PRESSURISATION

TOPCONTROL MODULAR ETCM

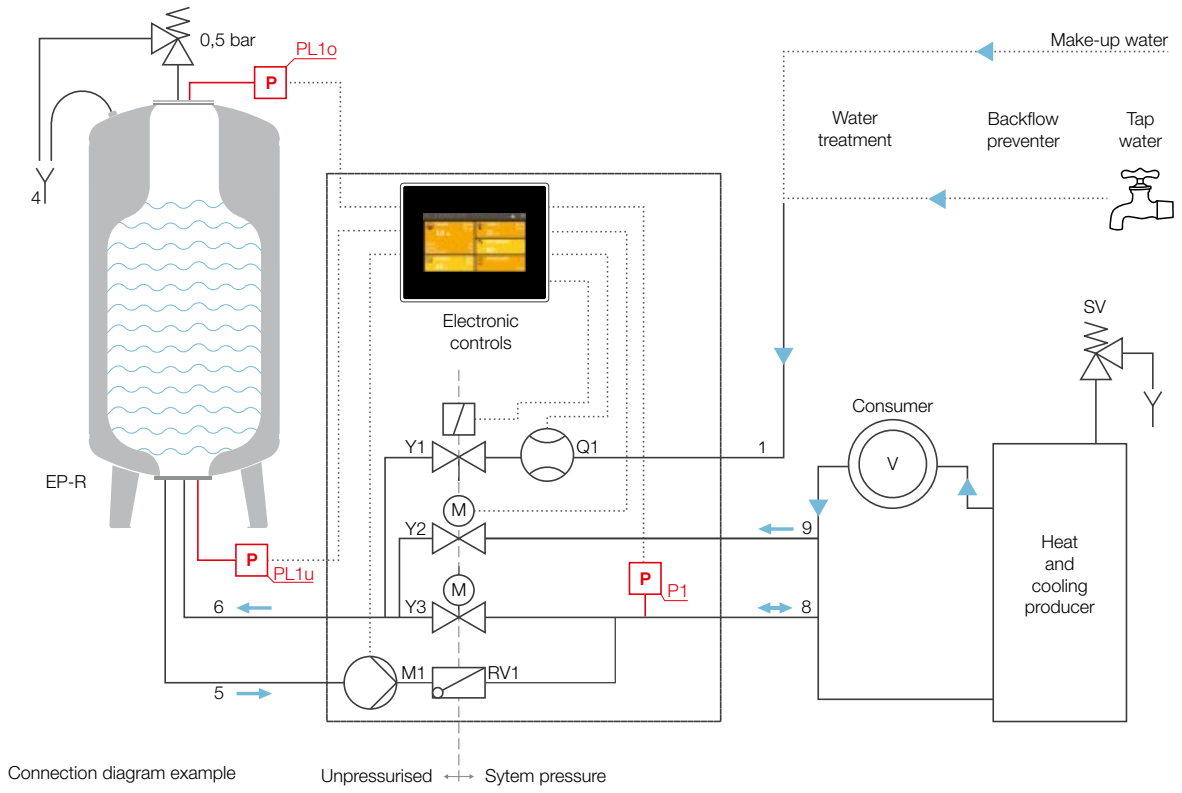
Pressurisation

Replenishment

Monitoring

SPIROEXPAND®

CONNECTION DIAGRAM FOR THE SYSTEM

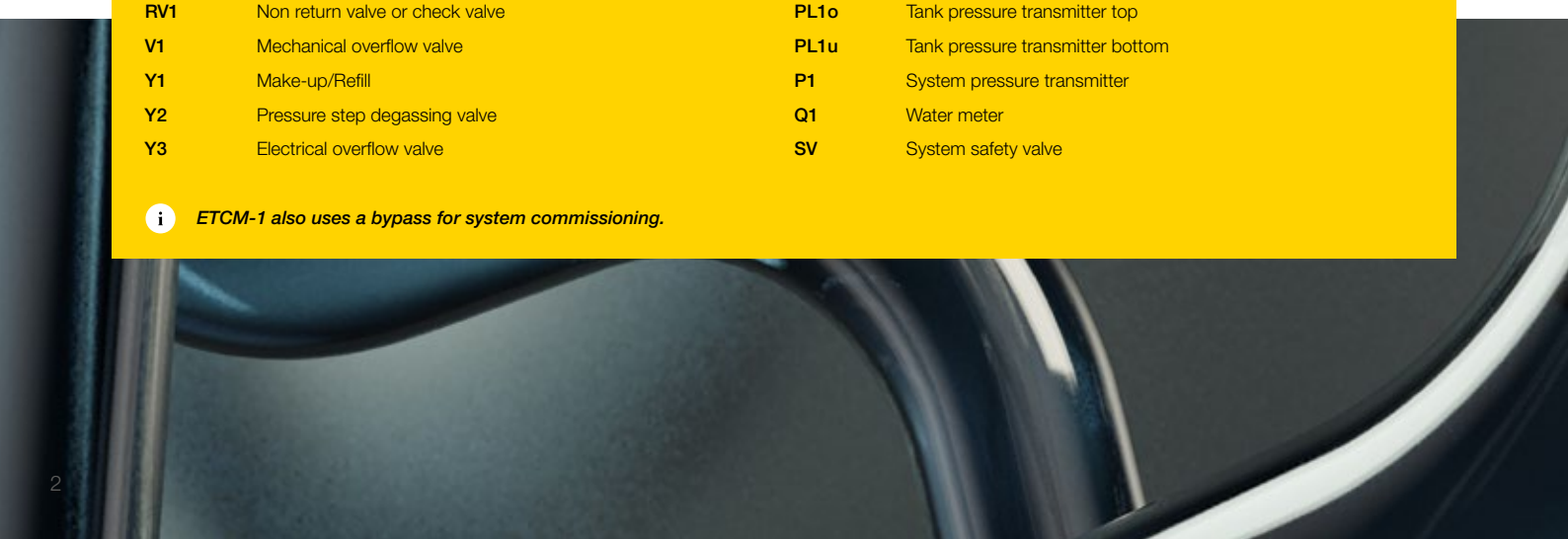


Connection diagram example

LEGEND

1	Make-up/Refill line	**6**	Expansion Overflow line
4	Expansion overflow pipe (from the system return)	**8**	Expansion line
5	Expansion Suction line	**9**	Low pressure degassing line only for series 1
M1	Speed-controlled pressure maintenance pump	**EP-R**	Expansion vessel with full membrane
RV1	Non return valve or check valve	**PL1o**	Tank pressure transmitter top
V1	Mechanical overflow valve	**PL1u**	Tank pressure transmitter bottom
Y1	Make-up/Refill	**P1**	System pressure transmitter
Y2	Pressure step degassing valve	**Q1**	Water meter
Y3	Electrical overflow valve	**SV**	System safety valve

i ***ETCM-1 also uses a bypass for system commissioning.***



THE PRINCIPLES BEHIND THE TOPCONTROL MODULAR SYSTEM

PRESSURE MAINTENANCE AND EXPANSION
SpiroExpand TopControl Modular is our range of pressure maintenance units designed for larger systems. These units enable most of the expansion storage volume to be used and keep the pressure at a constant level in closed loop heating and cooling systems.

They are manufactured in accordance with the regulations set out in the Pressure Equipment Directive PED 2014/68/EU and complies with EN12828, ÖNORM H12828.

In a modular system, the pressure maintenance units are used in combination with additional external, unpressurised tanks from the product series EP-R(S) (with 0.5 bar safety valve). The number of modules varies according to the size of the system. The painted tanks are made of steel and the volume can be utilised to almost its full capacity. For the optimal separation of system water and the atmosphere, the tanks features special high-quality membranes, which are flanged at both ends and can be replaced when necessary.

The control unit utilises compact hydraulics and one or two low-noise pressure maintenance pumps, featuring both the highest quality mechanical shaft sealing and one or two overflow (spill) valves, which constantly regulate the pressure and can be mechanically adjusted. The overflow valves are electronically controlled, with continuously regulating actuators, including mechanical safety reset (currentless mechanical self-closing via spring force).

The external hydraulic connections are fitted on the righthand side, and can be switched to the left if needed. An isolation valve is located here, which allows for isolation from the rest of the system. The temperature of the water entering the system is monitored.

MAKE-UP/REFILL
An EMCF-1 or -3 make-up module can be ordered as an option for make-up/refill via the pressurisation system. If ordered at the same time, the module is pre-installed at the factory. The make-up quantity is continuously measured using a litre-accurate water meter (Q1) and is signalled if the maximum quantity is exceeded, this will block the refilling process immediately.

If special media mixtures (e.g. glycol) are used, we recommend the use of a MultiControl AutoFill EMCA.

LOW-PRESSURE DEGASSING
Automatic low-pressure degassing is integrated as standard in the ETCM-_1-_ models. An EMAE-1 degassing module is available as an accessory for the other models. If ordered at the same time, it is pre-installed at the factory. Low-pressure degassing is based on the principle of pressure release from the system pressure into the unpressurised (0.5 bar) tank. For this purpose, the degassing valve is opened via a time programme and the pump pumps the degassed medium back into the system.

VACUUM DEGASSING
Taking into account the guidelines VDI4708 and VDI2035-2, Spirotech recommends the use of a separate vacuum degasser, which ensures the best possible degassing performance in heating and cooling systems.

CONTROL AND MONITORING
Microprocessors are utilised for the electronic control of all operational processes. The control panel is ergonomically designed, with an illuminated and capacative touchscreen display. The easy-to-follow instructions are available in many languages. The compact measuring and switch unit has its own casing and is supplied with connection wiring. In the basic version, four status messages are available:
Error (malfunction), warning, top-up in operation and system running.

Remote monitoring is possible using the MultiControl binary and analog modules, the MultiControl bus modules or the MultiControl web module.

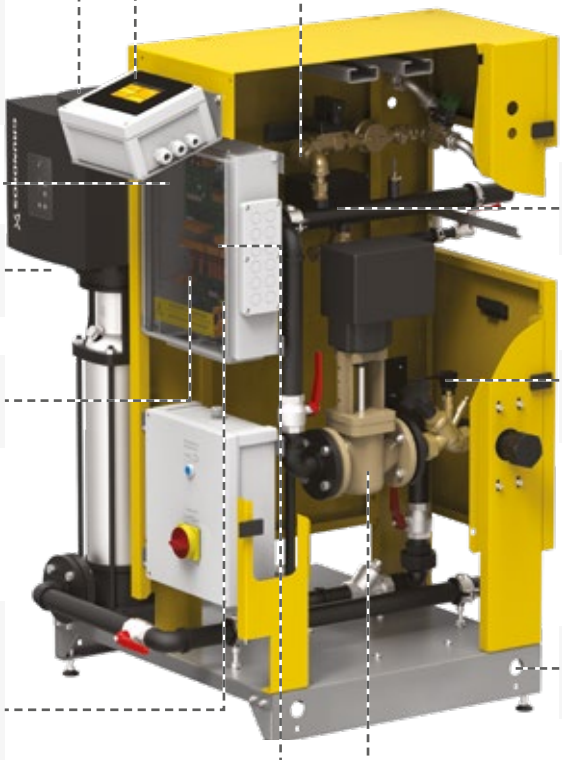
FEATURES OF TOPCONTROL MODULAR

Control panel with 5-inch touchscreen.

Electronic unit with the option of installing various communication modules: web module, bus module

Connection for EMCF make up module

Enclosed electronic unit optimally protected (degree of protection: IPX4)



Mounting space for EMAE-1 pressure step degassing module.

Highly efficient, frequency-controlled centrifugal pump.

Input for external warning or fault and device release.

Precise measurement of system pressure.

4 potential-free signalling outputs always included:
1. fault
2. warning
3. replenishment running
4. device function enabled

Holes for transport aids e.g. for carrying rods.

Electronic overflow valve with mechanical safety reset

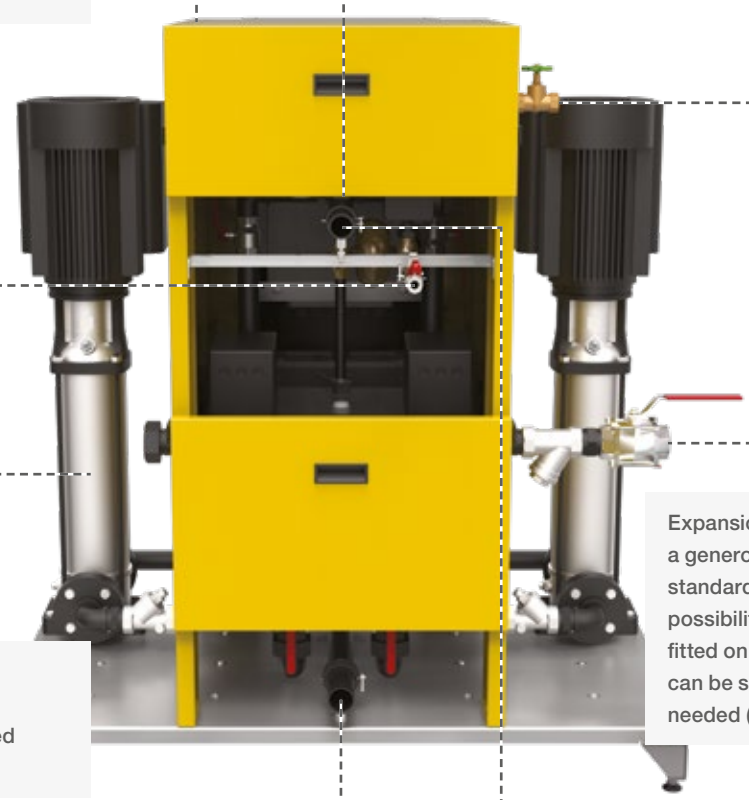
2 analogue remote indications:
1. current tank level (%)
2. current system pressure (bar)

Side and rear housing covers can be easily removed for optimum accessibility (closed in illustration)

Continuous temperature monitoring

EMAE-1 Pressure step degassing module

EMCF-1, volume controlled make up module



Speed-controlled pressure maintenance pump with high-efficiency motor with integrated frequency converter

Expansion pipe to the system, with a generous size and fitted as standard with the necessary shutoff possibilities. The connections are fitted on the left-hand side, and can be switched to the right if needed (as shown in the picture).

Suction line from the expansion vessels

Overflow pipe to the expansion vessels

WATER TREATMENT

If no standardised water is available for make-up water, a water treatment make-up module can also be combined, in accordance with **VDI2035** using **SpiroPure** demineralisation units.

If the capacity of the ion exchanger resin runs out, the electronic monitoring system stops the make-up and prompts you to replace the ion exchanger cartridge.

TECHNICAL DATA
ETCM SOLO

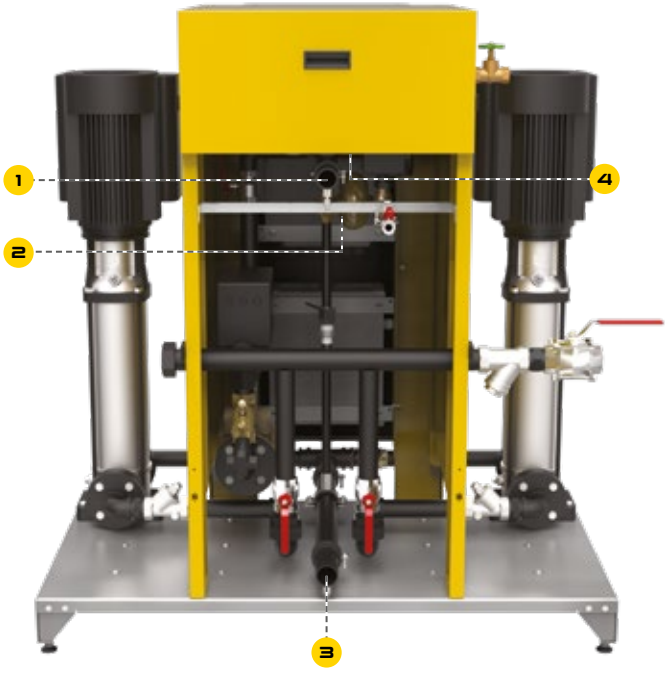
SINGLE PUMP SYSTEM 1X100%

- A frequency-controlled pressure maintenance pump, designed for 100% of the expansion volume flow
- An electronic overflow valve, designed for 100% of the expansion volume flow

E.g.: **ETCM-S5.4-15.7** with **EMCF-3**

1. Make-up
2. Expansion line from/to the system return

TECHNICAL DATA
ETCM DUO



DOUBLE PUMP SYSTEM 2X50%

- Two frequency-controlled pressure maintenance pumps, each designed for at least 50% of the expansion volume flow
- One electronic overflow valve, designed for 100% of the expansion volume flow

DUO covers a huge range of applications thanks to the staggered pump utilisation. The load is divided between two pumps during operation to save energy.

E.g.: **ETCM-D20.0-23.5** with **EMCF-3**

1. Overflow line to the expansion vessels
2. Low-pressure degassing module EMAE-1
3. Suction line from the expansion vessels
4. EMCF-3, volume controlled make up module

TECHNICAL DATA
ETCM DUO TWIN

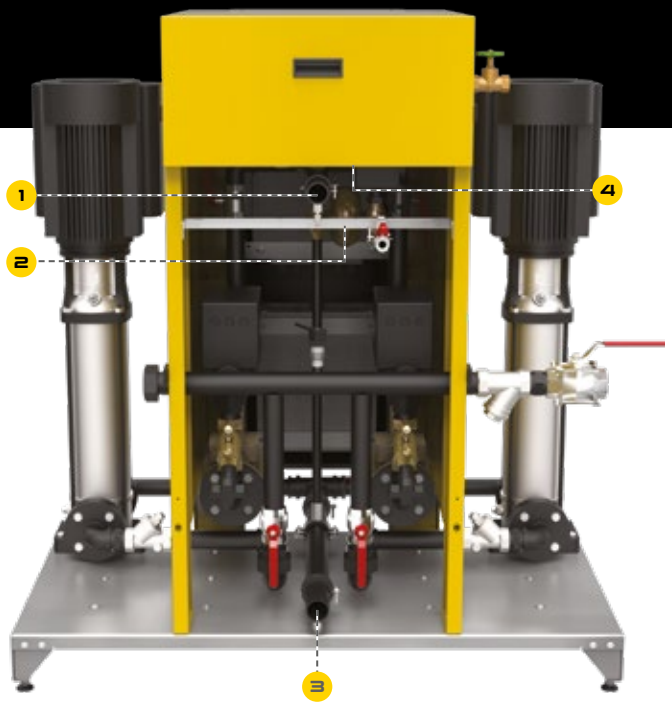
DOUBLE PUMP/DOUBLE VALVE SYSTEM
2X50%/2X100%

- Two frequency-controlled pressure maintenance pumps, each designed for at least 50% of the expansion volume flow
- Two electronic overflow valves, each designed for 100% of the expansion volume flow

The use of a second overflow valve increases the reliability of DUO TWIN.

E.g.: **ETCM-D18.2-14.9-twin**

1. Overflow line to the expansion vessels
2. Low-pressure degassing module EMAE-1
3. Suction line from the expansion vessels
4. EMCF-3, volume controlled make up module



TECHNICAL DATA
ETCM MAXI

DOUBLE PUMP SYSTEM 2X100%

- Two frequency-controlled pressure maintenance pumps, each designed for 100% of the expansion volume flow
- One electronic overflow valve, designed for 100% of the expansion volume flow

Thanks to the redundant use of pumps, MAXI ensures full performance and failure reserve. Each pump is designed so that it can provide the full volume flow.

E.g.: **ETCM-M4.7-23.5** with **EMCF-3**

1. EMCF-3, volume controlled make up module
2. Expansion line from/to the system return

TECHNICAL DATA
ETCM MAXI TWIN

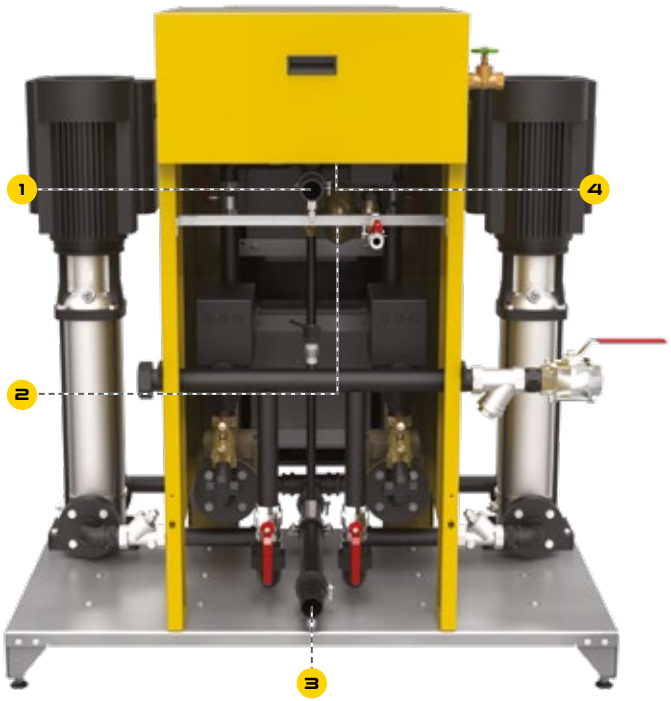
DOUBLE PUMP/DOUBLE VALVE SYSTEM
2X100%/2X100%

- Two frequency-controlled pressure maintenance pumps, each designed for 100% of the expansion volume flow
- Two electronic overflow valves, each designed for 100% of the expansion volume flow

The use of a second overflow valve increases the reliability of the MAXI TWIN.

E.g.: **ETCM-M9.1-14.9-twin**

1. Overflow line to the expansion vessels
2. Low-pressure degassing module EMAE-1
3. Suction line from the expansion vessels
4. EMCF, volume controlled make up module



TOUCHSCREEN WITH USER-FRIENDLY INTERFACE

The 5-inch touchscreen provides a user-friendly interface that makes it easy to operate and monitor the device. With its clear graphics and intuitive touch controls, it enables simple configuration and real-time monitoring of the operating status. This makes operation easy to understand.

STATUS INFORMATION

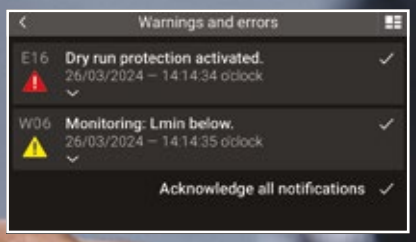
Current status information is visible at first glance even when the screen saver is active.

BASIC DISPLAY

The factory-defined basic display can be individually adapted to the requirements of the system operator. Furthermore, the current status of the accessories (e.g. make-up, water treatment, etc.) is visualized in the basic display.

WARNING AND FAULT MESSAGES

Warnings messages are displayed in detail directly on the device with possible causes and remedies.



SPIROEXPAND TOPCONTROL MODULAR SOLO

Type	A	B	C	D	E	F	Connections ["]							W x H x D [mm]	Weight [kg]
							1*)	2	3	5	6	8	9**)		
ETCM-S1-8.4	8,4	10	70	1x 230V 50 Hz	1,3	13	Rp 1/2	Rp1	Rp1	Rp1	Rp1	-	-	591 x 1149 x 750	65
ETCM-S5.4-15.7	15,7	16		3x 400V 50 Hz	1,7	20	Rp 1/2 bzw. Rp 3/4			R5/4	R5/4	Rp5/4	Rp½	868 x 958 x 1046	187
ETCM-S4.7-23.5	23,5	25			3,2									880 x 1205 x 1046	202
ETCM-S9.1-14.9	14,9	16												869 x 1084 x 1046	199
ETCM-S10.0-23.5	23,5	25			5,7									880 x 1439 x 1046	230

SPIROEXPAND TOPCONTROL MODULAR MAXI/MAXI TWIN/DUO/DUO TWIN

Type	A	B	C	D	E	F	Connections ["]							W x H x D [mm]	Weight [kg]
							1*)	2	3	5	6	8	9**)		
ETCM-M1-8.4 ETCM-D1-8.4	8,4	10	70	1x 230V 50 Hz	2,4	13	Rp 1/2	Rp1	Rp1	Rp1	Rp1	-	-	907 x 1149 x 750	84 84
ETCM-M1-8.4-twin ETCM-D1-8.4-twin								-	-	R6/4	R5/4 R6/4	Rp6/4	Rp1/2	907 x 1149 x 750	87 87
ETCM-M5.4-15.7 ETCM-D10.8-15.7	15,7	16		3x 400V 50 Hz	3,2	20	Rp ½ bzw. Rp ¾				R5/4 R6/4			1274 x 956 x 1106 1274 x 958 x 1134	231 240
ETCM-M5.4-15.7-twin ETCM-D10.8-15.7-twin											R5/4 R6/4			1274 x 956 x 1106 1274 x 958 x 1134	239,4 252
ETCM-M4.7-23.5 ETCM-D9.4-23.5	23,5	25			6,2	32					R5/4 R6/4			1296 x 1205 x 1106 1296 x 1205 x 1134	246 255
ETCM-M4.7-23.5-twin ETCM-D9.4-23.5-twin											R5/4 R6/4			1296 x 1205 x 1106 1296 x 1205 x 1134	254,5 267
ETCM-M9.1-14.9 ETCM-D18.2-14.9	14,9	16				20					R5/4 R6/4			1274 x 1082 x 1106 1274 x 1084 x 1134	243 252
ETCM-M9.1-14.9-twin ETCM-D18.2-14.9-twin											R5/4 R6/4			1274 x 1082 x 1106 1274 x 1084 x 1134	251,5 264
ETCM-M10.0-23.5 ETCM-D20.0-23.5	23,5	25			11,2	32					R5/4 R6/4			1296 x 1439 x 1106 1296 x 1439 x 1134	273 283
ETCM-M10.0-23.5-twin ETCM-D20.0-23.5-twin											R5/4 R6/4			1296 x 1439 x 1106 1296 x 1439 x 1134	282,2 294

LEGEND

- **A** Max. upper working pressure [bar]
- **B** Max. operating pressure device (PN) [bar]
- **C** Max. temperature at connection point [°C]
- **D** Voltage (V/Hz)
- **E** Max. power (kW)
- **F** Fuse protection (A)

- **1** Make-up line
- **2** Expansion overflow line
- **3** Expansion pressure line
- **5** Suction line
- **6** Overflow line
- **8** Expansion line from/to system return
- **9** Degassing connection

***)** Make-up optional, dimension dependent on model (EMCF-1 = ½" EMCF-3 = ¾")

****)** MultiControl pressure step degassing module EMAE-1 optional

Technical changes reserved!

EXPLANATION OF TYPES

ETCM-M4.7-23.5-twin

SYSTEM VERSION
TWIN (only possible with DUO and MAXI systems)
Maximum reliability due to double pump combination and 2 overflow valves (2x100%)

WORKING PRESSURE
Max. possible upper working pressure

VERSION
S System SOLO
D System DUO
M System MAXI

TYPE
ETCM: TopControl Modular

TECHNICAL DATA
EXPANSION VESSELS EP-R AND EP-RS

Additional primary vessels with article numbers EP-R and additional secondary vessels with article number EP-RS for pressureless storage or housing of the expansion volume.

The built-in high-quality membrane ensures consistent separation of the system and atmosphere.

EP-R primary tanks are equipped with two pressure transmitters for tank level measurement, which allows the current tank level to be read off the multicontrol control unit at any time. For larger systems, we recommend the use of two EP-RS (Primary vessels), each with differential pressure measurement for redundancy. The tanks are connected to the control unit on site either rigidly or with flexible hoses and shut-off valves.

1. Lifting lugs from EP0800R(S) and up
2. Pre-assembled drain funnel for optimum connection of the container safety valve drain line and vessel air side
3. Drain valves for maintenance purposes
4. Connection to the control unit and other expansion

EP-R(S)
200-500L

EP-R(S)
800L-1500L

EP-R(S)
2000M - 5000M

EP-R(S)
10000M

SPIROEXPAND EXPANSION VESSELS FOR ETCM

Type	Litre	A	B	Connections ["]				Tilt dimension [mm]	Ø	Heigth [mm]	Clear height above vessel [mm]	Weight [kg]
				1	2	3	4					
EP0200R EP0200RS	200	0,5	70	Rp1	Rp1	Rp½	Geberit DN 50	1600	500	1510	500	66
EP0300R EP0300RS	300							1700	600	1570		80
EP0500R EP0500RS	500							2300	600	2150		95
EP0800R EP0800RS	800							2300	800	2110		210
EP1000R EP1000RS	1000							2300	900	2100		250
EP1500R EP1500RS	1500			Rp5/4	Rp5/4			2500	1050	2220		350
EP2000R EP2000RS	2000					Rp3/4		2600	1200	2265		500
EP2500R EP2500RS	2500							3400	1050	3200	700	550
EP3000R EP3000RS	3000							3500	1200	3275		575
EP4000R EP4000RS	4000			Rp6/4	Rp6/4			3800	1400	3500	1000	675
EP5000R EP5000RS	5000							3900	1500	3550		775
EPX100R EPX100RS	10000			DN50	DN50		Geberit DN 75	5600	1700	5310		1500

LEGEND

A Max. operating pressure tank (PN) [bar]

B Max. temperature at connection point [°C]

1 Transfer line from the control unit

2 Suction line to the control unit

3 Gas-side tank connection (under cover)

4 Container overflow funnel drain connection

Technical changes reserved!

OTHER PRODUCTS FROM THE SPIROEXPAND RANGE

- **Pressure maintenance systems:**
  PicoControl Kompakt (EPCK), MultiControl Kompakt (EMCK), MultiControl Modular (EMCM), MultiControl Cool (EMCC)
- **Automatic make-up units:**
  MultiControl Autofill (EMCA)

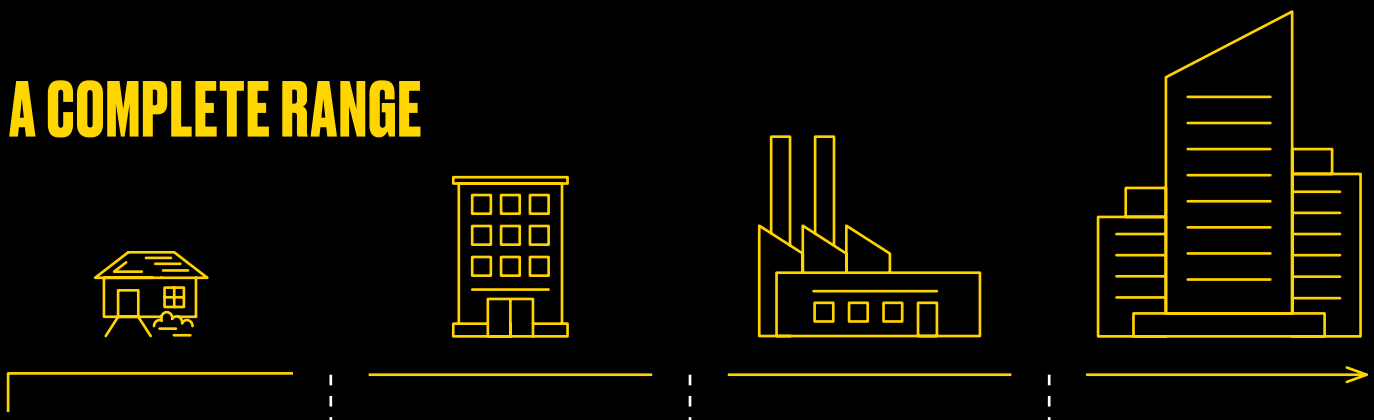
Visit our website!
www.spirotech.co.uk/spiroexpand
www.spirotech.com/spiroexpand

ACCESSORIES

	Description	Art. No.
	**MultiControl post-feed module ½"** For installation in EMCK, EMCM-_1...9, ETCM	**EMCF-1**
	**Back flow preventer IG ½"** Back flow preventer with a controllable low pressure zone for products with automatic refill function	**TMA05**
	**SpiroPure** Filling unit for the complete desalination of the replenishment water	**-**
	**MultiControl Kompakt bypass set** The MultiControl Kompakt bypass set is to use MultiControl units (EMCK, EMCM-_1, ETCM-_1 and EMCC-_1) without automatic pressure step degassing function. Integration in the system is only possible with a connection to the system's return flow. In addition, it is recommended to use the bypass set during maintenance, in order to adjust the pressure without having a connection to the system. Technical details: connection size: R 1", PN10.	**EMCB-ZB**
	**MultiControl low pressure degassing module ½"** For EMCM/ETCM (excluding models S1, D1 and M1)	**EMAE-1**
	**Bus modules** To connect the pressure maintenance unit with an external control unit and enable the exchange of data.	
	MultiControl Busmodule Modbus TCP	**EMCMO-TCP**
	MultiControl Busmodule Modbus RTU RS485	**EMCMO**
	MultiControl Busmodule Profibus-Standard DP-V0	**EMCPB**
	MultiControl Busmodule Profinet IO-Device	**EMCPN**
	**Expansion modules** For SpiroExpand MultiControl, TopControl and PicoControl expansion systems.	
	MultiControl Expansion module analogue remote signaling	**EMCAM**
	MultiControl Expansion module binary remote message	**EMCBM**
	MultiControl Expansion module binary remote messages & remote acknowledgment	**EMCBMR**
	**MultiControl web module** Web-based control and monitoring of pressure levels. Email notifications of system information, malfunctions and warnings.	**EMCWE**
	**Intermediate cooling vessels in various sizes** To regulate the temperature and to protect the system from unacceptable temperature ranges (> 70 °C to 110 °C). Tank sizes from 100 to 3000 litres, depending on requirements. Custom tanks also possible.	**ET0100T1 - ET3000T1**
	**MultiControl Temperature sensor T2** 15-40 mm pipe size	**E51950**
	**MultiControl cable temperature sensor** Cable 10 m, including immersion sleeve G ½", PN10.	**E51951**

THE RIGHT PRODUCT AT A GLANCE

A COMPLETE RANGE



EVN/EVU

PICOCONTROL KOMPAKT

MULTICONTROL KOMPAKT

MULTICONTROL MODULAR

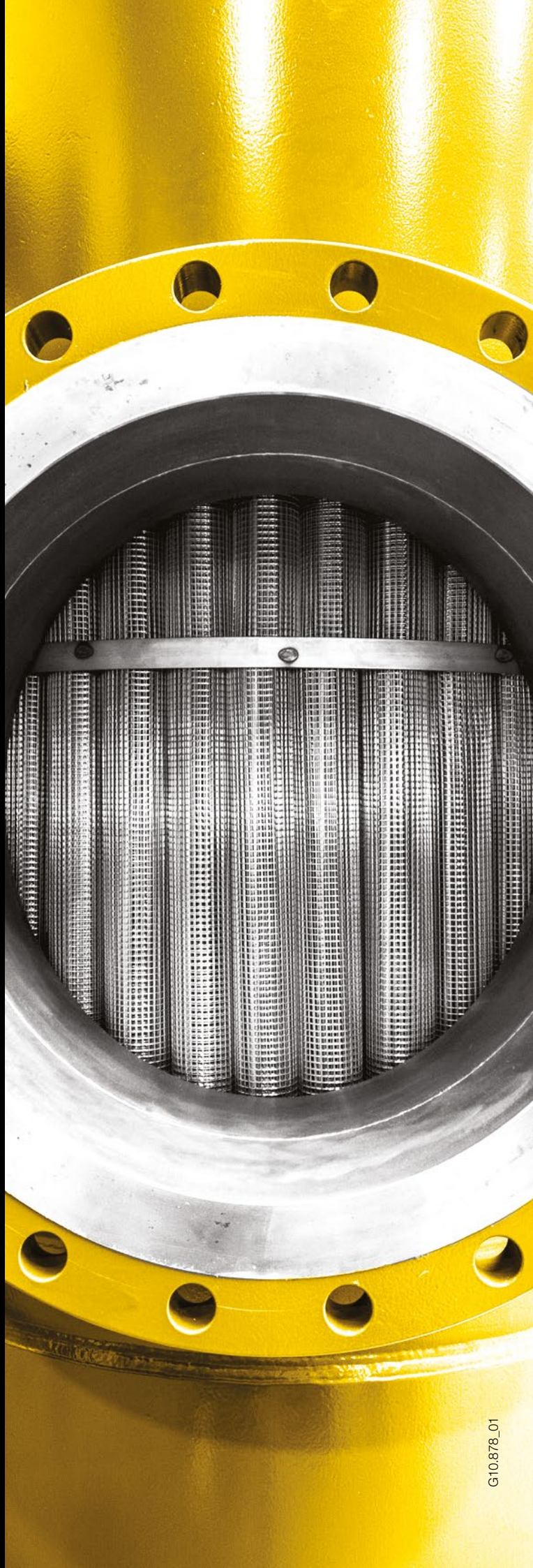
TOPCONTROL MODULAR

MAXIMISING PERFORMANCE FOR YOU

Spirotech is a leading expert in improving the efficiency of heating and cooling systems. Our family business has over 60 years of experience in developing solutions for removing and preventing the accumulation of air and sludge deposits in energy systems. Our products save energy, increase comfort, avoid wear and tear and maximise operating periods. Reliable and customer-oriented products that help you get top performance and protect investment in capital assets. We develop high-value solutions with our partners and suppliers that improve the operation of residential and commercial properties. Our comprehensive network of selected importers in over 70 countries means there is always a Spirotech expert near to you.

Heating and cooling systems are highly complex, particularly when they are run in conjunction with other systems and installations. So locating and analysing faults when they occur is never easy, especially with the clock ticking in the event of a system failure. Spirotech is here to support you with practical advice and solutions, helping you to pinpoint causes and rectify them. Please feel free to contact us.

IF YOU WOULD LIKE TO KNOW MORE ABOUT OUR SOLUTIONS, PLEASE VISIT OUR WEBSITE WWW.SPIROTECH.COM OR WWW.SPIROTECH.CO.UK



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