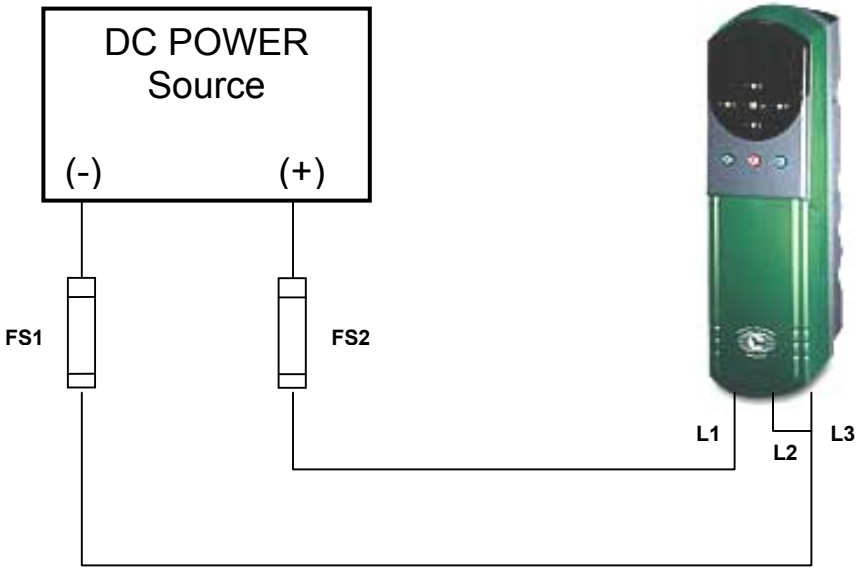
Application Note
CTAN #173

The Application Note is pertinent to the Unidrive & Commander SE Families

Unidrive Size 1 & 2 Operating on DC Supplies

This application note describes how to operate a Unidrive (Size 1 or 2) on a DC power source.

The simplest way to do this is to apply the dc power source to the line inputs (L1, L2 & L3) of the drive. This method takes advantage of the built-in pre-charge circuit in the drive to "soft-charge" the dc bus capacitors.



The DC voltage required is based on the motor rated voltage. The table below gives the nominal voltage required.

Motor Rated Voltage	Nominal DC Bus Voltage
208/230	325 (LV)
380	540 (MV)
415	580 (MV)
460	650 (MV)

The DC voltage supply must also be appropriately fused. These fuses must handle the inrush current (charging current) to the dc bus capacitors in the drive and be capable of "breaking" DC current/voltage in the event of a short circuit at the drive. The recommended fuse for this application is **Gould Shawmut type AJT class J** or equivalent. The table below gives the fuse rating for the various drive sizes.

Drive	HP	Fuse (amps)		Drive	HP	Fuse (amps)
UNI1401	**1**	**4**		**UNI1203**	**1**	**4**
UNI1402	**1.5**	**4**		**UNI1204**	**1.5**	**5**
UNI1403	**2**	**4**		**UNI1205**	**3**	**10**
UNI1404	**3**	**5**				
UNI1405	**5**	**10**		**UNI2201**	**3**	**10**
				UNI2202	**5**	**15**
UNI2401	**7.5**	**15**		**UNI2203**	**7.5**	**20**
UNI2402	**10**	**20**				
UNI2403	**15**	**25**				
MV				**LV**		

Additional Drive information:

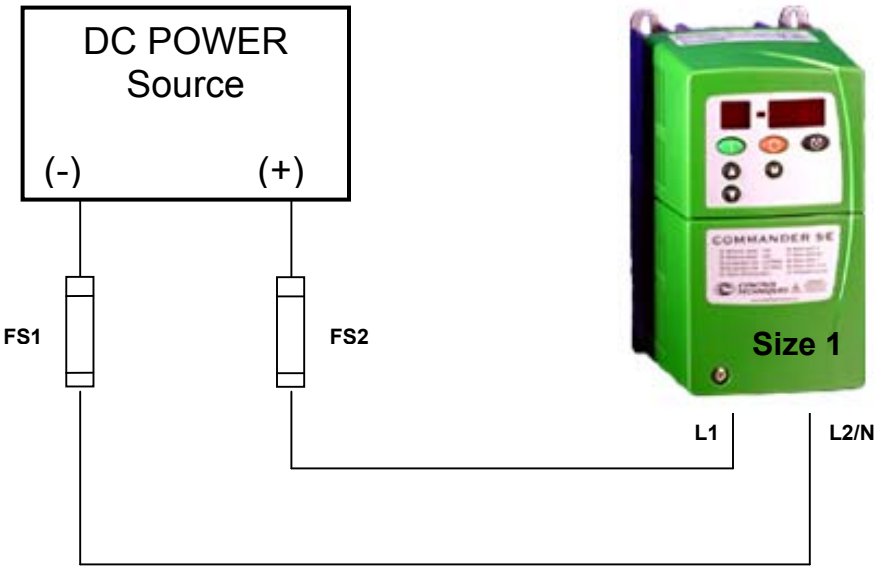
The Unidrive has the following voltage thresholds:

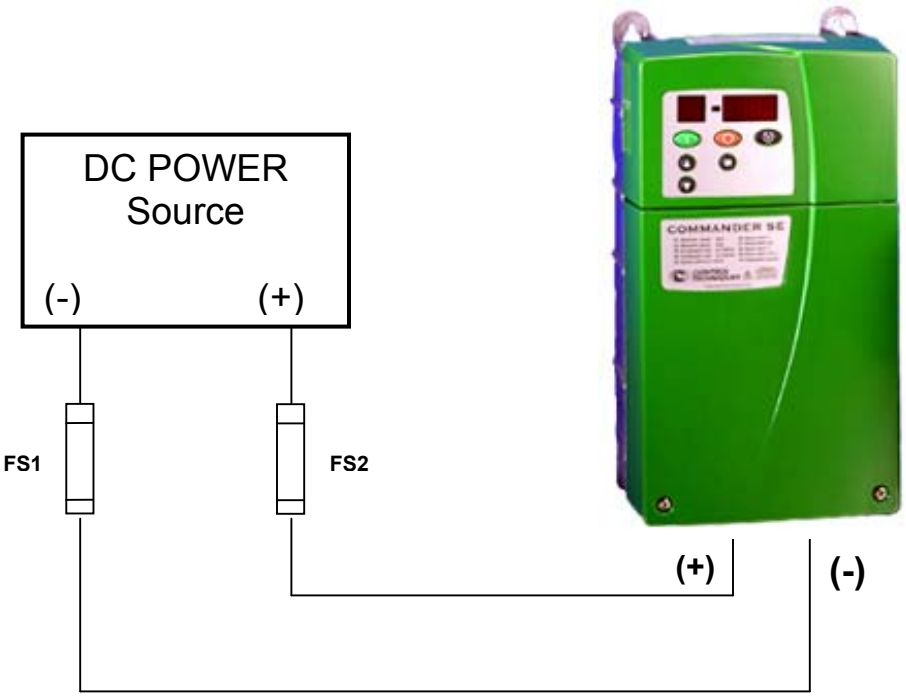
	MV	LV
Maximum DC link voltage (OU trip)	830V	415V
Minimum DC link voltage (UU trip)	320V	175V
Maximum motor voltage	480V	240V
Braking IGBT turn on point	780V	390V
Restart voltage (switch mode ps)	450V	235V

MV = 380 Vac – 480 Vac Unidrive product
LV = 220 Vac – 240 Vac Unidrive product

Commander SE Operating on DC Supplies

The Commander SE may also be operated off a dc power source with the exception that the dc supply may be connected directly into the dc bus connections (+) and (-). The reason for this is that the "pre-charge" circuit is connected between the (+) and (-) connections and the bus capacitors (this is not the case with Unidrive). One exception to this is the **Size 1** Commander SE which does not provide access to the (+) and (-) connections. For this drive, the DC power source must be connected as it is for the Unidrive models.





The DC voltage supply must also be appropriately fused. These fuses must handle the inrush current (charging current) to the dc bus capacitors in the drive and be capable of "breaking" DC current/voltage in the event of a short circuit at the drive. The recommended fuse for this application is **Gould Shawmut type AJT class J** or equivalent. The table below gives the fuse rating for the various drive sizes.

Size 1

Drive	HP	Fuse (amps)
SE11200025	1/3	8*
SE11200025	1/5	8*
SE11200025	3/4	8*
SE11200025	1	8*
LV		

*Based on in-rush current

All other Sizes

Drive	HP	Fuse (amps)		Drive	HP	Fuse (amps)
SE23400075	1	4		SE2D200075	1	4
SE23400150	2	4		SE2D200150	2	6
SE23400220	3	5		SE2D200220	3	10
SE23400400	5	10		SE2D200400	5	15
SE33400550	7.5	15		SE33200550	7.5	20
SE33400750	10	20		SE33200750	10	30
SE43401100	15	25				
SE43401500	20	35				
SE43401850	25	45				
SE53402200	30	50				
SE53403000	40	70				
SE53403700	50	80				
MV				LV		

Additional Drive information:

The Commander SE has the following voltage thresholds:

	MV		LV	
Maximum DC link voltage (OU trip)	830V		415V	
Minimum DC link voltage (UU trip)	320V		175V	
Maximum motor voltage	480V		240V	
**Braking IGBT turn on point		780V		390V
Restart voltage (switch mode ps)	450V		235V	

MV = 380 Vac – 480 Vac Commander SE product
LV = 220 Vac – 240 Vac Commander SE product
**** Not on Size 1 drive**

Questions: Ask the author??
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