

Enteghal Tavan Paydar Co. (ETP Co.)



**Manufacturer of Medium Voltage
& Low Voltage Surge Arrester**



INTRODUCTION

Enteghal Tavan Paydar Co. (ETP) was established in 2013 in Isfahan, Iran. The main activities of ETP are designing and manufacturing of MOV type surge arresters (ZnO Varistor Surge Arrester). ETP's main mission is protecting electrical installations against lightning and switching transient over voltages. Apart from the area of standard application, ETP offers customized surge arresters for special applications, too. When it comes to design, develop and produce a reliable protection system, the experience of staff is most essential. ETP's technical committee employs members having a long experience in designing and manufacturing of surge arresters. Offering consultant engineering advices on designing protection system is another service that is provided by ETP. Our manufacturing plants are certified under ISO 9001-2008.



Fig.1: MOV Block

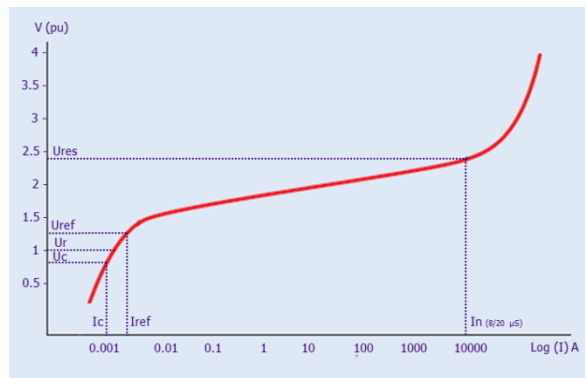


Fig.2: V-I characteristic of MOV disks

PRODUCTS

Products of ETP include variety types of surge arrester and its accessories. ETP's arresters are manufactured based of MOV (ZnO Varistors) technology. High quality MOV disks that passed standard type tests are the core of protective surge arrester. Furthermore, ETP's outdoor surge arresters have been designed to meet the requirement of a wide range of installation environments from freezing mountain area to the hot desert and humid tropical climates. ETPs products are categorized as following:

ETI INDOOR SURGE ARRESTER

ETI is Indoor type medium voltage surge arrester. The design consists of a number of MOV disks which are stacked and mechanically reinforced by fiberglass & epoxy-resin with high quality heat shrink insulator. It is economic solution which is designed for installation inside switchboard in order to protect equipment such as Transformer, Motor, Potential Transformer, Current Transformer, Cable Termination and etc.

Benefits of ETI Surge Arrester:

- High protection characteristic
- High mechanical strength
- Economic design
- Suitable dimension to use inside switchboard
- Low weight
- Fast delivery

Specification of ETI Indoor Surge Arrester:

- Maximum rated voltage: 45 [kV]
- Maximum continuous operating voltage 36 [kV]
- Line discharge class: 2
- Nominal discharge current: 10 [kA]
- High-current, short duration impulse 100 [kA]
- Long duration current impulse 300 [A]
- Short circuit current: 20 kA



Rated Voltage (Ur)	Arrester Height	Creepage & Arcing Distance	Lightning Impulse Withstand Level	Power Frequency Withstand Level	Mechanical Load	
					Dynamic (SSL)	Static (SLL)
[kV]	[mm]	[mm]	[kV]	[kV]	[N]	[N]
$U_r \leq 6$	132	110	55	25	2500	1000
$6 < U_r \leq 12$	174	152	70	30	2000	800
$12 < U_r \leq 18$	232	210	95	45	1500	600
$18 < U_r \leq 27$	317	295	135	60	1100	440
$27 < U_r \leq 36$	456	434	185	90	760	300
$36 < U_r \leq 45$	520	498	210	100	650	270

Fig.3: Insulator types of ETI (Indoor Arrester)

ETM OUTDOOR SURGE ARRESTER

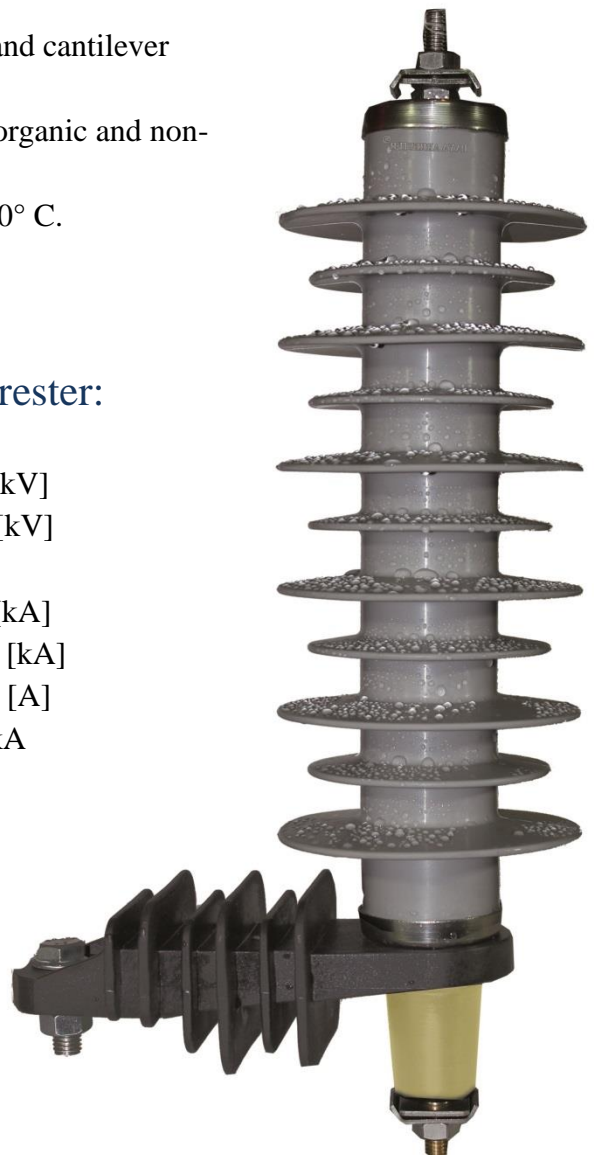
ETM is polymer-housed, medium voltage surge arrester. The design consists of a number of MOV disks which are stacked and mechanically reinforced by fiberglass rods that high quality silicone rubber injected over it to make hermetically sealed housing. The MOV disks have excellent protective characteristics and steady state performance to maximize protection over many years of service. Using silicone rubber housing in ETM type surge arrester, make it highly compatible with very heavy polluted area.

Benefits of ETM Surge Arrester:

- Excellent sealing system against moisture ingress & partial discharge & deposits of pollution throughout its entire service life.
- High tracking and erosion resistance housing.
- Self-extinguishing and flame-retardant housing.
- Lightweight design, but excellent torsional, tensile and cantilever strength up to 350 N.m.
- Resistant to UV , ozone exposure, cleaning agents, organic and non-organic solvents
- Suitable for a temperature range from -55°C to $+60^{\circ}\text{C}$.
- Application altitude up to 3600 m a.s.l.

Specification of ETM Outdoor Surge Arrester:

- | | |
|---|----------|
| - Maximum rated voltage: | 45 [kV] |
| - Maximum continuous operating voltage | 36 [kV] |
| - Line discharge class: | 2 |
| - Nominal discharge current: | 10 [kA] |
| - High-current, short duration impulse | 100 [kA] |
| - Long duration current impulse | 300 [A] |
| - Short circuit current: | 20 kA |
| - Pedestal or Bracket mounted installation. | |



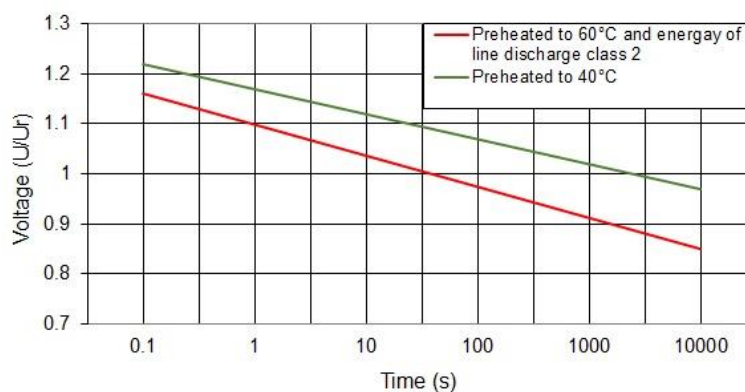
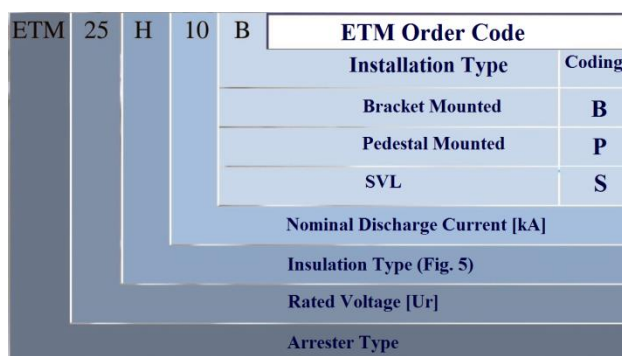


Fig.4: TOV characteristic of ETM



Insulator Code	No. of Sheds	Rated Voltage (Ur)	Arrester Height	Creepage Distance	Arcing Distance	Lightning Impulse Withstand Level	Power Frequency Withstand Level		Mechanical Load	
		kV	mm	mm	mm	kV	Dry	Wet	Dynamic (SSL)	Static (SLL)
							kV	kV	N	N
E	3	6	125	260	130	65	30	26	2700	1000
F	5	12	170	410	175	95	50	44	2000	800
G	7	18	220	550	225	125	70	60	1550	650
H	11	28	315	820	320	180	100	85	1100	500
K	17	45	460	1250	465	250	120	100	750	300

Fig. 6: Insulator types of ETM

Max. System Voltage [kV]	Distance P [mm]	Distance E [mm]
3.6	140	90
7.2	160	110
12	180	120
24	280	190
36	370	260

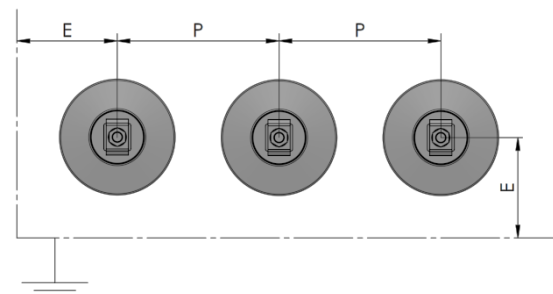


Fig 8: Clearance Distance

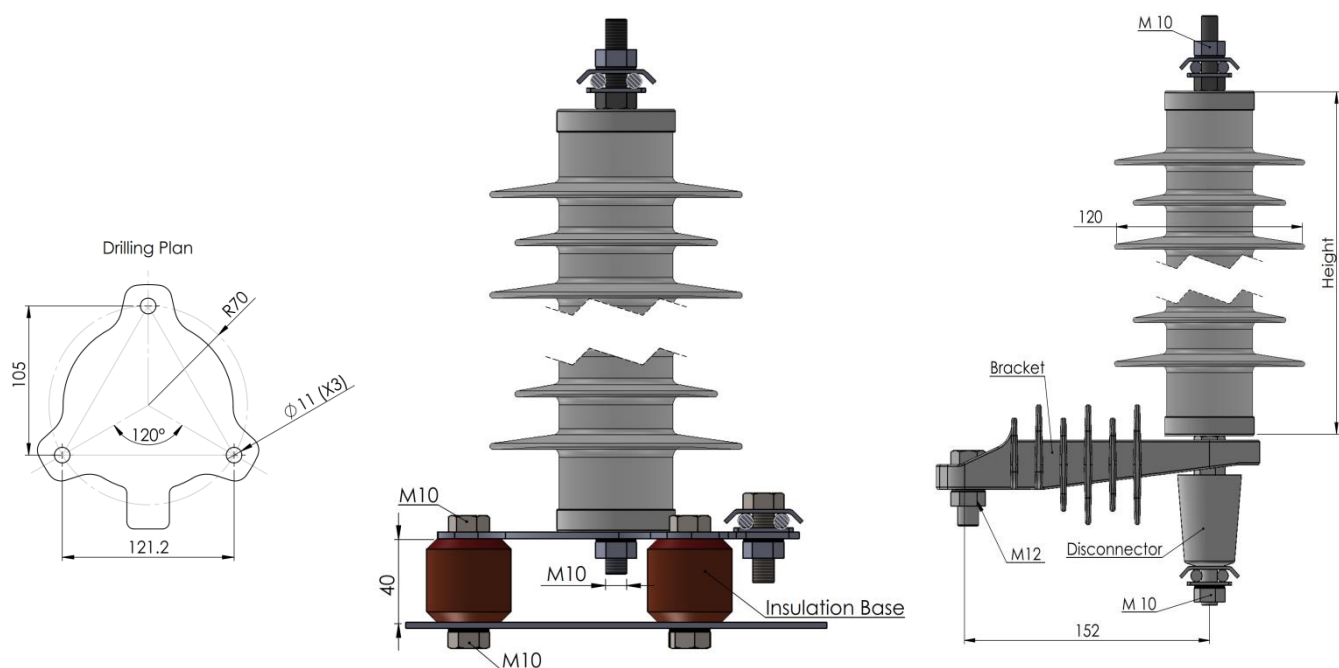


Fig 8: Outline drawing of Pedestal Mounted & Bracket Mounted ETM

ETS SURGE PROTECTIVE DEVICE

ETS type surge arresters are low voltage surge arrester named SPD (Surge Protective Device). A SDP is a device that limits transient voltage surges and runs current waves to ground to limit the amplitude of the voltage surge to a safe level for electrical installations and equipment. The SPD includes one or several nonlinear components.

ETS Arresters are designed based on IEC61643-1 standard and produced in energy classes of Type I, Type II and Type III with voltage range up to 600 [V].

Type 1 surge arrester is fitted in the installation's main incoming electrical switchboard and is capable of deviating energy of a direct lightning strike.

Type 2 surge arrester should be used in coordination with the incoming surge arrester. This is the second stage of the protection.

Type 3 surge arrester is installed next to sensitive equipment, in order to provide the best protection level.

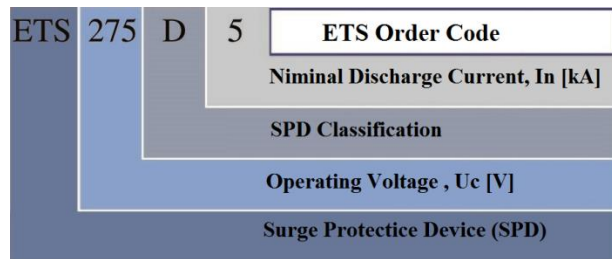
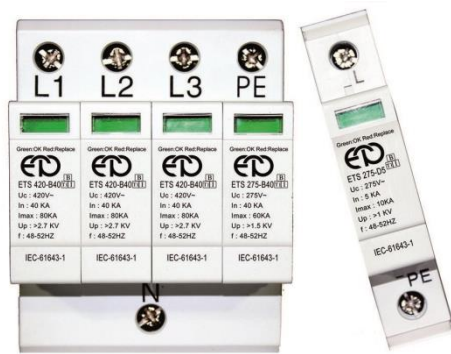


Fig.9 SPD Order Code

	ETS 420-B40	ETS 420-BC30	ETS 420-C30	ETS 275-D5	* ETS 24-DS5
(according to IEC 61643-1) CLASS	B	B+C	C	D	D
Operating Voltage (U _c)** V	420	420	420	275	24 [V DC]
Protection Level (L/N L/PE) KV	< 2.7	< 2.2	< 2.2	< 1	< 80 [V]
Max. Discharge Current (I _n) KA	40	30	30	5	5
Nominal Discharge Current (I _{max}) KA	80	60	60	10	10
Nominal Discharge Current (I _{imp}) KA	12	7	N.A.	N.A.	N.A.
Recommended Back up Protection	100 A gL/gA fuse or 63 A C-curve MCCB	100 A gL/gA fuse or 63 A C-curve MCCB	60 A gL/gA fuse or 50 A C-curve MCCB	32 A gL/gA fuse or 25 A C-curve MCCB	N.A.
Installation type	DIN Rail Mounting				

Fig.10: ETS Electrical Specifications



www.paya-etp.com
Info@paya-etp.com



PAYA ARRESTER

آدرس کارخانه: اصفهان، شهرک صنعتی دولت آباد
خیابان دکتر حسابی (۲۰)، پلاک ۳۵
تلفن: ۰۳۱-۳۴۴۱ ۲۷۷۰-۷۱
۰۳۱-۳۴۴۱ ۴۵۵۳
فکس: ۰۲۱-۸۹۷۷ ۴۴۸۸
کد پستی: ۸۳۴۱۶-۵۵۷۹۴

Address: No. 35, Dr Hesabi(20) Ave., Dowlat
Abad Industrial Zone, Isfahan,I.R.IRAN
Tel: +98 3134412 770-71
+98 3134414 553
Fax: +98 218977 4488
Postal Code :83416-55794

