CPKSoft

Industrial communication drivers for Windows

X61850 Driver Manual

IEC 61850 International Standard Protocol Driver

Contents

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X61850 technical specifications

General information

X61850 driver supports a subset of the IEC 61850 international standard to communicate with protection relays and other substation devices.

The driver is intended for protection monitoring and implements the following functionallity:

- Can read relay identification data.
- Can read the value of one or several items, belonging to the same or to different logical nodes.
- Can list the files available in the file directoy.
- Can read files from the relay and write them to local hard disk.
- Can download disturbance records.
- Can decide to download the most recent disturbance record based on the trigger time.
- Can communicate over TCP, UDP or serial lines.

Driver limitations:

- Always behaves as master and client, initiating all the communications.
- Does not accept incoming unsolicited messages or goose messages.
- Can read files of up to 256KB in size.

This driver makes use of some useful coding/encoding routines from libIEC61850, an well-known open source library for IEC 61850 available in www.libiec61850.com.

Command list

Read Identification

Description of this command:
Obtains current device identification using the Send IdentifyRequest command.
Methods used to run this command:
Analog Input (ReadNumericValues)
Number of points accepted by this command:
1-3
Meaning of the DriverP0 parameter:
0
Values that are returned:
Text in PointText (0) = Vendor Name
Text in PointText (1) = Model Name
Text in PointText (2) = Revision

Read File Directory

Description of this command:
Obtains a list of files available in relay file directory.
Methods used to run this command:
Analog Input (ReadNumericValues)
Number of points accepted by this command:
1-250
Meaning of the DriverP0 parameter:
1
Meaning of the DriverP2 parameter:
Indicates if timestamp is added after filenames:
0 = No
1 = Yes (see DriverP3 for date format)
Meaning of the DriverP3 parameter:
Indicates the format for returned date:
0 = Use English format (MM/DD/YYYY hh:mm:ss.000)

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1 = Use Spanish format (DD/MM/YYYY hh:mm:ss.000)
2 = Use Native format: YYYYMMDDHHMMSSZ

Meaning of the DriverP6 parameter:
The remote matching path, or only a part of it, that is common to the files to be considered by this command. If this property is empty, all files will be considered by default. Example: '/C13_TRANSMISORF650'.

Meaning of the DriverP8 parameter:
Full path and filename of an optional ICD configuration file, with .icd extension. See format in 'ICD Configuration File Format'. If this parameter empty, the driver will look for a file named 'X61850.icd' in the driver folder. If not found, default configuration will be used.

Meaning of the DriverP9 parameter:
Indicates a 3-chars file extension. Leave empty for all files or use 'cfg' for .cfg files, 'txt' for .txt files, etc.

Values that are returned:
Value in PointValue (0) = Size of Filename 1 in bytes
Text in PointText (0) = Filename 1[,Timestamp 1]
Value in PointValue (1) = Size of Filename 2 in bytes
Text in PointText (1) = Filename 2[,Timestamp 2]
Value in PointValue (2) = Size of Filename 3 in bytes
Text in PointText (2) = Filename 3[,Timestamp 3]
- ...

Read File

Description of this command:
Reads a file from relay file directory and writes its contents to a local file. Maximum allowed file size is 128KB.

Methods used to run this command:
Analog Input (ReadNumericValues)

Number of points accepted by this command:
1

Meaning of the DriverP0 parameter:
2

Meaning of the DriverP2 parameter:
Indicates if timestamp is added after filename:
0 = No
1 = Yes (see DriverP3 for date format)

Meaning of the DriverP3 parameter:
Indicates the format for returned date:
0 = Use English format (MM/DD/YYYY hh:mm:ss.000)
1 = Use Spanish format (DD/MM/YYYY hh:mm:ss.000)

Meaning of the DriverP7 parameter:
Destination full filename in local computer. If empty, source filename is used and is stored in the driver folder.

Meaning of the DriverP8 parameter:
Full path and filename of an optional ICD configuration file, with .icd extension. See format in 'ICD Configuration File Format'. If this parameter empty, the driver will look for a file named 'X61850.icd' in the driver folder. If not found, default configuration will be used.

Meaning of the DriverP9 parameter:
Source filename to be read from relay, as it appears in the file directory (example: '/LD/C13_TRANSMISORF650/FLT008.TXT').

Values that are returned:
Value in PointValue (0) = Size of file in bytes
Text in PointText (0) = Filename [,Timestamp]

Get Newest Fault Record Information

Description of this command:
Obtains information about the newest fault record available in the protection memory. The file date is determined by comparing the date associated to the file when the whole file directory is read. It can give wrong results if the relay assigns an outdated date to the file in the file directory.

Methods used to run this command:
Analog Input (ReadNumericValues)

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Number of points accepted by this command:
1
Meaning of the DriverP0 parameter:
3
Meaning of the DriverP2 parameter:
Indicates if timestamp is added after filenames:
0 = No
1 = Yes (see DriverP3 for date format)
Meaning of the DriverP3 parameter:
Indicates the format for returned date:
0 = Use English format (MM/DD/YYYY hh:mm:ss.000)
1 = Use Spanish format (DD/MM/YYYY hh:mm:ss.000)
Meaning of the DriverP6 parameter:
The remote matching path, or only a part of it, that is common to the files to be considered by this command. Any other files in the relay directory will be ignored when looking for a matching .txt file. If this property is empty, all .txt files will be considered by default. Example: '/C13_TRANSMISORF650/FLT'.
Meaning of the DriverP8 parameter:
Full path and filename of an optional ICD configuration file, with .icd extension. See format in 'ICD Configuration File Format'. If this parameter empty, the driver will look for a file named 'X61850.icd' in the driver folder. If not found, default configuration will be used.
Values that are returned:
Value in PointValue (0) = Size of file in bytes
Text in PointText (0) = Filename [,Timestamp]

Get Newest Disturbance Record Information

Description of this command:
Obtains information about the newest disturbance record available in the protection memory. The file date is determined by comparing the date associated to the file when the whole file directory is read. It can give wrong results if the relay assigns an outdated date to the file in the file directory.
Methods used to run this command:
Analog Input (ReadNumericValues)
Number of points accepted by this command:
1
Meaning of the DriverP0 parameter:
4
Meaning of the DriverP2 parameter:
Indicates if timestamp is added after filenames:
0 = No
1 = Yes (see DriverP3 for date format)
Meaning of the DriverP3 parameter:
Indicates the format for returned date:
0 = Use English format (MM/DD/YYYY hh:mm:ss.000)
1 = Use Spanish format (DD/MM/YYYY hh:mm:ss.000)
Meaning of the DriverP6 parameter:
The remote matching path, or only a part of it, that is common to the disturbance records to be considered by this command. Any other files in the relay directory will be ignored when looking for a matching .cfg file. If this property is empty, all .cfg files will be considered by default. Example: '/COMTRADE/OSC'.
Meaning of the DriverP8 parameter:
Full path and filename of an optional ICD configuration file, with .icd extension. See format in 'ICD Configuration File Format'. If this parameter empty, the driver will look for a file named 'X61850.icd' in the driver folder. If not found, default configuration will be used.
Values that are returned:
Value in PointValue (0) = Size of file in bytes
Text in PointText (0) = Filename [,Timestamp]

Download Disturbance Record

Description of this command:
Requests the relay to send the disturbance record information that correspond to the newest or to a selected record number. Format of output files is COMTRADE ASCII or BINARY. Both .cfg and

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.dat are generated according to IEEE Standard Common Format for Transient Data Exchange (COMTRADE) for Power Systems. Additional .hdr and .inf files are generated. Maximum allowed file sizes are 128KB each. The relay must be configured to use the same date format (english or spanish) that is used in the DriverP3 parameter. The driver can receive Comtrade either in binary or in ascii format. It can also convert binary to ascii format. Ascii to binary format conversion is not supported.

Methods used to run this command:

Analog Input (ReadNumericValues)

Number of points accepted by this command:

1-10

Meaning of the DriverP0 parameter:

5 or 6, depending on the method used to determine the disturbance record time, where:
5 = The driver relies in the creation time of the files stored in the file directory. In some relays, such as GE F650, this time could be different that the real waveform trigger time.
6 = The driver uses the real trigger time, by reading each .cfg file first and then comparing the disturbance trigger time instead of the directory file time (takes longer than previous option).

Meaning of the DriverP1 parameter:

COMTRADE format:
0 = BINARY
1 = ASCII

Meaning of the DriverP2 parameter:

Record index to be downloaded where: -3 = Download oldest disturbance record. -2 = Download next disturbance record that is newer than date indicated in DriverP7. If DriverP7 is empty, the oldest record is downloaded. -1 = Download newest disturbance record. 0-999 = Record index to download (not valid if DriverP0 = 6)

Meaning of the DriverP3 parameter:

Indicates the format for returned dates:
0 = Use English format (MM/DD/YYYY hh:mm:ss.000)
1 = Use Spanish format (DD/MM/YYYY hh:mm:ss.000)

Meaning of the DriverP4 parameter:

Indicates if optional .hdr file must be downloaded (0=No, 1=Yes).

Meaning of the DriverP5 parameter:

Indicates if a complementary .inf file must be created (0=No, 1=Yes).

Meaning of the DriverP6 parameter:

Indicates two different optional paths, separated with comma, with the format 'LOCALPATH,REMOTEPATH', where: LOCALPATH = The full local path where the COMTRADE files will be generated (without backslash at the end). If this property is empty, the local driver folder is used by default. REMOTEPATH = The remote matching path, or only a part of it, that is common to the disturbance records to be considered by this command. Any other files in the relay directory will be ignored when looking for a matching .cfg file. If this property is empty, all .cfg files will be considered by default. It can include an explicit domain name or either the token '$DOMAINNAME' that will be replaced by the first domain name retrieved from the relay. Example: '$DOMAINNAME/COMTRADE/OSC'.

Meaning of the DriverP7 parameter:

Indicates a TriggerTime that should not be downloaded if it happens to be the last TriggerTime available in the protection. If empty, the last TriggerTime available is downloaded. Format must be 'YYYY-MM-DD hh:mm:ss.uuuuuu000', where uuuuuu=microseconds.

Meaning of the DriverP8 parameter:

Full path and filename of an optional ICD configuration file, with .icd extension. See format in 'ICD Configuration File Format'. If this parameter empty, the driver will look for a file named 'X61850.icd' in the driver folder. If not found, default configuration will be used.

Meaning of the DriverP9 parameter:

Filename root for .hdr, .cfg, .dat and .inf files. If empty, original filename stored in protection relay will be used. Existing files with same name will be overwritten.

Values that are returned:

Text in PointText (0) = Download status
Text in PointText (1) = Record number
Text in PointText (2) = Downloaded filename
Text in PointText (3) = First sample time
Text in PointText (4) = Trigger time
Text in PointText (5) = Formatted trigger time (yyyy-MM-dd HH:mm:ss.fff000000)
Text in PointText (6) = Total samples

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Text in PointText (7) = Downloaded filedate
Text in PointText (8) = Remote matching path
Text in PointText (9) = Domain name
Value in PointValue (0) = Number of channels downloaded
Value in PointValue (1) = Record number
Value in PointValue (2) = Original data format (0=BINARY, 1=ASCII)
Value in PointValue (3) = System frequency (Hz)
Value in PointValue (4) = COMTRADE format version
Value in PointValue (5) = Available records
Value in PointValue (6) = Number of analog channels
Value in PointValue (7) = Number of digital channels
Value in PointValue (8) = Max downloaded filesize
Value in PointValue (9) = Reserved

Read Domain Names

Description of this command:
Obtains a list of domain names from the relay.
Methods used to run this command:
Analog Input (ReadNumericValues)
Number of points accepted by this command:
1-N
Meaning of the DriverP0 parameter:
7
Values that are returned:
Text in PointText (0) = Domain name 1
Text in PointText (1) = Domain name 2
- ...
Text in PointText (N-1) = Domain name N

Read Single Value

Description of this command:
Obtains the value of an item from a VMD or domain logic node.
Methods used to run this command:
Analog Input (ReadNumericValues)
Number of points accepted by this command:
1
Meaning of the DriverP0 parameter:
8
Meaning of the DriverP3 parameter:
Indicates the format for values having a date type:
0 = Use English format (MM/DD/YYYY hh:mm:ss.000)
1 = Use Spanish format (DD/MM/YYYY hh:mm:ss.000)
2 = Use Native format: YYYYMMDDHHMMSSZ
Meaning of the DriverP6 parameter:
Specifies the domain name. If empty, values are considered VMD specific instead of domain specific. If the token $DOMAINNAME is used, the first domain name obtained from the relay is used.
Meaning of the DriverP8 parameter:
Full path and filename of an optional ICD configuration file, with .icd extension. See format in 'ICD Configuration File Format'. If this parameter empty, the driver will look for a file named 'X61850.icd' in the driver folder. If not found, default configuration will be used.
Meaning of the DriverP9 parameter:
The item name, case-sensitive, with no extra spaces and using '.' or '$' to separate each property. Example: 'MMXU1.MX.PPV.phsAB.instCVal.mag.f' or 'MMXU1MXPPV$phsAB$instCValmagf'.
Values that are returned:
Value in PointValue (0) = Item value as number
Text in PointText (0) = Item value as text

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Read Multiple Values

Description of this command:
Obtains the values of a list of items from VMD or domain logic nodes.
Methods used to run this command:
Analog Input (ReadNumericValues)
Number of points accepted by this command:
1-32
Meaning of the DriverP0 parameter:
9
Meaning of the DriverP3 parameter:
Indicates the format for values having a date type:
0 = Use English format (MM/DD/YYYY hh:mm:ss.000)
1 = Use Spanish format (DD/MM/YYYY hh:mm:ss.000)
2 = Use Native format: YYYYMMDDHHMMSSZ
Meaning of the DriverP6 parameter:
Specifies the domain name. If empty, values are considered VMD specific instead of domain specific. If the token $DOMAINNAME is used, the first domain name obtained from the relay is used.
Meaning of the DriverP8 parameter:
Full path and filename of an optional ICD configuration file, with .icd extension. See format in 'ICD Configuration File Format'. If this parameter empty, the driver will look for a file named 'X61850.icd' in the driver folder. If not found, default configuration will be used.
Meaning of the DriverP9 parameter:
List of item names, case-sensitive, separated with commas, with no extra spaces and using '.' or '$' to separate each item property. Maximum parameter length is 1000 characters. Example: 'MMXU1.MX.PhV.phsA.instCVal.mag.f,MMXU1.MX.PhV.phsB.instCVal.mag.f,MMXU1.MX.PhV.phsC.instCVal.mag.f'.
Values that are returned:
Value in PointValue (0) = First item value as number
Text in PointText (0) = First item value as text
- ...
Value in PointValue (N-1) = Last item value as number
Text in PointText (N-1) = Last item value as text

Write Boolean Value

Description of this command:
Writes a single value to a boolean item belonging to a VMD or to a domain logic node. The item must be writeable.
Methods used to run this command:
Analog Output (WriteNumericValues)
Number of points accepted by this command:
1
Meaning of the DriverP0 parameter:
0
Meaning of the DriverP6 parameter:
Specifies the domain name. If empty, values are considered VMD specific instead of domain specific. If the token $DOMAINNAME is used, the first domain name obtained from the relay is used.
Meaning of the DriverP7 parameter:
Value to be sent: 0 or 1
Meaning of the DriverP8 parameter:
Full path and filename of an optional ICD configuration file, with .icd extension. See format in 'ICD Configuration File Format'. If this parameter empty, the driver will look for a file named 'X61850.icd' in the driver folder. If not found, default configuration will be used.
Meaning of the DriverP9 parameter:
Item name, case-sensitive, using '.' or '$' to separate each property. Example: 'XCBR1.CO.Pos.phsA.instCVal.mag.f,MMXU1.MX.PhV.phsB.instCVal.mag.f,MMXU1.MX.PhV.phsC.instCVal.mag.f'.
Values that are sent:
Value in PointValue (0) = Ignored

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Write Char Value

Description of this command:
Writes a single value to a 8-bit signed char item belonging to a VMD or to a domain logic node. The item must be writeable.
Methods used to run this command:
Analog Output (WriteNumericValues)
Number of points accepted by this command:
1
Meaning of the DriverP0 parameter:
1
Meaning of the DriverP6 parameter:
Specifies the domain name. If empty, values are considered VMD specific instead of domain specific. If the token $DOMAINNAME is used, the first domain name obtained from the relay is used.
Meaning of the DriverP7 parameter:
Value to be sent: -128 to 127
Meaning of the DriverP8 parameter:
Full path and filename of an optional ICD configuration file, with .icd extension. See format in 'ICD Configuration File Format'. If this parameter empty, the driver will look for a file named 'X61850.icd' in the driver folder. If not found, default configuration will be used.
Meaning of the DriverP9 parameter:
Item name, case-sensitive, using '.' or '$' to separate each property. Example: 'XCBR1.CO.Pos.phsA.instCVal.mag.f,MMXU1.MX.PhV.phsB.instCVal.mag.f,MMXU1.MX.PhV.phsC.instCVal.mag.f'.
Values that are sent:
Value in PointValue (0) = Ignored

Write Byte Value

Description of this command:
Writes a single value to a byte item belonging to a VMD or to a domain logic node. The item must be writeable.
Methods used to run this command:
Analog Output (WriteNumericValues)
Number of points accepted by this command:
1
Meaning of the DriverP0 parameter:
2
Meaning of the DriverP6 parameter:
Specifies the domain name. If empty, values are considered VMD specific instead of domain specific. If the token $DOMAINNAME is used, the first domain name obtained from the relay is used.
Meaning of the DriverP7 parameter:
Value to be sent: 0 to 255
Meaning of the DriverP8 parameter:
Full path and filename of an optional ICD configuration file, with .icd extension. See format in 'ICD Configuration File Format'. If this parameter empty, the driver will look for a file named 'X61850.icd' in the driver folder. If not found, default configuration will be used.
Meaning of the DriverP9 parameter:
Item name, case-sensitive, using '.' or '$' to separate each property. Example: 'XCBR1.CO.Pos.phsA.instCVal.mag.f,MMXU1.MX.PhV.phsB.instCVal.mag.f,MMXU1.MX.PhV.phsC.instCVal.mag.f'.
Values that are sent:
Value in PointValue (0) = Ignored

Write 16-bit Signed Integer Value

Description of this command:
Writes a single value to a signed integer item belonging to a VMD or to a domain logic node. The item must be writeable.
Methods used to run this command:
Analog Output (WriteNumericValues)

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Number of points accepted by this command:
1
Meaning of the DriverP0 parameter:
3
Meaning of the DriverP6 parameter:
Specifies the domain name. If empty, values are considered VMD specific instead of domain specific. If the token $DOMAINNAME is used, the first domain name obtained from the relay is used.
Meaning of the DriverP7 parameter:
Value to be sent: -32768 to 32767
Meaning of the DriverP8 parameter:
Full path and filename of an optional ICD configuration file, with .icd extension. See format in 'ICD Configuration File Format'. If this parameter empty, the driver will look for a file named 'X61850.icd' in the driver folder. If not found, default configuration will be used.
Meaning of the DriverP9 parameter:
Item name, case-sensitive, using '.' or '$' to separate each property. Example: 'XCBR1.CO.Pos.phsA.instCVal.mag.f,MMXU1.MX.PhV.phsB.instCVal.mag.f,MMXU1.MX.PhV.phsC.instCVal.mag.f'.
Values that are sent:
Value in PointValue (0) = Ignored

Write 16-bit Unsigned Integer Value

Description of this command:
Writes a single value to an unsigned integer item belonging to a VMD or to a domain logic node. The item must be writeable.
Methods used to run this command:
Analog Output (WriteNumericValues)
Number of points accepted by this command:
1
Meaning of the DriverP0 parameter:
4
Meaning of the DriverP6 parameter:
Specifies the domain name. If empty, values are considered VMD specific instead of domain specific. If the token $DOMAINNAME is used, the first domain name obtained from the relay is used.
Meaning of the DriverP7 parameter:
Value to be sent: 0 to 65535
Meaning of the DriverP8 parameter:
Full path and filename of an optional ICD configuration file, with .icd extension. See format in 'ICD Configuration File Format'. If this parameter empty, the driver will look for a file named 'X61850.icd' in the driver folder. If not found, default configuration will be used.
Meaning of the DriverP9 parameter:
Item name, case-sensitive, using '.' or '$' to separate each property. Example: 'XCBR1.CO.Pos.phsA.instCVal.mag.f,MMXU1.MX.PhV.phsB.instCVal.mag.f,MMXU1.MX.PhV.phsC.instCVal.mag.f'.
Values that are sent:
Value in PointValue (0) = Ignored

Write 32-bit Signed Long Value

Description of this command:
Writes a single value to a signed long item belonging to a VMD or to a domain logic node. The item must be writeable.
Methods used to run this command:
Analog Output (WriteNumericValues)
Number of points accepted by this command:
1
Meaning of the DriverP0 parameter:
5

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Meaning of the DriverP6 parameter:
Specifies the domain name. If empty, values are considered VMD specific instead of domain specific. If the token $DOMAINNAME is used, the first domain name obtained from the relay is used.
Meaning of the DriverP7 parameter:
Value to be sent: -2147483648 to 2147483647
Meaning of the DriverP8 parameter:
Full path and filename of an optional ICD configuration file, with .icd extension. See format in 'ICD Configuration File Format'. If this parameter empty, the driver will look for a file named 'X61850.icd' in the driver folder. If not found, default configuration will be used.
Meaning of the DriverP9 parameter:
Item name, case-sensitive, using '.' or '$' to separate each property. Example: 'XCBR1.CO.Pos.phsA.instCVal.mag.f,MMXU1.MX.PhV.phsB.instCVal.mag.f,MMXU1.MX.PhV.phsC.instCVal.mag.f'.
Values that are sent:
Value in PointValue (0) = Ignored

Write 32-bit Unsigned Long Value

Description of this command:
Writes a single value to an unsigned long item belonging to a VMD or to a domain logic node. The item must be writeable.
Methods used to run this command:
Analog Output (WriteNumericValues)
Number of points accepted by this command:
1
Meaning of the DriverP0 parameter:
6
Meaning of the DriverP6 parameter:
Specifies the domain name. If empty, values are considered VMD specific instead of domain specific. If the token $DOMAINNAME is used, the first domain name obtained from the relay is used.
Meaning of the DriverP7 parameter:
Value to be sent: 0 to 4294967295
Meaning of the DriverP8 parameter:
Full path and filename of an optional ICD configuration file, with .icd extension. See format in 'ICD Configuration File Format'. If this parameter empty, the driver will look for a file named 'X61850.icd' in the driver folder. If not found, default configuration will be used.
Meaning of the DriverP9 parameter:
Item name, case-sensitive, using '.' or '$' to separate each property. Example: 'XCBR1.CO.Pos.phsA.instCVal.mag.f,MMXU1.MX.PhV.phsB.instCVal.mag.f,MMXU1.MX.PhV.phsC.instCVal.mag.f'.
Values that are sent:
Value in PointValue (0) = Ignored

Write String

Description of this command:
Writes a single text to a visible string item belonging to a VMD or to a domain logic node. The item must be writeable.
Methods used to run this command:
Analog Output (WriteNumericValues)
Number of points accepted by this command:
1
Meaning of the DriverP0 parameter:
9
Meaning of the DriverP6 parameter:
Specifies the domain name. If empty, values are considered VMD specific instead of domain specific. If the token $DOMAINNAME is used, the first domain name obtained from the relay is used.
Meaning of the DriverP7 parameter:
Text to be sent (max. 255 characters)

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Meaning of the DriverP8 parameter:
Full path and filename of an optional ICD configuration file, with .icd extension. See format in 'ICD Configuration File Format'. If this parameter empty, the driver will look for a file named 'X61850.icd' in the driver folder. If not found, default configuration will be used.
Meaning of the DriverP9 parameter:
Item name, case-sensitive, using '.' or '$' to separate each property. Example: 'XCBR1.CO.Pos.phsA.instCVal.mag.f,MMXU1.MX.PhV.phsB.instCVal.mag.f,MMXU1.MX.PhV.phsC.instCVal.mag.f'.
Values that are sent:
Value in PointValue (0) = Ignored

Connect

Description of this command:
Sends the required telegrams to connect to the relay.
Methods used to run this command:
Digital Output (WriteBooleanValues)
Number of points accepted by this command:
1
Meaning of the DriverP0 parameter:
0
Meaning of the DriverP8 parameter:
Full path and filename of an optional ICD configuration file, with .icd extension. See format in 'ICD Configuration File Format'. If this parameter empty, the driver will look for a file named 'X61850.icd' in the driver folder. If not found, default configuration will be used.
Values that are sent:
Value in PointValue (0) = Ignored

Reset Link

Description of this command:
Resets internal driver connect flag and enforces the driver to send reconnect telegrams next time.
Methods used to run this command:
Digital Output (WriteBooleanValues)
Number of points accepted by this command:
1
Meaning of the DriverP0 parameter:
1
Values that are sent:
Value in PointValue (0) = Ignored

Delete File

Description of this command:
Deletes a file from relay file directory.
Methods used to run this command:
Digital Output (WriteBooleanValues)
Number of points accepted by this command:
1
Meaning of the DriverP0 parameter:
2
Meaning of the DriverP8 parameter:
Full path and filename of an optional ICD configuration file, with .icd extension. See format in 'ICD Configuration File Format'. If this parameter empty, the driver will look for a file named 'X61850.icd' in the driver folder. If not found, default configuration will be used.
Meaning of the DriverP9 parameter:
Existing filename to be deleted from relay.
Values that are sent:
Value in PointValue (0) = Ignored

Rename File

Description of this command:
Renames a file from relay file directory.

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Methods used to run this command:
Digital Output (WriteBooleanValues)
Number of points accepted by this command:
1
Meaning of the DriverP0 parameter:
3
Meaning of the DriverP7 parameter:
New file name.
Meaning of the DriverP8 parameter:
Full path and filename of an optional ICD configuration file, with .icd extension. See format in 'ICD Configuration File Format'. If this parameter empty, the driver will look for a file named 'X61850.icd' in the driver folder. If not found, default configuration will be used.
Meaning of the DriverP9 parameter:
Existing filename to be renamed from relay.
Values that are sent:
Value in PointValue (0) = Ignored

ICD Configuration File Format

Create a plain ASCII file with the following lines in .INI format (donÂ´t forget to include section name):
[Remote] AP_ID=x.x.x.x.x AE_Qualifier=xx P_Selector=xxxx S_Selector=xxxx T_Selector_Size=xxxx T_Selector_Value=xxxx
[Local] AP_ID=x.x.x.x AE_Qualifier=xx P_Selector=xxxx S_Selector=xxxx T_Selector_Size=xxxx T_Selector_Value=xxxx
[Authentication] Enabled=0/1 Method=PASSWORD/NONE Password=xxxxxxxx
[ServicesSupported] Byte0=xxx Byte1=xxx Byte2=xxx Byte3=xxx Byte4=xxx Byte5=xxx Byte6=xxx Byte7=xxx Byte8=xxx Byte9=xxx Byte10=xxx
DEFAULT CONFIGURATION:
[Remote] AP_ID=1.1.1.999.1 AE_Qualifier=12 P_Selector=1 S_Selector=1 T_Selector_Size=2 T_Selector_Value=1
[Local] AP_ID=1.1.1.999 AE_Qualifier=12 P_Selector=1 S_Selector=1 T_Selector_Size=2 T_Selector_Value=0
[Authentication] Enabled=0 Method=NONE Password=
[ServicesSupported] Byte0=238 (<-- 0xee) Byte1=28 (<-- 0x1c) Byte2=0 (<-- 0x00) Byte3=0 (<-- 0x00) Byte4=4 (<-- 0x04) Byte5=8 (<-- 0x08) Byte6=0 (<-- 0x00) Byte7=0 (<-- 0x00) Byte8=121 (<-- 0x79) Byte9=239 (<-- 0xef) Byte10=24 (<-- 0x18)
NOTES:
Missing parameters will be assumed to have the default value. Numeric values are decimal values. Hexadecimal and octal is not supported.
Equivalences for GE F650:
[Remote]_AP_ID = OSI-AP-Title (replace commas with dots) [Remote]_AE_Qualifier = OSI-AE-Qualifier [Remote]_P_Selector = OSI-PSEL [Remote]_S_Selector = OSI-SSEL
[Remote]_T_Selector = OSI-TSEL

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.

[0130] LINK: Error setting up connection
[0200] IEC61850: Tpkt-layer receive error
[0202] IEC61850 Synchronization lost: TPKT START / VERSION
[0203] IEC61850 Synchronization lost: TPKT RES
[0204] IEC61850 Synchronization lost: TPKT TPDU too long
[0205] IEC61850 COTP: unexpected INIT
[0205] IEC61850 Synchronization lost: TPKT unknown kstate
[0206] IEC61850 COTP: ERROR
[0207] IEC61850 COTP: unknown status
[0208] IEC61850 TPKT: unknown state
[0209] IEC61850 SESSION: unknown error
[0210] IEC61850: MMS no data

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[0211] IEC61850 SESSION: error short message
[0212] IEC61850 SESSION: wrong length check in CONNECT(CN) SPDU
[0213] IEC61850 SESSION: error parsing connect spdu
[0214] IEC61850 SESSION: wrong length check in ACCEPT SPDU
[0215] IEC61850 SESSION: error parsing accept spdu
[0216] IEC61850 SESSION: wrong length check in Give token / data SPDU
[0217] IEC61850 SESSION: error parsing Give token / data SPDU
[0218] IEC61850 SESSION: not finished
[0219] IEC61850 SESSION: wrong length check in FINISH SPDU
[0220] IEC61850 SESSION: error parsing FINISH SPDU
[0221] IEC61850 SESSION: wrong length check in DISCONNECT SPDU
[0222] IEC61850 SESSION: error parsing DISCONNECT SPDU
[0223] IEC61850 SESSION: abort
[0224] IEC61850 SESSION: unknown id
[0225] IEC61850 PRESENTATION: no data
[0226] IEC61850 ACSE: no association
[0227] IEC61850 PRESENTATION ACCEPT: not a CPA message
[0228] IEC61850 PRESENTATION ACCEPT: wrong parameter length
[0229] IEC61850 PRESENTATION ACCEPT: error parsing normal-mode-parameters
[0230] IEC61850 PRESENTATION ACCEPT: no data parsing accept
[0231] IEC61850 ACSE: no data
[0232] IEC61850 PRESENTATION USER: message too short
[0233] IEC61850 PRESENTATION USER: wrong header 1
[0234] IEC61850 PRESENTATION USER: wrong header 2
[0235] IEC61850 PRESENTATION USER: wrong header 3
[0236] IEC61850 PRESENTATION USER: wrong header 4
[0237] IEC61850 PRESENTATION USER: wrong header 5
[0238] IEC61850 PRESENTATION USER: no data parsing userdata
[0239] IEC61850 ACSE: invalid message
[0240] IEC61850 ACSE: abort
[0241] IEC61850 ACSE: unknown message
[0242] IEC61850 ACSE parseAarqPdu: user info invalid
[0243] IEC61850 ACSE parseAarqPdu: check authentication failed
[0244] IEC61850 ACSE parseAarqPdu: user info invalid
[0245] IEC61850 ACSE parseAarePdu: invalid user info
[0246] IEC61850 ACSE parseAarePdu: associate failed
[0247] IEC61850: Invalid initlink stage
[0248] IEC61850 MMS parseInitiateResponse: ber_decode error
[0249] IEC61850 MMS parseInitiateResponse: mmsPdu error
[0250] IEC61850 MMS parseIdentifyResponse: invalid decoded length 1
[0251] IEC61850 MMS parseIdentifyResponse: invalid decoded length 2
[0252] IEC61850 MMS parseIdentifyResponse: invalid decoded length 3
[0253] IEC61850 MMS parseIdentifyResponse: invalid tag
[0254] IEC61850 MMS parseIdentifyResponse: invalid decoded length 4
[0255] IEC61850 MMS parseIdentifyResponse: message too short
[0256] IEC61850 MMS parseFileDirectoryResponse: no files found
[0257] IEC61850 MMS parseFileDirectoryResponse: invalid decoded length
[0257] IEC61850 MMS parseReadResponse: error %u decoding PDU
[0258] IEC61850 MMS parseFileDirectoryResponse: message too short (length:%i maxBufPos:%i)
[0259] IEC61850 MMS parseFileDirectoryResponse: message contains unknown tag
[0260] IEC61850 MMS parseListOfDirectoryEntries: invalid tag %02X
[0261] IEC61850 MMS parseListOfDirectoryEntries: invalid decoded length
[0262] IEC61850 MMS parseListOfDirectoryEntries: message too short
[0263] IEC61850 MMS parseListOfDirectoryEntries: message contains unknown tag
[0264] IEC61850 MMS parseDirectoryEntry: invalid decoded length
[0265] IEC61850 MMS parseDirectoryEntry: error parsing attributes
[0266] IEC61850 MMS parseDirectoryEntry: message contains unknown tag
[0267] IEC61850 MMS parseDirectoryEntry: filename is null
[0268] IEC61850 MMS parseDirectoryEntry: invalid stage
[0269] IEC61850 MMS parseFileOpenResponse: file not found
[0271] IEC61850 MMS parseFileOpenResponse: invalid decoded length
[0272] IEC61850 MMS parseFileOpenResponse: message too short

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[0273] IEC61850 MMS parseFileOpenResponse: error parsing attributes
[0274] IEC61850 MMS parseFileCloseResponse: error closing file
[0274] IEC61850 MMS parseFileReadResponse: no data in file
[0276] IEC61850 MMS parseFileReadResponse: invalid decoded length
[0277] IEC61850 MMS parseFileReadResponse: message too short
[0278] IEC61850: Receive buffer is full
[0279] IEC61850 MMS createFileReadRequest: invalid frsmId=%lu
[0280] IEC61850 MMS createFileOpenRequest: filename is null
[0283] IEC61850 MMS MemoryStream_Write: file chunk too long (>128KB)
[0284] IEC61850 MemoryStream_WriteToFile: stream is empty
[0285] IEC61850 Oscilo_ParseDisturbanceCFG: error parsing .cfg file
[0286] IEC61850 Oscilo_ProcessDisturbanceDAT: ASCII to BINARY conversion not supported
[0287] IEC61850 Oscilo_ProcessDisturbanceDAT: binary to ascii conversion buffer is full
[0288] IEC61850 MMS parseGetNameListDomainResponse: invalid decoded length 1
[0289] IEC61850 MMS parseGetNameListDomainResponse: invalid decoded length 2
[0290] IEC61850 MMS parseGetNameListDomainResponse: invalid decoded length 3
[0291] IEC61850 MMS parseGetNameListDomainResponse: invalid tag
[0292] IEC61850 MMS parseGetNameListDomainResponse: invalid decoded length 4
[0293] IEC61850 MMS parseGetNameListDomainResponse: invalid tag
[0294] IEC61850 MMS parseGetNameListDomainResponse: invalid decoded length 5
[0295] IEC61850 MMS parseGetNameListDomainResponse: invalid decoded length 6
[0296] IEC61850 MMS parseGetNameListDomainResponse: invalid tag
[0297] IEC61850 MMS parseGetNameListDomainResponse: invalid decoded length 7
[0298] IEC61850 MMS parseGetNameListDomainResponse: invalid tag
[0299] IEC61850 MMS parseGetNameListDomainResponse: invalid decoded length 8
[0300] IEC61850 MMS parseGetNameListDomainResponse: invalid value
[0301] IEC61850 Oscilo_Strategy: couldnÂ´t determine a matching record index
[0302] IEC61850 Oscilo_Strategy: invalid DriverP2 parameter value (-3, -2 or -1 only)
[0303] IEC61850 MMS parseDirectoryEntry: max limit of 1000 files reached
[0304] IEC61850 MMS createFileRenameRequest: existing filename cannot be empty
[0305] IEC61850 MMS createFileRenameRequest: new file name cannot be empty
[0306] IEC61850 MMS createFileDeleteRequest: filename cannot be empty
[0307] IEC61850 MMS createReadSingleValueRequest: item name cannot be empty
[0308] IEC61850 MMS createWriteSingleValueRequest: item name cannot be empty
[0309] IEC61850 MMS createWriteSingleValueRequest: data type not implemented
[0310] IEC61850 MMS parseWriteResponse: MMS_ERROR_PARSING_RESPONSE
[0311] IEC61850 MMS parseWriteResponse: MMS_ERROR_PARSING_RESPONSE
[0312] IEC61850 MMS parseWriteResponse: MMS_ERROR_ACCESS_OBJECT_INVALIDATED
[0313] IEC61850 MMS parseWriteResponse: MMS_ERROR_HARDWARE_FAULT
[0314] IEC61850 MMS parseWriteResponse:
MMS_ERROR_ACCESS_TEMPORARILY_UNAVAILABLE
[0315] IEC61850 MMS parseWriteResponse:
MMS_ERROR_ACCESS_OBJECT_ACCESS_DENIED
[0316] IEC61850 MMS parseWriteResponse:
MMS_ERROR_DEFINITION_OBJECT_UNDEFINED
[0317] IEC61850 MMS parseWriteResponse: MMS_ERROR_DEFINITION_INVALID_ADDRESS
[0318] IEC61850 MMS parseWriteResponse:
MMS_ERROR_DEFINITION_TYPE_UNSUPPORTED
[0319] IEC61850 MMS parseWriteResponse:
MMS_ERROR_DEFINITION_TYPE_INCONSISTENT
[0320] IEC61850 MMS parseWriteResponse:
MMS_ERROR_DEFINITION_OBJECT_ATTRIBUTE_INCONSISTENT
[0321] IEC61850 MMS parseWriteResponse:
MMS_ERROR_ACCESS_OBJECT_ACCESS_UNSUPPORTED
[0322] IEC61850 MMS parseWriteResponse:
MMS_ERROR_ACCESS_OBJECT_NON_EXISTENT
[0323] IEC61850 MMS parseWriteResponse:
MMS_ERROR_ACCESS_OBJECT_VALUE_INVALID
[0324] IEC61850 MMS parseWriteResponse: MMS_ERROR_OTHER
[0325] IEC61850 MMS parseWriteResponse: unknown error
[1005] DRIVER (Internal): Invalid driver stage
[1008] DRIVER (Internal): Command execution requires a valid license

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[1010] DRIVER (Internal): Error calculating elapsed milliseconds
[1201] DRIVER (System): Error closing %s
[1202] DRIVER (System): Error creating %s
[1208] DRIVER (System): Error seeking end of %s
[1210] DRIVER (System): Error writing to %s
[1214] DRIVER (System): Error deleting %s
[1300] PROTOCOL (Timeout): No answer
[1313] PROTOCOL (Timeout): No answer from meter after retrying with a Start Communications message
[1332] PROTOCOL (Remote): Invalid date received
[1333] PROTOCOL (Remote): Couldn't decode received date
[1334] PROTOCOL (Remote): Invalid time received
[1338] PROTOCOL (Remote): Couldn't decode reference date
[2002] CONFIG (DataType): Digital inputs are not supported by this driver
[3001] CONFIG (P0): Invalid command
[4166] CONFIG (P2): Invalid parameter value (can be -1, -2 or -3)
[4167] CONFIG (P2): Invalid record number (must be -3 or greater)
[4168] CONFIG (P2): Invalid record number (must be -1 or greater)
[7506] CONFIG (P9): Parameter is empty
[7507] CONFIG (P9): No items found in parameter

Supported devices

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

GE Multilin F650 Digital Bay Controller

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