



Sensors



Switches



Controls

Application notes



Application Note : March 2018

Market involved : Plastic & Rubber

Product : RGC1A60D32MGE

Customer : OEM

Subject : Switching of heaters in extrusion machines

CUSTOMER ISSUE :

Short circuit protection for SSRs:

Until a few years ago it was very common to protect SSRs with semiconductor fuses. Semiconductor fuses are a special type of fuse which are not always readily available worldwide and can also be very expensive.

Since OEMs ship their machines all over the world, the trend for such OEMs is to move towards protecting SSRs with Miniature Circuit Breakers, since these are more economical, readily available and re-settable.

MCBs are, however, inferior in performance compared to semiconductor fuses and so, when utilised to protect the SSR, the SSR is not just selected based on its current rating but also on its I^2t specification in combination with the line impedance that needs to be added by the cabling between the load and the MCB.

OUR SOLUTION :

In such applications the load current is typically 20 AAC. 20 AAC solutions available on the market have an I^2t specification that is very low (2000 A²s). Protecting such low I^2t SSRs with MCBs is not always practical because of the very long cable lengths required to increase the impedance of the system.

Other solutions have a higher I^2t (7000 A²s) but in most cases this is still not enough to guarantee protection of the SSR without the use of quite long cable lengths needed to ensure the required line impedance.

The RGC..32 is a compact solid state contactor rated up to 37 AAC (30 AAC for the screw output terminals version), which has an I^2t of 18000 A²s. With this superior I^2t , the line impedance required when protecting the SSRs with MCBs is very low and so it is practical and easy to achieve. This specification of 18000 A²s makes the RGC..32 the ideal solution when protection of SSRs with common B-type MCBs is required.

BENEFITS :

- Ease of SSR protection coordination with MCBs thanks to the 18000 A²s specification
- OEMs have a wider choice of suppliers when using MCBs vs. semiconductor fuses
- Space savings since MCBs occupy less space than semiconductor fuses
- MCBs are readily available and re-settable, so the end-user does not need to keep inventory to prevent machine stoppages