
Engineer's Guide

SMART TRACTM *DPRAM*

MagneTek, Inc., - Drives & Systems Division

Contents

Installing the DPRAM Driver	1
DPRAM I/O Driver Installation.....	1
DPRAM Configuration	1
Parameter Configuration Using the DPRAM I/O Driver	1
Making DPRAM I/O Points Available to the Program	1
High Speed Command	2
High Speed Response.....	2
Main Menu, Operation	2
Main Menu, Initialize	2
Main Menu, Programming	2
Fault Status.....	2
DPRAM Parameters	4
DPRAM Physical Address Details	5
The Torque Reference.....	9
Appendix A – DPRAM Menu Tree	11
Introduction	11
DPRAM I/O Menu Tree - High Speed Command.....	12
DPRAM I/O Menu Tree - High Speed Response.....	13
DPRAM I/O Menu Tree – Operation (Monitor Class)	14
DPRAM I/O Menu Tree – Initialize.....	15
DPRAM I/O Menu Tree – Programming.....	16
DPRAM I/O Menu Tree – Group b Application	17
DPRAM I/O Menu Tree – Group C Tuning	18
DPRAM I/O Menu Tree – Group d Reference	19
DPRAM I/O Menu Tree – Group E Motor	20
DPRAM I/O Menu Tree – Group F Options	21
DPRAM I/O Menu Tree – Group H Terminal	22
DPRAM I/O Menu Tree – Group L Protection	23
DPRAM I/O Menu Tree – Group o Operator	24
DPRAM I/O Menu Tree – Fault Status.....	25
Appendix B – Application Parameters	27
The Application Parameters List	27
Glossary of Terms	51
Index	53

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Installing the DPRAM Driver

DPRAM I/O Driver Installation

1. Click **START, PROGRAMS, MAG-300, CONTROL MANAGER**. The Control Manager software loads.
2. Under the **Project** tree, right click the **Drivers** folder. A selection box appears with **New...** highlighted.

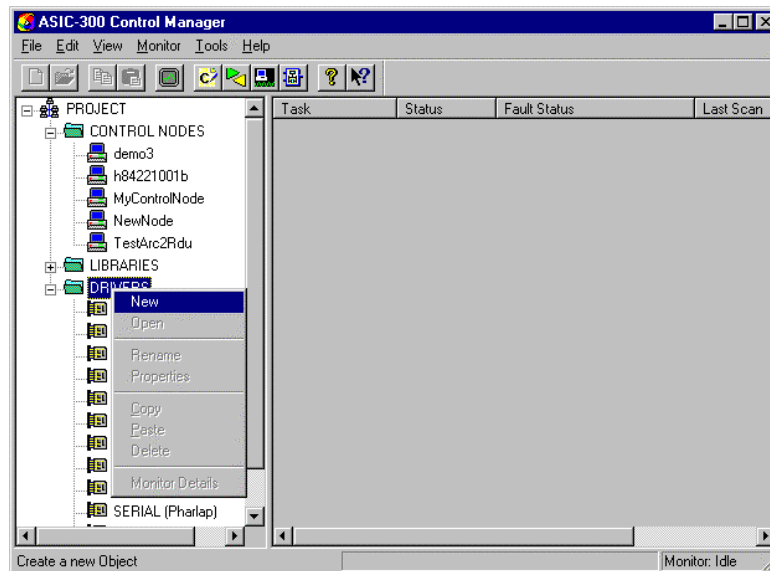


Figure 1. The New Device Driver Selection box.

3. Click the New selection box. The **Install Driver** dialog box appears.

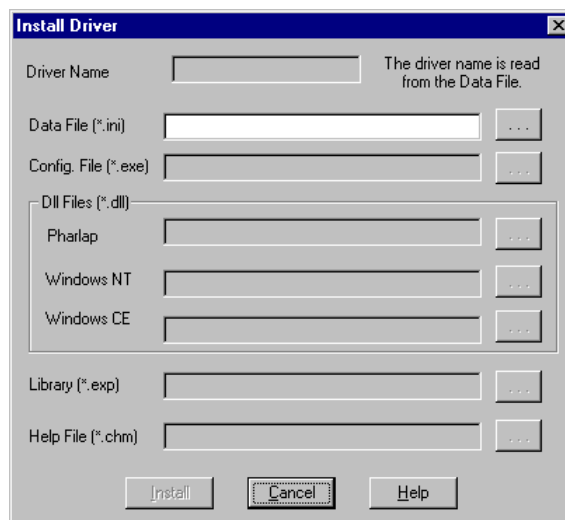


Figure 2. I/O Driver Install dialog box.

*To view driver .dll files, you must select View All Files in Windows NT Explorer. If you have Windows NT without IE4.0 installed: from Explorer, click **View, Options**, click **View** tab. In **Hidden Files**, click Show all files. If you have IE4.0 installed: from Explorer, click **View, Folder Options**, click the **View** tab. In **Advanced Settings**, click **Show All Files** in the **Hidden files** folder.*

4. Click on the small box containing three dots (...) to the far right of the **Data File (*.ini)** box. This allows you to browse for the initialization file on your system (generally the driver will be installed from your CD_ROM). For our example, we assume the file is on a floppy in the A: drive. Find the file **DPRAM.ini** and press **TAB** or **ENTER**. Two more boxes, for entry of **Config.exe** and **Help.exe**, become active.
5. Click the small box containing three dots (...) to the far right of the **Config (*.exe)** box. Browse for the **DPRAM.EXE** file. Press **TAB** or **ENTER**. More boxes will become active.
6. Click the small box containing three dots (...) to the far right of the **Dll files (*.dll)**, **Pharlap** box. Browse for the **DPRAM.dll** file. Press **TAB** or **ENTER**.
7. Click the small box containing three dots (...) to the far right of the **Library (*.exp)** box. Browse for the **DPRAM.exp** file. Press **TAB** or **ENTER**.
8. Click the small box containing three dots (...) to the far right of the **Help (*.chm)** box. Browse for the **DPRAM.CHM** file. Press **TAB** or **ENTER**.
9. Click **INSTALL**. When finished, you are returned to Control Manager. The driver name should appear in its own folder within the **Drivers** folder.
10. Verify that the driver was installed by expanding the **LIBRARIES** folder and locating the **DPRAM** library folder. Double click the **DPRAM** folder. The "**C**" **Function Block Editor** opens with the dll folder expanded. You should see the **DPRAM .dll Library** along with other installed libraries.
11. You may now configure the DPRAM (see "Parameter Configuration Using the DPRAM I/O Driver").

DPRAM Configuration

Parameter Configuration Using the DPRAM I/O Driver

The Dual Port Random Access Memory Input/Output Driver, or DPRAM I/O Driver, allows the setting and reading of Smart Trac AC1 parameters by programs written with Smart Trac Workstation™ software. Before you download a program to control the Smart Trac AC1, you must make I/O points accessible to the control software. The last submenu in each branch of the menu tree lists Smart Trac AC1 parameters. Check boxes allow selection of those parameters to be given access rights.

Making DPRAM I/O Points Available to the Program

Use the **DPRAM Configurator** to select which DPRAM I/O points are available to the function block environment.

To access the DPRAM Configurator:

1. Load **Control Manager**.
2. Click **Interface Cards** to highlight it.
3. Click DPRAM Card (or whatever name you gave it when installed), then right click the card name. The **DPRAM I/O Configurator** dialog box appears.

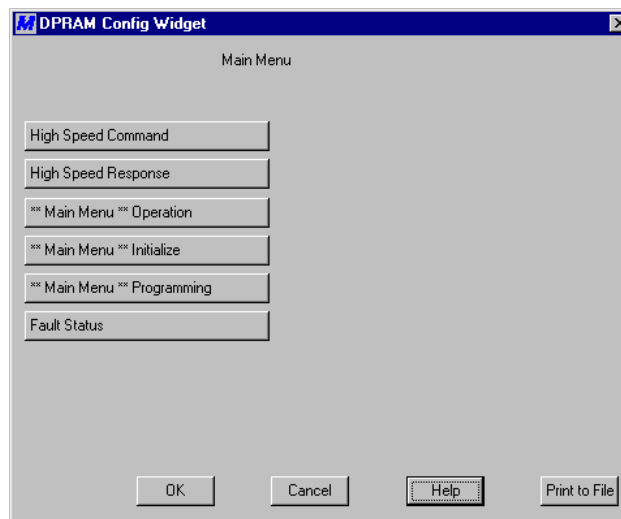


Figure 3. DPRAM Configurator Main Menu

4. You may choose one of the following six configuration groups: High Speed Command, High Speed Response, *****Main Menu*** Operation**, *****Main Menu*** Initialize**, *****Main Menu*** Programming**, and Fault Status.

High Speed Command

Allows for output of commands from an option card to the inverter of the Smart Trac AC1 control card.

High Speed Response

Allows for input of status and feedback from the Smart Trac AC1 inverter control card.

*****Main Menu***, Operation**

Enables the Smart Trac AC1 to monitor operation of the drive and allows configuration of the DPRAM card to display Smart Trac AC1 status. Included are fault tracing and fault histories submenus. In this submenu are the “U”, or “Monitor” parameters.

*****Main Menu***, Initialize**

Allows for setting of the Smart Trac AC1 control method. In this submenu is the Control Method “A1_02”, or “Initialize Control Method” parameter.

*****Main Menu***, Programming**

Allows the setting of parameters for the application (b), tuning (C), reference (d), motor (E), options (F), terminal (H), protection (L), and operator (o) functions.

Fault Status

Allows configuration of the Smart Trac AC1 to report status of drive faults, CPF faults and drive alarms.

Refer to the Appendix for the entire menu tree.

1. You may choose one of the following six configuration groups: For this example, click *****Main Menu***, Programming**. The **Programming** dialog box appears. The box presents eight groups from which to choose. See *Figure 4. DPRAM Programming .*

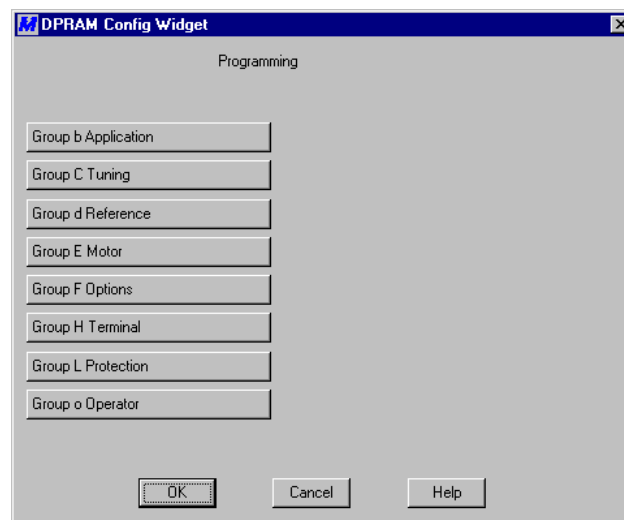


Figure 4. DPRAM Programming Menu

2. Click the **Group b Application** button for this example. The Application dialog box appears, allowing you to choose from nine functions, b1 through b9.

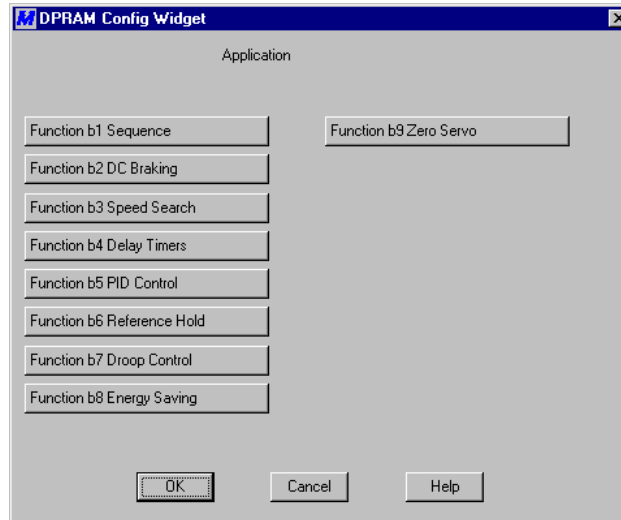



Figure 5. Application Menu



CAUTION

Do not make any changes to default parameter selections until you have thoroughly read about them and understand their use. Failure to comply may result in damage to equipment.

3. Click **Function b1 Sequence**. The **b1, Sequence** selection box appears and offers a list of eight parameters. You may click the check boxes to the left of each parameter to toggle a checkmark on or off. A parameter with a checkmark in the box to its left means that it has been made available to the programming environment. If a **Write Enable** check box to the right of each parameter shows a checkmark, the program environment will allow writing data to the parameter. Otherwise, it will only allow reading the data.

NOTE: The first time you select any parameters level dialog box, you may see some boxes are checked and others are not. The checked boxes indicate default selections.

NOTE: Two variables will always be selected (indicated by check marks): C1_10 Accel/Dcel Units; and o2_04 Inverter Model Num. Even if you deselect (uncheck) these parameters, they will always behave as if they were selected. If you deselect, click **OK** to accept the changes, then go back into the same submenu, you will see that they are selected (checked).

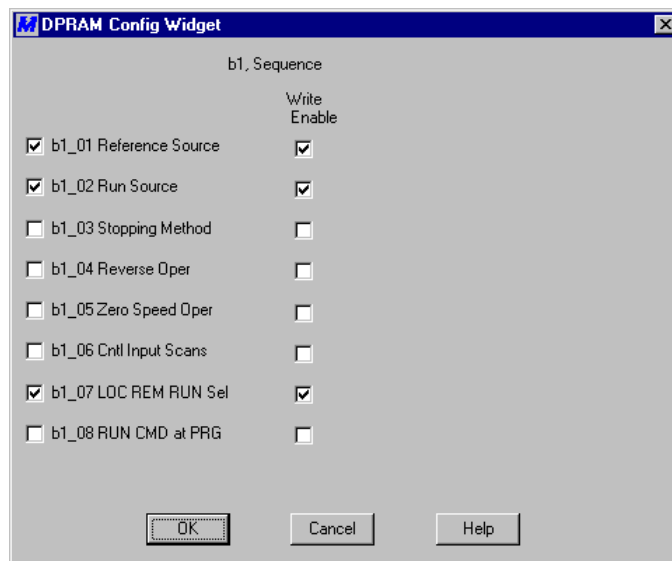


Figure 6. Group b1, Sequence Parameters selection box

4. Click Cancel to back out of the b1, Sequence submenu without making any changes to the parameter settings.
5. Continue to back out of the various submenus until you are returned to the **Main Menu** dialog box.

DPRAM Parameters

A listing of DPRAM I/O Points and associated parameter definitions is contained in an appendix at the back of this guide. Each I/O point is referred to by a *Parameter Number* and associated with a *Function Name*.

For the program to have complete control of I/O, certain parameters must be held to the values indicated in **Table 1**. If set differently by the user's program, the DPRAM driver will not have complete control of I/O.

Parameter	Setting for Control of I/O by DPRAM
b1_02	Option Card (value of "3") must be selected for valid inputs 1-2. Allows logic inputs 1 and 2 to be used as general
H1_01	Select "15" for valid inputs 3-8. Allows Logic input 3 to be used as general purpose I/O.
H1_02	Select "15" for valid inputs 3-8. Allows Logic input 4 to be used as general purpose I/O.
H1_04	Select "15" for valid inputs 3-8. Allows Logic input 5 to be used as general purpose I/O.
H1_04	Select "15" for valid inputs 3-8. Allows Logic input 6 to be used as general purpose I/O.
H1_05	Select "15" for valid inputs 3-8. Allows Logic input 7 to be used as general purpose I/O.
H1_06	Select "15" for valid inputs 3-8. Allows Logic input 8 to be used as general purpose I/O.
b1_01	Option Card (3) must be selected for valid reference selection. Allows the Smart Trac AC1 to provide
o1_03	Select "1" for speed and frequency settings in %
H4_01	Select "31" (not used) to allow the Smart Trac AC1 to control Analog Output 1 in DPRAM
H4_04	Select "31" (not used) to allow the Smart Trac AC1 to control Analog Output 2 in DPRAM
H2_01	Select "15" (not used) to allow the Smart Trac AC1 to control contact output on Terminals 9, 10
H2_02	Select "15" (not used) to allow the Smart Trac AC1 to control the logic output on Terminal 25
H2_03	Select "15" (not used) to allow the Smart Trac AC1 to control the logic output on Terminal 26

Table 1. Required settings for DPRAM to maintain complete control of I/O.

DPRAM Physical Address Details

To access DPRAM I/O physical address details:

1. Ensure that the DPRAM Interface Card is established in Control Studio. If not previously done, load Control Studio, select **Interface Cards**, right click on **Interface Cards** and select **New Interface Card**. The **New** dialog box appears.

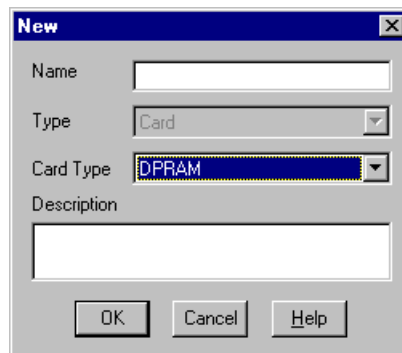


Figure 7. New Interface Card Dialog Box

2. Scroll within **Card Type** until you locate **DPRAM**. Enter a descriptive name for the card in the data entry box to the right of **Name**. Click **OK**. The DPRAM Config Widget dialog box appears. Click the "X" in the upper right corner to close the dialog box. You will configure the DPRAM card later.
3. Maximize the Control Studio window by clicking the **Maximize** button at the upper right of the window.

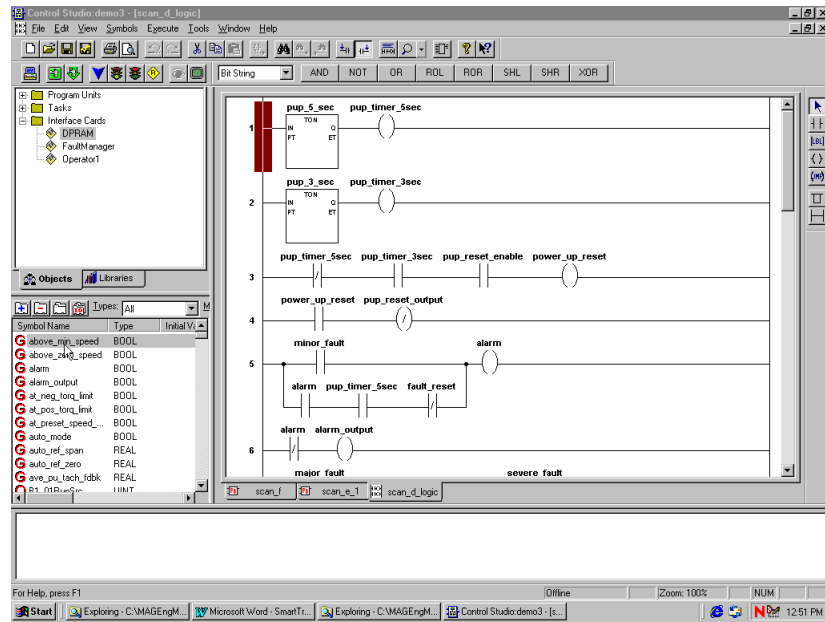


Figure 9. Control Studio maximized for full screen display.

By single clicking Name, Type, Initial Value, Physical Address, or Description., the physical details will be presented in alphabetical order by that label's name.

4. Locate the **Symbol Editor** area within Control Studio. Depending on the **Control Node** and with the **Display Mapping** selected as **ALL**, you will see I/O points listed by name, type, Initial Value, Physical Address and Description. Small squares with gold letters on a blue background are marked:

G for "Global Symbol"

I for "Input Symbol"

O for "Output Symbol"


L for "Local Symbol"

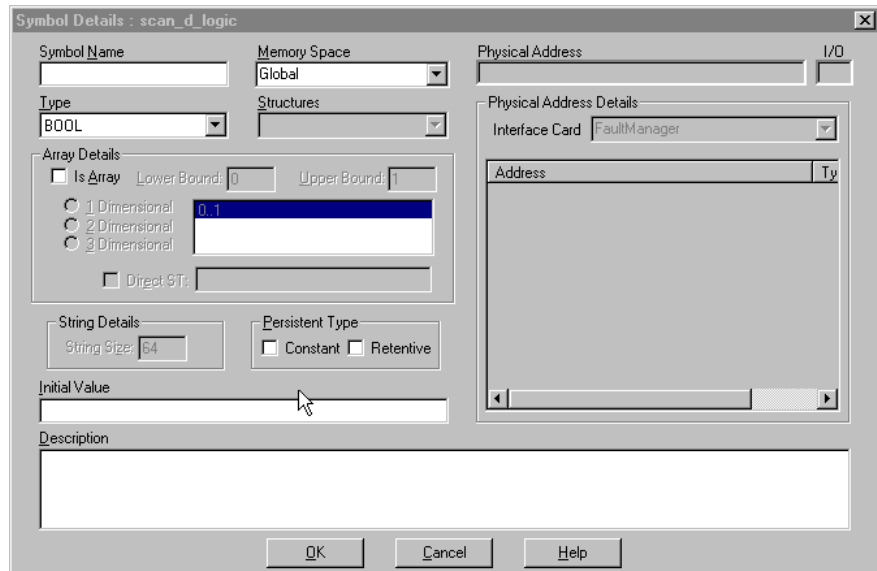
R for "Real Time Symbol"

Only I/O symbols have physical addresses.

Symbol Name	Type	Initial Value
G above_min_speed	BOOL	
G above_zero_speed	BOOL	
G alarm	BOOL	
G alarm_output	BOOL	
G at_neg_torq_limit	BOOL	
G at_pos_torq_limit	BOOL	
G at_preset_speed...	BOOL	
G auto_mode	BOOL	
G auto_ref_span	REAL	
G auto_ref_zero	REAL	
G ave_pu_tach_fdbk	REAL	
R1_01RunS...	UINT	

Figure 10. Control Studio's Symbol Area.

- Click **New Symbol**  button just above the Symbol area. The **Add Symbol** dialog box appears.



Symbol Details : scan_d_logic

Symbol Name:

Type:

Memory Space:

Physical Address:

Interface Card:

Array Details:

☐ Is Array Lower Bound: Upper Bound:

☐ 1 Dimensional

☐ 2 Dimensional

☐ 3 Dimensional

☐ Direct ST:

String Details:

String Size:

Persistent Type:

☐ Constant ☐ Retentive

Initial Value:

Description:

OK Cancel Help

Figure 11. The Symbol Details dialog box

- Select **I/O** from the **Memory Space** selection box. The **Memory Space** selection box will indicate "I/O" and the **Physical Address Details** box becomes active instead of inactive (grayed out).

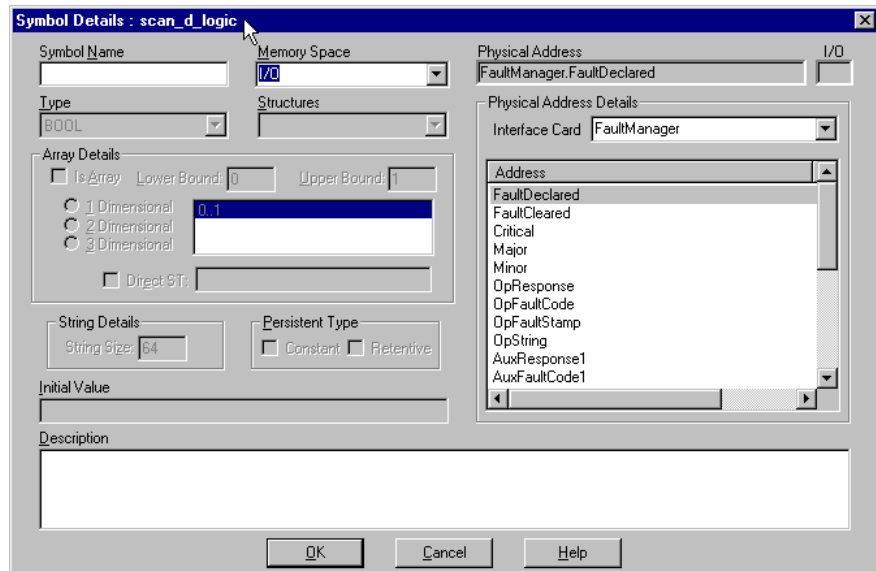


Figure 12. Symbol Details dialog box with I/O Memory Space selected.

7. Find the box labeled **Interface Card**. Scroll until you find the DPRAM Card (or whatever name you've given it). A list of address names, types, and I/O appears.

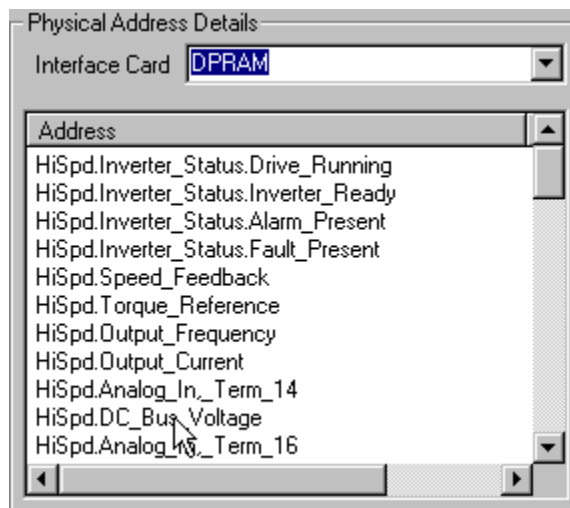


Figure 13. The DPRAM Card Physical Address Details

8. Assign **Symbol Names** to each of the I/O points in the **Physical Address Details** part of the window. Refer to the *Language Reference* in Control Studio for valid identifiers and a list of keywords and reserved system symbol names that should not be used when defining symbols. These names are later used in function block diagrams, structured text, or any other IEC-61131-3 compliant language. See Appendices in the *Smart Trac ACI Engineer's Guide*, "Parameter Settings and Factory Defaults" for a listing of all DPRAM I/O points and their function. Recommended settings for the majority of applications are **listed in red** and indicated as such in "Parameter Settings and Factory Defaults."

**The Torque
Reference**

The DPRAM I/O Driver handles the Torque Reference in a unique way. When this special function block accepts the torque reference as input, it immediately writes the data directly to the DPRAM. The Inverter control card reads this value within 2ms.

Appendix A – DPRAM Menu Tree

Introduction

From the DPRAM Main Menu, you may choose one of the following six configuration groups: High Speed Command, High Speed Response, ****Main Menu**** Operation, ****Main Menu**** Initialize, ****Main Menu**** Programming, and Fault Status. Diagrams of each of the menu structure of each group show selections available.

DPRAM I/O Menu Tree - High Speed Command



Figure 14. DPRAM I/O Menu Tree – High Speed Command

DPRAM I/O Menu Tree - High Speed Response

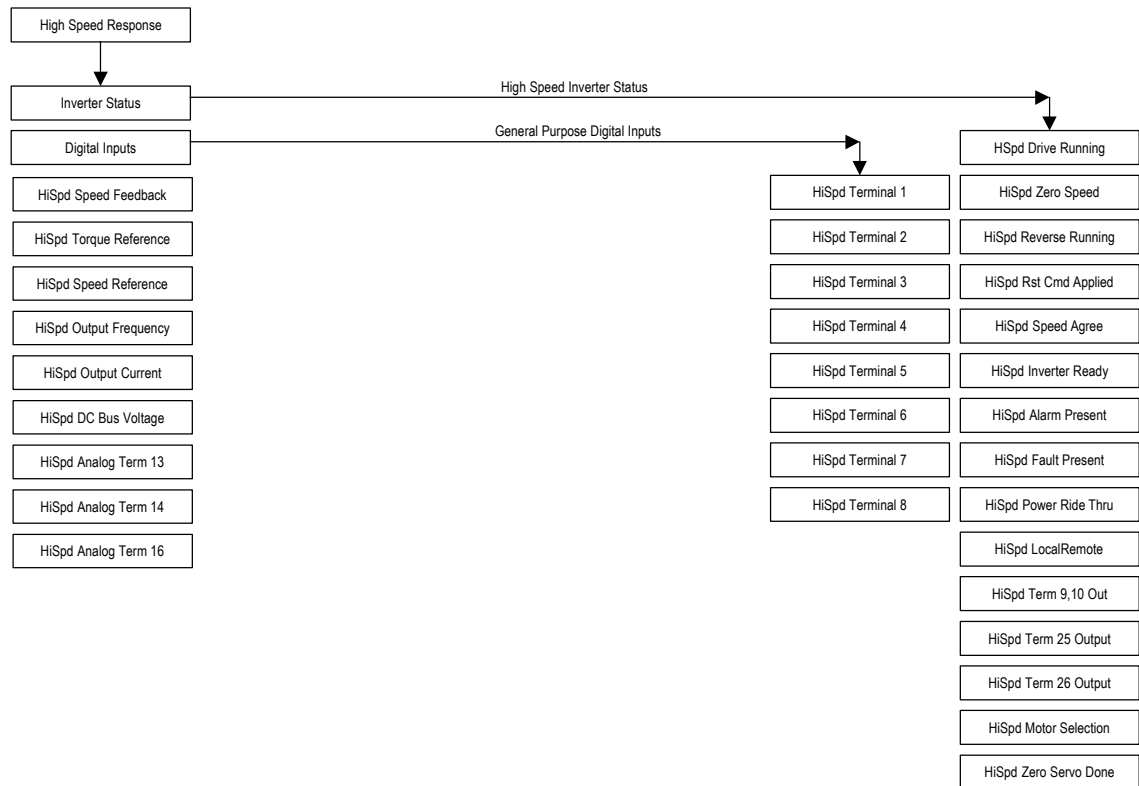


Figure 15. DPRAM I/O Menu Tree – High Speed Response

DPRAM I/O Menu Tree – Operation (Monitor Class)

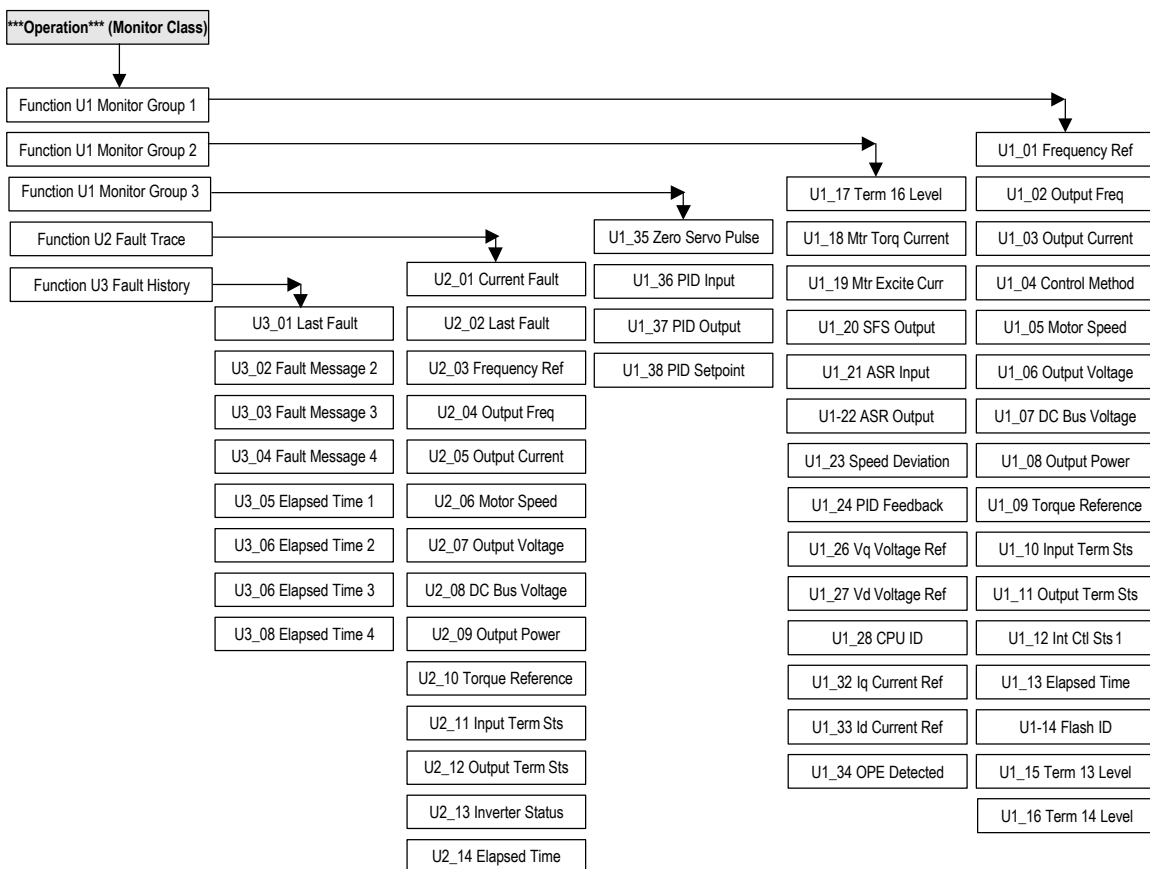


Figure 16. DPRAM I/O Menu Tree – Operation (Menu Class)

DPRAM I/O Menu Tree – Initialize



Figure 17. DPRAM I/O Menu Tree – Initialize

DPRAM I/O Menu Tree – Programming

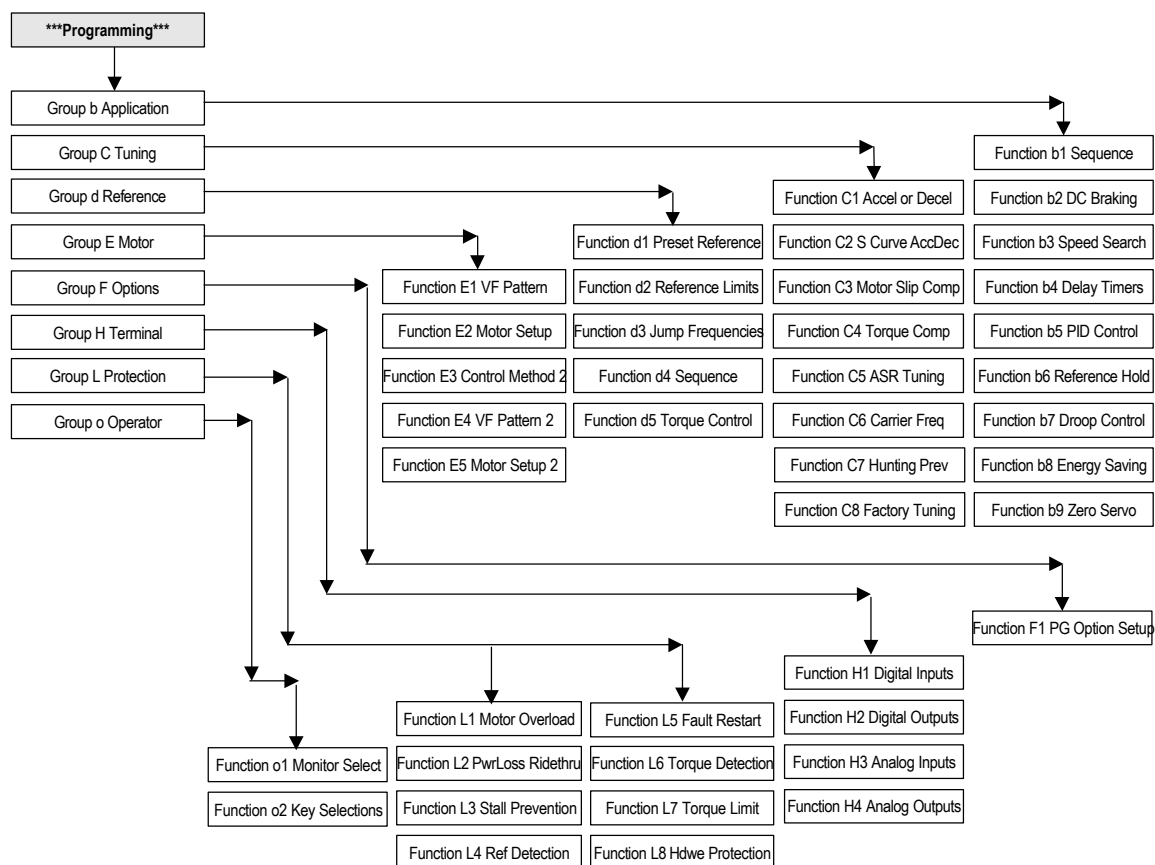


Figure 18. DPRAM I/O Menu Tree – Program (Menu Class)

DPRAM I/O Menu Tree – Group b Application

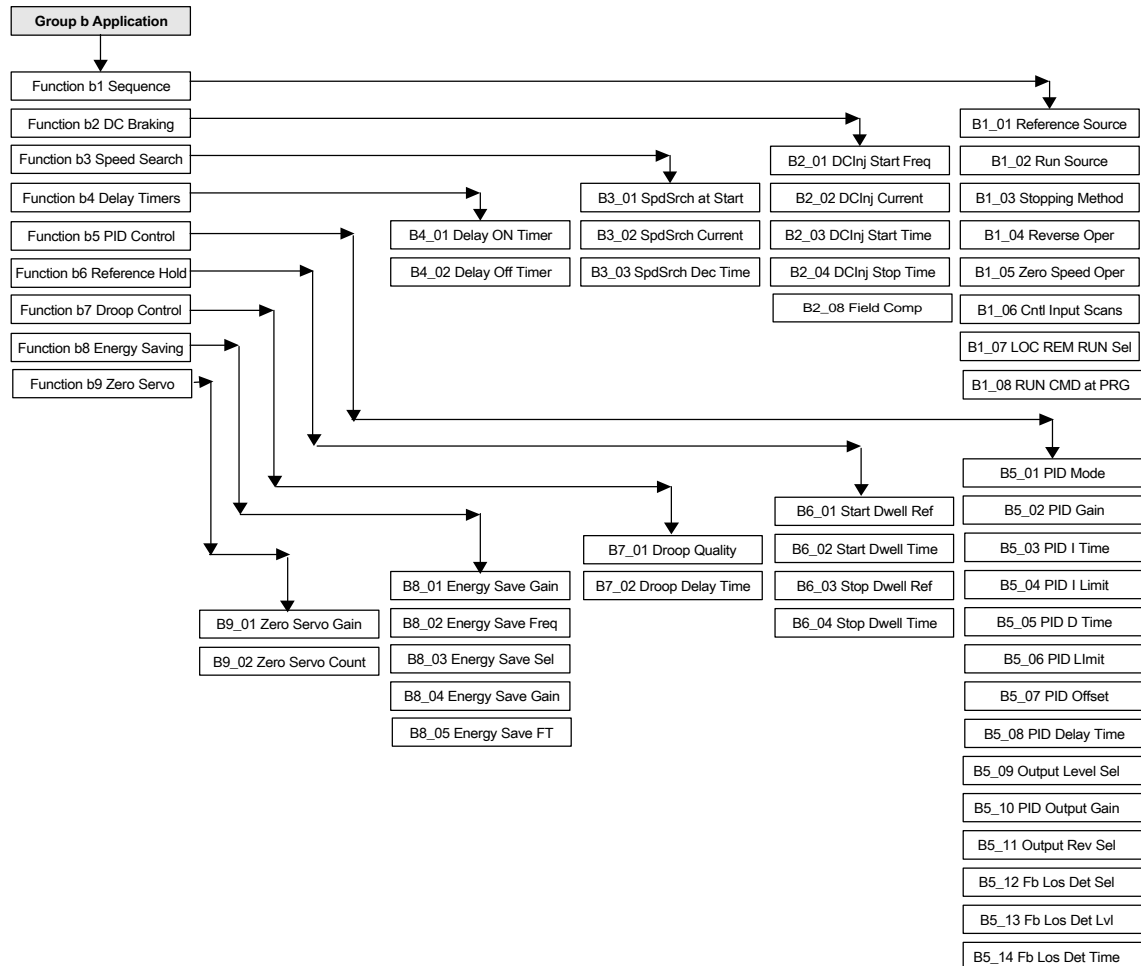


Figure 19. DPRAM I/O Menu Tree - Group b Application

DPRAM I/O Menu Tree – Group C Tuning

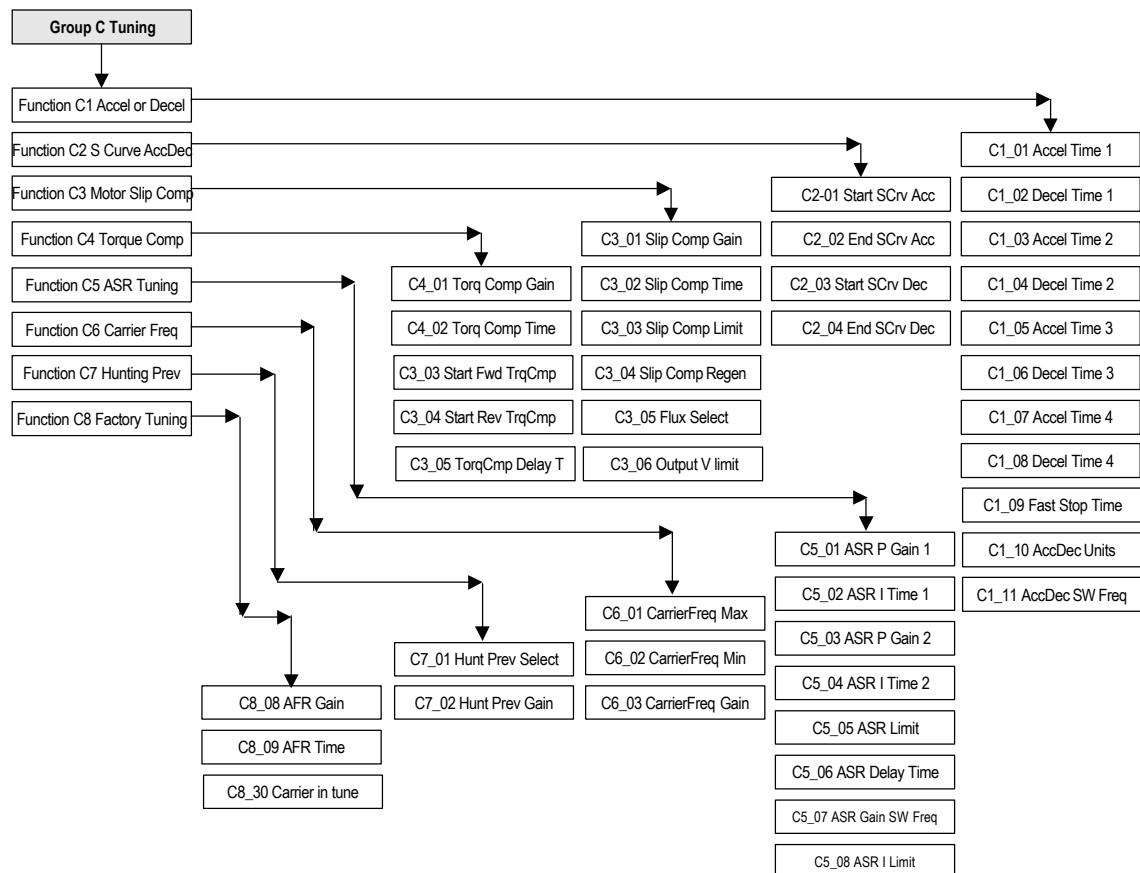


Figure 20. DPRAM I/O Menu Tree – Group C Tuning

DPRAM I/O Menu Tree – Group d Reference

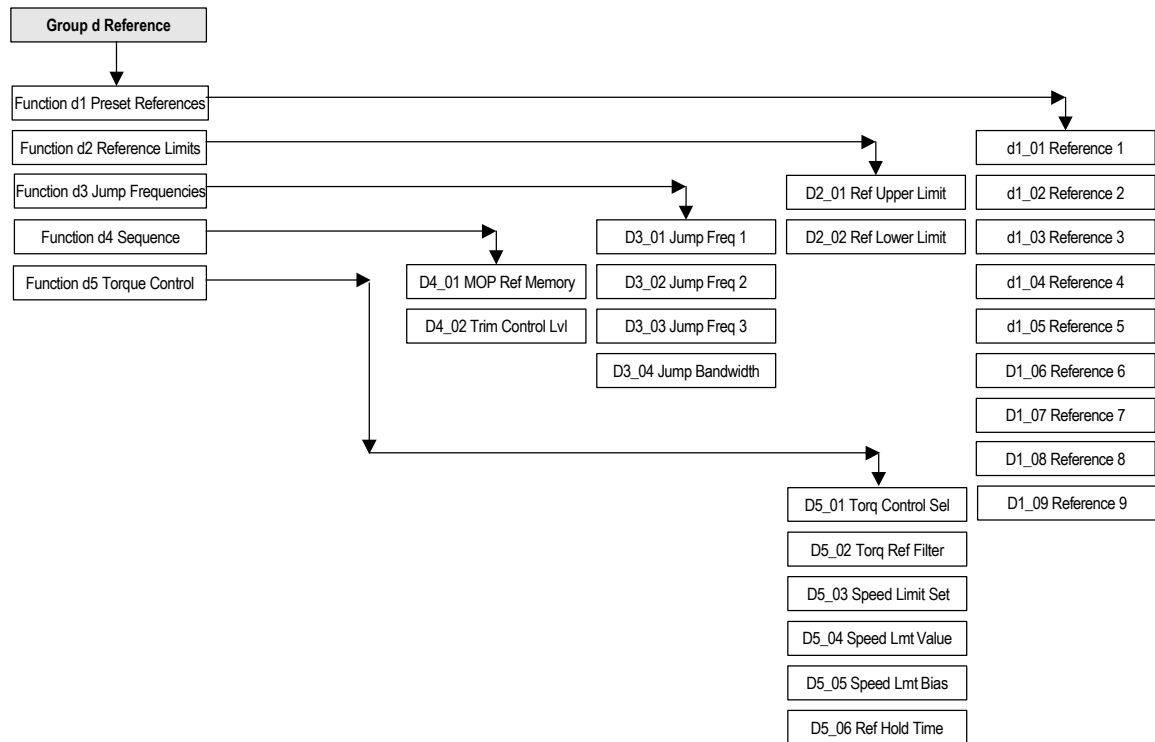


Figure 21. DPRAM I/O Menu Tree – Group d Reference

DPRAM I/O Menu Tree – Group E Motor

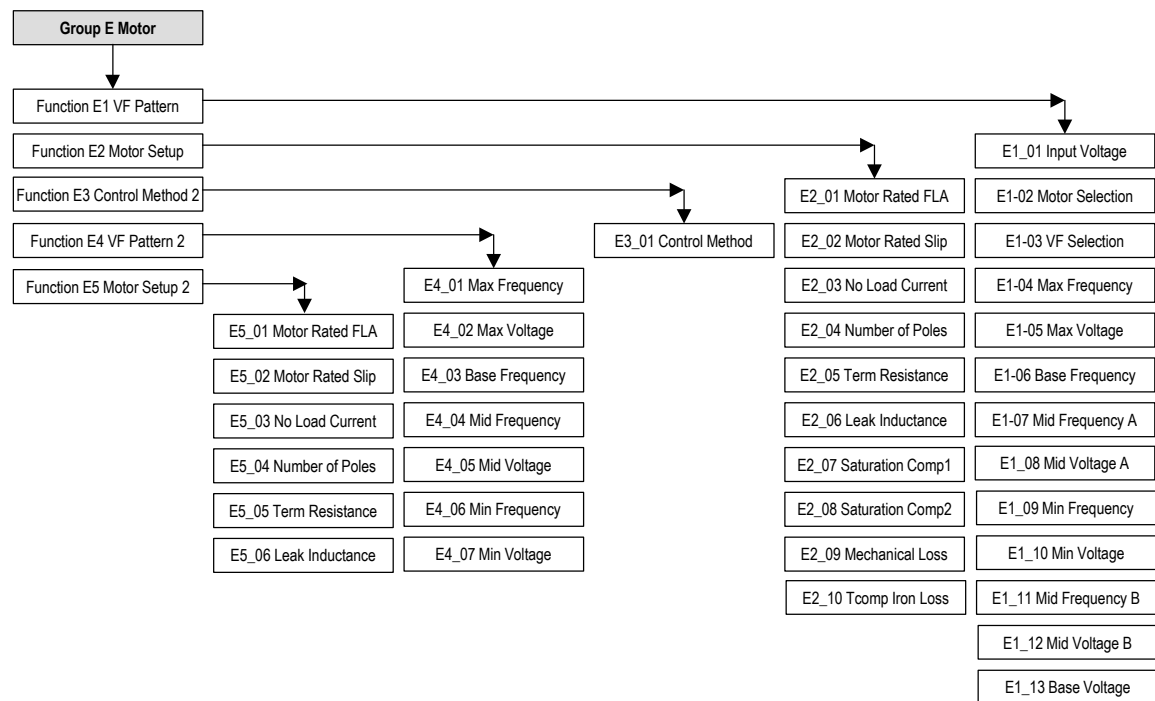


Figure 22. DPRAM I/O Menu Tree – Group E Motor

DPRAM I/O Menu Tree – Group F Options

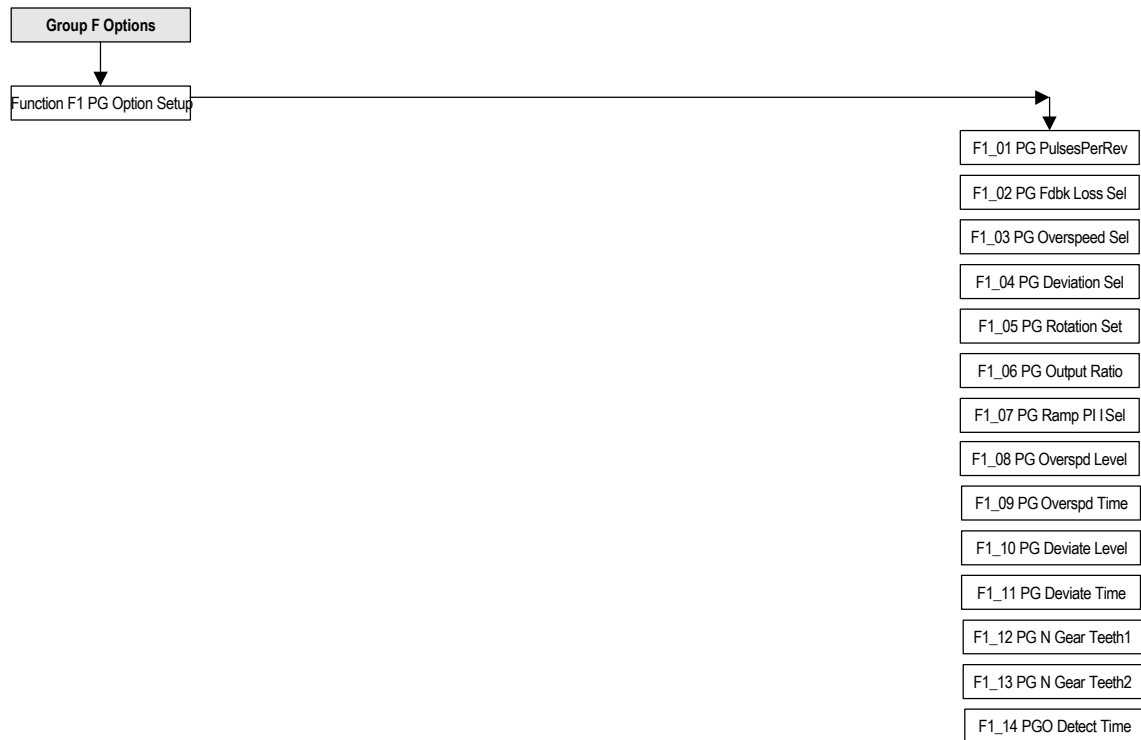


Figure 23. DPRAM I/O Menu Tree – Group F Options

DPRAM I/O Menu Tree – Group H Terminal

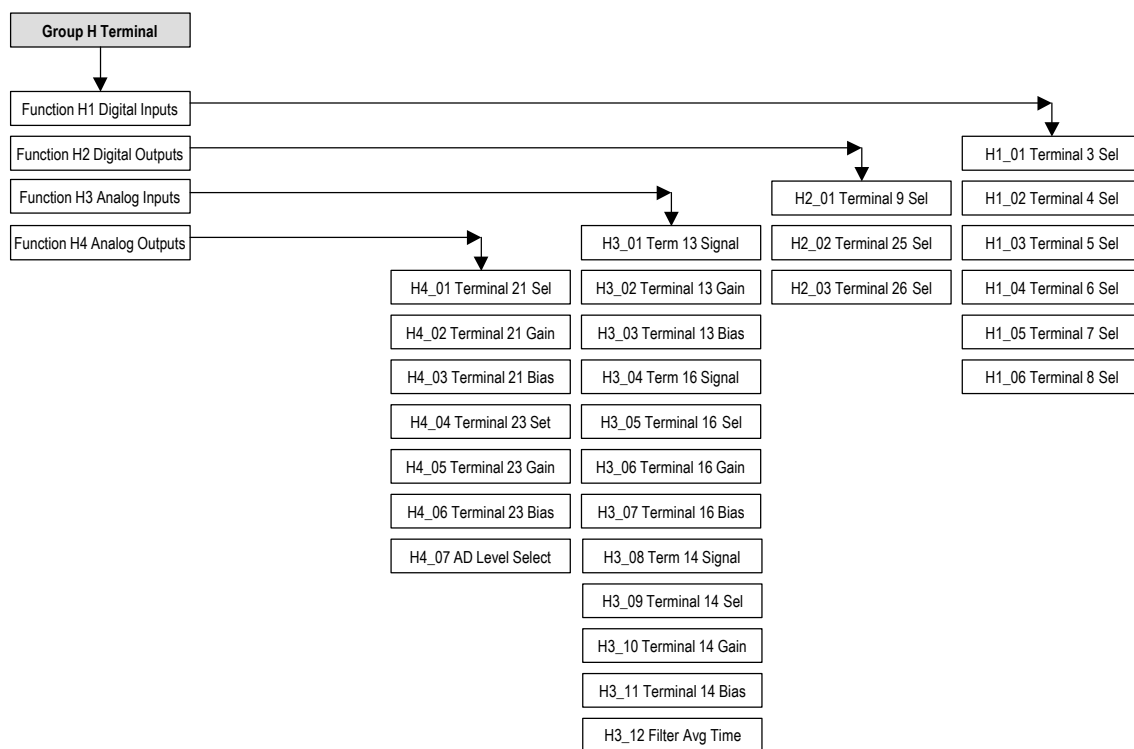


Figure 24. DPRAM I/O Menu Tree – Group H Terminal

DPRAM I/O Menu Tree – Group L Protection

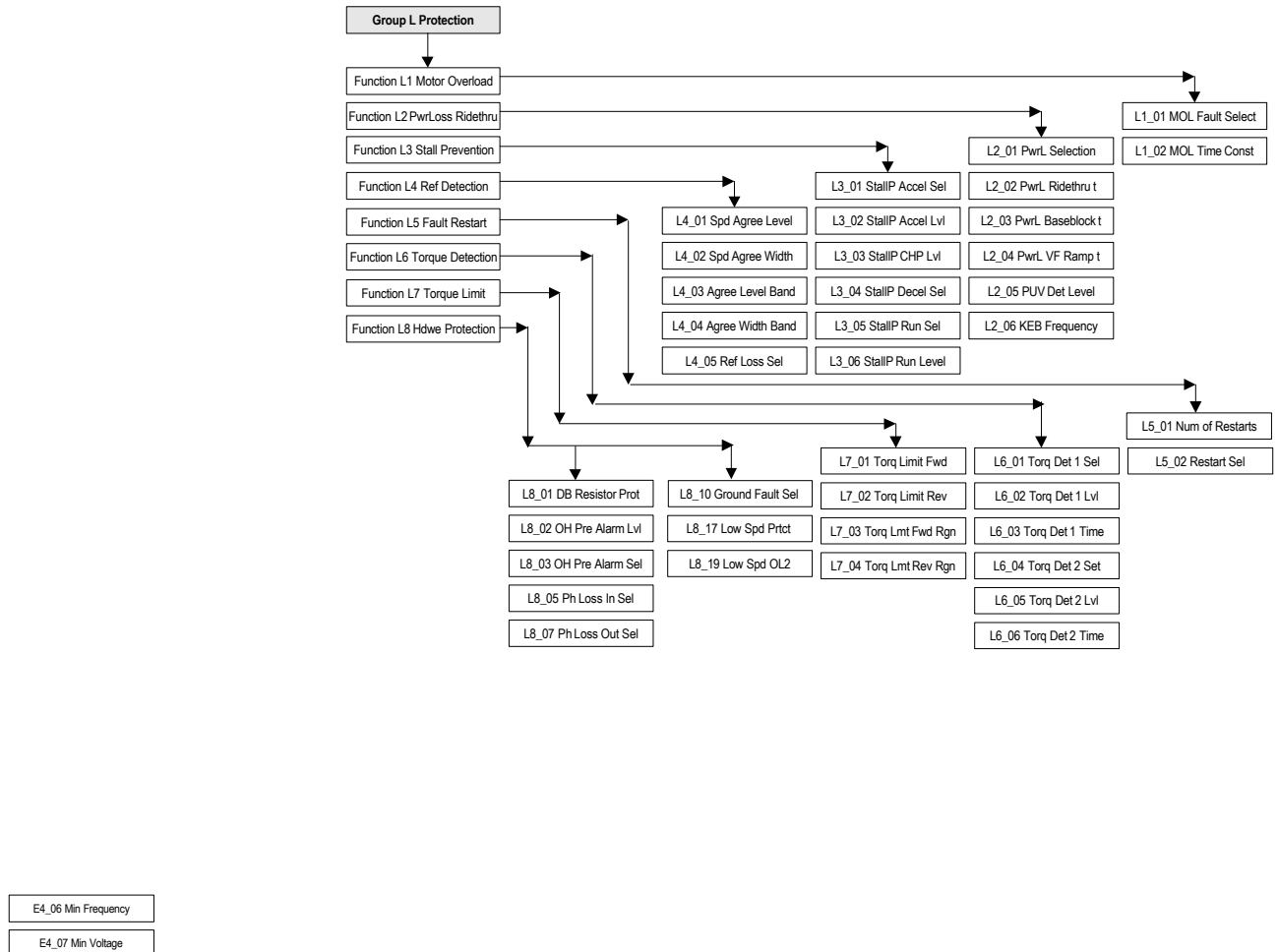


Figure 25. DPRAM I/O Menu Tree – Group L Protection

DPRAM I/O Menu Tree – Group o Operator

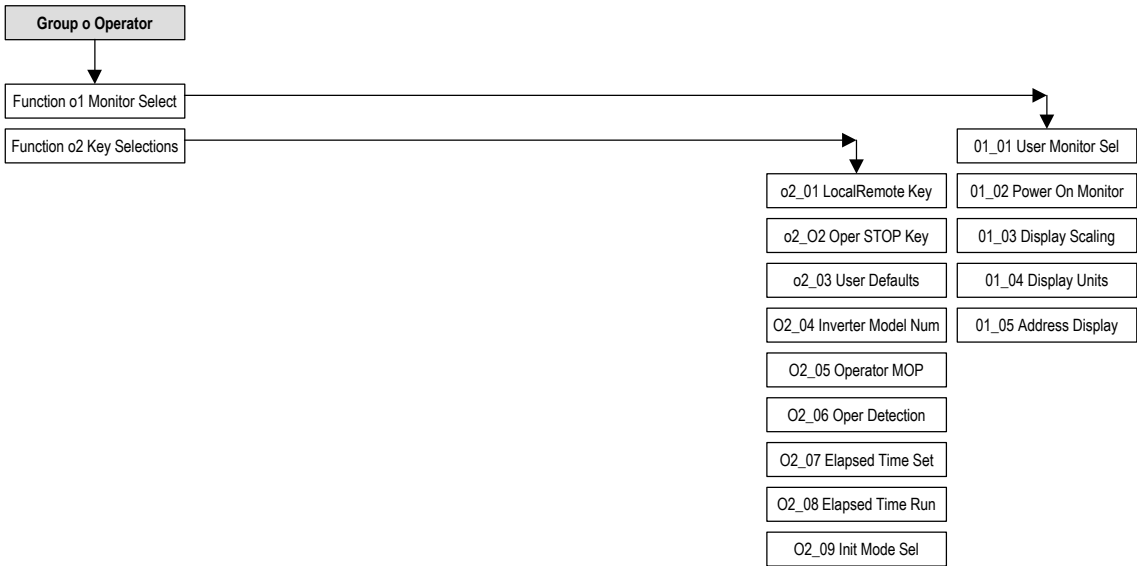


Figure 26. DPRAM I/O Menu Tree – Group o Operation

DPRAM I/O Menu Tree – Fault Status

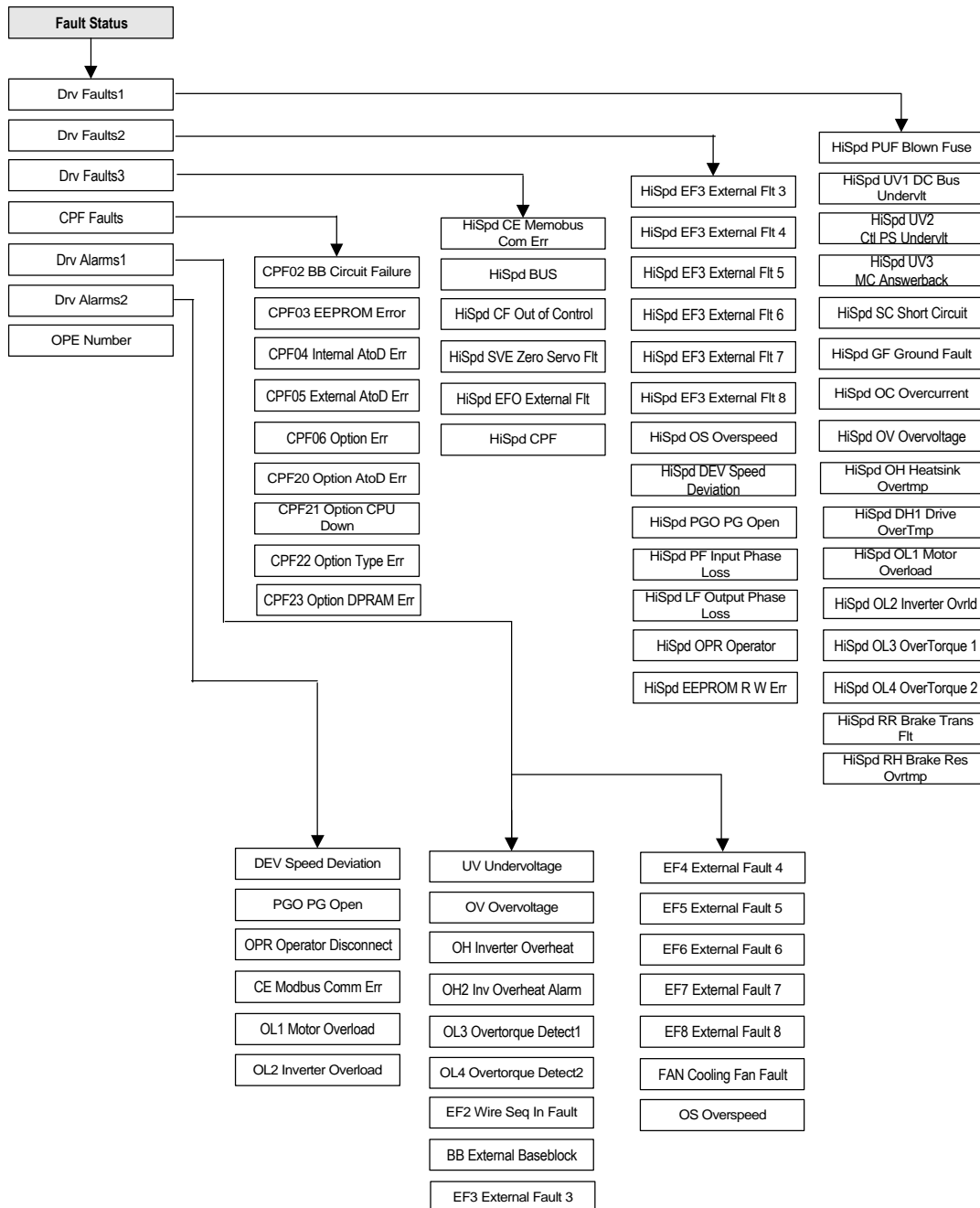


Figure 27. DPRAM I/O Menu Tree – Fault Status

Appendix B – Application Parameters

The Application Parameters List

The following table lists parameters that can be configured in the DPRAM software.

Parameter Designator	Function	Description	Increment	Setting Range	Notes	Can be set during RUN
A1_02	Control Method Selection	0: V/f control 1: V/f with PG feedback 2: Open loop vector 3: Flux vector	1	0 - 3		No
A1_04	Reserved		1	0000-9999		No
A2_01 thru A2_32	Reserved		1	b1_01-02-09		No
b1_01	Reference Source	0: Digital Operator 1: Terminal 2: Serial Communication 3: Option Card	1	0 - 4	Option Card (3) required for reference selection.	No
b1_02	Run Source	0: Digital Operator 1: Terminal 2: Serial Communication 3: Option Card	1	0 - 4	Option Card (3) required for inputs 1-2 to be valid.	No
b1_03	Stopping Method	0: Ramp to Stop 1: Coast to Stop 2: DC Injection to Stop 3: Coast with timer	1	0 - 3 (See Note)	Setting range is only 0 and 1 when control method (A1_02) is set to Flux Vector control (3).	No
b1_04	Reverse Operation	0: Enable Reverse Operation 1: Disable Reverse Operation	1	0, 1		No
b1_05	Reference Source	0: Digital Operator 1: Terminal 2: Serial Communication 3: Option Card	1	0 - 3		No
b1_06	Cntl input scans	0: 2ms 2 scans 1: 5ms 2 scans	1	0,1		No

b1_07	Run Source	0: cycle extrn run 1: accept extern run	1	0,1	Option Card 3 required for inputs 1-2 to be valid.	No
b1_08	Run command selection at PRG mode	0: Run is disabled 1: Run is enabled	1	0,1		No
b2_01	DC Injection Braking Start Frequency		0.1 Hz	0.00 - 10.0		No
b2_02	DC Injection Braking Current		1%	0 - 100		No
b2_03	DC Injection Braking Time at Start		0.01 sec	0.00 - 10.0		No
b2_04	DC Injection Braking Time at Stop		0.01 sec	0.00 - 10.0		No
b2_08	field cmp @ start		1%	0 - 500		No
b3_01	Speed Search Selection at Start	0: Disabled 1: Enabled	1	0, 1	For VF or Open Loop Vector Control, b3_01=1; for VF w/PG feedback or Flux Vector, b3_01=0.	No
b3_02	Speed Search Deactivation Current Level		1%	0 - 200	For VF or Open Loop Vector Control, b3_01=1; for VF w/PG feedback or Flux Vector, b3_01=0.	No
b3_03	Speed Search Deceleration Time		0.1 sec	0.1 - 10.0		No
b4_01	Delay ON Timer		0.1 sec	0.0 - 300.0		No
b4_02	Delay OFF Timer		0.1 sec	0.0 - 300.0		No
b5_01	PID Mode	0: Disabled 1: Enabled (D=feedback) 2: Enabled (D=feed forward) 3: Fref+PID D=fdbk 4: Fref+PID D=feed forward	1	0 - 4		Yes
b5_02	PID Proportional Gain		0.01	0.00 - 25.0		Yes
b5_03	PID Integral Time		0.1 sec	0.0 - 360.0		Yes
b5_04	PID Integral Limit		0.10%	0.0 - 100.0		Yes
b5_05	PID Differential Time		0.01 sec	0.0 - 10.0		Yes
b5_06	PID Output Limit		0.10%	0.0 - 100.0		Yes
b5_07	PID Offset Adjustment		0.01%	-100.0 - 100.0		Yes
b5_08	PID Primary Delay Time Constant		0.01 sec	0.00 - 10.00		Yes

b5_09	PID output		1	0, 1		No
b5_10	PID output gain		0.1	0.0 - 25.0		No
b5_11	PID output reverse selection		1	0, 1		No
b5_12	PID feedback reference missing detection	0: Disabled 1: Alarm Fault 2:	1	0 - 2		No
b5_13	PID feedback reference missing detection level		1	0 - 100		No
b5_14	PID feedback reference missing detection time		0.1	0.0 - 25.5		No
b6_01	Dwell Frequency at Start		0.1 Hz	0.0 - 400.0		No
b6_02	Dwell Time at Start		0.1 sec	0.0 - 10.0		No
b6_03	Dwell Frequency at Stop		0.1 Hz	0.0 - 400.0		No
b6_04	Dwell Time at Stop		0.1 sec	0.0 - 10.0		No
b7_01	Droop Quality		0.10%	0.00 - 100.00		No
b7_02	Droop Control Delay Time		0.01 sec	0.00 - 2.00		Yes
b8_01	Energy Saving Gain		1%	0 - 100		No
b8_02	Energy Saving Frequency		0.1 Hz	0.0 400.0		No
b8_03	Energy saving mode selection		1	0, 1		No
b8_04	Energy saving control gain		0.1	0.0 - 10.0		Yes
b8_05	Energy saving control tc		0.01	0.00 - 10.00		Yes
b9_01	Zero-Servo Gain		1	0 - 100		No
b9_02	Zero-Servo Count		1	0-16383		No
C1_01	Acceleration Time 1		0.01 sec. or 0.1 sec. (Depend-ent upon C1_10 setting)	0.00 - 600.0 or 0.0 - 6000.0 (Depend-ent upon C1_10 setting)		Yes
C1_02	Deceleration Time 1					Yes

C1_03	Acceleration Time 2					Yes
C1_04	Deceleration time 2					Yes
C1_05	Acceleration Time 3					No
C1_06	Deceleration time 3					No
C1_07	Acceleration Time 4					No
C1_08	Deceleration time 4					No
C1_09	Fast Stop Time					No
C1_10	Accel/Decel Units	0: 0.01 seconds 1: 0.1 seconds	1	0, 1		No
C1_11	Accel/Decel Switching Frequency		0.1 Hz	0.0 - 400.0		No
C2_01	S-Curve Characteristic at Accel. Start		0.01 sec	0.0 - 2.50		No
C2_02	S-Curve Characteristic at Accel. End		0.01 sec	0.0 - 2.50		No
C2_03	S-Curve Characteristic at Decel. Start		0.01 sec	0.0 - 2.50		No
C2_04	S-Curve Characteristic at Decel. End		0.01 sec	0.0 - 2.50		No
C3_01	Slip Compensation Gain		0.1	0.0 - 2.5	Factory settings differ depending on control method.	Yes
C3_02	Slip Compensation Primary Delay Time		1 ms	0 - 10000	Factory settings differ depending on control method.	No
C3_03	Slip Compensation Limit		1%	0 - 250		No
C3_04	Slip Compensation Selection During Regeneration	0: Disabled 1: Enabled	1	0, 1		No
C3_05	Flux Select	0: slip included 1: slip excluded	1	0, 1		No
C3_06	output voltage limit operation selection		1	0, 1		No
C4_01	Torque Compensation Gain		0.01	0.00 - 2.50		No
C4_02	Torque Compensation Time Constant		1 ms	0 - 10000	Factory settings differ depending on control method.	No

C4_03	Torque compenstaion value at start		0.1	0.0 - 200.0		No
C4_04	Torque compensation value at start		0.1	-200.0 - 0.0		No
C4_05	torque compensation time constant		1	0 - 200		No
C5_01	ASR Proportional Gain		0.01	1.00 - 300.00	Factory settings differ depending on control method.	Yes
C5_02	ASR Integral Time 1		0.001 sec	0.000 - 10.000	Factory settings differ depending on control method.	Yes
C5_03	ASR Proportional Gain 2		0.01	0.00 - 300.00	Factory settings differ depending on control method.	Yes
C5_04	ASR Integral Time 2		0.001 sec	0.000- 10.000	Factory settings differ depending on control method.	Yes
C5_05	ASR Limit		0.10%	0.0 - 20.0		No
C5_06	ASR Primary Delay Time		0.001 sec	0.000 - .500		No
C5_07	ASR Gain Switching Frequency		0.1 Hz	0.0 - 400.0		No
C5_08	ASR Integral Limit		1%	0 - 400		No
C6_01	Carrier Frequency Maximum		0.1 kHz	0.4 - 15.0 (See Note)	Setting range depends on Control Method (A1_02): if VF, 0; if VF w/PG or Open Loop, 1; if Flux Vector, 2.	No
C6_02	Carrier Frequency Minimum		0.1 kHz	0.4 - 15.0 (See Note)		No
C6_03	Carrier Frequency Proportional Gain		1	00 - 99 (See Note)		No
C7_01	Hunting Prevention Selection		1	0, 1		No
C7_02	Hunting Prevention Gain		0.01	0.00 - 2.50		No
C8_08	AFR Gain		0.01	0.00 - 10.00		No
C8_09	AFR Time		1 ms	0 - 2000		No
C8_30	Carrier in Tune 0: Fc = 2 KHz 1: Fc = C6_01 2: Fc = 5 kHz		1	0, 1		No
d1_01	Frequency Reference 1		0.0001	0.0 - 1.0		Yes
d1_02	Frequency Reference 2		0.0001	0.0 - 1.0		Yes

d1_03	Frequency Reference 3		0.0001	0.0 - 1.0		Yes
d1_04	Frequency Reference 4		0.0001	0.0 - 1.0		Yes
d1_05	Frequency Reference 5		0.0001	0.0 - 1.0		Yes
d1_06	Frequency Reference 6		0.0001	0.0 - 1.0		Yes
d1_07	Frequency Reference 7		0.0001	0.0 - 1.0		Yes
d1_08	Frequency Reference 8		0.0001	0.0 - 1.0		Yes
d1_09	Frequency Reference 9		0.0001	0.0 - 1.0		Yes
d2_01	Frequency Reference Upper Limit		0.10%	0.0 - 110.0		No
d2_02	Frequency Reference Lower Limit		0.10%	0.0 - 109.0		No
d3_01	Jump Frequency 1		0.1 Hz	0.0 - 400.0		No
d3_02	Jump Frequency 2		0.1 Hz	0.0 - 400.0		No
d3_03	Jump Frequency 3		0.1 Hz	0.0 - 400.0		No
d3_04	Jump Bandwidth		0.1 Hz	0.0 - 20.0		No
d4_01	MOP Reference Memory	0: Disabled 1: Enabled	1	0, 1		No
d4_02	Trim Control Level		1%	0 - 100		No
d5_01	Torque Control Set	0: Speed Control 1: Torque Control	1	0, 1		No
d5_02	Torque Reference Filter		1 ms	0 - 1000		No
d5_03	Speed Limit Set	0: Analog input (term. 13 & 14) 1: d5_04 setting	1	1,2		No
d5_04	Speed Limit Value		1%	-120 to +120		No
d5_05	Speed Limit Bias		1%	0 to 120		No
d5_06	Reference Hold Time		1 ms	0 to 1000		No
E1_01	Input Voltage		1 V	155 to 244 (230V ratings) 460 to 690 (600V ratings)		No

E1_02	Motor Selection	0: General Purpose motor (TEFC) 1: Blower Control motor (TENV or TEBC) 2: Vector motor	1	0 - 2	Initialization of Smart Trac system sets parameter to "0", which protects motor at 0 speed and trip with OL1 fault after 10 mins @ 70% motor current	No
E1_03	VF Selection	0 to E: 15 preset VF patterns F: Customer pattern using E1_04 thru E1-10	1 H	0 to F		Value change does not take effect until power is cycled
E1_04	Maximum Output Frequency		.1 Hz	40.0 to 400.0		No
E1_05	Maximum Voltage		0.1 V	0.0 - 255.0 (230V ratings) 0.0 - 510.0 (460V ratings) 0.0 - 733.1 (600V ratings)		No
E1_06	Base Frequency		0.1 Hz	0.0 - 400.0		No
E1_07	Mid. Frequency A		0.1 Hz	0.0 - 400.0		No
E1_08	Mid Output Voltage A		0.1 V	0.0 - 255.0 (230V ratings) 0.0 - 510.0 (460V ratings) 0.0 - 733.1 (600V ratings)	Settings determined by control method.	No
E1_09	Min. Frequency		0.1 Hz	0.0 - 400.0	Settings determine by control method.	No

E1_10	Min. Output Voltage		0.1 V	0.0 - 255.0 (230V ratings) 0.0 - 510.0 (460V ratings) 0.0 - 733.1 (600V ratings)	Settings determine by control method.	No
E1_11	Mid. Output Frequency B		0.1 Hz	0.0 - 400.0		No
E1_12	Mid. Output Voltage B		0.1 V	0.0 - 255.0 (230V ratings) 0.0 - 510.0 (460V ratings) 0.0 - 733.1 (600V ratings)		No
E1_13	Base Voltage		0.1 V	0.0 - 255.0 (230V ratings) 0.0 - 510.0 (460V ratings) 0.0 - 733.1 (600V ratings)		No
E2_01	Motor Rated FLA		See Note	0.00 - 1500.0	Setting increment is 0.01 A for STAC-/STACW A003 thru A025, B001 thru B011. Increment is .1A for STAC-/STACW A033 thru A300 and B014 thru B605.	No
E2_02	Motor Rated Slip		0.01 Hz	0.00 - 20.00	Factory setting differs per drive capacity	No
E2_03	Motor No Load Current		0.01 A	0.00 - 1500.0	Factory setting differs per drive capacity	No
E2_04	Number of Motor Poles		1 pole	2 - 48		No
E2_05	Terminal Resistance		0.001 ohms	0.000 - 65.000	Term. Resistance depends on drive capacity. Factory setting differs per drive capacity	No

E2_06	Leak Inductance		0.10%	0.0 - 40.0	Terminal resistance depends on drive capacity	No
E2_07	Saturation Comp1		0.01	0.00 - 0.50		No
E2_08	Saturation Comp2		0.01	0.00 - 0.75		No
E2_09	Mechanical Loss		0.10%	0.0 - 30.0		No
E3_01	Control Method 2	0: VF Control 1: VF with PG feedback 2: Open loop vector 3: Flux vector	1	0 - 3		No
E4_01	VF Pattern 2 Maximum Output Frequency		0.1 Hz	40.0 - 400.0		No
E4_02	VF Pattern 2 Maximum Voltage		0.1 V	0.0 - 255 (230V ratings) 0.0 - 765 (600V ratings)		No
E4_03	VF Pattern 2Base Frequency		0.1 Hz	0.0-400.0		No
E4_04	VF Pattern 2 Mid Frequency		0.1 Hz	0.0-400.0	Factory settings depend on control method	No
E4_05	VF Pattern 2 Mid Voltage		.1 Hz	0.0 - 255 (230V ratings) 0.0 - 765 (600V ratings)	Factory settings depend on control method	No
E4_06	VF Pattern 2 Minimum Frequency		0.1 V	0.0 - 150.0	Factory settings depend on control method	No
E4_07	VF Pattern 2 Minimum Output Voltage		0.1 V	0.0 - 255 (230V ratings) 0.0 - 765 (600V ratings)	Factory settings depend on control method	No
E5_01	Motor 2 Rated FLA		See Note	0.00 - 1500.0 (See note 3)	Factory settings depend on drive capacity. Setting increment is 0.01 A for STAC-/STACW A003 thru A025, B001 thru B011. Increment is .1A for STAC-/STACW A033 thru A300 and B014 thru B605.	No
E5_02	Motor 2 Rated Slip		0.01 Hz	0.00 - 20.00		No

E5_03	Motor 2 No-Load Current		See Note	0.00 - 1500.0	Factory settings depend on drive capacity. Setting increment is 0.01 A for STAC-/STACW A003 thru A025, B001 thru B011. Increment is .1A for STAC-/STACW A033 thru A300 and B014 thru B605.	No
E5_04	Motor 2 Number of Poles		1 pole	2 - 48	Factory settings depend on drive capacity	No
E5_05	Motor 2 Terminal Resistance		0.001	0.0-65.0	Factory settings depend on drive capacity	No
E5_06	Motor 2 Leak Inductance		0.10%	0.0 - 40.0		No
F1_01	PG Pulses per Rev (Encoder Constant)		1 pulse per revolution	0 - 60000		No
F1_02	PG Feedback Loss Select	0: Ramp to stop 1: Coast to stop 2. Fast-stop 3. Alarm only	1	0-3		No
F1_03	PG Overspeed Select	0: Ramp to stop 1: Coast to stop 2. Fast-stop 3. Alarm only	1	0-3		No
F1_04	PG Deviation Select	0: Ramp to stop 1: Coast to stop 2. Fast-stop 3. Alarm only	1	0-3		No
F1_05	PG Rotation Set	0: Counter-clockwise 1: Clockwise	1	0, 1		No
F1_06	PG Output Ratio		1	1-132		No
F1_07	PG Ramp Pt 1 Select		1	0, 1		No
F1_08	PG Overspeed Level		1%	0 - 120		No
F1_09	PG Overspeed Timer (Detection Delay)		0.1 sec	0.0 - 2.0	Factory settings depend on control method.	No
F1_10	PG Deviate Level		1%	0 - 50		No
F1_11	PG Deviate Time		0.1 sec.	0.0 - 10.0		No
F1_12	PG Number of Gear Teeth 1		1	0 - 1000		No
F1_13	PG Number of Gear Teeth 2		1	0 - 1000		No
F1_14	Pgo Detect Time		0.1 sec	0.0 - 10.0		No
F2_01 thru F9_06	Reserved					No

H1_01	Terminal 3 Select		1	0x 0 - 77	Must be "F" for DPRAM Driver operation of inputs 3-8.	No
H1_02	Terminal 4 Select		1	0x 0 - 77	Must be "F" for DPRAM Driver operation of inputs 3-8.	No
H1_03	Terminal 5 Select		1	0x 0 - 77	Must be "F" for DPRAM Driver operation of inputs 3-8.	No
H1_04	Terminal 6 Select		1	0x 0 - 77	Must be "F" for DPRAM Driver operation of inputs 3-8.	No
H1_05	Terminal 7 Select		1	0x 0 - 77	Must be "F" for DPRAM Driver operation of inputs 3-8.	No
H1_06	Terminal 8 Select		1	0x 0 - 77	Must be "F" for DPRAM Driver operation of inputs 3-8.	No
H2_01	Terminal 9 Select		1	0x 0 - 37	Set to "F" (not used) for DPRAM I/O access to Contact Output 1 (Terminals 9, 10).	No
H2_02	Terminal 25 Select		1	0x 0 - 37	Set to "F" (not used) for DPRAM I/O access to Logic Output 1 (Terminal 25).	No
H2_03	Terminal 26 Select		1	0x 0 - 37	Set to "F" (not used) for DPRAM I/O access to Logic Output 2 (Terminal 26).	No
H3_01	Terminal 13 Signal		1	0, 1		No
H3_02	Terminal 13 Gain		0.10%	0.0 - 1000.0		Yes
H3_03	Terminal 13 Bias		0.10%	-100.0 to +100.0		Yes
H3_04	Terminal 16 Signal		1	0.1		No
H3_05	Terminal 16 Select		1	0x 0 - 1F		No
H3_06	Terminal 16 Gain		0.10%	0.0 - 1000.0		Yes
H3_07	Terminal 16 Bias		0.10%	-100.0 thru +100.0		Yes
H3_08	Terminal 14 Signal	0: 0 to 10 VDC 1: +/- 10 VDC 2: 4-20 mA	1	0 - 2		No
H3_09	Terminal 14 Select		1	0 - 1F		No
H3_10	Terminal 14 Gain		0.10%	0.0 - 1000.0		Yes
H3_11	Terminal 14 Bias		0.10%	-100.0 to +100.0		Yes
H3_12	Filter Avg Time (Constant)		0.01 sec	0.00 - 2.00		No

H4_01	Terminal 21 Select		1	0x 1 - 31	Set to "31" (not used) for DPRAM I/O access to Analog Output 1.	No
H4_02	Terminal 21 Gain		0.01	0.00 - 2.50		Yes
H4_03	Terminal 21 Bias		0.10%	-10.0 to +10.0		Yes
H4_04	Terminal 23 Set		1	0x 1 - 31	Set to "31" (not used) for DPRAM I/O access to Analog Output 2.	No
H4_05	Terminal 23 Gain		0.01	0.00 - 2.50		Yes
H4_06	Terminal 23 Bias		0.10%	-10.0 to +10.0		Yes
H4_07	AD Level Select	0: 0 to 10 VDC 1: +/- 10 VDC	1	0, 1		No
H5_01 thru H5_04	Reserved					
L1_01	Motor Over Load (MOL) Fault Select	0: Disabled 1: Enabled	1	0, 1		
L1_02	Motor Over Load (MOL) Time Constant		0.1 min	0.1 - 5.0	Factory settings differ depending on drive capacity.	No
L2_01	Momentary Power Loss Detection Selection	0: Disabled 1: Enabled 2: CPU power active	1	0 - 2	Factory settings differ depending on drive capacity.	No
L2_02	Momentary Power Loss Ridethru Time		0.1 sec	0.0 - 2.0		No
L2_03	Momentary Power Loss Ridethru Minimum Baseblock Time		0.1 sec	0.0 - 5.0		No
L2_04	Momentary Power Loss VF Ramp Time		0.1 sec	0.0 - 5.0		No
L2_05	Power Under Voltage Detection Level		1V sec	150-210 F(230V ratings) 300 - 420 (460V ratings) 431 - 603 (600V ratings)		No
L2_06	KEB Frequency		0.10%	0.0 - 100.0		No
L3_01	Stall Prevention Acceleration Select	0: Disabled 1: General-purpose 2: Intelligent (See Note)	1	0 - 2	When Vector control is selected (A1_02=2 or 3), value of 2 (intelligent) is not allowed.	No

L3_02	Stall Prevention Acceleration Level		1%	0 - 200		No
L3_03	Stall Prevention CHP (during accel) Level		1%	0 - 100	Factory settings depend on control method.	No
L3_04	Stall Prevention During Decel Select	0: Disabled 1: General-purpose 2: Intelligent (See Note 2) 3: Stall prev W/R	1	0 - 3		No
L3_05	Stall Prevention During Run Select	0: Disabled 1: Decel Time 1 2: Decel Time 2	1	0 - 2		No
L3_06	Stall Prevention During Run Level		1%	30 - 200		No
L4_01	Speed Agree Level		0.1 Hz	0.0 - 400.0		No
L4_02	Speed Agree Width		0.1 Hz	0.0 - 20.0		No
L4_03	Speed Agree Level Band		0.1 Hz	-400.0 thru +400.0		No
L4_04	Speed Agree Width Band		0.1 Hz	0.0 - 20.0		No
L4_05	Reference Loss Select	0: Stop 1: Run at 80% of frequency reference	1	0, 1		No
L5_01	Number of (Auto) Restarts		1 time	0 - 10		No
L5_02	(Auto) Restart Operation Select	0: No fault relay 1: Fault relay active	1	0, 1		No
L6_01	Torq Detection Selection 1	0: Disabled 1: Detected during speed agree, and operation continues after detection. 2: Detected during running, and operation continues after detection. 3: Detected during speed agree and drive faults. 4: Detected during running and drive faults.	1	0 - 4		No
L6_02	Torque Detection Level 1		1%	0 - 300		No
L6_03	Torque Detection Time 1		0.1 sec	0.00 - 10.0		No

L6_04	Torque Detection Selection 2	0: Disabled 1: Detected during speed agree, and operation continues after detection. 2: Detected during running, and operation continues after detection. 3: Detected during speed agree and drive faults. 4: Detected during running and drive faults.	1	0 - 4		No
L6_05	Torque Detect Level 2		1%	0 - 300		No
L6_06	Torque Detection Time 2		0.1 sec	0.00 - 10.0		No
L7_01	Torque Limit Forward		1%	0 - 300		No
L7_02	Torque Limit Reverse		1%	0 - 300		No
L7_03	Forward Regenerative Torque Limit		1%	0 - 300		No
L7_04	Reverse Regenerative Torque Limit		1%	0 - 300		No
L8_01	Dynamic Braking Resistor Protection	0: Not provided 1: Provided	1	0, 1		No
L8_02	OverHeat Pre-alarm protection Level		1 degree Centigrade	50 - 130		No
L8_03	OverHeat Pre-alarm Selection	0: Ramp to stop 1: Coast to stop 2: Fast-stop 3: Alarm only	1	0 - 3		No
L8_04	Reserved					No
L8_05	Input Phase Loss to Select	0: Disabled 1: Enabled	1	0, 1		No
L8_06	Reserved					No
L8_07	Phase Loss Output Select	0: Disabled 1: Enabled	1	0, 1		No
L8_10	Ground fault sel	0: Disabled 1: Enabled	1	0, 1		No
L8_17	Prtct @ L-spd		1	0 - 3		No
L8_19	OL2 chara @ L-spd	0: Disabled 1: Enabled	1	0, 1		No
o1_01	User Monitor Select		1	4 - 33		Yes
o1_02	Power On Monitor	1: Frequency reference 2: Output frequency 3: Output current 4: Selected monitor	1	1 - 4		Yes

o1_03	Display Scaling?		1	1 - 39999	Set to "1" for speed and frequency expressed as a percentage.	No
o1_04	Display Units	0: Hz 1: RPM	1	0, 1		No
o1_05	Address Display	0: Parameter number 1: MODBUS address	1	0, 1		No
o2_01	Local/Remote Key	0: Disabled 1: Enabled	1	0, 1		No
o2_02	Operator Stop Key	0: Disabled 1: Enabled	1	0, 1		No
o2_03	User Defaults	0: Disabled 1: Set default 2: Clear all	1	0 - 2		No
o2_04	Inverter Model Number		1	0 - FF	Parameters Dependent on Capacity. Not initialized. Factory setting differs depending on drive capacity.	No
o2_05	Operator Motor Operated Pot (MOP)	0: Drive accepts frequency command after ENTER key is pressed 1: Drive accepts frequency command immediately.	1	0, 1		No
o2_06	Operator Detection	0: Disabled (operation continues) 1: Enabled (motor coasts to stop and fault is displayed).	1	0, 1		No
o2_07	Elapsed Time Set		1 hour	0 - 65535		No
02_08	Elapsed Time Run	(Elapsed Operating Hour Timer Set) 0: Timer active whenever power is applied to drive. 1: Timer active whenever drive is in "run" mode	1	0, 1		No
02_09	Init Mode Select	0: Japanese Spec	1	0 - 2		No
U1_01	Frequency Reference		(See Note)	10V / Max. output frequency (E1-04)	Display unit differs depending on setting of o1_03.	
U1_02	Output Frequency	Absolute, PU value	(See Note)	10V / Max. output frequency (E1-04)	Display unit differs depending on setting of o1_03.	
U1_03	Output Current					
U1_04	Control Method	0: VF Control 1: VF with PG feedback 2: Open loop vector 3: Flux vector			Configuration determines whether parameter may be viewed.	

U1_05	Motor Speed	Absolute, PU value	0.01 Hz	10V /max. output frequency (E1_04 or E4_01)	Configuration determines whether parameter may be viewed.	
U1_06	Output Voltage		0.1 V	10/230V or 10V/460V or 10V/575V		
U1_07	DC Bus Voltage		0.1 V	10V/400V or 10V/800V or 10V/1150V	Configuration determines whether parameter may be viewed.	
U1_08	Output Power		0.1 V	10V / drive capacity (kW)	Configuration determines whether parameter may be viewed.	
U1_09	Torque Reference	PU value	0.1\$	10V/ (motor rated torque)	Configuration determines whether parameter may be viewed.	
U1_10	Input Terminal Status		NA	NA	Configuration determines whether parameter may be viewed.	
U1_11	Output Terminal Status		NA	NA		
U1_12	Operation Status		NA	NA		
U1_13	Elapsed Time		1 hour	NA	Configuration determines whether parameter may be viewed.	

U1_14	Flash ID (Software No.)		NA	NA	Configuration determines whether parameter may be viewed.
U1_15	Terminal 13 Level		0.10%	10V / 10V	Configuration determines whether parameter may be viewed.
U1_16	Terminal 14 Level		0.10%	10V / 10V or 10V / 20 mA	Configuration determines whether parameter may be viewed.
U1_17	Terminal 16 Level (Input Voltage)		0.10%	10V / 10V	Configuration determines whether parameter may be viewed.
U1_18	Iq Torque Current	PU value	0.10%	10V / motor rated primary current (E2_01)	Configuration determines whether parameter may be viewed.
U1_19	Iq Excite Current	PU value	0.10%	10V/motor rated primary current (E2_01)	Configuration determines whether parameter may be viewed.
U1_20	SFS Output	Absolute value (Output Freq after Soft start)	0.01 Hz	10V / Max. output frequency (E1-04)	Configuration determines whether parameter may be viewed.
U1_21	ASR Input	PU value (Auto. Speed Regulator) Input	0.01%	10V / Max. output frequency (E1-04)	Configuration determines whether parameter may be viewed.
U1_22	ASR Output	PU value (Auto Speed Regulator) Output: Analog monitor output level becomes 10V / max output frequency with VF control.	0.01%	10V / motor rated primary current (E2_01)	Configuration determines whether parameter may be viewed.
U1_23	Speed Deviation Regulator Input	PU value	0.01%	10V / max. output frequency (E1_04)	Configuration determines whether parameter may be viewed.
U1_24	PID Feedback	PU value	0.01%	10V / max. output frequency (E1_04)	Configuration determines whether parameter may be viewed.
U1_25	Reserved				Configuration determines whether parameter may be viewed.

U1_26	Vq Voltage Reference		0.1 V	10V /230V or 10V /460V or 10V /575V	Configuration determines whether parameter may be viewed.
U1_27	Vd Voltage Reference		0.1 V	10V /230V or 10V /460V or 10V /575V	Configuration determines whether parameter may be viewed.
U1_28	CPU ID	Example: 00040			Configuration determines whether parameter may be viewed.
U1_32	ACR(q) output				Configuration determines whether parameter may be viewed.
U1_33	ACR(d) output				Configuration determines whether parameter may be viewed.
U1_34	OPE Detected				Configuration determines whether parameter may be viewed.
U1_36	PID input				Configuration determines whether parameter may be viewed.
U1_37	PID output				Configuration determines whether parameter may be viewed.
U1_38	PID setpoint				Configuration determines whether parameter may be viewed.
U2_01	Current Fault				
U2_02	Last Fault				
U2_03	Frequency Reference	At time of most recent fault	0.01 Hz		
U2_04	Output Frequency	Absolute value at time of most recent fault	0.01 Hz		
U2_05	Output Current	At time of most recent fault	(See Note)		Setting increment is 0.01 A for STAC-/STACW A003 thru A025, B001 thru B011. Increment is .1A for STAC-/STACW A033 thru A300 and B014 thru B605.
U2_06	Motor Speed	Absolute value at time of most recent fault	0.01 Hz		
U2_07	Output Voltage	At time of most recent fault	0.1 V		

U2_08	DC Bus Voltage	At time of most recent fault	1 V			
U2_09	Output Power	At time of most recent fault	0.1 kW			
U2_10	Torque Reference	At time of most recent fault	0.1%			
U2_11	Input Terminal Status	At time of most recent fault.				
U2_12	Output Terminal Status	At time of most recent fault.				
U2_13	Inverter Status	At time of most recent fault.				
U2_14	Elapsed Time	At time of most recent fault. (All Closed)				
U3_01	Last Fault	Most recent fault	1 hour			
U3_02	Fault Message 2	2nd most recent fault				
U3_03	Fault Message 3	3rd most recent fault				
U3_04	Fault Message 4	4th most recent (oldest) fault				
U3_05	Elapsed Time 1	Time of most recent fault				
U3_06	Elapsed Time 2	Time of 2nd most recent fault				
U3_07	Elapsed Time 3	Time of 3rd most recent fault				
U3_08	Elapsed Time 4	Time of 4th most recent (oldest) fault				
HIGH SPEED RESPONSE DATA						
DRIVE RUNNING		1 = drive in run mode.				
ZERO SPEED		1 = motor is above zero speed				
REVERSE RUNNING		1 = motor is spinning in the reverse direction				
RST CMD APPLIED		1 = the reset input is active				
SPEED AGREE		1 = motor speed and speed reference are the same				
INVERTER READY		1 = no faults or alarms				

ALARM PRESENT	1 = an alarm condition is occurring			
FAULT PRESENT	1 = a fault has occurred			
POWER LOSS RIDE THRU	1 = power loss ride thru is active			
LOCAL / REMOTE				
TERM 9,10 OUT	1 = RY1 N.O. contact (TB2-4,5) is closed			
TERM 25 OUT				
TERM 26 OUT				
MOTOR SELECTION				
ZERO SERVO DONE				
TERMINAL 1	1 = terminal 9 input is being pulled high			
TERMINAL 2	1 = terminal 10 input is being pulled high			
TERMINAL 3	1 = terminal 11 input is being pulled high			
TERMINAL 4	1 = terminal 12 input is being pulled high			
TERMINAL 5	1 = terminal 13 input is being pulled high			
TERMINAL 6	1 = terminal 14 input is being pulled high			
TERMINAL 7	1 = terminal 15 input is being pulled high			
TERMINAL 8	1 = terminal 16 input is being pulled high			
PUF blown fuse	1 = open DC link fuse			
UV1 bus undervoltage	1 = DC bus undervoltage			
UV3 MC answerback	1 = MC contactor failure			
SC short circuit				
GF ground fault	1 = ground current fault			
OC overcurrent	1 = excessive output current			
OV overvoltage	1 = DC bus overvoltage			
OH heatsink overtemp	1 = heatsink temp > L8-o2 setting			
OH 1 drive overtemp	1 = Drive overheat			
OL1 motor overload	1 = motor overheat			
OL2 inverter overload	1 = drive overload protection has tripped			

OL3 overtorque 1					
OL4 overtorque 2					
RR brake trans fault	1 = braking transistor failure				
RH brake res overtemp	1 = brake resistor overheated				
OPE number					
EF3	1 = terminal 11 is configured for EF, and the input is active.				
EF4	1 = terminal 12 is configured for EF, and the input is active.				
EF5	1 = terminal 13 is configured for EF, and the input is active.				
EF6	1 = terminal 14 is configured for EF, and the input is active.				
EF7	1 = terminal 15 is configured for EF, and the input is active.				
EF8	1 = terminal 16 is configured for EF, and the input is active.				
OS overspeed	1 = an overspeed has occurred				
DEV speed deviation	1 = a speed deviation has occurred				
PGO PG open	1 = tach bad or not connected				
PF input phase loss	1 = input phase loss				
LF output phase loss	1 = output phase loss				
OPR operator					
EEPROM R/W error					
CE memobus comm error					
BUS					
EF0	1 = an external fault has occurred				
CF out of control					
SVE zero servo error					
CPF					

SPEED FEEDBACK	Scaled absolute value speed feedback from the inverter				
TORQUE REFERENCE	Displays actual torque reference				
SPEED REFERENCE	Displays speed reference				
OUTPUT FREQUENCY	Actual absolute value, PU output frequency from the inverter				
OUTPUT CURRENT	Actual current output from the inverter				
DC BUS VOLTAGE	Actual DC bus voltage from the inverter				
TERM 13	displays the P.U. analog input value between term. 36 - 37				
TERM 14	displays the P.U. analog input value between term. 39 - 40				
TERM 16	displays the P.U. analog input value between term. 42 - 43				
HIGH SPEED COMMAND DATA					
FWD RUN STOP	Set to 1 for run				
REV RUN STOP	Set to 1 for run				
TERM 3 FUNCTION	Determines the function of terminal 11 input				
TERM 4 FUNCTION	Determines the function of terminal 12 input				
TERM 5 FUNCTION	Determines the function of terminal 13 input				
TERM 6 FUNCTION	Determines the function of terminal 14 input				
TERM 7 FUNCTION	Determines the function of terminal 15 input				
TERM 8 FUNCTION	Determines the function of terminal 16 input				
EXTERNAL FAULT	set to 1 to generate an EF0				
FAULT RESET	Set to 1 for reset				
TERMINALS 9,10	Set to 1 to close RY1N.O. contact (TB2-4,5)				
TERMINAL 25		Controls the O.C. output at terminal 19			
TERMINAL 26		Controls the O.C. output at terminal 20			
SPEED COMMAND	Speed reference to the inverter				
TORQUE LIMIT	Torque limit to the inverter				
TORQUE COMP	Torque compensation to the inverter				

ANALOG OUT, TERM 21					
ANALOG OUT, TERM 23					
DRIVE ALARMS					
UV	DC bus undervoltage				
OV	Overvoltage				
OH	Heatsink overtemp				
OH2					
OL3					
OL4	Overtorque detect 2	Output current exceeds L6-02 setting.			
EF	External fault				
BB	base block				
EF3	External fault signal at terminal 3				
EF4	External fault signal at terminal 4				
EF5	External fault signal at terminal 5				
EF6	External fault signal at terminal 6				
EF7	External fault signal at terminal 7				
EF8	External fault signal at terminal 8				
FAN	Drive cooling fan fault				
OS	Motor overspeed				
DEV	Speed deviation				
PGO	PG cable is disconnected				
OPR	Operator disconnected				
CE	Modbus com error				
OL1	Motor overloaded				
OL2	Drive overloaded				
DRIVE CPF FAULTS					

CPF 02	Base block circuit fault					
CPF 03	EEPROM fault					
CPF 04	Internal A/D fault					
CPF 05	External A/D fault					
CPF 06	Option error					
CPF 20	Option A/D error					
CPF 21						
CPF 22						
CPF 23						

Glossary of Terms

function block	One of three Program Control Unit types. A programming language element, typically represented by a graphical block, consisting of inputs, outputs, internal variables, and a set of operations. Function blocks are instantiated and can contain state information from one invocation of an instantiation to the next.
IEC-61131-3	Part 3 of the international standard on programmable controllers, which specifies programming languages, including Relay Ladder Logic (RLL), Structure Text (ST), Sequential Function Charts (SFC), Function Blocks (FB), and Instruction Lists (IL).
Inverter	A device which converts direct current electricity to alternating current electricity.
Torque Reference	TBD

Index

C

Configuration 2, 1–2, 11

I

Initialize 2, 11, 15

Installation 1

inverter 2, 3, 9

O

Operation 2, 11, 14, 24

P

parameters 1–3

Programming 2–3, 11

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