

Variable and Command Reference

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MOTIONLINK version 4.4.3

Ignite CD-Lite V1.0.5



Caution – MOTIONLINK version 4.4.3 only works with Firmware version 1.1.0 and vice versa!

Record of Manual Revisions

ISSUE NO.	DATE	BRIEF DESCRIPTION OF REVISION	FIRMWARE
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VARIABLES/COMMANDS BY FUNCTION

The command and variable descriptions presented here are in alphabetical order. Command and variable descriptions can be differentiated by typeface. Commands are listed in italics while variables are not.

ANALOG INPUT-RELATED

ANDB	ANLPHZ	ISCALE	<i>ANZERO</i>
ANIN1	ANOFF1	VSCALE	
ANIN2	ANOFF2		

CURRENT VARIABLES AND COMMANDS

DIPEAK	FOLDR	IC	MICONT
DICONT	FOLDT	ICONT	MIPEAK
FOLD	FOLDTIME	ILIM	<i>CONFIG</i>
FOLDD	I	IMAX	
FOLDMODE	IA	ISCALE	

DIGITAL I/O

IN	LIMDIS		
----	--------	--	--

DRIVE CONFIGURATION MODES

LIMDIS	OPMODE	RELAYMODE	
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DRIVE ENABLING AND DISABLING

ACTIVE	READY	SWEN	<i>DIS</i>
DRIVEOK	REMOTE	<i>EN</i>	<i>K</i>

DRIVE / MOTOR ERROR FAULT AND STATUS

ACTIVE	DRIVEOK	RELAYMODE	<i>FLTCLR</i>
CWLIM	READY	TRUN	<i>FLTHIST</i>
CCWLIM	RELAY	VER	

DRIVE PARAMETERS

DICONT	DIPEAK	VBUS	PWMFRQ
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FEEDBACK VARIABLES AND COMMANDS

HALLS	MENCRES	MPHASE	PRD
MENCTYPE	MENCOFF	PFB	

MOTOR VARIABLES AND COMMANDS

MBEMFCOMP	MIPEAK	MOTOR	MTANGLP
MENCOFF	MKT	MPHASE	MVANGLF
MENCRES	MLGAINC	MPOLES	MVANGLH
MENCTYPE	MLGAINP	MSPEED	<i>MLIST</i>
MICONT	MLMIN	MTANGLC	ICMD
			THERMTYPE

VELOCITY LOOP COMPENSATION GAINS

KV	KVFR	KVI	ANOUT
COMPFLT	VD	VF	V6STEP

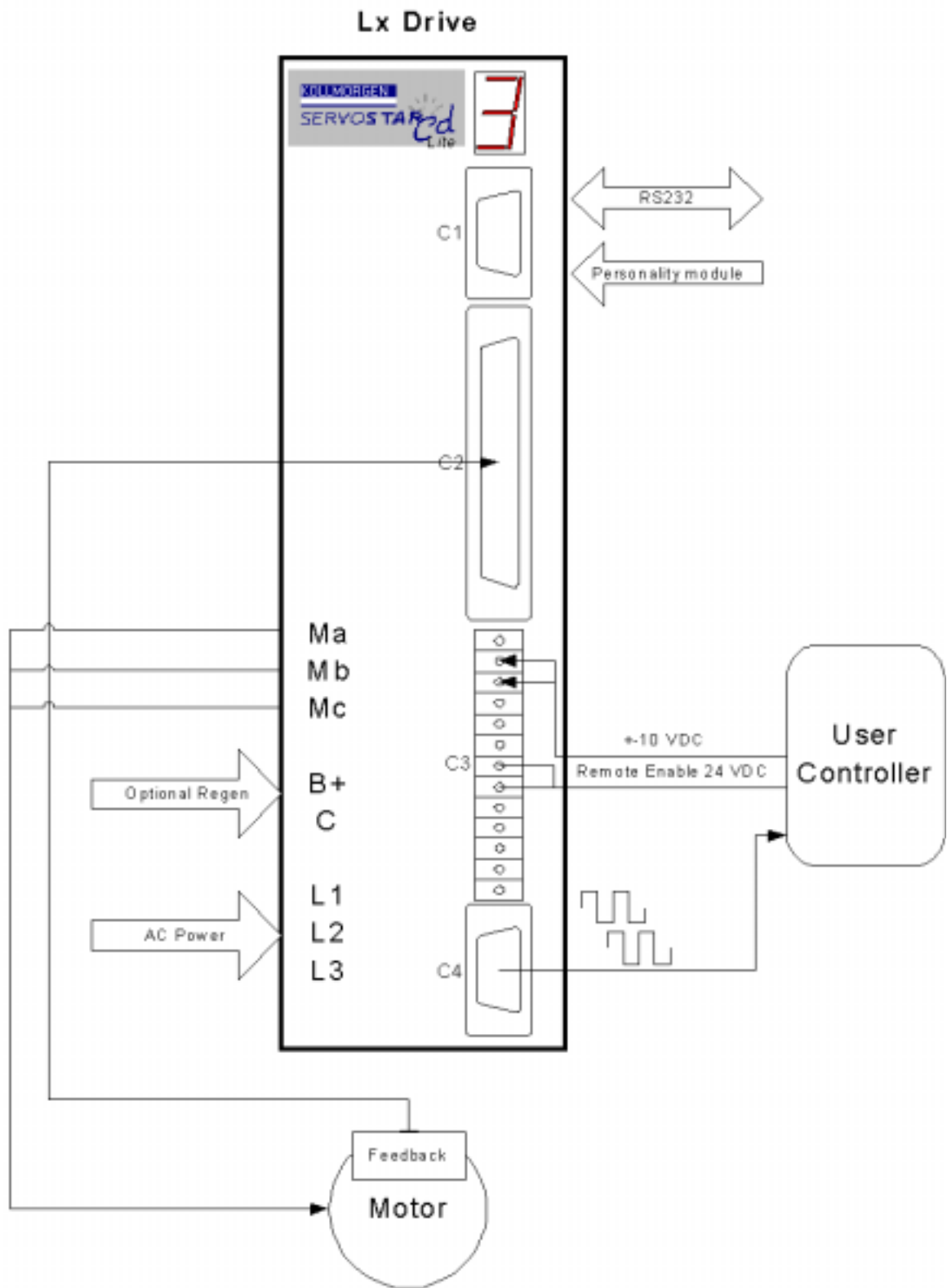
VARIABLE SETTING AND CLEARING

<i>CLREEPROM</i>	<i>LIST</i>	<i>MLIST</i>	<i>SAVE</i>
<i>DUMP</i>	<i>LOAD</i>	<i>RSTVAR</i>	

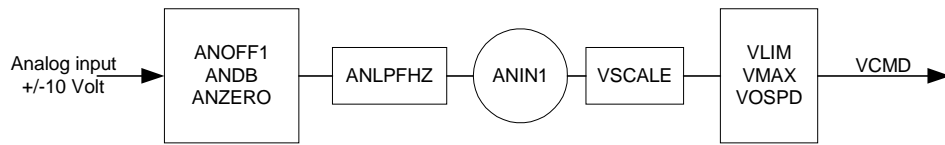
VELOCITY VARIABLES AND COMMANDS

MSPEED	VCMD	VLIM	VOSPD
V	VE	VMAX	VSCALE

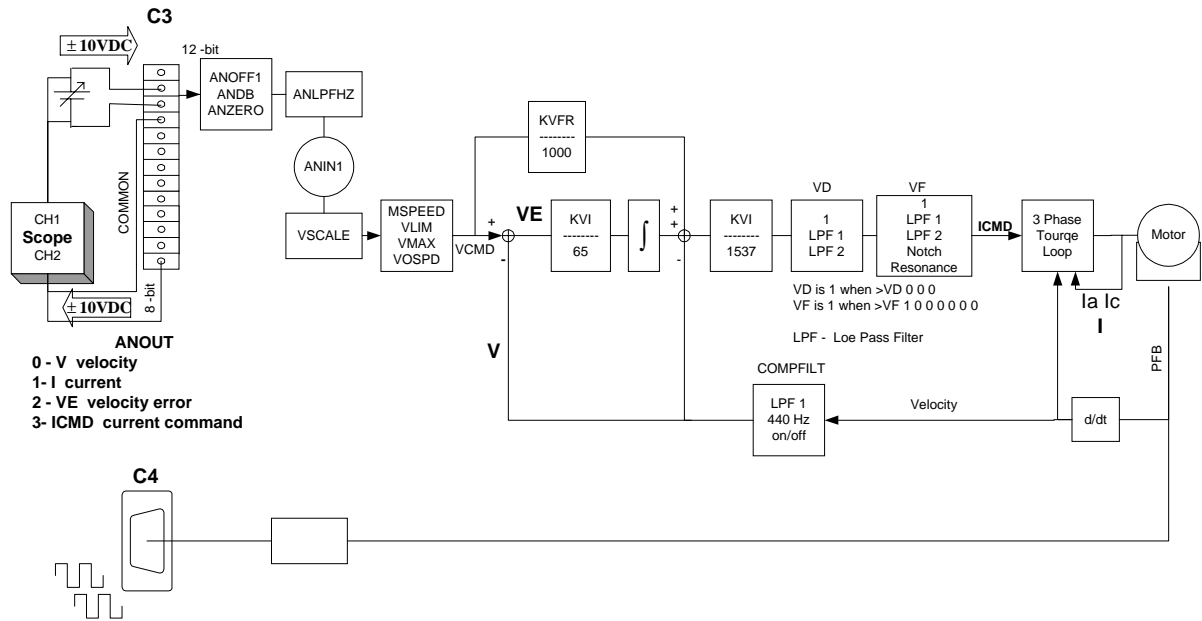
BLOCK DIAGRAMS



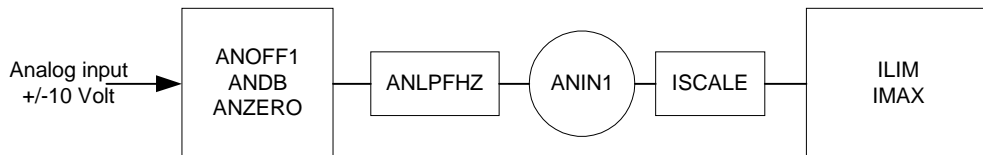
VELOCITY LOOP OPMODE 1



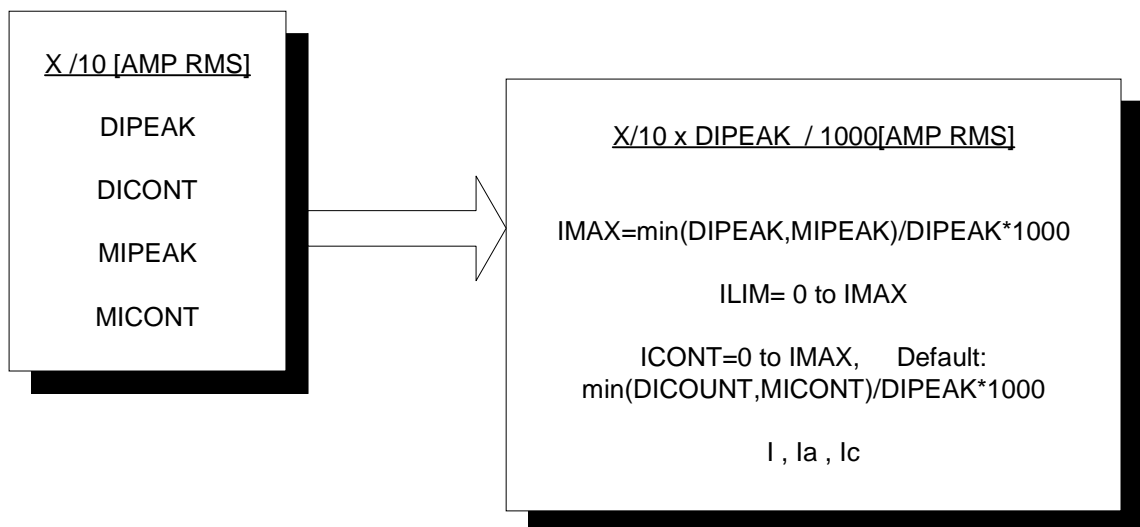
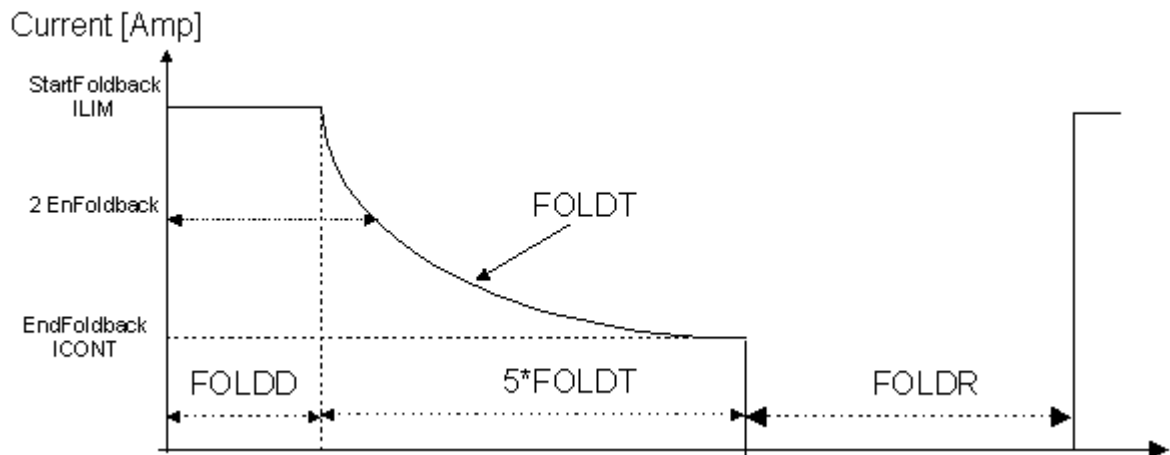
Following is the velocity controller discrete time model for PDFF compensation. The update rate of the controller is 250 μ sec.



TORQUE LOOP OPMODE 3



CURRENT AND FOLDBACK

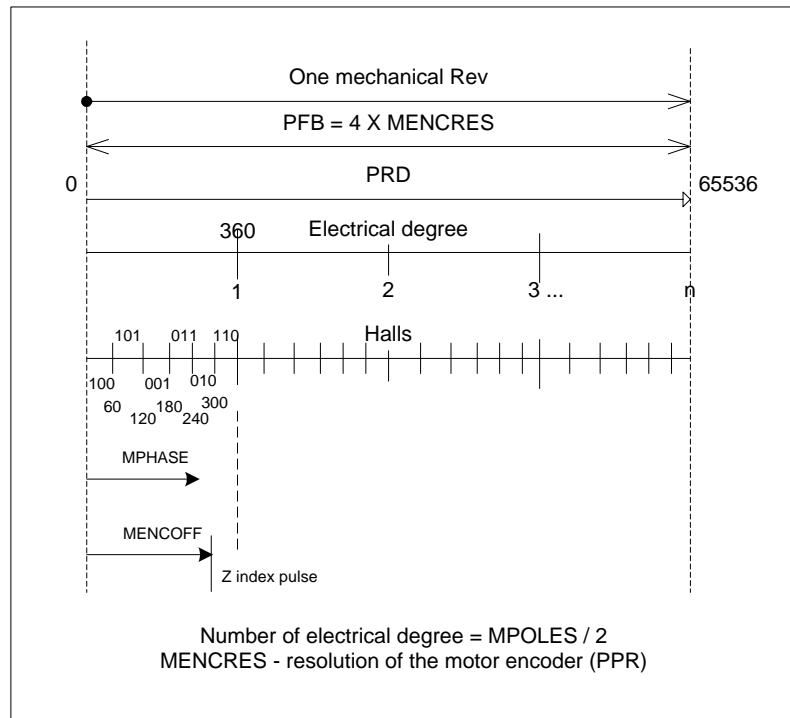


FEEDBACK

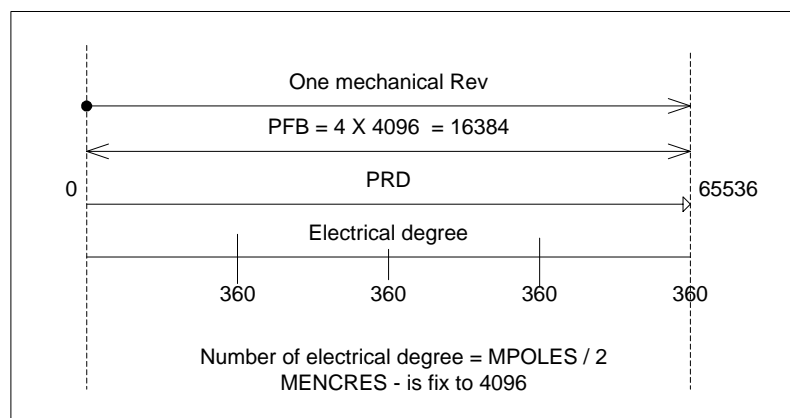
Type	Comments	MENCTYPE
Incremental A/B/Z/Halls		0
Incremental A/B/H		6
Resolver		NA
Halls only w/ sinus commutation	Can be defined from MotionLink	5
Hall only w/ six step commutation	Defined by setting DIP switch 2 to ON	10

Incremental Encoder

Halls HA HB HC where 0 to 60 degree is HA=1 HB=0 and HC=0



Incremental Encoder



Resolver feed back

Variables And Commands

FORMAT

The command and variable descriptions presented here are in alphabetical order. Command and variable descriptions utilize different formats, as described below.

COMMAND

This is the format of a command description.

Firmware Versions:

Command Syntax:

Opmodes:

Drive Status:

Firmware Versions: tells what firmware versions the command is implemented in. To check your drive's firmware version, use the VER command.

Command Syntax: gives the exact syntax of the command. Any optional or required parameters are also listed.

If parameters are used with the command, the units and ranges of those parameters are given.

Opmodes: (1, 3) indicates in which operational modes (opmodes) the command can be used (see the description for the variable OPMODE).

Drive Status: (en, dis, or en/dis) indicates the drive state in which the command can be used (en = enabled; dis= disabled; en/dis = either).

VARIABLE

This is the format that a variable description will take. The variable name font is Arial, 16-pt, bold.

Firmware Versions:

Type:

Range:

Units:

Default:

Opmodes:

Drive Status:

EEPROM:

You can set variable values by typing in the name of the variable followed by a new value for the variable, separated by an equal sign or one or more spaces. Just typing in the name of a variable without a new value causes the SERVOSTAR to output the current value of that variable to the serial port.

Firmware Versions: indicates in what firmware versions the variable is implemented. To check your drive's firmware version, use the VER command.

Type: variable types are: switch variables, switch mode variables, standard variables, or vector variables. Switch variables can be toggled between two different states (0/1, on/off, etc.). Switch mode variables are state variables used to select one of more than two states (for example, opmode is a switch mode variable that selects one of 2 opmodes - 1-3). Standard variables are set to an integer value within a given range. Vector variables are special variables that are used with several parameters. All variables are classified as read-only (R) or read/write (R/W).

Range: defines the range of valid values for the variable.

Units: defines the units of the variable.



*To get the final value of the variable (including units), multiply its value by its units. Example: the units of MICONT are "amperes * 0.1." If MICONT = 200, then its value is 200 * amperes * 0.1 or 20 amperes.*

Default: defines the default value of the variable. If this field is "motor data," then the default value is entered from a motor data file (using MOTIONLINK's Motor Configuration Screen) or a motor data sheet. Most variables are reset to their defaults by using the RSTVAR command.

Opmodes: (1,3) indicates in which operational modes (opmodes) the variable is used (see the description for the variable OPMODE). Most variables can be set in any opmode, but they only have an effect in the opmodes listed here.

Drive Status: (EN, DIS, or EN/DIS) indicates the drive state in which the command can be used (en = enabled; dis = disabled; en/dis = either).

EEPROM: (yes or no) specifies whether or not a variable can be stored in non-volatile memory (EEPROM). If a variable is stored in EEPROM, it is "remembered" by the SERVOSTAR when the drive is powered down and back up. Refer to the SAVE command.

ACTIVE – DRIVE INDICATOR

Syntax: ACTIVE

Description: Displays if the drive is enabled and power is applied to the motor. This flag is the overall readiness indicator of the drive. The values are:
 0 = drive is inactive (DIS)
 1 = drive is active and ready to operate (EN)

Active Flag		
READY (drive ready)	REMOTE (hardware enable)	ACTIVE (power to the motor)
0	X	0 (no)
X	0	0 (no)
1	1	1 (yes)

Firmware version: All

Range: 0, 1

Default: N/A

Drive Status: EN/DIS

Type: Switch(R)

Units: N/A

OpModes: All

EEPROM: No

ANDB – ANALOG DEAD BAND SIGNAL

Syntax: ANDB <expression>

Description: Sets the dead band of the analog input signal. If the absolute value of the analog input signal is less than this value, no analog command signal is generated.

Firmware version: All

Range: 0 to 10,000

Default: 0

Drive Status: EN/DIS

Type: Variable(R/W)

Units: milliVolts

OpModes: All

EEPROM: Yes

ANIN1 – ANALOG INPUT

Syntax: ANIN1

Description: Displays the analog input value after being filtered by ANOFF1 and ANDB.

Firmware version: All

Range: -22,500 to +22,500

Default: N/A

Drive Status: EN/DIS

Type: Variable(R)

Units: milliVolts

OpModes: All

EEPROM: No

ANIN2 – ANALOG INPUT

Syntax: ANIN2

Description: N/A

Firmware version: N/A

Range: N/A

Default: N/A

Drive Status: N/A

Type: N/A

Units: N/A

OpModes: N/A

EEPROM: N/A

ANLPHZ – ANALOG INPUT FILTER

Syntax: ANLPHZ <expression>

Description: Sets a filter rate (corner frequency) for the analog input filter. This is a simple single pole filter, which is always present value 10000 means transparent (unity) filter. The filter rate adjusts automatically as the analog input sampling rate changes for different operational modes.

Firmware version: All

Range: 1 to 10000

Default: 10000

Drive Status: EN/DIS

Type: Variable(R/W)

Units: Hz

OpModes: All

EEPROM: Yes

ANOFF1 – ANALOG OFFSET

Syntax: ANOFF1 <expression>

Description: Sets the analog offset which is added to the analog input command to the drive. This is used to compensate for the analog input signal (ANIN1) offset or drift.

Firmware version: All

Range: -10000 to 10000

Default: 0

Drive Status: EN/DIS

Type: Variable(R/W)

Units: milliVolts

OpModes: All

EEPROM: yes

ANOFF2 – ANALOG OFFSET

Syntax: ANIN2
Description: N/A
Firmware version: N/A **Type:** N/A
Range: N/A **Units:** N/A
Default: N/A

ANOUT – ANALOG OUTPUT

Syntax: ANOUT <expression>
Description: sets the source for the analog output feature at user connector C3 pin 13.
0 - Tachometer (vel. feedback V) scaled identical to VSCALE.
1 - I monitor (equivalent current) scaled identical to ISCALE.
2 - Velocity Error, VE, scaled identical to VSCALE.
3 - Torque Command Output Scaled to ISCALE.
Firmware version: 1.1.0 **Type:** switch mode (R/W)
Range: 0 to 3 **Units:** N/A
Default: 0

ANZERO – ZERO ANALOG OFFSET

Syntax: ANZERO
Description: Causes the drive to zero the analog offset. A sample of the motor analog input command is averaged over 64 samples, and the value of ANOFF1 is set to zero out the analog input command. This command may need to be executed more than once to achieve zero offset, and ANOFF1 will probably be modified.
Firmware version: All
OpModes: All **Drive Status:** EN/DIS

BURNIN – MANUFACTURING TEST

Syntax: BURNIN <expression>
Description: This command is only for manufacturing propose for the burn in test, do not use this command.
Firmware version: **Type:** Variable(R/W)
Range: **Units:** N/A
Default: 0 **OpModes:** All
Drive Status: DIS **EEPROM:** No

CCWLIM – COUNTER CLOCKWISE LIMIT SWITCH

Syntax: CWWLIM <expression>
Description: Displays the state of the external counter clockwise (CCW) limit switch input, Note that when the limit switch is activated it gives zero for safety reason, the LIMDIS variable should be set to zero . The possible values are:
0 = switch closed, CCW limit not reached (IN 1)
1 = switch open, CCW limit reached (IN 0)
Firmware version: All **Type:** Switch (R)
Range: 0, 1 **Units:** N/A
Default: Hardware defined **OpModes:** All
Drive Status: EN/DIS **EEPROM:** No

CLREEPROM – CLEAR EEPROM

Syntax: CLREEPROM
Description: Clears the non-volatile memory (EEPROM) in the drive. The drive nulls the EEPROM and recovers from a NVRAM error and assumes a no-comp state. A complete drive configuration procedure then has to be initiated before resuming drive operation.
Firmware version: All
OpModes: All **Drive Status:** DIS

COMPFLT – COMPENSATION FILTER FOR THE VELOCITY CONTROL LOOP

Syntax: COMPFLT <expression>
Description: Sets or disables the low pass filter of the feedback to the velocity loop see also block diagram.
 0 = switch OFF
 1 = switch ON, low pass filter of 440 Hz

Firmware version: From 0.1.5 or later **Type:** Switch (R/W)
Range: 0, 1 **Units:** N/A
Default: 1 **OpModes:** All
Drive Status: DIS **EEPROM:** Yes

CONFIG – CONFIGURE CURRENT AND VELOCITY CONTROL LOOPS

Syntax: CONFIG
Description: Configures the current and velocity control loops after motor data has been entered. Executing this command tells the drive that the motor data parameters have all been entered and that it is time for the drive to configure its control loops using the motor data.

When certain drive or motor variables are entered, they cause the drive to enter a non-compensated (no-comp) state. The LED display will flash “-1”. In this case, a CONFIG command is required. This also occurs when CLREEPROM is executed.

Firmware version: All
OpModes: All **Drive Status:** DIS

CWLIM – CLOCKWISE LIMIT SWITCH

Syntax: CWLIM
Description: Displays the state of the external clockwise (CW) limit switch input, Note that when the limit switch is activated it gives zero for safety reason, the LIMDIS variable should be set to zero . The possible values are:

0 = switch closed, CW limit not reached (IN1)
 1 = switch open, CW limit reached (IN0)

Firmware version: All **Type:** Switch (R)
Range: 0, 1 **Units:** N/A
Default: Hardware defined **OpModes:** All
Drive Status: EN/DIS **EEPROM:** No

DICONT – AMPLIFIER RATED CURRENT

Syntax: DICONT
Description: Defines the continuous rated current for the drive (sinusoidal RMS). This is a hardware-defined read-only variable that is detected automatically by the drive.

DICONT is 50% of DIPEAK on the 10-Amp unit and 33% of DIPEAK on the 3- or 6-Amp units. In a given application, the drive may be configured to a lower rating than DICONT by setting the value of ICONT to the desired rating.

Firmware version: All **Type:** Variable(R)
Range: 10 to 1100 **Units:** ampere *0.1
Default: Hardware defined **OpModes:** All
Drive Status: EN/DIS **EEPROM:** Yes

DIPEAK – PEAK AMPLIFIER CURRENT

Syntax: DIPEAK
Description: Defines the peak rated current of the drive (sinusoidal RMS). This is a hardware-defined read-only variable that will be set to a value of DICONT * 3 on the 3- or 6- Amp units and to the value of DICONT *2 on the 10-Amp unit. DIPEAK sets the 100% reference for many other current variables.

Firmware version: All **Type:** Variable(R)
Range: 20 to 2200 **Units:** milliamps RMS
Default: Hardware-defined **OpModes:** All
Drive Status: EN/DIS **EEPROM:** Yes

DIS – DISABLE DRIVE**Syntax:** DIS**Description:** Disables the drive. Software servo loops are halted and power is disconnected from the motor. The function is immediate, and the motor may coast.**Firmware version:** All**OpModes:** All**Drive Status:** EN/DIS**DRIVEOK – DRIVE STATUS****Syntax:** DRIVEOK**Description:** Displays the status of the drive faults.
0 = faults exist
1 = no faults exist**Firmware version:** All**Range:** 0, 1**Default:** N/A**Drive Status:** EN/DIS**Type:** Switch(R)**Units:** N/A**OpModes:** All**EEPROM:** No**DUMP – SEND TO TERMINAL****Syntax:** DUMP**Description:** Transmits all variables and their settings to the serial port terminal. This command actually outputs the EEPROM contents of the drive to the serial port, where the variables can then be reviewed or saved to a variable file (*.SSV). and be used as configuration file to duplicate the drive's configuration.**Firmware version:** All**OpModes:** All**Drive Status:** EN/DIS**EN – SOFTWARE ENABLE****Syntax:** EN**Description:** Initiates a software enable of the drive. This command if issued after DIS or K first attempts to reset any existing fault conditions, then sets SWEN to 1. If READY, REMOTE, are equal to one, the drive becomes ACTIVE. Checking the value of ACTIVE indicates whether or not an EN command successfully enabled the drive.**Firmware version:** All**OpModes:** All**Drive Status:** EN/DIS**FLTCLR – CLEAR FAULT HISTORY BUFFER****Syntax:** FLTCLR**Description:** Clears the fault history buffer, which contains up to 10 faults.**Firmware version:** All**OpModes:** All**Drive Status:** EN/DIS**FLTHIST – DISPLAY FAULT HISTORY****Syntax:** FLTHIST**Description:** Causes the drive to transmit the fault history buffer to the serial port. The most recent fault is sent first. Up to 10 fault messages are output by the drive, with each fault message followed by a CR-LF. A time stamp in the format of hours:minutes:seconds is displayed along with each fault, indicating the time at which the fault occurred since power up.**Firmware version:** All**OpModes:** All**Drive Status:** EN/DIS**FOLD – FOLDBACK STATUS****Syntax:** FOLD**Description:** Displays the status of the drive foldback mechanism. When the system current level exceeds ICONT for too long, the drive enters foldback mode. FOLD changes from 0 to 1, and the drive current is limited gradually (in exponential fashion) to the value of ICONT.
0 = drive foldback OFF
1 = drive foldback ON**Firmware version:** All**Range:** 0, 1**Default:** 0**Drive Status:** EN/DIS**Type:** Switch(R)**Units:** N/A**OpModes:** All**EEPROM:** No

FOLDD - FOLDBACK DELAY TIME

Syntax: FOLDD <expression>

Description: Sets the delay time for drive foldback. This is the amount of time that the system current can exceed ICONT before the drive enters the drive foldback state. The time units assume a worst-case scenario where the drive is applying DIPEAK current. A current level of less than DIPEAK can be allowed for a longer time. It is highly recommended to use the default value.

Firmware version: All **Type:** Variable(R/W)
Range: 1 to 32767 **Units:** miliSeconds
Default: 1000 - 2000 depend on Hardware **OpModes:** All
Drive Status: EN/DIS **EEPROM:** Yes

FOLDMODE – FOLDBACK MODE

Syntax: FOLDMODE <expression>

Description: Sets the mode for drive current foldback and motor current foldback operation.
0 = normal foldback from ILIM to ICONT
1 = foldback to ICONT and issue fault after FOLDTIME
2 = issue fault immediately upon detection

Firmware version: All **Type:** Switch(R/W)
Range: 0, 1, 2 **Units:** N/A
Default: 0 **OpModes:** All
Drive Status: EN/DIS **EEPROM:** Yes

FOLDR – FOLDBACK RECOVERY TIME

Syntax: FOLDR <expression>

Description: Sets the recovery time for foldback to the next foldback. See also FOLD, FOLDMODE, and FOLDD.

Firmware version: All **Type:** Variable(R/W)
Range: 1 to 32767 **Units:** miliSeconds
Default: 12000 -17000 depend on hardware **OpModes:** All
Drive Status: EN/DIS **EEPROM:** Yes

FOLDT – FOLDBACK TIME CONSTANT

Syntax: FOLDT <expression>

Description: Sets the time constant for drive foldback. After the drive enters the drive foldback state (FOLD=1), this variable defines how long it will take the drive to reduce the system current level to ICONT.

Firmware version: All **Type:** Variable(R/W)
Range: 1 to 32767 **Units:** miliSeconds
Default: 1450 - 2500 depend on hardware **OpModes:** All
Drive Status: EN/DIS **EEPROM:** Yes

FOLDTIME – SET FOLDBACK DETECTION TIME

Syntax: FOLDTIME <expression>

Description: Sets the time since foldback detection to foldback fault latch for FOLDMODE=1 only.

Firmware version: All **Type:** Variable(R/W)
Range: 1 to 300 **Units:** miliSeconds
Default: 30 **OpModes:** All
Drive Status: EN/DIS **EEPROM:** Yes

HALLS – HALL SENSOR STATUS

Syntax: HALLS

Description: Returns the hall switch values (encoder feedback option only). The switch values are displayed as a three-bit code in the sequence

Till Firmware version 0.1.1 Ha-Hb-Hc.

From Firmware version 0.1.1 Hc-Hb-Ha

Firmware version: All **Type:** Switch(R/W)
Range: 000 – 111 **Units:** bits
Default: Hardware-defined **OpModes:** All
Drive Status: EN/DIS **EEPROM:** No

I – MOTOR CURRENT

Syntax: I
Description: Displays the motor current (absolute value).
Firmware version: All **Type:** Variable (R)
Range: 0 – 2000 **Units:** % of DIPEAK * 0.1
Default: N/A **OpModes:** All
Drive Status: EN/DIS **EEPROM:** No

IA – A-PHASE CURRENT

Syntax: IA
Description: Displays the motor's A phase current.
Firmware version: All **Type:** Variable (R)
Range: -1000 to 1000 **Units:** % of DIPEAK * 0.1
Default: N/A **OpModes:** All
Drive Status: EN/DIS **EEPROM:** No

IC – C-PHASE CURRENT

Syntax: IC
Description: Displays the motor's C phase current.
Firmware version: All **Type:** Variable (R)
Range: -1000 to 1000 **Units:** % of DIPEAK * 0.1
Default: N/A **OpModes:** All
Drive Status: EN/DIS **EEPROM:** No

ICMD – CURRENT COMMAND

Syntax: ICMD
Description: displays the Current (Torque) command to the current controller. This variable is equivalent to the Analog Input (ANIN1) in OPMODE 3, and to the output of the velocity controller in OPMODE 0 or 1.
Firmware version: 0.1.8 **Type:** Variable (R)
Range: -1000 to 1000 **Units:** % of DIPEAK * 0.1
Default: N/A **OpModes:** All
Drive Status: EN/DIS **EEPROM:** No

ICONT – SET SYSTEM CONTINUOUS CURRENT

Syntax: ICONT <expression>
Description: Sets the system continuous current. This variable is used in the foldback algorithm. The default value of this variable is the minimum of DICONT (Drive Continuous Current) and MICONT (Motor Continuous Current) multiply by 1000 and divided by DIPEAK, unless that value exceeds IMAX, in which case ICONT is set equal to IMAX. This variable is reset to its default whenever DICONT or MICONT is changed. You can override the default.
Firmware version: All **Type:** Variable(R/W)
Range: 0 to IMAX **Units:** % of DIPEAK * 0.1
Default: Minimum of DICONT and MICONT **OpModes:** All
Drive Status: EN/DIS **EEPROM:** Yes

ILIM – CURRENT LIMIT

Syntax: ILIM <expression>
Description: Sets the application current limit, Allowing the user to limit the maximum current below the drive's peak current. This variable limits the current command issued by the control loops (in Opmodes 1 and 3). This variable is an independent variable that is not calculated from hardware parameters and is maximum value is IMAX. ILIM is similar to VLIM (which is used in Opmode 1) and can be used to protect delicate load equipment
Firmware version: All **Type:** Variable(R/W)
Range: 0 to IMAX **Units:** % of DIPEAK * 0.1
Default: IMAX **OpModes:** All
Drive Status: EN/DIS **EEPROM:** Yes

IMAX – MAXIMUM SYSTEM CURRENT

Syntax: IMAX
Description: Displays the maximum system current for a drive and motor combination. This variable is actually the minimum of the drive Peak Current (DIPEAK) and the Motor Peak Current (MIPEAK).
Firmware version: All **Type:** Variable(R)
Range: 0 to 1000 **Units:** % of DIPEAK * 0.1
Default: Minimum of DIPEAK & MIPEAK **OpModes:** All
Drive Status: EN/DIS **EEPROM:** No

IN – DIGITAL INPUT STATUS

Syntax: IN
Description: Returns the state of the three digital inputs (IN1, IN2, IN3) in a three-character string. The leftmost bit represents IN1 and the rightmost bit represents IN3.
Firmware version: All **Type:** Switch(R)
Range: 000 – 111 **Units:** bits
Default: Hardware-defined **OpModes:** All
Drive Status: EN/DIS **EEPROM:** No

ISCALE – ANALOG CURRENT SCALE

Syntax: ISCALE <expression>
Description: An analog current scale factor that scales the analog output. The value entered is the motor current per 10 volts of analog input or output. This variable may be either higher or lower than 100%, but the actual analog command will be limited by the application current limit (ILIM).
Firmware version: All **Type:** Variable(R/W)
Range: 100 to 10,000 **Units:** (DIPEAK*0.1)/10V
Default: 833 – 1250 depend on hardware **OpModes:** 3
Drive Status: EN/DIS **EEPROM:** Yes

K – KILL

Syntax: K
Description: This command is the same as the disable command (DIS) and provide a one-key hot-button. The drive is disabled and the motor may coast when this command is issued
Firmware version: All
OpModes: All **Drive Status:** EN/DIS

KV – SET PDFF PROPORTIONAL GAIN

Syntax: KV <expression>
Description: KV sets the proportional gain for the Pseudo Derivative Feedback with Feed-Forward Velocity Control Loop (PDFF loop). This variable is set manually.
Firmware version: All **Type:** Variable(R/W)
Range: 0 to 1000000000 **Units:** N/A
Default: 1000 **OpModes:** 1
Drive Status: EN/DIS **EEPROM:** Yes

KVFR – SET FEED FORWARD

Syntax: KVFR <expression>
Description: KVFR sets the feed-forward to feedback gain ratio for the Pseudo Derivative Feedback with Feed-Forward Velocity Control Loop (PDFF loop). This variable is set manually.
Firmware version: 1 **Type:** Variable(R/W)
Range: 0 to 1,000 **Units:** N/A
Default: 0 **OpModes:** All
Drive Status: EN/DIS **EEPROM:** Yes

KVI – SET INTEGRAL GAIN

Syntax: KVI <expression>
Description: KVI sets the integral gain for the Pseudo Derivative Feedback with Feed-Forward Velocity Control Loop (PDFF loop). This variable is set manually.
Firmware version: All **Type:** Variable(R/W)
Range: 0 to 65,535 **Units:** N/A
Default: 1000 **OpModes:** 1
Drive Status: EN/DIS **EEPROM:** Yes

LIMDIS – ENABLE OR DISABLE END TRAVEL LIMIT SWITCHES

Syntax: LIMDIS <expression>
Description: Enables and disables the End Travel Limit function. 0 = limit switch function enabled
 1 = limit switch function disabled.
Firmware version: All **Type:** Switch(R/W)
Range: 0, 1 **Units:** N/A
Default: 0 **OpModes:** All
Drive Status: EN/DIS **EEPROM:** Yes

LIST – LIST COMMANDS

Syntax: LIST
Description: Dumps a list of valid commands and variables to the serial port. Only the names of variables are transmitted.
Firmware version: All
OpModes: All **Drive Status:** EN/DIS

LOAD – LOAD VARIABLE INTO RAM

Syntax: LOAD
Description: Loads all variables saved in the EEPROM into system RAM. This command is automatically executed on power-up.
Firmware version: All
OpModes: All **Drive Status:** DIS

MBEMFCOMP – BACK EMF COMPENSATION

Syntax: MBEMFCOMP <expression>
Description: Sets a back EMF compensation percentage value. This variable affects the amount of back EMF compensation that is applied to the motor command.
Firmware version: All **Type:** Variable(R/W)
Range: 1 to 130 **Units:** Percent
Default: 50 **OpModes:** All
Drive Status: DIS **EEPROM:** Yes

MENCOFF – ENCODER INDEX POSITION

Syntax: MENCOFF <expression>
Description: Sets the encoder index position. This variable is expressed in units of encoder counts after quadrature, and the range is from 0 to (4 * encoder resolution - 1), or (4 * MENCRES - 1).
Firmware version: All **Type:** Variable(R/W)
Range: 0 to (4*MENCRES) - 1 **Units:** Encoder Counts/Mechanical
 Motor Revolution
Default: N/A **OpModes:** All
Drive Status: DIS **EEPROM:** Yes

MENCRES – ENCODER RESOLUTION

FOR ENCODERS:

Syntax: MENCRES <expression>

Description: Displays the resolution of the motor encoder in number of lines per revolution of the motor. Note that the number of encoder counts per revolution is obtained by multiplying MENCRES by 4. This variable requires a CONFIG command when changed.

Firmware version: All
Range: 100 to 10,000,000
Default: Motor data
Drive Status: DIS

Type: Variable(R/W)
Units: Lines/Motor Rev
OpModes: All
EEPROM: Yes

FOR RESOLVERS

Syntax: MENCRES

Description: Displays the resolution of the motor resolver according to VLIM.

VLIM	MENCRES
$VLIM \leq 1500$	16384
$1500 < VLIM \leq 6100$	4096
$4096 < VLIM \leq 24400$	1024
$24400 < VLIM$	256

Firmware version: All
Range: 256, 1024, 4096, 16384
Default: According to VLIM (see table)
Drive Status: DIS

Type: Variable(R)
Units: N/A
OpModes: All
EEPROM: Yes

FOR HALLS ONLY

Syntax: MENCRES

Description: To change to this mode, you have to set the hardware DIP Switch to
 2=1
 3=0
 4=0

For further information refer to the *CD-Lite User Manual*.

Firmware version: N/A
Range: N/A
Default: Motor data
Drive Status: N/A

Type: N/A
Units: N/A
OpModes: N/A
EEPROM: N/A

MENCTYPE – ENCODER TYPE

Syntax: MENCTYPE <expression>

Description: Sets the motor encoder type. When this variable is changed on an encoder-based system, the drive will enter a no-comp state, requiring a CONFIG command (see CONFIG).

	MENCTYPE	A/Bquad	Marker Pulse	Hall Effects	Firmware Versions
A/B/Z/H	0	Yes	Yes	Yes	All
Hall only sinus commutation	5	No	No	Yes	0.1.7
A/B/H	6	Yes	No	Yes	0.1.4
Hall only six step commutation	10	No	No	Yes	

A/B/Z/Halls

- The Drive according to the hall section start commutates.
- The Drive set the electrical angle after first hall switch.
- The Drive re-set the electrical angle after first Index pulse switch.
- From now on the Drive calculates the electrical angle according to A/B counter.

A/B/Halls

- The Drive according to the hall section start commutates.
- The Drive set the electrical angle after first hall switch.
- From now on the Drive calculates the electrical angle according to A/B counter.

Halls only w/ sinus commutation

According to the halls the drive create the Sin Wave for the commutation, which is up to date every hall switch.

Hall only w/ six step commutation.

Elec Deg	HA HB HC	Current from phase to phase for CW direction	Disconnect Phase
0-60	100	A to B	C
60-120	101	C to B	A
120-180	001	C to A	B
180-240	011	B to A	C
240-300	010	B to C	A
300-360	110	A to C	B

Firmware version: All

Range: 0, 10

Default: 0

Drive Status: DIS

Type: Switch(R/W)

Units: N/A

OpModes: All

EEPROM: Yes

MICONT – CONTINUOUS RATE CURRENT

Syntax: MICONT <expression>

Description: Sets the motor's continuous rated current. When this variable is changed, the drive enters a no-comp state, requiring a CONFIG command.

Firmware version: All

Range: 1 to 1750

Default: Motor data

Drive Status: DIS

Type: Variable(R/W)

Units: Amperes RMS*0.1

OpModes: All

EEPROM: Yes

MIPEAK – PEAK RATED CURRENT

Syntax: MIPEAK <expression>

Description: Sets the motor's peak rated current. When this variable is changed, the drive enters a no-comp state, requiring a CONFIG command.

Firmware version: All

Range: 3 to 3500

Default: Motor data

Drive Status: DIS

Type: Variable(R/W)

Units: Amperes RMS*0.1

OpModes: All

EEPROM: Yes

MKT – MOTOR TORQUE CONSTANT

Syntax:	MKT <expression>	Type: Variable(R/W)
Description:	Sets the motor's torque constant.	Units: 10 ⁻³ Nm/RMS AMP
Firmware version:	All	OpModes: All
Range:	16 to 64506	EEPROM: Yes
Default:	Motor data	
Drive Status:	DIS	

MLGAINC – CURRENT LOOP ADAPTIVE GAIN

Syntax:	MLGAINC <expression>
Description:	Sets the current loop adaptive gain value at continuous motor current (MICONT). MLGAINC and MLGAINP define the adaptive gain algorithm that is based on motor current.

The current-based adaptive gain algorithm is a gain calculation method that increases current loop stability by reducing the current loop gain as the motor current increases. The current-based adaptive gain algorithm is set up by defining the gains at peak motor current (MLGAINP), at continuous motor current (MLGAINC), and at zero motor current. All other gains between zero, continuous, and peak current are interpolated linearly.

This variable is typically be set to the midpoint of MLGAINP. When this variable is changed, the drive enters a no-comp state, requiring a CONFIG command.

Firmware version:	All	Type: Variable(R/W)
Range:	1 to 100	Units: % *10
Default:	8	OpModes: All
Drive Status:	DIS	EEPROM: Yes

MLGAINP – CURRENT LOOP ADAPTIVE GAIN

Syntax:	MLGAINP <expression>
Description:	Sets the current loop adaptive gain value at peak motor current (MIPEAK). MLGAINC and MLGAINP define the adaptive gain algorithm that is based on motor current.

The current-based adaptive gain algorithm is a gain calculation method that increases current loop stability by reducing the current loop gain as the motor current increases. The current-based adaptive gain algorithm is set up by defining the gains at peak motor current (MLGAINP), at continuous motor current (MLGAINC), and at zero motor current. All other gains between zero, continuous, and peak current are interpolated linearly.

This variable is typically set to 4 for motors that do not have a lot of iron in their construction and peak currents within the boundaries of the drive. If the motor is rated for much more than what the drive can deliver, and/or if there is a lot of iron in the motor, saturation has less of an effect and there may be an opportunity to increase this variable. The range for this variable is typically 4 to 7. When this variable is changed, the drive enters a no-comp state, requiring a CONFIG command.

Firmware version:	All	Type: Variable(R/W)
Range:	1 to 100	Units: % *10
Default:	4	OpModes: All
Drive Status:	DIS	EEPROM: Yes

MLIST – DUMP VARIABLES AND VALUES TO SERIAL PORT

Syntax:	MLIST
Description:	Dumps all motor variables and their values to the serial port.
Firmware version:	All
OpModes:	All
Drive Status:	EN/DIS

MLMIN – MINIMUM LINE-TO-LINE INDUCTANCE

Syntax:	MLMIN <expression>	
Description:	Sets the motor's minimum line-to-line inductance. This variable is used for current loop controller design and as an input to the Torque Angle Control algorithms. When this variable is changed, the drive will enter a no-comp state, requiring a CONFIG command.	
Firmware version:	All	Type: Variable(R/W)
Range:	1 to 32767	Units: Millihenries *10 ⁻²
Default:	1 to 32767	OpModes: All
Drive Status:	DIS	EEPROM: Yes

MOTOR – MOTOR NAME

Syntax: MOTOR <expression>
Description: MOTOR is the number of the motor connected to the drive.
Firmware version: All **Type:** Variable(R/W)
Range: 0 to 65536 **Units:** N/A
Default: Motor data **OpModes:** All
Drive Status: DIS/EN **EEPROM:** Yes

MPHASE – FEEDBACK DEVICE PHASE

Syntax: MPHASE <expression>
Description: Allows the feedback device to compensate alignment due to commutation angle.



Changing MPHASE merely shifts the internal commutation angle. It does not change the value of PRD or create a physical change in the position of the motor shaft.

Firmware version: All **Type:** Variable(R/W)
Range: 0 to 359 **Units:** Electrical degrees
Default: 0 **OpModes:** All
Drive Status: DIS **EEPROM:** Yes

MPOLES – NUMBER OF MOTOR POLES

Syntax: MPOLES <expression>
Description: Sets the number of motor poles. This variable is used for commutation control and represents the number of individual magnetic poles of the motor (not pole pairs). When this variable is changed, the drive enters a no-comp state, requiring a CONFIG command.

Firmware version: All **Type:** Switch(R/W)
Range: 2, 4, 6, 8, 10, 12, 14, 16,, 80 **Units:** Poles
Default: Motor data **OpModes:** All
Drive Status: DIS **EEPROM:** Yes

MSPEED – MAXIMUM VELOCITY

Syntax: MSPEED <expression>
Description: Defines the maximum recommended velocity of the motor. When this variable is changed, the drive enters a no-comp state, requiring a CONFIG command.

Firmware version: All **Type:** Variable(R/W)
Range: 10 to 32767 **Default:** Motor data
Units: Rotary: RPM **OpModes:** All
Drive Status: DIS **EEPROM:** Yes

MTANGLC – CONTINUOUS CURRENT TORQUE ANGLE ADVANCE

Syntax: MTANGLC <expression>
Description: Sets the value of the torque-related commutation angle advance at the motor's continuous current rating (MICON). This variable helps increase reluctance torque. For surface magnet motors, a typical value is 5. For motors with embedded magnets, a typical value is 8 to 10.

Firmware version: All **Type:** Variable(R/W)
Range: 0 to 45 **Units:** Electrical degrees
Default: 10 **OpModes:** All
Drive Status: DIS **EEPROM:** Yes

MTANGLP – PEAK CURRENT ANGLE ADVANCE TORQUE

Syntax: MTANGLP <expression>
Description: Sets the value of the torque-related commutation angle advance at the motor's peak current (MIPEAK). This variable helps increase reluctance torque. For surface magnet motors, a typical value is 10. For motors with embedded magnets, a typical value is 23 to 25.

Firmware version: All **Type:** Variable(R/W)
Range: 0 to 45 **Units:** Electrical degrees
Default: 23 **OpModes:** All
Drive Status: DIS **EEPROM:** Yes

MVANGLF – MAXIMUM SPEED ANGLE ADVANCE VELOCITY

Syntax: MVANGLF <expression>

Description: Sets the value of the velocity-related commutation angle advance to be used when the motor is operating at motor max speed (MSPEED). Between MSPEED/2 RPM and MSPEED, the angle advance is linearly interpolated based on MVANGLH and MVANGLF.

When a CLREEPROM command is issued, MVANGLF is set to 10. If a CONFIG command is then issued, MVANGLF is set to a default value based on MSPEED and MPOLES. Once you enter a value for MVANGLF, it keeps that value and is not changed if a CONFIG is executed.

Firmware version: All

Type: Variable(R/W)

Range: 0 to 90

Units: Electrical degrees

Default: 10

OpModes: All

Drive Status: DIS

EEPROM: Yes

MVANGLH – HALF SPEED ANGLE ADVANCE VELOCITY

Syntax: MVANGLH <expression>

Description: Sets the value of the velocity-related commutation angle advance to be used when the motor is operating at half of the motor max speed (MSPEED). Between 0 RPM and half of MSPEED, the angle advance will be linearly interpolated based on MVANGLH.

When a CLREEPROM command is issued, MVANGLH is set to 5. If a CONFIG command is then issued, MVANGLH is set to a default value based on MSPEED and MPOLES. Once you enter a value for MVANGLH, it keeps that value and is not changed if a CONFIG is executed.

Firmware version: All

Type: Variable(R/W)

Range: 0 to 90

Units: Electrical degrees

Default: 5

OpModes: All

Drive Status: DIS

EEPROM: Yes

OPMODE – OPERATIONAL MODE

Syntax: OPMODE <expression>

Description: Sets the operational mode for the drive. The OPMODES are:

1 = Analog Velocity

3 = Analog Torque

Firmware version: All

Type: Switch(R/W)

Range: 1, 3

Units: N/A

Default: 3

OpModes: All

Drive Status: DIS

EEPROM: Yes

PFB – CUMULATIVE POSITION FEEDBACK

Syntax: PFB

Description: Displays the cumulative position feedback from the feedback device. The value rolls over at $\pm 2^{31}$.

Firmware version: 0.13 or later

Type: Variable(R)

Range: -2,147,483,6478 to 2,147,483,6477

Units: Counts

Default: N/A

OpModes: All

Drive Status: DIS/EN

EEPROM: No

PRD – ABSOLUTE POSITION FEEDBACK

Syntax: PRD

Description: Displays the absolute position feedback of the hardware feedback device (for both resolver- and encoder-based systems) related to the commutation, within one mechanical revolution. PRD increments from 0 to 65,535 throughout the course of one mechanical motor shaft revolution (360 degrees). The range of PRD does not change.

Firmware version: 0.13 or later

Type: Variable(R)

Range: 0 to 65,535

Units: Counts

Default: N/A

OpModes: All

Drive Status: DIS/EN

EEPROM: No

PWMFRQ – PWM FREQUENCY TO THE MOTOR

Syntax: PWMFRQ <expression>

Description: Sets the PWM pulse width module frequency.
 For Power stage 3/9 Amp it should be set to 16 kHz
 For Power stage 6/18 Amp it should be set to 8 kHz
 For Power stage 10/20 Amp it should be set to 8 kHz

Firmware version: All **Type:** Variable (R/W)
Range: 8,16 **Units:** N/A
Default: See description **OpModes:** All
Drive Status: DIS **EEPROM:** Yes

READY – SOFTWARE ENABLE STATUS

Syntax: READY

Description: A flag indicating the status of the software enable. READY = 1 means that there are no faults (DRIVEOK = 1) and a communication enable request has been commanded (SWEN = 1). An external Remote Enable (REMOTE = 1) is still required to enable the drive (ACTIVE = 1). The flag values are:
 0 = faults exist or SWEN = 0
 1 = no faults exist and SWEN = 1

Ready Flag		
DRIVEOK (fault status)	SWEN (software enable)	READY (drive ready)
0 (fault exists)	0 (disable)	0
0 (fault exists)	1 (enable)	0
1 (no faults)	0 (disable)	0
1 (no faults)	1 (enable)	1

Firmware version: All **Type:** Switch(R)
Range: 0, 1 **Units:** N/A
Default: N/A **OpModes:** All
Drive Status: DIS/EN **EEPROM:** No

RELAY – FAULT/DRIVE UP RELAY STATUS

Syntax: RELAY

Description: Indicates the status of the Fault / Drive Up Relay.
 0 = relay open
 1 = relay closed

Firmware version: All **Type:** Switch(R)
Range: 0, 1 **Units:** N/A
Default: Hardware defined **OpModes:** All
Drive Status: DIS/EN **EEPROM:** No

RELAYMODE – RELAY MODES

Syntax: RELAYMODE <expression>

Description: sets the operation of the Drive Up / Drive Ready Relay.
 0 = relay will be closed when no faults exist
 1 = relay will be closed when ACTIVE equals 1
 3 = relay is open when no faults are latched and closed when the drive detects a fault.

Firmware version: 0.1.8 **Type:** Switch(R)
Range: 0, 1,3 **Units:** N/A
Default: 0 **OpModes:** All
Drive Status: DIS/EN **EEPROM:** No

REMOTE – EXTERNAL INPUT STATE

Syntax: REMOTE

Description: Indicates the state of the external hardware enable input line. When REMOTE = 1, and the software is ready (READY = 1) the drive is Enabled (ACTIVE = 1).
0 = remote enable input off
1 = remote enable input on

Firmware version: All

Type: Switch(R)

Range: 0, 1

Units: N/A

Default: Hardware defined

OpModes: All

Drive Status: DIS/EN

EEPROM: No

RSTVAR – SET VARIABLES TO FACTORY DEFAULT SETTINGS

Syntax: RSTVAR

Description: Sets all variables, switch variables, and switch mode variables to their factory default settings. These settings are stated within this document under the variable DEFAULT category. The default values of variables loaded from a motor data file cannot be predicted and are denoted “motor data” in the DEFAULT category.

Firmware version: All

Drive Status: DIS

OpModes: All

SAVE – SAVE CONFIGURATION

Syntax: SAVE

Description: Copies all system configuration variables from working RAM to non-volatile memory (EEPROM). This command must be executed in order to retain setting changes during power cycling.

Firmware version: All

Drive Status: DIS/EN

OpModes: All

SWEN – SOFTWARE ENABLE

Syntax: SWEN

Description: A software enable switch that defines the status of the serial port Enable (EN) request. If SWEN is set to 1, and there are no faults (DRIVEOK = 1), READY = 1.
0 = software disabled (DIS or K, command has been issued)
1 = software enabled (EN command has been issued)

Firmware version: All

Type: Switch (R)

Range: 0, 1

Units: N/A

Default: N/A

OpModes: All

Drive Status: DIS/EN

EEPROM: No

TESTLED – TEST LED

Syntax: TESTLED

Description: This command is used to put the drive into a status LED test mode. In this test mode, all of the LED segments are illuminated for approximately half a second and then return to normal.

Firmware version: 0.1.3 or later

Drive Status: DIS

OpModes: All

THERMTYPE – MOTOR TEMPERATURE TYPE

Syntax: THERMTYPE <expression>

Description: Sets the motor temperature sensor type:
0 = PTC (Positive Temperature Coefficient)
1 = NTC (Negative Temperature Coefficient)

Firmware version: 0.1.8

Type: Switch (R)

Range: 0, 1

Units: N/A

Default: N/A

OpModes: All

Drive Status: DIS/EN

EEPROM: Yes

TRUN – RELATIVE INCREMENTAL RUN TIME COUNTER

Syntax: TRUN
Description: Provides a relative incremental run time counter. Error log stamps include the value of this counter at the time of the error. The clock is incremented every 1.5 second. This clock is reset on every power up.
Firmware version: All **Type:** Variable
Range: 0:00:00 to 65536:59:59 **Units:** Hours: Minutes:Second
Default: N/A **OpModes:** All
Drive Status: DIS/EN **EEPROM:** No

UVIGNORE – UNDER VOLTAGE RESPONSE

Syntax: UVIGNORE <expression>
Description: Defines how the drive responds to an under-voltage (UV) fault:
0 = latch fault immediately, display flashing “u”.
1 = UV fault is ignored
Firmware version: All **Type:** Switch(R/W)
Range: 0, 1 **Units:** N/A
Default: 0 **OpModes:** All
Drive Status: DIS/EN **EEPROM:** Yes

V – CALCULATED FEEDBACK VELOCITY

Syntax: V
Description: Displays the velocity from feedback RPM.
Firmware version: All **Type:** Variable(R)
Range: -32768 to 32767 **Default:** N/A
Units: Rotary: RPM **Drive Status:** DIS/EN
OpModes: All **EEPROM:** No

V6STEP – HALL ONLY SIX STEPS

Syntax: V6STEP
Description: determine the type of controller for MENCTYPE 10 (Halls only type six step):
0 = obtain current controller.
1 = obtain voltage controller, this mode can harm your motor, we don't recommended to use this mode at all.
Firmware version: 0.1.6 **Type:** Variable(R/W)
Range: 0,1 **Default:** N/A
Drive Status: DIS/EN
OpModes: All **EEPROM:** No

VBUS – DRIVE BUS VOLTAGE

Syntax: VBUS <expression>
Description: Sets the drive bus voltage. This variable is used for current controller design. VBUS also affects the value of VMAX. When this variable is changed, the drive will enter a no-comp state, requiring a CONFIG command.
Firmware version: All **Type:** Variable(R/W)
Range: 10 to 850 **Units:** Volts
Default: 325 **OpModes:** All
Drive Status: DIS **EEPROM:** Yes

VCMD – VELOCITY COMMAND

Syntax: VCMD <expression>
Description: Displays the Velocity command to the velocity controller. This value is equivalent to the Analog Input (ANIN1) in OPMODE 1.
Firmware version: All **Type:** Variable(R)
Range: -VLIM to +VLIM **Units:** RPM
Default: N/A **OpModes:** 1
Drive Status: DIS **EEPROM:** No

VD – CONTROLLER FILTER

Syntax: VF [d1] [d2] [dshift]

Description: Set the forward path filter of the velocity controller. The vector defined by this variable includes two integers that represent the polynomial coefficients, and one shift parameters, that scales the polynomial. To calculate VD ask for the excel utility from Customer Support.

The filter structure is:

$$(1 + d1/dshift*z^{-1} + d2/dshift*z^{-2})$$

Firmware version: Version 0.1.5 and later

Type: Vector Variable (R/W)

Range: d1, d2 : -32768 to 32767

Units: N/A

dshift : 0 to 32767

OpModes: 1

Default: 0 0 0

Drive Status: DIS/EN

EEPROM: Yes

VE – VELOCITY ERROR

Syntax: VE

Description: Displays the velocity error, which is the difference between the commanded motor velocity (VCMD) and the actual motor velocity (V). This value is an instantaneous reading.

Firmware version: All

Type: Variable(R)

Range: -32,768 to +32,767

Units: RPM

Default: N/A

OpModes: 1

Drive Status: DIS

EEPROM: No

VER – FIRMWARE VERSION

Syntax: VER <parameter>

Description: Indicates the version of the drive firmware in use. This variable also displays other pertinent information such as the drive name, current ratings, TRUN, etc. The VER variable has two optional parameters: requesting VER 1 returns feedback type encoder or resolver, and VER 2 returns the firmware version.

Firmware version: All

Type: String Variable (R)

Range: N/A

Units: N/A

Default: N/A

OpModes: 1

Drive Status: DIS/EN

EEPROM: No

VF – COMMAND FILTER

Syntax: VF [b0] [b1] [b2] [bshift] [a1] [a2] [ashift]

Description: Set a filter that filters the velocity controller output (current command). The vector defined by this variable includes five integers that represent the polynomial coefficients, and two shift parameters, one that scales each polynomial to calculate VF ask for the excel utility from Customer Support.

The filter structure is:

$$(b0 + b1*z^{-1} + b2*z^{-2}) / (1 + a1*z^{-1} + a2*z^{-2})$$

Firmware version: All

EEPROM: Yes

Type: Vector Variable (R/W)

Range: b0, b1, b2,a1 ,a2 : -32768 to 32767

bshift, ashift : 0 to 32767

Units: N/A

Default: 1 0 0 0 0 0

OpModes: 1

Drive Status: DIS/EN

VLIM – APPLICATION VELOCITY LIMIT

Syntax: VLIM <expression>

Description: Sets the application velocity limit, allowing you to limit the motor's peak velocity. VLIM limits the velocity command issued by the control loops (Opmode 1). VLIM is an independent variable that is not calculated from hardware parameters and is not tied to any other variables. VLIM is similar to ILIM and can be used to protect delicate load equipment.

Firmware version: All

EEPROM: Yes

Type: Variable (R/W)

Range: 10 to VMAX

Units: Rotary: RPM

Default: VMAX

OpModes: 1

Drive Status: DIS

VMAX – MAXIMUM VELOCITY

Syntax: VMAX <expression>

Description: Displays the maximum system velocity for a drive and motor combination. This variable is based on drive and motor hardware parameters and is set equal to the MINIMUM of the following values:

- 1.) MSPEED
- 2.) VBUS / MKT * 11703 (MKT = MBEMF * 16.54)
- 3.) 24,000
- 4.) 180,000,000 / MENCRES (encoder-feedback systems only)

24,000 is the highest value VMAX can take. VMAX is used to limit VLIM and VOSPD.

Firmware version: All

EEPROM: No

Type: Variable(R)

Range: 10 to 24,000

Units: RPM

Default: See description

OpModes: 1

Drive Status: DIS/EN

VOSPD – OVERSPEED TRIP LIMIT

Syntax: VOSPD <expression>

Description: Sets the overspeed trip limit for the motor. The drive is disabled with a fault condition when the drive velocity exceeds this limit. The default value of this variable is 20% above the system velocity maximum (VMAX), but can be reduced by the user during regular motor operation for protection.

Firmware version: All

Type: Variable(R/W)

Range: 10 to (1.2 * VMAX)

Units: RPM

Default: VMAX * 1.2

OpModes: All

Drive Status: DIS

EEPROM: Yes

VSCALE – ANALOG VELOCITY SCALE FACTOR

Syntax: VSCALE <expression>

Description: An analog velocity scale factor that scales the analog input ANIN1 for OPMODE 1. The value entered is the motor velocity per 10 volts of analog input. This variable may be either higher or lower than the application velocity limit (VLIM).

Firmware version: All

Type: Variable(R/W)

Range: 10 to 32,767

Units: RPM/10V

Default: VLIM/0.8

OpModes: 1

Drive Status: DIS/EN

EEPROM: Yes

Support

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