Reactive power controllers

multicomp F144-3

Housing dimensions (H x W x D in mm)	**144 x 144 x 60**
Data display	**LCD illumination**
Interface	**Modbus**

Single-phase reactive power controller

Highlights

→ Detecting and compensating for the missing compensation power in case of recovery into the energy provider network

→ Rapid compensation with few switching operations

→ Display with two-line LC display, stage status and recovery

→ Manual-0-automatic switch separately programmable for each stage

→ Integrated temperature measurement

→ Interface RS485 for Modbus

An overall view of the **technical details** can be found on pages 22-25.

The microcontroller-controlled **multicomp F144-3** records all network data relevant to the control of small systems via A/D transformer inputs. After calculating the required compensation power to achieve the desired target cos φ, the available capacitor stages are automatically switched on or off with a few switching operations. Programming is menu-assisted and is performed with two buttons. System-specific values are stored in a non-volatile memory.
Each stage can be switched individually via the built-in manual-0-automatic function.

multicomp Technical details

	DEVICE TYPE	multicomp F144-3 [1] F144-MS-1V1C1TI6RO [2] F144-MS-1V1C1TI12RO [3] F144-MS-1V1C1TI6DO [4] F144-MS-1V1C1TI12DO [5] F144-MS-1V1C1TIDO6RO
SWITCHING STAGES	**Relay outputs;** 250 VA per output; 250 V AC: 50/60 Hz	[1] 6 [2] 12 [3] 6 optocoupler outputs [4] 12 optocoupler outputs [5] 6 relay and 6 optocoupler outputs
	Power per stage [kvar] programmable	0 to 999.9 kVar cap.
	Discharge times programmable	0 ... 900 sec.
	Manual-0 automatic switch | Status display	■ | ■
	Learning function for automatic programming by induced current measurement (requirement: transformer fitted into the cable to the compensation unit)	via main current transformer
	Rotary field and phase allocation programmable	■ | ■
SWITCHING PERFORMANCE	**Self-optimizing | Circular switching of equal stages**	■ | –
	Special switching functions for	Multiple series connection
	Switch-off limit for low load operation	programmable
MONITORING FUNCTIONS	**Zero-voltage trigger**	■
	Overcurrent switch-off (only in connection with induced current measurement)	–
	Overvoltage switch-off	fixed
	Temperature measurement and monitoring with fan control and emergency shut-down	■
	Harmonics monitoring with alarm message and emergency shut-down | additional displays	■ | Voltage: KF – U, 3rd – 13th harmonic
	Error messages programmable	■
	Target cos φ monitoring; alarm if unreachable	■
	Switching operation monitoring with display per stage	■
	Controller status display (overcompensation/ undercompensation)	■
SPECIAL OPERATING MODE	**Thyristor fast circuit breaker (optocoupler outputs)**	[3], [4], [5]
	Single-phase compensation	–
DISPLAYS	**Display type**	LCD (two-line)
	Measuring parameters (RMS values | RMS)	U_{PH-N}, U_{PH-PH}, cos φ, $f_{network}$, I_{main}, S_{total}, Q_{total}, P_{total}, $Q_{total\ demand}$, temp.
	Operating time display	–
MEASUREMENT	**Measurement accuracy: Voltage | current | power**	0.5% | 0.5% | 1%
	Update speed	20 ms
	Single-phase measurement (4Q)	Phase-phase or phase-neutral
	3-phase measurement	–

■ Standard version – Not available

multicomp Technical details

			DEVICE TYPE	multicomp F144
				[1] F144-MS-1V1C1TI6RO
				[2] F144-MS-1V1C1TI12RO
				[3] F144-MS-1V1C1TI6DO
				[4] F144-MS-1V1C1TI12DO
				[5] F144-MS-1V1C1TIDO6RO

MEMORY	**Long-term memory**		–
PASSWORD PROTEC-TION	**With digit code**		■
INPUTS	**Voltage path**	Low-voltage; direct measurement	30 V … 690 V … 790 V AC 50/60 Hz
		Medium voltage	1 V … 99.9 kV programmable
	Current path	Main current transformer	1 x 0.15 A … 5 A … 6 A AC
		Induced current transformer	–
	Frequency range		40 to 70 Hz
	2. Target value cos φ2	Automatic switchover in case of energy recovery	– | to cos φ = 1
OUTPUTS	**Additional relay outputs | Error message relay / fan relay**		Stage relay/fan relay | Error message relay
INTERFACES	**Serial interface with KBR eBus protocol | Modbus**		– | Modbus RTU
POWER SUPPLY	**Operating voltage**		85 – 265 V AC / DC
	Frequency		50/60 Hz
	Power consumption		max. 15 VA, 9 W
DIMENSIONS	**Switchboard installation**	**Housing (H x W x D)** **Switchboard cutout (H x W)**	144 x 144 x 60 mm 138 x 138 mm
	DIN rail installation	**Housing (H x W x D)**	

*4-quadrant operation: As energy costs are becoming increasingly important economically, more and more distributed power generation plants will be set up. During low-load periods, this can result in energy being fed back into the supply network. Therefore, all possible states concerning consumption and the provision of active and reactive power must be taken into account for the control system. For example, if asynchronous generators are used to generate energy, active power may be fed into the supply network and reactive power taken from the supply network.

□ Optionally available   – Not available