

	page :
INTRODUCTION	2
<u>SURGE ARRESTERS Low Voltage</u>	
TYPE 1	
TECHNOFOUDRE® TF-1251	4
TECHNOFOUDRE® TF-1001	5
TECHNOFOUDRE® TF-1151	6
TECHNOFOUDRE® TF-1154	7
TYPE 2	
TECHNOFOUDRE® TF-2600	8
TECHNOFOUDRE® TF-2400	9
TECHNOFOUDRE® TF-2404	10
TECHNOFOUDRE® TF-2302	11
TECHNOFOUDRE® TF-2202	12
TECHNOFOUDRE® TF-2100	13
TECHNOFOUDRE® Box C-TF 1151	14
TECHNOFOUDRE® Box t C-TF 2401	15
TECHNOFOUDRE® Box C-TF 2202	16
COORDINATION TF-IND INDUCTION	17
<u>TELEPHONY SURGE ARRESTERS</u>	
TECHNOFOUDRE® TF-DS	18
TECHNOFOUDRE® TF-MD	19
TECHNOFOUDRE® TF-M	20
TECHNOFOUDRE® TF-MO	21
TECHNOFOUDRE® TF-SU	22
TECHNOFOUDRE® TF-GD	23
<u>SURGE ARRESTERS INDICATION</u>	
TECHNOFOUDRE® TF-MC	24
TECHNOFOUDRE® TF-DF	25
TECHNOFOUDRE® TF-MI	26
TECHNOFOUDRE® TF-RS	27
<u>SPECIAL USE SURGE ARRESTERS</u>	
TECHNOFOUDRE® TF-X ..TV TF-X..SAT TF-X..VID	28
TECHNOFOUDRE® TF-230... / TF-230...	29
TECHNOFOUDRE® ONE FOURTH WAVE TF- ...N TF- ...7/16	30
TECHNOFOUDRE® ONE FOURTH WAVE TF-2.4N50/...	31
ISOLATING SPARK GAPS ED-ECL	32
ACCESSORIES	33
PRICE ENQUIRY FORM	34
SALE GENERAL CONDITIONS	36

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Inner Lightning Protection Installation : Surges Arresters

Inner Lightning Protection Installation's goal is to guard inner electrical fittings installations and supplies, and persons, against direct or inferred high voltage and potential rise.

Surge Arrester Protection

High Voltage (inferred effect) appears between the entrance of external electricity supply and the ground equipotential system of the framework. These surges «spread" in the inner framework (along the wire).

As it is impossible to connect immediately the wires with the equipotential network (court-circuit danger), we connect them thanks to devices which limit surge, which is called **parafoudre**.

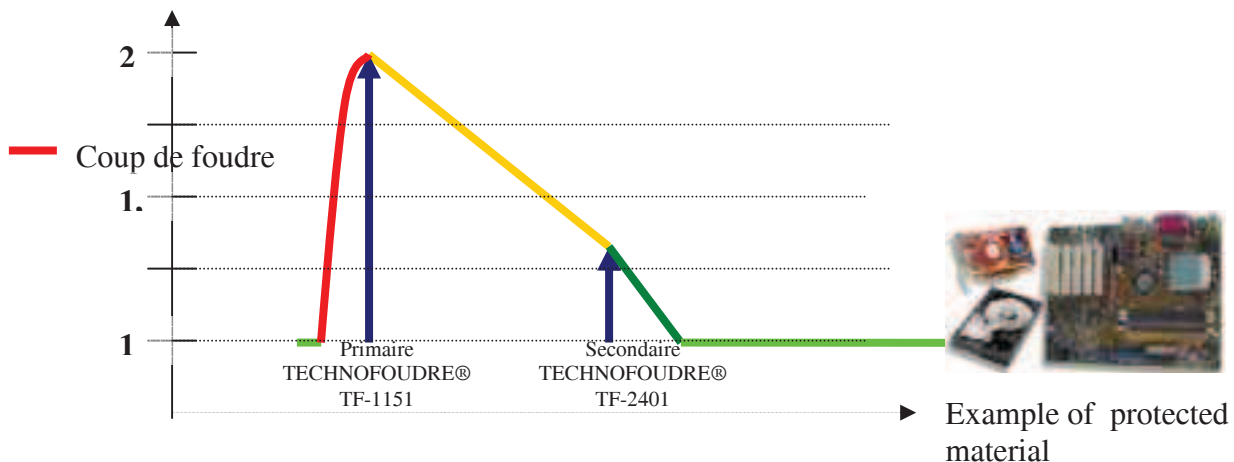
Surges Arresters Main features definition

- Discharge nominal current: It represents the protection ability of absorption on repeated a transitional phenomena (express in kA).
- Discharge Maximum current: It is the maximum intensity value that protection is able to discharge at bolt upright without being destroyed; it is linked to the discharge nominal current.

Implementation

Surge arresters implementation requires engineering and installation technical mastery (guide UTE 15-443), indeed advices protections have to ensure supplies preservation and especially to guaranty people safety.

Cascade protection principle



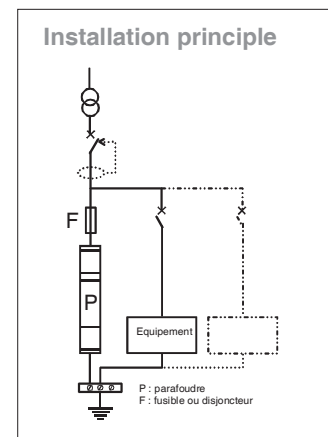
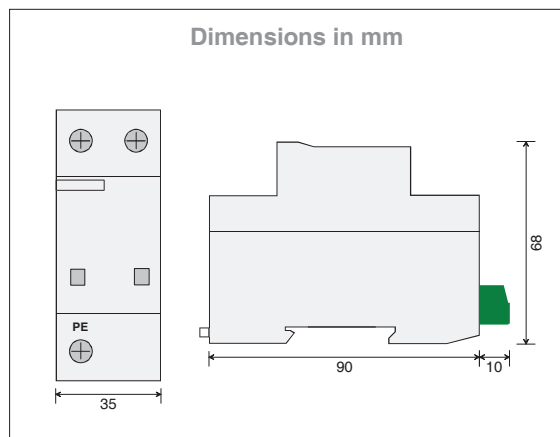
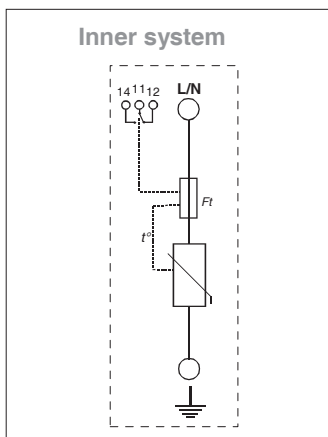
Prices request can be done on demand, for the only boxes, plastic or steel, cables, connection clamps, but also for the acceptance of surge arresters solutions in your products ... our engineering factories and our manufacturing research department are here to take into account whatever request you may ask us concerning a special production.

TYPE 1 TECHNOFOUDRE® TF-1251

Type 1
 $I_{imp} : 25kA/20kA$
1 pole/module

Cast in one piece Surge arrester, 1 high voltage pole TF-1251 for the protection against direct lightning effects (if there is a lightning rod) and indirect ones on single phased or three-phase networks of the installations situated in areas with strong lightning strikes density.

- Surge arrester type 1 I_{imp} 25 kA / I_{max} 100 kA
- Discharge nominal current I_n 30 kA
- Life-ending signal
- life-ending carrying forward (option)



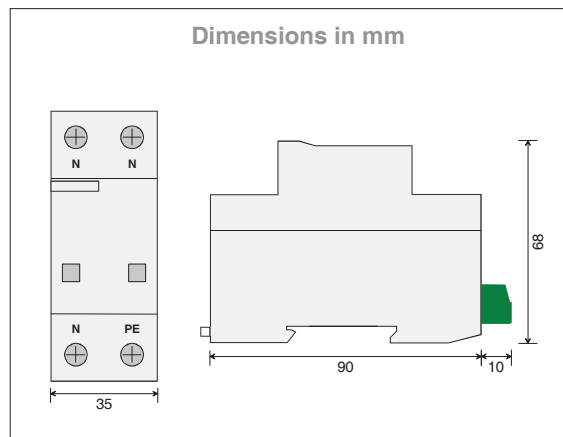
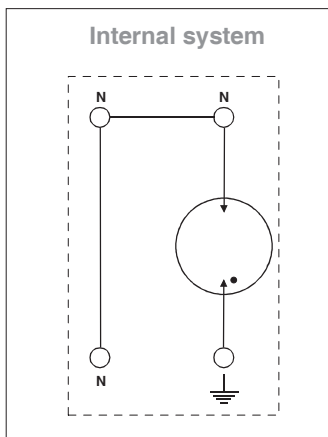
Features	TF-1251/440	TF-1251/440-T	TF-1251/335	TF-1251/335-T
References				
Kind of network	TT-TN-IT	TT-TN-IT	TT-TN	TT-TN
nominal tension U_n	400 VAC	400VAC	230 VAC	230 VAC
maximal tension of permanent service U_c (50Hz)	440 VAC	440 VAC	335 VAC	335 VAC
kept of temporary surges U_T	U_c	U_c	> 400 VAC	> 400 VAC
specific energy / charge				
discharge nominal current I_n (8/20 μ s)	30 kA	30 kA	30 kA	30 kA
discharge nominal current I_{imp} (10/350 μ s)	20 kA	20 kA	25 kA	25 kA
protection level U_p under I_n / under 5 kA	1,9 kV / 1,2 kV	1,9 kV / 1,2 kV	1,5 kV / 1,1 kV	1,5 kV / 1,1 kV
protection level U_p under I_{imp}	1,7 kV	1,7 kV	1,2 kV	1,2 kV
special energy / charge	100 kJ/ Ω / 10 As	100 kJ/ Ω / 10 As	155 kJ/ Ω / 12,5 As	155 kJ/ Ω / 12,5 As
Features of parasurges				
discharge current nom. / max. I_n / I_{max} (8/20 μ s)	70 kA / 140 kA	70 kA / 140 kA	70 kA / 140 kA	70 kA / 140 kA
leaking current	< 2 mA	< 2 mA	< 2 mA	< 2 mA
delay of answer	< 25 ns	< 25 ns	< 25 ns	< 25 ns
Fuse (associated protection's device)	max. 250 A gG/gL	max. 250 A gG/gL	max. 250 A gG/gL	max. 250 A gG/gL
admissible current of short circuit	25 kA / 50 Hz	25 kA / 50 Hz	25 kA / 50 Hz	25 kA / 50 Hz
life-ending signage	oui	oui	oui	oui
distance deferment life-ending information	non	oui	non	oui
connection ability				
L/N		4-35 mm ² (souple : 25 mm ² max.)		
PE		4-35 mm ² (souple : 25 mm ² max.)		
deferment terminal signage				
supply rigid	--	1,5 mm ²	--	1,5 mm ²
temperature in use		-20°C / +80°C		
housing material		thermoplastic Polyester UL 94 5VA		
protection degree		IP20		
installation		asymmetrical Rail din (EN 50 022 / DIN46277-3)		
quantity of ports		1		

TYPE 1 TECHNOFOUDRE® TF-1001

Type 1
 $I_{imp} : 100\text{Ka}$
Neutral
equipment

Cast in one piece Surge arrester very high voltage TF-1001 for the protection of the neutral of the power network in addition to the surge arresters TF-1251 (scheme 3+1 or 1+1), about the installations with lightning rods on

- Surge arrester type 1 $I_{imp} 100\text{ kA} / I_{max} 160\text{ kA}$
- Discharge nominal current $I_n 80\text{ kA}$



Features

References

TF-1001

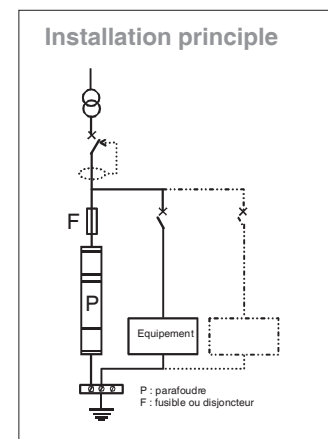
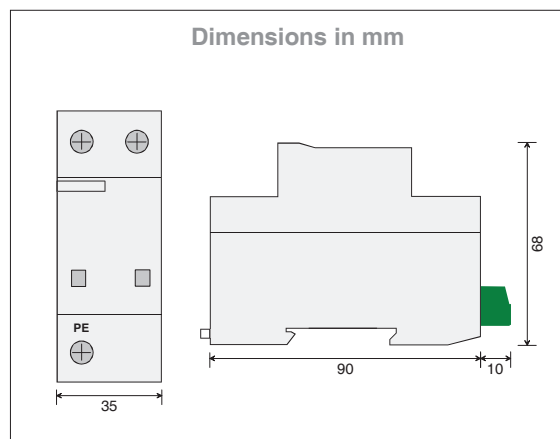
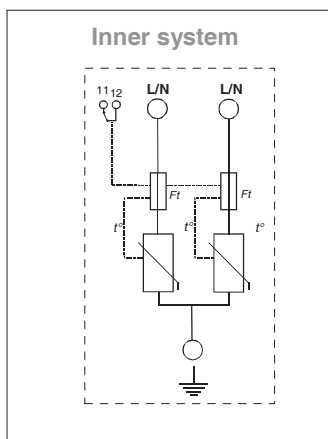
kind of network	TT / TNS
nominal tension U_n	230 VAC
permanent service maximal tension. U_c (50Hz)	255 VAC
temporary surges U_T	U_c
discharge nominal current I_n (8/20 μ s)	80 kA
discharge maximal current I_{imp} (10/350 μ s)	100 kA
protection level U_p under I_n	1,5 kV
protection level U_p under I_{imp}	1,75 kV
specific energy / charge	2,5 MJ/ Ω / 50 As
parasurges features	
nominal discharge current / max. I_n / I_{max} (8/20 μ s)	-
discharge maximal current I_{imp} (10/350 μ s)	-
residual tension U_{res} under I_n / under I_{imp}	-
cut-off the current in succession	> 100 A rms
time of answer	< 100 ns
Fuse (associated protection device)	-
admissible short circuit current	25 kA / 50 Hz
life-ending signage	-
distance deferment life-ending information	-
connection ability	
N	4-35 mm ² (souple : 25 mm ² max.)
PE	4-35 mm ² (souple : 25 mm ² max.)
terminal deferment signage	
Supple rigid	--
service temperature	-20°C / +80°C
housing Material	Polyester thermoplastique UL 94 5VA
protection degree	IP20
connection	Rail DIN symétrique (EN 5 000 22 / DIN46277-3)
quantity of ports	1

TYPE 1 TECHNOFOUDRE® TF-1151

Type 1
 $I_{imp} : 12.5kA$
2 poles/module

We advise you the use of surge arresters TF-1151 for the protection, against direct lightning effects (if there is a lightning rod) and indirect ones, and single phase or three phase networks for installations situated in areas with very strong lightning strikes density.

- Surge arrester type 1 $I_{imp} 12.5 kA / I_{max} 80 kA$
- Discharge nominal current $I_n 20 kA$
- Incorporated Thermal disjuncture (carrying forward in action)



Features

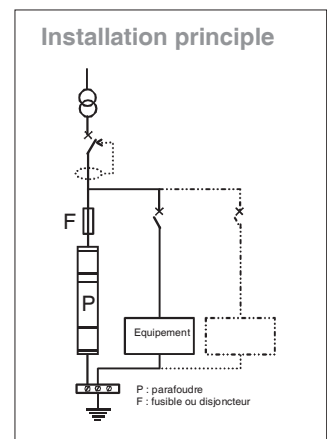
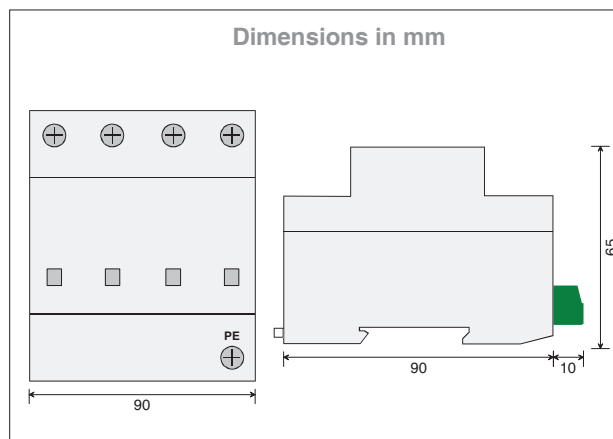
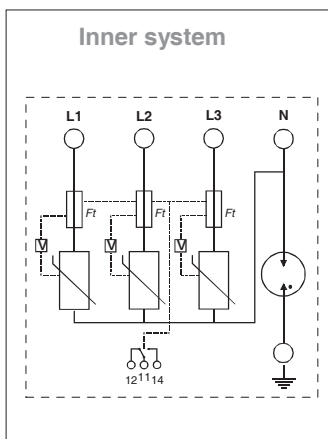
References	TF-1151/440	TF-1151/440-T	TF-1151/335	TF-1151/335-T
kind of network	TT-TN-IT	TT-TN-IT	TT-TN	TT-TN
nominal Tension U_n	400 VAC	400 VAC	230 VAC	230 VAC
maximal tension of permanent service U_c (50Hz)	440 VAC	440 VAC	335 VAC	335 VAC
kept of the temporary surges U_T	U_c	U_c	> 400 VAC	> 400 VAC
discharge nominal current I_n (8/20 μ s)	20 kA	20 kA	20 kA	20 kA
discharge maximal current I_{imp} (10/350 μ s)	12.5 kA	12.5 kA	12.5 kA	12.5 kA
protection level U_p under I_n	1,8 kV	1,8 kV	<1,5 kV	<1,5 kV
protection level U_p under I_{imp}	1,7 kV	1,7 kV	1,2 kV	1,2 kV
special Energy/ charge	40 kJ/Ω / 6,25 As	40 kJ/Ω / 6,25 As	40 kJ/Ω / 6,25 As	40 kJ/Ω / 6,25 As
residual tension U_{res}				
à 5kA	1,2 kV	1,2 kV	1 kV	1 kV
à 10kA	-	-	1,15 kV	1,15 kV
à 15kA	-	-	1,25 kV	1,25 kV
à 20 kA	-	-	1,31 kV	1,31 kV
Features of parasurges only				
discharge current nom./max. I_n / I_{max} (8/20 μ s)	40 kA / 80 kA	40 kA / 80 kA	40 kA / 80 kA	40 kA / 80 kA
leaking current I_c	< 2 mA	< 2 mA	< 2 mA	< 2 mA
delay of answer	< 25 ns	< 25 ns	< 25 ns	< 25 ns
Fuse (associated protection device)	max. 250 A gG/gL	max. 250 A gG/gL	max. 250 A gG/gL	max. 250 A gG/gL
admissible current of associated protection	25 kA / 50 Hz	25 kA / 50 Hz	25 kA / 50 Hz	25 kA / 50 Hz
life-ending signage	oui	oui	oui	oui
distance referment life-ending information	non	oui	non	oui
fork bridging section that holds up the parasurge	16 mm ²	16 mm ²	16 mm ²	16 mm ²
connection ability		4-35 mm ² (souple : 25 mm ² max)		
terminal signage referment (supple, rigid)	--	1,5 mm ²	--	1,5 mm ²
temperature in use		-20°C / +80°C		
housing material		Polyester thermoplastique	UL 94 5VA	
protection degree		IP20		
installation		Rail din symmetrical (EN 50022 / DIN46277-3)		
quantity of ports		1		

TYPE 1 TECHNOFOUDRE® TF-1154

Type 1
 $I_{imp} : 12.5kA$
4 poles (3+1)

Cast in one piece surge arrester TF-1154 – protection against direct lightning effects (if there is a lightning rod) and indirect ones on three phase networks (scheme C2: protection common and differential mode) of the installations situated in areas with very strong lightning strikes density.

- Surge arrester type 1 I_{imp} 12.5 kA
- Discharge nominal current I_n 12.5/50 kA
- Common and differential mode protection
- Incorporated thermal disjuncture (carrying forward in option)



Features

References	TF-1154/440	TF-1154/440-T	TF-1154/335	TF-1154/335-T
kind of network	TT-TN-IT	TT-TN-IT	TT-TN	TT-TN
nominal tension Un	400 VAC	400VAC	230 VAC	230 VAC
maximal tension of permanent service U_c L/N-N/PE	440 VAC / 255 VAC	440 VAC / 255 VAC	335 VAC / 255 VAC	335 VAC / 255 VAC
kept of temporary tension U_T L/N-N/PE	U_c / U_c	U_c / U_c	> 400 VAC / U_c	> 400 VAC / U_c
discharge nominal current I_n L/N-N/PE (8/20 μ s)	20 kA - 50 kA	20 kA - 50 kA	20 kA - 50 kA	20 kA - 50 kA
discharge maximal current I_{imp} (L/N-N/PE) (10/350 μ s)	12,5 kA - 50kA	12,5 kA - 50kA	12,5 kA - 50kA	12,5 kA - 50kA
protection level U_p under I_n (L/N-N/PE)	1,8 kV - 1,2 kV	1,8 kV - 1,2 kV	< 1,5 kV - 1,2 kV	< 1,5 kV - 1,2 kV
protection level U_p under I_{imp}	1,5 kV	1,5 kV	1 kV	1 kV
specific energy / charge	40 kJ/ Ω / 6,25 As	40 kJ/ Ω / 6,25 As	40 kJ/ Ω / 6,25 As	40 kJ/ Ω / 6,25 As
residual tension				
à 5kA	1,2 kV	1,2 kV	1 kV	1 kV
à 10kA	-	-	1,15 kV	1,15 kV
à 15kA	-	-	1,25 kV	1,25 kV
à 20 kA	-	-	1,31 kV	1,31 kV
discharge maximal current I_{max} L/N-N/PE (8/20 μ s)	80 kA / 100 kA	80 kA / 100 kA	80 kA / 100 kA	80 kA / 100 kA
leaking current I_c / following current N-PE	- / ?100A	- / ?100A	- / ?100A	- / ?100A
delay of answer	< 25 ns	< 25 ns	< 25 ns	< 25 ns
Fuse (associated protection features)	max. 250 A gG/gL	max. 250 A gG/gL	max. 250 A gG/gL	max. 250 A gG/gL
admissible current of associated protection	25 kA / 50 Hz	25 kA / 50 Hz	25 kA / 50 Hz	25 kA / 50 Hz
life ending signage	oui	oui	oui	oui
distance referent life ending information	non	oui	non	oui
fork bridging that holds up the parasurge	16 mm ²	16 mm ²	16 mm ²	16 mm ²
connection capacity		4-35 mm ² (souple : 25 mm ² max.)		
terminal signage referent (supple, rigid)	--	1,5 mm ²	--	1,5 mm ²
Temperature in use		-20°C / +80°C		
housing material		thermoplastic Polyester UL 94 5VA		
protection degree		IP20		
installation		Rail din symetrical (EN 50022 / DIN46277-3)		
quantity of ports		1		

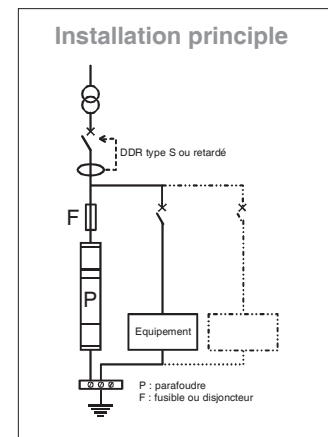
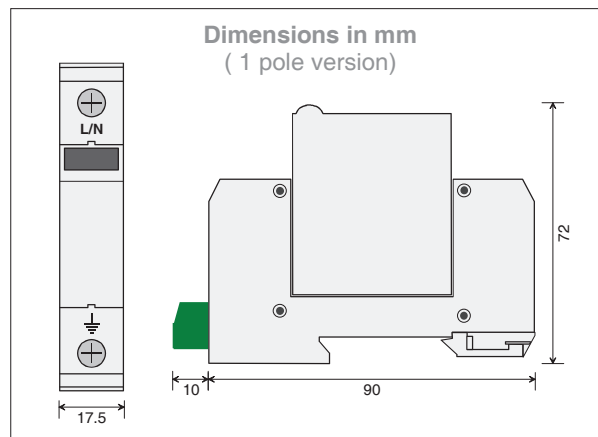
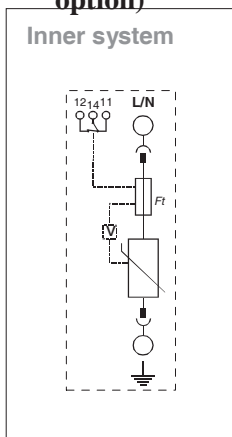
TYPE 2

TECHNOFOUDRE® TF-2600

Type 2
 $I_n / I_{max} : 20 / 60 \text{ kA}$
1 to 4 poles
removable

Surge arrester TF-2600 very high voltage for the first protection of single phase or three phase networks of installations that are prone to lightning strikes. Assembly in 2, 3 or 4 poles.

- Surge arrester type 2 I_{max} 60 kA
- Discharge nominal current I_n 20 kA
- Removable shell
- Incorporated thermal disjuncture (carrying forward in option)



Features

References	TF-2600/440	TF-2600/440-T	TF-2600/335	TF-2600/335-T
kind of network	TT-TN-IT	TT-TN-IT	TT-TN	TT-TN
nominal tension U_n	400 VAC	400 VAC	230 VAC	230 VAC
maximal tension of permanent service U_c	440 VAC	440 VAC	335 VAC	335 VAC
kept of temporary surges U_T	U_c	U_c	> 400 VAC	> 400 VAC
discharge nominal current I_n wave 8/20 μ s	20 kA (30 kA) ¹	20 kA (30 kA) ¹	20 kA (30 kA) ¹	20 kA (30 kA) ¹
discharge maximum current I_{max}	60 kA (1x70 kA) ¹	60 kA (1x70 kA) ¹	60 kA (1x70 kA) ¹	60 kA (1x70 kA) ¹
protection level U_p under I_n residual tension	2 kV	2 kV	1,5 kV	1,5 kV
à 5kA	1,3 kV	1,3 kV	1 kV	1 kV
à 10kA	-	-	1,15 kV	1,15 kV
à 15kA	-	-	1,25 kV	1,25 kV
leaking current I_c	< 2 mA	< 2 mA	< 2 mA	< 2 mA
following current	sans	sans	sans	sans
delay of answer	< 25 ns	< 25 ns	< 25 ns	< 25 ns
Fuse (associated protection device)	max. 160 A gG/gL	max. 160 A gG/gL	max. 160 A gG/gL	max. 160 A gG/gL
admissible current of short-circuit	25 kA / 50 Hz	25 kA / 50 Hz	25 kA / 50 Hz	25 kA / 50 Hz
thermal disjuncture integrated	oui	oui	oui	oui
distance deferment information disjuncture	non	oui	non	oui
connection capacity				
main terminals				
L/N		4-35 mm ² (soUPLE : 25 mm ² max.)		
PE		4-35 mm ² (soUPLE : 25 mm ² max.)		
deferment terminals signage				
Supple rigid	--	1,5 mm ²	--	1,5 mm ²
Temperature of use			-20°C / +80°C	
housing material			thermoplastic Polyester UL 94 V-0	
protection degree			IP20	
installation			Rail din symétrical (EN 50 022 / DIN46 277-3)	
quantity of ports			1	

¹ In et I_{max} for the parasurge only

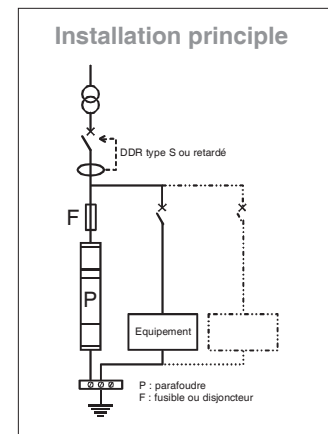
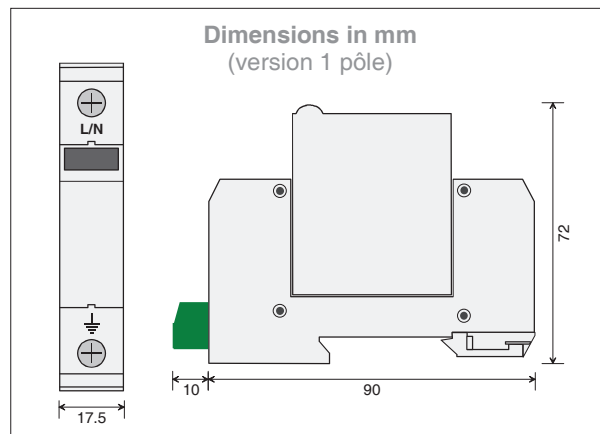
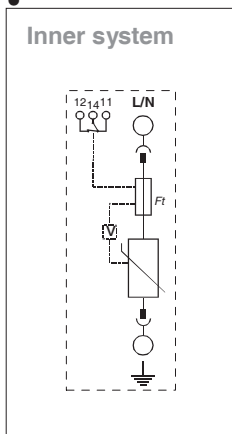
TYPE 2 TECHNOFOUDRE® TF-2400

Type 2
 $I_n / I_{max} : 15 / 40 \text{ kA}$
1 to 4 poles
removable +
reduced U_p

Surge arrester TF-2400 for the first protection of single phase or three phase installations that are often exposed. Low residual voltage (U_p). Assembly in 2, 3 or 4 poles.



- **Surge arrester type 2 I_{max} 40 kA**
- **Discharge nominal current I_n 15 Ka with UP reduced**
- **Removable shell**
- **Incorporated thermal disjuncture (carrying forward in option)**



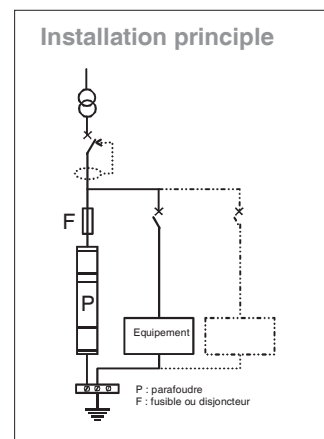
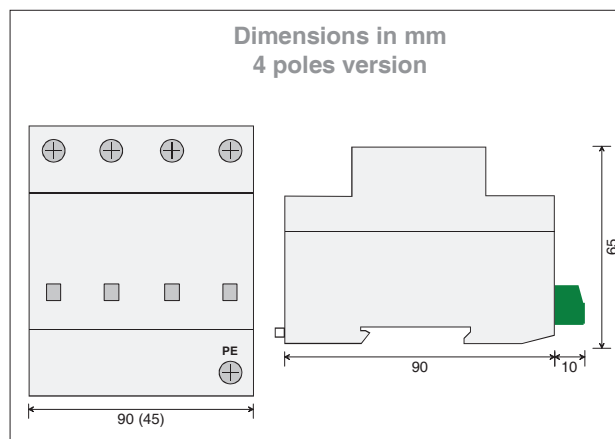
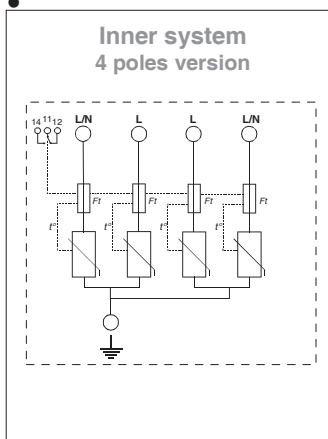
Features	TF-2400/440	TF-2400/440-T	TF-2400/335	TF-2400/335-T
References				
kind of network	TT-TN-IT	TT-TN-IT	TT-TN	TT-TN
nominal tension U_n	400 VAC	400VAC	230 VAC	230VAC
maximal tension of permanent service U_c	440 VAC	440 VAC	335 VAC	335 VAC
kept of temporary surges U_T	U_c	U_c	> 400 VAC	> 400 VAC
discharge nominal current in wave 8/20 μs	15kA	15 kA	15 kA	15 kA
discharge maximum current I_{max}	40kA	40 kA	40 kA	40 kA
protection level U_p under I_n	1,8kV	1,8 kV	1,4 kV	1,4 kV
residual tension				
à 5kA	1,3 kV	1,3 kV	1 kV	1 kV
à 10kA	-	-	1,15 kV	1,15 kV
à 15kA	-	-	1,25 kV	1,25 kV
leaking current I_c	< 2 mA	< 2 mA	< 2 mA	< 2 mA
following current	sans	sans	sans	sans
delay of answer	< 25 ns	< 25 ns	< 25 ns	< 25 ns
Fuse (associated protection device)	max 160 A gG/gL	max. 160 A gG/gL	max. 160 A gG/gL	max. 160 A gG/gL
admissible current of short-circuit	25 kA / 50 Hz	25 kA / 50 Hz	25 kA / 50 Hz	25 kA / 50 Hz
thermal disjuncture integrated	oui	oui	oui	oui
distance deferment information disjuncture	non	oui	non	oui
connection capacity				
main terminals				
L/N		4-35 mm ² (soUPLE : 25 mm ² max.)		
FE		4-35 mm ² (soUPLE : 25 mm ² max.)		
derivation terminals signage				
Supple rigid	--	1,5 mm ²	--	1,5 mm ²
Temperature of use		-20 °C / +80 °C		
housing material		Polyester thermoplastique	UL 94 V-0	
protection degree		IP20		
installation		Rail din symétrique (EN 50 022 / DIN4 6277-3)		
quantity of ports		1		

TYPE 2 TECHNOFOUDRE® TF-2404

Type 2
 $I_n / I_{max} : 15 / 40 \text{ kA}$
2 and 4 poles
Not removable

Cast in one piece surge arrester TF-2404 for the first protection of single phase or three phase installations exposed (scheme C1 : common mode protection).

- Surge arrester type 2 I_{max} 40 kA
- Discharge nominal current I_n 15 kA
- Incorporated thermal disjuncture (carrying forward in option)



Caractéristiques

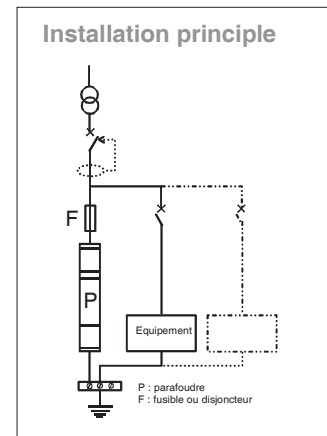
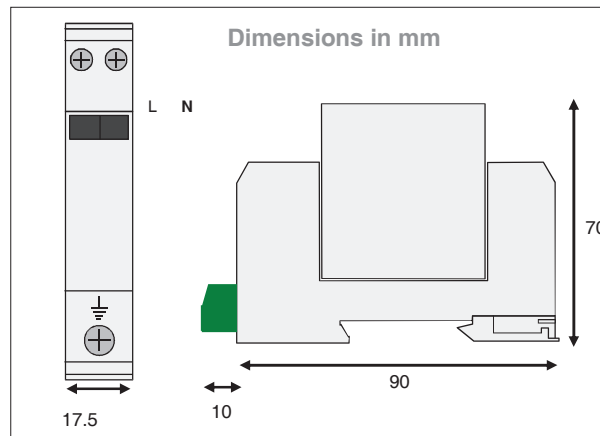
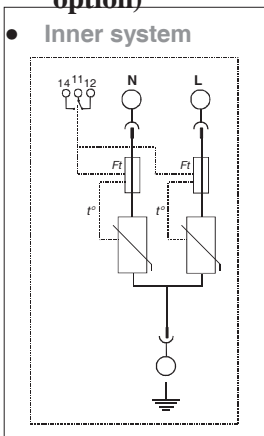
Références	TF-2404/440	TF-2404/440-T	TF-2404/335	TF-2404/335-T
Type de réseau	TT-TN-IT	TT-TN-IT	TT-TN	TT-TN
Tension nominale U_n	400 VAC	400 VAC	230 VAC	230 VAC
Tension max. de service perm. U_c	440 VAC	440 VAC	335 VAC	335 VAC
Tenue aux surtensions temporaires U_T	U_c	U_c	> 400 VAC	> 400 VAC
Courant nominal de décharge I_n (8/20 μ s)	15 kA	15 kA	15 kA	15 kA
Courant maximal de décharge I_{max}	40 kA	40 kA	40 kA	40 kA
Niveau de protection U_p sous I_n	2 kV	2 kV	1,5 kV	1,5 kV
Tension résiduelle				
à 5kA	1,5 kV	1,5 kV	1,1 kV	1,1 kV
à 10kA	-	-	1,3 kV	1,3 kV
à 15kA	-	-	1,36 kV	1,36 kV
courant de fuite I_c	< 1 mA	< 1 mA	< 1 mA	< 1 mA
Courant de suite	sans	sans	sans	sans
Temps de réponse	< 25 ns	< 25 ns	< 25 ns	< 25 ns
Dispositif de protection associé	max. 125 A gG/gL	max. 125 A gG/gL	max. 125 A gG/gL	max. 125 A gG/gL
Courant de court-circuit admissible	25 kA / 50 Hz	25 kA / 50 Hz	25 kA / 50 Hz	25 kA / 50 Hz
Déconnexion thermique intégrée	oui	oui	oui	oui
Report à distance information déconnexion	non	oui	non	oui
Capacité de raccordement				
L/N		4-35 mm ² (souple : 25 mm ² max.)		
PE		4-35 mm ² (souple : 25 mm ² max.)		
Bornes report signalisation				
Souple rigide	--	1,5 mm ²	--	1,5 mm ²
Souple souple	--	1,5 mm ²	--	1,5 mm ²
Température de service			-20 °C / +80 °C	
Matériau boîtier			Polyester thermoplastique UL 94 V-0	
Degré de protection			IP20	
Montage			Rail din symétrique (EN 50022 / DIN46277-3)	
Nombre de ports			1	

TYPE 2 TECHNOFOUDRE® TF-2302

Type 2
 $I_n / I_{max} : 15 / 30 \text{ kA}$
2 poles/module
removable

Single phase removable shell TF-2302 (scheme C1: common mode protection) for the second power network's protection. To be used in addition to the first protections, or in single protection for areas fairly exposed to lightning.

- Surge arrester type 2 I_{max} 30 kA
- Discharge nominal current I_n 15 kA
- Removable shell
- Incorporated thermal disjuncture (carrying forward in option)



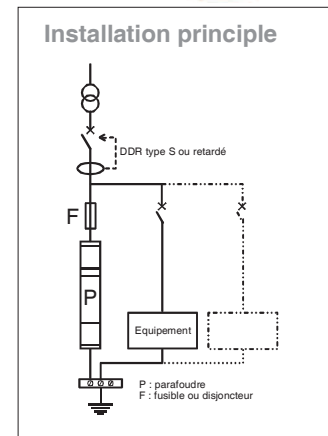
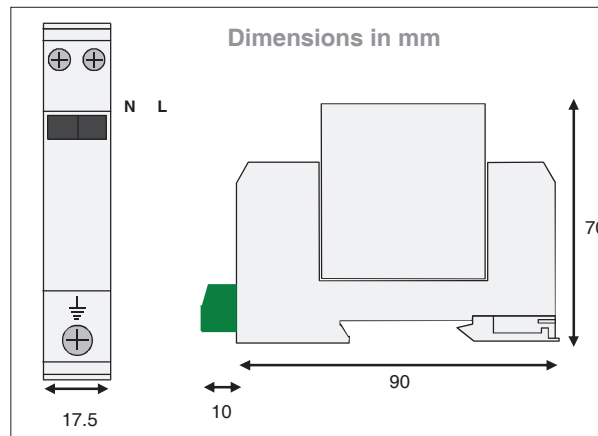
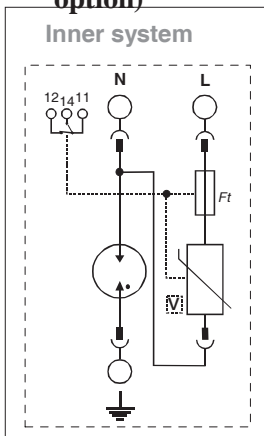
Features	TF-2302/440	TF-2302/440-T	TF-2302/335	TF-2302/335-T
References				
kind of network	TT-TN-IT	TT-TN-IT	TT-TN	TT-TN
nominal tension U_n	400 VAC	400VAC	230 VAC	230VAC
maximal tension of permanent service U_c	440 VAC	440 VAC	335 VAC	335 VAC
kept of temporary surges UT	U_c	U_c	> 400 VAC	> 400 VAC
discharge nominal current I_n wave 8/20 μ s	15 kA	15 kA	15 kA	15 kA
discharge maximum current I_{max}	30kA (1x40 kA)	30kA (1x40 kA)	30kA (1x40 kA)	30kA (1x40 kA)
protection level U_p under I_n	2 kV	2 kV	1,5 kV	1,5 kV
residual tension				
à 5kA	1,5 kV	1,5 kV	1,1 kV	1,1 kV
à 10kA	-	-	1,3 kV	1,3 kV
à 15kA	-	-	1,4 kV	1,4 kV
leaking current I_c	< 1 mA	< 1 mA	< 1 mA	< 1 mA
following current	sans	sans	sans	sans
delay of answer	< 25 ns	< 25 ns	< 25 ns	< 25 ns
Fuse (associated protection device)	max. 100 A gG/gL	max. 100 A gG/gL	max. 100 A gG/gL	max. 100 A gG/gL
admissible current of short-circuit	10 kA / 50 Hz	10 kA / 50 Hz	10 kA / 50 Hz	10 kA / 50 Hz
thermal disjuncture intergrated	oui	oui	oui	oui
distance deferment information disjuncture	non	oui	non	oui
connection capacity				
main terminals				
L/N	1,5-6 mm ²	1,5-6 mm ²	1,5-6 mm ²	1,5-6 mm ²
PE	4-25 mm ²	4-25 mm ²	4-25 mm ²	4-25 mm ²
derement terminals signage				
Supple rigid	--	1,5 mm ²	--	1,5 mm ²
Temperature of use		-20 C / +80 °C		
housing material		Polyester thermoplastique	UL 94 V-0	
protection degree		IP20		
installation		Rail din symétrique (EN 50022 / DIN46277-3)		
quantity of ports		1		

TYPE 2 TECHNOFOUDRE® TF-2202

Type 2
 $I_n / I_{max} : 10 / 20 \text{ kA}$
Single phased
removable

Single phase removable surge arrester TF-2202 (scheme C2 : common and differential mode protection) for second protection of power network. To be used in addition to first protection, or in single protection in areas that are fairly exposed to lightning.

- Surge arrester type 2 I_n 10 kA / I_{max} 20 kA
- Common and differential mode protection
- Removable shell
- Incorporated thermal disjuncture (carrying forward in option)



Features

References	TF-2202/335	TF-2202/335-T
kind of network	TT - TN-S	TT - TN-S
nominal tension U_n	230 VAC	230VAC
maximal tension of permanent service U_c	335 VAC / 255 VAC	335 VAC / 255 VAC
kept of temporary surges UT	> 400 VAC	> 400 VAC
discharge nominal current I_n wave 8/20 μ s	10 kA / 20 kA	10 kA / 20 kA
discharge maximum current I_{max}	20 kA / 40 kA	20 kA / 40 kA
protection level U_p under I_n	1,4 kV / 1,2 kV	1,4 kV / 1,2 kV
residual tension à 5kA (L-N/N-PE)	1,1/ 0,2 kV	1,1/ 0,2 kV
leaking current	< 1mA	< 1mA
following current N-PE	? 100 A	? 100 A
Delay of answer	< 100 ns	< 100 ns
associated protection device	max. 63 A gG/gL	max. 63 A gG/gL
admissible current of short-circuit	10 kA / 50 Hz	10 kA / 50 Hz
thermal disjuncture intergrated	oui	oui
distance deferment information disjuncture	non	oui
connection capacity		
Main terminals		
L,N	4-6 mm ²	4-6 mm ²
PE	4-25 mm ²	4-25 mm ²
deferment terminals signage		
supple rigid	--	1,5 mm ²
Temperature of use	-20°C / +80°C	
housing material	Polyester thermoplastique UL94 V-0	
protection degree	IP20	
montage	Rail din symétrique (EN 50022 / DIN46277-3)	
quantity of ports	1	

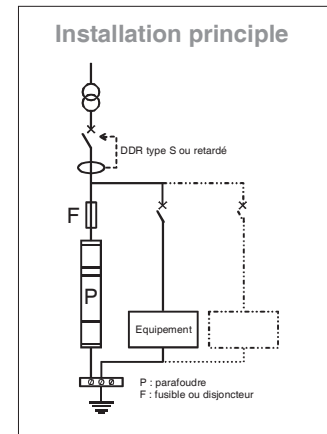
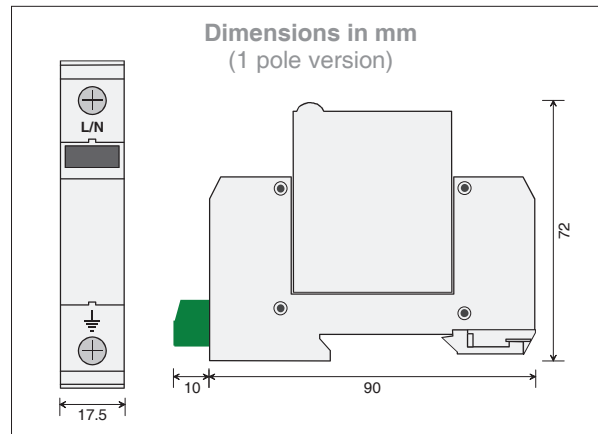
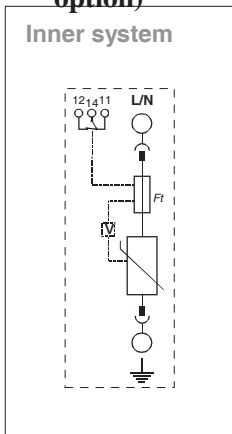
TYPE 2 TECHNOFOUDRE® TF-2100

Type 2
 $I_n / I_{max} : 5 / 10 \text{ kA}$
1 to 4 poles
removable

Removable surge arrester TF-2100 for the first protection of single phase or three phase networks for installations that are little exposed to lightning.

Assembly in 2, 3 ou 4 poles.

- Surge arrester type 2 I_{max} 10 kA
- Discharge nominal current I_n 5 kA
- Removable shell
- Incorporated thermal disjuncture (carrying forward in option)



Features

References	TF-2100/440	TF-2100/440-T	TF-2100/335	TF-2100/335-T
kind of network	TT-TN-IT	TT-TN-IT	TT-TN	TT-TN
nominal tension U_n	400 VAC	400VAC	230 VAC	230VAC
maximal tension of permanent service. U_c	440 VAC	440 VAC	335 VAC	335 VAC
kept of temporary surges U_T	U_c	U_c	> 400 VAC	> 400 VAC
discharge nominal current I_n (8/20 μ s)	5 kA	5 kA	5 kA	5 kA
discharge maximal current I_{max}	10 kA	10 kA	10 kA	10 kA
protection level U_p under I_n	1,6 kV	1,6 kV	1,2 kV	1,2 kV
residual tension à 4kA	1,5 kV	1,5 kV	1,1 kV	1,1 kV
leaking current I_c	< 1 mA	< 1 mA	< 1 mA	< 1 mA
following current	sans	sans	sans	sans
delay of answer	< 25 ns	< 25 ns	< 25 ns	< 25 ns
Fuse (associated protection device)	max. 63 A gG/gL	max. 63 A gG/gL	max. 63 A gG/gL	max. 63 A gG/gL
admissible current for short circuit	25 kA / 50 Hz	25 kA / 50 Hz	25 kA / 50 Hz	25 kA / 50 Hz
thermal disjuncture integrated	oui	oui	oui	oui
distance de fermeture disjuncture information	non	oui	non	oui
connection capacity main terminals				
L/N	4-35 mm ²	4-35 mm ²	4-35 mm ²	4-35 mm ²
PE	4-35 mm ²	4-35 mm ²	4-35 mm ²	4-35 mm ²
de fermeture terminals signage				
Supple rigid	--	1,5 mm ²	--	1,5 mm ²
temperature in use			-20 °C / +80 °C	
housing material			thermoplastique Polyester UL 94 V-0	
protection de gree			IP20	
installation			Rail din symetrical (EN 50022 / DIN46277-3)	
quantity of ports			1	

TECHNOFOUDRE® Box C/TF-1151/*

Un	400 V
Uc	440 V
In	20 kA
Up (sous Imp)	1,7 kV



visual not contractual

References

Single-phased : C/TF-1151/1
 Three phase : C/TF-1151/3
 Three phase + neutral : C/TF-1151/4
 (model shown)



Module TF 1151

This TECHNOFOUDRE® C/TF-1151/* kit is in keeping with NFC 15-100 convention (December 2003) and is particularly adapted to the first protection of the edifices equipped with lightning rods (industries, churches, individuals, rest-home...)

These systems are made up of « high voltage » modular surge arresters with incorporated thermal disjuncture for an ending-life in open circuit.

For an easy care, each module is made up of a signal in front with a mechanical braw, a removable shell, and is assembled forward an adapted fusible selector .

These modules are, presented in a thermoplastic kit IP 65 self-standing, supplied with a see-through door assembled on a waterproofing juncture. These doors allow us to see quickly if the modules work well. The kit is set on a wall by screwing the bottom of the kit with fastenings and lugs adapted to the bases (not supplied). These kits are in keeping with recommendations et regulation in force. (accordance to the conventions - NFC 15-443 - NFC 15-100 - NFC 61740-95 - ULI449-ed.2 - IEC 61643-11 - VDE 0675-6)

Standard Cables and accessories are supplied for the best implementation.

Our products are under one year warranty within the framework of a normal use. (cf. CGV)

Content of the box: (installation explanation supplied)

- 12 modules box
- Fusible selector 22x58 single phased with a visual access
- firing-pin fusible 22x58 – 50 A gG
- Surge arresters modules (x2) as described before
- 3 metre cables 10mm² (1 blue metre, 1 black metre, 1green-yellow metre)

TECHNOFOUDRE® Box C/TF-2400/*

Un	400 V
Uc	440 V
In	15 kA
Imax	40 kA
Up (sous Imax)	1,8 kV



visual not contractual

References

Single-phased : C/TF-2400/2

Three phase : C/T-2400/3

Three phase + neutral : C/TF-2400/4



Module TF 2400
(removable)

This TECHNOFOUDRE® C/TF-2400/* kit is particularly adapted to the SECOND protection of the edifices equipped with lightning rods (industries, churches, individuals, rest-home...) AND already equipped with protections at least equivalent to the TF-1151.

These systems are made up of « high voltage » modular surge arresters with incorporated thermal disjuncture for an ending-life in open circuit.

For an easy care, each module is made up of a signal in front with a mechanical braw, a removable shell, and is assembled forward an adapted fusible selector.

These modules are, presented in a thermoplastic kit IP 65 self-standing, supplied with a see-through door assembled on a waterproofing juncture. These doors allow us to see quickly if the modules work well. The kit is set on a wall by screwing the bottom of the kit with fastenings and lugs adapted to the bases (not supplied). These kits are in keeping with recommendations and regulation in force. (Accordance to the conventions - NFC 15-443 - NFC 15-100 - NFC 61740-95 - ULI449-ed.2 - IEC 61643-11 - VDE 0675-6)

Standard Cables and accessories are supplied for the best implementation.

Our products are under one year warranty within the framework of a normal use. (cf. CGV)

Content of the Box: (installation explanation supplied)

- 12 modules box
- Fusible selector 22x58 single phased with a visual access
- firing-pin fusible 22x58 – 50 A gG
- Surge arresters modules (x2) as described before
- 3 metres cables 10mm² (1 blue metre, 1 black metre, 1 green-yellow metre)

TECHNOFOUDRE® Box C/TF-2202

Un	400 V
Uc	440 V
In	15 kA
Imax	40 kA
Up (sous Imax)	1,8 kV



visual not contractual



Module TF 2202
(removable)

This TECHNOFOUDRE® C/TF-2202 Box is particularly adapted to the single phase electrical communications FIRST protection of houses and all the electrical communications bound to individuals. (Buildings which use is not professional – buildings without any lightning rods on). These systems are made up of « high voltage » modular surge arresters with incorporated thermal disjuncture for an ending-life in open circuit. For an easy care, each module is made up of a signal in front with a mechanical braw, a removable shell, and is assembled forward an adapted fusible selector.

These modules are, presented in a thermoplastic box IP 65 self-standing, supplied with a see-through door assembled on a waterproofing juncture. These doors allow us to see quickly if the modules work well. The kit is set on a wall by screwing the bottom of the kit with fastenings and lugs adapted to the bases (not supplied). These kits are in keeping with recommendations et regulation in force. (Accordance to the conventions - NFC 15-443 - NFC 15-100 - NFC 61740-95 - ULI449-ed.2 - IEC 61643-11 - VDE 0675-6)

Standard Cables and accessories are supplied for the best implementation.

Our products are under one year warranty within the framework of a normal use. (cf. CGV)

Content of the box: (installation explanation supplied)

- 4 modules box
- Fusible selector 14 x 51 single phased with a visual access
- firing-pin fusible 14x51 – 50 A gG
- 1 module 2202 as described before
- 3 metres cable 10mm² (1 blue metre, 1 black metre, 1 green-yellow metre)
- 3 nozzles 10mm²

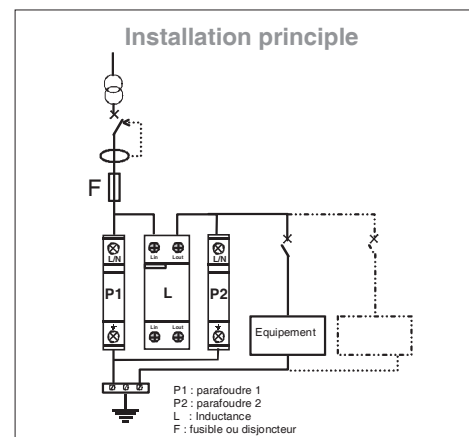
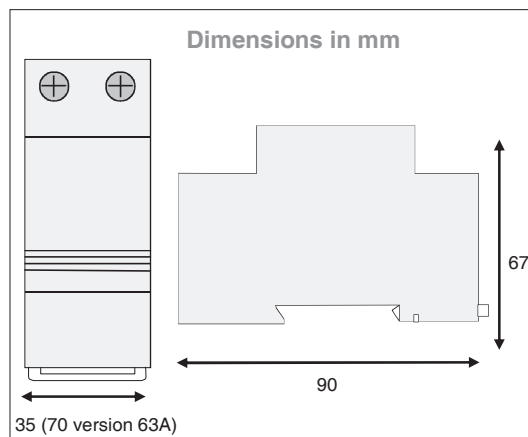
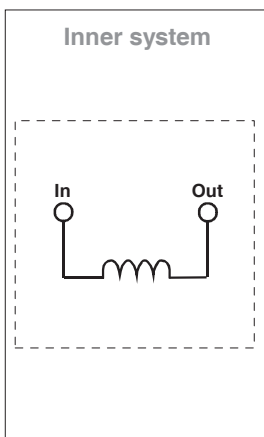
COORDINATION INDUCTION TF-IND

Inductance
 $I_N : 35 / 63 / 125 \text{ A}$

Inductions for first and second surge arrester coordination in the event that the cable distance between those two protection floors is very low.



- Coordination induction
- Current max. 35 / 63 / 125 A
- Modular



Features	TF-IND35	TF-IND63	TF-INDK125
References			
nominal tension Un	500VAC	500VAC	500 VAC
Inductance	15 μ H	15 μ H	15 μ H
Maximal current	35 A	63 A	125 A
up stream fuse	35 A gL	63 A gL	125 A gL
mode of connection	série	série	série
connection capacity			
supple	16 mm ²	16 mm ²	35 mm ²
rigid	35 mm ²	35 mm ²	50 mm ²
Temperature of use	-20°C / +85°C	-20°C / +85°C	-20°C / +85°C
housing material	Thermoplastique UL 94 V0	Thermoplastique UL 94 V0	Thermoplastique UL 94 V0
protection degree	IP20	IP20	IP55
Dimension	2 modules	4 modules	159x119x76

TECHNOFOUDRE® INDICATIONS TF-DS

Link in series
 $I_n / I_{max} : 10 / 20 \text{ kA}$
removable
Signage by default

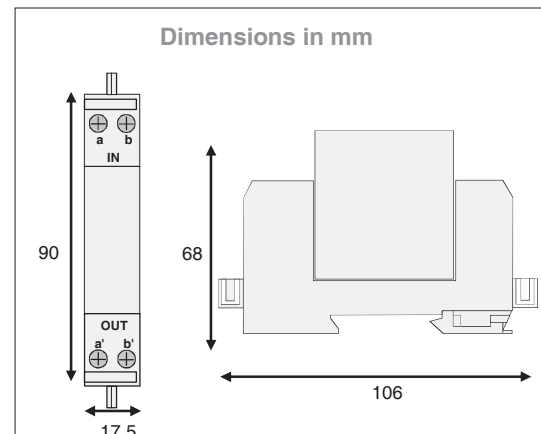
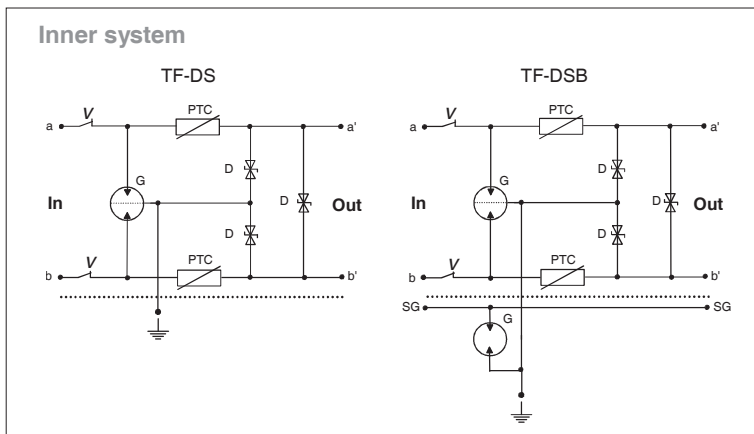
Removable surge arrester with signal TF-DS for electronic transmission supplied protection :

TF-DS/5,12,15,24,30,48 : E/S automaton

TF-DS/24 : link series RS232 (V24)

TF-DS/12 : link series high speed RS422 (V11), RS485, Ethernet

- Removable shell
- Thermal protection and current (with signal)
- Connection terminal for shoring (option)
- Grounding thanks to the rail



Features

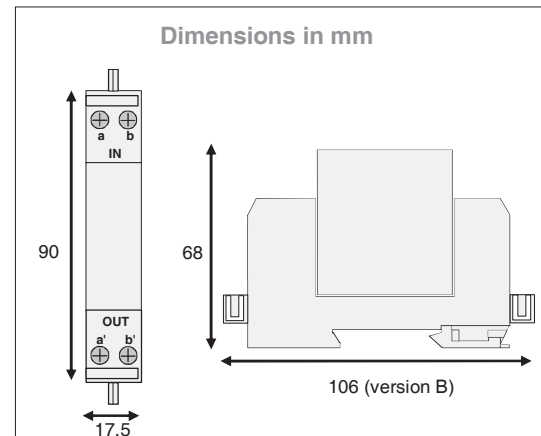
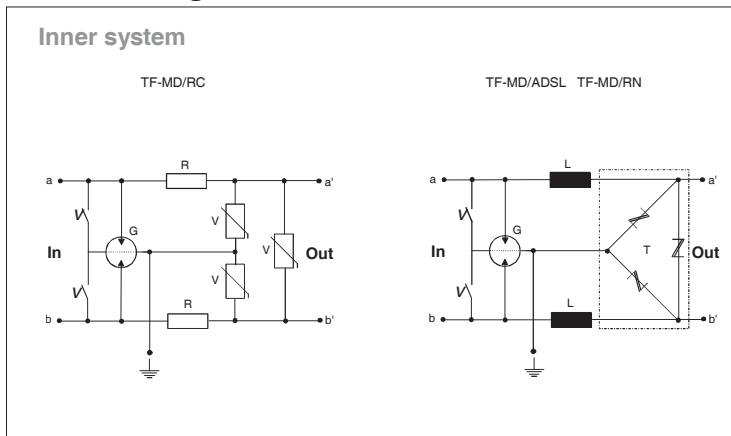
References	TF-DS/5	TF-DS/12	TF-DS/15	TF-DS/24	TF-DS/30	TF-DS/48	TF-DS/60
nominal tension U_n	5VDC	12VDC	15VDC	24VDC	30VDC	48VDC	60VDC
maximal tension U_{max}	6VDC	14VDC	17VDC	26VDC	34VDC	55VDC	65VDC
nominal intensity I_n at 25°C	100 mA	100 mA	100 mA	100 mA	100 mA	100 mA	100 mA
discharge nominal current $I_n (I_{max})$	10kA (20kA)	10kA (20kA)	10kA (20kA)	10kA (20kA)	10kA (20kA)	10kA (20kA)	10kA (20kA)
residual tension at 5kA	env. $3 \times U_n$	env. $3 \times U_n$	env. $3 \times U_n$	env. $3 \times U_n$	env. $3 \times U_n$	env. $3 \times U_n$	env. $3 \times U_n$
series resistance in ohm	env. 1	env. 1	env. 1	env. 1	env. 1	env. 1	env. 1
boundward frequency	0,6MHz	0,9MHz	1,1MHz	1,4MHz	1,8MHz	2,2MHz	3MHz
delay of answer	< 1ns						
life ending	open circuit						
connection capacity	6 mm ² max						
temperature in use	-25°C/+70°C						
housing material	Thermoplastic, UL94 V0						
installation	sur rail Din						
colour	yellow						

TECHNOFOUDRE® ANALOG TELEPHONE LINES
ADSL – NUMERIS
TF-MD/...

**Telephone RTC / ADSL /
RNIS**
 $I_n / I_{max} : 10 / 20 \text{ kA}$
removable
To be installed on rail

Removable surge arrester TF-MD for telephone supplies protection:
- analog (RTC/ADSL) : modems, fax, phones, Answer machines, videotransmitters.
- digital (Numéris 2 wire access S) : modems, main station.

- Removable shell
- Thermal protection
- Connection terminal for shoring (option)
- Grounding thanks to the rail



References	TF-MD/RC	TF-MD/RNIS	TF-MD/ADSL
nominal tension U_n	150 VDC	120 VDC	120 VDC
maximal tension U_{max}	170 VDC	170 VDC	170 VDC
nominal intensity I_n at 25°C	1A	200 mA	200 mA
discharge nominal current $I_n (I_{max})$	10kA (20kA)	10kA (20kA)	10kA (20kA)
residual tension at 5kA	approx. 3 U_n	< 350V	< 350V
series resistance in ohm	1	0,3	0,3
boundary frequency	10M Hz	17M Hz	17M Hz
delay of answer	< 25 ns	< 1 ns	< 1 ns
connection capacity		6 mm ² max	
Temperature in use		-25°C/+70°C	
housing material		Thermoplastic. UL 94 V0	
installation		on rail Din	
Colour		yellow	

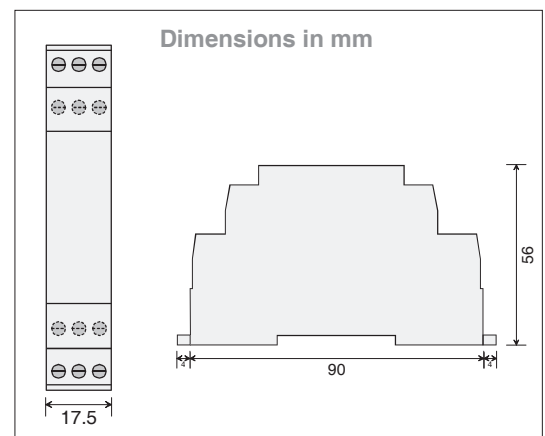
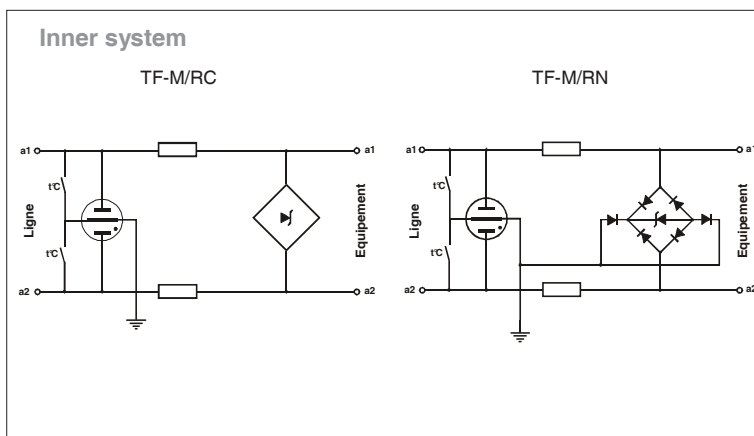
TECHNOFOUDRE® FOR ANALOG TELEPHONE LINES / ADSL – NUMERIS TF-M/...

Telephone
RTC/ADSL
Numéris
 $I_n / I_{max} : 5 / 10 \text{ kA}$
To be installed on
rail

Removable surge arrester TF-MD for telephone supplies protection:
- analog (RTC/ADSL) : modems, fax, phones, Answer machines, videotransmitters.
- digital (Numéris 2 wire access S) : modems, main station.



- TF-M/RC compatible ADSL 2 Mbits/s
- TF-M/RN compatible Numéris 4 Mbits/s (1 and 2 bracs)
- Surge arresters with Thermal protection



Features

References	TF-M/RC	TF-M/RN
nominal tension U_n	175VDC	*/- 6VDC
maximal tension U_{max}	185VDC	*/- 7VDC
nominal intensity I_n at 25°C	275 mA	275 mA
discharge nominal current I_n (I_{max}) (category C2 10 shocks 8/20)	5kA (10kA)	5kA (10kA)
residual tension at 5kA ($a1/a2$ / $a1-a2/PE$)	<250V / 700V	15V / 700V
series resistance in ohm	0,1	< 8
nominal rate	2 Mbits/s	2 Mbits/s
delay of answer	< 25 ns	< 25 ns
connection capacity	2,5 mm ² max	
Temperature of use	-25°C/+70°C	
housing material	Polyamide. UL 94 V0	
installation	on collar	
Colour	Grey	
trial group (NF EN 61643-21)	C2, C3, D1	

TECHNOFOUDRE® FOR ANALOG TELEPHONE LINES / ADSL – NUMERIS TF-MO/...

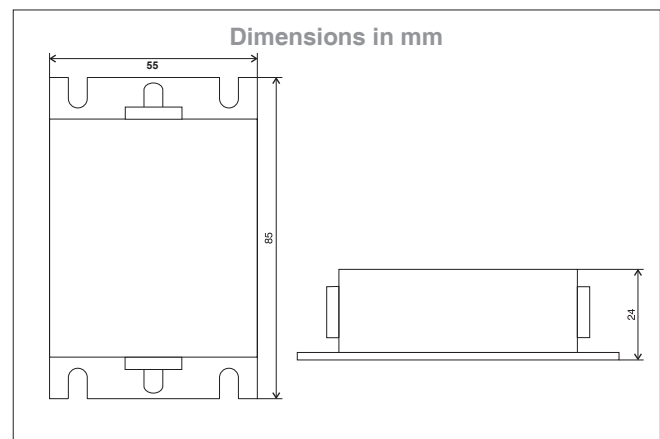
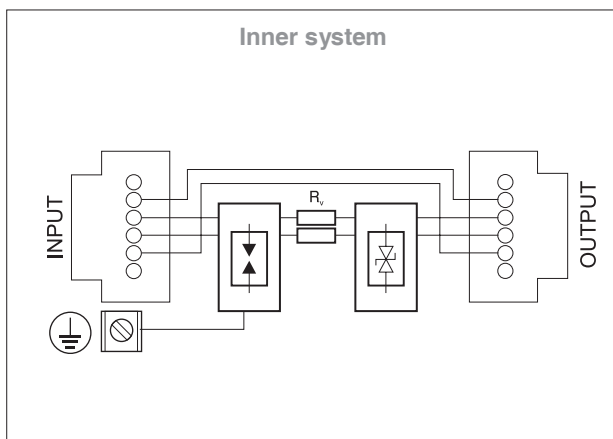
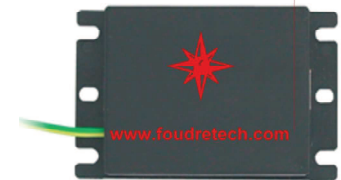
Telephone RTC
Telephone Numeris
 I_n : 10 kA
Mural holdfast

Urge arrester (fixation on the wall) TF-MO/ for telephone supplies protection (telephone, fax, modem...)

TF-MO/RC- analog (RTC/ADSL): modems, fax, phones, answer machines, videotransmitters.

TF-MO/RN- digital (Numéris 2 wire access S): modems, main station.

- Fixation on the wall
- 2 floors protection
- RJ11 (RTC) RJ45 connection (numéris)



Features	TF-MO/RC	TF-MO/RN
References		
Nominal tension U_n	175VDC	48VDC
max.imal tension U_{max}	185VDC	-
Nominal intensity at 25°C I_N	200mA	-
discharge nominal current I_n	10kA	10kA
Protection level at I_n Up		
Line - line	< 250 V	< 60 V
Line - PE	< 250 V	< 600 V
Series resistance in ohm	6,8	1
Frequency	-	2 MHz
Transmission gear	128 kbit/s	128 kbit/s
Delay of answer line-line / line - PE	< 1 ns / 100 ns	< 1 ns / 100 ns
connection (entrance, exit)	Connecteur RJ11 (RJ 12) femelle	RJ 45
Connection capacity BJ PE	4 mm ² max	4 mm ² max
Tightening couple BJ PE	0,6 Nm	0,6 Nm
Temperature in use	-25°C/+70°C	-25°C/+70°C
Housing material	PA	PA
installation	Mural holdfast	Mural holdfast
comment	Protected pair : 3-4	Protected pair : 4-5 / 3-6

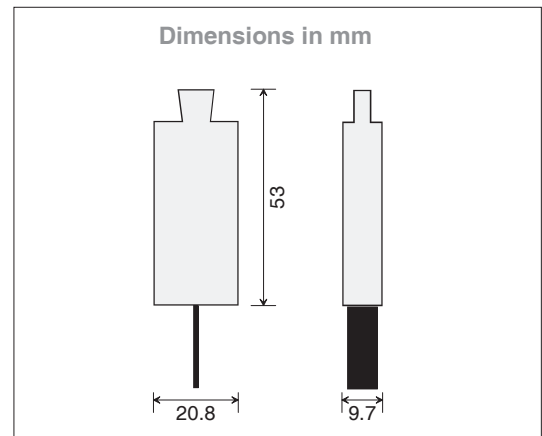
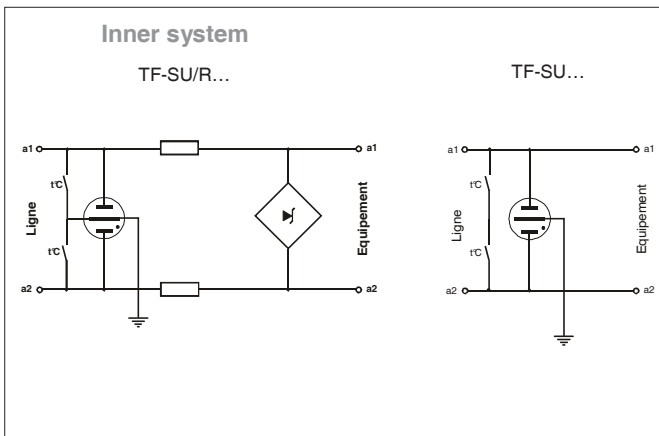
**TECHNOFOUDRE® ANALOGICAL TELEPHONE LINES
/ ADSL – NUMERIS
TF-SU/...**

**Telephone
RTC/ADSL
Numeris
 $I_n / I_{max} : 5 / 10 \text{ kA}$**

Surge arrester TF-SU/ for telephone supplies protection (telephone, fax, modem...).

These surge arresters can be directly implemented on the distributors.

- TF-SU/RC compatible ADSL 2 Mbits/s
- TF-SU/RN compatible Numéris 4 Mbits/s
- Surges arresters with thermal protection
- Direct connection on distributors.



Features	TF-SU/RC	TF-SU/RN	TF-SU/G
references			
nominal tension U_n	175VDC	7- 6VDC	175VDC
maximal tension U_{max}	185VDC	7- 7VDC	185VDC
nominal intensity I_n at 25°C	275 mA	275 mA	275 mA
discharge nominal current $I_n (I_{max})$ (category C2 10 shocks 8/20)	5kA (10kA)	5kA (10kA)	5kA (10kA)
residual tension at 5kA (a1/a2 / a1-a2/PE)	<250V / 700V	15V / 700V	700V / 700V
resistance in series in ohm	0,1	<8	-
nominal rate	2 Mbits/s	4 Mbits/s	10 Mbits/s
delay of answer	<25 ns	<25 ns	<100 ns
Connection capacity		-	
temperature in use		-25°C/+70°C	
housing material		Polyamide UL 94 V0	
installation		on collar	
Colour		Grey	

Compatibilities :
 Series K : Krone®
 Series I : Infra+®
 Series P : Pouyet® (3M®)
(® : Krone, Infra+ and Pouyet are the brand laid down)

**TECHNOFOUDRE® ANALOG TELEPHONE LINES
/ ADSL – NUMERIS
OEM
TF-GD**

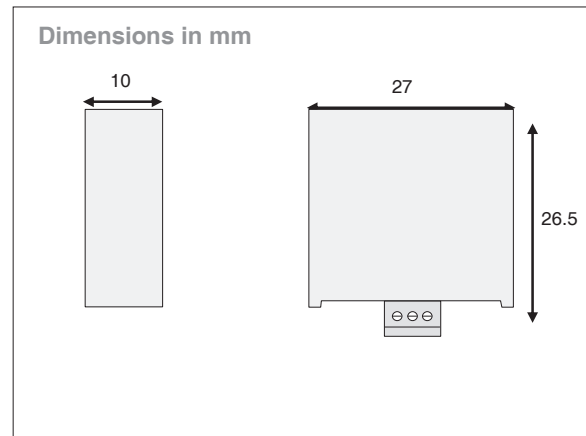
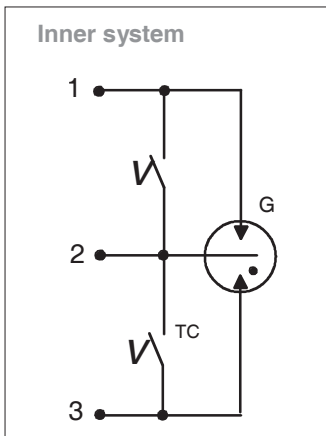
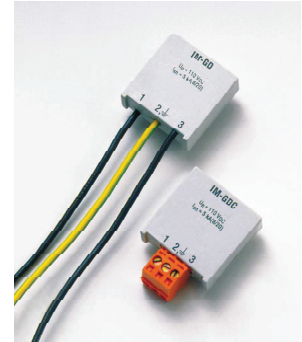
**Telephone
I_n : 5 kA**

Surge arrester TF-GD for analog telephone lines protection, RTC, RNIS, ADSL.

OEM Version to be directly incorporated in supplies

Gas burst with a short-circuit setting up (fail-safe).

- Low voltage surge arrester
- Discharge nominal current I_n 5 KA



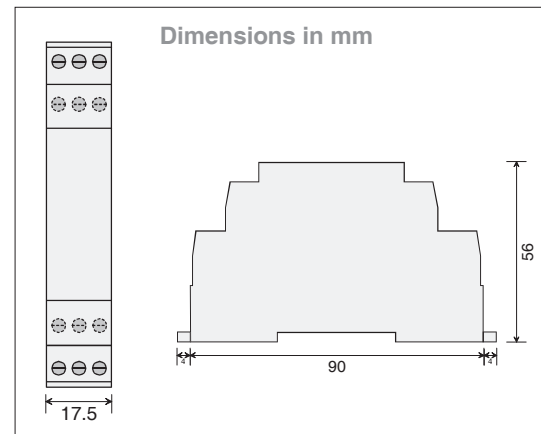
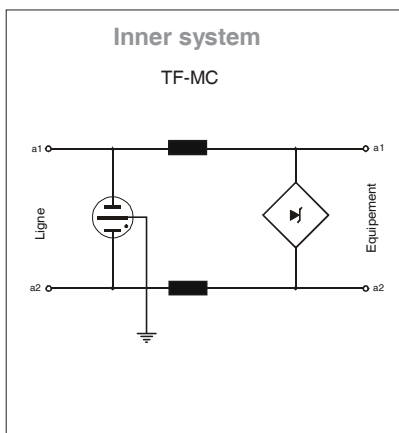
Features	TF-GD	TF-GD/C
References		
nominal tension U _n	150VDC	150VDC
maximal tension U _{max}	170VDC	170VDC
nominal intensity I _n at 25°C	6A	6A
discharge nominal current I _n	5 kA	5 kA
residual tension	approx. 3U _n	approx. 3U _n
Section		
1-3	0,5 mm ²	max 1,5 mm ²
2 (PE)	0,75 mm ²	max 1,5 mm ²
conductor length	150 mm	-
delay of answer		< 1 ns
life ending		short circuit
temperature in use		-25°C/+70°C
storage temperature		-40°C/+80°C
housing material		Thermoplastic. UL 94 V0
housing colour		grey

TECHNOFOUDRE® ONGOING ALIMENTATION TF-MC

Alim. 12, 24, 48 VDC
 $I_n / I_{max} : 5 / 10 \text{ kA}$
To be installed on rail

Cast in one piece surge arrester TF-MC for surge protection on supplies connected to ongoing feed (12 ou 24 VDC) : transducers, transmitters, automatons, acquired peripheral.

- To be installed on a Din rail
- Thermal protection
- Strong discharge power $I_n : 5\text{kA} / I_{max} : 10\text{kA}$



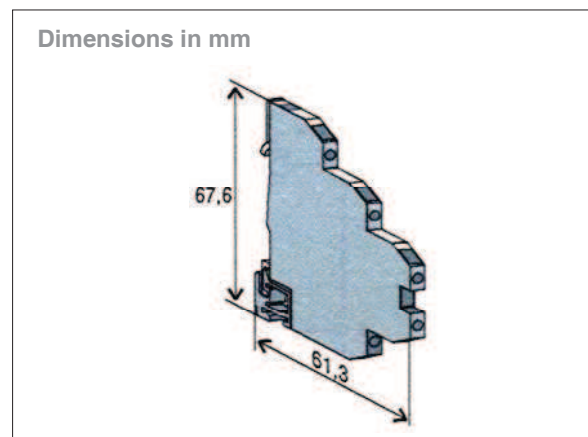
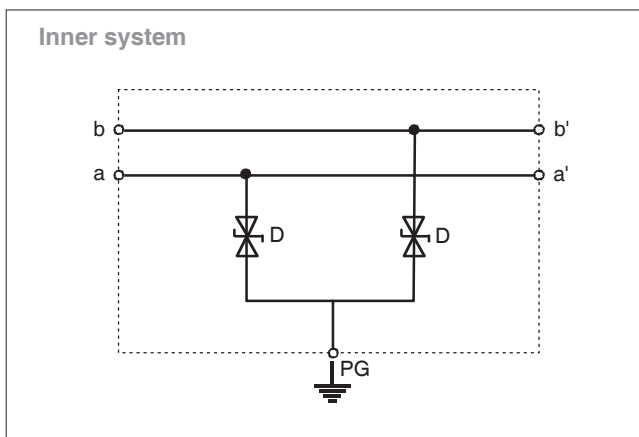
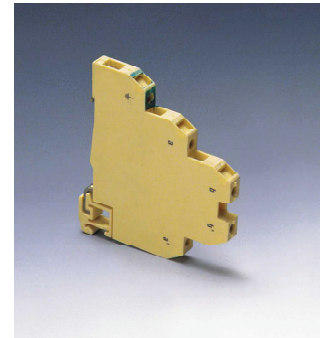
Features	TF-MC/12	TF-MC/24	TF-MC/48
References			
nominal tension U_n	12VDC	24VDC	48VDC
Maximal tension U_{max}	14VDC	27VDC	53VDC
Nominal intensity I_n à 20°C	10 A	10 A	10 A
Discharge nominal current $I_n (I_{max})$	5kA (10kA)	5kA (10kA)	5kA (10kA)
Residual tension à 5kA	25 V	40 V	85 V
Resistance in series in ohm	< 0.1	< 0.1	< 0.1
Boundary frequency / nominal rate	-	-	-
Delay of answer		< 25 ns	
Life ending		short circuit	
Connection capacity		2,5 mm ² max	
Temperature in use		-25°C/+70°C	
Housing material		Polyamide UL 94 V0	
installation		On rail Din	
Triax group (NF EN 61643-21)		C2, C3, D1	

TECHNOFOUDRE® INDICATIONS TF-DF

Indications
 I_n : 0.12 à 0.5 kA
Rail stone

Surge arresters TF-DF allow to ensure electronic supplies protection: E/S automaton... Their pales appearance enables them to be located in cupboard so as to save room.

- Low voltage surge arrester
- Discharge nominal current I_n 120 à 550A
- To be installed on a rail (grounding thanks to the rail)



references	TF-DF12V	TF-DF24V	TF-DF60V
nominal tension U_n	12VDC	24VDC	60VDC
maximal tension U_{max}	15VDC	28VDC	64VDC
nominal intensity at 25°C I_N	10A	10A	10A
discharge nominal current I_n	500A	250A	100A
residual tension	approx. 3Un	approx. 3Un	approx. 3Un
Frequency			
thermal protection			
delay of answer		< 1 ns	
life ending		short circuit	
section able to be connected		max. 2,5 mm ²	
Temperature in use		-25°C/+70°C	
storage temperature		-40°C/+80°C	
housing material		Thermoplastic, UL 94 V0	
housing colour		Beige	
installation		sur rail din	

TECHNOFOUDRE® BT OEM TF-MI

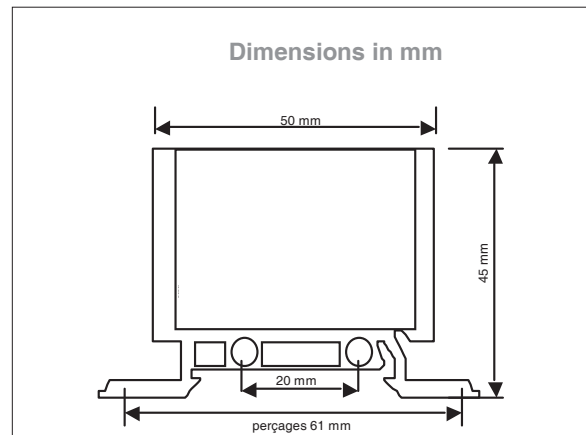
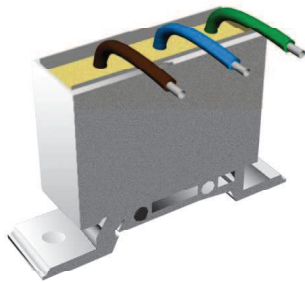
Parasurge OEM
 $I_n / I_{max} : 5 / 10 \text{ kA}$
Single phase
Installation on rail
ordirect

Feeded on network - Supplies protection 230 Veff.

OEM Products which aim is to incorporate into the supply to be protected.

A forward Fusible protection is compulsory in order to limit whatever overload danger.

- Exit on wire 2.5mm²
- Fixation on DIN rail or direct one
- varistance technology + spark



Features

References	TF-M I
kind of network	TT-TNS
nominal tension U_n	230 VAC
permanent service maximal tension U_c	335 VAC
kept of temporary surges U_T	> 400 VAC
discharge nominal current I_n (8/20 μ s)	5 kA
discharge maximal current I_{max}	10 kA
protection level U_p under I_n (MC/MD)	1,4 kV/1,3 kV
residual tension à 5kA	<1 kV
leaking current I_c	< 0,1 mA
following current	sans
delay of answer	< 100 ns
associated protection device	maximal fuse 15 A gG/gL
admissible short circuit current	5 kA / 50 Hz
connection capacity	
main terminals L,N,PE	2,5 mm ²
Temperature in use	-20°C / +80°C
housing material	Polyamide UL 94 V-0
protection degree	IP20
installation	Rail din symétrique (EN 50022 / DIN46277-3)
quantity of ports	1

TECHNOFOUDRE® INDICATIONS TF-RS

Links in series
RS 232,422, 485
Connector SUB D

Surge arresters TF-RS for electronic interfaces protection: series link RS232(V24), RS422(V11), RS485... equipped with connectors SUB D.

- Protection RS 232, RS 422, RS 485
- Connectors SUB D 9 and 25 points
- Thin protection thanks to diodes.



Features	TF-RS/D9	TF-RS/D25
References		
nominal tension Un	15VDC	15VDC
Maximal tension Umax	17VDC	17VDC
Nominal intensity In à 25°C	1A	1A
Discharge nominal current In (Imax)	0,5 kA / 5 kA (SG- PE)	0,5 kA / 5 kA (SG- PE)
discharge maximal current Imax	0,75 kA / 10 kA (SG- PE)	0,75 kA / 10 kA (SG- PE)
Protection level at In Up		
Line - line	< 44V	< 44V
Line - SG	< 22V	< 22V
Line - PE	< 880V	< 880V
SG - PE	< 880V	< 880V
Protection level at 1 kV/µs Up		
Line - line	< 45V	< 45V
Line - SG	< 45V	< 45V
Line - PE	< 890V	< 890V
SG - PE	< 890V	< 890V
Delay of answer (L-L, L-SG/L-PE, SG-PE)	< 1 ns / < 100ns	
Fréquency	13MHz	13MHz
Transmission gear	10 Mbit/s	10 Mbit/s
Connectors	SUB D 9 points	SUB D 25 points
Clamp Connection capacity PE	2,5 mm²	2,5 mm²
Temperature in use	-25°C/+70°C	-25°C/+70°C
Housing material	ABS	ABS
Dimensions (LxHxP)	58x79x29 mm	78x58x29 mm
Norm	NF EN 61643-21	NF EN 61643-21

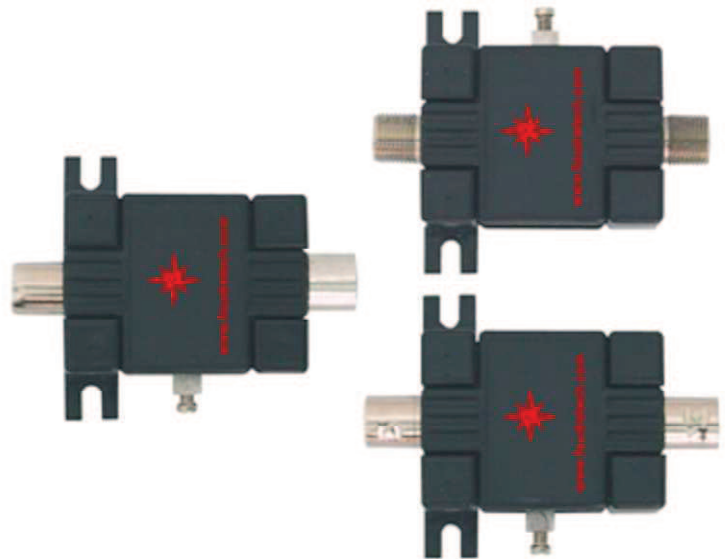
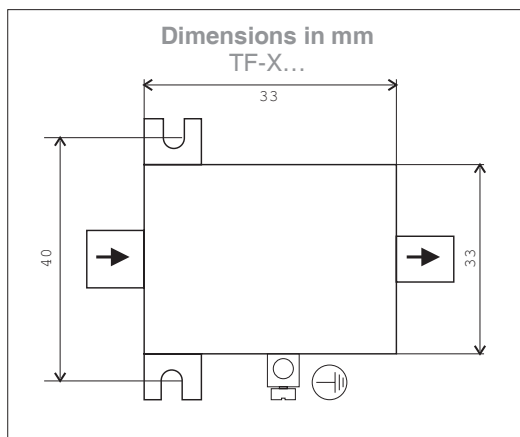
TV VIDEO SATELLITE TECHNOFOUDRE®

TF-X...TV - TF-X...SAT - TF-X...VID

Coax : TV / Sat./
Video
 I_n : 10 kA
 I_{imp} : 2.5 kA
Mural holdfast

Surge arresters TF-X... ensure video reception system(s) protection : land aerial, inner dispersion, cable TV (CATV), satellite reception, video camera

- Discharge nominal current I_n 10kA
- type TV, F, BNC connection
- Fixation on a wall



Features

References	TF-X230TV-M/F	TF-X230SAT-F/F	TF-X230VID-F/F
nominal tension	180 VDC	180 VDC	180 VDC
permanent service tension U_c	200 VDC	200 VDC	200 VDC
discharge nominal current I_n	4 A	4 A	4 A
discharge maximal current I_{imp} (10/350 μ s)	2,5 kA	2,5 kA	2,5 kA
discharge nominal current I_n (8/20 μ s)	10 kA	10 kA	10 kA
combine tension U_{oc}	-	-	-
protection level at I_n U_p	600	600	600
maximal frequency	< 862 MHz	< 2,15 GHz	< 2,15 GHz
maximal exit power P_T	-	-	-
loss by insertion a_E	< 0,5 dB	-	-
lay of answer	< 100 ns	< 100 ns	< 100 ns
distinctive Impedance	75 Ω	75 Ω	50 Ω
temperature in use	-40°C/+80°C	-40°C/+80°C	-40°C/+80°C
kind of connectors	TV F/F	F F/F	BNC 50 F/F
housing material	ABS / métal	ABS / métal	ABS / métal
Norm	NF EN 61643-21	NF EN 61643-21	NF EN 61643-21

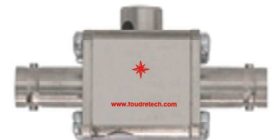
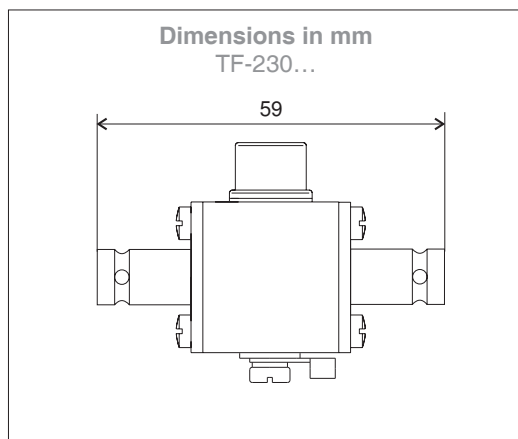
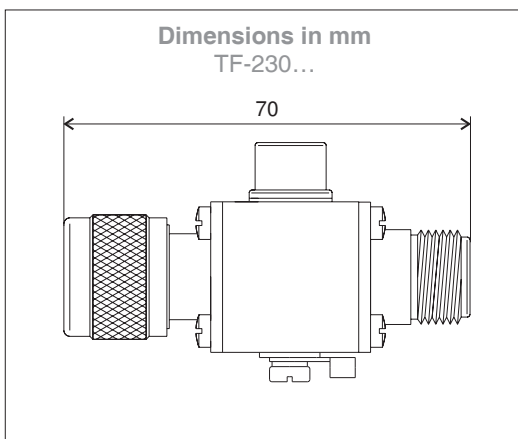
TRANSMISSION SYSTEMS TECHNOFOUDRE® TF-230... / TF-230...

Conn. : N et BNC
Conn. : M/F ou F/F
 I_n / I_{max} :
10kA/20kA

Surges arresters TF-230... ensure the protection of transmission systems against surges.

transmitters`receptors, repeaters, people lookup, oder by radio.

- Discharge nominal current I_n 10kA
- type N et BNC connection
- max. Frequency < 2.5 GHz (2 GHz BNC)
- Power max. 20 à 100W



Features

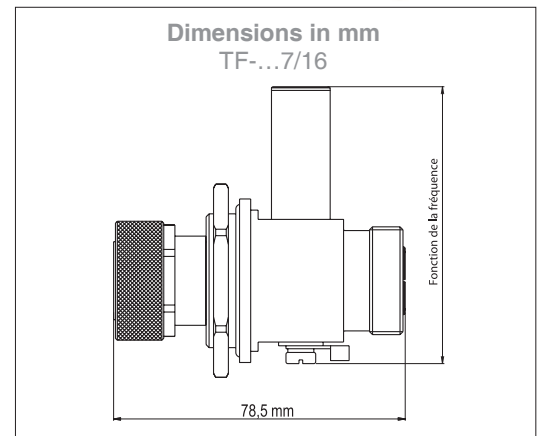
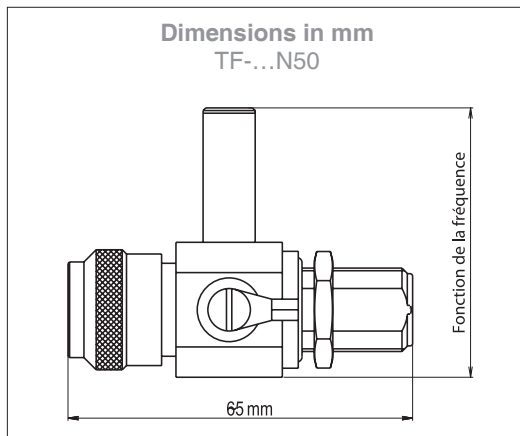
References	TF-230N50F/F(M/F)	TF-230B50F/F(M/F)
nominal tension	150 VDC	150 VDC
permanent service maximal tension U_c	170 VDC	170 VDC
discharge nominal current I_N	4 A	4 A
discharge nominal current I_n (8/20 μ s)	10 kA	10 kA
discharge maximal current I_{max} (8/20 μ s)	20 kA	20 kA
combined tension U_{oc}	20 kV	20 kV
protection level at U_{oc} U_p	900 V	900 V
maximal frequency	< 2,5 GHz	< 2 GHz
maximal exit power P_T	100 W	100 W
loss by insertion a_e	< 0,4 dB	< 0,4 dB
delay of answer	< 100 ns	< 100 ns
distinctive Impedance	50 Ω	50 Ω
temperature in use	-40 C/+80°C	-40 C/+80°C
kind of connectors	N 50 Male/Female ou N50 Femal e/Female	BNC 50 Female/Male ou BNC 50 Female/Female
housing material	metal	metal
Norms	NF EN 61 643-21	NF EN 61 643-21

FOURTH WAVE TECHNOFOUDRE® TF-...N TF-...7/16

A fourth of wave
Connectors : N et
7/16
 $I_n / I_{imp} : 10kA/40kA$
Use : GSM

Surge arresters TF-...N / TF-...7/16 ensure protection against transmission systems' inferred surges: transmitters/receptors, GSM repeaters, radio broadcast FM band.

- Discharge nominal/max current $I_n/I_{imp} : 10kA / 40kA$
- type N et 7/16 connection
- Frequency 0.9 à 2.4 GHz
- low $U_p (<40 V)$



Features	Connecteurs type N			Connecteurs type 7/16	
	TF-0,9N50-W/F	TF-1,8N50-W/F	TF-2,4N50-W/F	TF-0,9-7/16-M/F	TF-1,8-7/16-W/F
References					
discharge pulse current I_{imp} (10/350 μ s)	40 kA	40 kA	40 kA	40 kA	40 kA
discharge nominal current I_n (8/20 μ s)	10 kA	10 kA	10 kA	10 kA	10 kA
discharge maximal current I_{max} (8/20 μ s)	50 kA	50 kA	50 kA	50 kA	50 kA
combine tension U_{oc}	20 kV	20 kV	20 kV	20 kV	20 kV
protection level at U_{oc} U_p	34 V	34 V	34 V	34 V	34 V
frequency range	0,9 GHz \pm (5-20%)	1,8 GHz \pm (5-20%)	2,4 GHz \pm (5-20%)	0,9 GHz \pm (5-20%)	1,8 GHz \pm (5-20%)
loss by insertion aE	< 0,1 dB	< 0,1 dB	< 0,1 dB	< 0,1 dB	< 0,1 dB
distinctive Impédance	50 Ω	50 Ω	50 Ω	50 Ω	50 Ω
ture in use		-40°C/+80°C			-40°C/+80°C
kind of connectors		N 50 mâle/femelle			7/16 male/female
housing material		métal			métal
Norms		NF EN 61643-21			NF EN 61643-21
Use	GSM900	GSM1800	E/R with narrow tape	GSM900	GSM1800

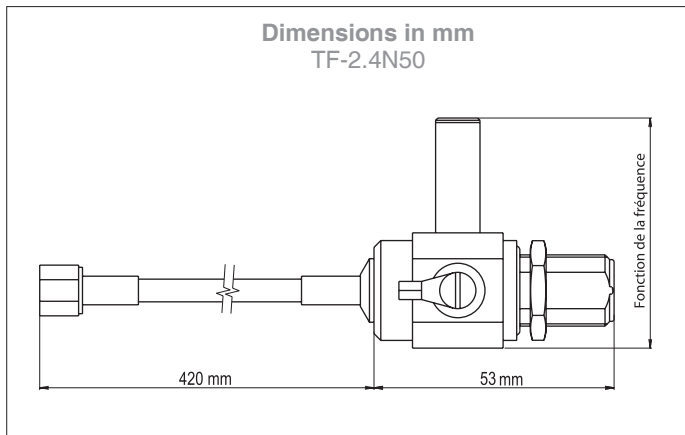
Fourth wave technology: the gas spark is replaced by a short-circuit which is calculated according to the use frequency band (bandpass filter).

Advantage comparing to the gas spark: really low U_p and unlimited shelf life

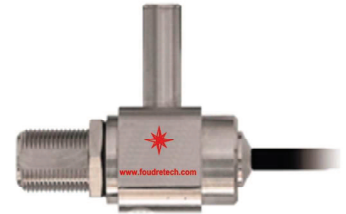
FOURTH WAVE TECHNOFOUDRE® TF-2.4N50/...

Surge arresters TF-2.4N50 ensure protection against transmission systems' inferred surges:
Diversified way of connection adaptable to many situations.

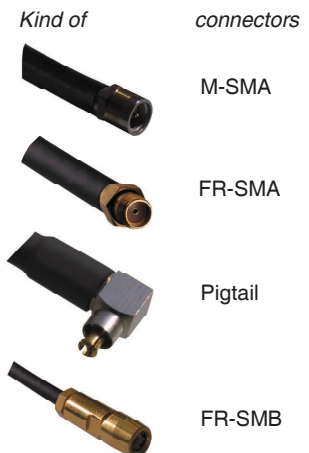
- discharge nominal/max. current I_n/I_{imp} : 10kA / 40kA
- type N-SMA,SMB, connection Pigtail, et N-BNC
- Frequency : 2.4 GHz
- Low Up (< 40V)



A fourth wave
Conn. : N-SMA,SMB
Conn. : N-BNC,
PIGTAIL
 I_n / I_{imp} : 10kA/40kA



Connectors available



Features	Kind of connectors			Kind of conn. N - BNC
	TF-2,4N50/SMA-F/L/F	TF-2,4N50/SMA-F/L/M	TF-2,4N50/SMA-F/L/RF	TF-2,4N50/B50-F/L/M
References				
discharge pulse current I_{imp} (10/350 μ s)	40 kA	40 kA	40 kA	40 kA
discharge nominal current I_n (8/20 μ s)	10 kA	10 kA	10 kA	10 kA
discharge maximal current I_{max} (8/20 μ s)	50 kA	50 kA	50 kA	50 kA
combined tension U_{oc}	20 kV	20 kV	20 kV	20 kV
protection level at U_{oc} Up	34 V	34 V	34 V	34 V
frequency range	2,4 GHz \pm (5-20%)	2,4 GHz \pm (5-20%)	2,4 GHz \pm (5-20%)	2,4 GHz \pm (5-20%)
loss by insertion aE	< 0,4 dB	< 0,4 dB	< 0,4 dB	< 0,4 dB
distinctive impedance	50 Ω	50 Ω	50 Ω	50 Ω
temperature in use		-40C/+80C		-40C/+80C
kind of connectors	N 50 femelle - SMA femelle	N 50 fem. - SMA mâle (mod.)	N 50 fem. - SMA fem. (inv.)	N 50 fem. - BNC 50 mâle
housing material		métal		métal
Norms		NF EN 61643-21		NF EN 61643-21

Comment : identical technical features with N-SMB et N-PIGTAIL connectors

Fourth wave technology: the gas spark is replaced by a short-circuit which is calculated according to the use frequency band (bandpass filter).

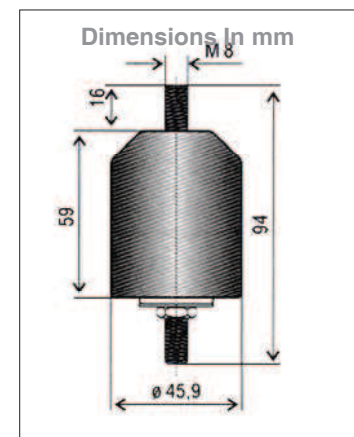
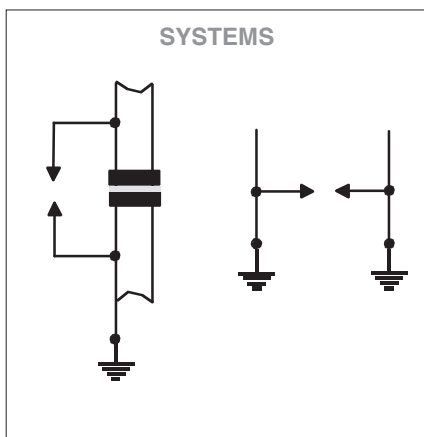
Advantage comparing to the gas spark: really low Up and unlimited shelf life.

ISOLATING SPARK GAPS ED-ECL

Eclateur
I_n : 100 kA
Racc. : tige M8


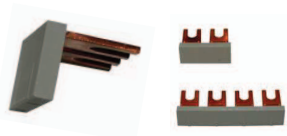

Isolating spark gaps ensure supplies potential balancing when the grounds are not connected together. They also allow aerial masts' protection, protection discharge spout, metal framework.

- Isolating spark gaps
- Discharge nominal current I_n 100kA
- Exterior installation
- Threaded rod M8



Features	ED-ECL/1	ED-ECL/2,5	ED-ECL/10
References			
alternative tension of solicitation (50hz)	1KV	2,5KV	10KV
baiting Tension (1,2/50µs)	2KV	5KV	<15KV
discharge nominal current I _n (8/20µs)	100 KA	100 KA	50 KA
insulation resistance	<10 Gohms	<10 Gohms	<10 Gohms
Dimensions	94x45,9 mm		
connection's mode	threaded pipe M 8		
Temperature in use	-30°C / +80°C		
housing material	thermoplastic polyester UL 94 V-0		
protection degree			
installation	external		

SURGE ARRESTERS' ACCESSORIES

	Nomination	Number of poles		References
	PF Fork Bridging bar (section 16 mm ²)	2 poles		PF-O2
		3 poles		PF-O3
		4 poles		PF-O4
		6 poles		PF-O6
		8 poles		PF-O8
		28 poles		PF-O28
		57 poles		PF-O57
	Bridging bar with casting insulator (section 16 mm ²)	2 poles		PF-F2
		4 poles		PF-F4
	Cut-circuit fusible for 22x58 rounds (with indication fusible melting)	2 poles		PF-S2
		3 poles		PF-S3
		4 poles		PF-S4
 	Cylinder-shape fusibles type gG 22x58 mm (avec perceur)	In	U(V)	
		16	690	PF-Fu16
		20	690	PF-Fu20
		25	690	PF-Fu25
		32	690	PF-Fu32
		40	690	PF-Fu40
		50	690	PF-Fu50
		63	690	PF-Fu63
		80	500	PF-Fu80
		100	500	PF-Fu100





LIGHTNING ARRESTERS - PARASURGES

ENQUIRY FORM

Customer code :		<i>Cf. your last invoice</i>	
e-mail :		@	
Society :			
Contact name :			
Contact firstname :			
Adress :			
County code :		City:	
Country:			
Phone. :			
Fax :			
Delivery: <i>(specify is the applicant's address is different)</i>			
Society :			
Adress :			
Conty code :		City :	
Country:			
Comments :			

References	Nomination	Quantity



LIGHTNING ARRESTERS - PARASURGES

PURCHASE CONDITIONS

- 1- Generalities :** All the orders that come from a quotation made by LPS FRANCE is addressed to LPS FRANCE – BP 80055 – F-33460 MARGAUX – RCS BORDEAUX 521 876 433 and thus triggers the acceptance of the customer of our sale general conditions herein and despite whatever opposite clause from his part.
- 2- Orders:** They must be certified by written word thanks to the purchase attached to the quotation or thanks to numbered purchase orders coming from your service or society. They must contain all the usual, legal information, linked to the ordering party.
- 3- Price:** The prices indicated on our offers or quotations are valid during 6 months (six) and according to the quantity that is foreseen on the quotation. They are changeable if the quantities asked do not stick to those in the quotation. LPS FRANCE allows itself to modify the prices according to the construction's index, BT 47 index in particular. In the framework of a basic furnitures' order, that does not include the installation, our prices are duty-free, sold free alongside ship, concerning the metropolis, for orders upper than 305,00 Euros net duty-free (for lower amounts, the transport will have to be paid by the purchaser). Concerning the delivery outside the Metropolis, our prices are Ex-works (the customer has in charge the transport from our factory) and the transport expenses will have to be paid by the purchaser only, except if LPS FRANCE mentions the contrary.
- 4- Delivery delay:** LPS FRANCE society will stick to the delay foreseen, so far as possible, (9 to 10 weeks as from the purchase orders' reception). However, the purchaser can't oppose to a potential delay. The recipient is in charge of the delivery risks, whatever the sales and transport conditions are. In case of contest for delay, loss or damage of the goods, it is the role of the recipient to have recourse to third party.
- 5- Transport:** According to article 105 of French commercial code, the goods are travelling to the riskiness of the purchaser, recipient who must check the state of the goods in the presence of the deliverer. In case of damage, it is compulsory to mention it on the freight forwarder's written document with the maximum of precision, followed by a registered letter addresses to the freight forwarder within 48 hours. If the goods are totally unusable, refuse it. The latter will be replaced within the best extension. If you sign the freight deliverer's without any reservation, that means you recognise having received the goods in a good state and from that moment, no recourse or repayment is possible anymore, neither replacement of the pieces will be possible.
- 6- Payment:** Body corporate of public law will settle payment through administrative transfer 60 days in date of reception of the works or material. Concerning all other orders, 30% of the total amount of the quotation and chosen options will be compelled. This down payment will be settled cash at the order's certification. The payment will be settled either cash at the reception of the works, or by bank draft 30 days at the end of the month for the remaining to be paid. The lack of the bank draft at the date planned or the change of their due date without previous agreement of our society will automatically trigger the suppression of payment's easy terms. The loss of payment of at least one of the due date will trigger, by rights, the payability of the interests and of the inherent expenses as well as the cessation of the orders in process. Every payment that comes after the payment date which is on the invoice, will be mark-up with a 1.5% penalty for each month past due, having for known that all entered month will be due integrally. The invoicing date is the goods' delivery date, or the date when the goods will be available in our factory, but also at the reception of the works. Body corporate of public law will settle the payment thanks to administrative transfer 60 days at the date of reception of the works or material.
- 7- Reserve of property:** Concerning supplies' order only, the supplied goods' ownership will only be transferred to the buyer after the whole payment of the price, the supplier allowing himself the right to claim the said goods in the conditions foreseen by the law n°80-335 of May 12th 1980. All the expenses which would follow from the implementation of this clause would be at the charge of the buyer.
- 8- Warranty-liability limit:** There is a one (1) year warranty on the supplies, but it is effective only in a normal use of the material. All return of material must be first accepted by LPS FRANCE. Our responsibility is limited to the only starting value of the supplied pieces and recognized as flawed without being linked to any other indemnity towards the buyer such as expenses of dismantling, reassembly, diagnostics, evaluation, loss of use, or other expenses. The return expenses must be paid by the customer. It is specialized that LPS FRANCE society won't be responsible for damages directly or indirectly induced by the material the customer has got, it can be awry or not.
- 9- Return of the goods:** Except a mistake of our part, no piece will be taken back, neither swapped – beyond 15 days from the invoicing date. Contact us to obtain a return authorization and know the conditions to complete this return in the best conditions. In no case we will accept returns of pieces in cash on delivery or in freight due or bad-packed. The returns are limited only to pieces in their first packaging and in perfect state of commercialization, which means not assembled.
- 10- Jurisdiction:** In case of disagreement, Bordeaux Tribunal de Commerce (France) are the only interested for the issue.