



Type series FA.3../ FS.3..

load resistors in steel-grid design,
self-ventilated, 5 – 60 kW, for 3 x 230/400VFSMS 3342303, in
special designIP
20IP
23FA...Steel-grid resistor unit, degree of protection IP 20, without weather-proof roof
FS...Steel-grid resistor unit, degree of protection IP 23, with weather-proof roof

In completely closed zinc sheet enclosure with stationary safety guard at the top and bottom. Ceramic insulated flat or bolt terminals of 35 A up to 87 A in variable combinations for star and delta wiring are possible.

Technologies

- continuous dissipation from 5 up to 60 kW
- switchable in parallel for higher continuous dissipation
- for floor-level mounting or for mobile applications optional with handgrip and steering rolls
- for outdoor location (FS..)

The necessary terminals are mounted on a terminal strip in the lower part of the device and are accessible after demounting a cover.

The resistance value increases approx. +15% between cold and operating temperature. The given power values will be achieved at operating temperature. The load resistor can be chosen with star or delta wiring. On request we can build it for different voltages up to 3 x 690 V AC as well.

Application

An important application is the use as economic load resistor. Protection degree IP 20 is sufficient for installing in factory rooms, IP 23 is necessary for outdoor location.

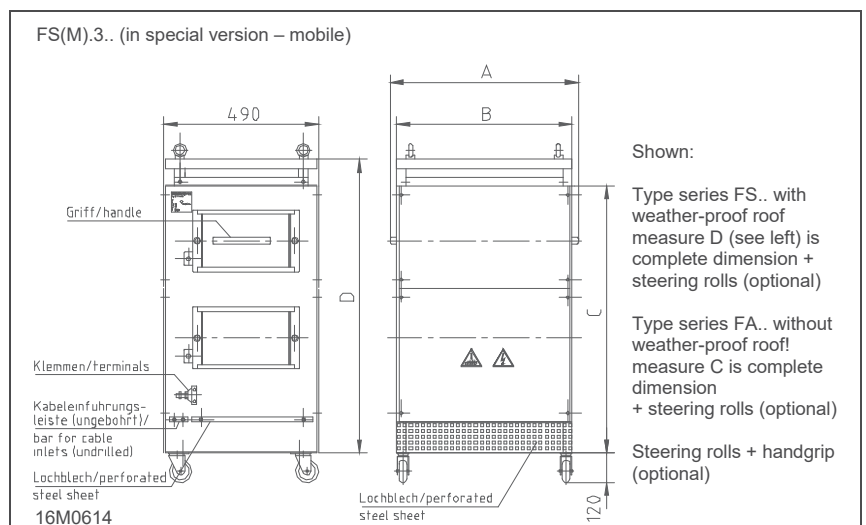
Special design

- different power steps or combinations with higher power possible
- connection parts and enclosure out of stainless steel 1.4301
- mobile, for test area
- consoles for wall installation
- CEE-plug with cable and holder

Electrical and mechanical data of load resistors

Type FAM.3.. / FSM.3.. dimensions in version „M“	max. typical power in kW at 40°C and 100%ED	resistor value in Ohm	current in A	dimension in mm				weight in kg
				A	B	C	D only IP23	
F.. 31218..	5,0	3 x 31,8	3 x 7,2	640	595	460	520	33
F.. 31215..	7,5	3 x 21,4	3 x 10,9	640	595	460	520	32
F.. 31221..	10,0	3 x 16,0	3 x 14,5	640	595	460	520	35
F.. 31224..	12,5	3 x 12,8	3 x 18	640	595	460	520	36
F.. 31330..	15,0	3 x 10,6	3 x 22	840	795	460	520	49
F.. 31442..	20,0	3 x 8,0	3 x 28,9	1040	995	460	520	60
F.. 32351..	25,0	3 x 6,4	3 x 36	840	795	710	770	78
F.. 32360..	30,0	3 x 5,3	3 x 43,3	840	795	710	770	82
F.. 32472..	35,0	3 x 4,6	3 x 51	1040	995	710	770	93
F.. 32475..	37,5	3 x 4,3	3 x 54	1040	995	710	770	95
F.. 32481..	40,0	3 x 4,0	3 x 58	1040	995	710	770	98
F.. 33399..	45,0	3 x 3,5	3 x 65	840	795	960	1100	111
F.. 33414..	50,0	3 x 3,2	3 x 72	1040	995	960	1100	124
F.. 33423..	55,0	3 x 2,9	3 x 80	1040	995	960	1100	134
F.. 33432..	60,0	3 x 2,7	3 x 87	1040	995	960	1100	138

This chart shows a choice of preferred power types. Other continuous dissipation, voltage and ohmic values are possible.



Example of dimensioning and selection of a specific unit:
Type in star wiring FA 3121803 – 3 x 31.8, for 5 kW, 3 x 7,2 A



Type series FAV 3../ FSV 3..

load resistors in steel-grid design,
forced ventilation, 70 – 500 kW, for 3 x 230/400 V



FSV 3889212



FAV... Steel-grid fixed resistor unit, degree of protection IP 20,
without weatherproof roof, air outlet on top,

FSV... Steel-grid fixed resistor unit, degree of protection IP 23
with weatherproof roof, for outdoor location, air outlet at the side via air
deflectors in the upper area.

In completely closed zinc sheet enclosure with barrier grid at the bottom and
powered ventilation by an integrated ventilator. With air flow monitoring by wind
indicator relay. Ceramic insulated flat or bolt terminals of 35A up to 400A in
variable combinations available.

Technologies

- model for high power ratings with best price-performance ratio
- power ventilated by integrated 230/400 V; 50 Hz axial flow fan
- for floor-level location
- continuous dissipation up to 500 kW
- paralleling of 2 or more units for even higher dissipation
- for outdoor location (FSV)

The necessary terminals are mounted on a terminal strip in the lower part of the device and are accessible after demounting a cover.

By the use of steel-grid elements with a typical power of 1100 W up to 1720 W per steel-grid with forced ventilation we cover a power range of up to 500 kW per unit. The resistance value increases approx. +15% between cold and operating temperature. The given power values will be achieved at operating temperature. You can achieve higher dissipations by installing several units in parallel.

Application

An important application is the use as load resistor for the testing of emergency standby power system. Protection degree IP 20 is sufficient for installing in factory rooms, IP 23 is necessary for outdoor location.

Special design

- with 2 temperature switches wired on terminals
- special voltages of fan
- please ask for devices with higher power ratings or other construction forms
- mobile, for test area by rollers

Electrical and mechanical data

Type FAV .. FSV ..	max. typical power in kW at 40°C and 100% DCF	max. number of steel-grids corresp. to given size of device	dimension in mm						max. weight in kg
			A	B	C	D	E	F	
F.V 38568..	75	68	1200	1240	800	700	795	770	142
F.V 38602..	110	102	1500	1540	800	700	795	770	185
F.V 38776..	185	176	1400	1450	955	850	995	970	265
F.V 38864..	250	264	1700	1750	955	850	995	970	370
F.V 38976..	300	176	1820	1875	1190	1000	1004	980	350
F.V 39052..	500	352	2230	2285	1190	1000	1004	980	480

This chart shows the size and the maximum power which can be built-in. You have much possibilities of combinations, depending on your needed power rating and your needed number of steps (examples see below).

Standard load resistors for 3 x 230/400 V; 50 Hz

Type series FAV..	power - steps in kW	f FAV..
FAV 3856612	37,5/37,5	
FAV 3856609	75	
FAV 3869612	50/50	
FAV 3869009	100	
FAV 3876818	25/50/50/50	
FAV 3875609	175	
FAV 3884021	5 x 50	
FAV 3882209	250	
FAV 3896812	2 x 150	
FAV 3908809	400	
FAV 3903612	2 x 250	

16 M 0182 type 385-388; 16M-0786-00-001 type 389-390

Type series FSV..	power - steps in kW	f FSV..
FSV 3856609	75	
FSV 3869618	10/20/20/50	
FSV 3869009	100	
FSV 3875612	75/100	
FSV 3875609	175	
FSV 3882212	100/150	
FSV 3882209	250	
FSV 3896809	300	
FSV 3906409	350	
FSV 3908812	2 x 200	
FSV 3903609	500	

16 M 0088 type 385-388; 16M-0786-00-002 type 389-390



Type series FAVR.3../FSVR.3..

load resistors in steel-grid design,
forced ventilation, 70 – 500 kW, with attached switch cabinet



FSVR with switch cabinet



- FAV... Steel-grid fixed resistor unit, degree of protection IP 20, without weatherproof roof, air outlet on top,
- FSV... Steel-grid fixed resistor unit, degree of protection IP 23 with weatherproof roof, for outdoor location, air outlet at the side via air deflectors in the upper area.

In completely closed zinc sheet enclosure with barrier grid at the bottom and powered ventilation by an integrated ventilator. With air flow monitoring by wind indicator relay. With attached switched cabinet. Controlling the load by cam switches, contactors or coupling switched relays with customer SPS.

Technologies

- model for high power ratings with best price-performance ratio
- power ventilated by integrated 3x400 V; 50 Hz axial flow fan
- for floor-level location
- paralleling of 2 or more units for even higher dissipation
- with integrated power contactors and fuses in the attached switch cabinet to control the load steps

There are 3 possibilities to control the contactors of the individual load steps. With internal cam switches or by wiring the coils of contactors to terminals, or coupling relays switched by customer SPS. The power connections in the switch cabinet are with Rittal system copper bars and terminals. By the use of steel-grid elements with typical power up to 1720 W per steel-grid with forced ventilation we cover a power range of up to 500 kW per unit. The resistance value increases approx. +15% between cold and operating temperature. The given power values will be achieved at operating temperature. Higher power ratings can be achieved by in parallel connection of several units.

Application

An important application is the use as load for the testing of emergency standby power systems or for use in test areas.

Special design

- with wirewound lamina type fixed resistors and the resistance value will change from cold to warm condition +/-1%
- special voltages also DC
- enclosure and parts out of stainless steel, switch cabinet varnished
- mobile, for test area by rollers

Electrical and mechanical data

Type FAV .. FSV ..	max. typical power in kW at 40°C and 100% DCF	max. number of steel-grids corresp. to given size of device	dimension in mm					max. weight in kg
			A	B	C	E	G	
F.VR38568	75	68	1200	1240	800	795	1100	170
F.VR38602	110	102	1500	1540	800	795	1100	220
F.VR38776	185	176	1400	1450	955	995	1350	310
F.VR38864	250	264	1700	1750	955	995	1350	410
F.VR38968	300	168	1820	1875	1190	1004	1360	470
F.VR39052	500	352	2230	2285	1190	1004	1360	600

This chart shows the size and the maximum power which can built-in. You have very much possibilities for combinations, depending from your needed power and your needed steps (e.g. below).

Example for load resistors 3 x 230/400 V, 50 Hz.

Type FAVR.. FSVR..	power steps in kW	example: IP23: FSVR(M)..
F.VR3856608	75	
F.VR3856608	2x37,5	
F.VR3869008	100	
F.VR3869608	50/50	
F.VR3869608	10/20/20/5	
F.VR3875608	175	
F.VR3875608	75/100	
F.VR3876808	50/50/50/2	
F.VR3882208	250	
F.VR3882208	150/100	
F.VR3884008	5 x 50	
F.VR3896808	300	
F.VR3896808	2 x 150	
F.VR3896808	4 x 75	
F.VR3901608	3 x 100	
F.VR3908808	4 x 100	
F.VR3903608	2 x 250	
F.VR3903608	4 x 125	
F.VR3903608	8 x 62,5	

Remark: Not all power steps can be technical build. We like to send you for your individual application an offer. Please send us the rated voltage and the preferred steps of the load.