Aromat Serial Driver Help

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Help version 1.014

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Overview

The Aromat Serial Driver provides an easy and reliable way to connect Aromat Serial devices to OPC Client applications, including HMI, SCADA, Historian, MES, ERP and countless custom applications. It is intended for use with Aromat Matsushita/NAIS FP devices.

Device Setup

Supported Devices
FP0
FPM
FP1 models: C16, C24, and C40
FP2
FP3
FP10SH

Note: Models FP0, FPM, FP2, FP3, and FP10SH should use the "Any FP Model" selection for device configuration. It does not impose any limits on the address range for each data type besides what is allowed by the MEWTOCOL-COM protocol. It will allow the driver to be used with any Aromat Matsushita/NAIS PLC.

Communication Protocol
Aromat Matsushita/NAIS MEWTOCOL-COM

Supported Communication Parameters
Baud Rate: 300, 600, 1200, 2400, 4800, 9600, and 19200.
Parity: None, Even, and Odd.
Data Bits: 7 and 8.
Stop Bits: 1 and 2.

Ethernet Encapsulation
This driver supports Ethernet Encapsulation, which allows the driver to communicate with serial devices attached to an Ethernet network using a terminal server. It may be invoked through the COM ID tab in the Channel Properties. For more information, refer to the OPC server's help documentation.

Device IDs
Up to 63 devices numbered from 1 to 63.

Flow Control
When using an RS232/RS422 converter, the type of flow control that is required depends on the needs of the converter. Some converters do not require any flow control, whereas others require RTS flow. To determine a particular converter's flow requirements, consult its documentation.

Note: When using the manufacturer's supplied communications cable, it is sometimes necessary to choose a flow control setting of **RTS** or **RTS Always** under the Channel Properties.

Cable Connections
Use the smart cable (AFP15201-US9 or AFP15201-US25) configuration between the PC and the PLC. This same cable is used when programming with the Aromat Matsushita/NAIS PLC programming software (NPST-GR Software).

When using the FP Optional Communications Port, the following cable diagram can be used to connect the PLC to the PC.
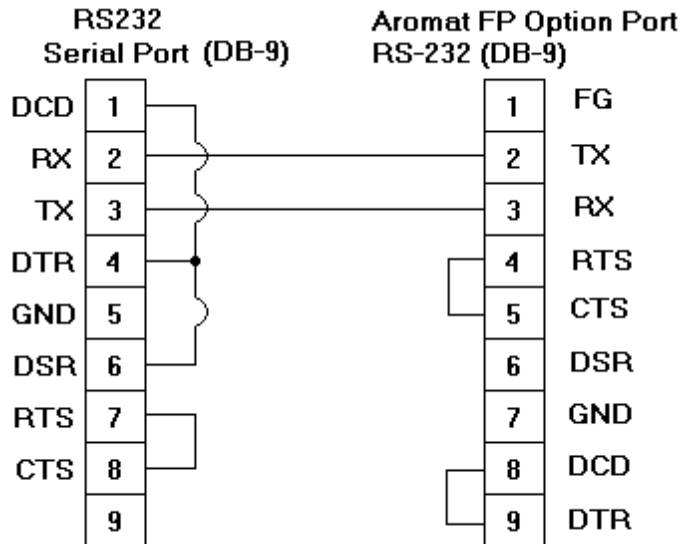
Configuring the Optional Communications Port

The Optional Communications Port must be configured using Aromat Matsushita/NAIS's FPSOFT programming software. For more information, refer to the instructions below.

1. To start, open the **Options** menu in **FPSOFT**. Then, select **PLC Configuration**.

2. Next, select the **Optional Port** configuration.

3. Fill in the settings as shown in the image below.
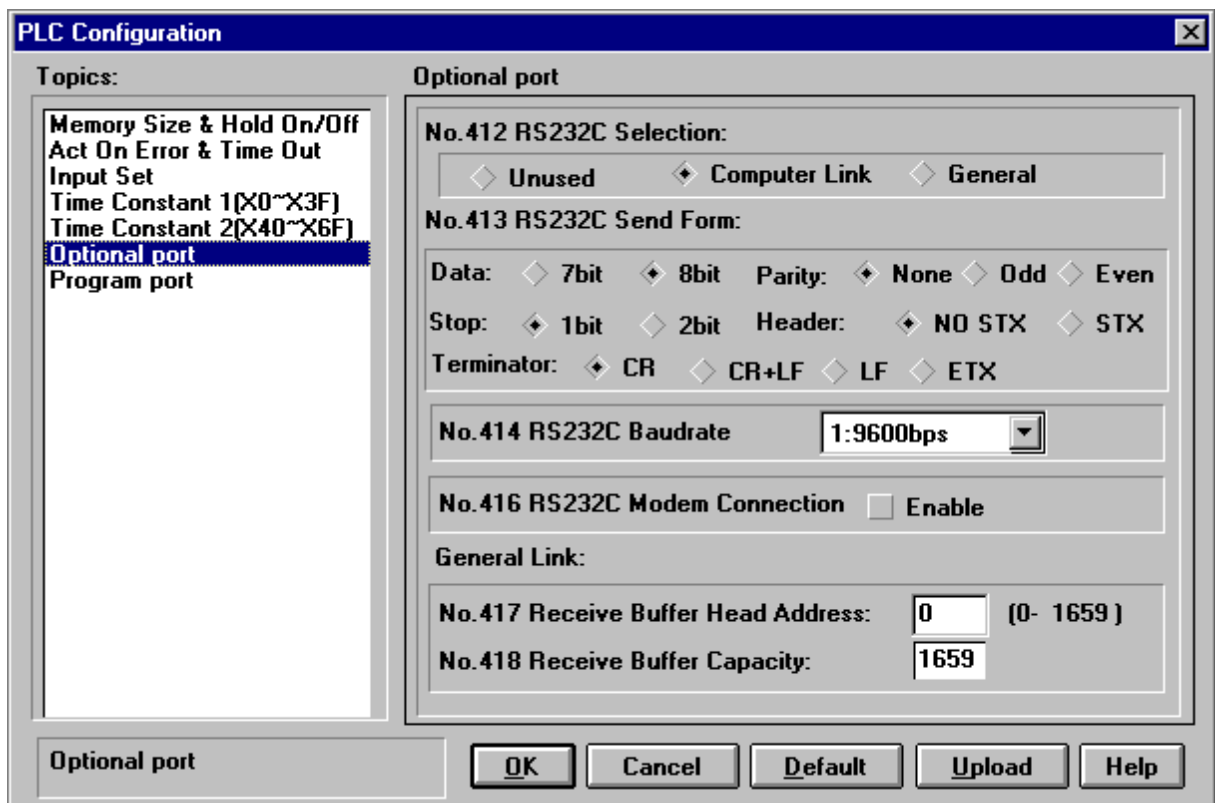
4. Once finished, click **OK** to download these parameters to the PLC.

Note: In testing, it was found that this step might need to be done more than once in order for the settings to take effect. PLC power should also be cycled after sending the new settings. When configuring the Aromat Serial Driver in the server, these settings must be matched.

Modem Setup

This driver supports modem functionality. For more information, please refer to the topic "Modem Support" in the OPC Server Help documentation.

Data Types Description

Data Type	Description
Boolean	Single bit
Word	Unsigned 16 bit value bit 0 is the low bit bit 15 is the high bit
Short	Signed 16 bit value bit 0 is the low bit bit 14 is the high bit bit 15 is the sign bit
DWord	Unsigned 32 bit value bit 0 is the low bit bit 31 is the high bit
Long	Signed 32 bit value bit 0 is the low bit bit 30 is the high bit bit 31 is the sign bit
BCD	Two byte packed BCD Value range is 0-9999. Behavior is undefined for values beyond this range.
LBCD	Four byte packed BCD Value range is 0-99999999. Behavior is undefined for values beyond this range.
Float	32 bit Floating point value The driver interprets two consecutive registers as a Floating point value by making the second register the high word and the first register the low word.

Address Descriptions

Address specifications vary depending on the model in use. Select a link from the following list to obtain specific address information for the model of interest.

C16 Addressing (FP1)
C24 Addressing (FP1)
C40 Addressing (FP1)
Any FP Model Addressing (FP0, FPM, FP1, FP2, FP3, FP10SH)

C16 Addressing (FP1)

The default data types are shown in **bold**.

Address Type	Range	Data Type	Access
External Input Relays	X0-X207 X0.0…X0.F-X12.0…X12.F WX0-WX12 WX0-WX11	Boolean **Word** Short, BCD DWord, Long, LBCD	Read Only
External Output Relays	Y0-Y207 Y0.0…Y0.F-Y12.0…Y12.F WY0-WY12 WY0-WY11	Boolean **Word** Short, BCD DWord, Long, LBCD	Read/Write
Internal Relays	R0-R255 R0.0…R0.F-R15.0…R15.F WR0-WR15 WR0-WR14	Boolean **Word** Short, BCD DWord, Long, LBCD	Read/Write
Special Relays	R14400-R14463 R900.0…R900.F-R903.0…R903.F WR900-WR903 WR900-WR902	Boolean **Word** Short, BCD DWord, Long, LBCD	Read/Write
Timer Contacts	T0-T127	Boolean	Read Only
Counter Contacts	C0-C127	Boolean	Read Only
Timer/Counter Set Value	SV0-SV127	**Word**, Short	Read/Write
Timer/Counter Elapsed Value	EV0-EV127	**Word**, Short	Read/Write
Data Registers	DT0-DT255 DT0-DT254	**Word**, Short, BCD, DWord, Long, LBCD, Float*	Read/Write
Special Registers	DT9000-DT9069 DT9000-DT9068	**Word**, Short, BCD, DWord, Long, LBCD, Float*	Read/Write
Index Registers	IX, IY ID	**Word**, Short **DWord**, Long	Read/Write

*When using these 32 bit data types, two consecutive 16 bit registers will be used; meaning, if address DT1 is declared type DWord, then both addresses DT1 and DT2 will be used to reference the 32 bit value.

C24 Addressing (FP1)

The default data types are shown in **bold**.

Address Type	Range	Data Type	Access
External Input Relays	X0-X207 X0.0…X0.F-X12.0…X12.F WX0-WX12 WX0-WX11	Boolean **Word** Short, BCD DWord, Long, LBCD	Read Only
External Output Relays	Y0-Y207 Y0.0…Y0.F-Y12.0…Y12.F WY0-WY12 WY0-WY11	Boolean **Word** Short, BCD DWord, Long, LBCD	Read/Write
Internal Relays	R0-R1007 R0.0…R0.F-R62.0…R62.F WR0-WR62 WR0 WR61	Boolean **Word** Short, BCD DWord, Long, LBCD	Read/Write
Special Relays	R14400-R14463	Boolean	Read/Write

	R900.0...R900.F-R903.0...R903.F WR900-WR903 WR900-WR902	**Word** Short, BCD DWord, Long, LBCD	
Timer Contacts	T0-T143	Boolean	Read Only
Counter Contacts	C0-C143	Boolean	Read Only
Timer/Counter Set Value	SV0-SV143	**Word**, Short	Read/Write
Timer/Counter Elapsed Value	EV0-EV143	**Word**, Short	Read/Write
Data Registers	DT0-DT1659 DT0-DT1658	**Word**, Short, BCD, DWord, Long, LBCD, Float*	Read/Write
Special Registers	DT9000-DT9069 DT9000-DT9068	**Word**, Short, BCD, DWord, Long, LBCD, Float*	Read/Write
Index Registers	IX, IY ID	**Word**, Short **DWord**, Long	Read/Write

*When using these 32 bit data types, two consecutive 16 bit registers will be used; meaning, if address DT1 is declared type DWord, then both addresses DT1 and DT2 will be used to reference the 32 bit value.

C40 Addressing (FP1)

The default data types are shown in **bold**.

Address Type	Range	Data Type	Access
External Input Relays	X0-X207 X0.0...X0.F-X12.0...X12.F WX0-WX12 WX0-WX11	Boolean **Word** Short, BCD DWord, Long, LBCD	Read Only
External Output Relays	Y0-Y207 Y0.0...Y0.F-Y12.0...Y12.F WY0-WY12 WY0-WY11	Boolean **Word** Short, BCD DWord, Long, LBCD	Read/Write
Internal Relays	R0-R1007 R0.0...R0.F-R62.0...R62.F WR0-WR62 WR0-WR61	Boolean **Word** Short, BCD DWord, Long, LBCD	Read/Write
Special Relays	R14400-R14463 R900.0...R900.F-R903.0...R903.F WR900-WR903 WR900-WR902	Boolean **Word** Short, BCD DWord, Long, LBCD	Read/Write
Timer Contacts	T0-T143	Boolean	Read Only
Counter Contacts	C0-C143	Boolean	Read Only
Timer/Counter Set Value	SV0-SV143	**Word**, Short	Read/Write
Timer/Counter Elapsed Value	EV0-EV143	**Word**, Short	Read/Write
Data Registers	DT0-DT1659 DT0-DT1658	**Word**, Short, BCD, DWord, Long, LBCD, Float*	Read/Write
Special Registers	DT9000-DT9069 DT9000-DT9068	**Word**, Short, BCD, DWord, Long, LBCD, Float*	Read/Write
Index Registers	IX, IY ID	**Word**, Short **DWord**, Long	Read/Write

*When using these 32 bit data types, two consecutive 16 bit registers will be used; meaning, if address DT1 is declared type DWord, then both addresses DT1 and DT2 will be used to reference the 32 bit value.

Any FP Model Addressing (FP0, FPM, FP1, FP2, FP3, FP10SH)

The Any FP Model setting allows the driver to handle a range of Aromat Matsushita/NAIS PLCs without specific control over the range of addresses available from the device. The address ranges displayed in the tables below may exceed the range that is available for a particular device. If an unsupported address is requested, the Aromat Serial Driver will mark the requested data item in error.

Note: The default data types are shown in **bold**.

Address Types

Type	Valid Tag Prefixes	Valid Data Types
I/Os (bits)	X, Y	**Boolean**
I/Os (words)	WX, WY	**Word**, DWord*, Short, Long*, BCD, LBCD*
Relays (bits)	R	**Boolean**
Relay (words)	WR	**Word**, DWord*, Short, Long*, BCD, LBCD*
Timer/Counter Contacts	T/C	**Boolean**
Data Registers	DT	**Word**, DWord*, Short, Long*, Float*, BCD, LBCD*
Timer/Counter Registers	SV, EV	**Word**, Short
Index Registers	IX, IY ID	**Word**, Short, **DWord**, Long

*When using these 32 bit data types, two consecutive 16 bit registers will be used. This means that if address DT1 is declared type DWord, then both addresses DT1 and DT2 will be used to store the 32 bit value.

Address Specifications

Address Type	Bit Number	Bit Range	Word Number	Word Range
External Inputs (Read Only)	X<xxx>.<y> xxx-Decimal y-Hex X<xxxxx> xxxxx-Decimal	X000.0-X000.F ... X999.0-X999.F X0-X15999	WX<xxx> xxx-Word Number	WX000-WX999
External Ouputs	Y<xxx>.<y> xxx-Decimal y-Hex Y<xxxxx> xxxxx-Decimal	Y000.0-Y000.F ... Y999.0-Y999.F Y -Y15999	WY<xxx> xxx-Word Number	WY000-WY999
Internal Relays	R<xxx>.<y> xxx-Decimal y-Hex R<xxxxx> xxxxx-Decimal	R000.0-R000.F ... R999.0-R999.F R0-R15999	WR<xxx> xxx-Word Number	WR000-WR999
Timer/Counter Contacts (Read Only)	T<xxx> C<xxx> xxxx-Decimal	T000-T999 C000-C999	N/A	N/A
Data Registers	N/A	N/A	DT<xxxxx> xxxxx-Decimal	DT00000-DT65535
Special Registers	N/A	N/A	DT<xxxxx> xxxxx-Decimal	DT90000-DT99999
Set Value Area (Timers/Counters)	N/A	N/A	SV<xxxx> xxxx-Decimal	SV0000-SV9999
Elapsed Value Area (Timers/Counters)	N/A	N/A	EV<xxxx> xxxx-Decimal	EV0000-EV9999
Index Registers	N/A	N/A	N/A	IX, IY, ID

Note: <y> bits are only valid between 0 and F hexadecimal. The bit reference used when accessing X, Y, and R memory is only required when using the <xxx>.<y> address format. Normally, direct access to X, Y, and R can be done using standard Aromat Serial addressing (such as X50, Y122, or R140).

Examples

1. Y15 Output Relay 15.
2. T000 Timer Contact 0.
3. C127 Counter Contact 127.

Error Descriptions

The following error/warning messages may be generated. Click on the link for a description of the message.

Address Validation
Address '<address>' is out of range for the specified device or register
Data Type '<type>' is not valid for device address '<address>'
Device address '<address>' contains a syntax error
Device address '<address>' is not supported by model '<model name>'
Device address '<address>' is Read Only
Missing address

Serial Communications
Communications error on '<channel name>' [<error mask>]
COMn does not exist
COMn is in use by another application
Error opening COMn
Unable to set comm parameters on COMn

Device Status Messages
Device '<device name>' is not responding
Unable to write to '<address>' on device '<device name>'

Device Specific Messages
Unable to read block for address type '<mnemonic>', words <start address> - <end address>, on device '<device>'

Address Validation

The following error/warning messages may be generated. Click on the link for a description of the message.

Address Validation
Address '<address>' is out of range for the specified device or register
Data Type '<type>' is not valid for device address '<address>'
Device address '<address>' contains a syntax error
Device address '<address>' is not supported by model '<model name>'
Device address '<address>' is Read Only
Missing address

Address '<address>' is out of range for the specified device or register

Error Type:
Warning

Possible Cause:
A tag address that has been specified dynamically references a location that is beyond the range of supported locations for the device.

Solution:
Verify the address is correct; if it is not, re-enter it in the client application.

Data Type '<type>' is not valid for device address '<address>'

Error Type:
Warning

Possible Cause:
A tag address that has been specified dynamically has been assigned an invalid data type.

Solution:
Modify the requested data type in the client application.

Device address '<address>' contains a syntax error

Error Type:
Warning

Possible Cause:
A tag address that has been specified dynamically contains one or more invalid characters.

Solution:
Re-enter the address in the client application.

Device address '<address>' is not supported by model '<model name>'

Error Type:
Warning

Possible Cause:
A tag address that has been specified dynamically references a location that is valid for the communications protocol but not supported by the target device.

Solution:
Verify the address is correct; if it is not, re-enter it in the client application. Also verify that the selected model name for the device is correct.

Device address '<address>' is Read Only

Error Type:
Warning

Possible Cause:
A tag address that has been specified dynamically has a requested access mode that is not compatible with what the device supports for that address.

Solution:
Change the access mode in the client application.

Missing address

Error Type:
Warning

Possible Cause:
A tag address that has been specified dynamically has no length.

Solution:
Re-enter the address in the client application.

Serial Communications

The following error/warning messages may be generated. Click on the link for a description of the message.

Serial Communications
Communications error on '<channel name>' [<error mask>]
COMn does not exist
COMn is in use by another application
Error opening COMn
Unable to set comm parameters on COMn

Communications error on '<channel name>' [<error mask>]

Error Type:
Serious

Error Mask Definitions:
B = Hardware break detected.

F = Framing error.
E = I/O error.
O = Character buffer overrun.
R = RX buffer overrun.
P = Received byte parity error.
T = TX buffer full.

Possible Cause:

1. The serial connection between the device and the Host PC is bad.
2. The communications parameters for the serial connection are incorrect.

Solution:

1. Verify the cabling between the PC and the PLC device.
2. Verify that the specified communications parameters match those of the device.

COMn does not exist

Error Type:
Fatal

Possible Cause:
The specified COM port is not present on the target computer.

Solution:
Verify that the proper COM port has been selected.

COMn is in use by another application

Error Type:
Fatal

Possible Cause:
The serial port assigned to a device is being used by another application.

Solution:
Verify that the correct port has been assigned to the channel.

Error opening COMn

Error Type:
Fatal

Possible Cause:
The specified COM port could not be opened due an internal hardware or software problem on the target computer.

Solution:
Verify that the COM port is functional and may be accessed by other Windows applications.

Unable to set comm parameters on COMn

Error Type:
Fatal

Possible Cause:
The serial parameters for the specified COM port are not valid.

Solution:
Verify the serial parameters and make any necessary changes.

Device Status Messages

The following error/warning messages may be generated. Click on the link for a description of the message.

Device Status Messages
Device '<device name>' is not responding

Unable to write to '<address>' on device '<device name>'

Device '<device name>' not responding

Error Type:
Serious

Possible Cause:
1. The serial connection between the device and the Host PC is broken.
2. The communications parameters for the serial connection are incorrect.
3. The named device may have been assigned an incorrect Network ID.
4. The response from the device took longer to receive than the amount of time specified in the "Request Timeout" device setting.

Solution:
1. Verify the cabling between the PC and the PLC device.
2. Verify that the specified communications parameters match those of the device.
3. Verify that the Network ID given to the named device matches that of the actual device.
4. Increase the Request Timeout setting so that the entire response can be handled.

Unable to write to '<address>' on device '<device name>'

Error Type:
Serious

Possible Cause:
1. The serial connection between the device and the Host PC is broken.
2. The communications parameters for the serial connection are incorrect.
3. The named device may have been assigned an incorrect Network ID.

Solution:
1. Verify the cabling between the PC and the PLC device.
2. Verify that the specified communications parameters match those of the device.
3. Verify that the Network ID given to the named device matches that of the actual device.

Device Specific Messages

The following error/warning messages may be generated. Click on the link for a description of the message.

Device Specific Messages
Unable to read block for address type '<mnemonic>', words <start address> - <end address>, on device '<device>'

Unable to read block for address type '<mnemonic>', words <start address> - <end address>, on device '<device>'

Error Type:
Warning

Possible Cause:
Consult device's user or technical manual for specific error code descriptions. It's likely that an attempt was made to reference a nonexistent location in the specified device.

Solution:
Verify the tags assigned to addresses in the specified range on the device and eliminate ones that reference invalid locations.

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