



## **Why use a Crompton Solar Isolator?**

### **DC Switching**

Crompton products are true DC switching isolators, not an AC type de-rated or re-wired for DC operation. What should be considered is that any AC isolator is predominantly designed with materials chosen such that the load will be AC. This means that the load supply will be a 50/60Hz sine wave, whether it is 230Vac or 400Vac etc. When switching AC it should be remembered that the nature of the load supply will always pass through 0Vac and therefore, although loads can be arduous in type, the supply is self extinguishing – which means that even if the isolator switches at peak load and an arc between contacts is formed, the action of the supply reducing to 0V means that the load will tend to zero and the arc be extinguished.

DC load, on the other hand, is always there and unless the load becomes zero the power being pulled through the contacts will always be the same. So, if the load is 500Vdc 25A, it will be 500V 25A now, in 1sec, in 1min, in 1hour, it is constant. If this is the case, unlike the AC above, if switched "OFF" on load you will also be switching "ON" on load; DC does not go through a 0V level unless there is system supply failure (or some other fault).

### **Switching Speed**

Crompton products have a switching speed that is independent of the operator. The mechanism is such that there is no direct linkage between the operator handle and the switch contacts. As the handle is moved it interacts with a spring mechanism which upon reaching a set point causes all the contacts to "SNAP" over thereby causing a very fast break/make action. This means that the arcs produced by the constant DC load are normally extinguished within 5ms. In an AC Isolator, there is a direct link between the operator turning the handle and the contacts switching, therefore if the operator turns the handle slowly then the contacts will break slowly leading to arcing times of up to 100ms or more.

As the AC isolators have direct action the operator could always stop the making/breaking of the contacts thereby oscillating them about a point that could make/break the arcing causing significant contact wear. With the Crompton range it is impossible to stop the make/break once it has started movement, and therefore the operation must go to completion before any secondary movement can occur.

A number of AC isolators do have DC ratings but these are normally covered by a caveat "Quick Switching Only" in small print and therefore the question of "What is 'Quick Switching'?" especially where, as said before, these isolators rely on operator action.

### **Arcing**

Crompton products operate with a "knife switch" mechanism. This means that when the unit is operated the operation gives a double break, but the arcing effect occurs on the corners of the switch only and so the main contact is made on an area where no arcing has occurred. The rotary nature of the contact mechanism also means that when the switch is operated a self-cleaning action occurs on the arcing points, thereby producing good contact integrity over the life of the product. A secondary advantage of this type of operation is the photovoltaic design, where high currents are available. In the event of the supply to earth failure, the high short circuit current pulls the contacts together thereby giving an extremely high short circuit withstand up to 1700A (product dependant).