

Industrial communication solutions for Windows

XKMOELLR Driver Manual

Klockner Moeller PLC SUCOM1 Protocol Driver

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XKMOELLR technical specifications

General information

The XKMOELLR driver allows you to connect to the Klockner Moeller PLCs that use the SUCOM1 protocol. The communication is point-to-point through a RS-232 port with the master PLC. Typical COM settings are 19200 bauds, even parity, 7 data bits and 1 stop bit.

Important note:

- 1) You should set the CommT1Delay property to a minimum of 5 milliseconds.
- 2) You must configure the PLC so it does not include the Office Number in the messages it transmits (choose one-to-one communication mode).
- 3) If the RTS pin is wired and being used by the PLC, it might be necessary that you set RTS in high state while transmitting and receiving data to/from the PLC.

This driver can be used with the following modules:

CPU: 07 ZE 60 / 07 ZE 61 / 07 ZE 62 COMM: 07 KP 60 REMOTE: 07 BR 61 LINK: 07 ZB 69

This driver supports task codes to do the following tasks:

- Execute RUN/STOP commands
- Request CPU Status
- Supervise PLC registers and I/O status
- Write PLC registers and I/O
- Send optional messages to:
 - Prepare the CPU to process commands (open)
 - Release the CPU (close)

PLC VALID DATA TYPES AND RANGES:

E from 0.00,00 to 4.99,95 E' from 0000,00 to 2047,15 A from 0.00,00 to 4.99,95 A' from 0000,00 to 2047,15 M from 000,00 to 127,15 M' from 000,00 to 383,31 T from 00,00 to 15,15 Z from 00,00 to 15,15 EW from 0.00,00 to 4.99,09 EW' from 0000,00 to 2047,00 AW from 0.00,00 to 4.99,09 AW' from 0000,00 to 2047,00 MW from 000,00 to 3135,15 or from 4096,00 to 4127,15 MW' from 000,00 to 383,01 TC from 00,00 to 31,15

DRIVER ADDRESSING:

- 1) To read memory positions of type E, A, EW and AW, the addresses adopt the form:
TT AA.BB,CC

Values that are sent:

TT = E, A, EW or AW (as defined in parameter DriverP6) AA = Remote module number (set with parameter DriverP7) BB = First address element (set with parameter DriverP8) CC = (optional) Second address element (set with parameter DriverP9)

Example:

E 1.127,7

DriverP6 = 0 (numeric code for 'E' data type) DriverP7 = 1 (AA part is 1, for subnetwork 1)

DriverP8 = 127 (BB part is 127) DriverP9 = 7 (CC part is 7)

- 2) To read memory positions other than E, A, EW or AW, the addresses adopt the form:
TT BB,CC (AA element not required)

Values that are sent:

T = E', A', M, M', EW', AW', MW, or MW' (as defined in parameter DriverP6) BB = First address element (set with parameter DriverP8) CC = Second address element (set with parameter DriverP9)

Example:

MW 64,15

DriverP6 = 10 (numeric code for 'MW' data type) DriverP7 = 0 (AA=not used, communicate with PLC and not with a remote module) DriverP8 = 64 (BB part is 64) DriverP9 = 15 (CC part is 15)

Important note:

If you are more familiar with using the internal names (X, Y, WX, WY, etc) for the PLC data types where address positions are expressed as unique hexadecimal numbers, you can use the XHITACHH driver instead.

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Command list

Read Multiple Analog Values

Description of this command:

Use this command to read a consecutive group of up to 120 analog values of a given type starting at a given initial PLC address.

Methods used to run this command:

Analog Input

Number of points accepted by this command:

1-120

Meaning of the DriverP0 parameter:

Identifies the link loop (Lump):

- 1 = CPU link loop 1
- 2 = CPU link loop 2
- 255 = No link installed

Meaning of the DriverP1 parameter:

Identifies the unit number (IUmp):

- 0-99 = units from 0 to 99
- 255 = No link installed

Meaning of the DriverP2 parameter:

Identifies the module number (luMp):

- 0 = CPU
- 4 = BASIC
- 8 = CPU LINK
- 16 = REMOTE (parent)
- 24 = COMM
- 32 = GPIB

Meaning of the DriverP3 parameter:

Identifies the port number (lumP):

- 0 = CPU Sequencer
- 1 = Peripheral device port
- 0 = BASIC
- 0-9 = REMOTE child from 0 to 9
- 0 = COMM RS-232C
- 1 = COMM RS-422
- 0 = GPIB

Meaning of the DriverP4 parameter:

Indicates if prepare/release CPU messages must be used before and after each conversation:

- 0 = do not send prepare/release CPU messages
- 1 = send prepare CPU message before the conversation
- 2 = send prepare and release CPU messages during the conversation

Meaning of the DriverP5 parameter:

64

Meaning of the DriverP6 parameter:

Identifies the data type:

- 5 = Timers of type T
- 7 = Counters of type Z
- 8 = Analog Inputs of type EW
- 9 = Analog Outputs of type AW
- 10 = Analog Registers of type MW
- 11 = Analog Registers of type EW' or AW'
- 12 = Analog Registers of type MW'
- 13 = Analog Registers of type TC

Meaning of the DriverP7 parameter:

PLC remote module number (AA element in the address)

- 0 = Communicate with PLC directly (or when AA is not indicated)
- 1 = Communicate with module 1 in RS485 subnetwork
- 2 = Communicate with module 2 in RS485 subnetwork
- 3 = Communicate with module 3 in RS485 subnetwork
- 4 = Communicate with module 4 in RS485 subnetwork

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Meaning of the DriverP8 parameter:

Indicates the BB element in the address

Meaning of the DriverP9 parameter:

Indicates the CC element in the address

Read Multiple Digital Values

Description of this command:

Use this command to read a consecutive group of up to 240 digital values of a given type starting at a given initial PLC address.

Methods used to run this command:

Digital Input

Number of points accepted by this command:

1-240

Meaning of the DriverP0 parameter:

Identifies the link loop (Lump):

- 1 = CPU link loop 1
- 2 = CPU link loop 2
- 255 = No link installed

Meaning of the DriverP1 parameter:

Identifies the unit number (IUmp):

- 0-99 = units from 0 to 99
- 255 = No link installed

Meaning of the DriverP2 parameter:

Identifies the module number (luMp):

- 0 = CPU
- 4 = BASIC
- 8 = CPU LINK
- 16 = REMOTE (parent)
- 24 = COMM
- 32 = GPIB

Meaning of the DriverP3 parameter:

Identifies the port number (lumP):

- 0 = CPU Sequencer
- 1 = Peripheral device port
- 0 = BASIC
- 0-9 = REMOTE child from 0 to 9
- 0 = COMM RS-232C
- 1 = COMM RS-422
- 0 = GPIB

Meaning of the DriverP4 parameter:

Indicates if prepare/release CPU messages must be used before and after each conversation:

- 0 = do not send prepare/release CPU messages
- 1 = send prepare CPU message before the conversation
- 2 = send prepare and release CPU messages during the conversation

Meaning of the DriverP5 parameter:

64

Meaning of the DriverP6 parameter:

Identifies the data type:

- 0 = Digital Inputs of type E
- 1 = Digital Outputs of type A
- 2 = Digital Status of type M
- 3 = Digital Status of type E' or A'
- 4 = Digital Status of type M'

Meaning of the DriverP7 parameter:

PLC remote module number (AA element in the address)

- 0 = Communicate with PLC directly (or when AA is not indicated)
- 1 = Communicate with module 1 in RS485 subnetwork
- 2 = Communicate with module 2 in RS485 subnetwork
- 3 = Communicate with module 3 in RS485 subnetwork
- 4 = Communicate with module 4 in RS485 subnetwork

Meaning of the DriverP8 parameter:

Indicates the BB element in the address

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Meaning of the DriverP9 parameter:

Indicates the CC element in the address

Read PLC Status Flags

Description of this command:

Use this command to read a consecutive group of up to 8 PLC status flags.

Methods used to run this command:

Digital Input

Number of points accepted by this command:

1-8

Meaning of the DriverP0 parameter:

Identifies the link loop (Lump):

- 1 = CPU link loop 1
- 2 = CPU link loop 2
- 255 = No link installed

Meaning of the DriverP1 parameter:

Identifies the unit number (IUmp):

- 0-99 = units from 0 to 99
- 255 = No link installed

Meaning of the DriverP2 parameter:

Identifies the module number (IuMp):

- 0 = CPU
- 4 = BASIC
- 8 = CPU LINK
- 16 = REMOTE (parent)
- 24 = COMM
- 32 = GPIB

Meaning of the DriverP3 parameter:

Identifies the port number (IuMp):

- 0 = CPU Sequencer
- 1 = Peripheral device port
- 0 = BASIC
- 0-9 = REMOTE child from 0 to 9
- 0 = COMM RS-232C
- 1 = COMM RS-422
- 0 = GPIB

Meaning of the DriverP4 parameter:

Indicates if prepare/release CPU messages must be used before and after each conversation:

- 0 = do not send prepare/release CPU messages
- 1 = send prepare CPU message before the conversation
- 2 = send prepare and release CPU messages during the conversation

Meaning of the DriverP5 parameter:

116 (or 16)

Values that are returned:

- Value in PointValue (0) = Run/Stop flag
- Value in PointValue (1) = Halt state flag
- Value in PointValue (2) = Simulation state flag
- Value in PointValue (3) = Error state flag
- Value in PointValue (4) = Forced state flag
- Value in PointValue (5) = Debug state flag
- Value in PointValue (6) = Reserved
- Value in PointValue (7) = Battery error flag

Write Single Analog Value

Description of this command:

Use this command to write a single analog value of a given type to a given PLC address.

Methods used to run this command:

Analog Output

Number of points accepted by this command:

1

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Meaning of the DriverP0 parameter:

Identifies the link loop (Lump):

- 1 = CPU link loop 1
- 2 = CPU link loop 2
- 255 = No link installed

Meaning of the DriverP1 parameter:

Identifies the unit number (IUmp):

- 0-99 = units from 0 to 99
- 255 = No link installed

Meaning of the DriverP2 parameter:

Identifies the module number (luMp):

- 0 = CPU
- 4 = BASIC
- 8 = CPU LINK
- 16 = REMOTE (parent)
- 24 = COMM
- 32 = GPIB

Meaning of the DriverP3 parameter:

Identifies the port number (lumP):

- 0 = CPU Sequencer
- 1 = Peripheral device port
- 0 = BASIC
- 0-9 = REMOTE child from 0 to 9
- 0 = COMM RS-232C
- 1 = COMM RS-422
- 0 = GPIB

Meaning of the DriverP4 parameter:

Indicates if prepare/release CPU messages must be used before and after each conversation:

- 0 = do not send prepare/release CPU messages
- 1 = send prepare CPU message before the conversation
- 2 = send prepare and release CPU messages during the conversation (recommended)

Meaning of the DriverP5 parameter:

69

Meaning of the DriverP6 parameter:

Identifies the data type:

- 5 = Timers of type T
- 7 = Counters of type Z
- 9 = Analog Outputs of type AW
- 10 = Analog Registers of type MW
- 11 = Analog Registers of type EW' or AW'
- 12 = Analog Registers of type MW'
- 13 = Analog Registers of type TC

Meaning of the DriverP7 parameter:

PLC remote module number (AA element in the address)

- 0 = Communicate with PLC directly (or when AA is not indicated)
- 1 = Communicate with module 1 in RS485 subnetwork
- 2 = Communicate with module 2 in RS485 subnetwork
- 3 = Communicate with module 3 in RS485 subnetwork
- 4 = Communicate with module 4 in RS485 subnetwork

Meaning of the DriverP8 parameter:

Indicates the BB element in the address

Meaning of the DriverP9 parameter:

Indicates the CC element in the address

Values that are sent:

Value in PointValue (0) = Value to be sent to the PLC

Write Multiple Analog Values

Description of this command:

Use this command to write a consecutive group of up to 100 analog values of a given type starting at a given initial PLC address.

Methods used to run this command:

Analog Output

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Number of points accepted by this command:

1-100

Meaning of the DriverP0 parameter:

Identifies the link loop (Lump):

- 1 = CPU link loop 1
- 2 = CPU link loop 2
- 255 = No link installed

Meaning of the DriverP1 parameter:

Identifies the unit number (IUmp):

- 0-99 = units from 0 to 99
- 255 = No link installed

Meaning of the DriverP2 parameter:

Identifies the module number (luMp):

- 0 = CPU
- 4 = BASIC
- 8 = CPU LINK
- 16 = REMOTE (parent)
- 24 = COMM
- 32 = GPIB

Meaning of the DriverP3 parameter:

Identifies the port number (lumP):

- 0 = CPU Sequencer
- 1 = Peripheral device port
- 0 = BASIC
- 0-9 = REMOTE child from 0 to 9
- 0 = COMM RS-232C
- 1 = COMM RS-422
- 0 = GPIB

Meaning of the DriverP4 parameter:

Indicates if prepare/release CPU messages must be used before and after each conversation:

- 0 = do not send prepare/release CPU messages
- 1 = send prepare CPU message before the conversation
- 2 = send prepare and release CPU messages during the conversation (recommended)

Meaning of the DriverP5 parameter:

66

Meaning of the DriverP6 parameter:

Identifies the data type:

- 5 = Timers of type T
- 7 = Counters of type Z
- 9 = Analog Outputs of type AW
- 10 = Analog Registers of type MW
- 11 = Analog Registers of type EW' or AW'
- 12 = Analog Registers of type MW'
- 13 = Analog Registers of type TC

Meaning of the DriverP7 parameter:

PLC remote module number (AA element in the address)

- 0 = Communicate with PLC directly (or when AA is not indicated)
- 1 = Communicate with module 1 in RS485 subnetwork
- 2 = Communicate with module 2 in RS485 subnetwork
- 3 = Communicate with module 3 in RS485 subnetwork
- 4 = Communicate with module 4 in RS485 subnetwork

Meaning of the DriverP8 parameter:

Indicates the BB element in the address

Meaning of the DriverP9 parameter:

Indicates the CC element in the address

Values that are sent:

Value in PointValue (0) = Value 0 to be sent to the PLC

Value in PointValue (1) = Value 1 to be sent to the PLC

Value in PointValue (2) = Value 2 to be sent to the PLC

...

Value in PointValue (n-1) = Value n-1 to be sent to the PLC

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Write Single Digital Value

Description of this command:

Use this command to write a single digital value of a given type to a given PLC address.

Methods used to run this command:

Digital Output

Number of points accepted by this command:

1

Meaning of the DriverP0 parameter:

Identifies the link loop (Lump):

- 1 = CPU link loop 1
- 2 = CPU link loop 2
- 255 = No link installed

Meaning of the DriverP1 parameter:

Identifies the unit number (IUmp):

- 0-99 = units from 0 to 99
- 255 = No link installed

Meaning of the DriverP2 parameter:

Identifies the module number (IuMp):

- 0 = CPU
- 4 = BASIC
- 8 = CPU LINK
- 16 = REMOTE (parent)
- 24 = COMM
- 32 = GPIB

Meaning of the DriverP3 parameter:

Identifies the port number (IuMp):

- 0 = CPU Sequencer
- 1 = Peripheral device port
- 0 = BASIC
- 0-9 = REMOTE child from 0 to 9
- 0 = COMM RS-232C
- 1 = COMM RS-422
- 0 = GPIB

Meaning of the DriverP4 parameter:

Indicates if prepare/release CPU messages must be used before and after each conversation:

- 0 = do not send prepare/release CPU messages
- 1 = send prepare CPU message before the conversation
- 2 = send prepare and release CPU messages during the conversation (recommended)

Meaning of the DriverP5 parameter:

69

Meaning of the DriverP6 parameter:

Identifies the data type:

- 1 = Digital Outputs of type A
- 2 = Digital Status of type M
- 3 = Digital Status of type E' or A'
- 4 = Digital Status of type M'

Meaning of the DriverP7 parameter:

PLC remote module number (AA element in the address)

- 0 = Communicate with PLC directly (or when AA is not indicated)
- 1 = Communicate with module 1 in RS485 subnetwork
- 2 = Communicate with module 2 in RS485 subnetwork
- 3 = Communicate with module 3 in RS485 subnetwork
- 4 = Communicate with module 4 in RS485 subnetwork

Meaning of the DriverP8 parameter:

Indicates the BB element in the address

Meaning of the DriverP9 parameter:

Indicates the CC element in the address

Values that are sent:

Value in Point/Value (0) = Value to be sent to the PLC

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Write Multiple Digital Values

Description of this command:

Use this command to write a consecutive group of up to 200 digital values of a given type starting at a given initial PLC address.

Methods used to run this command:

Digital Output

Number of points accepted by this command:

1-200

Meaning of the DriverP0 parameter:

Identifies the link loop (Lump):

- 1 = CPU link loop 1
- 2 = CPU link loop 2
- 255 = No link installed

Meaning of the DriverP1 parameter:

Identifies the unit number (IUmp):

- 0-99 = units from 0 to 99
- 255 = No link installed

Meaning of the DriverP2 parameter:

Identifies the module number (IuMp):

- 0 = CPU
- 4 = BASIC
- 8 = CPU LINK
- 16 = REMOTE (parent)
- 24 = COMM
- 32 = GPIB

Meaning of the DriverP3 parameter:

Identifies the port number (IuMp):

- 0 = CPU Sequencer
- 1 = Peripheral device port
- 0 = BASIC
- 0-9 = REMOTE child from 0 to 9
- 0 = COMM RS-232C
- 1 = COMM RS-422
- 0 = GPIB

Meaning of the DriverP4 parameter:

Indicates if prepare/release CPU messages must be used before and after each conversation:

- 0 = do not send prepare/release CPU messages
- 1 = send prepare CPU message before the conversation
- 2 = send prepare and release CPU messages during the conversation (recommended)

Meaning of the DriverP5 parameter:

66

Meaning of the DriverP6 parameter:

Identifies the data type:

- 1 = Digital Outputs of type A
- 2 = Digital Status of type M
- 3 = Digital Status of type E' or A'
- 4 = Digital Status of type M'

Meaning of the DriverP7 parameter:

PLC remote module number (AA element in the address)

- 0 = Communicate with PLC directly (or when AA is not indicated)
- 1 = Communicate with module 1 in RS485 subnetwork
- 2 = Communicate with module 2 in RS485 subnetwork
- 3 = Communicate with module 3 in RS485 subnetwork
- 4 = Communicate with module 4 in RS485 subnetwork

Meaning of the DriverP8 parameter:

Indicates the BB element in the address

Meaning of the DriverP9 parameter:

Indicates the CC element in the address

Values that are sent:

Value in PointValue (0) = Value 0 to be sent to the PLC
Value in PointValue (1) = Value 1 to be sent to the PLC
Value in PointValue (2) = Value 2 to be sent to the PLC

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...
Value in PointValue (n-1) = Value n-1 to be sent to the PLC

Send Prepare CPU Command to PLC

Description of this command:

Use this command to send a prepare CPU command to the PLC to capture the CPU's attention.

Methods used to run this command:

Digital Output

Number of points accepted by this command:

1-256

Meaning of the DriverP0 parameter:

Identifies the link loop (Lump):

- 1 = CPU link loop 1
- 2 = CPU link loop 2
- 255 = No link installed

Meaning of the DriverP1 parameter:

Identifies the unit number (IUmp):

- 0-99 = units from 0 to 99
- 255 = No link installed

Meaning of the DriverP2 parameter:

Identifies the module number (IUmp):

- 0 = CPU
- 4 = BASIC
- 8 = CPU LINK
- 16 = REMOTE (parent)
- 24 = COMM
- 32 = GPIB

Meaning of the DriverP3 parameter:

Identifies the port number (IumP):

- 0 = CPU Sequencer
- 1 = Peripheral device port
- 0 = BASIC
- 0-9 = REMOTE child from 0 to 9
- 0 = COMM RS-232C
- 1 = COMM RS-422
- 0 = GPIB

Meaning of the DriverP4 parameter:

0

Meaning of the DriverP5 parameter:

10

Values that are sent:

Value in PointValue (0) = Ignored

Send Release CPU Command to PLC

Description of this command:

Use this command to send an release command to the PLC so the CPU can be used by other stations.

Methods used to run this command:

Digital Output

Number of points accepted by this command:

1-256

Meaning of the DriverP0 parameter:

Identifies the link loop (Lump):

- 1 = CPU link loop 1
- 2 = CPU link loop 2
- 255 = No link installed

Meaning of the DriverP1 parameter:

Identifies the unit number (IUmp):

- 0-99 = units from 0 to 99
- 255 = No link installed

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Meaning of the DriverP2 parameter:

Identifies the module number (luMp):

- 0 = CPU
- 4 = BASIC
- 8 = CPU LINK
- 16 = REMOTE (parent)
- 24 = COMM
- 32 = GPIB

Meaning of the DriverP3 parameter:

Identifies the port number (lumP):

- 0 = CPU Sequencer
- 1 = Peripheral device port
- 0 = BASIC
- 0-9 = REMOTE child from 0 to 9
- 0 = COMM RS-232C
- 1 = COMM RS-422
- 0 = GPIB

Meaning of the DriverP4 parameter:

0

Meaning of the DriverP5 parameter:

11

Values that are sent:

Value in PointValue (0) = Ignored

Send Run/Stop Command to PLC

Description of this command:

Use this command to set the PLC into RUN or STOP mode.

If you get a 'PLC:Operation error' error message:

- 1) While trying to Stop the CPU, could mean that:
 - a) Key switch is not in the REMOTE position
 - b) Remote stop is not enabled
- 2) While trying to Run the CPU, could mean that:
 - a) Key switch is not in the REMOTE position
 - b) The CPU is in error state
 - c) The CPU is in debug state
 - d) The CPU is write occupied by other station
 - e) Remote run is not enabled
 - f) The user set operation conditions have not been met

If you get a 'PLC:Combination error' error message:

- 1) While trying to Stop the CPU, this message is never returned.
- 2) While trying to Run the CPU, could mean that run/stop command has already been executed and the CPU is in run/stop mode.

RUN/STOP OPERATION CONDITIONS:

The CPU can run when the following conditions are met:

- 1) The CPU to be run has not been occupied (write occupation) by another stations.
- 2) The CPU status is neither debug nor error.
- 3) The special internal output M 124,3 (R7C3) is ON.
- 4) The special internal output M 126,9 (R7E9) is OFF.
- 5) In case the operation control input contact is specified by the parameter, the specified input contact is ON.
- 6) The RUN/STOP/REMOTE switch is set to the REMOTE position.

The CPU can stop when the following conditions are met:

- 1) The special internal output M 124,4 (R7C4) is ON.
- 2) The RUN/STOP/REMOTE switch is set to the REMOTE position.

Methods used to run this command:

Digital Output

Number of points accepted by this command:

1-256

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Meaning of the DriverP0 parameter:

Identifies the link loop (Lump):

- 1 = CPU link loop 1
- 2 = CPU link loop 2
- 255 = No link installed

Meaning of the DriverP1 parameter:

Identifies the unit number (IUmp):

- 0-99 = units from 0 to 99
- 255 = No link installed

Meaning of the DriverP2 parameter:

Identifies the module number (IuMp):

- 0 = CPU
- 4 = BASIC
- 8 = CPU LINK
- 16 = REMOTE (parent)
- 24 = COMM
- 32 = GPIB

Meaning of the DriverP3 parameter:

Identifies the port number (IumP):

- 0 = CPU Sequencer
- 1 = Peripheral device port
- 0 = BASIC
- 0-9 = REMOTE child from 0 to 9
- 0 = COMM RS-232C
- 1 = COMM RS-422
- 0 = GPIB

Meaning of the DriverP4 parameter:

Indicates if prepare/release CPU messages must be used before and after each conversation:

- 0 = do not send prepare/release CPU messages
- 1 = send prepare CPU message before the conversation
- 2 = send prepare and release CPU messages during the conversation

Meaning of the DriverP5 parameter:

17

Values that are sent:

Value in Point/Value (0) = 0 for STOP, 1 for RUN

Error messages

The following list shows the possible error messages that can be returned by the driver during a failed communication in the 'Status' property.

[1005] DRIVER (Internal): Invalid driver stage

[1300] PROTOCOL (Timeout): No answer

Supported devices

This driver can communicate with these devices, but is not necessarily limited to this list:

KLOCKNER MOELLER PLCs Using SUCOM1 Protocol

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hotmail.com

phone: 54-911-45788354

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