



CBX800 Gateway Software Configuration Parameter Guide

- System Layout
- Communication Settings
- Diagnostics
- User Information Section

SW package 003 and later

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System Layout

ID-NET Network Baud Rate (bps)

This parameter defines the baud rate for the ID-NET™ network if the Topology Role is set to ID-NET Slave Multidata.

Selections: from **19200** to **1Mb**.

Host Port Type

It allows selecting the Host Interface network type (Fieldbus and non-Fieldbus) for communication to/from the Host network.

<u>Selections:</u>	Serial	No Fieldbus Interface is selected. The Host Serial Interface is available for communication.
	Profibus (BM3x0)	Enables the Fieldbus branch to allow the Profibus interface parameters to be configured.
	DeviceNet (BM4x0)	Enables the Fieldbus branch to allow the DeviceNet interface parameters to be configured.
	Ethernet/IP (BM5x0) (Ethernet/IP - TCP/IP)	Enables the combination Fieldbus and TCP/IP branches for parameter configuration of either the Ethernet/IP interface (Fieldbus), the Ethernet TCP/IP Services which allow up to 2 User Sockets to be configured - (non Fieldbus), or both. IP Addressing in the Line Parameters branch determines the method of address selection, either user defined (Static Assignment), DHCP or Remote Assignment.
	CC-Link (BM11x0)	Enables the Fieldbus branch to allow the CC-Link interface parameters to be configured.
	CANopen (BM6x0)	Enables the Fieldbus branch to allow the CANopen interface parameters to be configured.
	Profinet (BM7x0) (Profinet IO - TCP/IP)	Enables the combination Fieldbus and TCP/IP branches for parameter configuration of either the Profinet IO interface (Fieldbus), the Profinet TCP/IP Services which allow up to 2 User Sockets to be configured - (non Fieldbus), or both. IP Addressing in the Line Parameters branch determines the method of address selection, either user defined (Static Assignment), DHCP or Remote Assignment.
	Modbus TCP (BM12x0) (Modbus TCP - TCP/IP)	Enables the combination Fieldbus and TCP/IP branches for parameter configuration of either the Modbus TCP interface (Fieldbus), the Modbus TCP/IP Services which allow up to 2 User Sockets to be configured - (non Fieldbus), or both. IP Addressing in the Line Parameters branch determines the method of address selection, either user defined (Static Assignment), DHCP or Remote Assignment.
	Ethernet TCP/IP (BM2x0) Ethernet/IP (explicit messaging) Modbus TCP	Enables the combination TCP/IP services (up to 2 User Sockets can be configured) and/or the following fieldbus: Modbus TCP (Server or Client). IP Addressing in the Line Parameters branch determines the method of address selection, either user defined (Static Assignment) or DHCP.

Host Port Serial Protocol

The following communication modes can be selected when using the Host Serial Port.

Selections:

Standard

Standard is the normal mode for the Host Serial Interface. In this communication mode the following physical connections are allowed (see Electrical interface):

- RS232
- RS485 full-duplex

Selecting Standard, the scanner will send out the data using the specified Handshake, but without any special protocol.

MUX32 Slave

MUX32 slave is the communication mode used for connections to a Multiplexer. For such a configuration the scanner must be set with the same communication parameters (Baud rate, Parity, etc.) as the multiplexer.

In this communication mode, only the RS485 half-duplex physical connection is possible.

The following values are automatically set:

- No parity
- 8 data bits
- 1 stop bit

Communication Settings

The communication may occur through:

Gateway	for Host communication when a Host Interface Module is installed in the CBX800 and a Fieldbus or TCP/IP communication type is selected for the Host Port Type.
Host Serial Port	for Host communication only when there is no Host Interface Module installed in the CBX800 and the Serial communication type is selected for the Host Port Type.
Auxiliary Serial Port	a CBX800 secondary serial port for CBX800 configuration through Genius™.
Data Source Serial Port	corresponds to the reader serial port for reader data monitoring and/or reader configuration through Genius™.

Gateway

The following parameters determine the communication between the CBX800 Gateway and the selected Fieldbus network.

All the parameters managing the Heartbeat are available in the Heartbeat parameters group.

Data Rx Destination

Allows the Host to send data through the Fieldbus gateway to either the CBX800 or to the device connected to the Data Source Serial Port. This is used principally as an alternative to the Aux Ports for CBX800 or Data Source configuration.

NOTE

When selecting Data Source, only serial data strings can be sent from the host (i.e. Host Mode programming or Serial On-Line strings). To configure the Data Source device through Genius, use the Data Source Aux Port.

Data Source Port Device Type

It allows the Host to forward special messages to the Data Source Serial Port in order to support the configuration of special devices connected to the Data Source Port. This parameter is available when Data Rx Destination is set to *Data Source Serial Port* and Data Flow Control is *disabled*.

<u>Selections:</u>	Standard	for most devices
	Vision Sensor	when DLA's Vision Sensor connected to the Data Source Serial Port

Heartbeat

This parameter enables/disables transmission of the Heartbeat message used to signal device or system status at regular intervals. If enabled, (checked), the Heartbeat message is always transmitted.

Heartbeat

The following parameters allow enabling the communication through the selected Fieldbus interface protocol:

The Heartbeat message is used to signal the device's or system's status at regular intervals to the Host. It has the following format:

Header	Counter	Field Sep	System Diagnostics	Field Sep	Network Diagnostics	Terminator
--------	---------	-----------	--------------------	-----------	---------------------	------------

Timeout

This parameter defines the amount of time between two message transmissions. If the selected timeout expires and no transmission has occurred, the Heartbeat message will be transmitted.

Heartbeat Header String

This parameter signals the beginning of the Heartbeat message. It can be a string of up to 128 characters.

Selections: characters from **NUL** (00H) to **~** (7EH)

The Heartbeat Header String should be different from the Heartbeat Terminator String.

Heartbeat Field Separators String

This parameter determines the string used to separate the fields within the Heartbeat message. It can be a string of up to 128 characters.

Selections: characters from **NUL** (00H) to **~** (7EH)

Counter Module

This parameter enables a counter to track the number of Heartbeat messages.

Selections:

Disable	no counter field in the Heartbeat message
10	counts cyclically from 0 to 9
100	counts cyclically from 0 to 99
1000	counts cyclically from 0 to 999
10000	counts cyclically from 0 to 9999
Custom	allows defining a custom counter start/stop range from 0 to 10000.

Custom Counter Module

This parameter is available when the Counter Module parameter is Custom. It allows defining the maximum count number to reach before recycling.

Selections: a number from **2** to **10000**

Counter Starting Value

For the Custom Counter Module this parameter selects the starting counter value.

Selections: a number from **0** to **9999**

Counter Direction

Sets the counter direction, either **up** or **down**.

System Diagnostics

If checked it enables the System Diagnostics Field in the Heartbeat message. The System Diagnostics field is a fixed 2-byte field. The first byte has the following meaning:

- 1 = Reading Station OK
- 3 = Presence Sensor Failure
- 4 = Reading Station Failure

Network Diagnostics

If checked it enables the Network Diagnostics Field in the Heartbeat message. The Network Diagnostics field is a fixed 32-byte field (one for each device in the network from device 0 (Master), to device 31). Each byte has the following meaning:

- 0 = device not expected
- 1 = device OK
- 2 = device expected but not present (not connected or possible network failure)
- 3 = device Failure

Heartbeat Terminator String

This parameter signals the end of the Heartbeat message. It can be a string of up to 128 characters.

Selections: characters from **NUL** (00H) to **~** (7EH)

The Heartbeat Header String should be different from the Heartbeat Terminator String.

Bus Communication

The parameters available in this group define the fundamental information about the communication.

NOTE

For further information regarding Fieldbus interfacing including downloadable support files, go to the HMS website at <http://www.anybus.com>, choose the link to the support page, select the Anybus-CompactCom product type and then your network type.

Baud Rate

This is a read-only parameter. The modules are set to use the automatic baud rate mechanism where the Fieldbus Master defines the speed of the connection. After connection, for some Fieldbus types, the actual speed of the Fieldbus will be displayed in this parameter.

For CC-Link Fieldbus, the Fieldbus Master does not set the network baud rate and therefore this parameter must be set manually according to the application specific network baud rate.

Max. Exchange Area Size (Input+Output)

This is a read-only parameter. It defines the (fixed) maximum size of the exchange area (total of both Input and Output Areas) available for messages between the Fieldbus Master and the Fieldbus module.

Selections:

Profibus	152
DeviceNet	152
Ethernet IP	152
CC-Link	254
CANopen	152
Profinet IO	64
Modbus TCP	152

Master Input Area Size

It defines the size of the message command sent from the Fieldbus module to the Fieldbus Master.

Selections:

Profibus	a value in the range 8 - 144
DeviceNet	a value in the range 8 - 144
Ethernet IP	a value in the range 8 - 144
* CC-Link	a value in the range 2 - 126
CANopen	a value in the range 8 - 144
Profinet IO	a value in the range 8 - 56
Modbus TCP	a value in the range 8 - 144

* For CC-Link Version 1, the Master Input Area Size must be less than or equal to 30.

Master Output Area Size

It defines the size of the message command sent to the Fieldbus module from the Fieldbus Master.

Selections:

Profibus	a value in the range 8 - 144
DeviceNet	a value in the range 8 - 144
Ethernet IP	a value in the range 8 - 144
* CC-Link	a value in the range 2 - 128
CANopen	a value in the range 8 - 144
Profinet IO	a value in the range 8 - 56
Modbus TCP	a value in the range 8 - 144

* For CC-Link Version 1, the Master Output Area Size must be less than or equal to 32.

Node Address (MAC ID)

NOTE

The Net Type and Address Selection hardware switch settings on the CBX800 are read at power-up and override the software settings. For correct software configuration, make sure these switch settings are compatible with your application.

The Media Access Control Identifier (MAC ID) is an integer identification value assigned to each node of the Fieldbus network. The defined value distinguishes a node from all other nodes on the same link.

Selections:

⁽¹⁾ Profibus	a value in the range 0 - 126
⁽²⁾ DeviceNet	a value in the range 0 - 64
⁽³⁾ CC-Link	a value in the range 1 - 64
⁽⁴⁾ CANopen	a value in the range 1 - 128

⁽¹⁾ For Profibus, the Node Address 126 forces the SSA (Set Station Address) service which allows the Fieldbus Master to assign the slave node address. It is no longer possible to visualize the new address from the slave node after the Master sets it.

⁽²⁾ For DeviceNet, the Node Address 64 allows the Fieldbus Master to assign the slave node address. It is possible to visualize the new address from the slave node after the Master sets it.

⁽³⁾ The range of valid addresses for CC-Link depends on the assigned Input/Output Area Size as follows:
 If the Input Area is greater than 6 or the Output Area is greater than 8, the max Node Address is 63.
 If the Input Area is greater than 14 or the Output Area is greater than 16, the max Node Address is 62.
 If the Input Area is greater than 22 or the Output Area is greater than 24, the max Node Address is 61.

⁽⁴⁾ For CANopen, the Node Address 128 forces the LSS (Layer Setting Service) which allows the Fieldbus Master to assign the baud rate and address, but it is no longer possible to visualize the new address value from the slave node.

Data Flow Control

It implements a reliable transmission protocol between Fieldbus Master (PLC) and Slave (Fieldbus module) allowing specific functionalities such as Synchronization, Fragmentation/Reassembling and Data Consistency. For more details refer to the "DAD / DPD Driver" document on the CD-ROM.

Selections:

Disable
DAD Driver
DPD Driver

Data Consistency

If checked (enabled), it allows improving the overall communication robustness of the Fieldbus network. For more details refer to the "DAD / DPD Driver" document on the CD-ROM.

Version

This parameter appears only if the Fieldbus type is CC-Link. It indicates the software version of the CC-Link controller. The possible values are Version **1** or **2**.

Stations

This is a read-only parameter that appears only if the Fieldbus type is CC-Link. It indicates how many logical stations are assigned to the physical slave.

Cycles

This is a read-only parameter that appears only if the Fieldbus type is CC-Link. It indicates the number of cycles the CC-Link Fieldbus Master must perform on the logical stations in order to manage the Exchange Areas.

Process Active Timeout (ms)

This value specifies how long the module shall stay in the "PROCESS_ACTIVE"-state after receiving a Modbus TCP request. The valid values are in the range from **0** to **65535** ms. The default value is 0 = timeout disabled.

Connection Timeout (s)

This setting specifies how long a Modbus TCP connection may be idle before it is closed by the module. The valid values are in the range from **0** to **65535** seconds, default = 60 seconds. 0 = timeout disabled.

Line Parameters

The parameters available in this group define and report the fundamental information about the system.

For details refer to "Internetworking with TCP/IP, vol. I", by Douglas E. Comer.

MAC

This is a read-only parameter, which displays the address of the network interface card (NIC).

Baud Rate

This is a read-only parameter. All modules are set to use the automatic baud rate mechanism where the Fieldbus-TCP/IP Master defines the speed of the connection. After connection the actual speed will be displayed in this parameter.

IP Addressing

<u>Selections:</u>	Static Assignment	the IP Address can be set manually through the IP_address, IP_netmask and IP_gateway parameters.
	DHCP	the IP address is assigned by a DHCP server when getting the device configuration. In this case the IP address parameters are read-only and display the DHCP assigned address.
	Remote Assignment	the IP address is assigned by a remote network device (PC) using the IPConfig address configuration application available on the CD-ROM. In this case the IP address parameters are read-only and display the remotely assigned address.

IP_address

If the IP Addressing parameter is set to Static Assignment, the Internet Protocol (IP) network address can be defined manually. Consult your network administrator to obtain a new address. For other IP Addressing selections, this parameter is read-only.

IP_netmask

If the IP Addressing parameter is set to Static Assignment, the subnet mask address can be defined manually. Consult your network administrator to obtain a new address. For other IP Addressing selections, this parameter is read-only.

IP_gateway

If the IP Addressing parameter is set to Static Assignment, the gateway address can be defined manually. Consult your network administrator to obtain a new address. For other IP Addressing selections, this parameter is read-only.

Station Name

This parameter is meaningful and mandatory only for the Profinet interface. It is a string (max 240 characters) which identifies the node on the network as an alternative to the IP address. If this value is changed by the host application during runtime, a reset is required in order for changes to have effect.

The Name can be made up only of letters or numbers. The . (dot) and - (dash) characters can be used but not as the first or last character in the Name.

TCP/IP Services

UserSocket #n

The TCP/IP protocol provides two (user-defined) application sockets for communication. For further details refer to the following bibliography:

- Internetworking with TCP/IP, vol. I (chap. 20), by Douglas E. Comer
- UNIX, network programming, by W. Richards Stevens

All the parameters managing the Heartbeat are available in the Heartbeat parameters group.

Status

Enables the TCP/IP User Socket #n.

Data Rx Destination

Allows the Host to send data through the TCP/IP gateway to either the CBX800 or the device connected to the Data Source Port. This is used principally as an alternative to the Aux Ports for CBX800 or Data Source configuration.

NOTE

When selecting Data Source, only serial data strings can be sent from the host (i.e. Host Mode programming or Serial On-Line strings). To configure the Data Source device through Genius, use the Data Source Aux Port.

Heartbeat

This parameter enables/disables transmission of the Heartbeat message used to signal device or system status at regular intervals. If enabled, (checked), the Heartbeat message is always transmitted.

Type

It defines the type of the socket:

Selection: **Server** the station waits for connections and can communicate with a maximum of 3 clients simultaneously
Client the station tries a connection towards the server

Only one connection can be associated with an application socket of type server TCP. If a second connection is opened by the same peer machine with an application socket of type server TCP, this new connection will replace the first.

Server Address

This parameter is available only when the socket is configured as a Client. It defines the IP address of the server to which the client tries to connect.

Protocol

It defines the protocol to be used for the TCP/IP communication.

Selection: **TCP**
 UDP

For details refer to "Internetworking with TCP/IP, vol. I", by Douglas E. Comer.

Port

It defines the port number of the socket.

For details refer to "Internetworking with TCP/IP, vol. I", by Douglas E. Comer.

Heartbeat

The following parameters allow enabling the communication through the TCP/IP interface protocol:

The Heartbeat message is used to signal the device's or system's status at regular intervals to the Host. It has the following format:

Header	Counter	Field Sep	System Diagnostics	Field Sep	Network Diagnostics	Terminator
--------	---------	-----------	--------------------	-----------	---------------------	------------

Timeout

This parameter defines the amount of time between two message transmissions. If the selected timeout expires and no transmission has occurred, the Heartbeat message will be transmitted.

Heartbeat Header String

This parameter signals the beginning of the Heartbeat message. It can be a string of up to 128 characters.

Selections: characters from **NUL** (00H) to ~ (7EH)

The Heartbeat Header String should be different from the Heartbeat Terminator String.

Heartbeat Field Separators String

This parameter determines the string used to separate the fields within the Heartbeat message. It can be a string of up to 128 characters.

Selections: characters from **NUL** (00H) to ~ (7EH)

Counter Module

This parameter enables a counter to track the number of Heartbeat messages.

Selections: **Disable** no counter field in the Heartbeat message
 10 counts cyclically from 0 to 9
 100 counts cyclically from 0 to 99
 1000 counts cyclically from 0 to 999
 10000 counts cyclically from 0 to 9999
 Custom allows defining a custom counter start/stop range from 0 to 10000.

Custom Counter Module

This parameter is available when the Counter Module parameter is Custom. It allows defining the maximum count number to reach before recycling.

Selections: a number from **2** to **10000**

Counter Starting Value

For the Custom Counter Module this parameter selects the starting counter value.

Selections: a number from **0** to **9999**

Counter Direction

Sets the counter direction, either **up** or **down**.

System Diagnostics

If checked it enables the System Diagnostics Field in the Heartbeat message. The System Diagnostics field is a fixed 2-byte field. The first byte has the following meaning:

- 1 = Reading Station OK
- 3 = Presence Sensor Failure
- 4 = Reading Station Failure

Network Diagnostics

If checked it enables the Network Diagnostics Field in the Heartbeat message. The Network Diagnostics field is a fixed 32-byte field (one for each device in the network from device 0 (Master), to device 31). Each byte has the following meaning:

- 0 = device not expected
- 1 = device OK
- 2 = device expected but not present (not connected or possible network failure)
- 3 = device Failure

Heartbeat Terminator String

This parameter signals the end of the Heartbeat message. It can be a string of up to 128 characters.

Selections: characters from **NUL** (00H) to **~** (7EH)

The Heartbeat Header String should be different from the Heartbeat Terminator String.

Modbus TCP

This option determines the communication between the scanner, or, in a multi-sided layout, between several scanners and the Fieldbus network.

The Modbus Application Protocol-TCP/IP allows data transmission between the server and client. Both the scanner and a Quantum family PLC (programmer logical controller) can be either server or client.

This protocol implements Function Code 16(10Hex), which allows copying the application format message into the registers of the Modicon PLC controller. The application format rules for the Modicon message are the same of the Standard protocol on the Serial Line (for example, header and terminators), but it is recommended not to use Headers and Terminators since the mechanism to bind information is already native on the Modicon protocol. Both the parameters managing respectively the PLC memory register address value and the number of registers can be modified (see Start Register Number and Number of Registers for details). This protocol also implements function code F03 (read holding register), and F06 (preset single register).

The following parameters allow enabling the communication through the CBXGateway to the Fieldbus network.

Status

This parameter enables the Modbus TCP socket and allows setting the Modbus TCP parameters.

Type

It defines the type of the Modbus TCP socket:

Selection: **Server** The station waits for connection and can communicate with one single client at a time. If a second connection is opened by the same peer machine with an application socket of type server TCP, this new connection will be ignored.

Client The station tries a connection towards the server.

Server Address

This parameter is available only when the Modbus TCP socket is configured as a Client. It defines the IP address of the server to which the client tries to connect.

Start Register Number

It defines the "Starting Address" field of the Modbus TCP message. For details refer to "Modicon Modbus Protocol Reference Guide" by AEG Schneider Automation.

Number of Registers

It defines the maximum number of registers according to the maximum length of the message to be transmitted. The size of the message transmitted is constant, thus, it must be big enough to contain the largest barcode information. If the message is longer than the one expected, it will be truncated during transmission; if shorter, all unused characters will be filled with 0 binary. For details refer to "Modicon Modbus Protocol Reference Guide" by AEG Schneider Automation.

Ethernet/IP

(explicit messaging)

Ethernet/IP is a high-level industrial application layer protocol for industrial automation applications. Based on the standard TCP/IP protocol suite, it uses the traditional Ethernet hardware and software to define an application layer protocol for configuring, accessing and controlling industrial automation devices.

NOTE

This feature is only available when BM2x0 is running SW Release 2.02.01 or later.

Status

This parameter enables the Ethernet/IP service.

Host Serial Port

The following parameters determine the communication between the CBX800 Gateway and a Serial Host.

All parameters managing the serial communication are available in the Line Parameters group while all the parameters managing the Heartbeat are available in the Heartbeat parameters group.

Data Rx Destination

Allows the Serial Host to send data to either the CBX800 or the device connected to the Data Source Port. This is used principally as an alternative to the Aux Ports for CBX800 or Data Source configuration.

NOTE

When selecting Data Source Serial Port, only serial data strings can be sent from the host (i.e. Host Mode programming or Serial On-Line strings). To configure the Data Source device through Genius, use the Data Source Aux Port.

Heartbeat

This parameter enables/disables transmission of the Heartbeat message used to signal device or system status at regular intervals. If enabled, (checked), the Heartbeat message is always transmitted.

Heartbeat

The following parameters allow configuring the Heartbeat message for communication through the Host Serial Port.

The Heartbeat message is used to signal the device's or system's status at regular intervals to the Host. It has the following format:

Header	Counter	Field Sep	System Diagnostics	Field Sep	Network Diagnostics	Terminator
--------	---------	-----------	--------------------	-----------	---------------------	------------

Timeout

This parameter defines the amount of time between two message transmissions. If the selected timeout expires and no transmission has occurred, the Heartbeat message will be transmitted.

Heartbeat Header String

This parameter signals the beginning of the Heartbeat message. It can be a string of up to 128 characters.

Selections: characters from **NUL** (00H) to **~** (7EH)

The Heartbeat Header String should be different from the Heartbeat Terminator String.

Heartbeat Field Separators String

This parameter determines the string used to separate the fields within the Heartbeat message. It can be a string of up to 128 characters.

Selections: characters from **NUL** (00H) to **~** (7EH)

Counter Module

This parameter enables a counter to track the number of Heartbeat messages.

<u>Selections:</u>	Disable	no counter field in the Heartbeat message
	10	counts cyclically from 0 to 9
	100	counts cyclically from 0 to 99
	1000	counts cyclically from 0 to 999
	10000	counts cyclically from 0 to 9999
	Custom	allows defining a custom counter start/stop range from 0 to 10000.

Custom Counter Module

This parameter is available when the Counter Module parameter is Custom. It allows defining the maximum count number to reach before recycling.

Selections: a number from **2** to **10000**

Counter Starting Value

For the Custom Counter Module this parameter selects the starting counter value.

Selections: a number from **0** to **9999**

Counter Direction

Sets the counter direction, either **up** or **down**.

System Diagnostics

If checked it enables the System Diagnostics Field in the Heartbeat message. The System Diagnostics field is a fixed 2-byte field. The first byte has the following meaning:

- 1 = Reading Station OK
- 3 = Presence Sensor Failure
- 4 = Reading Station Failure

Network Diagnostics

If checked it enables the Network Diagnostics Field in the Heartbeat message. The Network Diagnostics field is a fixed 32-byte field (one for each device in the network from device 0 (Master), to device 31). Each byte has the following meaning:

- 0 = device not expected
- 1 = device OK
- 2 = device expected but not present (not connected or possible network failure)
- 3 = device Failure

Heartbeat Terminator String

This parameter signals the end of the Heartbeat message. It can be a string of up to 128 characters.

Selections: characters from **NUL** (00H) to **~** (7EH)

The Heartbeat Header String should be different from the Heartbeat Terminator String.

Line Parameters

Electrical Interface

The Host Serial Interface is compatible with the following electrical standards:

Selections: **RS232**
 RS485 full duplex

Handshake

Handshake is a communication control used to protect against data loss, it can be achieved via hardware (RTS\CTS protocol) or software (Xon\Xoff protocol).

Selections: **None**
 Hardware (RTS/CTS)
 Software (Xon/Xoff)

Baud Rate

Baud rate is the transmission speed in a communication line.

Selections: from **1200** to **115200**

Parity

Parity is a parameter indicating the presence of a control bit in the communication protocol frame.

Selections: **None**
 Odd
 Even

Data Bits

Data Bits is a parameter indicating the number of bits composing the data packet of the communication protocol frame.

Stop Bits

Stop Bits is a parameter indicating the number of stop bits in the data packet of the communication protocol frame.

MUX 32 Protocol Address

When Host Port Serial Protocol is set to MUX32 Slave, the node address must be defined for the connection of the CBX800 to a Multiplexer.

Selections: a value from **0** to **31**

Auxiliary Serial Port

This group determines the communication through the Auxiliary Serial Port (RS232 only). This port is typically used for CBX800 configuration through Genius™. It can also be used to communicate the heartbeat message.

All parameters managing the serial communication are available in the Line Parameters group while all the parameters managing the Heartbeat are available in the Heartbeat parameters group.

Heartbeat

This parameter enables/disables transmission of the Heartbeat message used to signal device or system status at regular intervals. If enabled, (checked), the Heartbeat message is always transmitted. The Heartbeat message can be enabled even though data is not sent on the Auxiliary Serial Port.

Heartbeat

The following parameters allow configuring the Heartbeat message for communication through the Auxiliary Serial Port.

The Heartbeat message is used to signal the device's or system's status at regular intervals to the Host. It has the following format:

Header	Counter	Field Sep	System Diagnostics	Field Sep	Network Diagnostics	Terminator
--------	---------	-----------	--------------------	-----------	---------------------	------------

Timeout

This parameter defines the amount of time between two message transmissions. If the selected timeout expires and no transmission has occurred, the Heartbeat message will be transmitted.

Heartbeat Header String

This parameter signals the beginning of the Heartbeat message. It can be a string of up to 128 characters.

Selections: characters from **NUL** (00H) to **~** (7EH)

The Heartbeat Header String should be different from the Heartbeat Terminator String.

Heartbeat Field Separators String

This parameter determines the string used to separate the fields within the Heartbeat message. It can be a string of up to 128 characters.

Selections: characters from **NUL** (00H) to **~** (7EH)

Counter Module

This parameter enables a counter to track the number of Heartbeat messages.

Selections:

Disable	no counter field in the Heartbeat message
10	counts cyclically from 0 to 9
100	counts cyclically from 0 to 99
1000	counts cyclically from 0 to 999
10000	counts cyclically from 0 to 9999
Custom	allows defining a custom counter start/stop range from 0 to 10000.

Custom Counter Module

This parameter is available when the Counter Module parameter is Custom. It allows defining the maximum count number to reach before recycling.

Selections: a number from **2** to **10000**

Counter Starting Value

For the Custom Counter Module this parameter selects the starting counter value.

Selections: a number from **0** to **9999**

Counter Direction

Sets the counter direction, either **up** or **down**.

System Diagnostics

If checked it enables the System Diagnostics Field in the Heartbeat message. The System Diagnostics field is a fixed 2-byte field. The first byte has the following meaning:

- 1 = Reading Station OK
- 3 = Presence Sensor Failure
- 4 = Reading Station Failure

Network Diagnostics

If checked it enables the Network Diagnostics Field in the Heartbeat message. The Network Diagnostics field is a fixed 32-byte field (one for each device in the network from device 0 (Master), to device 31). Each byte has the following meaning:

- 0 = device not expected
- 1 = device OK
- 2 = device expected but not present (not connected or possible network failure)
- 3 = device Failure

Heartbeat Terminator String

This parameter signals the end of the Heartbeat message. It can be a string of up to 128 characters.

Selections: characters from **NUL** (00H) to **~** (7EH)

The Heartbeat Header String should be different from the Heartbeat Terminator String.

Line Parameters

Baud Rate

Baud rate is the transmission speed in a communication line.

Selections: from **1200** to **115200**

Parity

Parity is a parameter indicating the presence of a control bit in the communication protocol frame.

Selections: **None**
Odd
Even

Data Bits

Data Bits is a parameter indicating the number of bits composing the data packet of the communication protocol frame.

Stop Bits

Stop Bits is a parameter indicating the number of stop bits in the data packet of the communication protocol frame.

Data Source Serial Port

This group determines the communication through the Data Source Serial Port. The reading device is connected to this port and its data is automatically sent to the Host Serial Port, Auxiliary Serial Port or Host Interface Gateway.

All parameters managing the serial communication are available in the Line Parameters group.

Send Data On

Defines when the data from the reading device connected to the Data Source will be transmitted.

Selections: **Termination String** Data will be transmitted (towards the selected **Data Destination**) when the Expected Termination String is received from the reading device.
Timeout For reading devices that do not use termination strings this parameter allows data transmission based on a timeout (automatically managed in software).

Expected Termination String (max 32 chars)

When **Send Data On** is set to *Termination String*, it defines the expected string from the reading device used to terminate the data and therefore transmit it.

Cutoff Terminators Before Sending

When **Send Data On** is set to *Termination String*, and this parameter is *enabled*, the **Expected Terminator String** is used to determine the reader's Data Packet and is then removed from the message. Only the data is sent out towards the Host on the selected Data Destination interface.

If this parameter is *disabled* the entire Data Packet plus the **Expected Terminator String** from the reader is sent out through the CBX800 towards the Host on the selected Data Destination interface.

Data Destination: Auxiliary Serial Port

The reading device connected to Data Source will pass its data through to the Auxiliary Serial Port interface.

Data Destination: Host Serial Port

The reading device connected to Data Source will pass its data through to the Host Serial Port interface.

Data Destination: Gateway

The reading device connected to Data Source will pass its data through to the Gateway interface.

Data Destination: ID-NET

If the CBX800 Topology Role is set as ID-NET™ Multidata Slave, the reading device connected to Data Source will pass its data through to the ID-NET™ interface.

This data can also be passed through to the Host Serial Port interface.

Line Parameters

Electrical Interface

The Data Source Serial Interface is compatible with the following electrical standards:

Selections: **RS232**
 RS485 full duplex

Baud Rate

Baud rate is the transmission speed in a communication line.

Selections: from **1200** to **115200**

Parity

Parity is a parameter indicating the presence of a control bit in the communication protocol frame.

Selections: **None**
 Odd
 Even

Data Bits

Data Bits is a parameter indicating the number of bits composing the data packet of the communication protocol frame.

Stop Bits

Stop Bits is a parameter indicating the number of stop bits in the data packet of the communication protocol frame.

Diagnostics

When enabled, this group allows selection of the desired diagnostic messages and definition of the relative diagnostic management parameters.

The relative transmission parameters are described in Actions.

The relative data format parameters are described in Format.

Enable

If checked, it allows configuring the Diagnostics parameters. Diagnostic error messages (or alarms) can be sent as strings when the Diagnostic Message Format parameter is set as a User Defined String.

ID-NET Controller Failure

If checked, it allows sending an alarm signalling a malfunctioning of the CBX800 ID-NET™ network controller.

Fieldbus Failure

If checked, it allows sending an alarm whenever there is a communication error between the CBX800 and the Fieldbus module inside the CBX800.

Fieldbus Configuration Error

If checked, it allows sending an alarm whenever a configuration error has occurred between the CBX800 and the Fieldbus module inside the CBX800.

Fieldbus DHCP Problem

If checked, it allows sending an alarm whenever there is a communication problem between the DHCP server and the Fieldbus module inside the CBX800.

Fieldbus Mismatch

If checked, it allows sending an alarm whenever the Fieldbus module inside the CBX800 doesn't match the CBX800 configuration memory.

Wrong Rotary Switch Selection

If checked, it allows sending an alarm whenever one or more of the selected Rotary Switch settings inside the CBX800 doesn't match the CBX800 configuration memory.

Actions

When diagnostics are enabled, this group allows selection of all the parameters managing diagnostic message transmission by the CBX800.

Tx Diagnostics Every

It defines the time interval in which the diagnostic messages will be transmitted.

Interface Transmission (Aux, Host Serial Port, Fieldbus, User Socket #1, User Socket #2, etc.)

This parameter defines the interface(s) on which the diagnostic messages will be transmitted. The selected interface can be different from the code transmission interface.

NOTE

The Host Serial Port Interface is not compatible with Fieldbus or User Socket selections. If a Host Interface module is installed in the CBX800 Gateway, the Host Serial Port Interface selection is not available.

Format

This group allows definition of the diagnostic message formatting sent by the CBX800 to the system.

The format of diagnostic messages in general is <Header><Message><Terminator> where the Internal Numeric Message has the following syntax:

xx#yyy space...

xx is either the address of the device: 00 = Master, all others = Slaves; or the Node Identification description string.
yyy is the diagnostic error number as described in the diagnostic tables.

Internal Numeric Message Example

<STX>00#132 01#1<ETX> Master (00) No Phase Timeout + Slave 01 not responding

Header String

Headers (up to 128 bytes) can be defined and transmitted as a block preceding the diagnostic message.

Selections: characters from **NUL** (00H) to ~ (7EH).

Termination String

Terminators (up to 128 bytes) can be defined and transmitted as a block following the diagnostic message.

Selections: characters from **NUL** (00H) to ~ (7EH).

Diagnostic Message Format

It defines whether the message will be sent as an Internal Numeric Message or as a User Defined String.

User Defined Messages

The following messages substitute the Internal Numeric Messages when Diagnostic Message Format is set to User Defined Messages.

The format of diagnostic messages in general is <Header><Message><Terminator> where the User Defined Message has the following syntax:

xx#yyy space...

xx is either the address of the device: 00 = Master, all others = Slaves; or the Node Identification description string.
yyy is the User Defined Message string

User Defined Message Examples

<STX>00#* 01#^<ETX> Master (00) No Phase Timeout + Slave 01 not responding

<STX>00#"No Phase Timeout" 01#"Slave Not Responding"<ETX> "No Phase Timeout" + "Slave Not Responding" (user defined strings)

ID-NET Controller Failure

It defines the message string (up to 128 bytes) that will be sent as a diagnostic message whenever the CBX800 ID-NET™ network controller failure is present.

Fieldbus Failure

It defines the message string (up to 128 bytes) that will be sent as a diagnostic message whenever there is a communication error between the CBX800 and the Fieldbus module inside the CBX800.

Fieldbus DHCP Problem

It defines the message string (up to 128 bytes) that will be sent as a diagnostic message whenever there is a communication problem between the DHCP server and the Fieldbus module inside the CBX800.

Fieldbus Configuration Error

It defines the message string (up to 128 bytes) that will be sent as a diagnostic message whenever a configuration error has occurred between the CBX800 and the Fieldbus module inside the CBX800.

Fieldbus Mismatch

It defines the message string (up to 128 bytes) that will be sent as a diagnostic message whenever the Fieldbus module inside the CBX800 doesn't match the one saved in the CBX800 configuration memory.

Wrong Rotary Switch Selection

It defines the message string (up to 128 bytes) that will be sent as a diagnostic message whenever one or more of the selected Rotary Switch settings inside the CBX800 doesn't match the CBX800 configuration memory.

User Information Section

This section allows storing specific device and system identity information together with the CBX800 configuration. It can be visualized in Genius™, printed together with the configuration report and also through Host Mode Programming.

User Name

Add the User or Company name to the CBX800 information.

Device Name

Add the Device Name to the CBX800 information.

Line Name

Add the workstation Line Name or CBX800 position to the CBX800 information.

System Information Section

Device Information

This displays read-only device identity information. It can be visualized in Genius™, printed together with the configuration report and also through Host Mode Programming.

Detected Model

Displays the CBX800 model number.

Serial Number

Displays the CBX800 serial number.

References

Diagnostic Error Conditions

The following tables summarize all Internal Numeric Error Messages generated when working in the network.

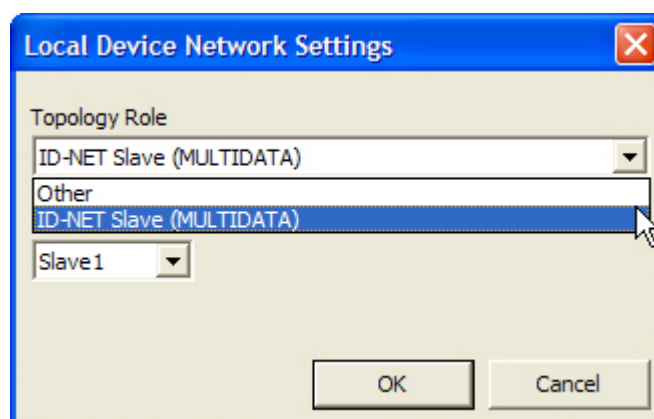
Diagnostic Error Messages

Other / MULTIDATA Slave

Diagnostic Error Number	Meaning
[151]	ID-NET Controller Failure: the CBX800 ID-NET™ network controller has failed.
[187]	Wrong Rotary Switch Selection: one or more of the selected Rotary Switch settings inside the CBX800 doesn't match the CBX800 configuration memory.
[189]	Fieldbus Failure: there is a communication error between the CBX800 and the Fieldbus module inside the CBX800.
[191]	Fieldbus Mismatch: the Fieldbus module inside the CBX800 doesn't match the CBX800 configuration memory.
[193]	Fieldbus Configuration Error: a configuration error has occurred between the CBX800 and the Fieldbus module inside the CBX800.
[195]	Fieldbus DHCP Problem: a communication problem has occurred between the DHCP server and the Fieldbus module inside the CBX800.

Local Device Network Settings

By selecting the "Local Device Network Settings" from the Device menu, the following dialog box appears allowing to define the topology role of the local device:



Topology Role

Defines the device topology role:

ID-NET™ (MULTIDATA): SlaveThe device is connected as an ID-NET™ Slave in a master/slave multidata configuration.

Other: This selection allows Local Device Network Settings to support Fieldbus networks, Mux 32 multiplexer networks or Stand Alone applications.

The Master/Slave MULTIDATA configuration is an ID-NET™ network configuration which allows the Slave devices to be configured differently and independently from the Master. In this way the Slave devices act as Stand Alone Devices which can send their data not only to their configured communication channels but also to the Master. The Master can be configured to send this data as a complete message to its configured communication channels with header, address and separators.

Slave Address

When setting the device topology role to Slave, it is necessary to define the ID-NET™ slave address within the network (1..31).

Host Mode Programming

An alternative method of programming the Gateway is by sending programming strings over one of the serial interfaces.

These strings are transmitted from the Host system to the device on either the Auxiliary RS232 or Host Serial RS232/RS485 interface.



This is called Host Mode programming.

Once the programming session has started on one of the interfaces, the other is disabled until programming is over.

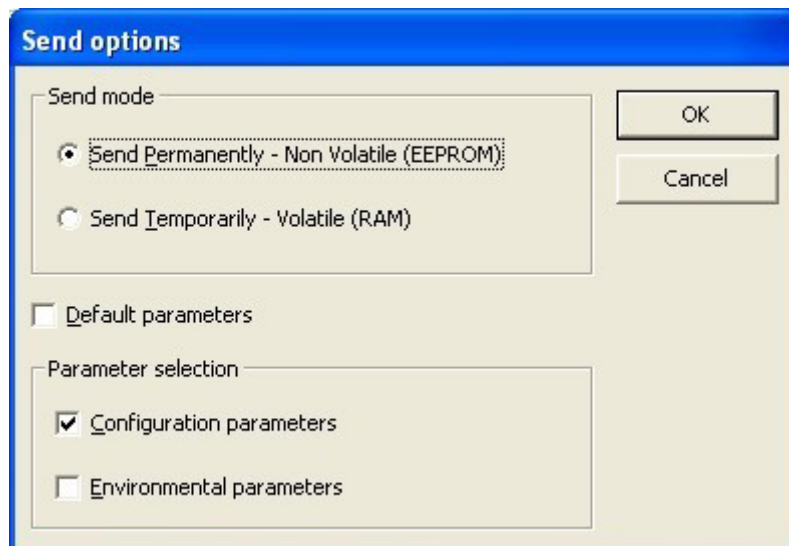
For a detailed description of the programming commands refer to the [Host Mode Programming](#) document on the CD-ROM.

Send Configuration Options

The CBX800 parameters are divided into two main classes, Configuration and Environmental which are effected

differently by the Send Default  and Send Configuration  commands.

Configuration Parameters regard parameters that are specific to the CBX800. These parameters are influenced by the Send Default and Send Configuration commands, that is they are overwritten by these commands. The same parameters are modified by the following "Send with Options..." dialog from the Device Menu:



Environmental Parameters regard the CBX800 Identity and Position in a Network (ID-NET™, MUX 32) and are not influenced by the Send Default and Send Configuration commands. This allows individual devices to be configured differently without affecting their recognized position in the network.

The following is a list of the Environmental Parameters:

READING SYSTEM LAYOUT

- Local Device Network Settings

LOCAL DEVICE NETWORK SETTING

- Cluster Description
- Topology Role
- ID-NET Slave Address
- Device Enable
- Device Description

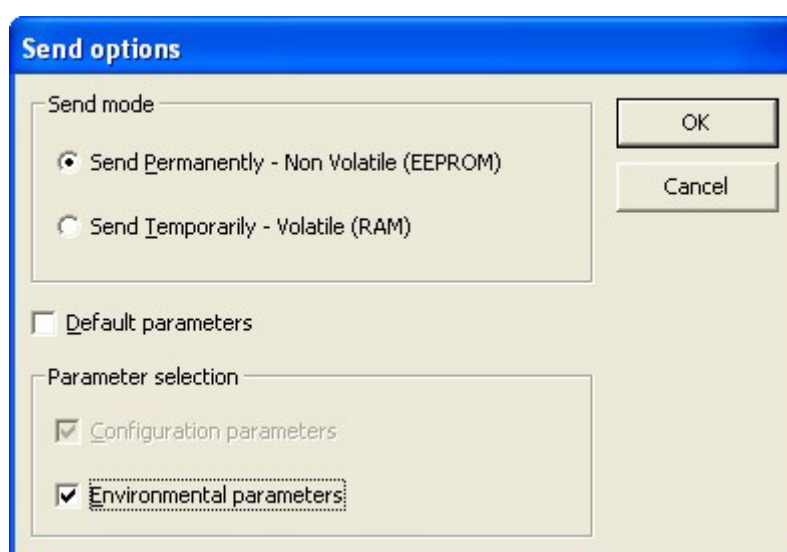
COMMUNICATION SETTINGS

- MUX 32 Protocol Address

USER INFORMATION SECTION

- User Name
- Device Name
- Line Name

For CBX800 replacement it is necessary to send the previously saved configuration (both Configuration and Environmental parameters) to the new CBX800. To do this select "Send with Options..." from the Device Menu and check the Environmental Parameters checkbox:



In order to return a CBX800 to its absolute default parameters including Environmental parameters, the following Send with Option..." dialog must be used:

