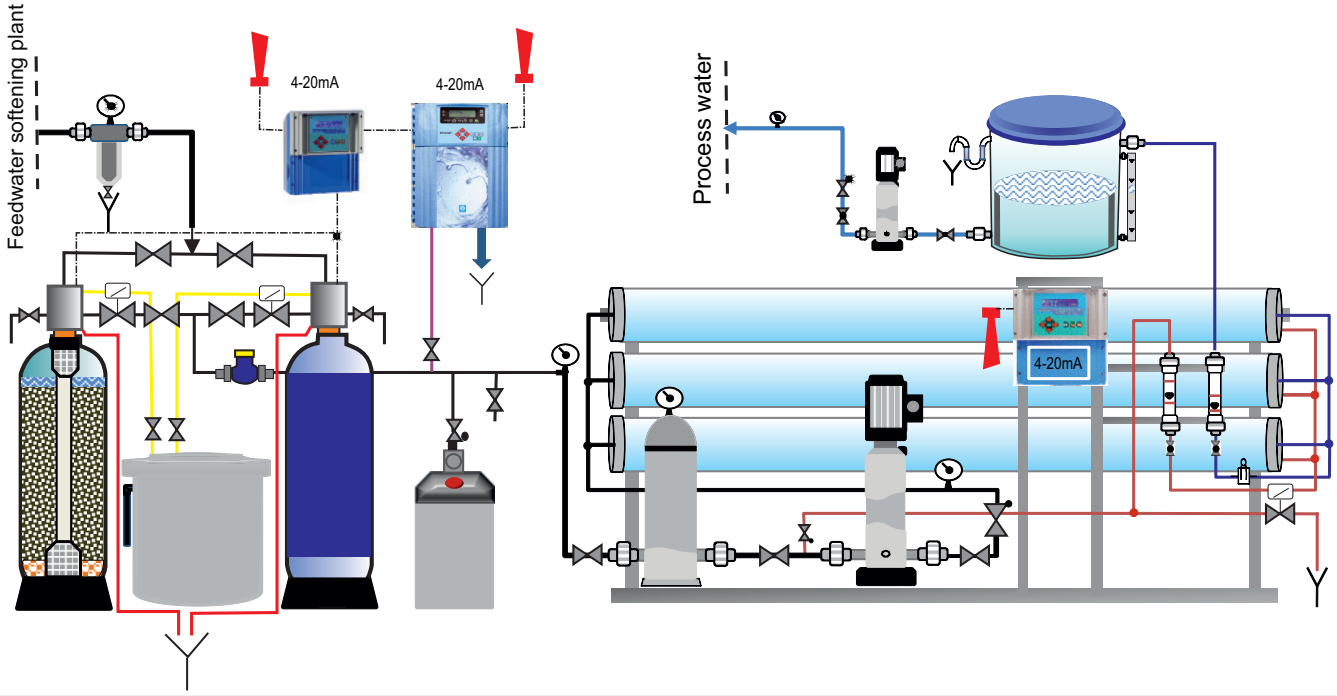
Example of Autotrol 952 with MMP1 on a 1-filter system:



Example of Fleck 2900 with MMP2 on a 2-filter system:



Softmaster controllers monitoring a reverse osmosis system together with Testomat® 2000



Product	Softmaster® MMP1	Softmaster® MMP2
		
Description	Controller for water softening systems	Controller for water softening plants
Advantages	❍ variable multi-purpose housing for control panel installation and wall installation ❍ multilingual menu navigation ❍ large blue LCD with 2 lines x 16 characters and backlight ❍ error messages and operating mode displays are displayed alternately and stored in the error history ❍ real-time clock ❍ five potential-free relay outputs for two filters, service valves and error message, synchronizing contact ❍ 12 V power supply for water turbine ❍ 5 inputs: water flow meter, regeneration start/regeneration stop, salt and brine monitoring, and additional external program start ❍ connection to various valves such as Autotrol, WWWS, Fleck, Siata	like Softmaster® MMP1 but with the following inputs and outputs: ❍ eight potential-free relay outputs for two filters, service valves, two additional programs, and error message, synchronizing contact ❍ output for metering pulse ❍ 12 V power supply for water turbine ❍ inputs for 2 water flow meters ❍ 8 inputs: regenerations-start/regenerations-stop, brine level – empty/full, synchronous messages from valves, and error messages from Testomat® instruments
Protection type/class	IP65 / I	IP65 / I
Mains connection	230–240V, 115V, 24V +/-10% 50–60Hz	230–240V, 115V, 24V +/-10% 50–60Hz
Power consumption	max. 9 VA	max. 9 VA
Dimensions	approx. 270 x 295 x 130 mm 10.6" x 11.6" x 5.1" (W x H x D) 262 x 146 mm / 10.3" x 5.7", +1 mm control panel cut-out approx. 90 mm / 3.5" installation depth 270 x 155 mm / 10.6" x 6.1" front frame dimensions	approx. 270 x 295 x 130 mm 10.6" x 11.6" x 5.1"(W x H x D) 262 x 146 mm / 10.3" x 5.7", +1 mm control panel cut-out approx. 90 mm / 3.5" installation depth 270 x 155 mm / 10.6" x 6.1" front frame dimensions
Weight	approx. 1.3 kg / 2.9 lbs	approx. 1.3 kg / 2.9 lbs
Measuring range	—	—
Application	❍ fully automatic regeneration of water softening systems ❍ suitable for central control valves or pilot distributors, controlled via electrical toggle or pulse switch for single and double softening systems ❍ quantity, time, or quality controlled activation of regeneration	❍ like Softmaster MMP1 in addition: ❍ parallel and serial connection

Softmaster® MMP compact	Softmaster® ROE1	Softmaster® ROE2
		
Controller for water softening systems	Controller for reverse osmosis systems	Controller for reverse osmosis plants
❍ multilingual menu navigation ❍ large LCD with 2 lines x 16 characters and backlight ❍ error messages and operating mode displays are displayed alternately and stored in the error history ❍ real-time clock ❍ 4 non-potential-free relay outputs: 2 filters, service valves, and synchronous contact ❍ one potential-free relay output for error message/additional program ❍ 12 V power supply for water turbine ❍ 5 inputs: water flow meter, regeneration start/regeneration stop, brine monitoring – empty and additional external program start ❍ connection to various valves such as Autotrol, WWWS, Fleck, Siata	❍ variable multi-purpose body for control panel and wall installation ❍ multilingual menu navigation ❍ large blue LCD with 2 lines x 16 characters and backlight ❍ error messages and operating mode displays are displayed alternately and stored in the error history ❍ real-time clock ❍ connection for conductivity probe with temperature sensor for permeate In addition, the following inputs and outputs: ❍ 5 potential-free relay outputs: pump, inlet valve, flushing valve, dosing, and error message output ❍ 5 inputs: water deficiency message, overpressure message motor protection, storage tank FULL/EMPTY, system stop ❍12 V-power supply	like Softmaster® ROE1 but with the following inputs and outputs: ❍ eight potential-free relay outputs for two pumps, programmable function output, inlet valve, outlet valve, flushing valve, by-pass valve, and error message output ❍ output for metering pulse ❍ eight inputs for concentrate monitoring, emergency operation (by-pass) and external motor protection switch, water deficiency message, overpressure message, storage tank FULL/EMPTY, system stop ❍ two inputs for water flow meter ❍ 12 V power supply for water turbine ❍ 4–20 mA input for a pressure transducer
IP54/I	IP65 / I	IP65 / I
230–240V, 115V, 24V +/-10% 50–60Hz	230–240V, 115V, 24V +/-10% 50–60Hz	230–240V, 115V, 24V +/-10% 50–60Hz
max. 9 VA	max. 9 VA	max. 9 VA
approx. 257 x 214 x 135 mm 10.1" x 8.4" x 5.3" (W x H x D)	approx. 270 x 295 x 130 mm 10.6" x 11.6" x 5.1"(W x H x D) 262 x 146 mm / 10.3" x 5.7", +1 mm control panel cut-out approx. 90 mm / 3.5" installation depth 270 x 155 mm / 10.6" x 6.1" front frame dimensions	approx. 270 x 295 x 130 mm 10.6" x 11.6" x 5.1"(W x H x D) 262 x 146 mm / 10.3" x 5.7", +1 mm control panel cut-out approx. 90 mm / 3.5" installation depth 270 x 155 mm / 10.6" x 6.1" front frame dimensions
approx. 1.6 kg / 3.5 lbs	approx. 2.3 kg / 5 lbs	approx. 2.3 kg / 5 lbs
—	0.1–50,000 µS/cm 0.01–5.0 cm^{-1} cell constant	0.1–50,000 µS/cm 0.01–5.0 cm^{-1} cell constant
❍ fully automatic regeneration of water softening plants ❍ suitable for central control valves or pilot distributors, controlled via electrical toggle or pulse switch for single and double softening systems ❍ quantity, time, or quality controlled activation of regeneration	❍ reverse osmosis plants with 1 conductivity measurement	❍ reverse osmosis plants with 1 conductivity measurement

Product	Softmaster® ROE2/S5	Softmaster® ROE3
		
Description	controller for reverse osmosis systems with programmable controller for water deficiency	Controller for reverse osmosis systems
Advantages	like Softmaster® ROE2, but in addition: ❍ programmable function for control for water deficiency. You determine how often and after how much time the system should be turned back on. ❍ interval for restart after water deficiency message between 1 and 99 minutes can be selected	like Softmaster® ROE1 but with the following inputs and outputs: ❍ eight potential-free relay outputs for two filters, service valves, two add-on programs, and error message, synchronizing contact ❍ output for metering pulse ❍ 12 V power supply for water turbine ❍ inputs for 2 water flow meters ❍ 8 inputs: water deficiency message, concentrate monitoring, overpressure message, storage tank FULL/EMPTY, external motor protection switch, system stop
Protection type/class	IP65 / I	IP65 / I
Mains connection	230–240V, 115V, 24V +/-10% 50–60Hz	230–240V, 115V, 24V +/-10% 50–60Hz
Power consumption	max. 9 VA	max. 9 VA
Dimensions	approx. 270 x 295 x 130 mm 10.6" x 11.6" x 5.1"(W x H x D) 262 x 146 mm / 10.3" x 5.7", +1 mm control panel cut-out approx. 90 mm / 3.5" installation depth 270 x 155 mm / 10.6" x 6.1" front frame dimensions	approx. 270 x 295 x 130 mm 10.6" x 11.6" x 5.1"(W x H x D) 262 x 146 mm / 10.3" x 5.7", +1 mm control panel cut-out approx. 90 mm / 3.5" installation depth 270 x 155 mm / 10.6" x 6.1" front frame dimensions
Weight	approx. 2.3 kg / 5 lbs	approx. 2.3 kg / 5 lbs
Measuring range	0.1–50,000 µS/cm 0.01–5.0 cm^{-1} cell constant	0.1–50,000 µS/cm 0.01–5.0 cm^{-1} cell constant
Application	❍ reverse osmosis plants with 1 conductivity measurement	❍ reverse osmosis plants with second conductivity measurement for controlling an EDI module

Softmaster® ROE compact	EcoControl EC Dos Desalt	
	 New	
Controller for reverse osmosis systems	controller for cooling circuits, desalination control, dosing	
❍ multilingual menu navigation ❍ large LCD with 2 lines x 16 characters and backlight ❍ real-time clock ❍ three potential-free relay outputs for pump, inlet valve and flushing valve ❍ two potential-free relay outputs for measuring and error message output ❍ 5 inputs: water deficiency message, concentrate monitoring, overpressure message, storage tank FULL/EMPTY, external motor protection switch, system stop	❍ blue LCD with 2 lines x 16 characters and backlight ❍ multilingual menu navigation ❍ relay outputs MIN/MAX limit values and error message output ❍ signal inputs for conductive conductivity probe and temperature sensor ❍ circular buffer for 20 to 10,000 measured values (variable) with date/time ❍ two programmable limit values for monitoring and control functions ❍ 0/4–20mA current interface and RS232 interface for measured value transfer	
IP54/I	IP54/I	
230–240V, 115V, 24V +/-10% 50–60Hz	230–240V, 115V, 24V +/-10% 50–60Hz	
max. 9 VA	max. 6 VA	
approx. 357 x 214 x 135 mm 14" x 8.4" x 5.3" (W x H x D)	approx. 166 x 155 x 115 mm 6.5" x 6.1" x 4.5" (W x H x D)	
approx. 1.6 kg / 3.5 lbs	approx. 0.8 kg / 1.8 lbs	
0.1–50,000 µS/cm 0.01–5.0 cm^{-1} cell constant	0–199.9 µS/cm to 0–199.9 mS/cm (depending on cell constant)	
❍ reverse osmosis plants with 1 conductivity measurement	❍ monitoring and regulation of process water circuits, cooling tower monitoring, boiler feed water	

Product	MMP 11	MMP 11 T
	 New	 New
Description	valve built-in controller for 1-filter water softening systems 801 and 802 of WWWS	valve built-in controller for 1-filter water softening systems 801 and 802 of WWWS
Advantages	❍ controller as replacement for MMP10 ❍ push-in module for the central controller valves – type 415, 426, 427, or 435 ❍ max. capacity of the 1-filter system: up to 3300 m^3 °dH, 5858 m^3 °f, or 909150 gpg ❍ one-key operation ❍ 1-line display (16 characters), backlight ❍ operating mode displays – display of percent depletion (2-digit) ❍ status displays – water flow meter – menu selection ❍ start regeneration – quantity-dependent, via water flow meter – time-dependent in intervals of days – time-dependent in intervals of weeks – manual	❍ controller as replacement for MMP10 ❍ push-in module for the central controller valves - type 415, 426, 427, or 435 ❍ interval settings range: 1 to 14 days or selection of day(s) of the week ❍ one-key operation ❍ 1-line display (16 characters), backlight ❍ operating mode displays – current time – display of time till next regeneration in days, hours, and minutes ❍ status displays (LED) – menu selection ❍ start regeneration – time-dependent in intervals of days – time-dependent in intervals of weeks – manual
Protection type/class	IP40 / I	IP40 / I
Mains connection	230–240V, 115V, 24V +/-10% 50–60Hz	230–240V, 115V, 24V +/-10% 50–60Hz
Power consumption	max. 4.5 VA, without external load	max. 4.5 VA, without external load
Dimensions	approx. 104 x 67 x 73 mm 4.1" x 2.6" x 2.9" (W x H x D)	approx. 104 x 67 x 73 mm 4.1" x 2.6" x 2.9" (W x H x D)
Weight	ca. 0.4 kg / 0.9 lbs (230 V) ca. 0.2 kg / 0.4 lbs (24 V)	ca. 0.4 kg / 0.9 lbs (230 V) ca. 0.2 kg / 0.4 lbs (24 V)
Ambient Temperature	5–45°C / 41-113°F	5–45°C / 41-113°F
Connector for	central control valve type: 415, 426, 427, or 435 valve voltage = mains voltage service valve, max 100 VA, opens when voltage is applied water flow meter, contact load 5 V = 1 mA min. pulse interval 0.2 seconds	central control valve type: 415, 426, 427, or 435 valve voltage = mains voltage service valve, max 100 VA, opens when voltage is applied
Application	❍ automatic regeneration control of one-filter water softening systems	❍ time-dependent regeneration control of one-filter water softening systems

MMP 41

New

valve built-in controller for 1-filter water softening systems 801 and 802 of WWWS

- ❍ controller as replacement for MMP40
- ❍ push-in module for the central controller valves – type 412, 415, 426, 427, 430, or 435
- ❍ one-key operation
- ❍ 1-line display (16 characters), backlight
- ❍ operating mode displays – display of percent depletion (2-digit)
- ❍ status displays – water flow meter – menu selection
- ❍ start regeneration – quantity-dependent, via water flow meter – time-dependent in intervals of days – time-dependent in intervals of weeks – manual

IP40 / I

230–240V, 115V, 24V +/-10%
50–60Hz

max. 4.5 VA, without external load

approx. 104 x 67 x 73 mm
4.1" x 2.6" x 2.9" (W x H x D)

ca. 0.4 kg / 0.9 lbs (230 V)
ca. 0.2 kg / 0.4 lbs (24 V)

5–45°C / 41-113°F

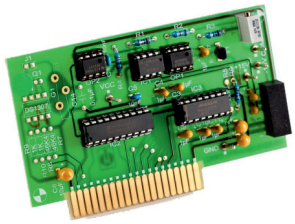
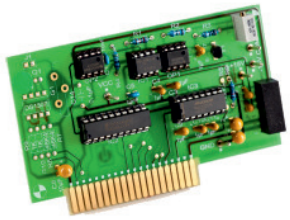
central control valve type: 412, 415, 426, 427, 430, or 435
valve voltage = mains voltage

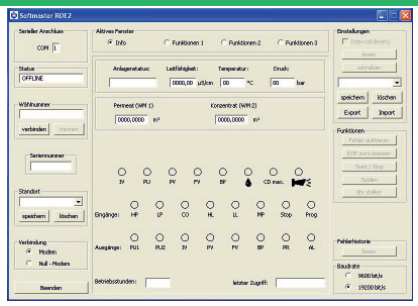
service valve, max 100 VA, opens when voltage is applied
water flow meter, contact load 5 V = 1 mA min. pulse interval 0.2 seconds

- ❍ automatic regeneration control of one-filter water softening systems

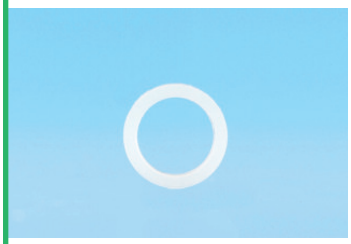
Product	PVH/PVH 4	PVP/PVP 4
		
Description	pilot distributor (hydraulic)	pilot distributor (pneumatic)
Advantages	❍ pilot distributor with four switch settings ❍ toggle switch for 8 bar (116 PSI) hydraulic pressure or 4.5 bar (65.3 PSI) pneumatic pressure ❍ without screw connections	❍ pilot distributor with four switch settings ❍ toggle switch for 8 bar (116 PSI) pneumatic pressure ❍ without screw connections
Protection type/class	IP44 / I	IP44 / I
Mains connection	230–240V, 24V +/-10% 50–60Hz	230–240V, 24V +/-10% 50–60Hz
Power consumption	max. 5 VA	max. 5 VA
Dimensions	approx. 125 x 120 x 210 mm 4.9" x 4.7" x 8.3" (W x H x D)	approx. 125 x 120 x 210 mm 4.9" x 4.7" x 8.3" (W x H x D)
Weight	approx. 1.5 kg / 3.3 lbs	approx. 1.6 kg / 3.5 lbs
Ambient temperature	0–45°C / 32-113°F	0–45°C / 32-113°F
Application	control of individual valves in automatic water treatment systems	control of individual valves in automatic water treatment systems
Order numbers	valves, opened when depressurized 24V 250002 230V 250001 valves, closed when depressurized 24V 250004 230V 250003	valves, opened when depressurized 24V 250011 230V 250010 valves, closed when depressurized 24V 250013 230V 250012

PVH I/PVH I4	PVP I/PVP I4	
		
pilot distributor (hydraulic)	pilot distributor (pneumatic)	
❍ pilot distributor with four switch settings ❍ pulse switch for 8 bar (116 PSI) hydraulic pressure or 4.5 bar (65.3 PSI) pneumatic pressure ❍ without screw connections	❍ pilot distributor with four switch settings ❍ pulse switch for 8 bar (116 PSI) pneumatic pressure ❍ without screw connections	
IP44 / I	IP44 / I	
230–240V, 24V +/-10% 50–60Hz	230–240V, 24V +/-10% 50–60Hz	
max. 5 VA	max. 5 VA	
approx. 125 x 120 x 210 mm 4.9" x 4.7" x 8.3" (W x H x D)	approx. 125 x 120 x 210 mm 4.9" x 4.7" x 8.3" (W x H x D)	
approx. 1.6 kg / 3.5 lbs	approx. 1.6 kg / 3.5 lbs	
0–45°C / 32-113°F	0–45°C / 32-113°F	
control of individual valves in automatic water treatment systems	control of individual valves in automatic water treatment systems	
valves, opened when depressurized 24V 250006 230V 250005 valves, closed when depressurized 24V 250008 230V 250007	valves, opened when depressurized 24V 250015 230V 250014 valves, closed when depressurized 24V 250017 230V 250016	

Softmaster® accessories	Adapter plate	RS232 interface	Current interface
			
Is used	for Softmaster devices	for Softmaster 2 devices	for Softmaster devices
Order number	130011	037259	037309
Description	With the help of the adapter plate, you can easily replace your old Heyl controller with a Softmaster® controller without drilling	plug-in card for one RS232 interface and one current interface	plug-in card for one current interface
Technical data	❍ The old holes can can be used for mounting the adapter plate. The Softmaster® device is then attached to the adapter plate. ❍ dimensions (W x H x D): 264 x 280 x 8 mm 10.4" x 11" x 0.3"	❍ current output: 0–20mA ❍ RS232 serial interface	❍ current output: 0–20mA or 4–20mA ❍ maximum load: 500 Ohm ❍ galvanic isolation

Product	Heyl Remote Control Softmaster®	Heyl Remote Control Softmaster® retrofit kit
		
Is used	remote maintenance for Softmaster devices	retrofit kit for remote maintenance of software devices
Order number	790001	790003
Scope of delivery	❍ Software ❍ Softmaster®-modem cable connection ❍ license key	❍ Software ❍ Softmaster® modem cable connection ❍ RS232 plug-in card ❍ license key
Description	Using the remote maintenance software, software devices can be configured via computer. The settings no longer need to be entered directed on the device and can now be entered conveniently on a PC using a mouse and keyboard.	Using the remote maintenance software, software devices can be configured via computer. The settings no longer need to be entered directed on the device and can now be entered conveniently on a PC using a mouse and keyboard.

Pilot distributor accessories	Program disc PV S1	Program disc PV S2	Program disc PV S8
			
Description	additional disc and neutral contact for controlling a valve or a relay of a guard during the course of the program.	like S1 but with two additional discs	automatic return movement thanks to the upstream programming unit
Order number	250031	250032	250038

	Program disc PV S9	PVH/PVP screw connector	Seal for screw connector
			
Description	freely configurable program disc, e.g. for gravel filter systems	screw connector for pilot distributor (8 pieces required)	seal for screw connector (8 pieces required)
Order number	250039	033900	033475

Order numbers

Type	Languages	Device version	24 V	115V	230V	230V/24V
Softmaster® MMP1	D, GB, F,	attachable	610100	610101	610102	–
	I, NL, PL	installable	610110	610111	610112	–
Softmaster® MMP2		attachable	620000	620001	620002	620003
	D, GB, F,	with RS232	620200	620201	620202	620203
	I, NL, PL	installable	620010	620011	620012	–
		with RS232	620210	620211	620212	–
Softmaster® MMP compact	D, GB, F,	attachable	610225	610226	610227	–
	I, NL, PL					
Softmaster® ROE1	D, GB, F,	attachable	*	*	601102	–
	I, NL, PL	installable	*	*	601112	–
Softmaster® ROE2		attachable	*	*	*	*
	D, GB, F,	with RS232	*	*	*	*
	I, NL, PL	installable	602010	*	602012	–
		with RS232	602210	602211	602212	–
Softmaster® ROE2/S5	D, GB, F,	attachable	–	–	*	–
	I, NL, PL	installable	–	–	*	–
Softmaster® ROE3		attachable	*	*	*	–
	D, GB, F,	with RS232	*	*	603202	–
	I, NL, PL	installable	*	*	603012	–
		with RS232	*	*	603212	–
Softmaster® ROE compact	D, GB, F,	attachable	601225	601226	601227	–
	I, NL, PL					
EcoControl EC Dos Desalt	D, GB, F,	attachable	300203	300202	300201	–
	I, NL, PL					
MMP 11	D, GB	installable	210064	–	210065	–
MMP 11T	D, GB	installable	210061	–	210062	–
MMP 41	D, GB	installable	210067	–	210068	–

*upon request