

# Transformer Protection Package for Overhead Distribution Transformers

Power Partners offers four basic transformer types: S, SP, CP and CSP®. Together they represent a wide range of protective capabilities to meet nearly every application. For transformers supplied with overcurrent protection, the user must assure coordination with system protective devices. Failure to do so will defeat the purpose of such protection.



## Conventional "S" Transformers

This type transformer contains no protection equipment. Therefore, lightning, fault and overload protection for these transformers must be provided by purchaser installed, auxiliary protective devices.

## Conventional "S" with Protective Link

The protective link is the least expensive device mounted in the transformer to protect the system from a defective transformer. Whenever there is an internal failure the resulting fault current will cause the protective link to blow, isolating the transformer from the primary feeder.

## Surge-Protecting "SP" Transformers

The "SP" transformers include transformer-mounted lightning arresters and internally-mounted high voltage protective links, but omit the internally-mounted low voltage circuit breaker. These transformers are used in locations where lightning is a problem. However, because the protective link protects the system only from outages due to internal transformer failure, overload protection, if desired, must be provided by external fuses.

## Current-Protecting "CP" Transformers

The "CP" transformers are equipped with the internally mounted low-voltage circuit breaker and high voltage protective links, but omit the lightning arresters. These transformers are used in locations where lightning is not a problem. The arrester may be crossarm-mounted if surge protection is desired.

The breaker and protective link are coordinated such that any fault or short circuit on the secondary side of the transformer will trip the breaker before the protective link operates, taking the load off the transformer before the core/coil is damaged.

## Self-Protected "CSP" Transformers

The CSP® coordinated protection package is available as an option on Power Partners overhead distribution transformers for increased protection against surge currents, short circuits, and overloads.



## Features

1. Protective Link
  - a) Removes an internally-faulted transformer from the primary line.
  - b) Operates at 8 to 14 times normal full load current.
2. Secondary Circuit Breaker
  - a) Protects against overloads and external short circuits.
  - b) Coordinated with protective link, trips on an external short or overload before the link blows, and only if the overload is large or continuous.
  - c) If overload is small or temporary, a load management light signals the need for change-out to a larger unit for more optimized transformer loading.
3. MOV Polymer Arrester  
Provides protection from lightning and switching surges.
4. Optional partial-range current limiting fuse (in series with protective link)
  - a) Limits the maximum current in the circuit.
  - b) Reduces current to zero in less than one-half cycle.
  - c) Minimizes the possibility of eventful failure.
5. Tank bottom rim is three layers thick for increased durability and resistance to shipping and handling damage.

The CSP® protection package is available on single phase and three phase overhead distribution transformers in the following ratings:

- Single Phase, LV 120/240, 10-100 kVA
- Single Phase, LV 240/480, 10-167 kVA
- Three Phase, 30-150 kVA

**Class Designations**

1. Type CSP®, above 5 kV, 5-100 kVA.

**Class A:** Two fully-insulated high voltage bushings, two arresters, two protective links and external breaker handle. Suitable for application on either wye or delta distribution systems. Single-position pole mounting in accordance with latest ANSI standards.

**Class B-1:** Two fully-insulated high voltage bushings, one arrester, two protective links and external breaker handle. Normally applied on solidly grounded systems.

**Class B-2:** One fully-insulated high voltage bushing, one arrester, one protective link and external breaker handle. Suitable only for application on solidly grounded distribution systems. Single-position pole mounting in accordance with latest ANSI standards.

**Class B-3:** Same as class B-2 except with two-position mounting. On 5 through 50 kVA only.  
2. Type CSP®, 5 kV and below, 5-100 kVA. Similar to Type CSP®

above 5 kV except:

- Sidewall-mounted primary bushings.
- Class B-2 and B-3 not available.

1. Type S, above 5 kV, 5-500 kVA.

**Class A:** Two fully-insulated high voltage bushings, suitable for application on either wye or delta distribution systems. Single-position pole mounting in accordance with the latest ANSI standards.

**Class B-2:** One fully-insulated high voltage bushing, suitable only for application on solidly grounded distribution systems. Single-position pole mounting in accordance with the latest ANSI standards.

**Class B-3:** Same as class B-2 except with two-position mounting. On 5 through 50 kVA only.  
2. Type S, 5 kV and below, 10-500 kVA. Similar to Type S, above 5 kV, except:

- Sidewall-mounted primary bushings.
- Only Class A is available.

