

# MP2300 Quick Reference Guide



## Contents

- 2 MP2300 Memory Map
- 3 MP2300 Register Addressing
- 4 LIO Autoconfiguration Register Allocation
- 5 Basic Set of Registers
- 6 Motion Command Code Positioning
- 7 MPE720 Serial/Ethernet Communication
- 8 General Startup Procedure
- 9 Function Block Startup Procedure
- 10 Motion Program Startup Procedure
- 11 Motion Program Work Registers
- 12 Data Trace
- 13 Reference Units
- 14 Terminology Synonyms
- 14 Register Offsets

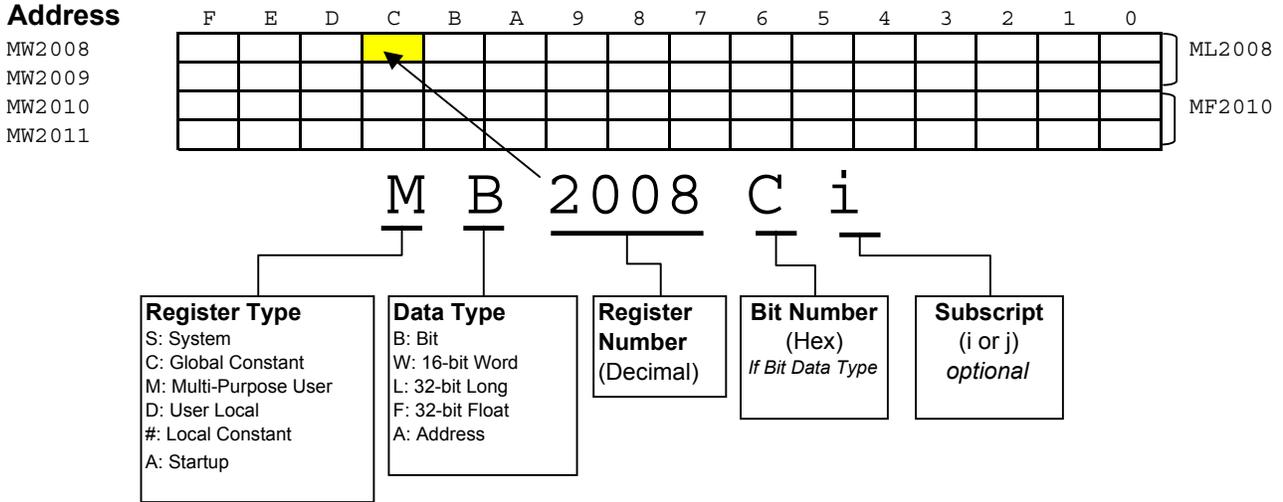
# MP2300 Memory Map

5.5 MB Stores ladder drawings, Local registers and special tables

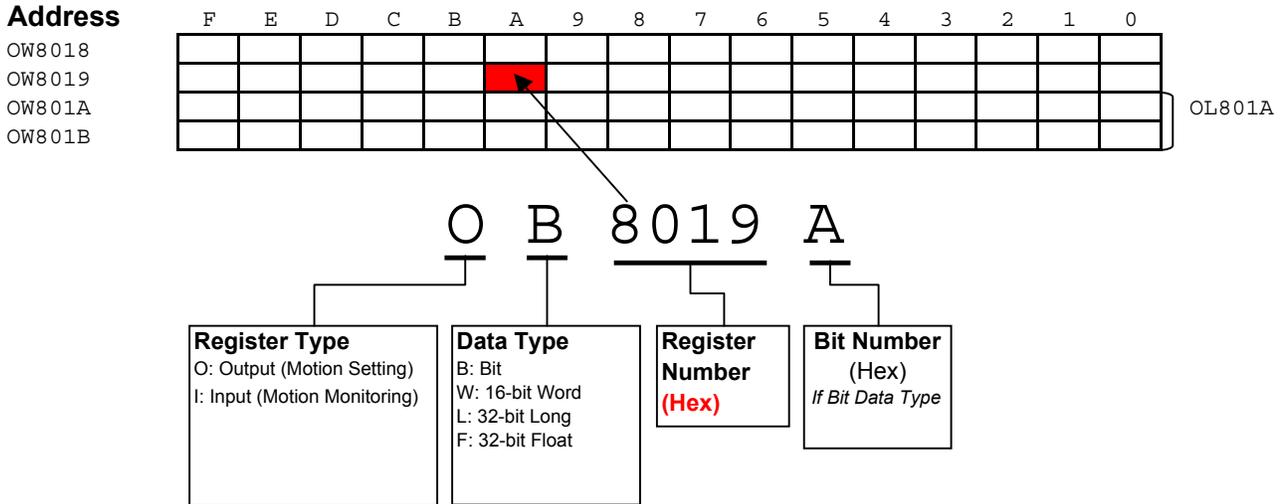
Register Memory (Battery Backup)	<b>S (Global) SW0000-1023</b> System information and status (read only) <i>Example: Flicker relays, Calendar, Scan time setting, error codes, ect.</i>	<b>C (Global)</b> Constant, Read only registers. <i>Data that end user can change in MPE720 without needing to access the drawings.</i>	<b>M (Global) (MW00000-65535)</b> General Multi-Purpose read/write registers <b>User Free: MW00000-29999</b> Convention: <i>Axis#1:MW1000-1999, Axis#2:MW2000-2999</i> <b>*Function Block RDA: MW30000-65535</b> <i>Axis#1:MW30100. Offset=200 per axis</i> <i>Master-Slave: MW56000. Offset=50 per M-S Pair</i> Reference: RDA Spreadsheet * If using motion function blocks.	D E C I M A L
	<b>Fixed Parameters</b> (for each axis) Written to in Module Configuration Define axis units, motor specs. Cannot be written by ladder Changes usually require power cycle	<b>Example:</b> <i>Mechanical system specifications</i> (pulley ratios, encoder counts per load rev)  <b>Reference:</b>		
Register Memory (Battery Backup)	<b>I (Input) IW0000-FFFF</b> general purpose & motion data (Read only by application program) <b>Physical Inputs: IW0000-7FFF</b> Convention: IW0410+ for Local I/O modules IW0010+ for M-LINK I/O modules	<b>O (Output) OW0000-FFFF</b> general purpose & motion data (Read/Write by application program) <b>Physical Outputs: OW0000-7FFF</b> Convention: OW0410+ for Local I/O Modules OW0010+ for M-LINK I/O modules		H E X A D E C I M A L
	<b>Axis (Motion) Input: IW8000-807F</b> (Module#1, Axis#1) "motion monitoring" Offset 80h per axis 800h per module <b>Example:</b> IB8000Q = controller ready Reference: Basic Module User Man 7.2.3	<b>Axis (Motion) Output: OW8000-807F</b> (Module#1, Axis#1) "motion setting" Offset 80h per axis 800h per module <b>Example:</b> OB8000Q = turn servo on Reference: Basic Module User Man 7.2.2		
Program Memory (Overwritten from FLASH at power up)	<b>D (Local Registers)*</b> Used as general purpose read/write in the defined Drawing only.			D E C I M A L
	Suggested Bits: DW00000-00008 (DB000000~DB00008F) Convention: One-Shot DW00009 (DB000090~DB00009F) Word Operations: DW00010-00025 (16-bit integers) Accumulators: DW00026 (16-bit Integer accumulator) DW00027 (16-bit Logic [Hexadecimal] Accumulator) DL00028 (32-bit Long Accumulator) DF00030 (32-bit Floating point Accumulator) Long & Float DW00032-00098* (32-bit Integers, 32-bit Floating Point) F.B. Work Register: DW00100-00320* (Bits, integers, floats as defined in Function Block)			
	*Default is 32 D-registers per drawing. R-click drawing in File Manager - increase to 320 when using Function Blocks. Reference:			
<b># ("Sharps") #W00000-16383</b> Local Constants. General purpose, read-only by the specified Drawing they are defined in.	Module Configuration Each hardware module on the rack has several configuration files. This data is stored in program memory. Set up via a table in the "properties" dialog box for each drawing. Rarely Used New project requires setting Module Configuration first. Select from File Manager under Definition Folder"			
<b>Drawings: H, L, A, I</b>				
Program Memory (Overwritten from FLASH at power up)	H (High Scan) Use for all code that runs motion related functions L (Low Scan) Use for code that runs HMI, or user operated switches, lights, etc A (Startup) Use for drawings that should automatically run once at controller power up. I (Interrupt) Use to run a special interrupt routine after receiving a local input defined as a dedicated "Interrupt."			

# MP2300 Register Addressing

All registers except Input and Output : S, C, M, D, #, A



Input and Output Registers



## LIO-01 / LIO-02

### Register Allocation after Automatic Self-Configuration

Ref. Basic Module User's Manual (SIEPC88070003B) Section 6.5.3

	LIO-0x #1	LIO-0x#2		LIO-0x #1	LIO-0x#2
<b>Digital Inputs</b> (As 16-bit word)	IW0410	IW0440	<b>Digital Outputs</b> (As 16-bit Word)	OW0411	OW0441
Input 0	IB04100	IB04400	Output 0	OB04110	OB04410
Input 1	IB04101	IB04401	Output 1	OB04111	OB04411
Input 2	IB04102	IB04402	Output 2	OB04112	OB04412
Input 3	IB04103	IB04403	Output 3	OB04113	OB04413
Input 4	IB04104	IB04404	Output 4	OB04114	OB04414
Input 5	IB04105	IB04405	Output 5	OB04115	OB04415
Input 6	IB04106	IB04406	Output 6	OB04116	OB04416
Input 7	IB04107	IB04407	Output 7	OB04117	OB04417
Input 8	IB04108	IB04408	Output 8	OB04118	OB04418
Input 9	IB04109	IB04409	Output 9	OB04119	OB04419
Input 10	IB0410A	IB0440A	Output 10	OB0411A	OB0441A
Input 11	IB0410B	IB0440B	Output 11	OB0411B	OB0441B
Input 12	IB0410C	IB0440C	Output 12	OB0411C	OB0441C
Input 13	IB0410D	IB0440D	Output 13	OB0411D	OB0441D
Input 14	IB0410E	IB0440E	Output 14	OB0411E	OB0441E
Input 15	IB0410F	IB0440F	Output 15	OB0411F	OB0441F

<b>Counter</b>	IW0420 / OW0420
----------------	-----------------

NOTE: There can be up to 2 LIO-0x modules in an MP2300 system.  
The first module to be auto-configured is the left-most module.

## Basic Set of Registers for Register-Based Programming

Assume Module(Circuit) #1, Axis #1. Add 800h per circuit, 80h per axis.

### Motion Setting Registers (OWxxxx)

Name	Word	Bit	[Unit] / Note	Reference
Servo On	OB8000	0		
Alarm Clear	OB8000	F		
Speed ("Feed" Speed)	OL8010		[10 <sup>3</sup> R.U./minute (by default)] Select Speed Units in OW8003.0-3	
Motion Command Code	OW8008		1=Position, 3=Home, 7=Jog, 8=Step	
Position Reference	OL801C		[R.U.] Default R.U. is encoder count	
Abs/Inc Position Mode	OB8009	5	1=Abs, 0=Inc (default)	
Step Distance	OL8004		[R.U.] Default R.U. is encoder count	
Direction (Step,Jog)	OB8009	2	0=Fwd, 1=Rev	
Acceleration	OL8036		[ms to rated speed (FP34)] Select Acceleration Units in OW8003.4-7	
Deceleration	OL8038		[ms to rated speed (FP34)] Select Deceleration Units in OW8003.4-7	

### Motion Monitoring Registers (IWxxxx)

Name	Word	Bit	[Unit] / Note	Reference
Servo Alarm	IL8004		=0 when no alarm. Each bit represents different alarm	
Servo Warning	IL8002		=0 when no warning Each bit represents different warning	
Mtn Cmd Code confirm	IW8008			
Main Power On	IB802C	4		
Servo Ready	IB8000	3		
Servo On Confirm	IB8000	1		
	IB802C	3		
Feedback Position	IL8016		[counts or Reference Units]	
Feedback Speed	IL8040			
Positioning Complete	IB800C	1		

#### Terminology used on this page

"R.U.": Minimum increment of motion. By default 1 R.U. = 1 Count. Used fixed parameters to change.

"Count": post-quadrature encoder count

"Pulse": pre-quadrature encoder pulse

## Motion Command Code

### Indexing Example

Move from position 5000 to position 8000, assuming the following for module (circuit) #1, Axis #1

ILC008=5000      Current position is 5000  
 ILC022=0        No alarms  
 IBC0013=1       Servo is ON

Solution using <b>STEP</b>		
	OL8044=3000	Step Distance 3000
1	OB80092=0	Direction Forward
	OL8010>=0	Set Feed Speed
2	OW8008=8	MtnCmdCd starts motion

Solution using <b>POSITION (INCRemental)</b>		
	OL801C=0	Initial position 0
1	OB80095=1	Incremental Positioning Mode
	OL8010>=0	Set Feed Speed
2	OW8008=1	MtnCmdCd defines initial position
3	OLC012=3000	Position reference incremented starts motion

Solution using <b>POSITION (ABSolute)</b>		
	OB80095=0	Absolute Positioning Mode
1	OL8010>=0	Set Feed Speed
	OL801C=8000	Position Reference to Absolute position
2	OW8008=1	MtnCmdCd starts Motion

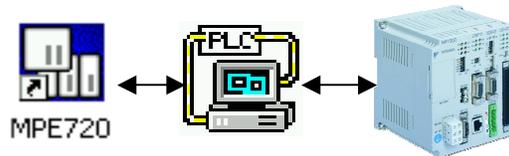
## Serial & Ethernet Connection Procedure (To MPE720)

### Serial Connection

Instruction	Step	Detail
Define the PC's Serial port as a valid way to communicate via MPE720 	1	Connect serial cable from MP2300 port 1 to PC's COM port.
	2	Open Communication manager from system tray
	3	Double click a "logical port number", choose "serial" and click "Detail"
	4	Choose desired "physical port" number that the serial cable is connected to on the PC.
	5	Save and close communication manager
	6	Restart MPE720

### Ethernet Connection

MW/MPE720 communicates to the MP2300's 218IF-01 Ethernet module through the Communication Manager program. All 3 must be configured to log on online over Ethernet.



Be sure the 218-IF TEST and INIT dipswitches are both off (left)

Instruction	Step	Detail
Give the 218IF module an IP address 	1	Logged On, Online via serial port (CP-217)
	2	From file manager, under Definition folder, open Module Configuration
	3	Highlight the column of 218IF-01 slot
	4	In the Module Details section, double-click slot 2 (or R-click - Open Slot)
	5	Enter the IP address for the MP2300 and save. (The table at the bottom of the screen is for other Ethernet devices controlled by the MP2300).
	6	Save configuration, close window, and save and save to flash 
	7	Cycle unit power so that IP address is updated. (be sure all dipswitches are off on both the base unit and the 218IF-01 to avoid overwriting the flash save upon power up)
Define the PC's Ethernet port as a valid way to communicate via MP2300 	1	Open Communication Manager (from windows system tray, near clock)
	2	Double click a blank logical port to open the settings
	3	Choose CP-218, click detail
	4	Select the IP address of the PC.
	5	Turn "Default" Off
	6	Click "OK" twice, save, and close communication manager
	7	Close MW/MPE720, then re-open so that the data is refreshed
Tell MW/MPE720 to connect via Ethernet 	1	Log Off
	2	R-click controller folder, choose properties
	3	Under Network tab, choose port number with CP-218 that you just made in Communication Manager
	4	Type the IP address of the MP2300 as defined in Module Configuration
	6	Log On, Online

#### NOTES:

It is assumed that a valid IP address has been acquired from the network administrator.

To connect directly, use a crossover cable and configure your PC to use a static IP address.

As noted on the 218IF module, the network must be 10mbps, or switchable from 100mbps to 10mbps.

If a 218IF error does not go away after power is cycled, turn on the 218IF INIT dipswitch and cycle power.

## MP2300 Startup Procedure

All equipment must be properly wired and installed.

Step	Instruction	Detail
1	Power OFF	Prepare for first Power ON
2	Set M-LINK address	MP2300 base unit is node 0, so set rotary switch 1-F
3	Set CONFIG and INIT dipswitches (right)	Prepare to erase all RAM (not FLASH) and self-configure hardware
4	Power ON	Wait for "All Green" lights on Servopacks and Controller. <i>Takes about 15sec.</i>
5	Set all dipswitches OFF (left)	The configuration is now temporarily stored in program RAM and should not be self-configured again at next power up.
6	Start MotionWorks MPE720	Connect Serial Cable JEPMC-W5311-03B
7	R-Click to create new Group folder, Order subfolder, and Controller subfolder	Type any name 8 characters or less, no spaces. Choose "Controller Type" as MP2300
8	R-Click Controller folder and select "Online"	Changes will be made to files on the computer as well as on the controller, instead of just the computer.
9	Double-click Controller folder to Log On	The default User Name and Password are both USER-A
10*	Save to flash 	When the window pops up, click the leftmost button (Save/Compare) and accept other defaults. Close window when complete. 
11*	Save controller configuration to hard disk	R-Click controller folder, Transfer - All Files - From Controller to MPE720. <i>Uncheck "Registers" or transfer will take over 7 minutes.*</i>

*\*These steps can be skipped because they will be completed when (1) Ethernet (rather than serial) will be used to logon online. (2) Function Blocks will be used.*

## SERVOPACK Default Set Procedure

*(Optional Procedure) When servopack is not brand new, use this procedure to restore default parameter settings*

Step	Instruction	Detail
1	Log On ONLINE	R-Click Controller folder, Log OFF. R-Click controller folder, check "online". Double-click Controller folder to log on. The default User Name and Password are both USER-A
2	Open Servopack Module Configuration	From file manager, under Definition folder, open Module Configuration. Engineering Manager application opens. Highlight Controller Slot 00 (MP2300). In the Module Details section, double-click slot 3 (or R-click - Open Slot). In the SVB Definition window, Select SERVOPACK tab
3	Save defaults for each axis	Choose the Axis number from the pull-down list (top left) Under Edit menu, choose Default Set. Click OK and Save Repeat for each axis as necessary Cycle Servopack Power

## Symbol Import Procedure

Step	Instruction	Detail
1	Log On (Online or Offline)	Double-click Controller folder to log on. The default User Name and Password are both USER-A
2	Close everything except File Manager	Close Ladder Editor, Engineering Manager, etc
3	Open Symbol Manager	From File Manager, under Database folder, open Symbol Manager. Symbol Manager Application opens.
4	Open Symbol List	Under View menu, be sure Data Tree is checked. Expand Data Tree to open Symbol List and double-click All Register.
5	Import Symbols	Under File menu, choose Import. Locate desired *.CSV symbol file (such as MotionImport.csv) and open.
6	Save Symbols	Use the SAVE icon, CTRL-S, or File-Save. <i>It may take a few seconds for saving to complete, depending on the number of symbols in the project and the speed of the computer.</i>

*Repeat process for additional symbol list \*.CSV files*

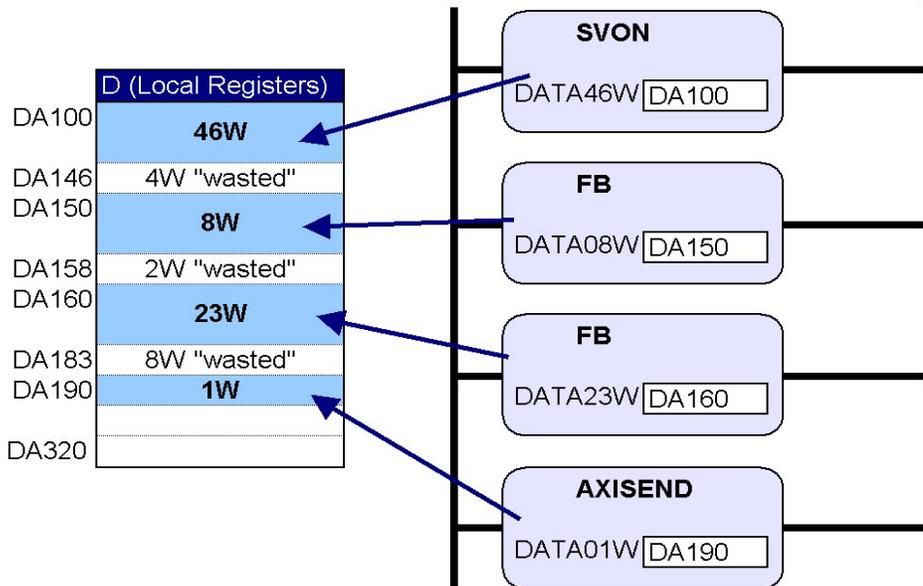
# Function Block Startup Procedure

- First complete the MP2300 Startup Procedure
- There should be a new controller folder

Step	Instruction	Detail
1	Acquire project file	FB040823.MAL or equivalent. Download to C:\ or any <b>directory without spaces.</b>
2	Log ON (online)	R-Click Controller folder, Log OFF. R-Click controller folder, check "online". Double-click Controller folder to log on. The default User Name and Password are both USER-A
3	Extract MAL file to controller files on hard drive*	R-click Controller folder, Transfer, Selected Files, From Another Drive to MPE720. Find *.MAL file. *Check the FUNC box. Then click "transfer" button. <i>Takes about 30 seconds.</i> Close window when complete.
4	Transfer Function blocks to Controller*	R-Click controller folder, Transfer, Selected Files, From MPE720 to Controller. *Check the FUNC box. Then click "transfer" button. <i>Transfer takes almost 4 minutes with serial connection.</i> Close window when complete.
5	Save to Flash	Click the Black Diskette Icon. When the window pops up, click the leftmost button (Compar/save) and accept other defaults. Close window when complete.
6	Save to Hard Disk	R-Click controller, Transfer - All files - From Controller to MPE720. <i>Uncheck registers or it will take over 7 minutes.*</i>
7	Cycle Power	Cycle power is needed for initialization drawings (A drawings) to run

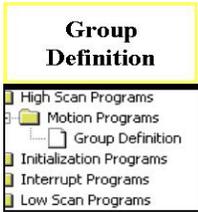
\* To start a totally blank Function Block project, only check FUNC box and all detail. To start with the pre-made Function Block template, check both DWG and FUNC and under each detail select "all".

## Function Block Work Register Addressing



## Motion Program Startup Procedure

First complete the MP2300 Commissioning Procedure  
There should be a new controller folder



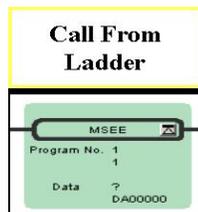
### Group Definition (axes used in motion program)

Step	Instruction	Detail
1	Log on Online	R-Click Controller folder and select Log Off. R-click again and check "online". Double-click controller folder to log on
2	Open Group Definition	In File Manager-> Programs -> High Scan Programs -> Motion Programs -> DoubleClick "Group Definition"
3	Enter & Save a Group Name	Under the "Group List" Tab. When saved a new "Group01" tab will appear.
4	Enter the number of axes that will be used in the Motion Program	Under the "Group01" Tab, in the "Axis" area. 
5	Define Module Number, Axis Number, and Axis Name	Under "Group01" Tab, in the "Axis Definition" area. In the "Physical" row, 01.01 means motion module 1, axis 1. Usually the default is fine. In the "Logical" row, enter a text name for the axis, such as X or Y.
6	Save Group Definition	Save Icon
7	Refresh view	In File Manager, Under View menu, choose Refresh



### Motion Program

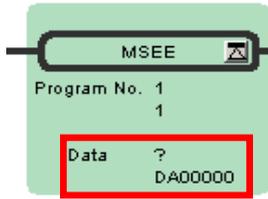
Step	Instruction	Detail
1	Start a new Motion Program	In File Manager-> Programs -> High Scan Programs -> Motion Programs, R-click "Motion Group01" and select "New Program".
2	Things to know before a Motion Program is started	There are no commands for SERVO ON or JOG in the Motion Programming Language. These steps are to be accomplished in Ladder.  First line must be 'MPM001' and last line must be 'END;'. Instructions terminate with semicolon. Comments enclosed in quotes ("comment"). Refer to Motion Programming User Manual (SIEZ-C887-1.3) for extensive details on each command.
3	Write Motion Program	
4	Save Motion Program	Use save icon. Also save to flash.



### Call From Ladder

Step	Instruction	Detail
1	Use the MSEE instruction	MSEE is located under the "Motion" tab in Ladder Editor. It can only be used in an H-drawing. Define a starting address for the four 16-bit work registers in the Data field. Often DA00000 is used defining DW00000 through DW00003, but be sure to use M or D registers that are not used elsewhere.
2	Rules before starting	All axes in the group must have: 1) Servo On, 2) Motion Command Code =0 and not continually updated to 0, 3) No other motion program in same group running, in alarm, or paused, 4) SERVOPACK self-writing function disabled - FixedParameter 1 bit A=1.
3	Start the motion program	Bit 0 of the second word defined in the Data field (DB000010 in the above example) must go high for the motion program to start. See Motion Program Work Registers in this QRG for more information.
4	Rules while running	Ladder code must not manipulate Motion Command Code, unless motion language is not using the Motion Command Code register the time, and proper interlocks are used to flag the ladder code

## Motion Program Work Registers for MSEE instruction



DW00000  
DW00001  
DW00002  
DW00003

F	E	D	C	B	A	9	8	7	6	5	4	3	2	1	0

1st work register  
2nd work register  
3rd work register  
4th work register

1st Work Register	<b>OUTPUT (Motion Program Status)</b>			The "Data" field of the MSEE instruction defines the address for the output and input registers of the motion program.  Ex: DA00000 means that DW00000 through DW00003 will be used.
	DW00000			
	<b>Bit</b>	<b>Name</b>	<b>Description</b>	
	DB000000	Program Running	ON while running	
	DB000001	Program Paused	ON while paused	
	DB000002	program stopped with program stop request	ON when stopped	
	DB000004	Program in Debug (Single Block) Mode	ON during debug via ladder (registers)	
	DB000008	Program Alarm	ON when Motion Program Alarm has occurred	
	DB000009	Stopped at Break Point		
	DB00000B	Program Debugging Mode	ON during Windows (EWS) debug mode	
DB00000D	Start request signal history	ON during request		
DB00000E	Program Duplication Error	ON when another Motion Program in the same group has started while this program is running		
DB00000F	Program Number Limit Error	ON when the number of steps in program exceeded maximum		

2nd Work Register	<b>INPUT (Motion Program Control Signals)</b>		
	DW00001		
	<b>Bit</b>	<b>Name</b>	<b>Description</b>
	DB000010	Program Start Request	ON with rising edge. (if it CAN start it will, otherwise alarm)
	DB000011	Program Pause Request	ON will pause motion blocks
	DB000012	Program Stop Request	ON will stop all group motion, exit the Motion Program, and generate a motion program alarm
	DB000013	Program Debug Mode Select	"Single block mode". ON will force debugging mode
	DB000014	Program Debug Start	"Single Block Mode" start. ON (transition) debug block by block
	DB000015	Program alarm Reset	ON will clear the program alarm (stop program before issuing alarm reset)
	DB000016	Program Continuous Operation Start Request	ON will cause program to ....
	DB000018	Block Skip 1 Operation	ON will cause the program to skip an interpolated motion block if the SKP ss1 instruction was used instead of MVS
	DB000019	Block Skip 2 Operation	ON will cause the program to skip an interpolated motion block if the SKP ss2 instruction was used instead of MVS
	DB00001D	System Work Number Setting	ON Sets system work register number with 4th word of MSEE work register
DB00001E	Interpolation Override Setting	ON activates the interpolation override speed with the 3rd MSEE work register	

3rd Work Register	<b>INTERPOLATION OVERRIDE (Speed)</b>		
	DW00002	The speed set in this register [0.01% of FMX] will override the interpolation speed set in the motion program (F & IFP commands) when bit E of the 2nd word of the MSEE work register is ON	

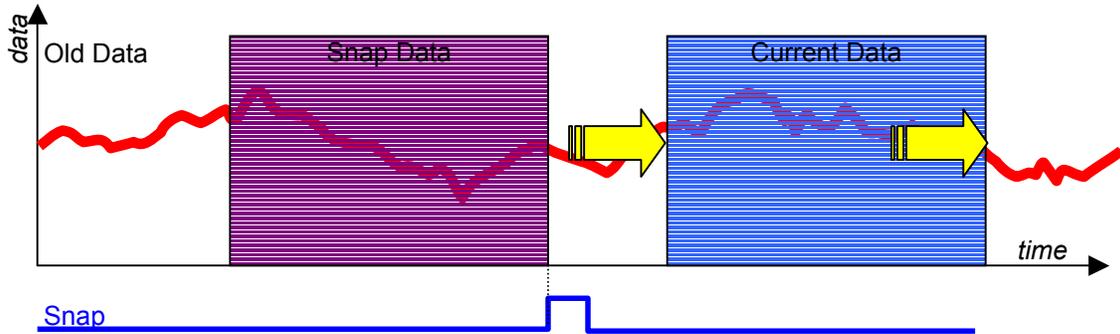
4th Work Register	<b>SYSTEM WORK REGISTER</b>		
	DW00003	The system work register number in this register will be used when bit D of the 2nd word of the MSEE work register is ON. Otherwise the system work register number will be automatically defined by the system and may be different each time.	

## Data Trace

### Quick Method

Add registers to trace	R-Click in ladder, select "register to trace", or type registers manually. To graph speed, create it in ladder using position scan differential.
Save configuration	CTRL-S or from menu. The selected data starts filling the trace buffer (FIFO) immediately
Snap the data	Click the Snap button to display the data currently in the trace buffer. Click Snap AFTER the motion completes. Although the data displayed is fixed, data continues to fill the buffer.

### Illustration



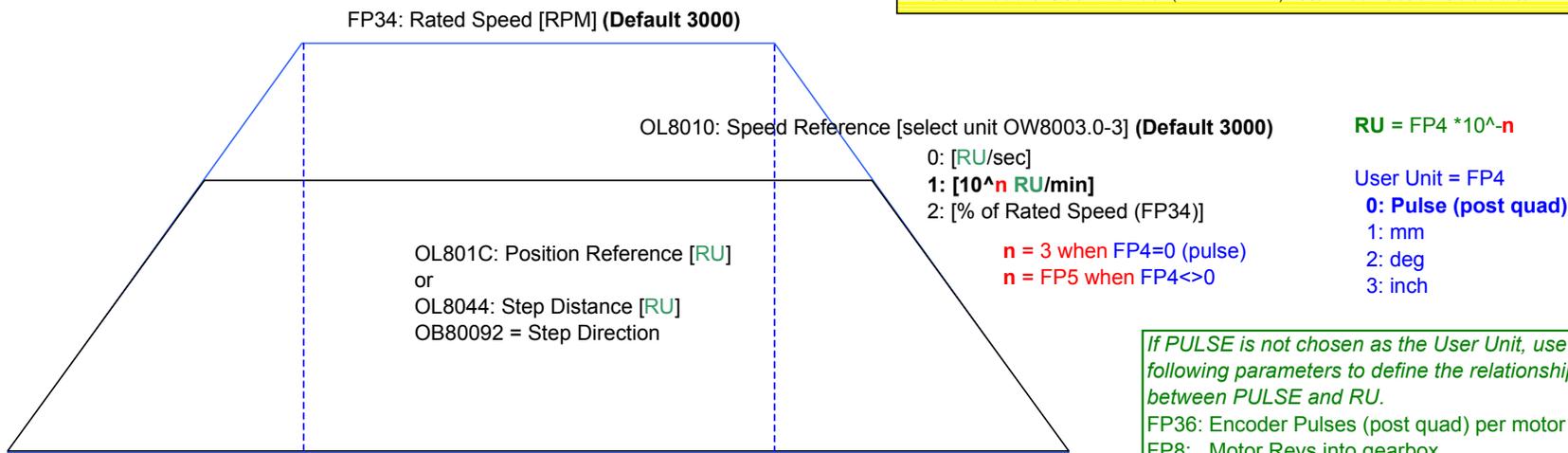
### Notes

- By default, the data saved in the list is updated every H-scan
- The trace buffer is limited to 32,000 16-bit words per "group". Once it is full, old data is pushed out by the new data.
- Four (4) groups of trace data can be collected simultaneously.
- Set the trigger condition to capture an event, such as a fault, or to change sample rate.

## Reference Units (User Units)

**KEY**  
 \* RU = "reference unit" = "command unit" - fraction of the User Unit  
 \* User Unit = base unit such as mm or inch  
 \* FP = Fixed Parameter  
 \* MCC = Motion Command Code (OWxx08)  
 \* Register Values given for Circuit#1, Axis#1  
 \* **Bold type** represents default setting

**NOTES:**  
 \* Register Addresses assume Circuit#1, Axis#1  
 \* Reference Units not compatible with Function Block programming.  
 \* Default Positioning units are [encoder pulses (post quad)]  
 \* Default Speed Reference units are [1000 pulses/min]  
 \* Default Accel/Decel units are [ms to rated motor rpm]  
 \* Default FP1.A=1 automatically transfers accel/decel to servopack  
 \* MPE720 5.31B "Units" in module configuration do not update  
 \* Basic Module User Manual (SIEPC88070003B) lists incorrect unit defaults



*If PULSE is not chosen as the User Unit, use the following parameters to define the relationship between PULSE and RU.*

FP36: Encoder Pulses (post quad) per motor rev  
 FP8: Motor Revs into gearbox  
 FP9: Machine Shaft Revs out of gearbox  
 FP6: RU per Machine Shaft Revolution

**FP1.A=1**  
 Update at power up or when changed

Use MCC=10 to change Acceleration when FP1.A=0

Use MCC=11 to change Deceleration when FP1.A=0

**FP1.A=1**  
 Update at power up or when changed

OL8036: Acceleration [select unit OW8003.4-7] (**Default 0**)  
 0: [RU/sec<sup>2</sup>]  
 1: [**ms to Rated Speed (FP34)**]

OL8038: Deceleration [select unit OW8003.4-7] (**Default 0**)  
 0: [RU/sec<sup>2</sup>]  
 1: [**ms to Rated Speed (FP34)**]

OL8036/OL8038 =0 sets servopack acceleration/deceleration rate to 65535[10,000 RU/sec<sup>2</sup>], independent of unit selected in OW8003.4-7

**For an "Infinite Length" Axis**  
 \* Rotary Table  
 \* Conveyor  
 FP1 bit0: Set axis type to "Infinite Length"  
 FP10: Set R.U. per rotation. This will be 360 degrees (converted to R.U.) for a rotary

## Terminology Synonyms and Definitions

Parameter	Register
Reference Unit (R.U.)	Command Unit
User Unit	Base unit such as mm, inch, degree.
Module #	Circuit #
MotionWorks	MPE720
Motion Command	Motion Command Code
Motion Programming	Motion Language (Structured Text)

## Register Offsets

	Offset	Start	Note
Per Axis	80h	IW8000 / OW8000	
Per Module / Circuit	800h	IW8000 / OW8000	
Function Block per axis	200	MW30100	
Function Block Master-Slave	50	MW56000	