

UnidriveSP Feedback Modules Hardware Requirements and Connections

In many applications it is necessary to have two or more motors match speed or position. To achieve digital locking there will need to be speed feedback devices attached to all of the motors. With the UnidriveSP drive you can add additional feedback modules to any of the three on-board expansion slots with the exception of only one Resolver Module per drive. These modules allow a drive to accept a speed feedback signal from the motor along with a speed/position reference from a master drive. The speed reference to be followed can be received in as a simulated encoder signal. This configuration will allow the slave drive(s) to lock on to the master and follow it 1:1 or with a specific ratio. To achieve this functionality, we have several option modules designed for this purpose.

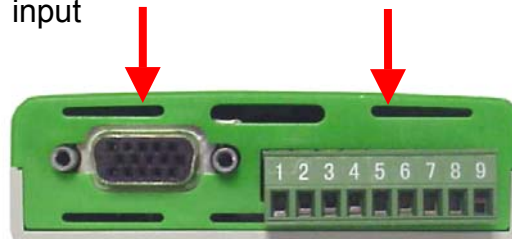
The SM-Universal Encoder Plus module accepts many types of Encoders and also creates a simulated Encoder Output

SM-Universal Encoder Plus



15-pin Feedback
or Reference
input

9 Terminal Simulated
Encoder Output



or

8 Terminal Feedback
or Reference Input

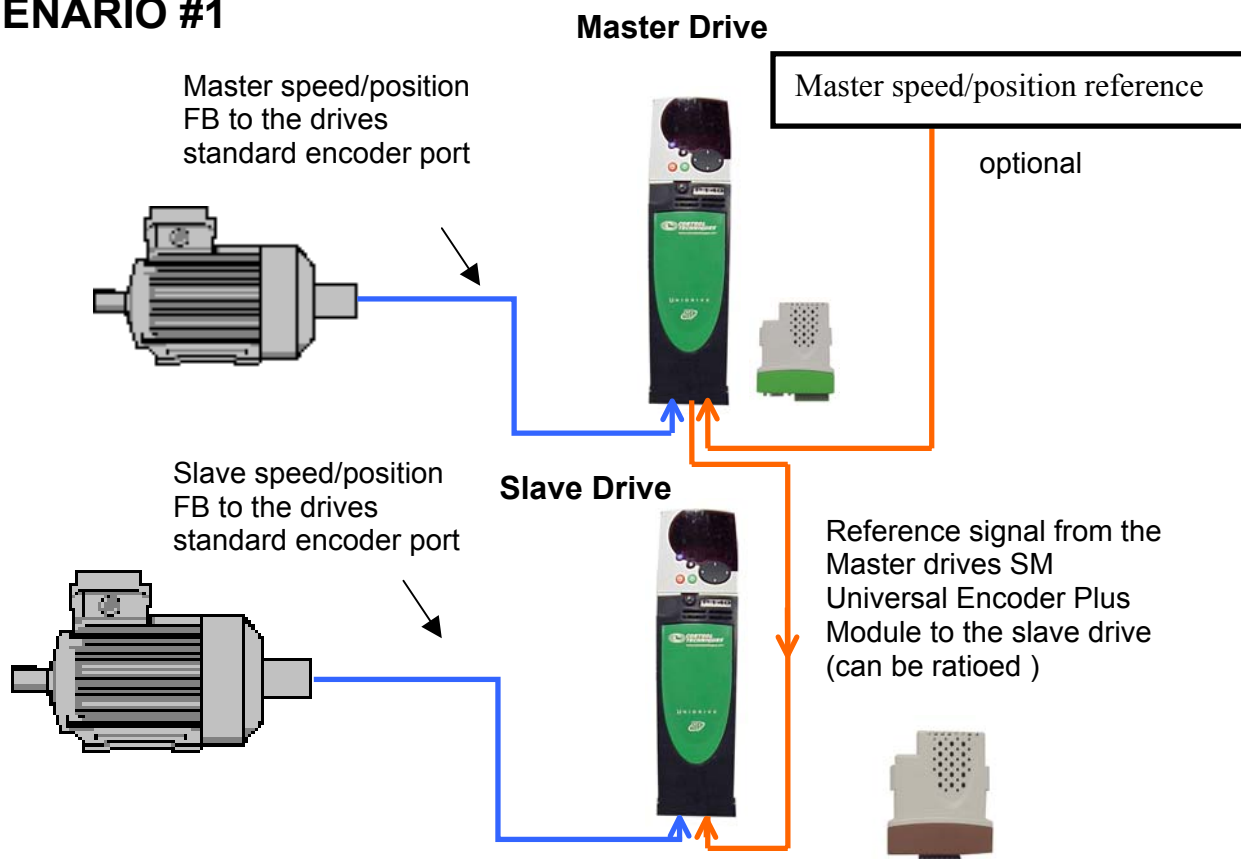


SM-Encoder Plus



The SM-Encoder Plus module accepts basic encoder types only and does not create a simulated Encoder Output

SCENARIO #1



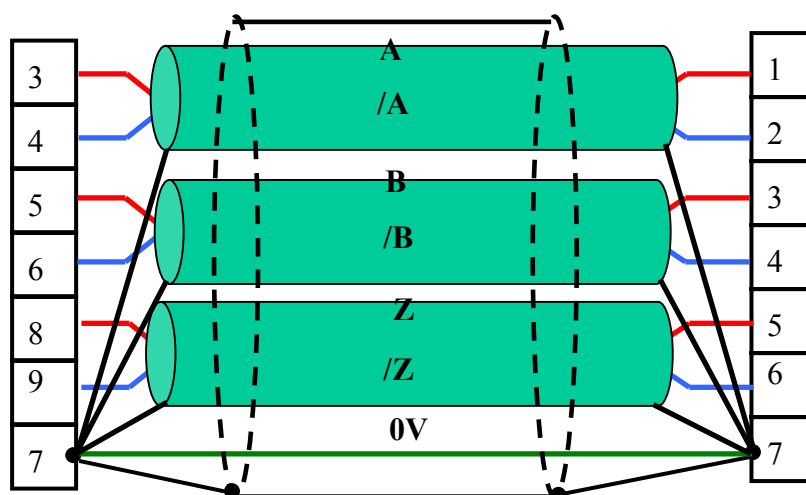
In the scenario #1 shown above the slave drive receives the speed reference from the **SM-Universal Encoder Plus Module** installed in the master. The reference is accepted into the slave drive via an additional **SM-Encoder Plus Module**. The master and slave drives are both getting the speed feedback from encoders on the motors. These signals are passed to the drives on-board feedback port.

The **SM-Universal Encoder Plus** module on the master and the **SM-Encoder Plus** module on the slave drive can be connected with relative ease. The basic connections are shown below.

MASTER DRIVE
SM-Universal Encoder Plus Module
 Simulated Encoder Outputs
 PL2

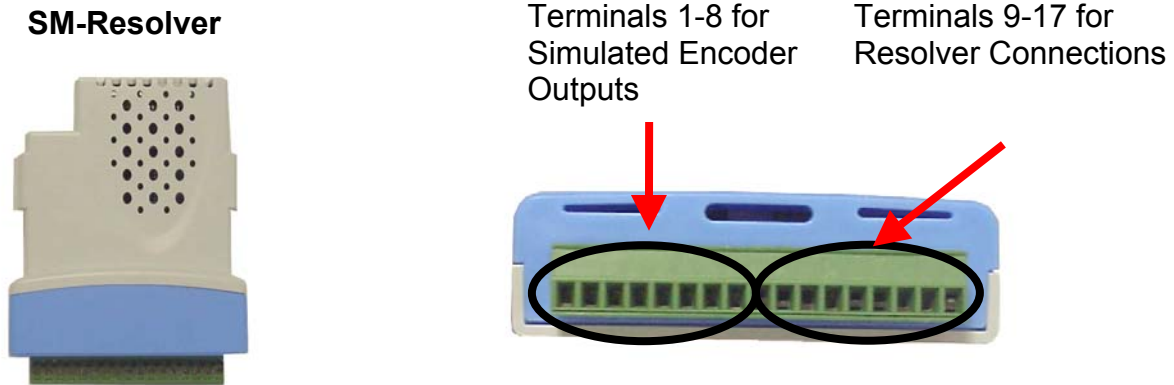
SLAVE DRIVE
SM-Encoder Plus Module
 Reference Encoder Inputs
 PL1

***If the marker channels are not going to be used do not wire them to the terminal strip**



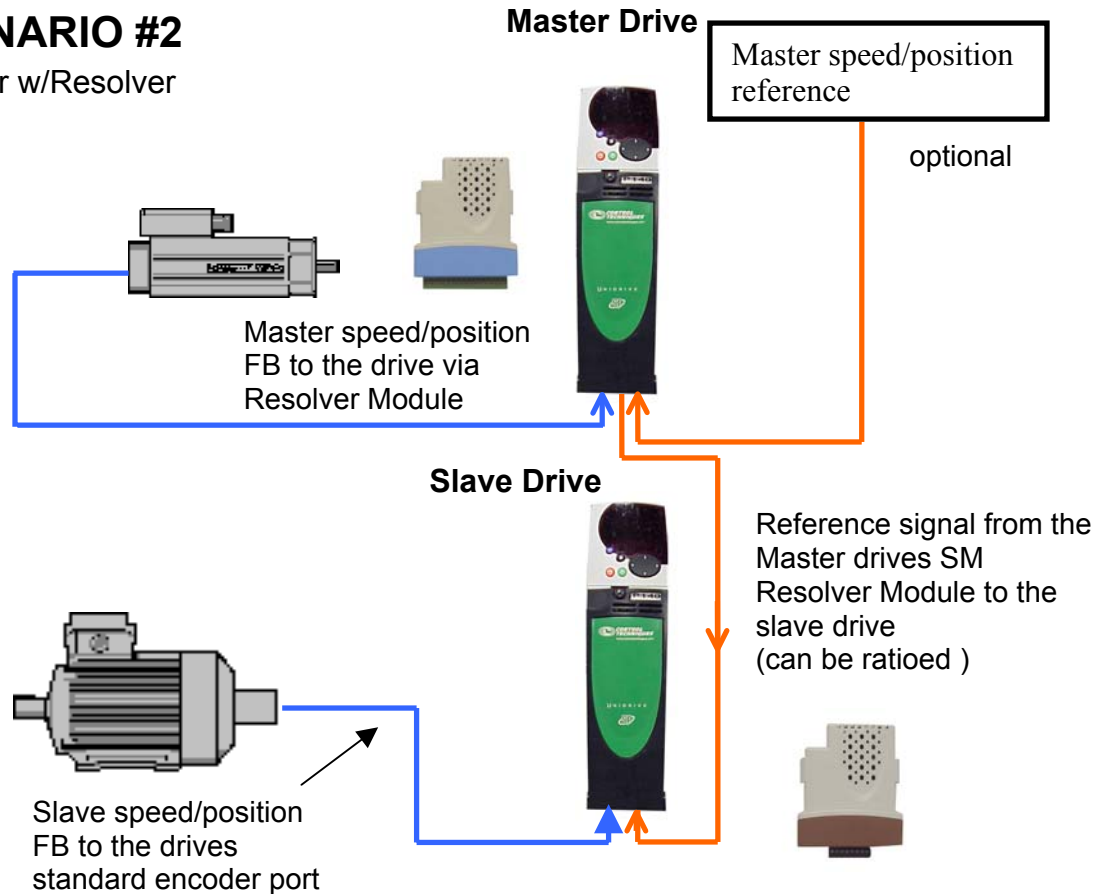
Cable P/N
6ConCbl-xxx

In situations where the Master motor uses Resolver Feedback, the UnidriveSP has a Resolver Option module that also creates a simulated encoder output for following purposes.



SCENARIO #2

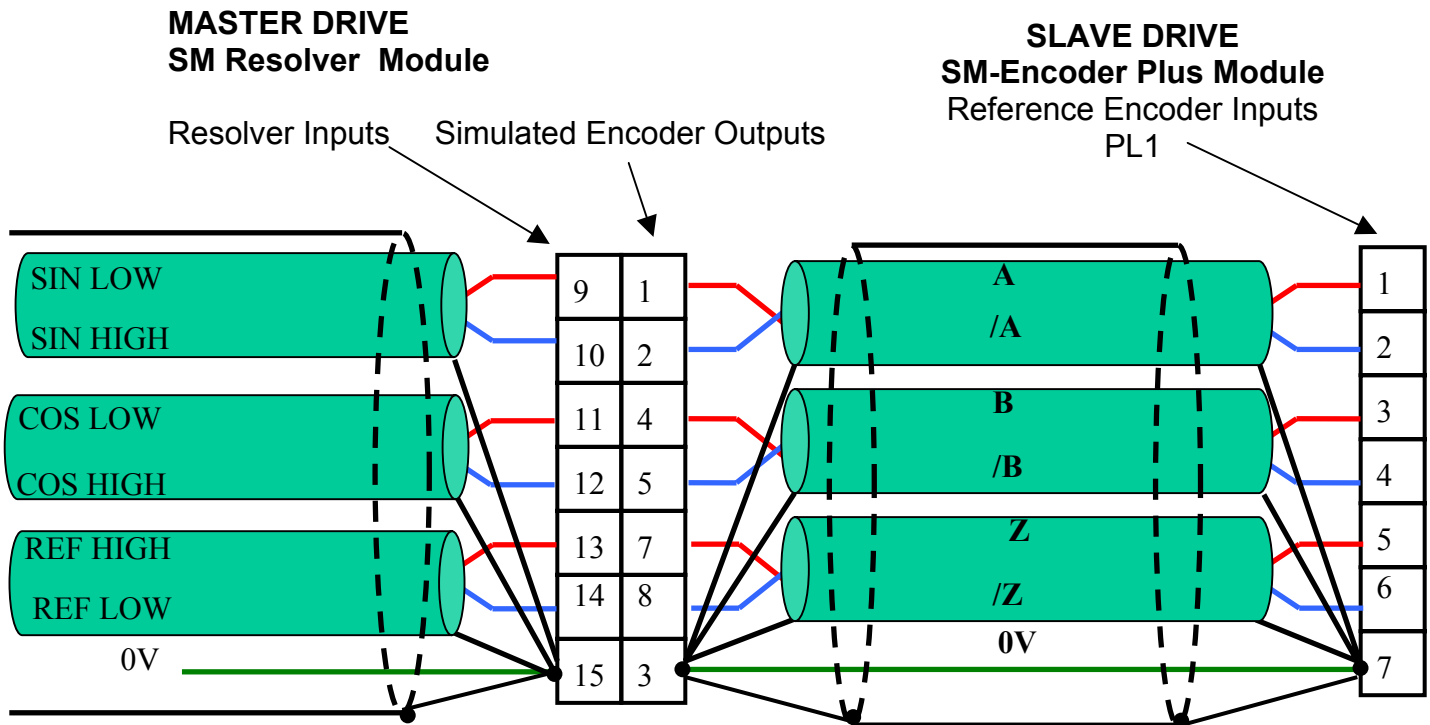
Motor w/Resolver



In scenario #2 shown above the slave drive receives the speed reference from the **SM-Resolver Module** installed in the master. The reference is accepted into the slave drive via an additional **SM-Encoder Plus Module**. The slave drive speed feedback is from an encoder on the slave motor. These signals are passed to the drive via the on-board feedback port.

SCENARIO #2

Motor w/Resolver



Note 1: Cable P/N 6ConCbl-XXX

If the drives standard encoder port is not going to be used and the drive is in closed loop vector or servo mode then #3.40 must be set to a 0. This will prevent an ENC2 fault trip.

Note 2:

It is preferred to use cable that provides **Individually twisted pairs with an Overall Shield** for feedback signals.

Note 3:

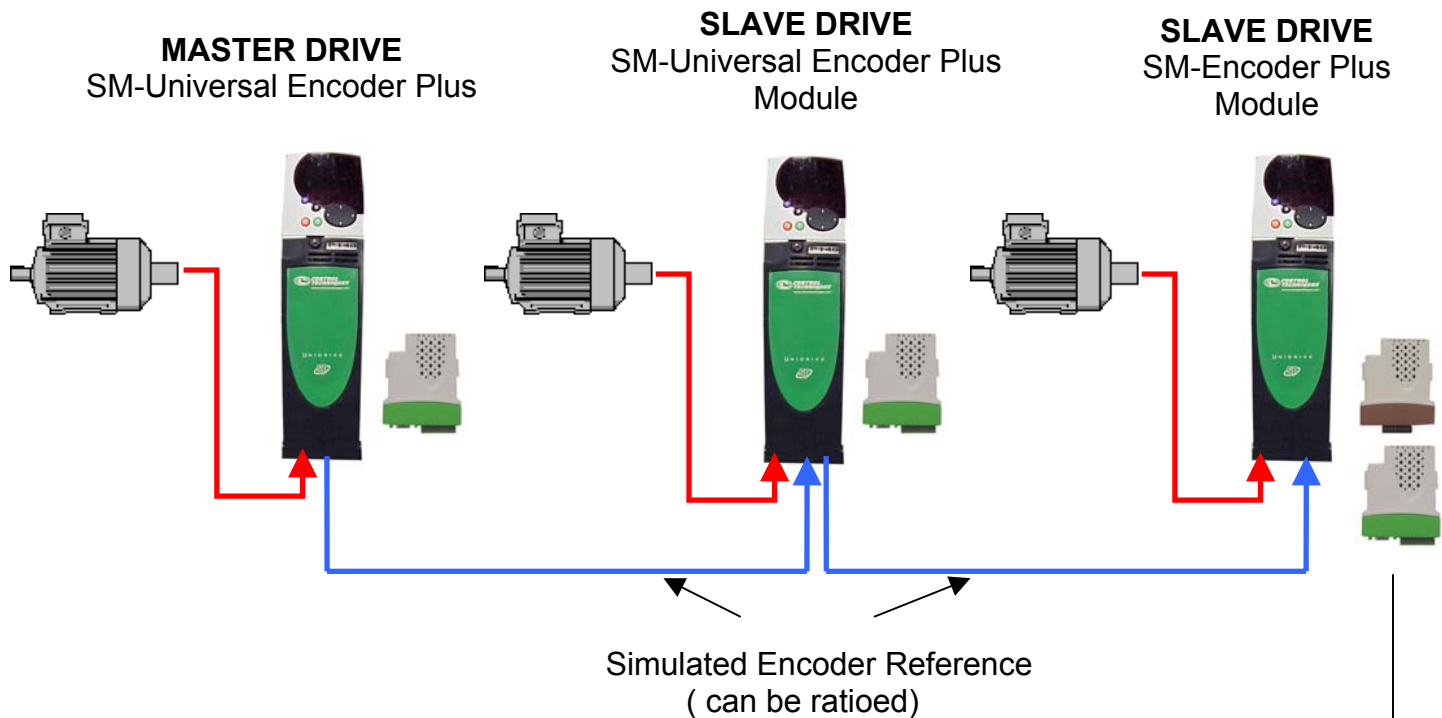
If the encoder type is AB.Servo with commutation channels and the encoder input is connected to the **SM-Universal Encoder Plus Module** then the simulated encoder outputs can't be used. This can be resolved by using the drives on-board encoder port to accept the AB.Servo type encoder. The source parameter for the simulated encoder output can be set to #3.29. The simulated encoder output on the SM-Universal Encoder Plus module will provide simulated encoder output if the set for Ab types.

Note 4:

UnidriveSP software version 1.06.01 will accept an encoder with a PPR other than a power of 2. Earlier versions will only accept encoder **PPR's with counts equal to powers of 2** ie(1024, 2048, 4096). The SM-Universal Encoder Plus module will however accept both types of encoders regardless of the firmware version.

The previous scenarios illustrate only one following drive. It is possible to have more than one drive following the Master. The basic configuration is shown below.

SCENARIO #3



When passing an encoder signal to following drives it is recommended to use the simulated encoder output from each module. The source of the simulated encoder output can be selected as the drives feedback or the drives reference. Which ever you decide is best for your application **the simulated encoder source must always be a position parameter**. Using the encoder output from each drive (not daisy chaining the master feedback signal) helps eliminate voltage drops and noise. The connections **between** the SM-Universal Encoder Plus and SM Encoder Plus for multiple drives are shown below.

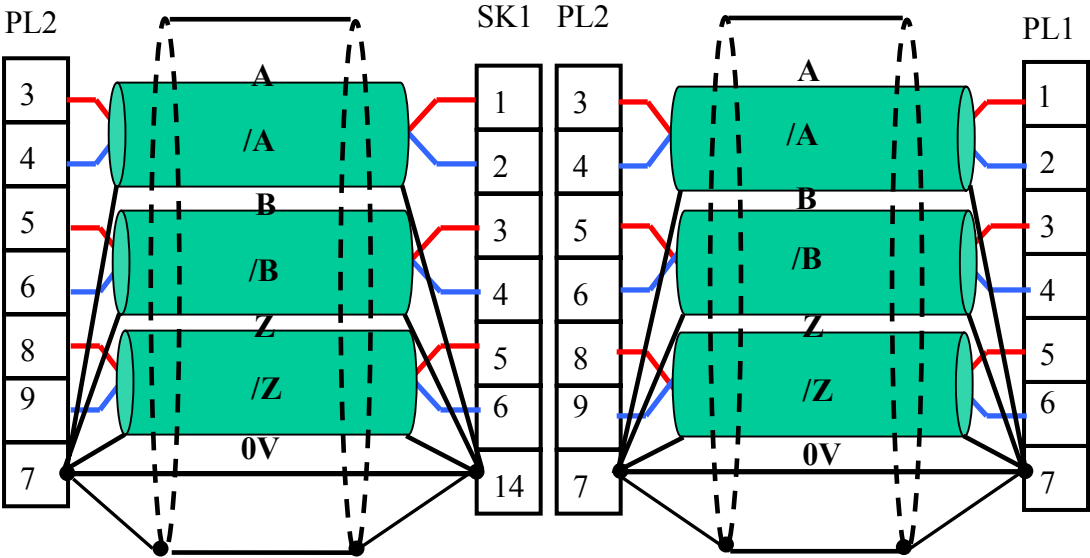
Either module type could be used here. The Encoder Plus module would suffice since it is the end of the string and an Encoder output is not required. The SM Encoder plus would be a little less expensive but it may be better from a spares viewpoint to just use one type of module.

SCENARIO #3

MASTER DRIVE
SM-Universal Encoder Plus
 Simulated Encoder Outputs

SLAVE DRIVE
SM-Universal Encoder Plus
 Second Encoder Input
 Simulated Encoder Outputs

SLAVE DRIVE
SM-Encoder Plus
 Reference Encoder
 Inputs



Cable P/N 6ConCbl-xxx

Connecting Accessories

To facilitate wiring and other interconnection requirements for these rather tedious connections, we provide a number of accessory items to make this work easier.

Interconnection cables and convenience connectors are available through Control Techniques Service Center at **716-774-0093** ask for Parts.

Cable P/N 6ConCbl-xxx (foot length)

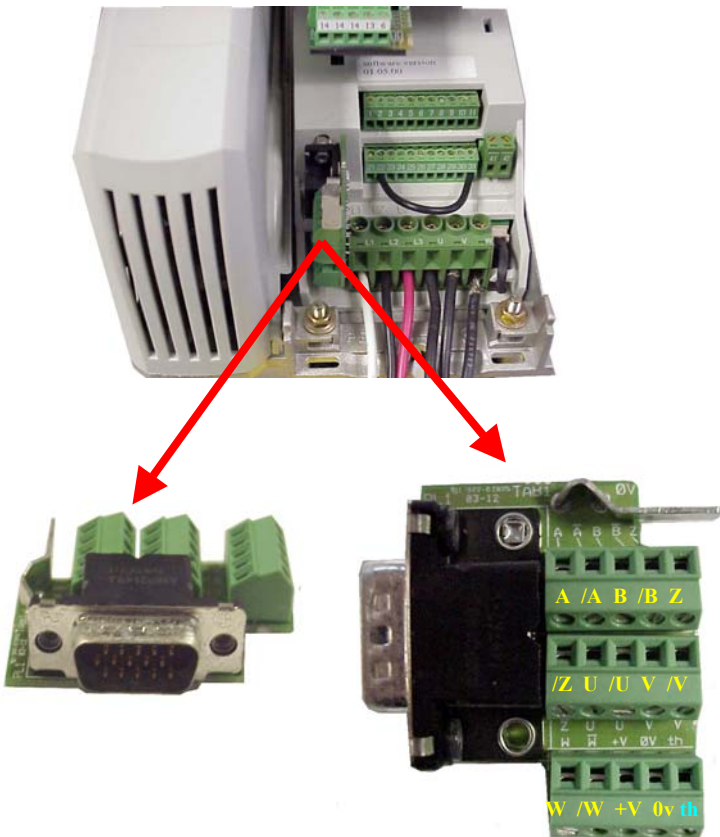
Interconnecting Cable

6 Individually Shielded Twisted pairs
w/Overall Shield



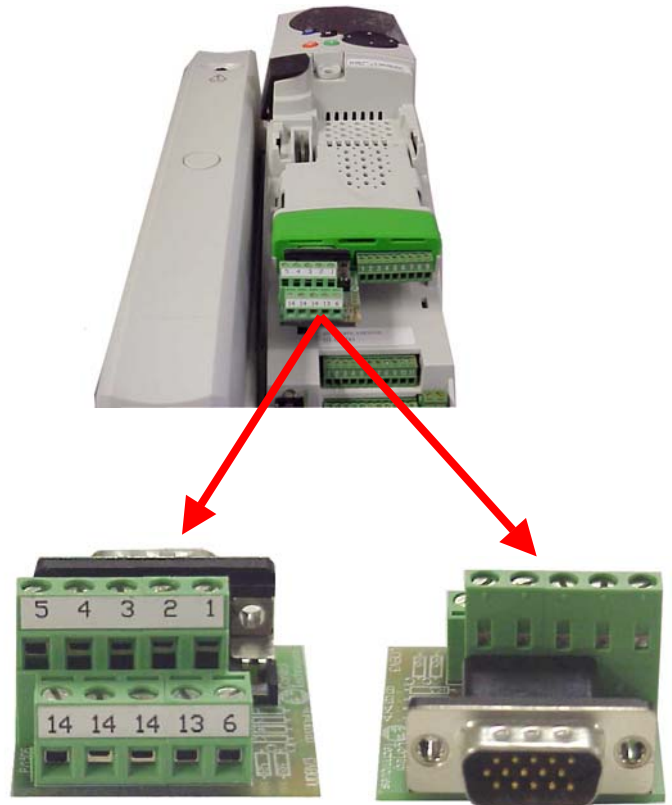
SM-ETC

15 pin D connector break out for the
drives encoder port



UDBV3

8-position terminal break out for the
SM Universal Encoder Plus Module



For questions call Control Techniques Technical Support at 716-774-1193
Grand Island, NY 14072

