

# Type 2 surge protection device - VAL-MS 230/3+1 FM - 2838199

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Surge voltage arrester consisting of base element with remote indicator contact and ground connectors, for mounting on NS 35/7.5, nominal voltage: 230 V AC, 3 + 1 circuit

## Product Features

- With or without floating remote indication contact
- Multi-channel type 2 arresters
- Optical, mechanical status indication for the individual arresters
- Type 2 consistent plug-in surge arresters
- Mechanical coding of all slots
- Disconnect device on each individual plug



## Key commercial data

package_quantity	1
GTIN	4017918172800

## Technical data

### Dimensions

Height	99 mm
Width	71 mm
Depth	58 mm
Horizontal pitch	4 Div.

### Ambient conditions

Degree of protection	IP20 (only when all terminal points are used)
Ambient temperature (operation)	-40 °C ... 80 °C
Ambient temperature (storage/transport)	-40 °C ... 80 °C
Altitude	≤ 2000 m (amsl (above mean sea level))
Permissible humidity (operation)	5 % ... 95 %
Shock (operation)	25 g
Vibration (operation)	5 g

### General

Standards/specifications	IEC 61643-11 2011
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## Technical data

### General

Standards/specifications	EN 61643-11 2012
IEC test classification	II
IEC test classification	T2
EN type	T2
Number of ports	One
SPD design	Combination type
Mode of protection	L-N
Mode of protection	L-PE
Mode of protection	N-PE
Mounting type	DIN rail: 35 mm
Color	black
Housing material	PA 6.6
Housing material	PBT
Pollution degree	2
Inflammability class according to UL 94	V-0
Type	DIN rail module, two-section, divisible
Number of positions	4
Surge protection fault message	Optical, remote indicator contact

### Protective circuit

Nominal voltage $U_N$	240/415 V AC (TN-S)
Nominal voltage $U_N$	240/415 V AC (TT)
Nominal frequency $f_N$	50 Hz (60 Hz)
Maximum continuous operating voltage $U_C$ (L-N)	275 V AC
Maximum continuous voltage $U_C$ (N-PE)	260 V AC
Rated load current $I_L$	80 A
Residual current $I_{PE}$	$\leq 5 \mu\text{A}$
Standby power consumption $P_C$	$\leq 360 \text{ mVA}$
Nominal discharge current $I_n$ (8/20) $\mu\text{s}$ (L-N)	20 kA
Nominal discharge current $I_n$ (8/20) $\mu\text{s}$ (L-PE)	20 kA
Nominal discharge current $I_n$ (8/20) $\mu\text{s}$ (N-PE)	20 kA
Maximum discharge current $I_{max}$ (8/20) $\mu\text{s}$ (L-N)	40 kA
Maximum discharge current $I_{max}$ (8/20) $\mu\text{s}$ (L-PE)	40 kA
Maximum discharge current $I_{max}$ (8/20) $\mu\text{s}$ (N-PE)	40 kA
Follow current interrupt rating $I_{fi}$ (N-PE)	100 A (260 V)
Short-circuit current rating $I_{SCCR}$	25 kA
Voltage protection level $U_p$ (L-N)	$\leq 1.35 \text{ kV}$
Voltage protection level $U_p$ (L-PE)	$\leq 1.6 \text{ kV}$
Voltage protection level $U_p$ (N-PE)	$\leq 1.5 \text{ kV}$
Residual voltage $U_{res}$ (L-N)	$\leq 1.35 \text{ kV}$ (at $I_n$ )
Residual voltage $U_{res}$ (L-N)	$\leq 1.1 \text{ kV}$ (at 10 kA)

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### Protective circuit

Residual voltage $U_{res}$ (L-N)	$\leq 1$ kV (at 5 kA)
Residual voltage $U_{res}$ (L-N)	$\leq 0.9$ kV (at 3 kA)
Residual voltage $U_{res}$ (L-PE)	$\leq 1.6$ kV (at $I_n$ )
Residual voltage $U_{res}$ (L-PE)	$\leq 1.2$ kV (at 10 kA)
Residual voltage $U_{res}$ (L-PE)	$\leq 1$ kV (at 5 kA)
Residual voltage $U_{res}$ (L-PE)	$\leq 0.9$ kV (at 3 kA)
Residual voltage $U_{res}$ (N-PE)	$\leq 0.4$ kV (at $I_n$ )
Residual voltage $U_{res}$ (N-PE)	$\leq 0.25$ kV (at 10 kA)
Residual voltage $U_{res}$ (N-PE)	$\leq 0.15$ kV (at 5 kA)
Residual voltage $U_{res}$ (N-PE)	$\leq 0.1$ kV (at 3 kA)
Front of wave sparkover voltage at 6 kV (1.2/50) $\mu$ s (N-PE)	$\leq 1.5$ kV
TOV behavior at $U_T$ (L-N)	335 V AC (5 s / withstand mode)
TOV behavior at $U_T$ (L-N)	440 V AC (120 min / safe failure mode)
TOV behavior at $U_T$ (N-PE)	1200 V AC (200 ms / withstand mode)
Response time $t_A$ (L-N)	$\leq 25$ ns
Response time $t_A$ (N-PE)	$\leq 100$ ns
Max. required backup fuse with branch wiring	125 A AC (gG)
Max. required backup fuse with V-type through wiring	80 A AC (gG)

### Indicator/remote signaling

Connection name	Remote fault indicator contact
Switching function	PDT contact
Operating voltage	5 V AC ... 250 V AC
Operating voltage	125 V AC (UL)
Operating voltage	30 V DC
Operating current	5 mA AC ... 0.75 A AC
Operating current	1 A AC (UL)
Operating current	1 A DC
Connection method	Screw connection
Screw thread	M2
Tightening torque	0.25 Nm
Tightening torque	4 lb in (UL)
Stripping length	7 mm
Conductor cross section stranded min.	0.14 mm <sup>2</sup>
Conductor cross section stranded max.	1.5 mm <sup>2</sup>
Conductor cross section solid min.	0.14 mm <sup>2</sup>
Conductor cross section solid max.	1.5 mm <sup>2</sup>
AWG conductor cross section	28 ... 16
AWG conductor cross section	30 ... 14 (UL)

### Connection data

Connection method	Screw connection
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### Technical data

#### Connection data

Conductor cross section stranded min.	1.5 mm <sup>2</sup>
Conductor cross section stranded max.	25 mm <sup>2</sup>
Conductor cross section solid min.	1.5 mm <sup>2</sup>
Conductor cross section solid max.	35 mm <sup>2</sup>
AWG conductor cross section	15 ... 2
AWG conductor cross section	10 ... 2 (UL)
Screw thread	M5
Tightening torque	4.5 Nm
Tightening torque	30 lb in (UL)
Stripping length	16 mm

#### NEMA/UL protective circuit

UL class	Type 4 SPD for Type 2 applications
Maximum continuous operating voltage MCOV (L-N)	275 V AC
Maximum continuous operating voltage MCOV (N-G)	260 V AC
Nominal voltage U <sub>N</sub>	230/400 V AC
Mode of protection	L-L
Mode of protection	L-N
Mode of protection	L-G
Mode of protection	N-G
Power distribution system	3Y
Nominal frequency	50/60 Hz
Voltage protection rating VPR (L-L)	1.8 kV
Voltage protection rating VPR (L-N)	1 kV
Voltage protection rating VPR (L-G)	1.5 kV
Voltage protection rating VPR (N-G)	0.9 kV
Nominal discharge current I <sub>n</sub> (L-L)	20 kA
Nominal discharge current I <sub>n</sub> (L-N)	20 kA
Nominal discharge current I <sub>n</sub> (L-G)	20 kA
Nominal discharge current I <sub>n</sub> (N-G)	20 kA

### classifications

#### eCl@ss

eCl@ss 4.0	27140201
eCl@ss 4.1	27130801
eCl@ss 5.0	27130801
eCl@ss 5.1	27130801
eCl@ss 6.0	27130805
eCl@ss 7.0	27130805

#### ETIM

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## classifications

### ETIM

ETIM 2.0	EC000941
ETIM 3.0	EC000941
ETIM 4.0	EC000941
ETIM 5.0	EC000941

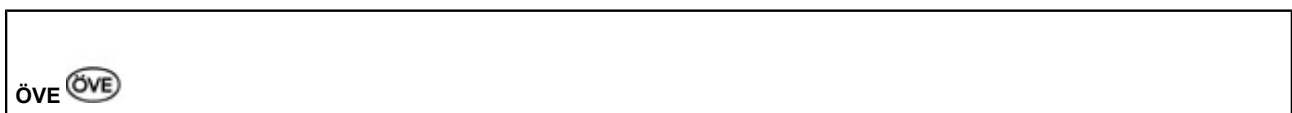
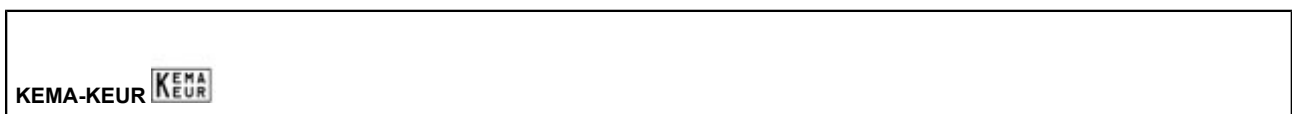
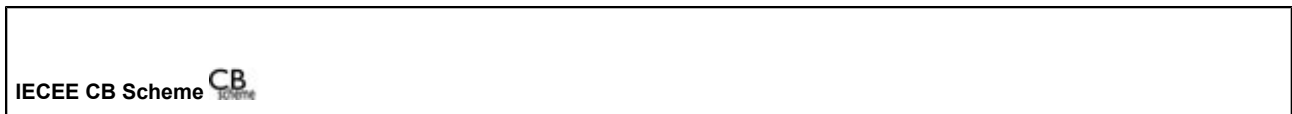
### UNSPSC

UNSPSC 6.01	30212010
UNSPSC 7.0901	39121610
UNSPSC 11	39121610
UNSPSC 12.01	39121610
UNSPSC 13.2	39121620

## approvals

IECEE CB Scheme / UL Recognized / KEMA-KEUR / ÖVE / cUL Recognized / GOST / GL / CCA / KEMA-KEUR / CSA / cULus Recognized /

### Approval details



# Type 2 surge protection device - VAL-MS 230/3+1 FM - 2838199

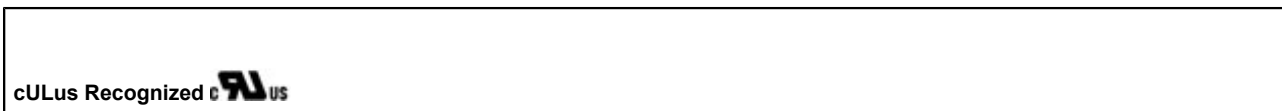
approvals

GL

CCA



CSA



accessories

**Labeled device marker**

ZBN 18,LGS:ERDE - 2749589



ZBN 18,LGS:L1-N,ERDE - 2749576



**Device marking**

ZBN 18:UNBEDRUCKT - 2809128



**Marker pen**

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### accessories

B-STIFT - 1051993



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### Feed-through terminal block

DK-BIC-35 - 2749880



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### Bridge

MPB 18/4- 8 - 2809283



MPB 18/4-12 - 2809296



MPB F200X16/ 1GS - 2818339



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### accessories

MPB F400X16/ 1GS - 2818342



MPB F600X16/ 1GS - 2818355



MPB F600X16/ 1GS - 2818355



MPB F400X16/ 1GS - 2818342



MPB F200X16/ 1GS - 2818339



MPB 18/4-12 - 2809296





## Type 2 surge protection device - VAL-MS 230/3+1 FM - 2838199 accessories

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MPB 18/4- 8 - 2809283



MPB 18/1-57 - 2809238



MPB 18/1-12 - 2748593



MPB 18/1- 9 - 2748580



MPB 18/1- 8 - 2748577



## Type 2 surge protection device - VAL-MS 230/3+1 FM - 2838199

### accessories

MPB 18/1- 6 - 2748564



MPB 18/1- 4 - 2809225



MPB 18/1- 3 - 2809212



MPB 18/1- 2 - 2809209



### accessories

ZBN 18:SO/CMS - 0800763



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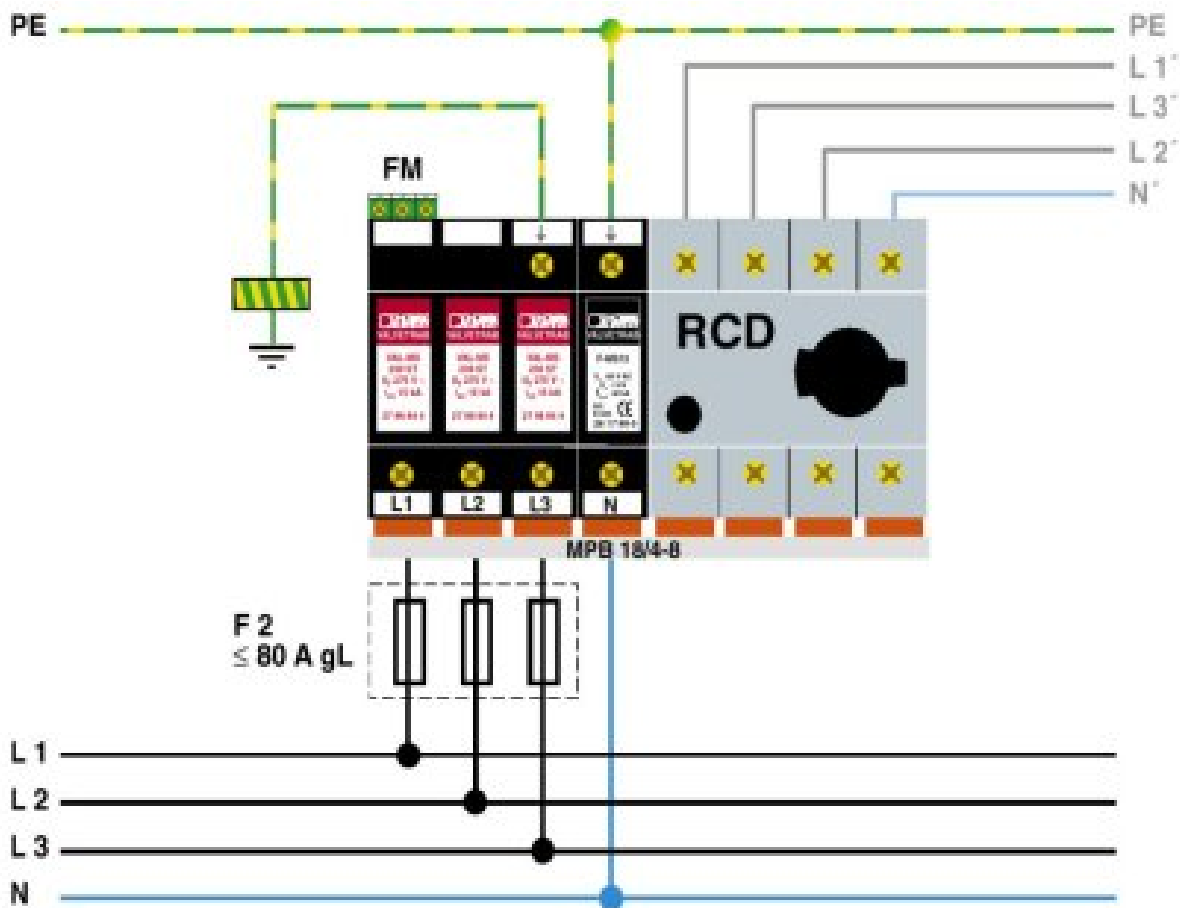
accessories

ZBN 18,LGS:L1-N,ERDE - 2830469



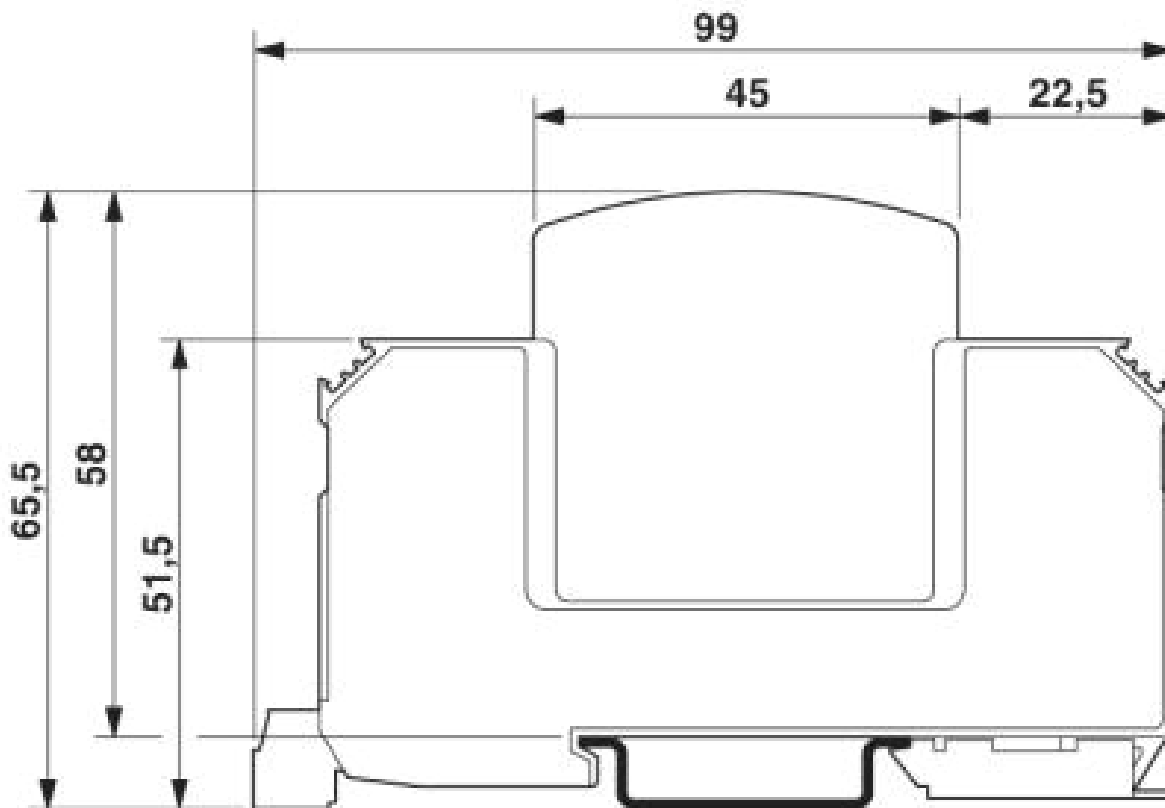
## Drawings

Application drawing



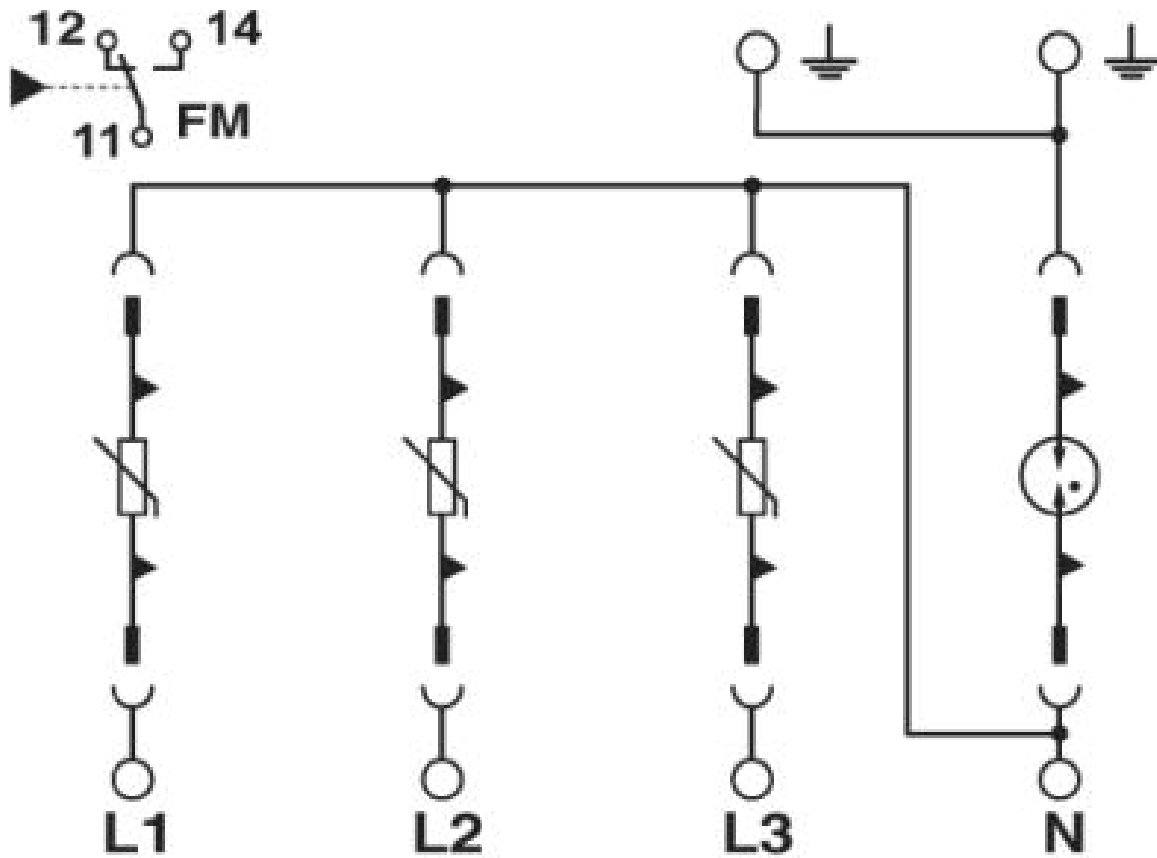
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Dimensioned drawing



# Type 2 surge protection device - VAL-MS 230/3+1 FM - 2838199

Circuit diagram



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