This Application note applies specifically to the Control Techniques Unidrive M700 Demo

Unidrive M700 Demo Configuration Restoration After Defaulting the VFD

This application note will describe using the KI-Keypad to restore the operation of a Unidrive M700 Demo. One is likely to need to do this after updating the firmware in the Unidrive M700. Using the KI-Keypad to perform the configuration has the advantage of not needing additional equipment or software, and is immune to being rendered obsolete via changes in such equipment or software.

This application note assumes:

a. That the Unidrive M700 Demo is already in RFC-S mode, and not in a completely unconfigured, out-of-box Open Loop condition.

b. The Unidrive M700 Demo is being powered via 240 Vac via a 120 Vac to 240 Vac transformer and with firmware revisions above Unidrive M700 1.06.xx.xx.

Resetting Drive to Default Parameters

Prior to beginning this procedure, ensure that the Drive Enable (STO) contact is open by flipping the "Enable" switch UP. Also, be sure that both the "Run FWD" and "Run REV" switches are also off (in the UP position).

1. Press the Enter button to enter Parameter mode.
2. Navigate to Pr. Xx.000
3. Press the Enter button again to enter Parameter Edit mode.
4. Use the up arrow buttons to enter "Reset 60 Hz Defaults"".
5. Press the Red reset button.

NOTE:
This may cause a series of trips to occur. The first trip you may see is "Slot 4 HF.5".
This is a spurious trip. Reset it by cycling power to the demo stand. If, after cycling power, you see a "User Program" trip message, clear it by pressing the Red reset key. You should now see a "Trip- Encoder 2.12" displayed. This is normal and will be reset once the correct parameters are entered for the demo stand.

Quick Start for RFC-S Mode

1. Check Pr. 0.48 to ensure that the drive is in “RFC-S” mode.

2. Choosing the Encoder type
    a. Navigate to Pr. # 3.038
    b. Press the Enter button and using the arrow buttons, choose “EnDat”
    c. Press the Enter button to select this as the Encoder type.

3. Setting the Encoder Voltage supply level
    a. Na
    igate to Pr. # 3.036
    b. Set this parameter to “5 V”

4. Press the escape button on the keypad to exit parameter mode.

5. Press the Red reset button to reset the Encoder 2.12 trip.

6. Save your parameters using the keypad
    a. Navigate to #mm.000
    b. Select “Save parameters”
    c. Press the Red button to enter.

7. At this point, your status LED should not be flashing and there should be no trips displayed.

8. Enter Motor Data, the demo motor type is a 067EDA300

    If not, use the Electrical ratings data of the motor printed on the label.

For the 067EDA300, enter the following data, after initializing for 60 Hz defaults.

a. Enter motor rated current into	Pr. 0.046	1.5 amp
b. Enter the number of motor poles into	Pr. 0.042	10 pole
c. Enter the motor rated voltage into	Pr. 0.044	220 Vac
d. Enter maximum motor speed into	Pr. 0.002	3000 rpm
e. Enter an acceleration rate into	Pr. 0.003	1.000 sec
f. Enter a deceleration rate into	Pr. 0.004	1.000 sec

Configure P1 (Primary Motor feedback) encoder
- a. # 3.038 8 or EnDat only
- b. # 3.033 16 Turns Bits
- c. # 3.057 16 Normalization Turns

Configure P2 (Sync) encoder
- a. # 3.138 0 or AB
- b. # 3.134 1024 PPR

9. By default, the Unidrive M is set to NOT use any sort of ramp for deceleration.
   Navigate to Pr. # 06.001 and change the value to “Ramp”.

10. Save your parameters by repeating step 6

11. Perform an Autotune by following these steps
    a. Navigate to Pr. 00.040
    b. Set this parameter to “1” to select a stationary Autotune.
    c. Turn on the “Enable” switch on the demo stand.
    d. Turn on the “Run FWD” switch to begin the procedure.
    e. When complete, set “Run FWD’ and “Enable” off and press reset/off on the Keypad.
    f. Set Pr. 0.040 to “2” to select a rotating Autotune.
       Note: This mode of Autotune is to be used on motors that are not connected to any load since the motor will be rotating during the procedure.
    f. Turn on the “Enable” switch on the demo stand.
    g. Turn on the “Run FWD” switch to begin the procedure.
    h. When complete, set “Run FWD’ and “Enable” off and press reset/off on the Keypad.

12. Test the operation of the motor by turning on the Enable switch, then the Run FWD/Run REV switch. The speed reference is set by the potentiometer on the demo stand.

13. The result of the Autotune tends to set the current gains a little high. Set the Speed Reference potentiometer to the approximate middle position and adjust Pr. 00.038 (Current Loop Proportional Gain) until the audible noise is diminished.

14. Finish the IO setup and set up Digital Lock. Check and confirm:

a.	# 8.021 = 10.006	* not default value	(at speed for LED indication)
b.	# 8.022 = 10.033		(reset input)
c.	# 8.023 = 6.030		(run forward)
d.	# 8.024 = 6.032		(run reverse)
e.	# 8.025 = 13.010	* not default value	(Digilock mode_0 / mode_1 select
f.	# 8.026 = 6.031		(jog forward)
g.	# 8.027 = 10.001		(Okay to relay out)
h.	# 13.004 = P2 Drive	* non default value	(Digilock mode_1 Reference source)
i.	# 13.005 = P1 Drive		(Digilock mode_1 Feedback source)

15. Save your work and consider saving to smart card.
    a. Set # 0.030 to “Prog” and press the “Stop / Enter” button, to save the basic drive info to block 1
    b. Set # 0.000 to 4002 and press the “Stop / Enter” button, to save anything else as differences from default to block 2.

Conclusion:
Operation has been restored. From here, the M700 Demo can be fitted with any additional options and the application being evaluated can proceed.

Resources

Product Manuals are available from both the website and upon request (in electronic form) from Technical Support

1. M700 / User's Guide
2. Advanced User guidance is available in the form of *.pdf(s) from Technical Support as well as within the help files found in MConnect.

Software is available from both the website and upon request (in electronic form) from Technical Support. Recommended:

1. M Connect
2. CTScope
3. CTSoft
4. Machine Control Studio

Resources: can be found on our website: www.controltechniques.com
For help contact techsupport.cta@mail.nidec.com, or
call Technical Support at 952-995-8000, 24/7/365