SL™ Series
AC Brushless
Axis Servodrive

Addendum

Revision 1.4 (6/99)
P/N MNLSLAD-1.4

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Introduction to the Addendum

Subsequent to the original design of the SL series AC Brushless Axis Servodrive, a design change was made to add a special high density DB-15 connector, P11 on the silkscreen of the servodrive. The standard documentation for the SL series does not cover that newly added connector. This Addendum explains the signals that are available there and how to interpret the fault bit output that is now available through that connector. Also in this Addendum, some additional information is provided covering the P1 (J1) Enable Jumpers that must be set up for proper operation of the drive. Finally, this Addendum concludes with a wiring layout and color definition for the axis control cable that may be used with the SL series servodrive to assist in wiring this cable if it is being used.

User - Configurable Jumpers

J1 Limit / Enable Jumpers

The J1 connector has the following pins that must be connected to logic common (J1 pin 27) for proper operation:

J1 Pin#	Function /Description
24	**Normally Closed Negative Limit Input -** When this input is at a CMOS logic high, or allowed to float, all negative command inputs to the non-inverted input J1 pin 2 with respect to the inverted input J1 pin 1 are clamped. This input must be forced low for normal operation. Internal pull-ups will hold this pin at a CMOS (12V) logic high if it is allowed to float. Internal diodes allow for voltages of up to 40V to be applied to this pin when in its high state. Note that this input disables all current in one direction only. The Drive Ready will remain asserted (Drive Ready will remain high, Drive Ready / will remain low).
25	**Normally Closed Positive Limit Input -** When this input is at a CMOS logic high, or allowed to float, all positive command inputs to the non-inverted input J1 pin 2 with respect to the inverted input J1 pin 1 are clamped. This input must be forced low for normal operation. Internal pull-ups hold the normal condition of this input at a CMOS (12V) logic high if it is allowed to float. Internal diodes allow for voltages of up to 40V to be applied to this pin when in its high state. Note that this input disables all current in one direction only. The Drive Ready will remain asserted. (Drive Ready will remain high, Drive Ready / will remain low).
26	**Normally Closed Disable Input -** When this input is at a CMOS logic high ,or allowed to float, all servodrive output will be disabled. This output must be forced low for normal operation. Internal pull-ups will hold this pin at a CMOS (12V) logic high if allowed to float. Internal diodes allow for voltages of up to 40V to be applied to this pin when in its high state. Note that this input disables all output, and will place the servodrive in a “Not Ready” state when it is asserted. (Drive Ready will go low, Drive Ready / will go high).
27	**Logic common**

The factory default is for J1 pins 24, 25 and 26 to be tied to Logic Common (J1 pin 27). This allows for normal operation when the Normally Closed Enable / Limit jumpers are not desired.

Fast Power-Up Jumper

Without J1 pin 29 and 30 shorted together, the servodrive has a 1 to 2 second startup delay to allow motion controllers and other system components time to stabilize. After the startup delay time, the Drive Ready signal will be asserted (refer to Servodrive Connection Definitions and Specifications). When pins 29 and 30 are shorted together the startup delay is

reduced to 100 to 200 milliseconds.

Control I/O Connector J11

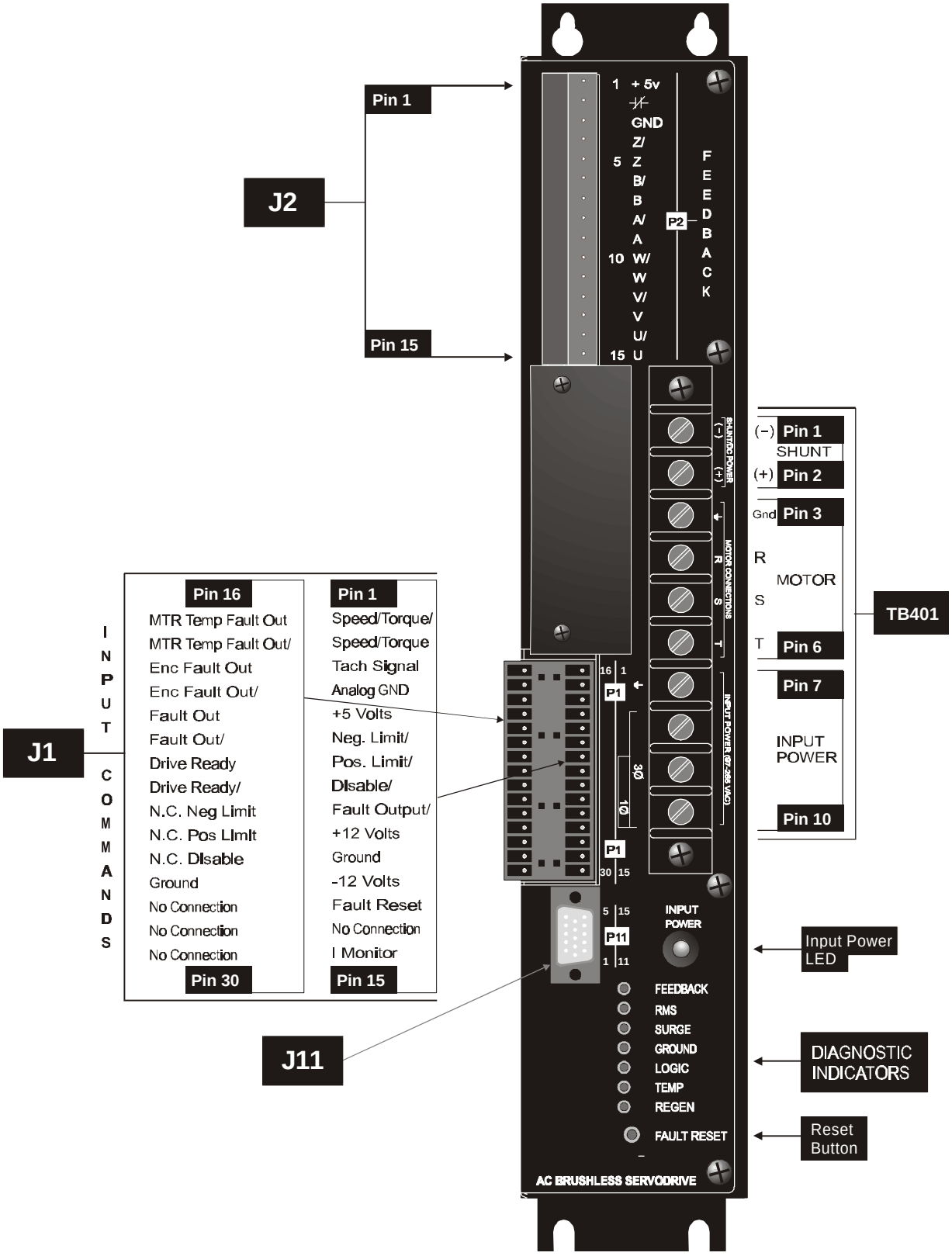
The Control I/O connector brings out the connections needed for a positioning controller to one connector, making multi-axis controller configurations easier to connect. The table below outlines the pin designations for this connector. Refer to J-11 Control I/O connector under *Servodrive Connection Definitions and Specifications* for a complete description and specifications for this connector.

HD15 (P11) Pin#	Function
1	Speed/Torque / (Command Signal) Inverted Input
2	Speed/Torque (Command Signal) Non-Inverted Input
3	Ground
4	Z/ reference
5	Z reference
6	B/ reference
7	B reference
8	A/ reference
9	A reference
10	Servodrive Fault Reset / Servodrive Disable Input
11	Power On output
12	Fault bit 0 output
13	Fault bit 1 output
14	Fault bit 2 output
15	Fault bit 3 output

Control I/O Cable

A High Density cable is available from Westamp for the J11 connector. The cable consists of a matching HD15F connector on one end and stripped, tinned fly leads on the other. The cable is available in 5 and 15 foot lengths. Refer to the drawings section for a cable description drawing.

Making Drive Connections



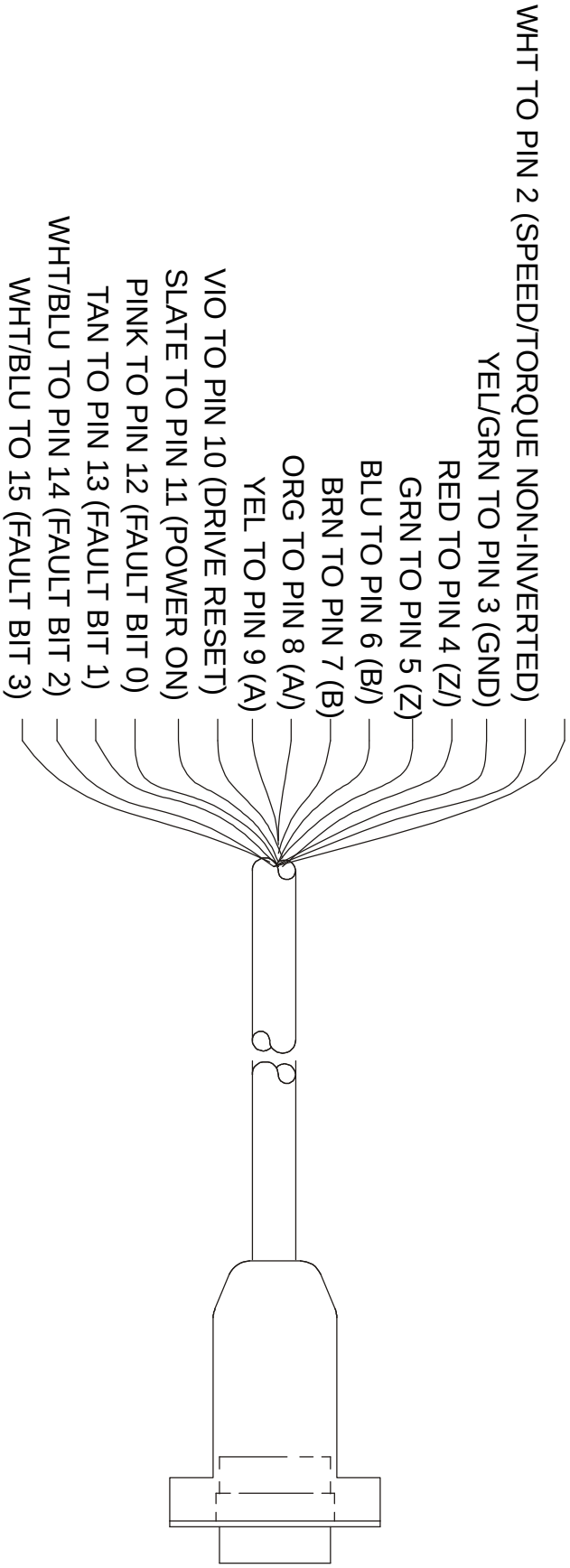
J11 -Control I/O Connector

Pin#	Function
1	**Speed/Torque / (Command Signal) Inverted Input** - Used in conjunction with pin 2. This input is the negative input of the Command signal input when connected differentially, or may be configured as either the Non-Inverted Command signal input return (common), or the Inverted Command Signal input when connected single-ended. The gain for this input is set at 10 volts equal peak current. **Single-ended input:** For single-ended input, the signal is applied to J1-1 with respect to common (J1-2 or J1-4). **Differential Input:** For differential input, the signal is applied between J1 pin 1 and J1 pin 2. This pin (J1-1) becomes the negative input of the differential input command.
2	**Speed/Torque (Command Signal) Non-Inverted Input** - Used in conjunction with pin 1, this input is the positive input of the command signal input when connected differentially, or either the Non-Inverted Command Signal Input, or the Inverted Command Signal Input return (common) when connected single-ended. The gain for this input is set at 10 volts equal peak current. **Single-ended Input:** For single-ended input (Normal Westamp Configuration) the signal is applied to J1-2 with respect to common (J1-1 or J1-4). **Differential Input:** For differential input, the signal is applied between J1 pin 1 and J1 pin 2. This pin becomes the input of the differential input command.
3	**Signal Ground** - use this pin as the ground for the encoder power and other digital signals.
4	**Encoder "Z" / reference -** index or marker channel compliment reference.
5	**Encoder "Z" reference** - index or marker channel reference.
6	**Encoder "B" / reference** - Encoder data channel B compliment reference.
7	**Encoder "B" reference** - Encoder data channel B reference.
8	**Encoder "A" / reference** - Encoder data channel A compliment reference.
9	**Encoder "A" reference** - Encoder data channel A reference.
10	**Servodrive Fault Reset input** - On the SL servodrive, a fault condition can be cleared by setting this pin high, and then back to low. A half-second delay will occur after this pin is cycled back to low before the servodrive becomes enabled. Internal pull-up resistors hold this pin high. **Servodrive Disable Input** - During the time that this pin is high, the servodrive will be disabled. A half-second delay will occur after this pin is pulled low, resetting and enabling the servodrive.
11	**Drive Power On -** This pin will be at a (12V) logic high when logic power has been applied to the servodrive.
12	**Fault Bit 0 output** - This signal is part of the four bit data word to indicate the status of the servodrive. Refer to the Fault Bit Status chart (next) for a description of this data word.
13	**Fault Bit 1 output** - This signal is part of the four bit data word to indicate the status of the servodrive. Refer to the Fault Bit Status chart (next) for a description of this data word.
14	**Fault Bit 2 output** - This signal is part of the four bit data word to indicate the status of the servodrive. Refer to the Fault Bit Status chart (next) for a description of this data word.
15	**Fault Bit 3 output** - This signal is part of the four bit data word to indicate the status of the servodrive. Refer to the Fault Bit Status chart (next) for a description of this data word.

J11 - Pins 12 to 15: Fault Bit Status Chart

MX_3	MX_2	MX_1	MX_0		Status
0	0	0	0		No Faults
0	0	0	1		RMS Fault
0	0	1	0		Surge Fault
0	0	1	1		Ground Fault
0	1	0	0		Logic Fault
0	1	0	1		Servodrive Temp Fault
0	1	1	0		Regen Fault
0	1	1	1		Motor Temp Fault
1	0	0	0		Feedback Fault
1	0	0	1		reserved
1	0	1	0		reserved
1	0	1	1		reserved
1	1	0	0		reserved
1	1	0	1		reserved
1	1	1	0		reserved
1	1	1	1		reserved

Note that the Fault Bit Output is a four bit data word. Along with the Power On output, this 4 bit word can be used to indicate the status of the servodrive. The output data is CMOS (12V) open collector with internal pull-ups. Because of the internal pull-ups, the No Fault State (0 0 0 0) will only be achieved when the servodrive is operating properly and all four lines are forced low.



AXIS CONTROL CABLE DEFINITION