

01 07 RemConf 801603

Application program usage

Product family: System device
Product type: Coupler
Manufacturer: Siemens

Name: IP Interface AP146
Order-No.: 5WG1 146-3AB01

Functional description

The interface for Ethernet-UDP/IP AP 146 is a surface mounted device. This interface connects a *instabus EIB* to a PC or other Internet Protocol (IP) enabled device via the Intranet. Using the Internet Protocol the interface offers remote configuration and operation of devices over a LAN or Intranet connection. The interface also connects to a time server on the Intranet to provide accurate date and time to EIB devices.

The remote configuration function of the Ethernet-UDP/IP interface is available in conjunction with the iETS, i.e. ETS2 version 1.2 plus iETS Client Optionpack.

The remote operation function is available

- with the iETS (remote control via group address, and remote reading of group address values), or
- with a software using the EIB Falcon (version 1.2) driver for Internet, or
- with a software using the Object-Server interface.

The IP address of the interface is assigned to the device via ETS, or automatically is assigned by a BootP server on the IP network. Assigning the IP address from a BootP server allows for changes to the IP address without changing the EIB setup of the device itself. The fixed MAC address required to configure the BootP server is printed on the device.

Please consult your network administrator regarding configuration of the parameters device IP address, sub-net mask, port addresses, time server IP address and BootP.

With the ETS (EIB Tool Software) the application program is selected, its parameters and addresses are assigned appropriately, and downloaded to the Ethernet-UDP/IP interface AP 146.

Communication objects

Phys.Addr.	Program		
no.	Object name	Function	Type
01.01.001	01 07 RemConf 801602		
10	Time	Time in EIS 3 Format	3 Byte
11	Date	Date in EIS 4 Format	3 Byte

Note:

Your screen presentation may vary from these typical snap shots.

Obj	Function	Object name	Type	Flag
10	Time	Time	3 Byte	CRT
This object provides the current time to the bus.				
11	Date	Date	3 Byte	CRT
This object provides the current date to the bus.				

Parameter Configuration

Configuration	iETS Server Settings	EIB Time Server Settings
Active Module	iETS Server / EIB Time Server	
IP Address	0.0.0.0	
IP Subnetmask	255.255.255.255	
Default Router	0.0.0.0	
BOOTP - Settings (Timeout)	Disabled	

Parameter	Settings
Active Module	iETS- Server EIB-Time-Server iETS- Server/EIB-Time-Server EIB-Object-Server EIB-Object-Server/EIB-Time-Server iETS- Server/ EIB-Object-Server iETS- Server/ EIB-Object-Server/ EIB-Time-Server
This parameter activates and deactivates specific modules. The module iETS Server offers remote configuration, module EIB-Time-Server provides date and time, and module EIB-Object-Server provides an event triggered transmission of pre-configured bus data to a PC or another Internet enabled device with appropriate software.	
Note: EIB-Object-Server and iETS-Server cannot be run at the same time. When both modules are pre-selected for alternating operation switching between these two operating modes at run-time is achieved by using a software.	

01 07 RemConf 801603

Parameter	Settings
IP Address Enter valid IP address in this format xxx.xxx.xxx.xxx	0.0.0.0
The default IP address of the IP interface is defined here. If BOOTP mode is enabled then this address is permanently replaced by the last IP address assigned by the BOOTP server. The IP address 0.0.0.0 is invalid. This setting only makes sense in conjunction with an activated BOOTP server (setting „Infinite“). If the device is configured without BOOTP server (setting „inactive“) then the device must have a valid network address to function correctly.	
IP Subnetmask Text input; Valid IP sub net mask in this format xxx.xxx.xxx.xxx	255.255.255.255
The default IP subnet mask of the IP Interface is entered here. If BOOTP mode is enabled BOOTP will permanently override any settings made here. If the device is configured without BOOTP (setting „inactive“) then this device must have the appropriate subnet mask to function properly.	
Default Router Text input; Valid IP address in this format xxx.xxx.xxx.xxx	0.0.0.0
The default router directs UDP telegrams to devices that are addressed outside of the local network. If BOOTP mode is activated then this address is permanently reassigned by the BOOTP server. If the BOOTP server does not provide a router address then the assumption is made that a router shall not be used. To configure the device without a standard router use the default address (0.0.0.0).	
BOOTP – Settings (Timeout)	Disabled 1 Min 2 Min 4 Min Infinite
The IP Interface provides three basically different settings for BOOTP server. <u>Inactive:</u> The device starts up with the default values listed below. There is no search for a BOOTP server. <u>BOOTP with timeout</u> The IP Interface is passive while searching for a BOOTP server. When this BOOTP server answers the network settings are loaded and the IP interface starts up with these settings. These settings permanently replace the default or previous settings. If a BOOTP server cannot be found within the timeout the device starts up with the last valid network settings. <u>BOOTP protocol only:</u> The IP Interface waits indefinitely for an answer from a BOOTP server. The device starts up with the network settings set by the server.	

Parameter iETS Server Settings

Configuration	iETS Server Settings	EIB Time Server Settings
iETS Server UDP Administration Port	50000	
iETS Server UDP Read Port	50001	
iETS Server UDP Write Port	50002	

Communication between iETS and IP Interface are relayed via ports. Port numbers in the interface must be identical with those used by the iETS. Valid port numbers are in the range of 49152 – 65535. Port numbers for the three ports must be different as shown in the default settings below.

Parameter	Settings
iETS- Server UDP - Administration- Port	50000
This port is used for exchange of administrative data.	
iETS- Server UDP - Read- Port	50001
This port is used for read transactions.	
iETS- Server UDP - Write- Port	50002
This port is used for write transactions.	

Parameter EIB Time Server Settings

Configuration	iETS Server Settings	EIB Time Server Settings
Time Base	Time Base 1900	
Time Zone	(GMT-06:00) Central Time (US & Canada)	
Daylight Saving Time Automatic	Active	
Transmission Rate (EIB)	1 h	
Default Address (IP) UDP Time Server	0.0.0.0	

Parameter	Settings
Time Base	Time Base 1970 Time Base 1900
UDP- Time servers typically use 01 Jan 1900 as the time base according to the Internet Standard RFC868. Optionally 01 Jan 1970 can be used as time base.	

01 07 RemConf 801603

Parameter	Settings
Time zone (DST <=> Daylight Saving Time)	(GMT-12:00) Eniwetok, Kwajalein ... (GMT-6:00) DST Central Time (US& Canada) ... (GMT+1:00) DST Brussels, Berlin, Bern, Rome ... (GMT+12:00) Fiji, Kamchatka, Marshall Is.
The parameter „Time zone“ determines the adaption of the time signal from the time server to the local time. A list of time zones is provided with the default time zone set to DST Central Time. The parameter „DST“ indicates automatic daylight savings time change-over.	
Transmission Rate (EIB)	1 Min 2 Min 5 Min 10 Min 30 Min 1 h 2 h 4 h 8 h 12 h 24 h
This is the rate of transmission for date and time on the EIB. Date and time are only transmitted if there is a contact with a UDP time server at the transmission time. Date and time are always readable after synchronization with the time server. Even if the contact with the time server should be lost the IP Interface updates the time automatically with a maximum daily error of six seconds.	
Default Address (IP) UDP Time Server	0.0.0.0
Text input; Valid IP address in this format xxx.xxx.xxx.xxx	
The EIB time server on the IP Interface must regularly synchronize with a UDP time server according to RFC 868 to provide the accurate date and time. This parameter defines the standard IP address of the time server. If BOOTP mode is activated the BOOTP server will overwrite this address permanently. If the BOOTP server does not provide a time server IP address then the IP Interface assumes that the time service should be deactivated. Use the default address (0.0.0.0) to configure the device without a standard time server, i.e. deactivate the time service function.	

Parameter EIB Object Server 1 ... 4

Using the ETS, standard group addresses can be assigned to up to ten (10) communication objects (binary – EIS1). A descriptive text, e.g. „Living rm“ can be assigned to each of these objects. Additionally, a condition can be defined for when the value of the object shall be sent to the PC. The descriptive text along with the current value of the communication object can be read and displayed using a PC software. Also a value can be written to the object and the associated group address. When using the Object Server individual EIB group addresses don't have to be known to the PC software communicating with the EIB.

The descriptive texts can be read via IP connection by a visualization software at start-up time.

The event driven communication of the Object Server works reliably even under strongly delayed network communication conditions like satellite links.

The Object Server offers a clean interface between EIB and PC software. The installer uses the familiar ETS for configuration. A PC software designer simply integrates an Object Server DLL as interface to EIB into his software.

The parameters for Object 0 are described representative for all Objects (0-9).

Parameter	Settings
Object 0: EIB data type	EIS 1
This parameter defines the EIB data type of the server object. This application software supports the EIB data type EIS 1 .	
Object 0: Object type	Disabled Binary Alarm; Alarm at 0 Binary Alarm; Alarm at 1 Binary Alarm; 0 to 1 Binary Alarm; 1 to 0 Binary Alarm; Alarm at Change
The server object is not available in the ETS if the parameter is set to disabled . Setting other values activates the object. These conditions may be selected for transmission of the object value: when receiving 0, when receiving 1, at change from 0 to 1, at change from 1 to 0, at any change.	

01 07 RemConf 801603

Parameter	Settings
Object 0: Name	Obj. 0
Any text describing the object may be entered here. The maximum length of the text is ten characters.	

Parameter EIB Object Server General

Configuration	EIB Object Server 1	EIB Object Server 2	EIB-Objekt-Server 3
EIB-Objekt-Server 4			
EIB Object Server General Settings			
EIB Object Server: UDP-Port	1500		
EIB Object Server: Repetitionrate	1 s		

Parameter	Settings
EIB-Objekt-Server: UDP Port	1500
The EIB Object Server uses the default port number 1500 . Port numbers of the IP Interface and the Object Server PC software must be the same. Port numbers may have any value in the range of 1500 – 65535, as long as the UDP port number is different from any of the others used.	
EIB Object Server: Repetition rate	0,5 s 1 s 2 s 5 s 10 s
The EIB Object Server relays bus events to a receiving software. Telegrams are repeated if they are lost on the transmission path. The parameter Repetition rate determines the time after which a telegram is resent if one should be lost. The value of repetition rate should be greater than 2.5 times the transmission time between IP interface and receiving PC. A network link with a transmission time of 1 s (e.g. a satellite link) should have a repetition rate greater than 2.5 s, i.e. the parameter value should be set to 5 s.	
Note: If the value of an EIB Object Server communication object changes faster than this value can be sent to the receiving software then value changes of a communication object that occur within the transmission time delay may be lost. The final value of the communication object will always be sent to the receiving software.	

Note:

Loading the application program via the RS232 interface may take up to 10 minutes.

While loading the application program the load progress indication of the ETS2 1.1 may not show any change for some time.

Note:

The LED labeled M should constantly be lit after loading the application program.

Otherwise, the application program should be loaded again.

Note:

When downloading through the IP Interface to a BCU1.x device ETS may falsely indicate a download error after the application has been fully loaded into the device.

This only happens when these circumstances apply:

- the application module of the device is not mounted on the PEI of BCU
- the time delay on the transmission line between IP Interface and iETS is longer than 2 seconds

ETS detects a load error which does not have an effect on the function of the device.

To avoid this situation mount the application modules on their respective BCU's when downloading. In case of parameter changes in an already installed system this should always be the case.

01 07 RemConf 801603

Notes for iETS configuration:

The IP Interface may be used for Remote Configuration with the iETS via satellite or other communication connections with large transmission times. This requires default settings described below.

Use Windows Start → Settings → System Configuration → ETS IP Configuration to open the configuration window. Select „Remote“ and „UDP“ or „UDP Satellite“ by clicking on the corresponding radio buttons in this window. Also insert the IP address of the IP Interface in the field Server Name. Acknowledge the settings and leave this window by clicking on „OK“.

The iETS requires the grey shaded entries in file „ete_eib.ini“, which may need to be added:

```
[ComPort]
UsageCheck=Enable
;UsageCheck=Disable

[Download]
;OptimisticWrite=OFF
;FastFilterTableDownload=OFF
```

```
[Gateway]
UseBcuTL=1
LifeCheckInterval=0
LifeCheckMethod=1
ALtimeout=20
LocalTimeout=7000
LLTimeout=7000
ALRepeat=3
```

```
[ReadGroup]
Timeout=100
```

```
[EibDriver]
```

Explanation of the grey shaded entries:

```
[Gateway]
UseBcuTL=1
LifeCheckInterval=0
LifeCheckMethod=1
```

These parameter settings are required for operation with the IP Interface.

```
ALtimeout=20
```

Time in seconds that the ETS waits for an answer telegram from the IP Interface.

```
LocalTimeout=7000
```

Time in milliseconds that the ETS waits for an answer from the IP Interface to a local request.

```
LLTimeout=7000
```

Time in milliseconds that the ETS waits for an answer from the IP Interface to Broadcast Linklayer Service requests.

```
ALRepeat=3
```

Determines how often the ETS repeats a telegram which has not been answered by the IP Interface.

```
[ReadGroup]
Timeout=100
```

Time in seconds while the ETS keeps the window „Group Read“ open.

iETS Error Messages – Error Solutions:

- ❖ “Error Message”
 - ◆ (potential) cause
 - ⇒ (potential) solution
- ❖ “Not able to install Physical External Interface!”
 - ◆ No COM Port has been selected.
 - ⇒ Double-click on connection symbol (lower right corner) or select Options – Settings. Both open the Settings window. Select a COM Port (e.g. COM1).
 - ◆ No IP network connection to Ethernet-UDP/IP interface.
 - ⇒ Check IP network connection. Open MS-DOS command window. If the IP address of the device is e.g. 60.135.150.2 then type “ping 60.135.150.2”. If an IP network connection is existant a response will be generated that will look similar to this: “Response from 60.135.150.2: Bytes=32 Time<10ms TTL=5”. Otherwise a connection is non-existent.
- ❖ “Timeout!”
 - ◆ The timeout values for Broadcast LinkLayer Services and/or LocalServices may be set too low.
 - ⇒ In file “ete_eib.ini” change the values of LocalTimeout and LLTimeout to
LocalTimeout=7000
LLTimeout=7000
Default values are LocalTimeout=700 and LLTimeout=700.
 - ◆ The values LocalTimeout and LLTimeout are not listed in the file “ete_eib.ini”.
 - ⇒ Add the parameters LocalTimeout and LLTimeout in file “ete_eib.ini” (see example above).
- ❖ The ETS window „Group Read“ closes before receiving or showing a reply
 - ◆ The window Group Read closes too early. The value of the parameter [ReadGroup] Timeout is not high enough.
 - ⇒ Change the value of [ReadGroup] Timeout in file “ete_eib.ini” to
Timeout=100
or a higher value if the delay on the communication link is greater than 2 seconds.
 - ◆ The parameter [ReadGroup] Timeout is not defined.
 - ⇒ Add the parameter [ReadGroup] Timeout in file “ete_eib.ini” (see example above).

01 07 RemConf 801603

Supported PC Software

When the parameters iETS-Server and/or EIB-Object-Server are set the IP Interface supports the selected software listed below.

iETS-Server

- iETS (ETS2, Version 1.2, in conjunction with the iETS Client Optionpack)
→ EIBA [<http://www.eiba.com>]
- Falcon Driver, Version 1.2
→ EIBA [<http://www.eiba.com>]

NOTE: A third party software package, solutions provider and/or systems integrator is required for complete user-specific solutions using the Falcon Driver.

EIB-Object-Server

- EIB-Object-Server DLL
→ IPAS GmbH [<http://www.ipas-gmbh.de>]