

# **KraussMaffei MC4 Ethernet Driver Help**

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## KraussMaffei MC4 Ethernet Driver Help

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Help version 1.013

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### Overview

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The KraussMaffei MC4 Ethernet Driver provides an easy and reliable way to connect KraussMaffei MC4 Ethernet devices to OPC Client applications, including HMI, SCADA, Historian, MES, ERP and countless custom applications. It is intended for communicating with KraussMaffei MC4-Injection Moulding Machines. The driver supports the TCP/IP transport protocol.

## Device Setup

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### Supported Devices

MC4-Injection Moulding Machine

### Connection Limitations

Simultaneous device connections are not allowed. The MC4-Injection Moulding Machine only supports 1 connection from a host device at a time.

### Supported Protocols

TCP/IP only.

### Connection Timeout

This parameter specifies the time that the driver will wait for a connection to be made with a device. Depending on network load, the connect time may vary with each connection attempt. The default setting is 3 seconds. The valid range is 1 to 60 seconds.

### Request Timeout

This parameter specifies the time that the driver will wait on a response from the device before giving up and going on to the next request. Longer timeouts only affect performance if a device is not responding. The default setting is 1000 milliseconds. The valid range is 100 to 9999 milliseconds.

### Retry Attempts

This parameter specifies the number of times that the driver will retry a message before giving up and going on to the next message. The default setting is 3 retries. The valid range is 1 to 10.

### Device IDs

Each device on the channel must be uniquely identified by its own IP address. Up to 255 devices may be defined on a given channel.

## Cable Diagrams

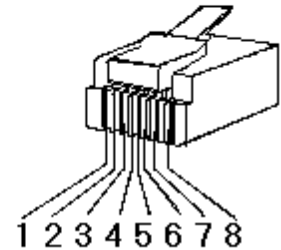
---

## Patch Cable (Straight Through)

TD + 1	OR/WHT	OR/WHT	1 TD +
TD - 2	OR	OR	2 TD -
RD + 3	GRN/WHT	GRN/WHT	3 RD +
4	BLU	BLU	4
5	BLU/WHT	BLU/WHT	5
RD - 6	GRN	GRN	6 RD -
7	BRN/WHT	BRN/WHT	7
8	BRN	BRN	8

RJ45 RJ45

10 BaseT



## Crossover Cable


TD + 1	OR/WHT	GRN/WHT	1 TD +
TD - 2	OR	GRN	2 TD -
RD + 3	GRN/WHT	OR/WHT	3 RD +
4	BLU	BLU	4
5	BLU/WHT	BLU/WHT	5
RD - 6	GRN	OR	6 RD -
7	BRN/WHT	BRN/WHT	7
8	BRN	BRN	8

RJ45 RJ45

8-pin RJ45

### Communications Parameters

**New Device - Communications Parameters** ✕



Set the TCP/IP port number the device is configured to use. The default port is 18901.

Select the ethernet protocol used by the device.

Set the Request Size Operating Mode. In "Standard" Mode up to 4 parameters per Request can be sent. In "Extended" Mode up to 16 parameters per Request can be sent.

Port Number:

Protocol:

Request Size:  Mode

Descriptions of the parameters are as follows:

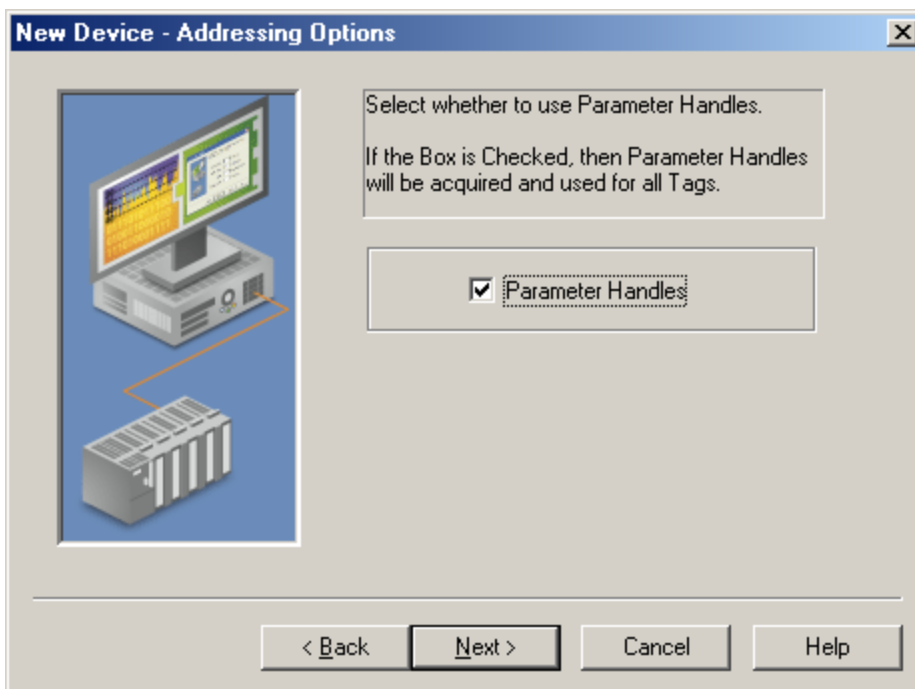
- **Port Number:** This parameter specifies the port number that the remote device is configured to use. The default setting is 18901.
- **Protocol:** This parameter specifies which protocol the driver should use in order to connect to the remote device. Although User Datagram Protocol (UDP) is listed, only Transfer Control Protocol (TCP) is supported.
- **Request Size:** This parameter specifies the number of parameter objects that may be requested from a MC4 device at one time. To refine this driver's performance, the request size may be configured to either **Standard Mode** or **Extended Mode**. In Standard Mode, up to 4 parameter objects can be requested at one time. In Extended Mode, up to 16 parameter objects can be requested. The default setting is Extended Mode.

**Note:** This driver requires Winsock V1.1 or higher.

## Addressing Options

### Parameter Handles

A parameter object name can be up to 36 characters long. In order to reduce the number of transmission data, the MC4 computer interface has the facility for allocating an identification number (called a Parameter Handle) to each parameter object name. Parameter handles consist of 4-figure hexadecimal numbers that carry the '\$' sign as prefix. This means that the parameter object name can be reduced from the maximum 36 characters down to 5. For example, "\$0001" or "\$001B".



When checked, the driver will acquire the parameter handle for each tag and then use it to make the request to the MC4 controller. When unchecked, the full 3-part parameter object name will be used instead. The default setting is checked.

## Data Types Description

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Data Type	Description
Double	64 bit floating point value The driver converts the Decimal ASCII string response to a Double.
Float	32 bit floating point value The driver converts the Decimal ASCII string response to a Float.
String	Null terminated ASCII string

## Address Descriptions

Named parameter objects are used to access data in the MC4 controller. Each parameter object is composed of the following three name sections:

*<parameter object name>. <element name>. <value name>*

The number of possible elements within an object and the names of these elements are subject to the object type. The possible values of a parameter element are a function of the element type.

All functionally related parameters are united in a *<parameter object>*. For instance, parameter object SCRW1\_H\_BAR\_Z01 contains all parameters that are connected with the barrel heating zone 1 of injection unit 1. A single element of the parameter object is designated *<parameter element>*. The number of possible parameter elements within an object is subject to its type. In the case of a barrel heating zone:

- **SET:** Set-value.
- **ACT:** Actual-value.

With the *<parameter value>* detail, it is determined that the information of the parameter element is to be read or written. Conventional parameter values are as follows:

- **VAL:** Current value.
- **MIN:** Minimum value.
- **MAX:** Maximum value.
- **LTXT:** Parameter plain text.
- **DIM:** Dimension (= physical unit).

To read out the maximum value of the set value of barrel zone 1, the complete parameter name must read as "SCRW1\_H\_BAR\_Z01.SET.MAX."

### Parameter Element Types

#### Set Analog Value Parameter **<Objectname>.SET.<xxx>**

The following values are available with an analog value parameter.

Name	Description	Access	Data Type
VAL	Current value of the parameters.	Read/Write	Float or Double
MIN	Lower limiting value of the parameters.	Read Only	Float or Double
MAX	Upper limiting value of the parameter.	Read Only	Float or Double
DIM	Physical unit in the language of the actual country.	Read Only	String
LTXT	Parameter text in the current country's language.	Read Only	String

#### Actual Analog Value Parameter **<Objectname>.ACT.<xxx>**

The following values are available with an analog value parameter.

Name	Description	Access	Data Type
VAL	Current value of the parameters.	Read Only	Float or Double
MIN	Lower limiting value of the parameters.	Read Only	Float or Double
MAX	Upper limiting value of the parameter.	Read Only	Float or Double
DIM	Physical unit in the language of the actual country.	Read Only	String
LTXT	Parameter text in the current country's language.	Read Only	String

#### Switching Function / Status **<Objectname>.SEL.<xxx>**

The following values are available with a switching function.

Name	Description	Access	Data Type
VAL	Current value of the parameter.	Read/Write	Float or Double
MAX	Maximum selection function value.	Read Only	Float or Double
LTXT	Parameter text in the current country's language.	Read Only	String

#### String Parameter **<Objectname>.STR.<xxx>**

The following values are available with a string parameter.



Name	Description	Access	Data Type
VAL	Current string of the parameters.	Read/Write	String
LEN	Maximum permissible length of the string.	Read Only	Float or Double
LTXT	Parameter text in the current country's language.	Read Only	String

#### Date/Time Parameter <Objectname>.TIM.<xxx>

The following values are available with a date parameter.

Name	Description	Access	Data Type
VAL	Value as no. of seconds since 01.01.1980.	Read/Write	Float or Double
DATE	Date in the format "tt.mm.jj".	Read Only	String
CLOCK	Time in the "hh:mm" format.	Read Only	String
CLKSEC	Time as seconds in the "hh:mm:ss" format.	Read Only	String
LTXT	Parameter text in the current country's language.	Read Only	String

#### Duration Parameter <Objectname>.TIM.<xxx>

The following values are available with a time parameter.

Name	Description	Access	Data Type
VAL	Value as number of seconds.	Read/Write	Float or Double
TIME	Duration as "hhh:mm" format.	Read Only	String
TIMSEC	Duration in seconds as "hhh:mm:ss" format.	Read Only	String
LTXT	Parameter text in the current country's language.	Read Only	String

#### Cycle Actual Parameter <Objectname>.CYCACT.<xxx>

The following values are available with the following parameters:

Name	Description	Access	Data Type
CYCVAL	Cycle value of the parameter of cycle CYCNUM.	Read Only	Float or Double
CYCNUM	Cycle number of the cycle parameter.	Read Only	Float or Double
CYCFLG	Flags:  Bit 0 – Quality control active Bit 1 – +Tolerance fault Bit 2 – - Tolerance fault Bit 3 – Startup scrap cycle Bit 8 – value not guilty	Read Only	Float or Double
DIM	Physical dimension in current country's language.	Read Only	String
LTXT	Parameter text in the current country's language.	Read Only	String

#### <Objectname>.CYCCNT.<xxx>

The following values are available with the following parameters:

Name	Description	Access	Data Type
VAL	Current value of the parameter.	Read Only	Float or Double
CYCNUM	Cycle number of the cycle parameter.	Read Only	Float or Double
DATE	Date in the format "tt.mm.jj".	Read Only	String
CLOCK	Time in the "hh:mm" format.	Read Only	String
CLKSEC	Time as seconds in the "hh:mm:ss" format.	Read Only	String
TIME	Duration as "hhh:mm" format.	Read Only	String
TIMSEC	Duration in seconds as "hhh:mm:ss" format.	Read Only	String
LTXT	Parameter text in the current country's language.	Read Only	String

#### <Objectname>.CAVSET.<xxx>

The following values are available with the following parameters:

Name	Description	Access	Data Type
VAL	Current value of the parameter.	Read/Write	Float or Double
MIN	Lower limiting value of the parameters.	Read Only	Float or Double

MAX	Upper limiting value of the parameter.	Read Only	Float or Double
DIM	Physical unit in the language of the actual country.	Read Only	String
LTXT	Parameter text in the current country's language.	Read Only	String

**<Objectname>.CAVCNT.<xxx>**

The following values are available with the following parameters:

Name	Description	Access	Data Type
VAL	Current value of the parameter.	Read Only	Float or Double
MIN	Lower limiting value of the parameters.	Read Only	Float or Double
MAX	Upper limiting value of the parameter.	Read Only	Float or Double
DIM	Physical unit in the language of the actual country.	Read Only	String
LTXT	Parameter text in the current country's language.	Read Only	String

**<Objectname>.ALARM.<xxx>**

The following values are available with the parameters.

Name	Description	Access	Data Type
NUM	Alarm number.	Read Only	Float or Double
TIME	Time of Occurrence as "tt.mm.jj hh:mm:ss" format.*	Read Only	String
LTXT	Parameter text in the current country's language.	Read Only	String

\*Value of <Objectname>.ALARM.TIME can be used to determine if the alarm is active or inactive. If the alarm has been acknowledged and is in an inactive state, the value will be 01/01/80 00:00:00. If the alarm is active, the value will be the date and time that the alarm occurred (such as 05/01/05 03:17:34).

**Caution:** Parameter objects that can be written to become effective immediately in the MC4 and will influence the extrusion process if it is running. Thus, any writes must be treated with care and should be avoided when production is running.

**Note:** For a list of parameter objects, refer to the specific KraussMaffei MC4 device's documentation.

## Error Descriptions

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

### Address Validation

#### [Missing address](#)

[Device address '<address>' contains a syntax error](#)

[Data Type '<type>' is not valid for device address '<address>'](#)

[Device address '<address>' is Read Only](#)

### Device Status Messages

[Device '<device name>' is not responding](#)

[Unable to write to '<address>' on device '<device name>'](#)

### Driver Error Messages

[Winsock initialization failed \(OS Error = n\)](#)

[Winsock V1.1 or higher must be installed to use the KraussMaffei MC4 Ethernet device driver](#)

[Device '<device name>' detected a message size error \(Tag '<address>'\)](#)

[Device '<device name>' detected a number of parameters error in message \(Tag '<address>'\)](#)

[Device '<device name>' detected a parameter size error in message \(Tag '<address>'\)](#)

[Device '<device name>' detected a Parameter value that was Too Large \(Tag '<address>'\)](#)

[Device '<device name>' detected a Parameter value that was Too Small \(Tag '<address>'\)](#)

[Device '<device name>' detected an invalid data character in message \(Tag '<address>'\)](#)

[Device '<device name>' detected an invalid memory address \(Tag '<address>'\)](#)

[Device '<device name>' detected an invalid memory address Or address can't be written \(Tag '<address>'\)](#)

[Device '<device name>' detected an invalid parameter Handle in message \(Tag '<address>'\)](#)

[Device '<device name>' Failed to convert Decimal response to a Float or Double number \(Tag '<address>'\)](#)

## Address Validation

---

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

### Address Validation

#### [Missing address](#)

[Device address '<address>' contains a syntax error](#)

[Data Type '<type>' is not valid for device address '<address>'](#)

[Device address '<address>' is Read Only](#)

## 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.

## 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.

---

**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>' 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.

---

**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>' is not responding**

---

**Error Type:**

Serious

**Possible Cause:**

1. The connection between the device and the Host PC is broken.
2. The response from the device took longer to receive than the amount of time specified in the "Request Timeout" device setting.
3. The IP address assigned to the device is incorrect.
4. A second connection to the same device was attempted. The MC4 only supports one connection at a time.

**Solution:**

1. Verify the cabling between the PC and the device.
2. Increase the Request Timeout setting so that the entire response can be handled.
3. Verify that the IP address given to the named device matches that of the actual device.

---

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

---

**Error Type:**

Serious

**Possible Cause:**

1. The connection between the device and the Host PC is broken.
2. The named device may have been assigned an incorrect IP address.

**Solution:**

1. Verify the cabling between the PC and the PLC device.
2. Verify that the IP address given to the named device matches that of the actual device.

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**Driver Error Messages**

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

**Driver Error Messages**

**Winsock initialization failed (OS Error = n)**

**Winsock V1.1 or higher must be installed to use the KraussMaffei MC4 Ethernet device driver**

**Device '<device name>' detected a message size error (Tag '<address>')**

**Device '<device name>' detected a number of parameters error in message (Tag '<address>')**

**Device '<device name>' detected a parameter size error in message (Tag '<address>')**

**Device '<device name>' detected a Parameter value that was Too Large (Tag '<address>')**

**Device '<device name>' detected a Parameter value that was Too Small (Tag '<address>')**

**Device '<device name>' detected an invalid data character in message (Tag '<address>')**

**Device '<device name>' detected an invalid memory address (Tag '<address>')**

**Device '<device name>' detected an invalid memory address Or address can't be written (Tag '<address>')**

**Device '<device name>' detected an invalid parameter Handle in message (Tag '<address>')**

**Device '<device name>' Failed to convert Decimal response to a Float or Double number (Tag '<address>')**

**Winsock initialization failed (OS Error = n)****Error Type:**

Fatal

OS Error:	Indication	Possible Solution
10091	Indicates that the underlying network subsystem is not ready for network communication.	Wait a few seconds and restart the driver.
10067	Limit on the number of tasks supported by the Windows Sockets implementation has been reached.	Close one or more applications that may be using Winsock and restart the driver.

**Winsock V1.1 or higher must be installed to use the KraussMaffei MC4 Ethernet device driver****Error Type:**

Fatal

**Possible Cause:**

The version number of the Winsock DLL found on the system is less than 1.1.

**Solution:**

Upgrade Winsock to version 1.1 or higher.

**Device '<device name>' detected a message size error (Tag '<address>')****Error Type:**

Serious

**Possible Cause:**

1. The connection between the device and the Host PC is broken or intermittent.
2. The IP address assigned to the device is incorrect.

**Solution:**

1. Verify the cabling between the PC and the device.
2. Verify that the IP address given to the named device matches that of the actual device.

**Device '<device name>' detected an invalid parameter Handle in message (Tag '<address>')****Error Type:**

Serious

**Possible Cause:**

1. The connection between the device and the Host PC is broken or intermittent.
2. The IP address assigned to the device is incorrect.

**Solution:**

1. Verify the cabling between the PC and the device.

2. Verify that the IP address given to the named device matches that of the actual device.

**Note:**

This message is only possible if "Parameter Handles" is checked in Addressing Options.

**See Also:**

[Addressing Options](#)

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**Device '<device name>' detected an invalid memory address Or address can't be written (Tag '<address>')**

---

**Error Type:**

Warning

**Possible Cause:**

1. Tag address specifies a parameter object name that does not exist in the device.
2. The name may be spelled incorrectly.
3. The Write value is incorrect and can not be written.

**Solution:**

1. Determine the correct name of the parameter object.
2. Determine the correct range of write values.

---

**Device '<device name>' detected an invalid memory address (Tag '<address>')**

---

**Error Type:**

Warning

**Possible Cause:**

1. Tag address specifies a parameter object name that does not exist in the device.
2. The name may be spelled incorrectly.

**Solution:**

Determine the name of the correct parameter object.

---

**Device '<device name>' detected an invalid data character in message (Tag '<address>')**

---

**Error Type:**

Serious

**Possible Cause:**

1. The connection between the device and the Host PC is broken or intermittent.
2. The IP address assigned to the device is incorrect.

**Solution:**

1. Verify the cabling between the PC and the device.
2. Verify that the IP address given to the named device matches that of the actual device.

---

**Device '<device name>' detected a number of parameters error in message (Tag '<address>')**

---

**Error Type:**

Serious

**Possible Cause:**

1. The connection between the device and the Host PC is broken or intermittent.
2. The IP address assigned to the device is incorrect.

**Solution:**

1. Verify the cabling between the PC and the device.
2. Verify that the IP address given to the named device matches that of the actual device.

---

**Device '<device name>' Failed to convert Decimal response to a Float or Double number (Tag '<address>')**

---

**Error Type:**

Serious

**Possible Cause:**

1. The connection between the device and the Host PC is broken or intermittent.
2. The IP address assigned to the device is incorrect.

**Solution:**

1. Verify the cabling between the PC and the device.
2. Verify that the IP address given to the named device matches that of the actual device.

---

**Device '<device name>' detected a parameter size error in message (Tag '<address>')**

---

**Error Type:**

Serious

**Possible Cause:**

1. The connection between the device and the Host PC is broken or intermittent.
2. The IP address assigned to the device is incorrect.

**Solution:**

1. Verify the cabling between the PC and the device.
2. Verify the IP address given to the named device matches that of the actual device.

---

**Device '<device name>' detected a Parameter value that was Too Large (Tag '<address>')**

---

**Error Type:**

Warning

**Possible Cause:**

The value written to the tag is too large. Use the tag's "XXX.XXX.MAX" value to determine the upper limit.

**Solution:**

Write a value less than or equal to max.

---

**Device '<device name>' detected a Parameter value that was Too Small (Tag '<address>')**

---

**Error Type:**

Warning

**Possible Cause:**

The value written to the tag is too small. Use the tag's "XXX.XXX.MIN" value to determine the lower limit.

**Solution:**

Write a value greater than or equal to min.

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