

A wide range of protection products are offered which are an important part of the C5C product line. Gas tube over voltage protection is available, and over current protection is also provided in 5-point protectors. 3 and 5 point protectors are available in dry and sealed versions.

### 3-Point Protection

The C5C-PR-3GT-230-D and C5C-PR-3GT-230-G contain a heavy-duty 3-electrode gas discharge tube. They are used when many large lightning induced voltages are expected on the telecom pairs.

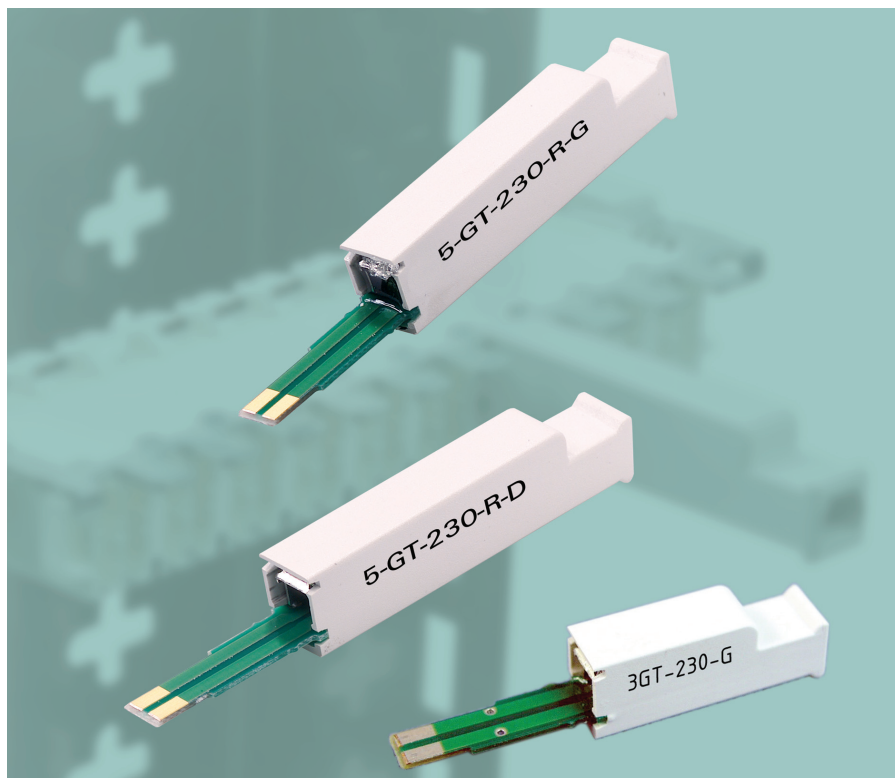
### 5-Point Protection

The C5C-PR-5GT-230-R-D and C5C-PR-5GT-230-R-G contain a heavy duty 3-electrode gas discharge tube.

Over current protection has been added in the form of 2 PTCRs (Positive Temperature Coefficient Resistor). The over current devices are fast acting, have low room-temperature resistance and are completely self-restoring when the fault current source is removed from the line.

Both, 3 and 5 point protectors are equipped with a heat operated fail safe (shorting) mechanism. Sustained operation of the protector, because of conflict with an induction from power lines, will cause operation of the fail safe device.

The fault current may continue to flow, but the heat-generating protector has been bypassed by the fail-safe shunt.



# 3-Point Protectors

## Specifications

Overvoltage Component      GDT

### Dry version

#### Electrical characteristics

Series resistance	3 mΩ IEC 512-2 test 2a
Insulation resistance	1000 MΩ measured @ 100 Vdc. IEC 512-2, test 3a: insulation resistance, method A.
Capacity (line to earth)	8 pF measured @1 Khz. IEC 512-9, test 22a: capacity.

#### Overvoltage

DC breakdown	184-276 V measured @ 100 V/sec. ITU-T recommendation K. 12
Impulse breakdown	600 V max measured @ 1 kV/μsec slope. ITU-T recommendation K. 12
Maximum switching current-failsafe	7.5 A RMS by side / 15 min. ITU-T recommendation K. 12

#### Life

AC discharge	5 A RMS for 1 second, 5 applications each line side, @3-minute intervals, 50 Hz ITU-T recommendation K. 12
Impulse discharge current	5 kA measured at 8/20 μsec, 5 shots both lines simultaneously to GND (IEC 1000-4-5) @5-minute intervals ITU-T recommendation K. 12

#### Mechanical characteristics

Endurance	Repeated insertion / withdrawals: 100 cycles. Maximum change in protector/magazine contact resistance is 5 mΩ IEC 512-2, test 2a: contact resistance
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#### Materials

Housing	Thermoplastic. Self-extinguishing, UL-94.
Gas tube	Aluminium oxide ceramic/metal construction. Inert gas filled, contains no radioisotopes.
Printed circuit	Board glass fibre/epoxy blend, self-extinguishing, UL-94.

### Filled version

#### Electrical characteristics

Series resistance	3 mΩ IEC 512-2 test 2a
Insulation resistance	1000 MΩ measured @ 100 Vdc. IEC 512-2, test 3a: insulation resistance, method A.
Capacity (line to earth)	8 pF measured @1 Khz. IEC 512-9, test 22a: capacity.

#### Overvoltage

DC breakdown	184-276 V measured @ 100 V/sec. ITU-T recommendation K. 12
Impulse breakdown	600 V max measured @ 1 kV/μsec slope. ITU-T recommendation K. 12
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Impulse discharge current	5 kA measured at 8/20 μsec, 5 shots both lines simultaneously to GND (IEC 1000-4-5) @5-minute intervals ITU-T recommendation K. 12

#### Mechanical characteristics

Endurance	Repeated insertion / withdrawals: 100 cycles. Maximum change in protector/magazine contact resistance is 5 mΩ IEC 512-2, test 2a: contact resistance
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#### Materials

Housing	Thermoplastic. Self-extinguishing, UL-94.
Gas tube	Aluminium oxide ceramic/metal construction. Inert gas filled, contains no radioisotopes.
Printed circuit	Board glass fibre/epoxy blend, self-extinguishing, UL-94.
Sealing	Two component silicone elastomer.

# 5-Point Protectors

## Specifications

Overvoltage component	GDT
Overcurrent component	PTCR

### Dry version

#### Electrical characteristics

Series resistance	4-12 $\Omega$ IEC 512-2 test 2a
Insulation resistance	1000 M $\Omega$ measured @ 100 Vdc. IEC 512-2, test 3a: insulation resistance, method A.
Capacity (line to earth)	8 pF measured @1 Khz. IEC 512-9, test 22a: capacity.

#### Overvoltage

DC breakdown	184-276 V measured @ 100 V/sec. ITU-T recommendation K.12
Impulse breakdown	600 V max measured @ 1 kV/ $\mu$ sec slope. ITU-T recommendation K.12
Maximum switching current-failsafe	7.5 A RMS by side / 15 min. ITU-T recommendation K.12

#### Overcurrent

Hold current	120 mA ITU-T recommendation K.30.
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#### Life

AC discharge	5 A RMS for 1 second, 5 applications each line side, @3-minute intervals, 50 Hz ITU-T recommendation K.12
Impulse discharge current	5 kA measured at 8/20 $\mu$ sec, 5 shots both lines simultaneously to GND (IEC 1000-4-5) @5-minute intervals ITU-T recommendation K.12

#### Mechanical characteristics

Endurance	Repeated insertion/ withdrawals: 100 cycles. Maximum change in protector/magazine contact resistance is 5 m $\Omega$ IEC 512-2, test 2a: contact resistance
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#### Materials

Housing	Thermoplastic. Self-extinguishing, UL-94.
Gas tube	Aluminium oxide ceramic/metal construction. Inert gas filled, contains no radioisotopes.
PTCR (5 point)	Conductive polymer
Printed circuit	Board glass fibre/epoxy blend, self-extinguishing, UL-94.

### Filled version

#### Electrical characteristics

Series Resistance	4-12 $\Omega$ IEC 512-2 test 2a
Insulation Resistance	1000 M $\Omega$ measured @ 100 Vdc. IEC 512-2, test 3a: insulation resistance, method A.
Capacity (line to earth)	8 pF measured @1 Khz. IEC 512-9, test 22a: capacity.

#### Overvoltage

DC breakdown	184-276 V measured @ 100 V/sec. ITU-T recommendation K.12
Impulse breakdown	600 V max measured @ 1 kV/ $\mu$ sec slope. ITU-T recommendation K.12
Maximum switching current-failsafe	7.5 A RMS by side / 15 min. ITU-T recommendation K.12

#### Overcurrent

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#### Mechanical characteristics

Endurance	Repeated insertion/ withdrawals: 100 cycles. Maximum change in protector/magazine contact resistance is 5 m $\Omega$ IEC 512-2, test 2a: contact resistance
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#### Materials

Housing	Thermoplastic. Self-extinguishing, UL-94.
Gas tube	Aluminium oxide ceramic/metal construction. Inert gas filled, contains no radioisotopes.
PTCR (5 point)	Conductive polymer
Printed circuit	Board glass fibre/epoxy blend, self-extinguishing, UL-94.
Sealing	Two component silicone elastomer.

## Part number keys

**C5C - PR - 3** XX - XXX - X

**GT** Gas tube

**230** 230V

**G** Gel filled  
**D** Dry

**C5C - PR - 5** XX - XXX - X - X

**GT** Gas tube

**230** 230V

**R** PTCR non coated

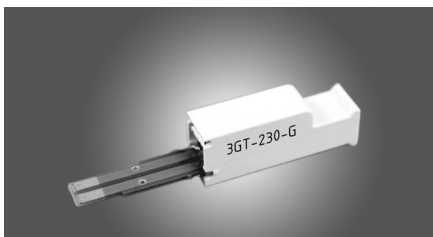
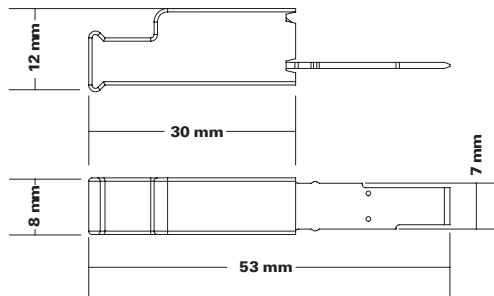
**G** Gel filled  
**D** Dry

## Ordering Information

Description	Catalogue number	Quantity	Tyco code
3-point protector, 230 V gas tube, gray housing, filled	C5C-PR-3GT-230-G	50	0-1200902-5
3-point protector, 230 V gas tube, gray housing, dry	C5C-PR-3GT-230-D	50	4-1200901-6
5-point protector, 230 V gas tube plus 2 PTCRs, gray housing, filled	C5C-PR-5GT-230-R-G	50	8-1200739-3
5-point protector, 230 V gas tube plus 2 PTCRs, gray housing, dry	C5C-PR-5GT-230-R-D	50	7-1200735-4

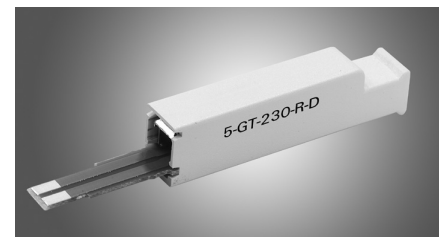
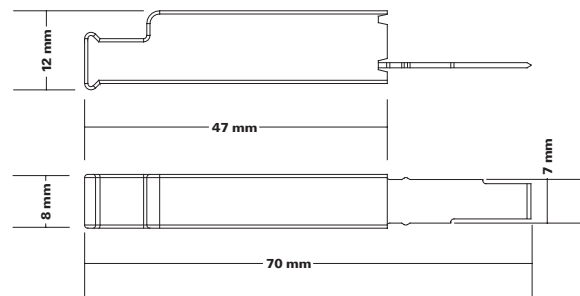
## Dimensions

### 3 point protector



3-point protector  
Gas tube

### 5 point protector



5-point protector  
Gas-tube plus PTCRs

**tyco**

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