

# CAMTO LTD

Arc detecting system DC/AC



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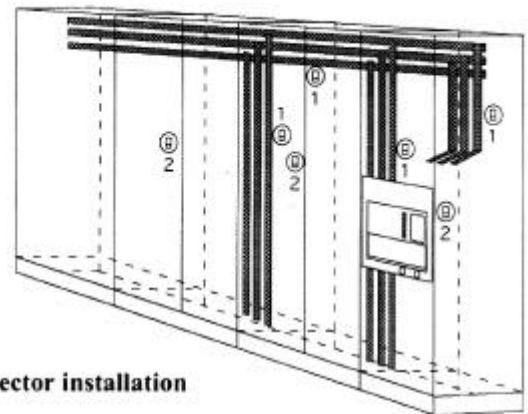
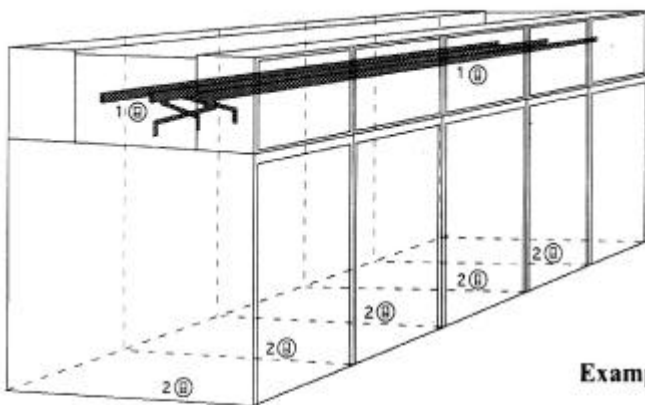


The system is based on experience with arc protection since 1962.

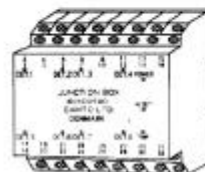
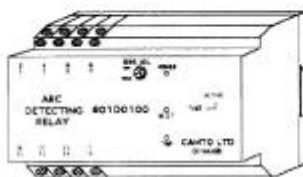
The system units are built into boxes that all fit on a 35 mm DIN-rail. All front plates are dimensioned to fit into the 45 mm slot in the cover plates of a DIN-system.

The arc detecting relay is connected to light sensitive detectors suitably placed in the various cubicles or drawers inside the switchboard. The overcurrent relay is used if overcurrent as well as an arc has to be present before the supply circuit breaker is tripped. However, arcing time is hereby increased.

The time relay is an extra security. It is designed to trip a back-up breaker further back in the supply with a time delay, if both an arc and an overcurrent are present after tripping of the supply breaker.



Examples of arc detector installation



## Arc detecting relay/Current relay/Time relay

To be placed in the switchboard or in connection with it. It is recommended that the arc detecting relay, the current relay and the time relay are installed in the relay box or otherwise separated from the circuit breaker to be tripped.

## Junction box for parallel connection

To be installed considering the length of the detector cables (5 metres). Junction boxes with indication are installed so that the LED's are fully visible. Max. 2 junction boxes per arc detecting relay.

## Arc detectors

Installation: 1-2 pcs. per cubicle or drawer as above:  
At horizontal/vertical bus bars (1) and in breaker/cable compartments (2).

## Arc protection DC



### 601D0100 - Arc detecting relay 48-220 V DC for station battery

The relay can monitor up to 16 arc detectors in parallel. In case of an arcing fault, the relay generates a fast tripping pulse to the circuit breaker(s) supplying the installation. The delay is less than 1 mSec. The arcing time is thus reduced to the mechanical opening time of the circuit breaker, reducing personal injury as well as damage of the installation. The relay is solid state with complete isolation between input and output. Thus the relay and the circuit breaker may have different pilot voltages. In TEST-position the relay can be tested without circuit breaker tripping. The relay has 2 free signal contacts: One contact is for remote indication of arcing fault trip. The other contact indicates absence of pilot voltage - or that the TEST-function is activated. The sensitivity to light (bias current) is adjustable within 1-12 mA on the front plate.



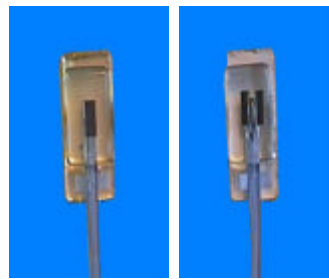
### 601D0500 - Junction box with indication

The unit is designed to connect up to 8 detectors in parallel and has a separate indication of which detector(s) caused tripping by means of a red LED for each detector. The red LED is lit when the light intensity exceeds 6.000 lux. on the detector, but it turns off again if the intensity goes below 6.000 lux. At 12.000 lux. the arc detecting relay is triggered, the active LED's are latched and a yellow LED (TRIP) is turned on. All LED's remain turned on until reset by a common RESET button. Max. 2 boxes per arc detecting relay is allowed.



### 601D0400 - Junction box

For connection of up to 8 detectors in parallel. No indication.



### 601A0200/0300 - Detector

React on light and is available with 180° or 360° characteristic. To be installed in each cubicle/drawer and should be shielded from normal switching arcs. Detectors are supplied with 5 m of cable and a mounting bracket.



### 601D0700 - Overcurrent relay

A 3-phase current relay to be used in combination with a DC arc detecting relay. The current setting range is 1.5-3.0xIn (7.5-15A). Each time the set current is exceeded a red LED (TRIP) turns on and an output relay activates. The relay contact - normally closed - opens and cancels the blocking of the arc detecting relay making it able to trip the supply breaker in the case of an arcing fault. The function of the arc detecting relay is thus made dependent on the current at the time of the arcing fault. However arcing time is increased.



### 601D0800 - Time relay for back-up breaker

The unit is used in combination with arc detecting relay DC and overcurrent relay and represents an extra security. With a time delay it trips a back-up breaker further back in the supply if an arc and an overcurrent are still present after the supply circuit breaker is tripped. In TEST-mode all functions of the system can be tested without tripping the breaker. The unit is factory set to 100 mSec. but can be ordered with time setting within 50-150 mSec. Setting should be at least 20 mSec. above the opening time of the circuit breaker.

After an operation in TEST, indication **must** be reset **before** going back to ACTIVE otherwise the breaker will trip on turning the key.

## Arc protection AC



### 601D0900 - Arc detecting relay AC

The relay is used in combination with junction box 601D0400. (601D0500 **cannot** be used). The relay is completely solid state and has complete isolation between detector input and output. In TEST-mode all functions of the system can be tested without tripping the breaker. The relay has energy stored in a storage capacitor charged with a DC voltage to trip the circuit breaker. The relay has 2 free signal contacts: One contact is for external indication of tripping on arcing fault. The other contact indicates absence of pilot voltage - or that the TEST-function is activated. Both contacts are activated after tripping as the relay normally disconnects its own supply voltage. The sensitivity to light (bias current) is adjustable within 1-12 mA on the front plate.

## Data

### 601D0100

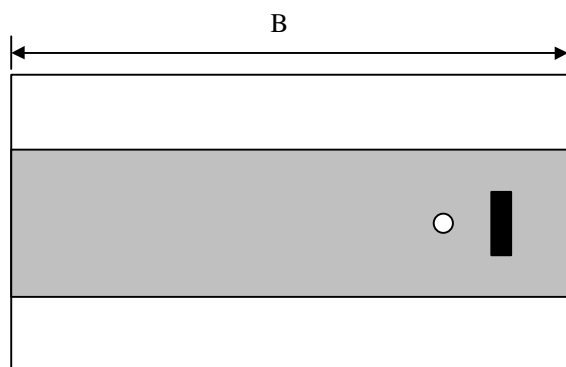
#### Arc detecting relay DC

Supply voltage: 48-220V DC from battery.  
 Triac output: 250V AC/DC, 4A cont. 25A/ 0.1sec.  
 Min. load current 50 mA.  
 Signal contacts: 2 free/220V AC/DC 1A max. 50W.  
 Sensitivity: 1-12 mA, pre-set trip 6mA/12000 lux.  
 Number of detectors: Max. 16 pcs.  
 Response time: Less than 1 mSec.  
 Power consumption: 4.3 W.  
 Ambient temperature: -25 to +70°C.

### 601D0900

#### Arc detecting relay AC

Supply voltage: 220-250V AC.  
 Thyristor output with stored energy: Storage capacitor 66 µF charged to 300V DC. E=2.97 Wsec. (Joule).  
 Life time min 30 years at 50°C.  
 Min. load current 50 mA.  
 Charging time approx. 1 sec.  
 Discharge time approx. 1 min.  
 Trip coil: 230V AC.  
 Signal contacts: 2 free, 220V AC/DC 1A max.50 W.  
 Sensitivity: 1-12mA, pre-set trip 6mA/12000 lux.  
 Number of detectors: Max. 16 pcs.  
 Response time: Less than 1 mSec.  
 Power consumption: 3.5 W.  
 Ambient temperature: -25 to +70°C.



### 601D0500

#### Junction box with indication

Power consumption: 0.6 W.  
 Ambient temperature: -25 to +70°C.

### 601D0700

#### Overcurrent unit

Supply voltage: 48-220V DC from battery.  
 Current inputs: 3-phase 5A cont., 75A /1sec.  
 Burden: 0.5 VA/input at 5A.  
 Current range: 1.5-3.0xIn (7.5-15A).  
 Response time: 20-30 mSec.  
 Power consumption: 2.6 W.  
 Ambient temperature: -5 to +55°C.

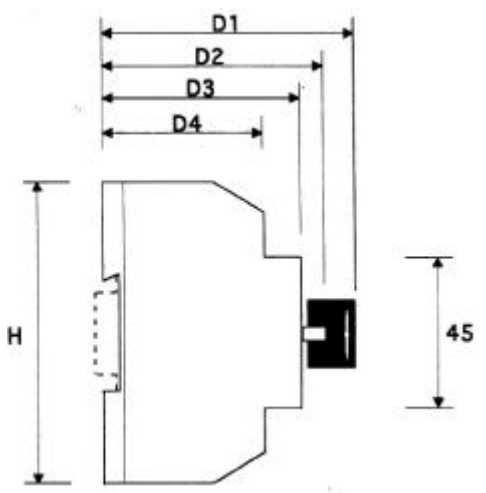
### 601D0800

#### Time unit for back-up breaker

Supply: From overcurrent unit 601D0700.  
 Time delay: 50-150 mSec., preset to 100 mSec.  
 Output contact: 250V AC/DC, 8A cont., 15A/ 4 sec.  
 Power consumption: 0.2 W.  
 Ambient temperature: -5 to +55°C.

### Environment

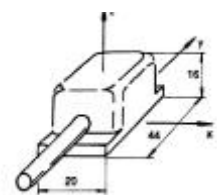
EMC standards: EN50081-1/2 and EN50082-1/2.  
 Enclosure: IP20.



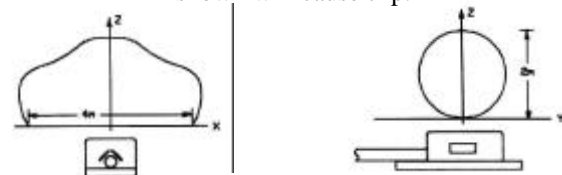
## Dimensions

Description	Item no.	Dim. mm					
		B	H	D1	D2	D3	D4
Arc detect. relay DC	601D0100	105	90	75	70	60	49
Arc detect. relay AC	601D0900	105	90	75	70	60	49
Junction box	601D0400	72	90	--	--	58	48
Junction box, indicat.	601D0500	72	90	--	70	58	48
Overcurrent unit	601D0700	105	90	--	--	60	49
Time unit	601D0800	72	90	75	70	58	48

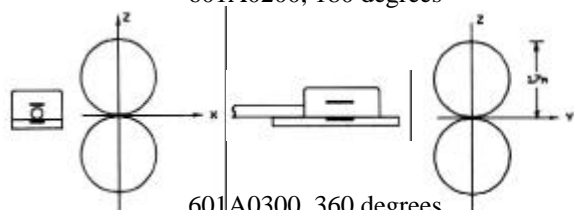
### 601A0200/0300 - Arc detector



An arc with min. 3 kA of current inside the curves shown will cause trip.



601A0200, 180 degrees



601A0300, 360 degrees

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