

## MOSFET Redundancy Modules..... Improving Upon Redundancy

In a previous issue of "The PULS Advantage", the general topic of paralleling and redundancy was discussed, along with the guidelines that should be followed. This issue will cover the improvements that have been made in the next generation of Redundancy Modules where MOSFETs are used instead of diodes resulting in improved performance.

### Redundancy Module Using Diodes:

Traditional Redundancy Modules using diodes can see a voltage drop anywhere from 0.5V all the way up to 1V between the input and output. The power losses can also be very high which can create heat issues. The voltage drop with diodes can further aggravate a voltage loss that will occur if a smaller wire is ran over a longer distance.

### MOSFET Redundancy Modules:

The benefits of using MOSFETs instead of diodes are significant. The lower resistance in a MOSFET produces substantially lower voltage drops than with a diode. For the PULS YR80.241 and a 40A current draw, a voltage drop of only 50mV is seen between the input and output. A traditional diode would see greater than a 0.5V voltage dip between input and output. The power losses with MOSFETs are also dramatically lower than when using a diode redundancy module. The same current draw through a diode would require a heat sink to dissipate the excess heat. At normal output capacity, the YR80.241 only loses 2.7W which does not

require a heat sink.

### 40A Dual Input MOSFET Redundancy Module:

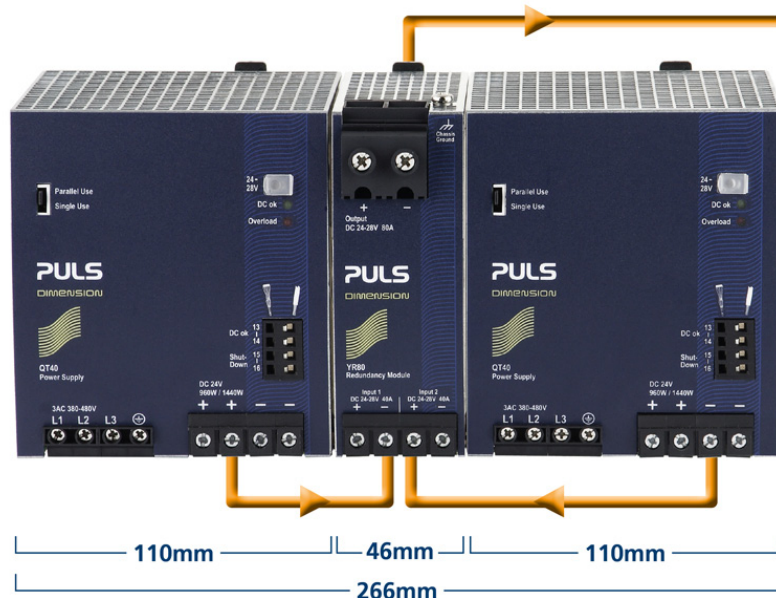
The PULS YR80.241 is the first dual input 24VDC, 40A MOSFET Redundancy Module that is continuously rated for 80A. The common mistake made in most redundancy module designs is that the unit is typically rated for just the current of one of the power supplies. This assumes that only one supply will be delivering the full current at a time or splitting the current if load sharing is involved between supplies. However, this type of rating does not take into consideration an overload or short circuit at the load. If this was

to occur, both power supplies can deliver their full potential which could damage the redundancy module either by overcurrent or by the excess heat. PULS redundancy modules are always rated for twice the rated current of the supply insuring a very reliable system. This dual input 80A unit is surprisingly small with a width of only 46mm as compared to other 40A modules which require two units to complete the redundancy circuit. Using a single compact device saves valuable panel space. The PULS YR40.241 offers a 24VDC, 20A dual input redundancy module that is fully rated for 40A and is only 36mm wide.

*Continued on page 2.....*



*PULS YR40.241 & YR80.241 Redundancy Modules*



*Compact 3-Phase 24VDC, 40A 1+1 Redundancy using two PULS QT40.241 & only one YR80.241 redundancy module*

### Compact Redundancy System:

With the YR80.241 and the QT40.241 power supply, PULS has been able to fit a complete 3-Phase 24VDC, 40A 1+1 redundancy circuit in the space of just one of the competitor's 40A 3-Phase supplies. This is a monumental break through in not only saving space but also being able to convert an older stand alone single

power supply design into a redundant one. Only 266mm of space is required on the panel and due to the high efficiency in both the power supplies and redundancy module, the units can be mounted side by side with no clearances required. A PULS single phase 40A redundant circuit can be mounted in the same fashion and only takes up 296mm of panel space.

### Continued Innovation

PULS was the first to introduce MOSFET designed redundancy module. PULS continues to use cutting edge technology in all designs to offer the most compact, efficient, reliable and cost-effective product on the market. PULS is truly the DC power specialist.

### Features of the YR40.241 & YR80.241 Redundancy Modules

- Uses MOSFETs instead of diodes
- Low voltage and power losses
- Dual input
- 40A & 80A continuously rated
- Can be used in 1+1 and N+1 redundant applications
- Short circuit proof
- Protected against reverse polarity
- Allows back feeding loads
- Operating temperature range -40°C to +70°C
- Comprehensive agency approval package