

ASTRA

Mitsubishi Device Driver

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⌘ Preface ⌘

This document introduces the user to the [MITSUBISHI PLCs Device Driver](#). It contains technical information about the device driver. This document gives you a broad idea of how to use the [MITSUBISHI Device Driver with Astra](#).

This document broadly tells you about the capabilities and technical details of [MITSUBISHI Device Driver](#) and the procedure to use the driver.

⌘ Introduction ⌘

This user manual assists the users of the [MITSUBISHI Driver](#) in conjunction with the Astra package.

The addressing scheme of the [MITSUBISHI](#) programming software is explained in the subsequent chapters. Description of the different data types and the various addressing schemes should be understood before attempting to use the driver in an Astra project.

The driver will operate up to 19200 bauds but the driver has been tested at 9600 bauds on [MITSUBISHI FX1S Model](#) and this baudrate is therefore recommended.



Technical & Communication Details



PLC Make :	MITSUBISHI Corporation.
PLC Modles :	The driver supports the following MITSUBISHI PLC models ... FX1S
PLC Memory :	_____
Communication Protocol :	Mitsubishi ASCII Computer Link Protocol.
Communication Parameters :	
Baud Rate -	9600
Parity -	EVEN
Data Bits -	7
Stop Bits -	1
Cable Connections :	The FX1S can be directly connected to the PC COM port using RS232- RS485 communications.
Node ID :	Any Node Id ranges from 0 to 15.
Device IDs	FX1S : From 0 to 15.
Flow Control	When using an RS232/RS485 converter, the type of flow control that is required will depend upon the needs of the converter. Use converters which do not require any flow control from PC using RTS.

⌘ Data Types and Addressing ⌘

Data Types:

The following is a description of how the MITSUBISHI driver interprets the information from the PLC as different data types.

Data Type	Description
Boolean	Single Bit.
Word	Unsigned 16 bit value Bit 0: Least Significant Bit. Bit 15: Most Significant Bit.
Integer	Signed 16 bit value Bit 0: Least Significant Bit. Bit 14: Most Significant Bit. Bit 15: Sign Bit.
Long	Signed 32 bit value Bit 0: Least Significant Bit. Bit 30: Most Significant Bit. Bit 31: Sign Bit.

⌘ Data Types and Addressing ⌘

Addressing:

Address specifications vary depending on the model in use. Given below are the addressing modes

FX 1S Addressing:

This Model Supports the Following Datatypes (Defaults are shown in bold):

Coils	X, Y, M, S	Boolean
Registers	D, T, C	Word, Integer, Long

Type	Format	Range
Input Coils	X <xx> xx : Bit Number.	X000 – X177
Output Coils	Y <xx> xx : Bit Number.	Y000 – Y177
General Coils	M <xx> xx : Bit Number.	M0000 – M1023
General Coils	M<xx> xx : Bit Number.	M8000 – M8255
State Coils	S<xx> xx : Bit Number.	S000 – S999

Type	Format	Range
Data Registers	D<xxxx> xxxx : Register Number.	D0000 – D0511
Data Registers	D<xxxx> xxxx : Register Number.	D8000 – D8255
Timer Registers	T<xxx> xxx : Register Number.	T000 – T255
Counter Registers	C<xx> xx : Register Number.	C000 – C255

⌘ Data Types and Addressing ⌘

Examples Of FX1S Addressing:

- ⦿ *X07* : *Input coil 7.*
- ⦿ *M50* : *General coil 50.*
- ⦿ *C10* : *Counter Register 10.*
- ⦿ *D100* : *Data memory location 100*

⌘ Optimizations ⌘

Use the following guidelines so that you can get an optimum performance from the driver PLC combination.

- ⦿ Whenever possible, use consecutive addresses, this reduces the overhead on the communication per requested data byte, word or double word.
- ⦿ When a same address is to be used for two different tags in Astra, make sure that the scan time is the same for both the tags, this ensures that the address is fetched only once for both the tags.
- ⦿ Use higher scan rates whenever the application allows to do so, this ensures that the critical tags with lower scan rates are fetched with minimum overhead.



Errors



Errors At Runtime:

The entire time an Astra project is running, the Event Logger displays the status and any errors that the program generates. The driver utilizes the Event Logger to display all the driver error messages. Below are the error messages, the probable causes and most likely solution to all the errors the driver can generate. Error numbers are displayed in the event logger in case an error is generated.

Driver Error Messages :

⦿ No Acknowledgement from PLC:

Error Type	0021
Possible Cause	No Acknowledgement from PLC.
Solution	Contact your software supplier.

⦿ Checksum Is Incorrect:

Possible Cause	There is probably incorrect checksum.
Solution	Contact your software supplier.

Errors At Config:

When an Astra project is configured, that time care is generally taken for address validation and also handles conditions when a read-only segment is configured as a read-write segment. Under such circumstances, error messages get displayed displaying the type of error and the possible solution for that particular error.



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