



## Zinc-Oxide Surge (Lightning) Arrester

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# Zinc-Oxide Surge Arrester

## General

The Zinc Oxide Type Surge Arrester is the latest advanced over-voltage protector for distribution line and power station device. Incorporated with zinc oxide and other metal oxide as the core resistor disc, the volt-ampere characteristics and the through-current capability of the resistor disc are improved drastically compared with the conventional SiC type surge arrester.

Under nominal operating voltage, the current through the surge arrester is only about micro-ampere grade. When the surge arrester experiences an over-voltage, the resistor disc with excellent non-linear characteristics will increase the current through the surge arrester to several thousand amperes instantaneously. The surge arrester is in a conducting state and then will release the over-voltage energy to the earth and thereby protects power distribution / transmission device against the impact of over-voltage.

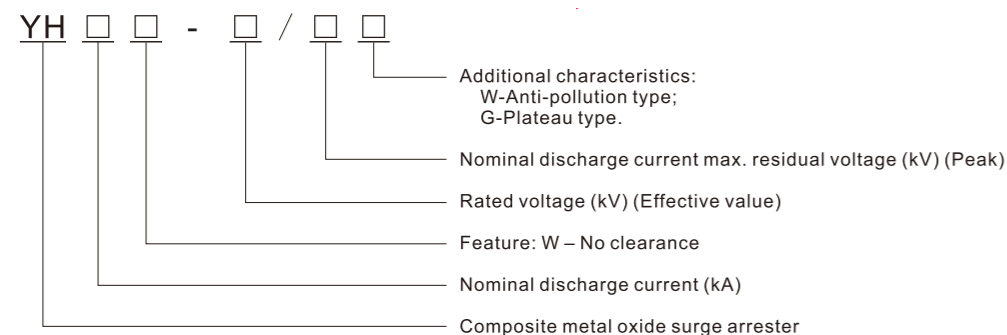
## Technical Performance

Product performance conforms to technical requirements of IEC60099-4, IEEE.C62.11.

## Application Environment

1. Ambient temperature :  $-40^{\circ}\text{C} \leq T \leq 40^{\circ}\text{C}$
  2. Altitude above sea level:  $\leq 1000\text{m}$
  3. Max. wind speed:  $\leq 35\text{m/s}$
  4. Earthquake intensity:  $\leq 8$
  5. Frequency (AC system): 50 / 60Hz
  6. Power frequency voltage for long term applied  $\leq$  Continuous operation voltage
- Heavy pollution should be indicated before ordering.

## Product Designation



## Key Technical Parameters

Nominal discharge current: 5KA

MOA Type	MOA Rated	MCOV	1/10 $\mu\text{s}$ steep current impulse	8/20 $\mu\text{s}$ lightning current impulse	30/60 $\mu\text{s}$ switching current impulse	2ms rectangular current impulse withstand	4/10 $\mu\text{s}$ high current impulse withstand
	kV (r.m.s)		$\leq$ kV			A	kA
YH5W-3	3	2.55	11.3	9	8.90	150	65
YH5W-6	6	5.10	22.6	18	16.8	150	65
YH5W-9	9	7.65	33.7	27	23.8	150	65
YH5W-10	10	8.40	36.0	30	26.4	150	65
YH5W-11	11	9.40	40.0	33	30.0	150	65
YH5W-12	12	10.2	42.2	36	31.7	150	65
YH5W-15	15	12.7	51.0	45	38.5	150	65
YH5W-18	18	15.3	61.5	54	46.5	150	65
YH5W-21	21	17.0	71.8	63	54.5	150	65
YH5W-24	24	19.5	82.0	72	62.6	150	65
YH5W-27	27	22.0	92.0	81	69.8	150	65
YH5W-30	30	24.4	102	90	79.0	150	65
YH5W-33	33	27.5	112	99	86.7	150	65
YH5W-36	36	29.0	117	103	92.4	150	65
YH5W-39	39	31.5	123	108	94.0	150	65
YH5W-42	42	34.0	126	111	101	150	65
YH5W-45	45	36.5	128	119	105	150	65
YH5W-48	48	39.0	139	127	110	150	65
YH5W-51	51	40.8	151	134	115	150	65
YH5W-54	54	42.0	160	143	119	150	65
YH5W-60	60	48.0	178	159	132	150	65
YH5W-66	66	53.0	196	175	145	150	65
YH5W-69	69	55.2	205	183	152	150	65

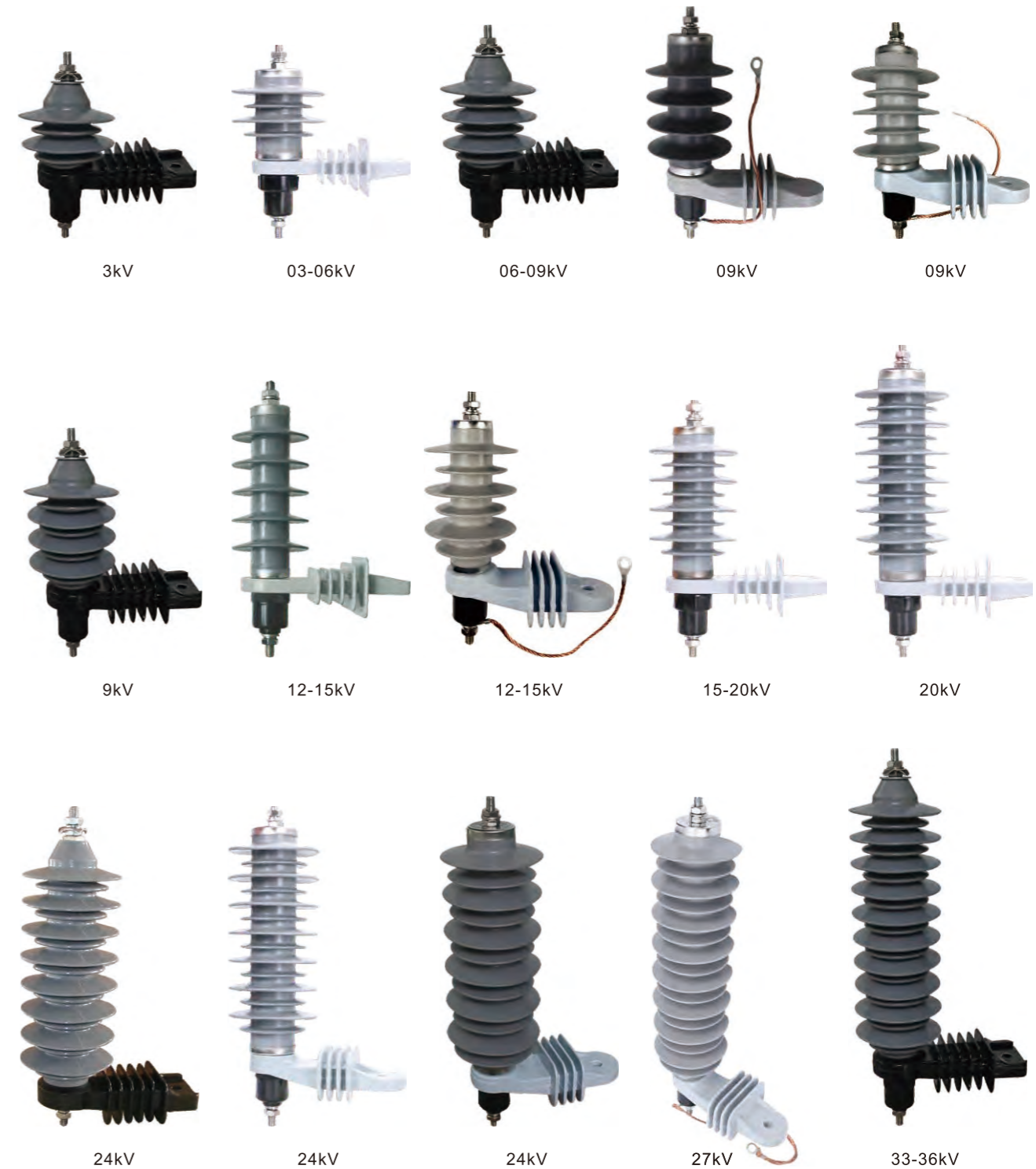
Note: "H" refers to composite (polymeric) housing zinc oxide surge arrester; in case of porcelain housing, no "H" ahead.

## Key Technical Parameters

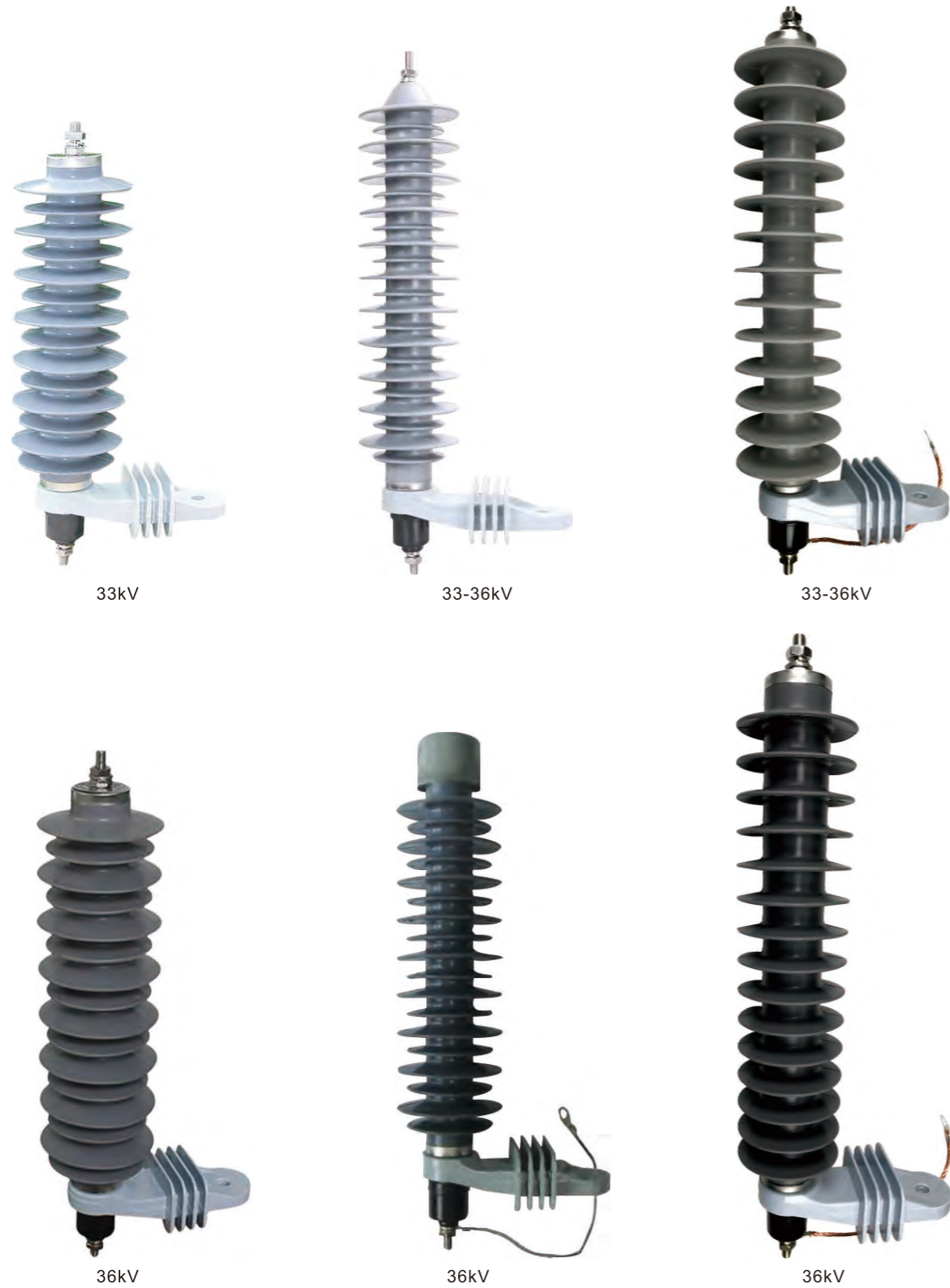
Nominal discharge current: 10KA

MOA Type	MOA Rated	MCOV	1/10 $\mu$ s steep current impulse	8/20 $\mu$ s lightning current impulse	30/60 $\mu$ s switching current impulse	2ms rectangular Current impulse withstand	4/10 $\mu$ s high Current impulse withstand
	kV (r.m.s)		kV			A	kA
YH10W-3	3	2.55	10.3	8.40	7.70	250	100
YH10W-6	6	5.10	20.5	16.7	15.4	250	100
YH10W-9	9	7.65	31.0	25.0	23.1	250	100
YH10W-10	10	8.40	33.0	27.4	27.0	250	100
YH10W-11	11	9.40	36.4	30.4	30.0	250	100
YH10W-12	12	10.2	38.5	33.3	30.8	250	100
YH10W-15	15	12.7	46.5	41.4	38.5	250	100
YH10W-18	18	15.3	56.0	49.8	46.2	250	100
YH10W-21	21	17.0	65.5	57.0	53.9	250	100
YH10W-24	24	19.5	75.0	65.0	61.6	250	100
YH10W-27	27	22.0	84.0	74.0	69.3	250	100
YH10W-30	30	24.4	93.0	82.0	76.5	250	100
YH10W-33	33	27.5	101	90.0	84.7	250	100
YH10W-36	36	29.0	112	98.0	92.4	250	100
YH10W-39	39	31.5	117	103	94.0	250	100
YH10W-42	42	34.0	126	111	101	250	100
YH10W-45	45	36.5	128	119	105	250	100
YH10W-48	48	39.0	139	127	110	250	100
YH10W-51	51	40.8	151	134	115	250	100
YH10W-54	54	42.0	160	143	119	250	100
YH10W-60	60	48.0	178	159	132	400	100
YH10W-66	66	53.0	196	175	145	400	100
YH10W-69	49	55.2	205	183	152	400	100
YH10W-72	72	57.0	214	191	158	400	100
YH10W-75	75	60.0	223	199	165	400	100
YH10W-84	84	68.0	244	218	181	600	100
YH10W-90	90	70.0	249	234	184	600	100
YH10W-96	96	76.0	265	247	201	600	100
YH10W-108	108	84.0	298	273	222	600	100
YH10W-120	120	98.0	338	319	259	600	100
YH10W-132	132	106	367	345	280	600	100
YH10W-144	144	115	397	374	304	600	100
YH10W-168	168	131	452	426	346	600	100
YH10W-172	172	140	483	455	370	600	100
YH10W-180	180	144	497	468	380	600	100

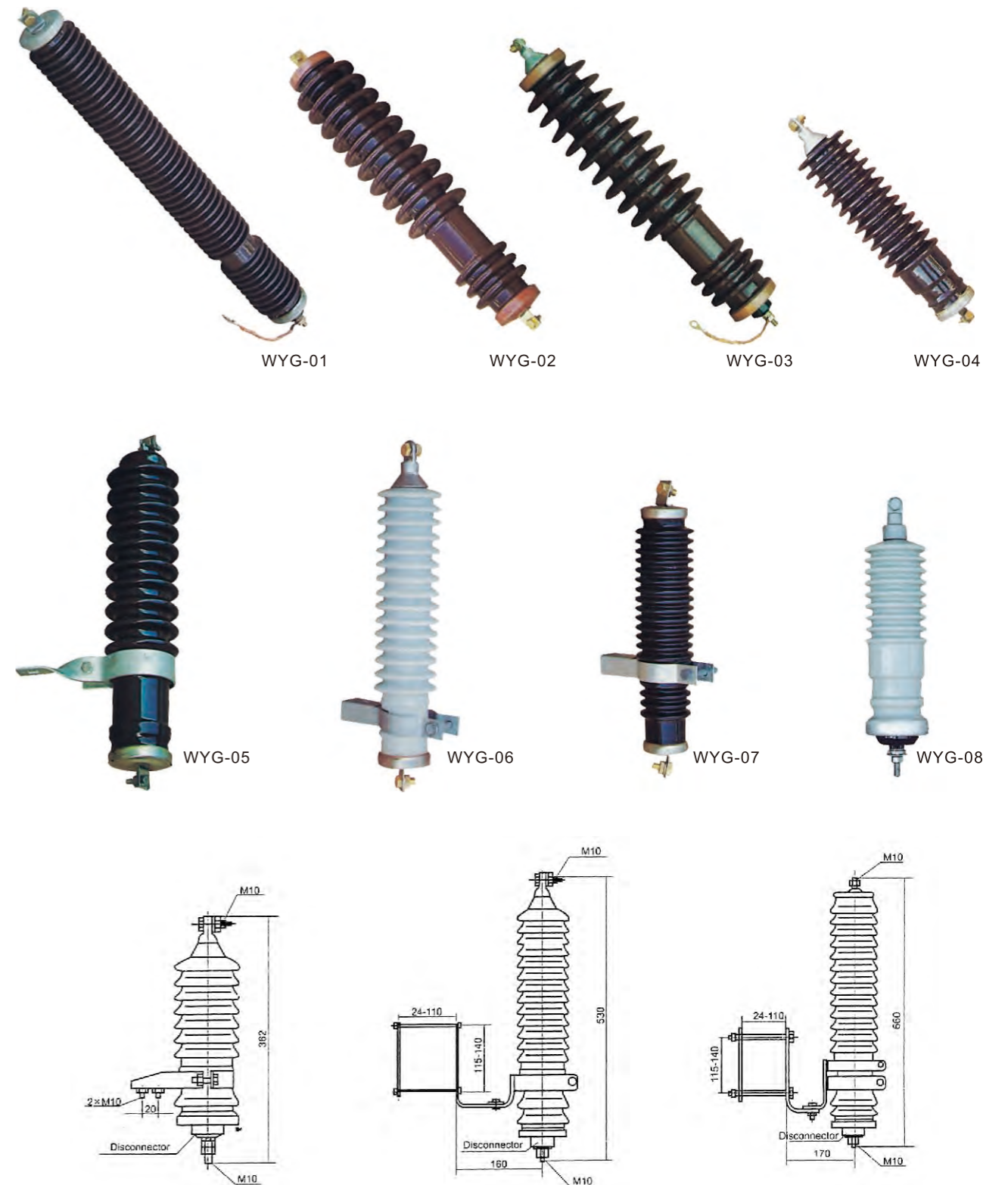
## Polymeric Housing Surge (Lightning) Arrester



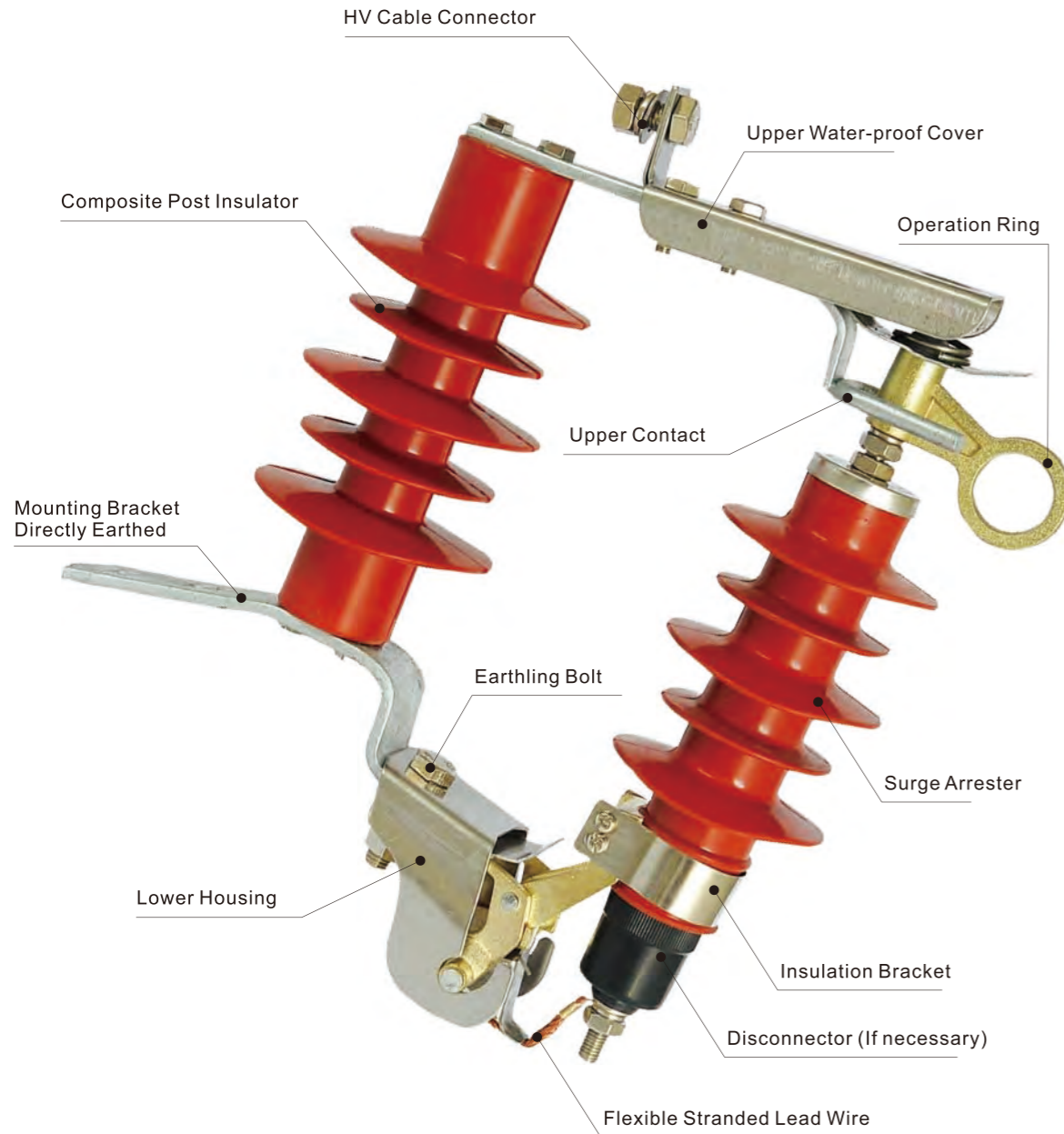
Polymeric Housing Surge (Lightning) Arrester



Porcelain Housing Surge (Lightning) Arrester



## Detachable Type Surge (Lightning) Arrester



## General

Detachable type surge arrester is an optimized distribution type zinc oxide arrester and to mount on a drop out (explosive) fuse cutout on the pole. It is applicable to operate with insulating hot stick. It is easy for detection, repair and replacement which not only assure the stability of distribution line, but also greatly reduce maintenance needed. It is particularly applicable to locations where requires continuous power supply like telecommunication station, airport, hospital, commercial center. The properties are same with distribution type surge arrester.

Advanced RW-12 type drop out mechanism, reliable contact, and composite support are applied to this type of surge arrester. It has features of good anti-pollution, quick operation, wide current range, and high withstand capacity to current impulse and operating load.

This type of surge arrester meets standard IEC60099-4:1991.

## Characteristic

1. Lightning arrester unit can be charged at any time, particularly suitable for loading and unloading place should not be cut.
2. Belt disengaging device, arrester unit fault can automatically turn fall, out of the operation, safeguard the normal traffic line.
3. Because the failure unit falling formmarked, easy to find, to repair and replace.
4. Lightning arrester using composite coat, drop mechanism adopts a composite column, good gydrophobicity, stain resistant ability.

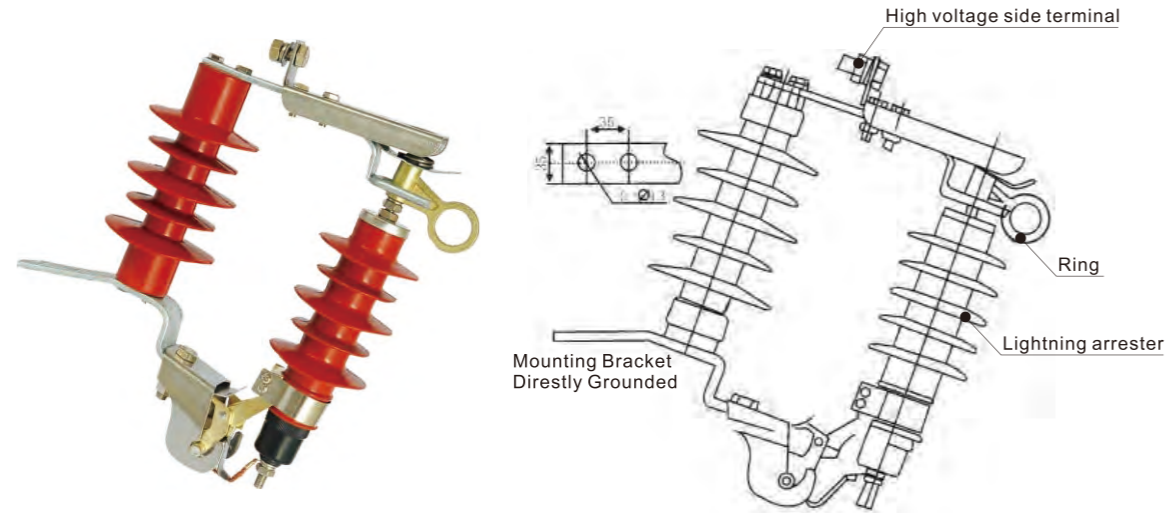
## Conditions Of Use

1. Ambient temperature:  $-40^{\circ}\text{C} \leq T \leq 40^{\circ}\text{C}$
2. Altitude above sea level:  $\leq 3000\text{m}$
3. Power frequency:  $48\text{Hz} \sim 62\text{Hz}$
4. Max. wind speed:  $\leq 35\text{m/s}$
5. Seismic intensity:  $\leq 7$

## Product Description

**HY 5 W S - 17 / 50 DL TB**

- TB/TR:
  - TB: Belt thermal explosion form
  - TR: Hot melt type detachment
- DL: Refers to drop out type structure
- Nominal discharge current max. residual voltage (kV) (Peak)
- Rated voltage (kV) (Effective value)
- Application field:
  - S: For distribution line; R: For capacitor; Z: For power station
- Feature: W – No clearance
- Nominal discharge current (kA)
- Composite metal oxide surge arrester



Thermal explosion form type drop out type surge arrester structure diagram

### Key Technical Parameters

Type of Surge Arrester		HY5WS-10/30 DL	HY5WS-10/30 DL-TR	HY5WS-10/30 DL-TB	HY5WS-17/50 DL	HY5WS-17/50 DL-TR	HY5WS-17/50 DL-TB
System rated voltage		9			10		
Rated voltage of surge arrester	kV (r.m.s)	10			17		
Continuous operating voltage		8.0			13.6		
The DC reference voltage ( $\mu 1\text{mA}$ )	$\pm$ kV	15.0			25.0		
0.75 $\mu$ 1mA leakage current	$\pm$ $\mu$ A	30			30		
Lightning impulse current of residual	$\pm$ kV	30			50.0		
Switching impulse current residual		25.6			42.5		
Square wave current capacity	$\pm$ A	150			150		
Large current impulse withstand	$\pm$ kA	40			40		
Application field		Distribution					

### Installation Instructions

1. This product shall be installed in distribution line with consistent rated voltage of the surge arrester.
2. Before the installation and operation, a check of arrester element and drop out type body shall be made in order to ensure good contact and unloading.
3. 15~30° angle to vertical position when installing and guarantees a clearance of  $\geq 200\text{mm}$ .

# Surge Monitor

## JS-8

JS-8 Type Surge Monitor is connected to the bottom of the surge arrester in serial. It is used for recoding the operation times of surge arrester with voltage of 6kV~220kV. The ambient environment is same with surge arrester, e.g., altitude above sea level  $\leq 4000\text{m}$ , temperature  $-40^{\circ}\text{C} \sim +40^{\circ}\text{C}$ . It is not applicable to environment with heavy corrosion gas and severe pollution, drastic vibration.

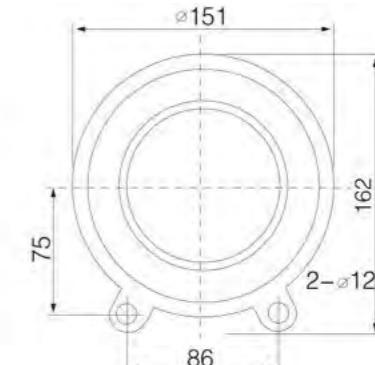
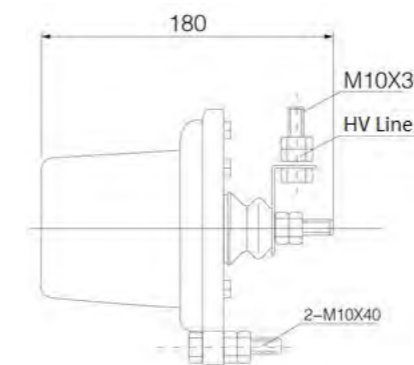
Surge monitor is made up of metal oxide element, silicon bridge type rectifier, capacitor, electromagnetic counter. It takes advantage of the surge arrester's energy (Impulse current and power frequency current) to fetch the voltage on metal oxide element (non linear resistance), then it charges the capacitor in one way direction through silicon



JS-8



JCQ



## JCQ

JCQ Type Surge Monitor is connected to the bottom of surge arrester in serial. It is applicable to ZnO surge arrester with voltage  $\leq 500\text{kV}$  for monitoring leakage current and record operation times.

Surge monitor is made up of metal oxide element, silicon bridge type rectifier, capacitor, electromagnetic counter. It takes advantage of the surge arrester's energy (Impulse current and power frequency current) to fetch the voltage on metal oxide element (non linear resistance), then it charges the capacitor in one way direction through silicon bridge type rectifier, makes the coils of electromagnetic counter discharge with form of DC power to move the counter,

# Disconnecter

Surge Arrester Disconnecter is a device for disconnecting an arrester from the distribution system in the event of failure/fault, to prevent a persistent fault on the distribution system and to give visible indication of failure. TL-1 is a thermal explode disconnecter per IEC 60099-4 standard.

