

Automation Service News

The Newsletter of Delta Automation Inc.

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Tech Tip!

Line Reactors with AC Drives

Should you specify a line or load reactor when installing an AC drive application? Most drives 10 horsepower and larger have DC link chokes already installed in the DC bus between the rectifier bridge and the capacitor bank to reduce harmonics. Drives less than 10 horsepower do not have the DC link choke built into the drive and it is not

normally a problem since any harmonic current distortion would be small compared to the total load of the facility. If many small drives are required, then an input reactor is a good choice in harmonics mitigation. It is also more economical and practical to connect a group of 5 to 10 small drives through one large three phase reactor.

Contactors and disconnects can cause line transients when inductive loads such as motors are switched off. When these voltage spikes occur, they could damage the

semiconductors in the DC converter circuit of the drive's input. For this reason a reactor can be useful as a line voltage buffer. This buffering is for short duration transients (less than 1 ms) and will not fix high line condition or protect against high energy short duration events such as lightning strikes.

The need to add a reactor to the drive output to increase the load inductance is not as necessary as it once was with the drives in today's market. The higher carrier frequencies and lower ripple current of the IGBT (Isolated Gate Bipolar Transistor) and higher multiple-pole units have reduced this need.

In summary use a line reactor to add line impedance, provide some light buffering against low magnitude line spikes, reduce harmonics when no link chokes are present, and compensating for low inductance motors.

Delta Automation, Inc. represents Trans Coil, Inc's (TCI) products, such as input & output reactors, active conditioners, 3-phase EMI/RFI filters and sine-wave filters.

Please contact Delta Automation, Inc for more information or a quotation on these and other products.



A/B 1305 Drive Check



Fig 1 DC-

AB 1305 Drive Check-out Procedure

WARNING: HAZARDOUS VOLTAGE MAY BE PRESENT PLEASE CONSULT USERS MANUAL FOR A DETAILED DESCRIPTION OF SAFETY PRECAUTIONS



Fig 2 DC+

With input power applied to the VFD, measure the input AC voltage and ensure that the readings are within Allen Bradley's specifications.

Measure the DC bus with the DVM set on the 800 VDC scale. Place the positive meter lead on the DC+ terminal located on the main terminal block next to L3 (see fig.2). Next, place the negative meter lead on the leg of C2 closest to the label (see fig.1, DC-). A drive with 480 VAC input should read 600 to 720 VDC across the DC bus terminals. Also measure the AC voltage across the DC bus. A reading of more than 4 VAC is an indication of a problem with the VFD input Diode Bridge or DC bus capacitors. This condition will cause failure of the VFD power components and can result in motor/machine damage.

The following measurements need to be taken with a Fluke 87 Series V Digital Multimeter. This meter has filtering to compensate for the high frequency noise located on VFD outputs. A multimeter that does not utilize a high frequency filter will give erroneous readings. Take voltage readings on the VFD output with a start command present and zero speed reference. You should read approximately 40 VAC from phase to phase. A higher reading (over 60 VAC) is an indication of a leaking IGBT module. This condition will cause a failure of the VFD and can result in motor/machine damage.

The following test should be performed with input power off. Wait approximately 5 minutes after input power is switched off for the DC Bus to discharge. Check for voltage on DC bus with a DVM before proceeding.

With your DVM set to diode check, place the negative meter lead on the DC+ terminal (see fig.2) and the positive meter lead on DC- (see fig.1). The meter should read between .6-.78 VDC, anything lower indicates a short on the DC Bus, a higher reading indicates added resistance to the DC Bus. Next while holding the positive meter lead on DC- (see fig.1) place the negative meter lead on L1 then L2, L3, T1, T2, and then T3. The meter should read between .3-. 485 VDC, a lower reading indicates a short, a higher reading indicates added resistance to that circuit. Next hold the negative meter lead on the DC+ terminal and place the positive meter lead on L1 then L2, L3, T1, T2, and then T3. The meter should read between .3-. 485 VDC, a lower reading indicates a short, a higher reading indicates added resistance to that circuit. Any abnormal reading indicates a problem in the power components of the drive. These conditions indicate a failure of the VFD power components and can result in motor/machine damage. If any measurements taken do not correspond with the normal readings listed here please contact Delta Automation for service at 888 PC DELTA.

Gridpoint Intelligent Renewable Energy Systems

Delta Automation, Inc. has been named as a distributor of Gridpoint Intelligent Renewable Energy appliances.

These cutting edge technology devices are targeted to be used in light commercial and residential applications where power outages occur and selective equipment needs to continue to operate.

Unlike current UPS systems, these systems automatically allow the user to purchase power at off-peak times as electrical power de-regulation becomes a reality, to recharge the batteries allowing a time shift for high demand usage. Additionally, alternative power sources, such as solar, can be used in conjunction with these units as well. No gasoline or propane to store, no carbon monoxide gases, no noisy generators and no building/management ordinances to contend with. These units come in sizes up to 10KW hours, with additional battery storage of 10KW for a maximum total of 20KW hours.

This intelligent system continuously monitors all aspects of its' operation and contacts the Gridpoint Central control with any alarms or out-of-tolerance conditions. Load conditions and any energy savings are up-linked daily to the central database which can be monitored by the user over the internet. For more information, please contact Delta Automation, Inc.



Allen Bradley PLC Class

Ed McClure, Delta Automation's Allen Bradley Specialist, has just completed teaching a customized, advanced 40 Hour Allen Bradley PLC training course for 39 maintenance personnel for a major Virginia automotive manufacturer.

The course curriculum was designed to address the customer's specific training needs, and scheduling was arranged to accommodate personnel from all three shifts and was held at a local community college. Several different families of controllers and their I/O structures were taught.

Additionally, the many communication networks and their respective ins and outs were also included.

Call Delta Automation today to learn how we can help make your maintenance team more effective.

Important Info

Recently, Roy Caudle, Delta's National Sales and Service Manager, held a customized Modicon PLC maintenance course specifically designed to meet the requirements of a large national manufacturer of paper products. The course covered all aspects of troubleshooting, both hardware and software, using several different types of Modicon PLC systems, including 584's and 984's, both chassis and slot mounts, utilizing Taylor ProWorx Plus software.

The 16 students were rotated through over four weeks to meet the clients needs and scheduling.

All students had lecture and hands on time with real PLC systems.

If you or your customers are in need of any PLC or drive training, please contact Delta Automation, Inc. for a quote.

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For after hours

Emergency Service or Parts

Call our main number 888-723-3582 or digital pager 1-888-969-1308

Extension 55

Leave a message and someone will respond within fifteen minutes to answer your call.

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