

SUBMERSIBLE MOTORS

USE OF SUBMONITOR/SUBTROL PLUS® WITH SOFT STARTERS and VARIABLE FREQUENCY DRIVES

SOFT STARTERS

Use of the Franklin Electric SubMonitor/Subtrol Plus microprocessor based protection system with an electronic soft starter is possible taking into account certain setup criteria.

The soft start wave output, like a variable frequency drive output, is generally a highly modified non sinusoidal wave. These chopped wave forms typically confuse the SubMonitor into tripping on overheat and/or false starts.

Our experience has found that when the ramp up and ramp down times of the soft starter are set to 2-3 seconds maximum, in conjunction with the soft starter being then operated in the bypass contactor mode, the system is then in Direct On Line operation and SubMonitor/Subtrol Plus will monitor within its parameters.

The overheat function of the SubMonitor/Subtrol Plus uses a thermostat and transmitter located inside 6" and 8" motors. Once the thermostat determines the motor is in danger, it sends a signal up the motors power wires to the receiver on the surface. The modified wave forms of the Soft Starter or VFD, typically called electronic noise, can duplicate this signal and cause the Subtrol to shut down in error. By using the above guidelines: ramp times and bypass contactor, this false signaling should be cut to near zero or dramatically reduced so as not to interfere.

It should also be noted that the SubMonitor/Subtrol Plus control circuit has a maximum current rating of 2 amps. This should never be exceeded. Excess current draw through this contact can and will damage the SubMonitor.

Should you encounter operational problems and false tripping, the installation of filters or run capacitors can be used to eliminate and/or minimize the electronic noise. (Further details can be obtained from Franklin Electric) Also check with your Soft Starter or VFD supplier for their preferred filtering options.

It may eventuate that the brand of soft starter that is installed cannot be used nor filtered sufficiently to be used with the SubMonitor/Subtrol Plus.

VARIABLE FREQUENCY DRIVES

The Franklin SubMonitor/Subtrol Plus **is not compatible for use with VFD's**. As described above, the wave form will cause erratic monitoring and nuisance tripping.

When using VFD's with Franklin Electric submersible motors, please refer for more details to the Franklin AID issue, Vol 18, No 3, May/June 2000. This information is also detailed on Page 24 of the Franklin AIM March 2003 Aust/NZ.

Nuisance tripping of SubMonitor/Subtrol Plus has been encountered when a VFD is installed in the same general area, controlling other equipment, as the signals can feed back through the power lines to the sensor coils. The source needs to be investigated and filters installed.

Should SubMonitor/Subtrol Plus not be usable for your installation, we strongly recommend a Pt100 temperature probe be fitted to your motor. This probe can then be monitored via a surface controller with an alarm and trip point to protect the submersible motor from overheating.

For more details on Pt100, refer to the Franklin AID issue, Vol 19, No 3, May/June 2001.

Any questions, please contact us.