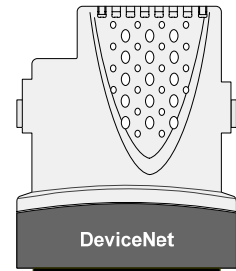


The Application Note is specific to the Commander SK

SM-DeviceNet Quick Start Guide

Scope

The SM-DeviceNet fieldbus communication option has proved to be a popular option for all of the current Control Techniques products that support the SM-Option format. Our experience at Grand Island supporting the SM-DeviceNet with the Commander SK has turned up a number of extra “challenges” that this application note will address.



This note describes setting up the first node at Node ID **01**, a second node at Node ID **02**, a third node at Node ID **03** and so forth. The data rate recommended is 500 Kbs, which is suitable for a DeviceNet total segment length of 100 meters (328 feet) or less.

Background

Unlike the Unidrive SP, the Commander SK does not make all of the “advanced parameters” available for inspection and/or modification with the user interface provided with the drive. And many times, one is setting up the SK for use with an option like the SM-DeviceNet module, and the cover is off the drive. It is not “obvious” how to use this interface under those conditions.

The SK is simply not as “observable” as the UnidriveSP when using the SM-Options unless one is using the LCD Keypad (SM-Keypad Plus) which can greatly speed up your efforts. See [CTAN313](#)

To finish the challenges to overcome, the Commander SK North American defaults are not suitable for use with the SM-DeviceNet option, if that use involves setting target speeds and/or starting and stopping over the DeviceNet link.

Instructions

Using the Commander SK keypad or CTSOft, set the following parameters to the indicated values. Save the parameters via software, or by cycling power. Note that changes made to the menu zero (0) parameters are saved at power down.

| | |
|-------------------------|--|
| Pr 5 (#11.27) to value | Pr - To select Preset Speeds as the Reference source |
| Pr 10 (#11.44) to value | L3 - To open up full access to menu 0 |
| Pr 11 (#06.04) to value | 0 - To select most compatible logic scheme |
| Pr 41 (#05.14) to value | Fd (2) allows you to run drive without motor connected |

Set Menu zero advanced parameter access pointers as follows:

| | | |
|----------------------|----------------------------------|--------------------------|
| Pr 71 to value 06.42 | Control Word | } DeviceNet Module setup |
| Pr 72 to value 06.43 | Control Word Enable | |
| Pr 73 to value 01.15 | Preset Reference Source Selector | |
| Pr 74 to value 15.03 | Node ID | |
| Pr 75 to value 15.04 | Data Rate | |
| Pr 76 to value 15.05 | Data Format | |
| Pr 77 to value 15.06 | Operating Status | |
| Pr 78 to value 15.32 | Re-Initialization | |
| Pr 79 to value 15.34 | Compression | |

Set parameter configuration values as follows:

| | |
|-------------------------|--|
| Pr 61 (#06.42) to value | 129 - Control Word for Drive Enable via Comm Link |
| Pr 62 (#06.43) to value | On - to enable Control Word Control |
| Pr 63 (#01.15) to value | 1 - to select #1.21 as the Speed Reference |
| Pr 64 (#15.03) to value | 01 first SM-DeviceNet module, 02 for the next one... |
| Pr 65 (#15.04) to value | -1 (auto detect baud rate, changes after connection) |
| Pr 66 (#15.05) to value | 2 (two 16-bit words in / out, 4-bytes total) |
| Pr 67 (#15.06) to value | Operating status (Read Only) |
| Pr 68 (#15.32) to value | Off *** |
| Pr 69 (#15.34) to value | On (polled data compression on). |

*** set to On ("1") after changing #0.64 or #0.65 or #0.68 (re-initializes module, then self-resets)

For more information on how to access parameters outside menu 0, consult [CTAN272](#)

Short video illustrating this procedure→



SK keypad operation with the cover removed:

The following diagram illustrates the button mappings



The keys micro-switches still work even without the cover in place over them!

So, one could still perform the previous configuration with the cover off, with these illustrations as a guide.

DeviceNet Media Recommendations

- “DeviceNet thin-net” is the recommended media for use with voltage-source PWM VFD(s) (like the SK). “DeviceNet thick-net” is also usable, but is more “difficult” to work with and usually more expensive. Insure that exactly two (2) 120 ohm terminating resistors are fitted across CAN-H and CAN-L on the segment extreme nodes..

DeviceNet Master (scanner) Configuration hints

Configure your scanner for a data rate of 500 Kbs, assuming that the DeviceNet total segment length of 100 meters (328 feet) or less

1. Configure your scanner’s scan table for two, 16-bit cyclic words (four bytes) out and (four bytes) in to Node ID “01”, using input assembly object 108 and output assembly object 109.

Note that for a Rockwell PLC, this is done with a software tool like RSNetworkx for DeviceNet, and that these transfers are “integer” (INT) transfers.

- The first OUTWORD is the control word
 - The second OUTWORD is the target frequency (proportional to target speed)
 - The first INWORD is the status word
 - The second INWORD is the actual (post-ramp) frequency (proportional to actual speed)
2. Configure your controller to write to Node ID “01” a speed target value via the first OUTWORD to #01.21, in a frequency x10 format (300 = 30.0 Hertz, 600 = 60.0 Hertz). The result is observable at #0.18 with the SK keypad.
 3. Configure your controller to write to Node ID “01” a control word value, via the second OUTWORD to parameter #06.42.

This is (now) observable at #0.61 with the SK Keypad.

- With a connection between terminal B2 and B4 (hardware enable):
- A value of “128” (*inhibit*) observed at #0.61 (#06.42) will show “**ih 0.0**” on the display.
- A value of “129” (*enable*) observed at #0.61 (#06.42) will show “**rd 0.0**” on the display.
- A value of “131” (*run forward*) observed at #0.61 (#06.42) will show “**Fr x.x**” on the display, where **x.x** is the target frequency in #0.18 (#01.21).
- A value of “137” (*run reverse*) observed at #0.61 (#06.42) will show “**Fr - x.x**” on the display, where **x.x** is the target frequency in #0.18 (#01.21).

To obtain an overview of internal details discussing such topics as the Control and Status Words click here → [CTAN320](#)

DeviceNet EDS files available here: → [DeviceNet EDS Files](#) or [EDS Files](#)

*note that the G1_csk.eds is the file of interest, here.

