MITSUBISHI MELSERVO DRIVE

Information Sheet for Crimson v2.0

Compatible Devices

- Mitsubishi MELServo

Verified Device

- MR-J2S-10A
- MR-J2S-10CP1 Version 1.1 added April 2008
- MR-J3-40A Version 2.0 added August 2008

Device Options

Network Address Selection:
1) Network Address Type is "STATION" – select a Network Address 0 – 31.

2) Network Address Type is "GROUP" – select a Network Address 10 – 15, representing group A – F.
Note that this selection might not be able to execute a "Read" instruction.

3) Network Address Type is "ALL UNITS" – the Network Address Number is ignored by the driver.
Note that this selection might not be able to execute a "Read" instruction.

Servo Type:
Select the type of communications required for the drive type that will be connected as this device. Note that there are differences in available commands, and ranges of similar selections. If Groups, or All Units need to be selected as Network Address Types, then connecting different types to the same port cannot be recommended.

Communication parameter settings in the drive:
Parameter 15 = Station Number – must match driver settings
Parameter 16 = Baud Rate, RS232/RS485 – must match driver settings
Parameter 53 = OP8 (Function Selection 8) – 0000 (Required)

Accessible Data for MR-J2S-CL Servo Type

Prefix	Description	Information
PARC	Read/Write Parameter - Real	0 – 90
PARCH	Read/Write Parameter - Long	0 – 90
STSC	Read CL Status Display Data	0 – 11 (Hex)
ALN	Read Alarm History Number	0 – 5
ALT	Read Alarm History Time	0 – 5
ALSC	Read CL Status At Alarm Occurrence	0 – 11 (Hex)
ACU	Read/Reset Current Alarm	Write 1 to Reset
EXTC	External I/O Signals	0 – 5
LAT	Current Position Latch Data	
GPR	General Purpose R Register	1 – 4
GPD	General Purpose D Register	1 – 4
GSV	Read/Write Group Setting	
SVR	Read Software Version String	Note 1
ACL	Clear Alarm History	Write 1 to Clear
SCL	Clear Status Display Data	Write 1 to Clear
OMS	Operation Mode Selection	Send Data = 0 - 4
TOM	Write Test Operation Data Item	Note 9
EIS	External Input Enable/Disable	1 -> Enable
EOS	External Output Enable/Disable	1 -> Enable
WPEC	Write Parameter to EEPROM	Note 2
WGER	Write R Register to EEPROM	Note 2
READ	Read TOM and OMS Selections	Note 3
GENR	Read Generic Item as String	Note 4
GENW	Write Generic Item as String	Note 5

Accessible Data for MR-J2S-A Servo Type

Prefix	Description	Information
PARA	Read/Write Parameter – Real	0 – 84
PARAH	Read/Write Parameter – Long	0 – 84
STSA	Read A Status Display Data	0 – E (Hex)
ALN	Read Alarm History Number	0 – 5
ALT	Read Alarm History Time	0 – 5
ALSA	Read A Status At Alarm Occurrence	0 – E (Hex)
ACU	Read/Reset Current Alarm	Write 1 to Reset
EXTA	External I/O Signals	0 – 1
GSV	Read/Write Group Setting	
SEP	Read Motor End Pulse Unit Position	
CUP	Read Command Unit Position	
SVR	Read Software Version String	Note 1
ACL	Clear Alarm History	Write 1 to Clear
SCL	Clear Status Display Data	Write 1 to Clear
OMS	Operation Mode Selection	Send Data = 0 - 4
TOM	Write Test Operation Data Item	Note 9
EIS	External Input Enable/Disable	1 -> Enable
EOS	External Output Enable/Disable	1 -> Enable
WPEA	Write Parameter to EEPROM	Note 2
READ	Read TOM and OMS Selections	Note 3
GENR	Read Generic Item as String	Note 4
GENW	Write Generic Item as String	Note 5

Accessible Data for MR-J2S-CP Servo Type

Prefix	Description	Information
PARC	Read/Write Parameter	0 − 90
PARCH	Read/Write Parameter	0 − 90
STSP	Read CP Status Display Data	0 − 11 (Hex)
PPOS	Point Table Position	1 − 31
PSPD	Point Table Speed	1 − 31
PACC	Point Table Acceleration	1 − 31
PDEC	Point Table Deceleration	1 − 31
PDWL	Point Table Dwell	1 − 31
PAUX	Point Table Auxiliary Function	1 − 31
EEPW	Read a Point and Write to EEPROM	Note 6
ALN	Read Alarm History Number	0 − 5
ALT	Read Alarm History Time	0 − 5
ALSP	Read CP Status At Alarm Occurrence	0 − 11 (Hex)
ACU	Read/Reset Current Alarm	Write 1 to Reset
EXTC	External I/O Signals	0 − 5
GSV	Read/Write Group Setting	
SVR	Read Software Version String	Note 1
ACL	Clear Alarm History	Write 1 to Clear
SCL	Clear Status Display Data	Write 1 to Clear
OMS	Operation Mode Selection	Send Data = 0 - 4
TOM	Write Test Operation Data Item	Note 9
EIS	External Input Enable/Disable	1 -> Enable
EOS	External Output Enable/Disable	1 -> Enable
WPEC	Write Parameter to EEPROM	Note 2
READ	Read TOM and OMS Selections	Note 3
GENR	Read Generic Item as String	Note 4
GENW	Write Generic Item as String	Note 5

Accessible Data for MR-J3 Servo Type

Prefix	Description	Information
PAR	Read/Write Parameter – Real	1 – 255 (Note 7)
PARH	Read/Write Parameter – Long	1 – 255 (Note 7)
PARU	Read Parameter Upper Limit – Real	1 – 255 (Note 7)
PARUH	Read Parameter Upper Limit – Long	1 – 255 (Note 7)
PARL	Read Parameter Lower Limit – Real	1 – 255 (Note 7)
PARLH	Read Parameter Lower Limit – Long	1 – 255 (Note 7)
PARAB	Read Parameter Abbreviation	1 – 255 (Note 7)
PAREN	Read Parameter Write Enable/Disable	1 – 255 (Note 7)
PARGP	Parameter Group	0 – 3 (Note 8)
STSA	Read Status Display Data	0 – E (Hex)
STSU	Read J3 Item Units String	0 – E (Hex)
STSN	Read J3 Item Name String	0 – E (Hex)
ALN	Read Alarm History Number	0 – 5
ALT	Read Alarm History Time	0 – 5
ALSU	Read Units String At Alarm Occurrence	0 – E (Hex)
ALSN	Read Name String At Alarm Occurrence	0 – E (Hex)
ACU	Read/Reset Current Alarm	Write 1 to Reset
EXTC	External I/O Signals	0 – 5
SEP	Read Motor End Pulse Unit Position	
CUP	Read Command Unit Position	
SVR	Read Software Version String	Note 1
ACL	Clear Alarm History	Write 1 to Clear
SCL	Clear Status Display Data	Write 1 to Clear
OMS	Operation Mode Selection	Send Data = 0 - 4
TOMM	Read Test Operation Mode	
TOMS	Read Test Operation Status	
TOM	Write Test Operation Data Item	Note 9
EIS	External Input Enable/Disable	1 -> Enable
EOS	External Output Enable/Disable	1 -> Enable
GENR	Read Generic Item as String	Note 4
GENW	Write Generic Item as String	Note 5

General Dialog Box Notes:
Read and Write Command Codes and Data Numbers are displayed in the upper right corner of the Dialog Box for programmer reference.

"Decimal", or "Hexadecimal", is displayed to the right of the entry box when a selection requires a numeric value.

The Data Type indicates the expected type of display item. Parameters and Status include drive values that may be Real or Integers. The driver converts integer values of these into Real numbers for display. Parameter values may also be chosen as "Long" values for parameters that have that format. Written decimal values are adjusted to the resolution of the drive parameter, and rounded when necessary.

For items with multiple selections, information about the selected item is displayed to the right of the command list.

NEVER allow continual writes to the EEPROM. The device will be damaged.

ACU, ACL, SCL, EIS, and **EOS** return –1 (0xFFFFFFFF) when read. **EIS** and **EOS** accept 0 to disable the I/O. Writing 0 to the others has no effect.

All items identified in the list as **String** items, with data type "Packed Characters", should be programmed similarly to SVR in Note 1.

NOTE 1: SVR: The version information is packed – 4 characters per 32 bits. To display the version information, assign a String tag to **SVR0**. Configure as shown here:
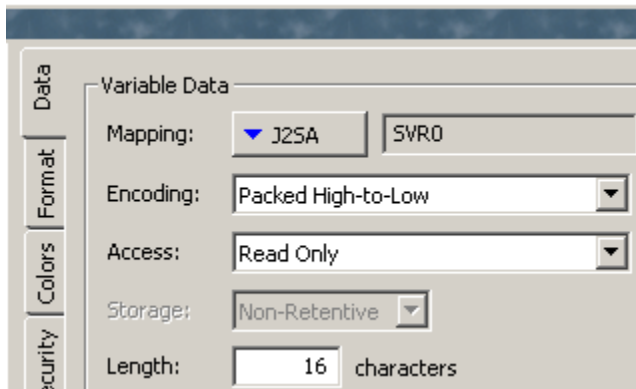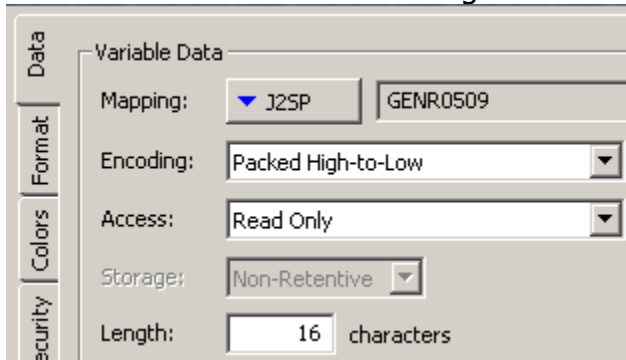
NOTE 2: WPEA, WPEC, WGER will write the specified data for the parameter to the EEPROM.

Use **PARA(H), PARC(H), GPR, GPD** to access the RAM memory.

NOTE 3: READ is an internal command provided to permit the display of the most recently written numerical values written to **TOM** or **OMS**. The Information pane describes which selection applies to which value.
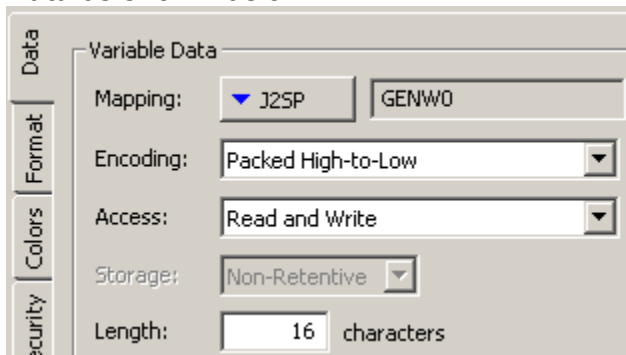
NOTE 4: GENR, a Read-Only selection, is provided to allow data reads that are not otherwise provided for in the specification. Assign a String tag to **GENR**, and enter 4 hex digits. The first two are the command number, and the second two are the data number. Configure the Variable Data as shown here:

The response to GENRccdd will be the entire string (without the checksum). The characters will be, in order, STX (hex 02), device address, Ack/Nak, n bytes of Data, and ETX (hex 03). The programmer, referring to the specification, must arrange to parse the string to process the Ack/Nak and Data appropriately.

NOTE 5: GENW is provided to allow data writes that are not otherwise provided for in the specification. Assign a String tag to **GENW**, and configure the Variable Data as shown below:

The response will be the programmed string, with the Ack/Nak character appended. If this string is to be sent again, the Ack/Nak character must be removed. An example string is shown in the Info field of the dialog box.

NOTE 6 (CP only): EEPW is provided to allow all the data for a single point to be written to EEPROM. Set **EEPW** to the point number. The driver will read the all the data of that point. If the read is successful, it will write the Position(1), Speed(2), Acceleration(3), Deceleration(4), Dwell(5), and Auxiliary Function(6), in that order. If any read fails, the returned value will be 100 + the number of the associated function. If the write fails for any reason, 200 + the number of the failing operation will be returned. If all writes are successful, the value will return to 0.
Writing 0 to EEPW will clear it. Values > 31 will be ignored.

NOTE 7 (J3 only): PARxxx selections, other than **PARGP**, require the selection of the parameter group being accessed. This is not related to the Device Group selection. Select one of A, B, C, D for the particular parameter group desired.

Select 1 – 255 for the parameter desired, and the necessary data type.

If the Long selection is made, and the servo returns a value with decimal places, the servo's returned hex value will be divided by the appropriate power of 10. For example: PAR11(A) might be 100.0000 when read as a real – the servo returns the value 1000 with one decimal place. If PARH11(A) is selected, the driver will divide 1000 by 10 in order to create the same integer value as the integer part of the real number.
However, the Upper and Lower Limits are returned with no decimal places by the servo, so represent the servo's value irrespective of the decimal point position. Thus, if the Upper limit is 1000, but the parameter is a real with one decimal place, the Upper limit needs to be interpreted as 100.0.

IMPORTANT: The driver will automatically change the current group selection in the servo each time an item requires a change. That selection will remain until a new group is required. The driver sets the group selection to 0 (Basic Settings) at every connection, or re-connection.

NOTE 8 (J3 only): PARGP – This permits the reading and writing of the current parameter group selection. Accessing a parameter of another parameter group will change this value. See Note 7.

NOTE 9: TOM – This requires the selection of the target item. Information on selecting the proper item is presented in the dialog box.

RS232 Cable Information

RLC UNIT	**J2** - CN3	Drive Signal Name	MR-CPCATCBL3M
2 (RxD)	12	TxD	2
5 (TxD)	2	RxD	3
3/4 (0V)	1/11	LG	5

RS422/485 Cable Information

RLC UNIT	**J2** - CN3	**J3** – CN3	Drive Signal Name
1 (TX-)	5	3	RDP
2 (TX+)	15	6	RDN
3 (RX+)	19	4	SDN
4(RX-)	9	5	SDP
6 (0V)	1/11	1	LG

For the last axis in a multi-axis system, termination is required.
At the time of development:
J2 – connect CN3-15 (RDN) to CN3-10 (TRE), for termination.
J3 – connect 150 ohm resistor between 3 and 6 of CN3.
Please verify with Mitsubishi documentation.

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