

SECTION 11 - MECHANICAL BRAKES

The DeltaMax driver is equipped with special circuitry and software to sequence an electrically released mechanical brake. The full line of Delta motors are available with mechanical brakes to provide mechanical fail safe braking in the case of power loss and driver disable.

It is very important for proper operation to sequence the driver servo lock and mechanical brake to avoid loss of holding torque during the transition. The driver in conjunction with an external relay and brake power supply provide for the optimum sequencing to prevent loss of holding torque or driver damage.

The brake mode and brake threshold are configured through the MacroPro II analyzer, Parameters, Current Drive Parameters menu item.

11.1 NO MECHANICAL BRAKING

If a mechanical brake is not used, tie BRAKE CONFIRM input ON for the DMAX-1.5 through DMAX-17.5 driver sizes. For the DMAX-35 and larger drivers, a jumper must be provided between B11 and B12. The factory installs a jumper from B11 to B12.

Set the Brake Mode to No Brake.

11.2 MECHANICAL BRAKING WITH SOFT DECELERATION

The driver sequencing can be set to apply the mechanical brake after the driver has reduced the motor speed to a programmable set point. The speed when the brake applied is determined by the Holding Brake Threshold parameter. This value is scaled in % of rated speed.

The mechanical brake is applied immediately upon loss of power or a drive alarm.

Connect the braking relay and power supply as shown in **Figures 11.1 or 11.2** and set the Brake Mode to Mechanical Brake. The sequencing will be as shown in **Figure 11.3**.

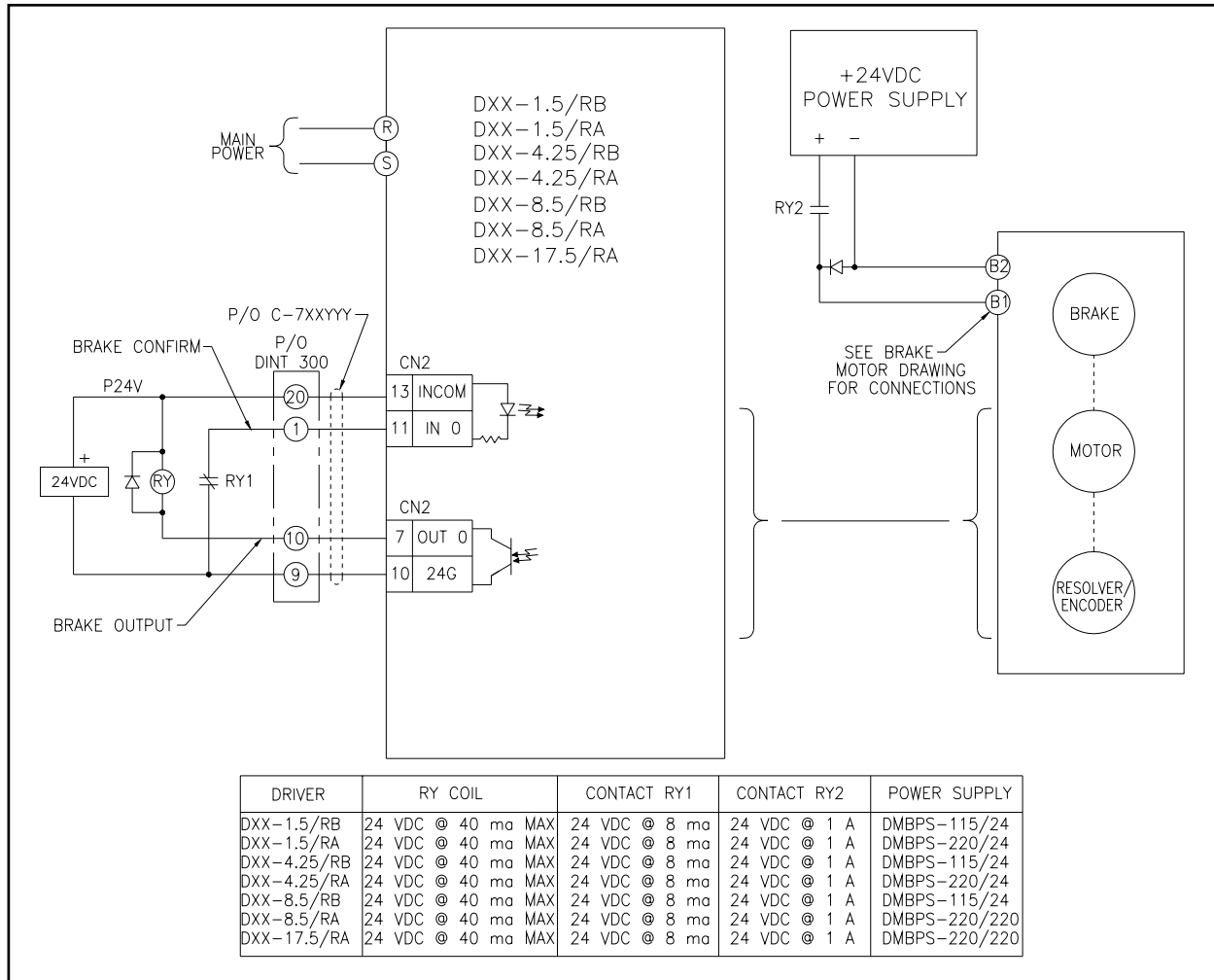


Figure 11.1 - Mechanical Brake Connection for the DMAX-1.5 Through DMAX-17.5 Drivers with a Sourcing I/O Board

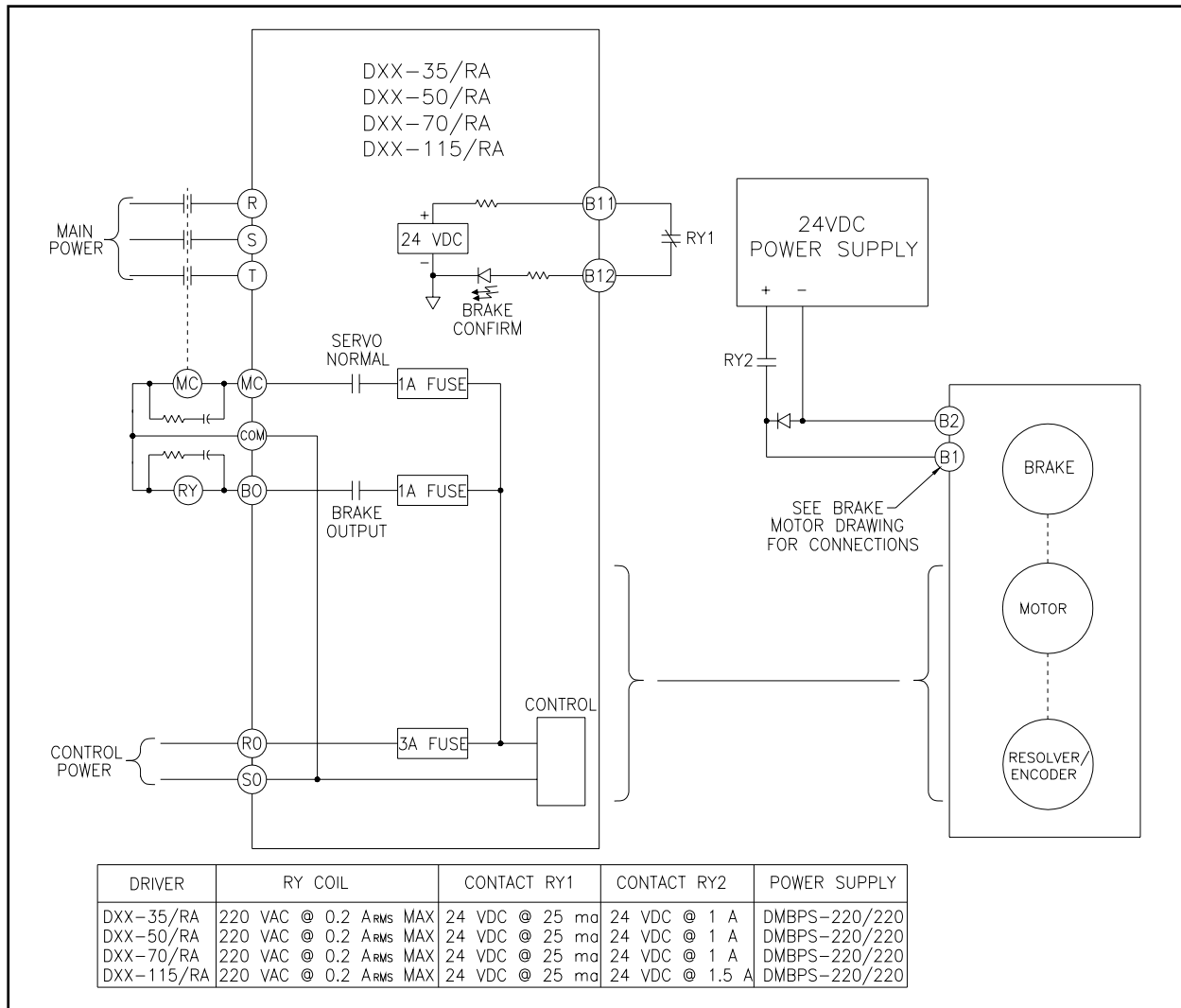


Figure 11.2 - Mechanical Brake Connection for the DMAX-35 Through DMAX-115 Drivers

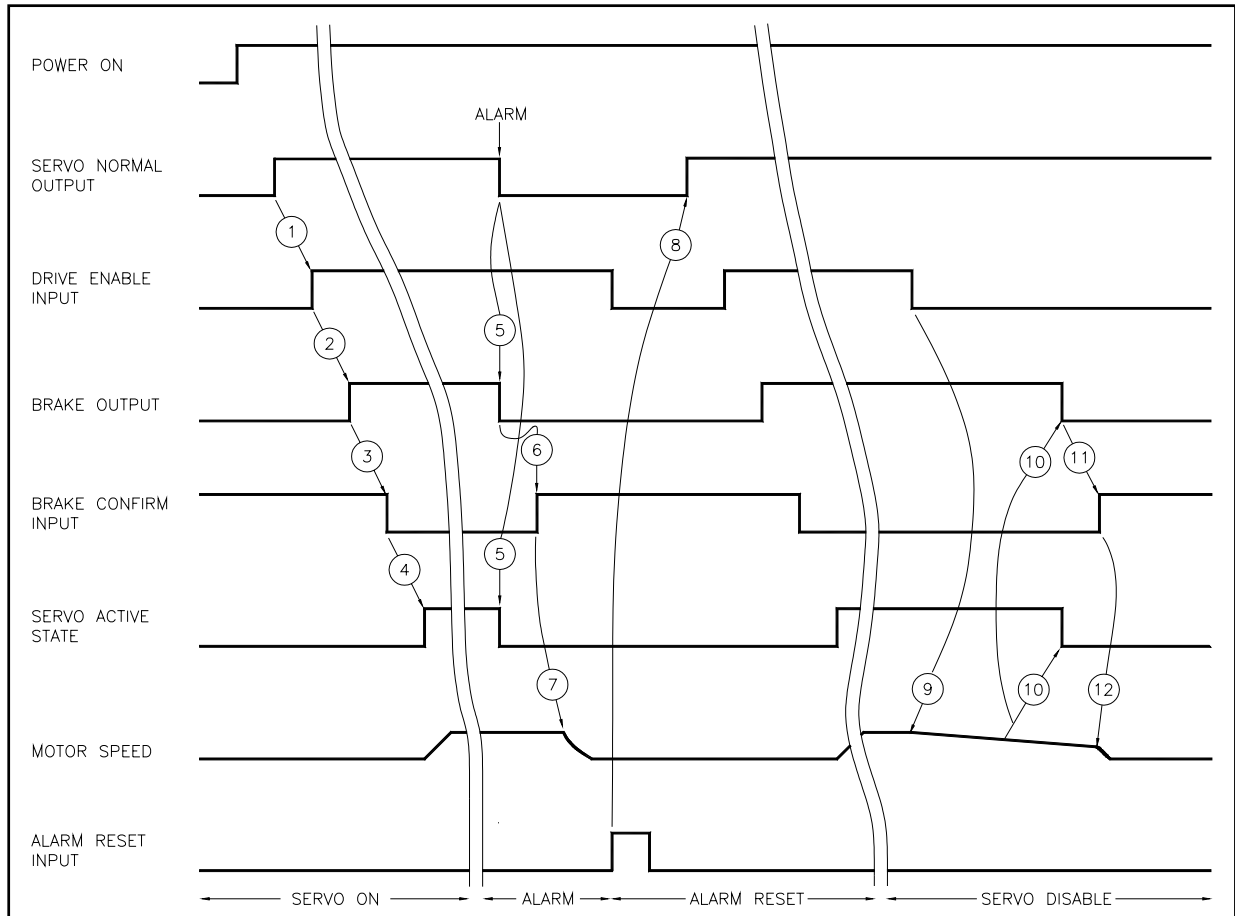


Figure 11.3 - Mechanical Brake Sequencing for Soft Decel

1. DRIVE ENABLE may be turned ON within 0.6 seconds of SERVO NORMAL.
2. BRAKE turns on within 800usec. of DRIVE ENABLE.
3. BRAKE CONFIRM must be returned within 100ms or AL-14 will be generated.
4. The servo will become active within 800usec of sensing BRAKE CONFIRM.
5. When an alarm is sensed, the SERVO NORMAL and BRAKE outputs are turned OFF and the servo becomes inactive.
6. The BRAKE CONFIRM turns ON indicating the braking relay has toggled.
7. The mechanical brake engages after a delay in the braking mechanism.
8. The DRIVE ENABLE must be turned OFF before alarm clearing can be accomplished. ALARM RESET causes driver to check for clearing of the alarm condition and if all alarm states are clear the SERVO NORMAL will turn ON within 30 ms. ALARM RESET should be turned OFF before DRIVE ENABLE is turned ON.
9. The servo starts to decelerate within 800usec of DRIVE ENABLE being turned OFF.
10. The servo becomes inactive and the BRAKE output turns OFF within 800usec of the motor speed dropping below the brake threshold set point.
11. The BRAKE CONFIRM turns ON indicating the braking relay has toggled.
12. The mechanical brake engages after a delay in the braking mechanism.

11.3 MECHANICAL BRAKE POWER SUPPLY

DRAWING NUMBER

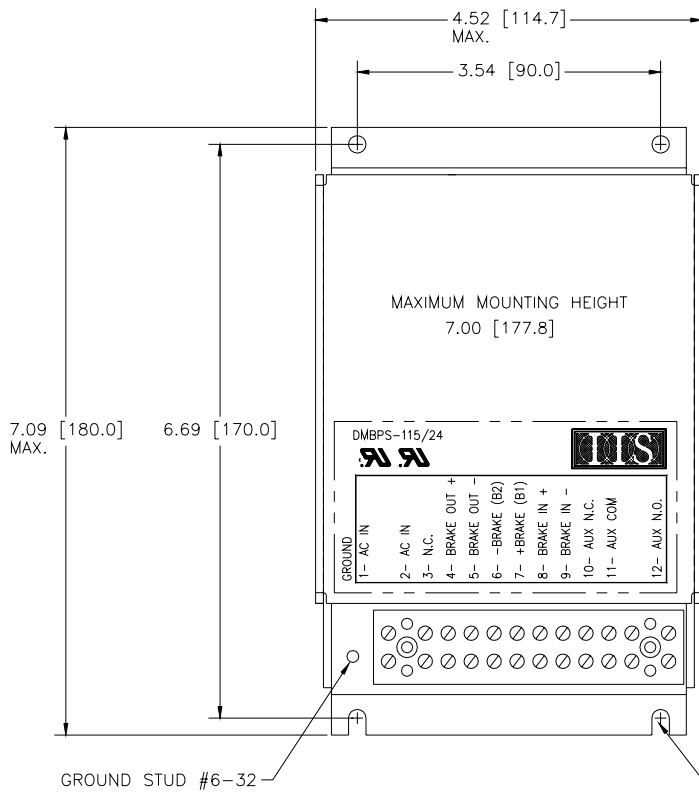
DESCRIPTION

DMBPS-115/24
DMBPS-220/24
DMBPS-220/220

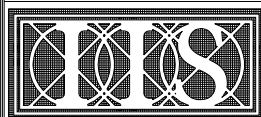
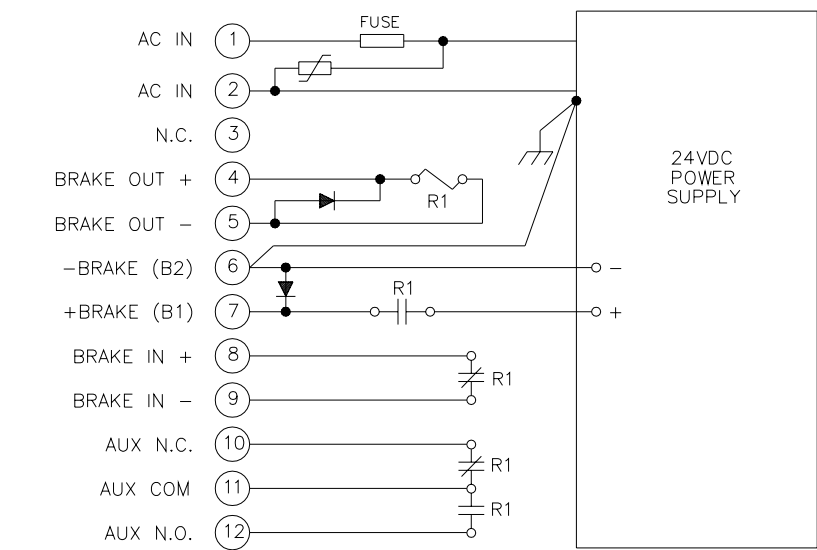
Mechanical Brake Power Supply
Mechanical Brake Power Supply
Mechanical Brake Power Supply

**** CAUTION ****

The DMBPS-XXX mechanical brake power supply does not have enough capacity to operate the brake in the 7500 W and 10 KW size motors. Use properly rated 24 VDC power supply and relay (Ry) per [Figure 11.2](#).



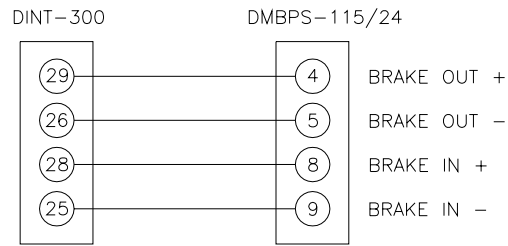
SPECIFICATIONS:	
INPUT POWER: AC IN	100-120VAC 50/60Hz 500ma max
BRAKE:	26 VDC at 1.0 A max.
R1 AUX CONTACT:	24 VDC at 1 A max./ 120 VAC at 1 A max.
R1 (BRAKE IN):	24 VDC at 1 A max.
R1 COIL: (BRAKE OUT)	24 VDC at 0.9 watts
FUSE:	GDC-0.500A



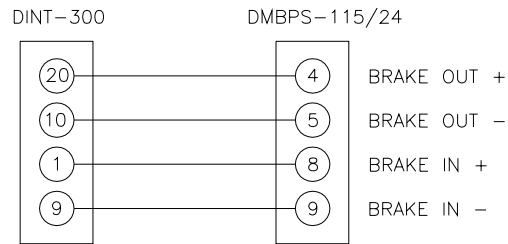
INDUSTRIAL INDEXING SYSTEMS, Inc.
www.iis-servo.com

TITLE
MECHANICAL BRAKE POWER SUPPLY
DRAWING NUMBER
DMBPS-115/24

FOR DELTAMAX AND DELTAPRO SOURCING I/O CONTROLLERS WITH
DSD-8.5 AND DSD-17.5 DRIVES:



FOR DELTA DSD-8.5 AND DSD-17.5 DRIVES:

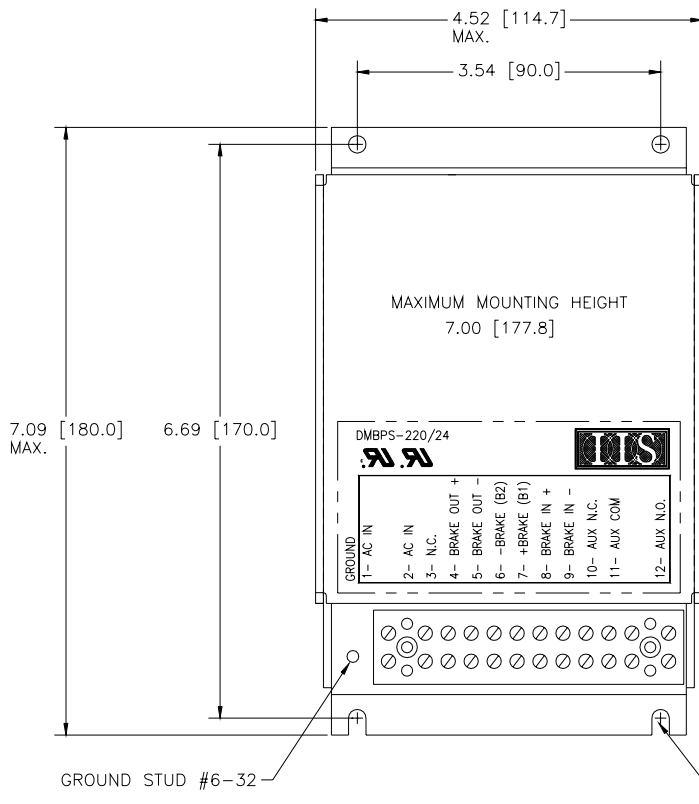


INDUSTRIAL INDEXING SYSTEMS, Inc.

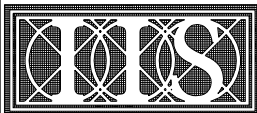
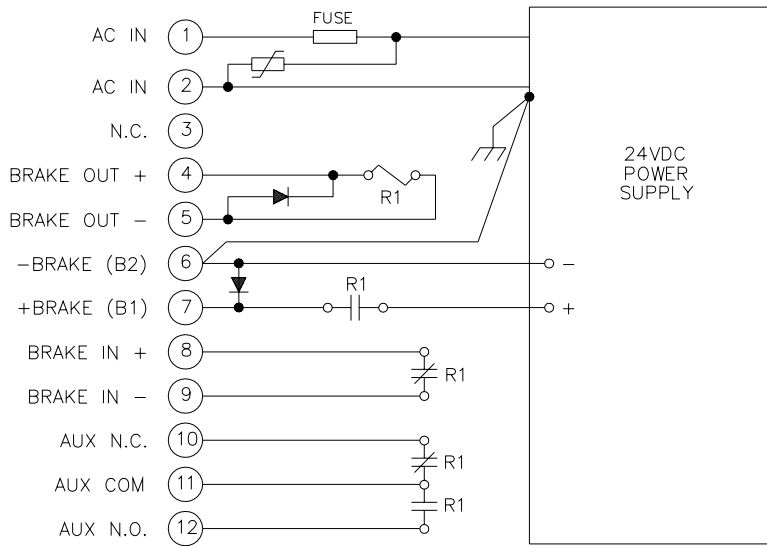
www.iis-servo.com

TITLE
MECHANICAL BRAKE POWER SUPPLY

DRAWING NUMBER
DMBPS-115/24



SPECIFICATIONS:	
INPUT POWER: AC IN	200-240VAC 50/60Hz 200ma max
BRAKE OUTPUT:	26 VDC at 1.0 A max.
R1 AUX CONTACT:	24 VDC at 1 A max./ 120 VAC at 1 A max.
R1 INO & 24G:	24 VDC at 1 A max.
R1 COIL:	24 VDC at 0.9 watts
FUSE:	GDC-0.200A

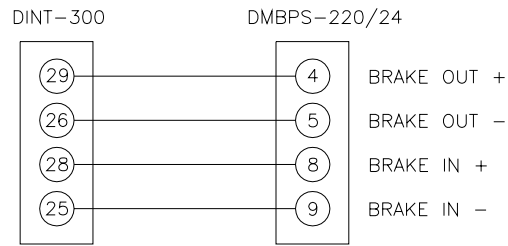


INDUSTRIAL INDEXING SYSTEMS, Inc.
www.iis-servo.com

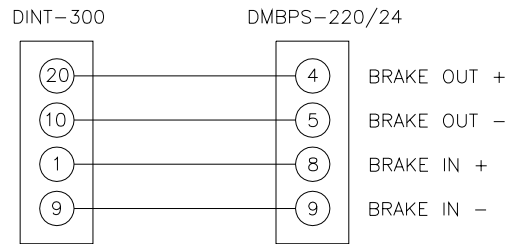
TITLE
MECHANICAL BRAKE POWER SUPPLY

DRAWING NUMBER
DMBPS-220/24

FOR DELTAMAX AND DELTAPRO SOURCING I/O CONTROLLERS WITH
DSD-8.5 AND DSD-17.5 DRIVES:



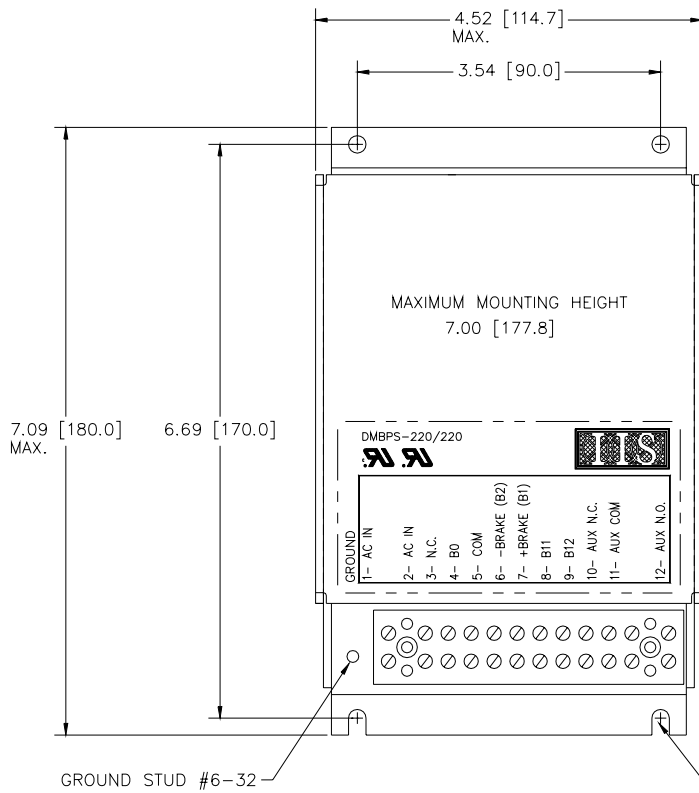
FOR DELTA DSD-8.5 AND DSD-17.5 DRIVES:



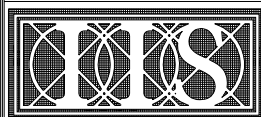
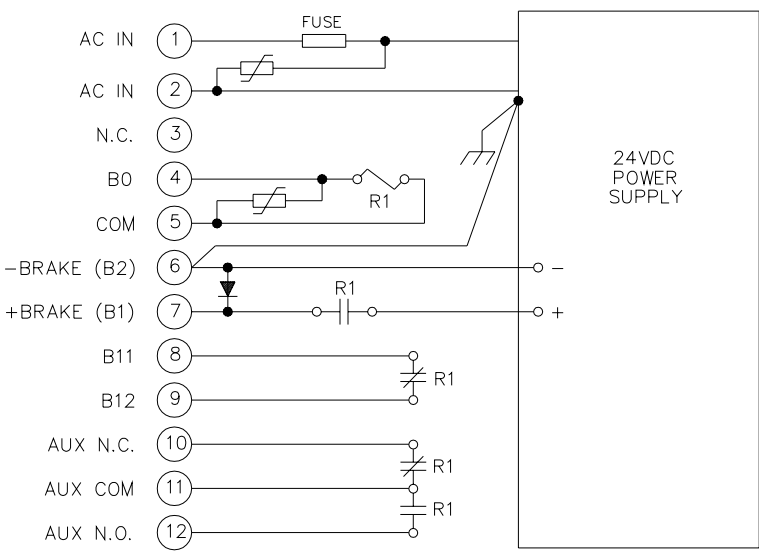
INDUSTRIAL INDEXING SYSTEMS, Inc.
www.iis-servo.com

TITLE
MECHANICAL BRAKE POWER SUPPLY

DRAWING NUMBER
DMBPS-220/24



SPECIFICATIONS:	
INPUT POWER: AC-IN	200-240VAC 50/60Hz 200ma max
BRAKE:	26 VDC at 1.5 A max.
R1 AUX CONTACT:	24 VDC at 1 A max./ 120 VAC at 1 A max.
R1 B11 & B12:	24 VDC at 1 A max.
R1 COIL: B0 & COM	220 VAC at 3.5 VA Inrush 1.2 VA Sealed
FUSE:	GDC-0.200A



INDUSTRIAL INDEXING SYSTEMS, Inc.
www.iis-servo.com

TITLE
MECHANICAL BRAKE POWER SUPPLY
DRAWING NUMBER
DMBPS-220/220

