

BASIC FUNCTION

The Panel Operator on the front side of the panel of the PRONET-E AC Servo Drive will allow the user to have access to and control of the drive functionality. This guide will familiarize the user with the basic functionality of the Panel Operator and assist with start up. The guide will cover the following:

1. Functions of the Panel Operator
2. Status Display Mode
3. Basic Modes
4. Parameter Mode
5. Monitor Mode
6. Utility Mode

For more information on these functions and others, please refer to the ProNet User's Manual.

1. Functions of the Panel Operator:

The Panel Operator is a built-in operator that consists of a display and keys located on the front panel of the servo drive. Parameter settings, status display, and execution of the utility function are enabled using the Panel Operator. The table below illustrates the keys found on the Panel Operator as well as their functionality. Figure 1 shows the display status of the Panel Operator on the initial start-up of the system.

Name	Function
INC KEY	Press the INC Key to increase the set value (Pressing and holding the INC Key will increase the set value quicker)
DEC KEY	Press the DEC Key to decrease the set value (Pressing and holding the DEC Key will decrease the set value quicker)
MODE KEY	Press the MODE Key to select the status display mode, parameter setting mode, monitor mode, or utility function mode. Press this key to exit the parameter setting.
ENTER KEY	Press the ENTER Key to display the parameter settings and to set value. Press and hold the ENTER Key to change HEX type data. A Red LED will blink in the bottom right. Press the INC or DEC Key to change the individual digit. Press the ENTER Key to change to between the individual digits. Once completed, press the MODE Key to return to the Parameter Number.

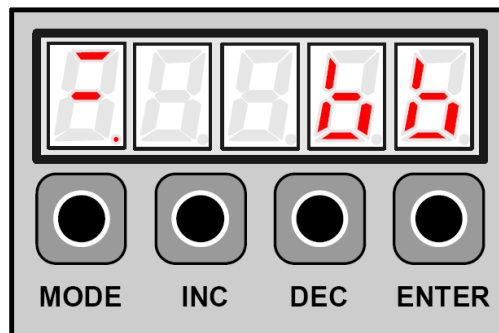


Figure 1

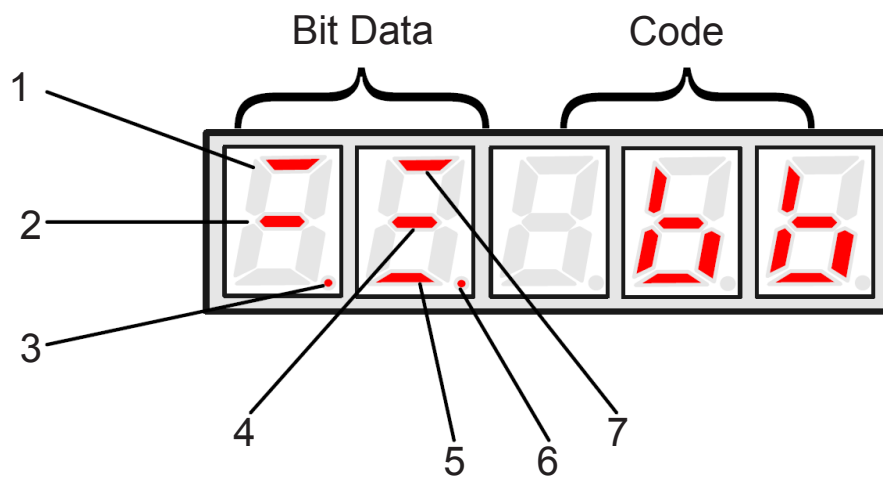
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2. Status Display Mode: In this mode, the digits and simple code are used to illustrate the status of the servo drive.

Selection of Status Display Mode -The status display mode is displayed when the power is turned ON. If the current mode is not the status display mode, press the MODE Key to switch to the required mode.

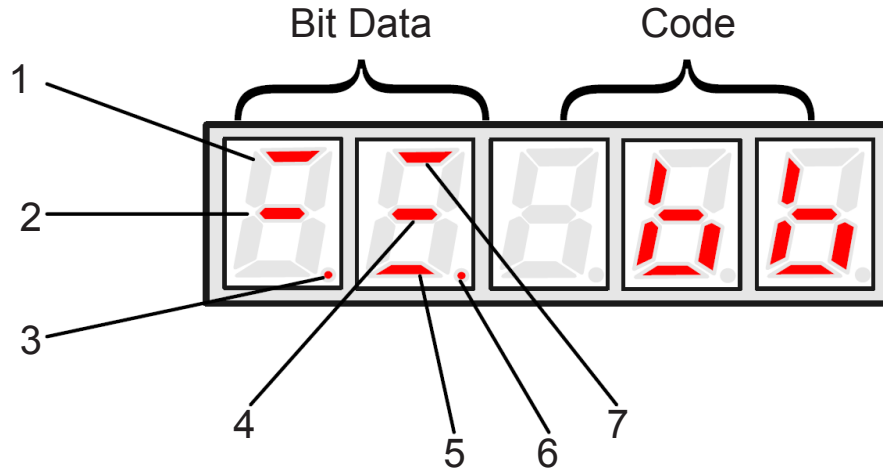
Contents Displayed in Status Display Mode - The contents displayed in the mode are different in Speed Control Mode and Position Control Mode.

Example: Speed Control Mode



No.	Bit Data	Description
1	Speed Coincidence	When the difference between the speed reference is the same or less than the preset value, segment is ON. Preset Value: Pn501 (The factory setting is 10 RPM) Segment is always ON in torque control mode.
2	Standby (Base Block)	Segment is ON when the servo is on Standby. Segment is OFF when the servo is ON.
3	Control Power is ON	Segment is ON when control power of the servo drive is ON.
4	Speed Reference Input	When the input reference speed input exceeds the preset value, segment is ON. When the input reference speed input is lower than the preset value, segment is OFF. Preset Value: Pn503 (The factory setting is 20 RPM)
5	Torque Reference Input	When the input reference torque input exceeds the preset value, segment is ON. When the input reference torque input is lower than the allowable value, segment is OFF. Allowable value: 10% of rated torque.
6	Main Circuit Power Supply is Ready	Segment is ON when main circuit power supply is ON and normal. Segment is OFF when main circuit power supply is OFF.
7	Rotation Detection (/TGON)	When the servo motor speed exceeds the preset value, segment is ON. When the servo motor speed is below the preset value, segment is OFF. Preset Value: Pn503 (The factory setting is 20 RPM)

Example: Position Control Mode



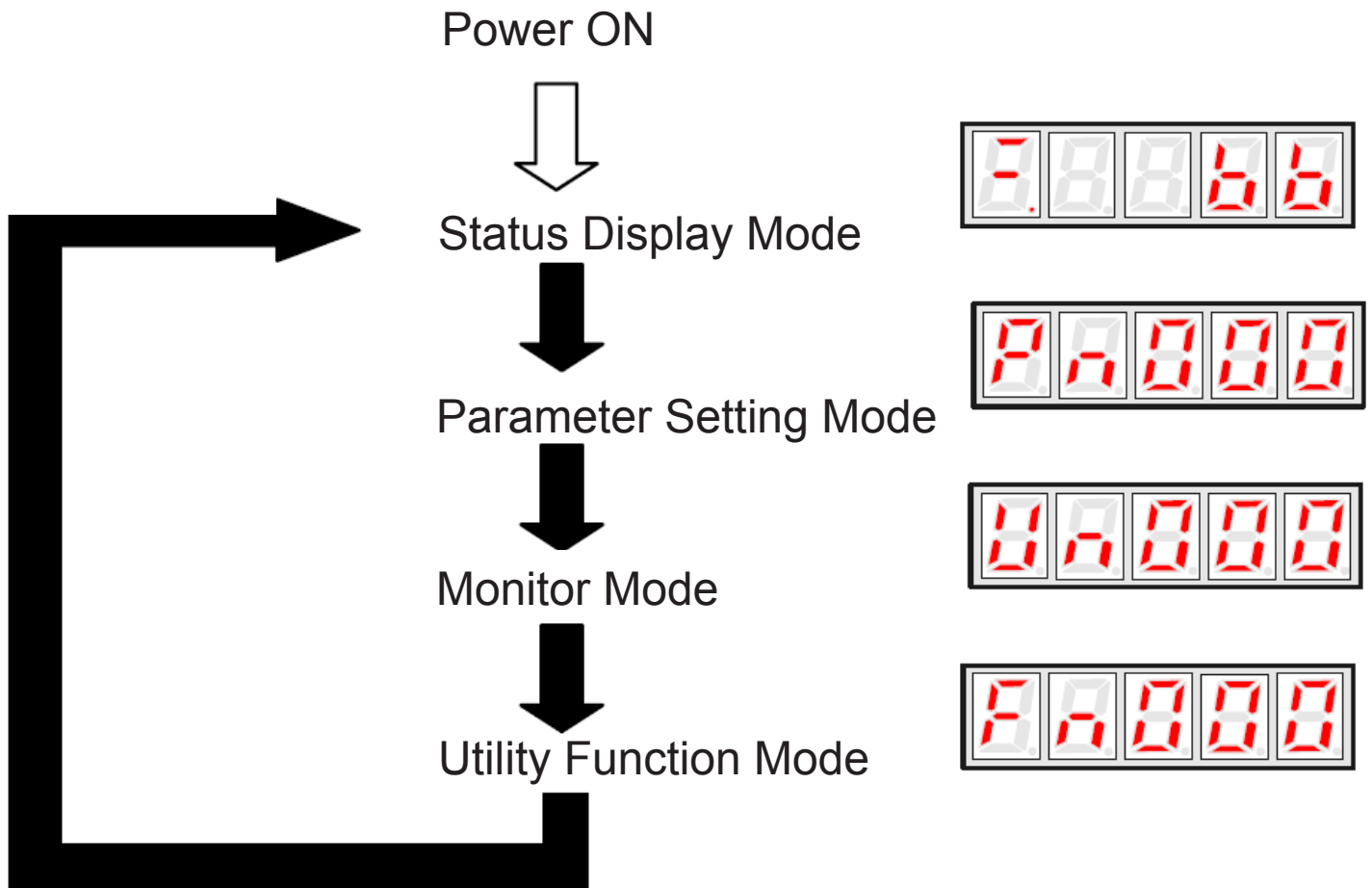
No.	Bit Data	Description
1	Positioning Complete	When the error between the position reference and the actual motor position is below preset value, segment is ON. Preset Value: Pn500 (The factory setting is 10 pulses)
2	Standby (Base Block)	Segment is ON when the servo is on Standby. Segment is OFF when the servo is ON.
3	Control Power is ON	Segment is ON when control power of the servo drive is ON.
4	Reference Pulse Input	When the reference pulse is input, segment is ON. When there is no reference pulse input, segment is OFF.
5	Error Counter Clear Signal Input	When error counter clear signal is input, segment is ON. When error counter clear signal is not input, segment is OFF.
6	Main Circuit Power Supply is Ready	Segment is ON when main circuit power supply is ON and normal; Segment is OFF when main circuit power supply is OFF.
7	Rotation Detection (TGON)	When the servo motor speed exceeds the preset value, segment is ON. When the servo motor speed is below the preset value, segment is OFF. Preset Value: Pn503 (The factory setting is 20 RPM)

Code	Description
	Standby (Base Block) Servo OFF (Servo Motor Power is OFF)
	Run Servo ON (Servo Motor Power ON)
	Forward Run Prohibited CN1-16 (P-OT) is OFF
	Reverse Run Prohibited CN1-17 (N-OT) is OFF
	Alarm Status Displays the Alarm Number

3. Basic Modes

With the Panel Operator, the user is able to toggle between different modes such as Current Running Status and Parameter Settings of the device. Below is a flow chart showing the four different stages of the handheld controller and the order in which they occur. The operator consists of the following basic modes: Status Display, Parameter Settings, Monitoring, and Utility Functions. To toggle between the modes, press the MODE Key. Once the MODE Key is pressed in the Utility Function Mode, the user will be looped back around to the Status Display Mode.

Navigation Through the Different Modes:



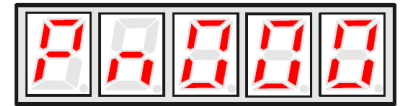
4. Parameter Setting Mode:

Parameters related to the operation and adjustment of the servo motor are set in this mode.

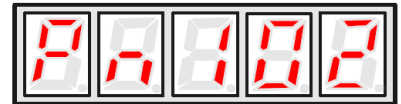
Change Parameters: Please refer to Parameter List Appendix A in the ProNet User's Manual to know the parameter change range. *Note:* When changing parameters that are of the HEX type require the user to press and hold the Enter Key. Upon doing so, a red LED will blink on the bottom right. Pressing the Up or Down Arrow will change the value. Press the Enter Key to change the digit you would like to change. Once completed, press the MODE Key to return back to the parameter value.

The following is an example of changing the data stored in Pn102 from 100 to 85.

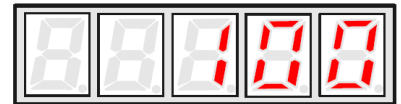
1. When the user first powers up the device, the Status Display Mode will be displayed. Press the MODE Key once to reach the parameter setup mode.



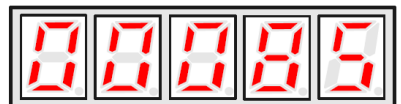
2. Press the INC Key or DEC Key to select a parameter number. Holding down the INC Key or DEC Key will increment or decrement the count quicker. For this example we will be changing the information stored in parameter number Pn102.



3. Once the desired parameter number is selected, press the ENTER Key. This will display the data stored in the parameter number.

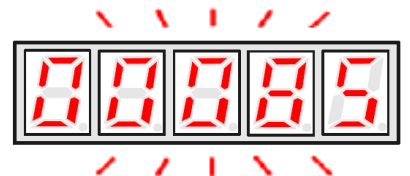


4. Press the INC Key or DEC Key to select a parameter number. Holding down the INC Key or DEC Key will increment or decrement the count quicker. For this example we will be changing the information stored in parameter number Pn102 from 100 to 85.

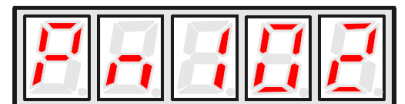


Note: When the data reaches its maximum or minimum value, the value will stay unchanged even if the INC/DEC Key is pressed.

5. Once the new value is reached, press the ENTER Key. This will cause the data to flash. The data is now saved in that parameter number.



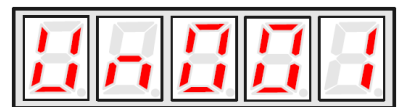
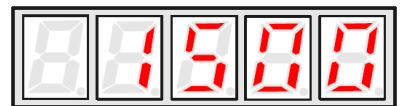
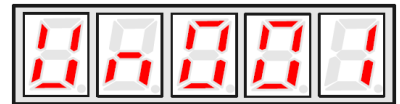
6. Press the ENTER Key again to return to the parameter number display.



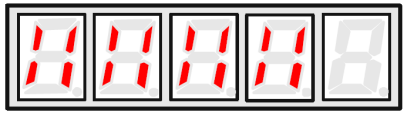
5. Monitor Mode:

The Monitor Mode can be used for monitoring the external reference values, I/O signal statuses, and internal statuses of the servo drive. Changes in Monitor Mode can be made even if the motor is running.

1. When the user first powers up the device, the Status Display Mode will be displayed. Press the MODE Key twice to reach the monitor mode.
2. Press the INC Key or DEC Key to select the monitor number to be displayed. Holding down the INC Key or DEC Key will increment or decrement the count quicker.
3. Press the ENTER Key to display the monitored data selected in Step 2.
4. Press ENTER again to display the monitor number.



List of Monitor Modes:

Monitor No.	Contents	Digits to Display Internal Status
Un000	Actual Servo Motor Speed, Unit: RPM	
Un001	Input Speed Reference, Unit: RPM	
Un002	Input Torque Reference, Unit: % (Relative Rated Torque)	
Un003	Internal Torque Reference, Unit: % (Relative Rated Torque)	
Un004	Number of Encoder Rotation Angle Pulses	
Un005	Input Signal Monitor	Internal Status Bit Display 7 6 5 4 3 2 1 0 
Un006	Encoder Signal Monitor	
Un007	Output Signal Monitor	
Un008	Frequency Given by Pulse, Unit: 1kHz	
Un009	Number of Servo Motor Rotation Pulses	
Un010	Pulse Rate of Servo Motor Rotated ($\times 10^4$)	
Un011	Error Pulse Counter Lower 16 Digit	
Un012	Error Pulse Counter Higher 16 Digit	
Un013	Number of Pulses Given	
Un014	Number of Pulses Given ($\times 10000$)	
Un015	Load Inertia Percentage	
Un016	Servo Motor Overload Ratio	
Un017	Servo Motor Winding Temperature	Only Used in ProNet-7.5kW~22kW when equipped with a resolver

6. Utility Function Mode:

In the Utility Function Mode, the Panel Operator can be used to run and adjust the servo drive and servo motor. The function details are described below:

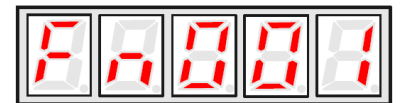
Function No.	Function
Fn000	Alarm Traceback Data Display
Fn001	Parameter Setting Initialization
Fn002	JOG Mode Operation
Fn003	Automatic Adjustment of Speed Reference Offset
Fn004	Manual Adjustment of Speed Reference Offset
Fn005	Automatic Adjustment of Servo Motor Current Detection
Fn006	Manual Adjustment of Servo Motor Current Detection
Fn007	Software Version Display
Fn008	Position Teaching
Fn009	Static Inertia Detection
Fn010	Absolute Encoder Multiturn Data and Alarm Reset
Fn011	Absolute Encoder Related Alarms Reset

Note: Fn010 and Fn011 can only be used when the servo motor has an absolute encoder mounted onto it.

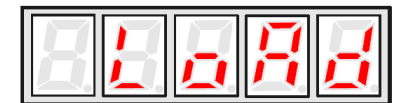
Example: Parameter Setting Initialization

Upon initial startup, the ProNet Servo Drive should contain factory settings. Should the user wish to default back to the factory settings after making changes, follow the steps below:

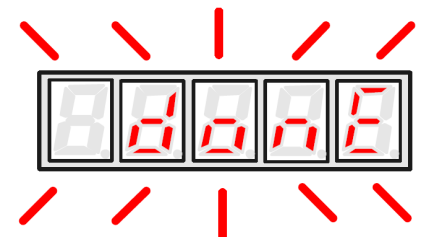
1. Press the MODE Key to select Utility Function Mode. Press the INC or DEC Key to select the function number for restoring defaults (Fn001).



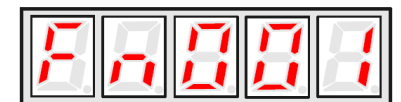
2. Press the ENTER Key to enter the parameter restoring mode.



3. Press and hold the ENTER Key for a second to restore all the parameters to their default values.



4. Release the ENTER Key to return to the function number display.



*Note: Pressing the ENTER Key during Servo ON **does not** initialize the parameter settings. Initialize the parameter settings with the Servo OFF.*