Leutron

Lightning-

and

Surge Protection

for

Power Net Systems (SPD)

with EnerPro Combi-Devices

Novelties 2003 Combi Surge Protectors

Leutron GmbH, 70771 Leinfelden-Echterdingen, Deutschland

Leutron Lightning and Surge Protection for Power Net Systems (SPD)

EnererPro Combi-Surge Protectors for TN and TT- Power Net Systems

Secondary T2 , pluggable Secondary T2 and Fine-Protection T3

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Surge Protection

EnerPro C TN

EP C TN 275 (/FM)
EP C TNC 275 (/FM)
EP C TNS 275 (/FM)

Combined multi-pole Surge Protective Device (SPD) protection category T2 (C) meeting the requirements of class II

used as Surge Protector in multi-pole TN - Power Net Systems

! Novelty !
preliminary
data sheet

EP C TN 275

EP C TNC 275

EP C TNS 275

- **Category T2 Surge Protective Device (SPD)**
- **based on hermetically encapsulated gas filled Spark-Gaps**
- **Leakage-current-free to protect foundation grounding lines**
- **Can be co-ordinated with upstream installed T1 lightning current SPD**
- **Optical front monitoring by LED**
- **Function control with potential-free (NC) remote signal contact (optional)**

Product description:

Leutron leakage current free SPD's of series EP C… with surge voltage valve are single block SPD's, for different TN - Power Net Systems, usually installed in sub–distribution panels.

EP C TN 275(/FM) is a **two-pole** surge protector for TN - Power Net Systems.

EP C TNC 275(/FM) is a **three-pole** surge protector for TNC - Power Net Systems.

EP C TNS 275(/FM) is a **four-pole** surge protector for TNS - Power Net Systems.

These SPD's are used as surge protectors for electronic equipments and systems. They are fitted with a thermal protection NC contact, which respond if the varistor exceed a certain level of temperature due to thermal overload.
These thermal protection contact works in such a way, that they only cut off the SPD from the power supply whilst the electrical equipment will not suffer any functioning failure; in that case the green signal LED will go out.
Before this happens, the remote contact (optional) inside the housing will open and signalise that the SPD has to be replaced. The wire connection to the built in remote contact (/FM) is made by a pluggable screw terminal block.

The protective circuit is installed in an easy-to-handle compact housing with snap-on clips for 35 mm DIN rail mounting with multifunctional screw terminals for wire and bus-bar connections.

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Technical Data:

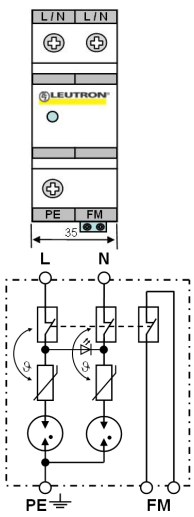
Type	Art. Nr.:	Remarks
EP C TN 275 EP C TN /FM	381 247 381 248	resp. one phase and neutral (L1 / N – PE) with remote signal contact
EP C TNC 275 EP C TNC 275 /FM	381 176 381 177	for three phases (L1 / L2 / L3 – PEN) with remote signal contact
EP C TNS 275 EP C TNS 275 /FM	381 178 381 179	for three phases and neutral (L1 / L2 / L3 / N – PE) with remote signal contact

Protection category acc. to E DIN VDE 0675-6 11/98-A1 and acc. to EN 61643-11 resp. IEC 61643-1			**T2 (C) class II**
Nominal voltage 50/60 Hz	U_N	[V]	230 / 400
Rated voltage (max. continuous operating voltage) 50/60 Hz	U_C	[V]	275
Max. permissible line- or backup fuse	I	[A]	100 A gL/gG
Voltage protection level at 5kA (8/20 µs)	U_P	[kV]	≤ 1.0
Voltage protection level at i_{sn} (8/20 µs)	U_P	[kV]	≤ 1.4
Response time	t_A	[ns]	< 25
Nominal discharge current (8/20 µs)	i_{sn} (I_N)	[kA]	10x 15
Max. discharge current (8/20 µs)	I_{max}	[kA	1x 40
Service life test current (10/700 µs)	i_L	[A]	500x 100 100x 500 1x 1000
Operating temperature range	t	[°C]	-40 … +85
Max. cross-sectional area		[mm²]	50 stranded / 35 flexible
Recommended cross-sectional area		[mm²]	25
Recommended connection torque		[Nm]	4,5
Max. cross-sectional area for remote signal contact terminal		[mm²]	1,5
Max. switching capacity of remote signal contact (FM)		[V/A]	AC 250V 0.5A
Material of housing / colour	Polycarbonate (halogen free) UL94-V0 / yellow		
Ambient protection category (IEC/EN 60529)	IP 20		
Mounting on	DIN rail 35mm (DIN / EN 50022)		

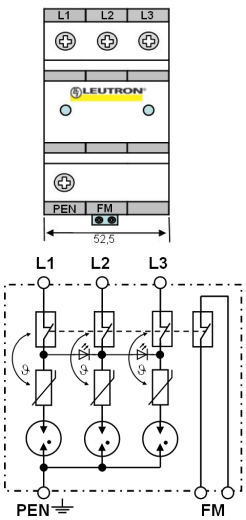
Dimension in mm / Diagram

Dimension acc. DIN 43880

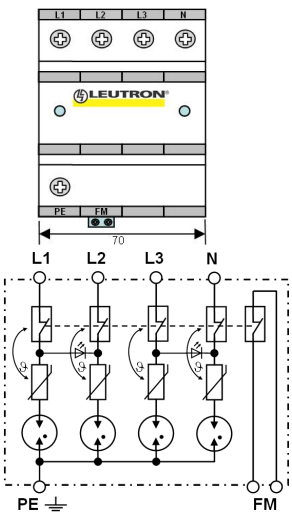
EP C (2 modules)

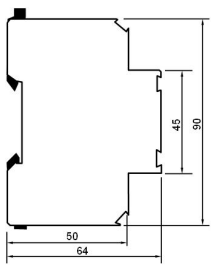


EP C TNC (3 modules)



EP C TNS (4 modules)





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Subject to technical modifications and delivery possibilities

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Surge Protection

EnerPro C TT

EP C TT1+1 275 (/FM)
EP C TT 275 (/FM)

Combined multi-pole Surge Protective Device (SPD)
meeting the requirements of protection category T2 (C), class II

Surge Protection in multi-pole TN-Power Net Systems

! Novelty !
preliminary
data sheet

EP C TT1+1 275

EP C TT 275

- **Category T2 Surge Protective Device (SPD)**
- **Based on hermetically sealed gas filled spark-gap technology**
- **Leakage-current-free to protect foundation grounding lines**
- **Can be co-ordinated with upstream installed T1 lightning current SPD**
- **Optical front monitoring by LED**
- **Function control with potential-free remote signal NC-contact (optional)**

Product description:

Leutron leakage current free SPD's of series EP C… are single block SPD's for different TN-Power Net Systems, usually installed in sub-distribution panels.

EP C TT1+1 275(/FM) is a **two-pole SPD** for single phase TT-Power Net Systems with one phase and neutral conductor, connected in the so called 1+1 circuit.

EP C TT 275(/FM) is a **four-pole SPD** for TT-Power Net Systems, connected in the so called 3+1 circuit.

These SPD's are used as surge protectors for electronic equipments and systems. They are fitted with a thermal protection NC-contact, which respond if the varistor exceed a certain level of temperature due to overload. These thermal protection contact works in such a way, that it only cut off the SPD from the power supply whilst the electrical equipment will not suffer any functioning failure; in that case the green signal LED will go out.

Before this happens, the remote contact (optional) inside the housing will open and signalise that the SPD has to be replaced. The wire connection of the optional built in remote NC-contact (/FM) is made by a pluggable screw terminal block.

The protective circuit is installed in an easy-to-handle compact housing with snap-on clips for 35 mm DIN rail mounting with multifunctional screw terminals for wire and bus-bar connections.

Technical Data:

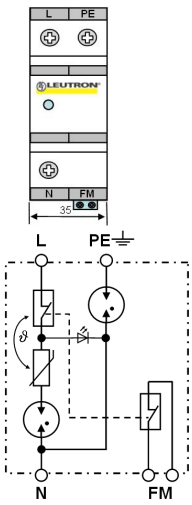
Type	Art. Nr.:	Remarks
EP C TT1+1 275	381 182	for one phase and neutral (L1, N-PE)
EP C TT1+1 275 /FM	381 183	with remote signal contact
EP C TT 275	381 180	for three phases (L1, L2, L3), with N-PE sum current Spark Gap
EP C TT 275 /FM	381 181	with remote signal contact

Protection category acc. to E DIN VDE 0675-6 11/98-A1 and acc. to EN 61643-11 resp. IEC 61643-1			**T2 (C) class II**	
Nominal power supply voltage 50/60 Hz	U_N	[V]	230 / 400	
Rated voltage (max. continuous operating voltage) 50/60 Hz	U_C	[V]	275	
Max. permissible line or backup fuse	I	[A]	100 A gL/gG	
			L1, L2, L3 - N	**PE - N**
Voltage protection level at 5kA (8/20 µs)	U_P	[kV]	≤ 1.0	≤ 1,3
Voltage protection level i_{sn} (8/20 µs)	U_P	[kV]	≤ 1.4	≤ 1,5
Response time	t_A	[ns]	< 25	
Nominal discharge current (8/20 µs)	i_{sn}	[kA]	15	20
Max. discharge current	I_{max}	[kA	40 (8/20 µs)	I_{imp}: 12 (10/350 µs) Q: 6 As W/R: 36 kJ/Ω
Service life test current (10/700 µs)	i_L	[A]	500x 100 100x 500 1x 1000	
Operation temperature range	T	[°C]	-40 … +80	
Max. cross-sectional area		[mm²]	35 stranded / 25 flexible	
Recommended cross sectional area		[mm²]	25	
Recommended connection torque		[Nm]	4,5	
Max. cross-sectional area for remote signal contact terminal		[mm²]	max. 1,5	
Max. switching capacity of remote signal contact (FM)		[V/A]	AC 250V / 0.5A	
Material of housing / colour			Polycarbonate (halogen free) UL94-V0 / yellow	
Ambient protection category (IEC/EN 60529)			IP 20	
Mounting on			35mm DIN rail (DIN/EN 50022)	

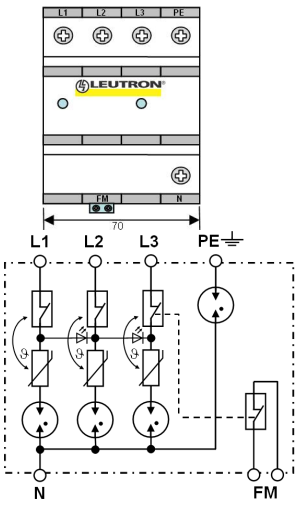
Dimension in mm / Diagram

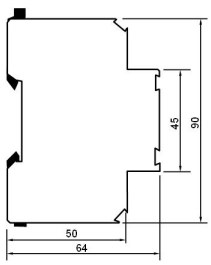
Dimension acc. DIN 43880

EP C TT 1+1 modules



EP C TT 3+1 modules





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Lightning and Surge Protection

EnerPro C S pluggable

EP C S TN 275 (/FM)
EP C S TNC 275 (/FM)
EP C S TNS 275 (/FM)

Pluggable combined multi-pole Surge Protective Device meeting the requirements of protection category T2 (C), class II

Surge Protection in multi-pole TN-Power Net Systems

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data sheet

EP C S TN 275 **EP C S TNC 275** **EP C S TNS 275**

- **Category T2 Surge Protective Device (SPD)**
- **Multi-pole complete device with socket and plugged-in protection modules**
- **Can be co-ordinated with an upstream installed T1 lightning current SPD**
- **High discharge capacity thanks to high-performance varistors (MOV)**
- **Failure indicator displayed by change of colour**
- **Potential-free SPDT remote contact (optional) for function control**

Product description:

Leutron surge protectors series EP C S … are single block SPD's with pluggable modules, usually installed in the sub-distribution panel.

EP C S TN 275(/FM) is a **two-pole** surge protector for TN - Power Net System

EP C S TNC 275(/FM) is a **three-pole** surge protector for TNC - Power Net System

EP C S TNS 275(/FM) is a **four-pole** surge protector for the TNS - Power Net System

These devices serve as surge protectors at the supply end of electrical equipment and systems. They are fitted with a thermal protective change over contact, which opens if the varistor exceed a certain level of temperature due to overload by too high leakage current. In that case, the failure indicator changes from green to red and the optional remote signal change-over contact switches over.

The protective circuit is installed in an easy-to-handle compact socket for 35mm DIN rail mounting (EN50022) with multifunctional screw terminals for wire and bus-bar connection. There is an optional potential-free remote signal contact (/FM) inside the housing. The wire connection is made by a pluggable screw terminal block.

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Technical Data:

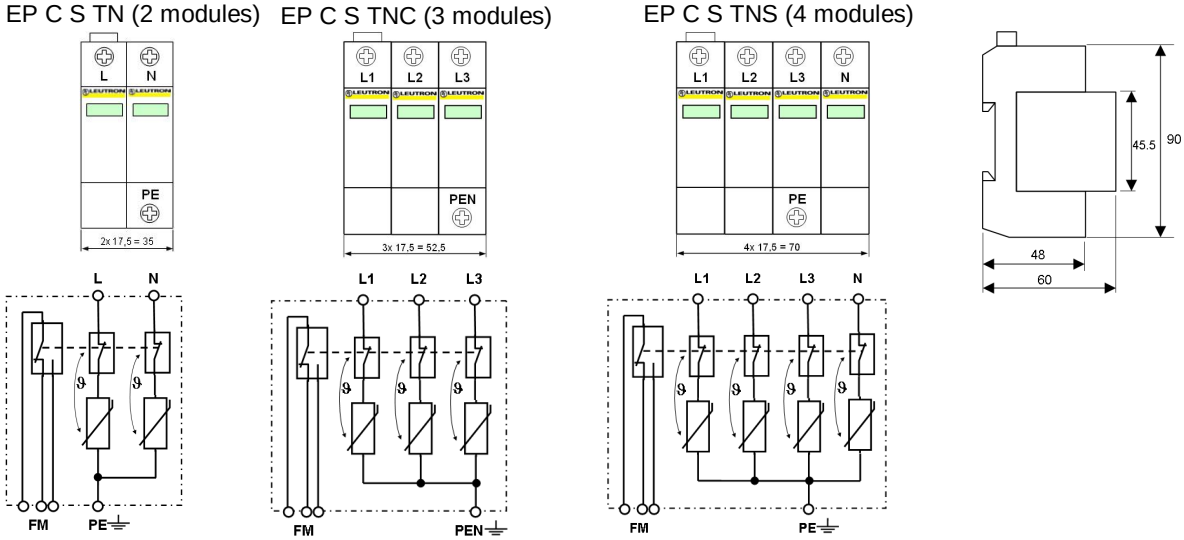
Type	Art. Nr.:	Remarks
EP C S TN 275 EP C S TN 275 /FM	381 240 381 241	for one phase and neutral (L1 / N –PE) with remote signal contact
EP C S TNC 275 EP C S TNC 275 /FM	381 030 381 035	for three phases (L1 / L2 / L3 – PE) with remote signal contact
EP C S TNS 275 EP C S TNS 275 /FM	381 050 381 055	for three phases and neutral (L1 / L2 / L3 / N – PE) with remote signal contact
EP C S 275	381 242	Pluggable line protection module for replacement, without socket

Protection category acc. to E DIN VDE 0675-6 11/98-A1 and EN 61643-11 resp. IEC 61643-1			T2 (C) class II
Nominal power supply voltage 50/60 Hz	U_N	[V]	230 / 400
Rated voltage (max. continuous operating voltage) 50/60 Hz	U_C	[V]	275
Max. permissible line resp. backup fuse	I	[A]	100 A gL/gG
Voltage protection level at 5kA (8/20 µs)	U_P	[kV]	< 1.0
Voltage protection level at i_{sn} (8/20 µs)	U_P	[kV]	< 1.4
Response time	t_A	[ns]	< 25
Nominal discharge current (8/20 µs)	i_{sn}	[kA]	20
Max. discharge current (8/20 µs)	I_{max}	[kA	40
Short-circuit withstand capability at max. perm. pre-fuse, 50Hz		[kA]	25
Operating temperature range	t	[°C]	-40 … +80
Max. cross-sectional area		[mm²]	50 stranded / 35 flexible
Recommended cross-sectional area		[mm²]	25
Recommended connection torque		[Nm]	4,5
Max. cross-sectional area for remote signal contact		[mm²]	1,5
Max. switching capacity of remote signal contact (FM) change over (SPDT) contact		[V/A]	AC 250 V 0,5 A / DC 250V 0,1A
Ambient protection category (IEC/EN 60529)			IP 20
Material of housing / colour			Polyamide PA 6 30SV, UL94 V0 / yellow
Mounting on			35mm DIN rail (DIN / EN 50022)

Dimensions in mm / Diagram

Dimension acc. DIN 43880

EP C S TN (2 modules) EP C S TNC (3 modules) EP C S TNS (4 modules)



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Surge Protection

EnerPro C S pluggable

EP C S TT 275 (/FM)
EP C S TT1+1 275 (/FM)

Pluggable combined multi-pole Surge Protective Device meeting the requirements of protection category T2 (C), class II

surge protection in multi-pole TT- Power Net Systems

! Novelty !
preliminary
data sheet

EP C S TT 275

EP C S TT1+1 275

- **Category T2 Surge Protective Device (SPD)**
- **Multi-pole complete device with socket and plugged-in protection modules**
- **Can be co-ordinated with an upstream installed T1 lightning current SPD**
- **High discharge capacity thanks to high-performance varistors (MOV)**
- **Failure indicator display by change of colour**
- **Potential-free SPDT remote contact (optional) for function control**

Product description:

Leutron surge protectors series EP C S … are single block SPD's with pluggable modules usually installed in the sub-distribution panel.

EP C S TT 275(/FM) is a **four-pole** surge protector for TT-Power Net Systems, connected in the so called 3+1 circuit.

EP C S TT1+1 275(/FM) is a **two-pole** surge protector for TT-Power Net Systems, connected in the so called 1+1 circuit.

These devices serve as surge protectors at the supply end of electrical equipment and systems. They are fitted with a thermal protective NC-contact which opens if the varistor exceed a certain level of temperature due to overload by too high leakage current. In that case, the failure indicator changes from green or yellow to red and the optional remote signal change-over contact switches over.

There is an optional potential-free remote signal contact (/FM) inside the housing. The wire connection is made by a pluggable screw terminal block.

The protective circuit is installed in an easy-to-handle compact socket for 35mm DIN rail mounting (EN 50022) with multifunctional screw terminals for wire and bus-bar connection.

LEUTRON®

Technical Data:

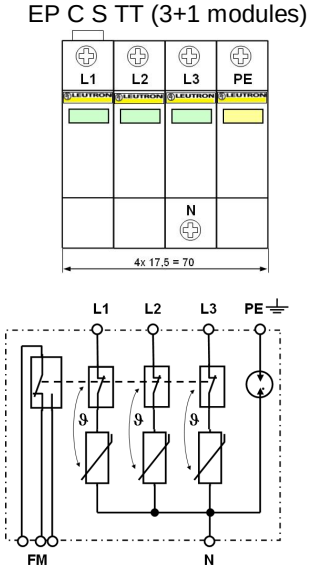
Type	Art. Nr.:	Remarks
EP C S TT 275 EP C S TT 275/FM	381 040 381 045	for three phases and neutral (3+1) with remote signal contact
EP C S TT1+1 275 EP C S TT1+1 275/FM	381 024 381 025	for one phase and neutral (1+1) with remote signal contact
EP C S 275 SP C S 255	381 242 381 244	Pluggable protection L – N module for replacement, without socket Pluggable protection PE - N module for replacement, without socket

Protection category acc. to E DIN VDE 0675-6 11/98-A1 and EN 61643-11 resp. IEC 61643-1			T2 (C) class II	
			L - N	**PE – N**
Nominal power supply voltage 50/60 Hz	U_N	[V]	230 / 400	
Rated voltage (max. continuous operating voltage) 50/60 Hz	U_C	[V]	275	255
Max. permissible line resp. backup fuse	I	[A]	100 A gL/gG	
Voltage protection level at 5kA (8/20 µs)	U_P	[kV]	≤ 1.0	
Voltage protection level at i_{sn} (8/20 µs)	U_P	[kV]	≤ 1.4	≤ 1,5
Response time	t_A	[ns]	< 25	< 100
Nominal discharge current	i_{sn}	[kA]	20 (8/20 µs)	12 (10/350 µs)
Max. discharge current (8/20 µs)	I_{max}	[kA	40	40
Short-circuit withstand capability at max. permissible pre-fuse, 50Hz		[kA]	25kA	
Operating temperature range	t	[°C]	-40 … +80	
Max. wire cross-sectional area		[mm²]	50 stranded / 35 flexible	
Recommended wire cross-sectional area		[mm²]	25	
Recommended connection torque		[Nm]	4,5	
Max. cross-sectional area for remote signal contact		[mm²]	1,5	
Max. switching capacity of remote signal contact (change over (SPDT) contact		[V/A]	AC 250 V 0,5 A / DC 250V 0,1A	
Ambient protection category (IEC/EN 60529)			IP 20	
Material of housing / colour			Polyamide PA 6 30SV, UL94 V0 / yellow	
Mounting on			DIN rail 35mm (DIN / EN 50022)	

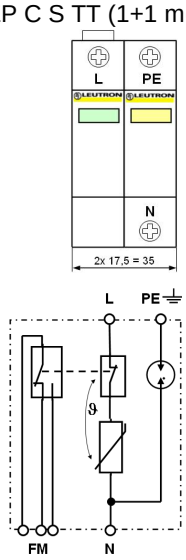
Dimensions in mm / Diagram

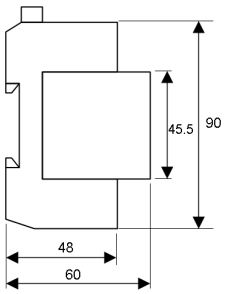
Dimension acc. DIN 43880

EP C S TT (3+1 modules)



EP C S TT (1+1 modules)





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Surge Protection

EnerPro D TN

EP D TN 275 (/FM)
EP D TNC 275 (/FM)
EP D TNS 275 (/FM)

Combined multi-pole Surge Protective Device (SPD)
meeting the requirements of protection category T3 (D), class III

To be used as Surge Protector in multi-pole TN-Power Net Systems

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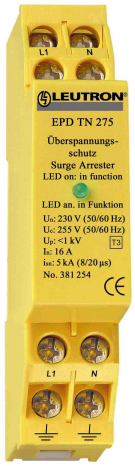
data sheet



EP D TN 275

EP D TNC 275

EP D TNS 275

- **Category T3 Surge Protective Device (SPD)**
- **Longitudinal and transversal protection for connected equipment up to 16 A**
- **No leakage current to PE**
- **Can be co-ordinated with an up-stream installed T2 surge protector**
- **Optical front monitoring by LED**
- **Potential-free remote signal NC-contact (optional)**

Product description:

Leutron serie EP D … is a surge protector for equipment, to be installed as close as possible to the equipment.

EP D TN 275(/FM) is a **two-pole SPD** in a single block for a two-pole TN-Power Net Systems.

EP D TNC 275(/FM) is a **three-pole SPD** in a single block for a three-pole TNC-Power Net Systems.

EP D TNS 275(/FM) is a **four-pole SPD** in a single block for a four-pole TNS-Power Net Systems.

These devices serve as a category T3 surge protector at the supply end of electrical equipments and systems. The green LEDs shows if the operating voltage is achieved and the protective circuit is in full working condition. They are with a thermal protection NC-contact, which opens if the varistor exceed a certain level of temperature due to overload. These thermal protection is installed in such a way that they only cut off the SPD from the power supply whilst the electrical equipment will not suffer any functioning failure; in that case the green signal LED will go out. Before this happens, the optional remote signal contact will open.

The protective circuit is installed in an easy-to-handle compact socket for 35mm DIN rail mounting with screw terminals for wire connection.

Technical Data:

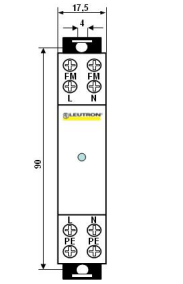
Type	Art. Nr.:	Remarks
EP D TN 275 EP D TN 275/FM	381 254 381 255	resp. for one phase and neutral (L1 / N – PE) resp. for one phase and neutral with remote signal contact
EP D TNC 275 EP D TNC 275 /FM	380 524 380 525	for three phases (L1 / L2 / L3 – PE) for three phases with remote signal contact
EP D TNS 275 EP D TNS 275 /FM	380 530 380 531	for three phases and neutral(L1 / L2 / L3 / N – PE) for three phases and neutral with remote signal contact

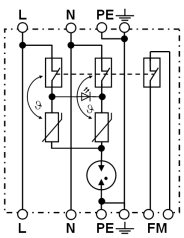
Protection category acc. to E DIN VDE 0675-6 11/98-A1 and acc. To EN 61643-11 resp. IEC 61643-1			T3
Nominal voltage 50/60 Hz	U_N	[V]	230 / 400
Rated voltage (max. continuous operating voltage) (50/60 Hz)	U_C	[V]	275 / 480
Max. permissible line fuse	I_n	[A]	16 A gL/gG
Voltage protection level at 1 kV/µs	U_P	[kV]	≤ 1,0
Voltage protection level at i_{sn}	U_P	[kV]	≤ 1,0
Response time	t_A	[ns]	< 25
Nom. discharge current (8/20 µs)	i_{sn}	[kA]	10x 5
Max. discharge current (8/20 µs)	I_{max}	[kA	1x 8
Service life test current (10/700 µs)	i_L	[A]	500x 100 100x 500
Operating temperature range	t	[°C]	-40 … +80
Max. cross-sectional area		[mm²]	2x 2,5 rigid / 2x 1,5 stranded with sleeve
Max. cross-sectional area for remote signal contact		[mm²]	2x 2,5 rigid / 2x 1,5 stranded with sleeve
Max. switching capacity of remote signal NC-contact		[V/A]	250V / 0.5A
Material of Housing / colour		Polycarbonate (halogen free) UL94-V0 / yellow	
Environment protection category		IP 20 (IEC 60529)	
Mounting on		DIN rail 35mm (DIN / EN 50022)	

Dimensions in mm / Diagram

Dimension acc. DIN 43880

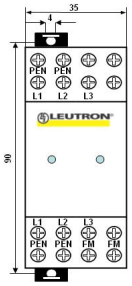
1 module

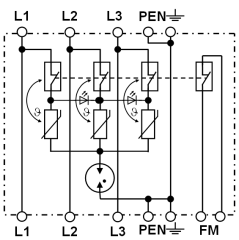




EP D TN 275

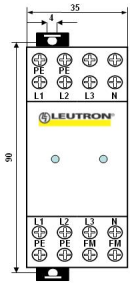
2 modules

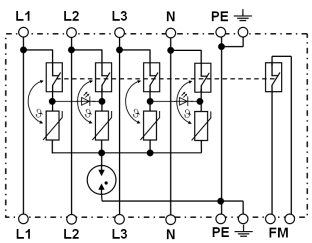




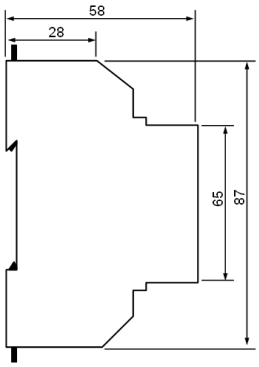
EP D TNC 275

2 modules





EP D TNS 275



28.10.2003
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Subject to technical modifications and delivery possibilities

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Surge Protection

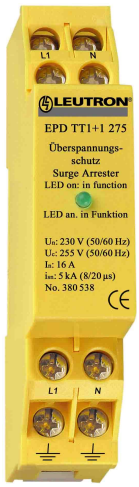
EnerPro D TT

EP D TT1+1 275 (/FM)
EP D TT 275 (/FM)

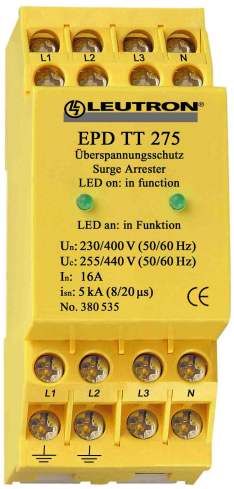
Combined multi-pole Surge Protective Device (SPD)
meeting the requirements of protection category T3 (D), class III

To be used as Surge Protector in multi-pole TT-Power Net Systems

! Novelty !
preliminary
data sheet



EP D TT1+1 275



EP D TT 275

- **Category T3 Surge Protective Device (SPD)**
- **Longitudinal and transversal protection for connected equipment up to 16 A**
- **No leakage current to PE**
- **Can be co-ordinated with an up-stream installed T2 surge protector**
- **Optical front monitoring by LED**
- **Potential-free remote signal NC-contact (optional)**

Product description:

Leutron serie EP D … is a surge protector for equipment, to be installed as close as possible to the equipment.

EP D TT1+1 275(/FM) is a **two-pole SPD** in a single block for one-phase TT-Power Net Systems with neutral conductor, connected in the so called 1+1-circuit.

EP D TT 275(/FM) is a **four-pole SPD** in a single block for TT-Power Net Systems, connected in the so called 3+1-circuit.

These devices serve as a category T3 surge protector at the supply end of electrical equipments and systems. The green LEDs shows if the operating voltage is achieved and the protective circuit is in full working condition. They are with a thermal protection NC-contact, which opens if the varistor exceed a certain level of temperature due to overload. These thermal protection is installed in such a way that they only cut off the SPD from the power supply whilst the electrical equipment will not suffer any functioning failure; in that case the green signal LED will go out. Before this happens, the optional remote signal contact will open.

The protective circuit is installed in an easy-to-handle compact socket for 35mm DIN rail mounting with screw terminals for wire connection.

LEUTRON®

Technical Data:

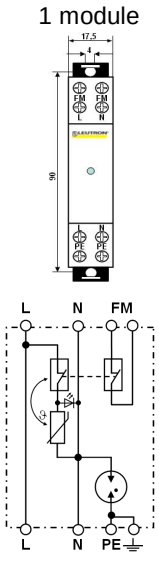
Type	Art. Nr.:	Remarks
EP D TT1+1 275	380 538	for one phase and neutral (L1 –PE / N – PE)
EP D TT1+1 /FM	380 539	for one phase and neutral with remote signal contact
EP D TT 275	380 535	for three phases and neutral (L1 / L2 / L3 – N / PE – N)
EP D TT 275 /FM	380 536	for three phases and neutral with remote signal contact

Protection category acc. to E DIN VDE 0675-6 11/98-A1 and acc. to EN 61643-11 resp. IEC 61643-1			T3	
Nominal voltage (50/60 Hz)	U_N	[V]	230 / 400	
Rated voltage (max. continuous operating voltage) (50/60 Hz)	U_C	[V]	275 / 480	
Max. permissible line fuse	I_n	[A]	16 A gulag	
Voltage protection level at 1 kV/µs	U_P	[kV]	< 1,0	
Voltage protection level at i_{sn}	U_P	[kV]	< 1,0	
Response time	t_A	[ns]	< 25	
			L1, L2, L3 – N	**PE – N**
Nom. discharge current	i_{sn}	[kA]	5 (8/20 µs)	20 (8/20 µs)
Max. discharge current	I_{max}	[kA	8 (8/20 µs)	I_{peak}: 12 kA (10/350 µs) Q: 6 As W/R: 36 kJ/Ω
Service life test current (10/700 µs)	i_L	[A]	500x 100 100x 500	
Operating temperature range	t	[°C]	-40 … +80	
Max. cross-sectional area		[mm²]	2x 2,5 rigid / 2x 1,5 stranded with sleeve	
Max. cross-sectional area for remote signal contact		[mm²]	2x 2,5 rigid / 2x 1,5 stranded with sleeve	
Max. switching capacity of remote signal NC-contact		[V/A]	250V / 0.5A	
Material of housing / colour		Polycarbonate (halogen free) UL94-V0 / yellow		
Environment protection category		IP 20 (acc. IEC/EN 60529)		
Mounting on		DIN rail 35mm (EN 50022)		

Dimensions in mm / Diagram

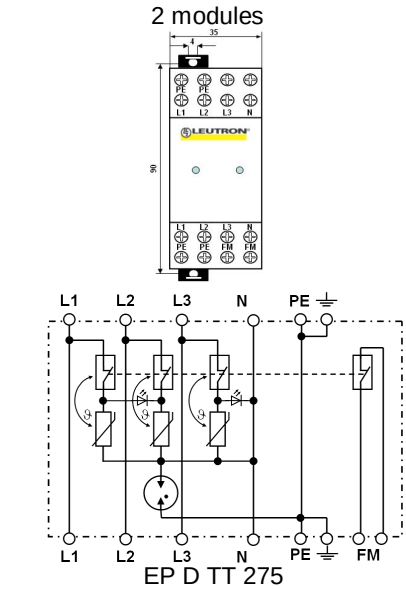
Dimension acc. DIN 43880

1 module

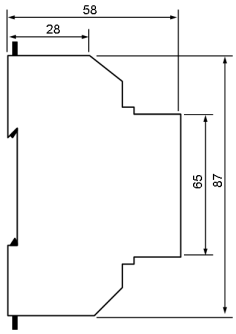


EP D TT1+1 275

2 modules



EP D TT 275



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