



IntesisBox[®]-Modbus Server

Siemens Cerberus AlgoRex (printer port)

User Manual

v10 r12 eng

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Gateway for the integration of Siemens Cerberus AlgoRex fire detection systems in Modbus enabled monitoring and control systems.

Order Code:

IBOX-MBS-ALGOREX

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1. Description

1.1 Introduction

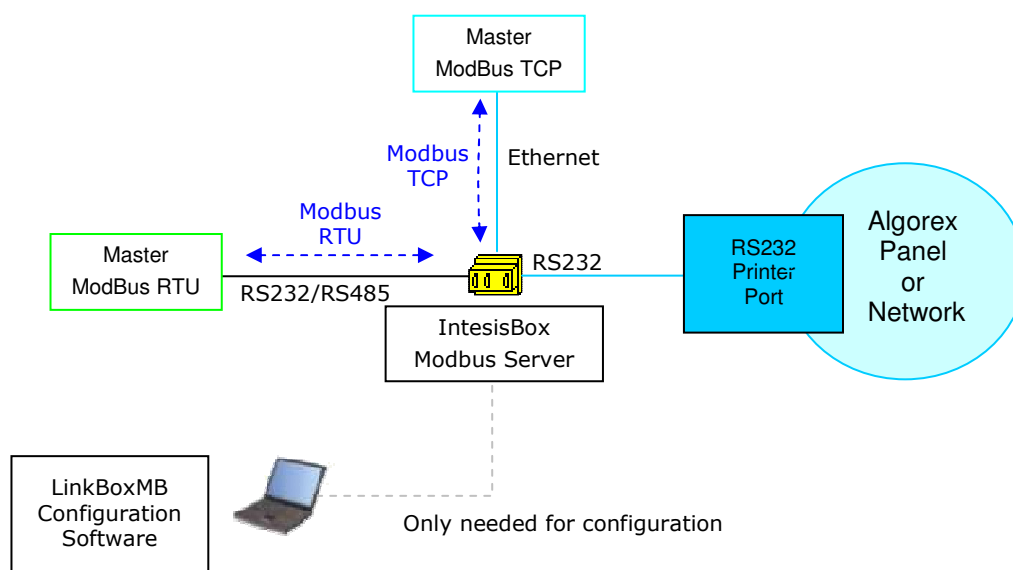
Integration of Siemens Cerberus Algorex fire panels into a Modbus master device or system, using *IntesisBox-Modbus Server Algorex* gateway.

The aim of this integration is to make available points (elements) states of Siemens Algorex fire panels from a Modbus master device or system. For this *IntesisBox-Modbus Server Algorex* gateway works, from the Modbus system point of view, acting as a modbus slave device responding to data polls coming from the Modbus master, and from the Siemens Algorex system point of view acting as a serial device connected to its RS232 printer port, and serving the data received from Algorex to the Modbus side.

IntesisBox connects to the RS232 printer port of the Algorex panel, either through the E3I020 RS232 module, or through the AlgoPilot B3Q module.

If there are more than one Siemens fire panel in network, all of them can be integrated using just one IntesisBox (up to 4000 points are supported in one IntesisBox).

If the panels are independent (not connected in network), then one IntesisBox must be used per every panel.



Integration of Siemens Cerberus AlgoRex fire panels using *IntesisBox-Modbus Server*

1.2 Functionality

General overview:

The communication protocol of Siemens Cerberus AlgoRex is based on events, the states of the system elements (detectors, modules, etc.) are transmitted through the protocol in the form of events whenever they occur.

The role of IntesisBox consists in associate the elements of the Algorex system with ModBus register addresses.

IntesisBox has a configuration table associating Cerberus AlgoRex elements with ModBus register addresses. This table is configured using LinkBoxMB software tool in a simple and friendly way. To ease the configuration process, the import of EP7 and EP5 Siemens Cerberus structure definition files is allowed by the configuration software tool LinkBoxMB.

The procedure of configuration consist in, from a list of Cerberus elements (points) supplied by the fire system installer, in an EP7 or EP5 structure definition file, import this information in the configuration table of the IntesisBox and associate the desired Modbus register addresses to the Cerberus elements wanted to be integrated (better associate consecutive Modbus register addresses to be able to poll multiple registers from the Modbus master device). Once this configuration has been done with the configuration software tool LinkBoxMB, you have to download this configuration to IntesisBox via a serial connection and IntesisBox will reboot with the new configuration working.

The numerical values that will represent, in the Modbus registers, the different possible states of the Cerberus points can be selected in the configuration process.

IntesisBox can be configured as ModBus TCP slave or ModBus RTU (RS232/RS485) slave.

The maximum number of points supported is 4000.

The control of the Algorex panel is not permitted, just the monitoring (no commands toward the panel are supported).

Any Cerberus AlgoRex element can be configured in IntesisBox, just indicating for every element the following necessary parameters:

- Area.
- Section.
- Zone.
- Element.

Also the following general events are detected by IntesisBox and translated to Modbus:

- Dialer.
- Power supply.
- Battery.

The integration operation is as follow:

Once IntesisBox is configured and connected to both systems (Algorex and Modbus), it listens continuously the Algorex serial printer port for new events regarding the points configured in it (the table mentioned before). With every event, the new status received is updated in the Intesisbox's memory and become available to be read by the modbus master device.

As mentioned before, the protocol in the serial printer port of the Algorex is based in spontaneous messages, that is, only element's change of status is sent through the protocol whenever it occurs. Because of this, when IntesisBox starts up, actual status of elements is unknown, only events received from that moment will be reflected in modbus side.

1.3 Limits

Element	Max.	Notes
Number of Panels	No limit	IntesisBox has no limit in terms of maximum number of Algorex Panels in network supported, in fact no panels are defined into IntesisBox, just Elements or Points (existing in any Algorex Panel in network).
Number of Points	4000	Number of Cerberus elements or points that can be defined into IntesisBox.

2. Modbus interface of IntesisBox

2.1 Description

IntesisBox acts as a slave device in its modbus interface, this interface can be the Ethernet port (if using Modbus TCP), or the RS232 port or the RS485 port (if using Modbus RTU). To access the points and resources of the IntesisBox from modbus system, you must specify as the modbus register addresses, those configured inside IntesisBox corresponding to Cerberus elements. See details below in this document.

2.2 Definition of signals

Every signal defined in IntesisBox corresponds to a Cerberus element. Every possible combination of event category (Alarm, Fault, Activation...) and status (Unacknowledged, Acknowledged, Clear) of the element (detector, callpoint...) in the Cerberus system can be freely associated to a numerical value in modbus. This numerical value will be the point's value read from Modbus when the associated Cerberus element is in this state. All the points are of type analog from the point of view of Modbus.

2.3 Functions supported

ModBus functions 03 and 04 (*read holding registers* and *read input registers*) can be used to read Modbus registers.

For this integration it is not allowed to write Modbus registers.

If *poll records* are used to read more than one register, it is necessary that the range of addresses requested contains valid addresses, if not the corresponding ModBus error code will be returned.

All the registers are of 2 bytes and its content is expressed in MSB..LSB.

ModBus error codes are fully supported, they will be sent whenever a non valid modbus action or address is required.

3. LinkBoxMB. Configuration & monitoring tool for IntesisBox Modbus Server series

3.1 Introduction

LinkBoxMB is a Windows® compatible software developed specifically to monitor and configure IntesisBox-Modbus Server series. It is possible to configure all external protocols available for IntesisBox-Modbus Server and to maintain different customer's configurations based on a LinkBoxMB project for every different installation. Maintaining always on hard disk a copy of the last configuration files for every external protocol and customer, that is to say for every project.

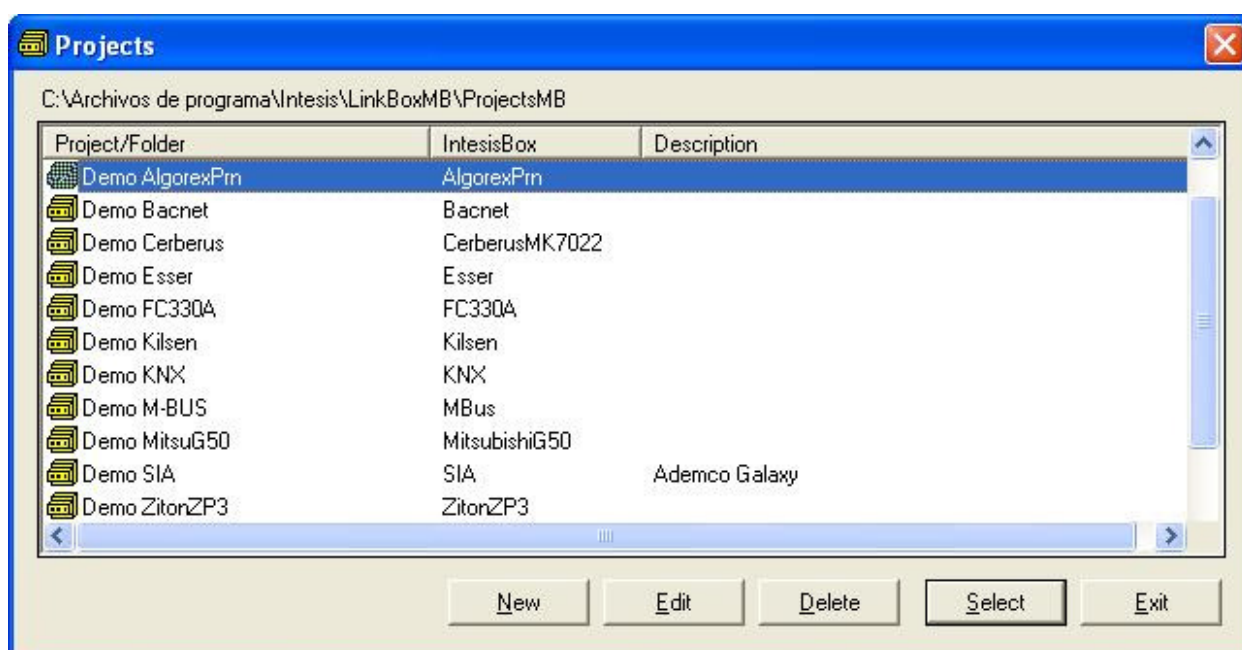
From LinkBoxMB, as well as configure the integration signals list and connection parameters for every external protocol, it is permitted to select the serial port to use to connect to IntesisBox-Modbus Server and the use of some tools for monitoring and debugging the device. Some of these tools will be explained in this document but only some of them, the rest of available debugging tools and commands will not be explained here because they are for exclusive use under the recommendations of Intesis Software technical support.

LinkBoxMB allows configuring all IntesisBox-Modbus Server series independently of the external system used. For every external system, LinkBoxMB has a specific configuration window. Periodically, new free versions of LinkBoxMB are released incorporating the latest developed integrations for external systems.

3.2 Project definition

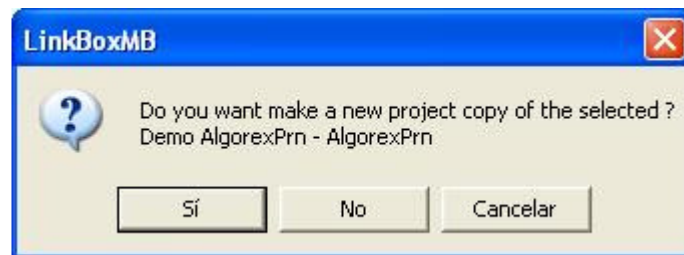
The first step to do in LinkBoxMB for a new installation is to create the installation's project giving a descriptive name to it. When you create a project, a new folder is created with the name of the project containing the configuration files needed depending on the external protocol selected for the project. It is strongly recommended that you create a new project for every installation, if not, overwriting of configuration files of previous installations using the same external protocol may occur, losing the configuration data for those previous installations. The projects folder is located in AppFolder\ProjectsMB, where AppFolder is the installation folder of LinkBoxMB (by default C:\Program Files\Intesis\LinkBoxMB). Inside the projects folder, a new folder will be created for every project defined in LinkBoxMB with the files needed for the project.

When you open LinkBoxMB, the project selection window will appear inviting you to select a project or create a new one. A demo project for every external protocol supported is provided with the standard installation of LinkBoxMB. You can create a new project or select a demo project based on the external protocol desired, and create a new one from the demo one selected.

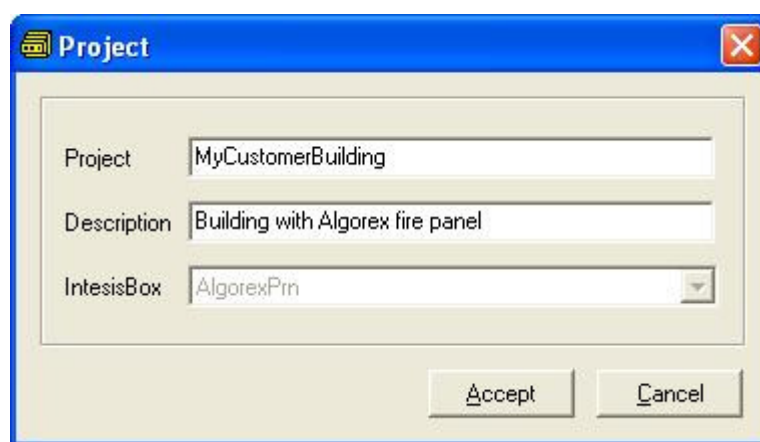


Project selection window

To create a new project, select a project using the same external protocol you want to use in the new project and click on New button. You will be prompted to create a copy of the selected project (useful for similar installations) or create a brand new one.



If you select Yes you will be prompted to specify a name and a description for the new project that will be based on the same external protocol than the selected one. If you select No you can specify a name, a description and an external protocol to use from the list of available external protocols.



On *Accept*, a new folder will be created inside the projects folder with the name given to the project, this folder will contain the template configuration files if the project is a brand new one, or a copy of the configuration files if it is a copy of a selected one.

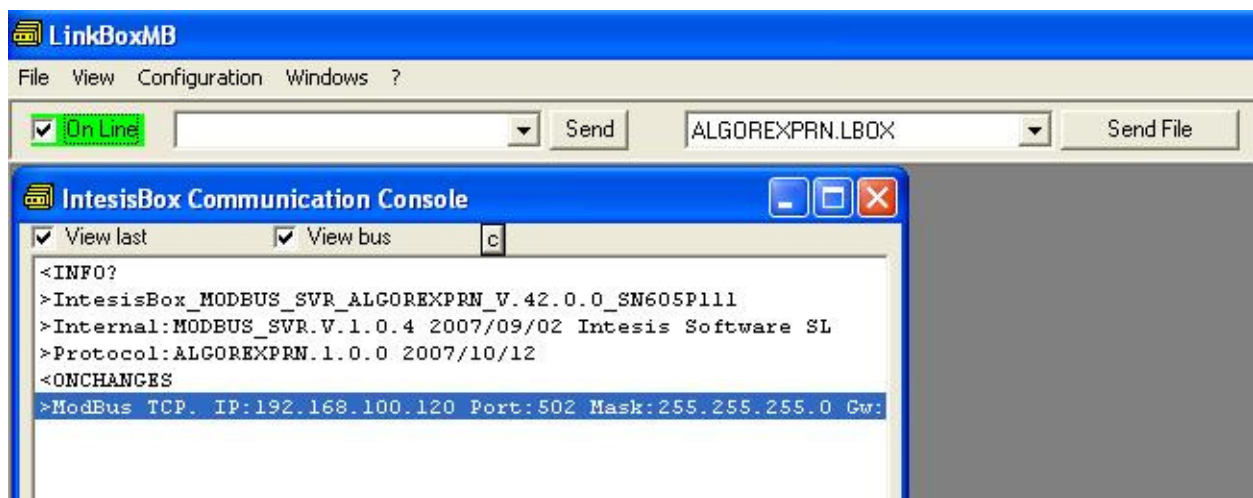
A description of the files created for an AlgorexPrn protocol based project can be found in section *Files* in this document.

From all the possibilities of LinkBoxMB, only changes in configuration for the integration and configuration file generation can be performed while disconnected from IntesisBox (working off-line), allowing you to do these tasks in the office more comfortably. Before any monitoring or downloading action to IntesisBox can be performed, the connection between IntesisBox and the PC running LinkBoxMB must be established (working on-line). To do so follow these steps:

1. Make sure IntesisBox is powered-up and correctly connected to the Modbus system via the Ethernet connection (Modbus TCP) or serial connection (Modbus RTU) and to Algorex panel via the RS232 connection (consult details for connection and pin assignments in section *Connections* of this document).
2. Connect a free PC serial port to the IntesisBox serial port marked as *PC Console*. (Use the standard serial cable supplied with the device or a customer's cable following the pin assignments specified in section *Connections* in this document).
3. Select in LinkBoxMB the PC serial port used for the connection to IntesisBox. Use menu Configuration -> Connection.

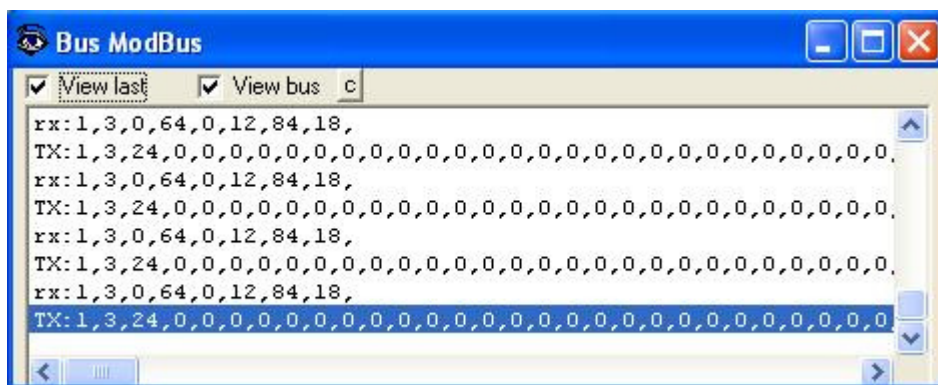


4. Check the checkbox *off-line* under the menu bar (it will change automatically to *on-line*) and LinkBoxMB will ask for INFO about the IntesisBox connected to it via the serial connection, if the connection is ok then IntesisBox will respond with its identification (this can be monitored in the *IntesisBox Communication Console* window, as showed below).

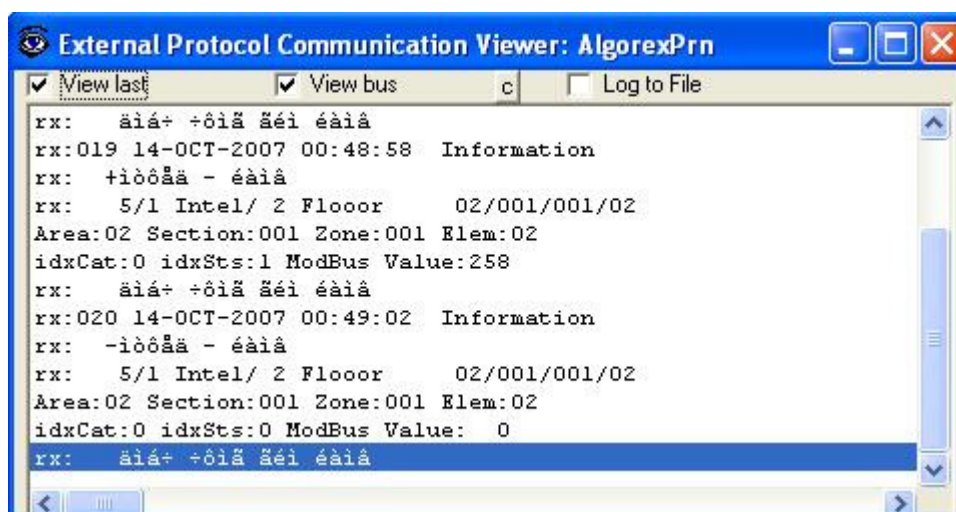


Once connected to IntesisBox, all the options of LinkBoxMB are fully operative.

To monitor the communication between IntesisBox and the Modbus master device, select the menu *View -> Bus -> Modbus*. The *Modbus communication Viewer* window will be opened. This window show in real time all the communication frames between IntesisBox and the Modbus master device as well as debugging messages referent to internal protocol (Modbus) sent by IntesisBox.



To monitor the communication between IntesisBox and the external system (AlgoRex in this case), select the menu *View -> Bus -> AlgoRexPrn*. The *External protocol communication viewer* window will be opened. This window show in real time all the communication frames between IntesisBox and AlgoRex panel as well as debugging messages referent to external protocol (AlgoRexPrn) sent by IntesisBox.



3.3 Algorex printer port message layout and IntesisBox configuration.

From the different possible message layouts of the Algorex printer port output (configurable in the Algorex panel), the only one supported by IntesisBox is International 3, so the panel must be configured to output this message layout for a correct operation of the integration.

In order to understand the configuration capabilities of the IntesisBox and the way the box interprets the Algorex messages, a brief description of the message layout is given using an example.

Below there is an example of an Algorex message (International 3 layout), in this case, this is an event message indicating *activation* of the detector configured in *Area1 / Section6 / Zone69 / Element1*.

633 12-FEB-2007 16:36:48 Information
+detector ACTIVATION → Status field
5/1 Intel/ 2 Floor **01/006/069/01**
Hall entrance ↓
Element field

The first character of the *status field* determines the actual status of the event, by default:

- "+" means active (when the event occurs).
- "*" means acknowledged (when the user acknowledges the event pushing "Silence" button in the panel).
- "-" means deactivated or cleared (when the user deactivates the event pushing "Reset" button in the panel).

The rest of the characters of the *status field* inform about the source of the event (detector in this case) and the type of event (ACTIVATION in this case).

IntesisBox scans this *Status field* in every message received to extract the actual status of the event and the type of event.

There are a lot of different strings that can be found in this *Status field* depending on the source of the event (detector, call point, etc.) and the type of event (ACTIVATION, GLASS BROKEN, etc.). For this reason, and because these strings vary depending on the country configured in the Algorex panel, all the possible strings that can be found in this field according to the country specific configuration of the Algorex panel must be introduced in the IntesisBox configuration, this is done in *Identifiers List* (see details in section 3.6).

All these possible events are categorised in order to translate to Modbus only the event categories and not all the possible events, which will be crazy and not practical. The value translated to Modbus for every possible combination of event category and event status is freely configurable, this is done in *Connection* tab (see details in section 3.4).

The event categories defined into IntesisBox are:

- Alarm.
- Activate.
- Fault.
- Isolation.
- Drift.
- Impaired.
- Unsuitable.

- Deviation.
- SetChanged.
- Test.
- *Other (for any event received not categorised).*
- *Error (Any event message received with a string in "Status field" not found in the Identifiers List, will generate this error that will be translated to modbus with the value specified for this category, entering -1 here means that IntesisBox will ignore these error situations).*

The assignment of every possible event, defined by the string that will be found into the *Status field*, to the desired event category is done in *Identifiers List* (see details in section 3.6).

Also IntesisBox scans the *Element field* in every message received in order to identify if the element generating the event is configured in its table of elements, and thus translating to the associated Modbus address the associated value of the event category and actual status decoded from the message.

The definition of the elements to consider by the IntesisBox (detectors, call points...), and the modbus register address associated to every one of them, is introduced in the *Points List* (see details in section 3.6). This list of elements can be introduced manually or can be imported from a EP5 or EP7 structure definition file.

All this parameters are already configured in the Demo project delivered with the standard installation of LinkBoxMB. In general, only importing the points of your installation from an EP5 or EP7 structure definition file will be necessary, the rest of parameters will be already configured (the Identifiers List is filled, by default, according with the standard English texts defined in the Siemens Cerberus Algorex technical documentation).

To configure the IntesisBox's connection parameters, the points list and the identifiers list, select menu *Configuration -> IntesisBox*. The *AlgoRexPrn Configuration* window will be opened.

3.4 Connections configuration

Select the Connection tab to configure the connection parameters.

Two kinds of information are configured using this window, the referent to the Modbus side and the referent to the AlgoRex side.

Modbus side configuration parameters:

1. Select the type of connection desired (TCP or RTU).

2. Enter the IP address for IntesisBox.

3. Enter the IP netmask for IntesisBox.

4. Enter the default router address to use by IntesisBox, leave blank if there is no need of router address.

5. Enter the TCP port to use, by default 502.

6. Select the type of port to use (RS232 or RS485).

7. Select the baud rate to use.

8. Enter the Modbus slave number for IntesisBox.

Modbus Interface Configuration

1. Select the type of connection desired (TCP or RTU).

If ModBus TCP is selected, then:

2. Enter the IP address for IntesisBox.
3. Enter the IP netmask for IntesisBox.
4. Enter the default router address to use by IntesisBox, leave blank if there is no need of router address.
5. Enter the TCP port to use, by default 502.

If ModBus RTU is selected, then:

6. Select the type of port to use (RS232 or RS485).
7. Select the baud rate to use.
8. Enter the Modbus slave number for IntesisBox.

AlgoRex side configuration parameters:

AlgoRex - Message layout: International 3

Baud rate
1 → 9600

Data Bits
2 → 8

Parity
3 → none

Statuses

Status	Indication	ModBus Value
1-Alarm	Clear	0
1-Alarm	UnAck	258
1-Alarm	Ack	2
2-Activate	Clear	0
2-Activate	UnAck	260
2-Activate	Ack	4
3-Fault	Clear	0
3-Fault	UnAck	264
3-Fault	Ack	8
4-Isolation	Clear	0
4-Isolation	UnAck	288
4-Isolation	Ack	32
5-Drift	Clear	0
5-Drift	UnAck	272
5-Drift	Ack	16
6-Impaired	Clear	64

4 →

5 → 0

Indication characters

Indication	Text id.
Clear	-
UnAck	+
Ack	*

6 →

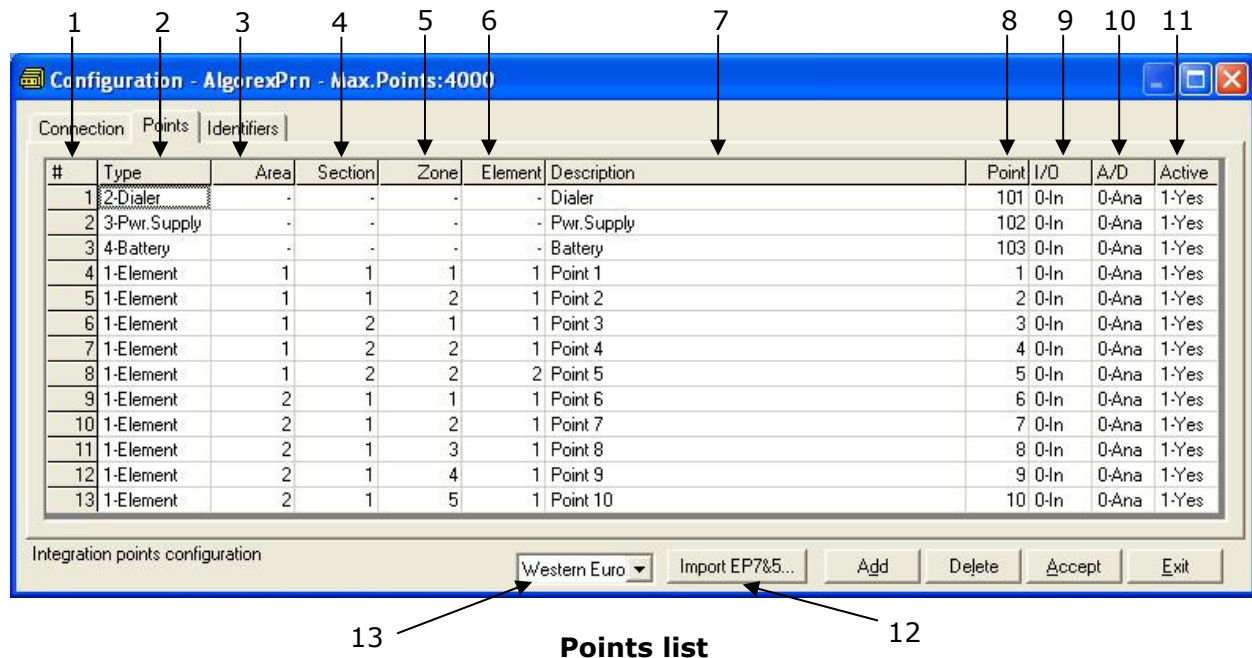
7 → -

AlgoRex Interface Configuration

1. Baud rate to use to communicate with AlgoRex panel.
2. Data bits to use to communicate with AlgoRex panel.
3. Parity to use to communicate with AlgoRex panel.
4. Select the Event Category/Status for AlgoRex elements, and
5. Assign the value you will see in the Modbus register whenever the element is in this Event Category/Status (if you enter -1, IntesisBox will ignore this Event Category/Status combination). You must press "Enter" to validate any value introduced. (Read more about events categories and statuses in section 3.3).
6. Select the status indication (Clear, Ack, UnAck), and
7. Enter the specific character used by the AlgoRex panel to indicate the status, this is the first character that appears in the *Status field* of the message (see example of an AlgoRex message and more details in section 3.3). You must press "Enter" to validate any text introduced.

3.5 Signals configuration

Select the *Points* tab to configure the Signals list.



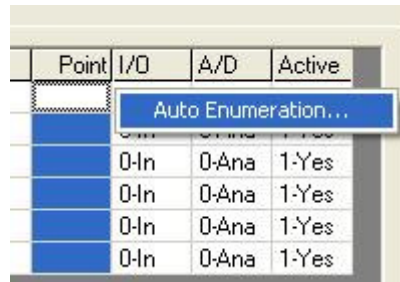
1. **#.** Signal's number (edit not permitted). Every row in the grid corresponds to a signal. Signals (rows in the grid) can be added or deleted selecting the desired row and clicking *Add* or *Delete* buttons. This column is used only to enumerate the rows in the grid (signals).
2. **Type.** Type of signal. Indicates the type of point (Element, Dialer, etc.). Edit not permitted.
3. **Area.** Area number of the point inside the Cerberus structure. Possible values: 1 to 99. This field is automatically filled with an import of a Cerberus EP5 or EP7 structure definition file.
4. **Section.** Section number of the point inside the Cerberus structure. Possible values: 0 to 999. This field is automatically filled with an import of a Cerberus EP5 or EP7 structure definition file.
5. **Zone.** Zone number of the point inside the Cerberus structure. Possible values: 0 to 999. This field is automatically filled with an import of a Cerberus EP5 or EP7 structure definition file.
6. **Element.** Element number of the point inside the Cerberus structure. Possible values: 0 to 99. This field is automatically filled with an import of a Cerberus EP5 or EP7 structure definition file.
7. **Description.** Descriptive name for the point (optional). Useful to describe the physical location of the Cerberus element inside the building. This field is automatically filled with an import of a Cerberus EP5 or EP7 structure definition file.

As these texts can be imported from an EP7 or EP5 file and the character set to use is country dependent, use the combo (13) at the bottom of the window to select the character set used in your country (Western europe, Eastern europe, Hebrew, Russian, Greek...).

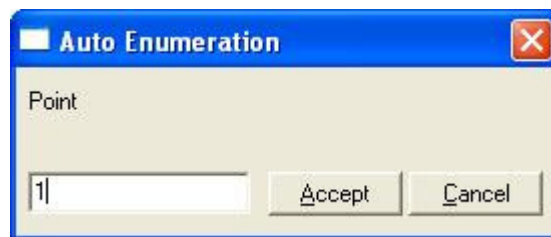
8. *Point*. Modbus register address desired for the point. Possible values: from 1 to 4000. This field can be automatically filled with an import of a Cerberus EP5 or EP7 structure definition file (user selectable, see below).
9. *I/O*. Signal's direction, always considered from the Modbus system point of view. Possible values: 0-Input, 2-Input/Output. Edit not permitted, for this integration all the signals corresponding to Cerberus elements will be inputs.
10. *A/D*. Signal type. Possible values: 0-Analog, 1-Digital. Edit not permitted, for this integration all the signals corresponding to Cerberus elements states will be analog, reflecting the value given (in the *Connection* tab) per every possible status.
11. *Active*. Indicates if the signal is active or not for the integration. Possible values: 0-No, 1-Yes. Edit using the mouse right-button-click menu available on the column.
12. *Import EP7 & EP5*. Button to launch the import tool to import Cerberus points from an EP7 or EP5 structure definition file, see details below.

In columns *Area*, *Section*, *Zone*, *Element* and *Point* you can enter the desired value individually per cell or you can auto enumerate some consecutive cells, for this last follow these steps:

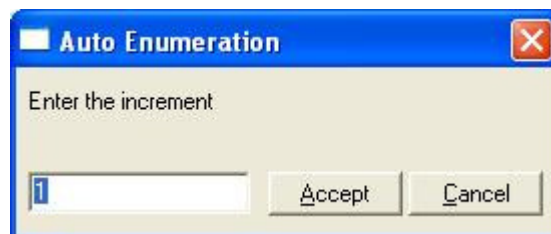
1. Select using the left mouse button (clicking and dragging) all the rows in the list to which you want to automatically assign values (must be consecutive rows).
2. Click right mouse button over the selected fields and select *Auto Enumeration* option from the pop-up menu that will appear.



3. Enter the first value to assign.



4. Enter the increment between consecutive assignments. For example selecting 0 for the first value and an increment of 1, the values generated will be 0,1,2,3,4.. and so on. To assign the same value to all the rows (useful to assign the same Area number in the column *Area* for some consecutive rows) just select the desired value and an increment of 0.



3.6 Identifiers configuration

Select the *Identifiers* tab to configure the Identifiers list.

These are all the possible event identifiers (string into *Status field* - see section 3.3. for more details) that can be received by the IntesisBox into the event messages through the AlgoRex printer port connection. As these texts for each of the possible events may vary depending on the country configuration of the AlgoRex panel, then the exact text that will be sent by the panel through the printer port for each event must be introduced here in order to indicate to the IntesisBox the exact string to search for each event.

According to the AlgoRex technical documentation, every identifier is characterised by:

- An identifier category (column *Cat.File*).
- An identifier number (column *Id.File*).
- A standard identifier text in English (column *Reference Text Id*).
- And a specific and country dependent text (column *Text Id to use*).

All these specific texts, country dependent, can be supplied in plain text files by your AlgoRex supplier or the Siemens Technical Support in your country. Contact them to obtain this list of specific text identifiers used by your Panel.

Then is just a matter to search in the plain text file supplied by the AlgoRex technical support containing the specific texts used in your country and introduce the customised text for every identifier number.

Also, in this Identifiers List, we can select the event category desired for every possible event that will be received from the panel (column *Status*). As explained in section 3.3, in order to simplify the high number of possible events to be translated to Modbus, all the possible events coming from the panel must be categorised into the following event categories.

- Alarm.
- Activate.
- Fault.
- Isolation.
- Drift.
- Impaired.
- Unsuitable.
- Deviation.
- SetChanged.
- Test.
- *Other (will be used as a default category for any event received not categorised).*
- *Error (Any event message received with a string in "Status field" not found in the Identifiers List, will generate this error that will be translated to modbus with the value specified for this category, entering -1 here means that IntesisBox will ignore these error situations).*

This is how the Identifiers List looks like.

Type	Cat.File	Id.File	Reference Text Id	Text Id to use	Status
1-Element	FA	4800	detector	detector	3-Fault
1-Element	FA	4801	call point	call point	3-Fault
1-Element	FA	4803	collective line	collective line	3-Fault
1-Element	FA	4804	call point line	call point line	3-Fault
1-Element	FA	4805	input faulty	input faulty	3-Fault
1-Element	FA	4806	control line	control line	3-Fault
1-Element	IN	4807	operation NOT EXECUTED	operation NOT EXECUTED	3-Fault
1-Element	FA	4808	inadmissible activation	inadmissible activation	3-Fault
1-Element	FA	4809	call point GLASS BROKEN	call point GLASS BROKEN	3-Fault
1-Element	FA	4810	internal horn	internal horn	3-Fault
1-Element	FA	4811	external horn	external horn	3-Fault
1-Element	FA	4812	remote transmission 'fire'	remote transmission 'fire'	3-Fault
1-Element	FA	4816	short or open LINE	short or open LINE	3-Fault
1-Element	FA	4817	call point line GLASS BROKEN	call point line GLASS BROKEN	3-Fault
1-Element	FA	4818	detector	detector	3-Fault
1-Element	FA	4819	remote transmission 'fault'	remote transmission 'fault'	3-Fault

Text identifiers and his classification: Western Euro

Accept Exit

7 **Identifiers list**

1. **Type.** Type of identifier. Indicates the type of identifier. Edit not permitted.
2. **Cat.File.** Category of the identifier according to the Algorex technical documentation. Edit not permitted.
3. **Id.File.** Number of the identifier according to the Algorex technical documentation. Edit not permitted.
4. **Reference Text Id.** Reference text for the identifier according to the Algorex technical documentation. Edit not permitted.
5. **Text Id to use.** This is the country dependent text used for the identifier. This is the text that must be entered depending on your panel country configuration. Consult your Algorex supplier or the Siemens Technical Support in your country to obtain this list of texts.

As these texts are country dependent, use the combo (7) at the bottom of the window to select the character set used in your country (Western europe, Eastern europe, Hebrew, Russian, Greek...).

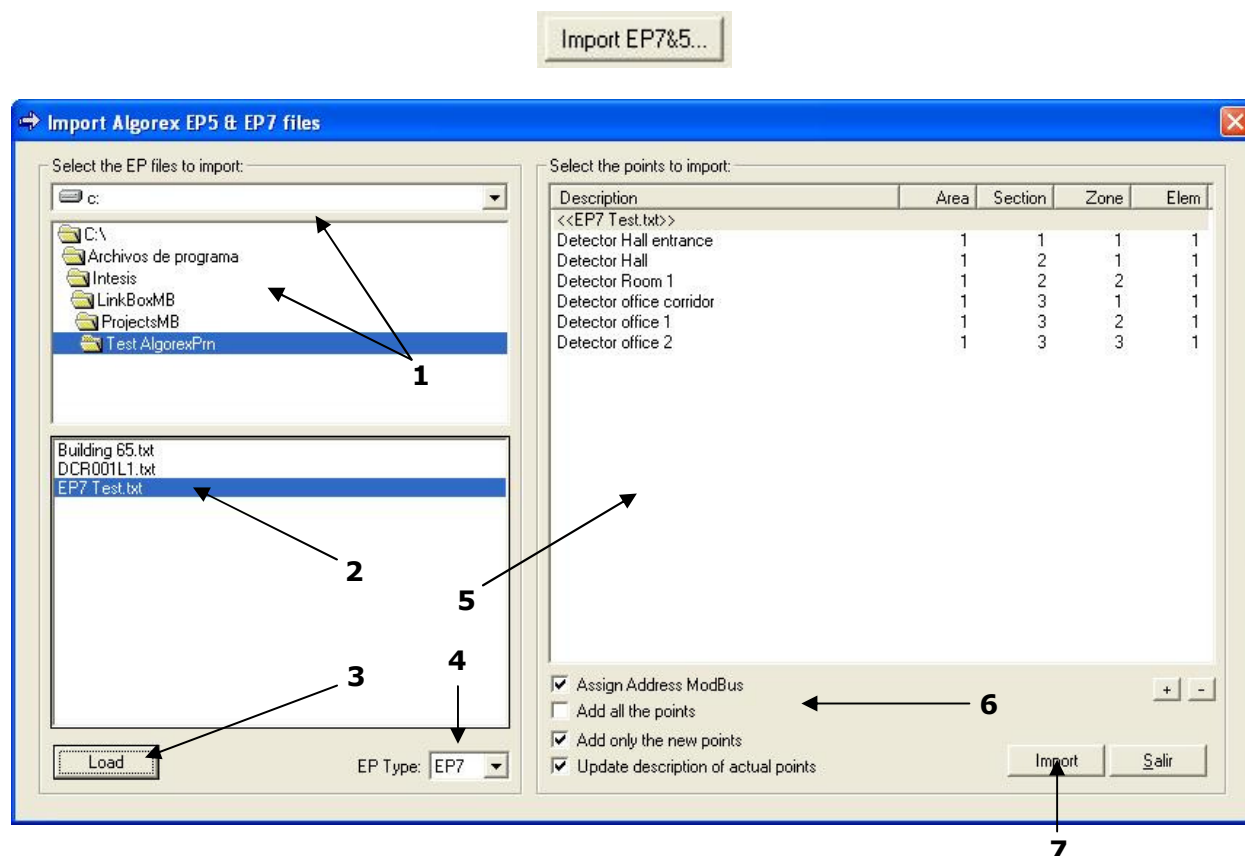
6. **Status.** Select the event category desired for the event. See above the list of event categories permitted.

3.6.1 Importing Cerberus points from an EP7 or EP5 file.

All the information related to Cerberus elements can be extracted from an EP7 or EP5 structure definition file provided by the Cerberus technician.

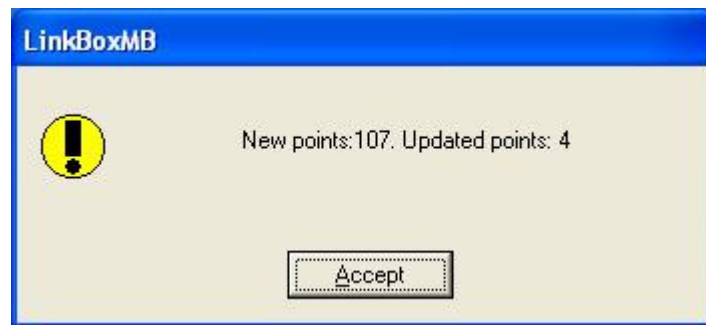
All this information can be directly imported into the signals list using the tool to import EP7 & EP5 files embedded in LinkBoxMB. To do so follow these steps:

- Click on button *Import EP7&5* in the bottom of the signals list. The *Import EP5 & EP7 files* window will be opened.





Import EP7 & EP5 files tool

- Using the drive and folder selectors (1), select the path where the EP7 or EP5 file is located.
- Using the files selector (2), select the file you want to load in the import tool, select the type of file (4) and click on button Load (3). The contents of the file loaded will be showed in the points selector (5).
- Using the points selector (5), select the points you want to import, and select also the options for the import (6). Finally click on button *Import* (7) to import the selected points into the signals list. A message will appear informing about the results of the import as showed in the figure below.



Selecting points:

To select one or more points just select them using the standard windows method for selecting some elements in a list (using left mouse button in combination with CTRL key to select non consecutive points, or clicking and dragging using left mouse button or the key combinations *SHIFT+ARROW UP* or *SHIFT+ARROW DOWN* to select consecutive points). The whole contents of the points selector can be selected or deselected clicking on buttons  or  respectively.

Selecting all the contents of the points selector and clicking on *Import* button with the default import options selected, will perform the following:

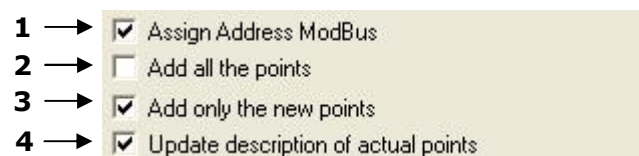
For an empty signals list (a new installation):

- Addition of all the points to the signals list.
- Automatic assignment of modbus addresses for the points.

For an already filled signals list (an existing installation that is being expanded):

- Addition to the signals list of only the points not previously existing in the list.
- Automatic assignment of modbus address for new points.
- Update of the name for those points already existing in the list.

Import options:



1. Select this to automatically assign modbus addresses to the new points added in the signals list.
2. Select this to append all the points selected to the signals list, although already existing in the list.
3. Select this to append only to the signals list those points not already existing in the list.
4. Select this to update the field description of the selected points already existing in the signals list.

Example:

Selecting the following in the points selector and in the import options

Select the points to import: _____

Description	Area	Section	Zone	Elem
<<EP7 Test.txt>>				
Detector Hall entrance	1	1	1	1
Detector Hall	1	2	1	1
Detector Room 1	1	2	2	1
Detector office corridor	1	3	1	1
Detector office 1	1	3	2	1
Detector office 2	1	3	3	1

☒ Assign Address ModBus
☐ Add all the points
☒ Add only the new points
☒ Update description of actual points

+ -

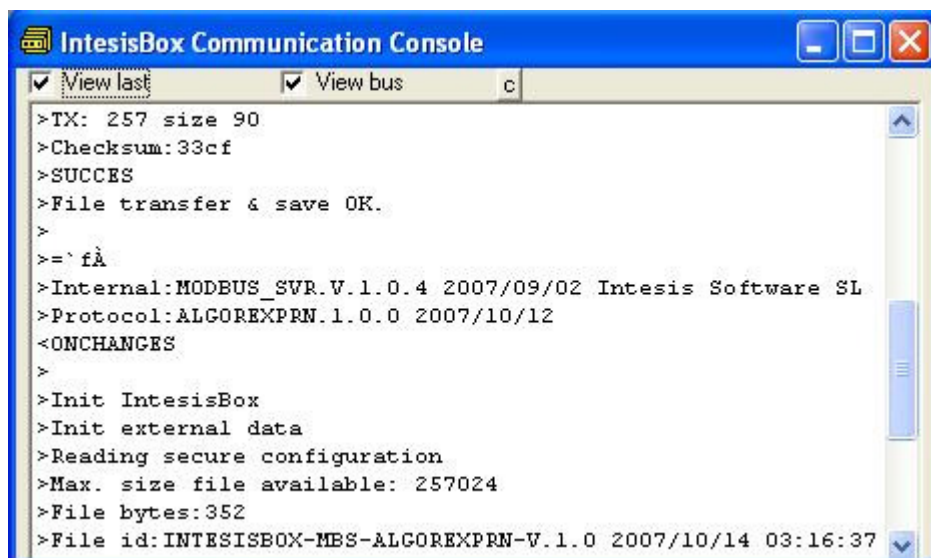
Import Salir

Will generate the following signals in the signals list

#	Type	Area	Section	Zone	Element	Description	Point	I/O	A/D	Active
1	1-Data	1	1	1	1	Detector Hall entrance	1	0-In	0-Ana	1-Yes
2	1-Data	1	2	2	1	Detector Room 1	2	0-In	0-Ana	1-Yes
3	1-Data	1	3	2	1	Detector office 1	3	0-In	0-Ana	1-Yes

3.7 Sending the configuration to IntesisBox

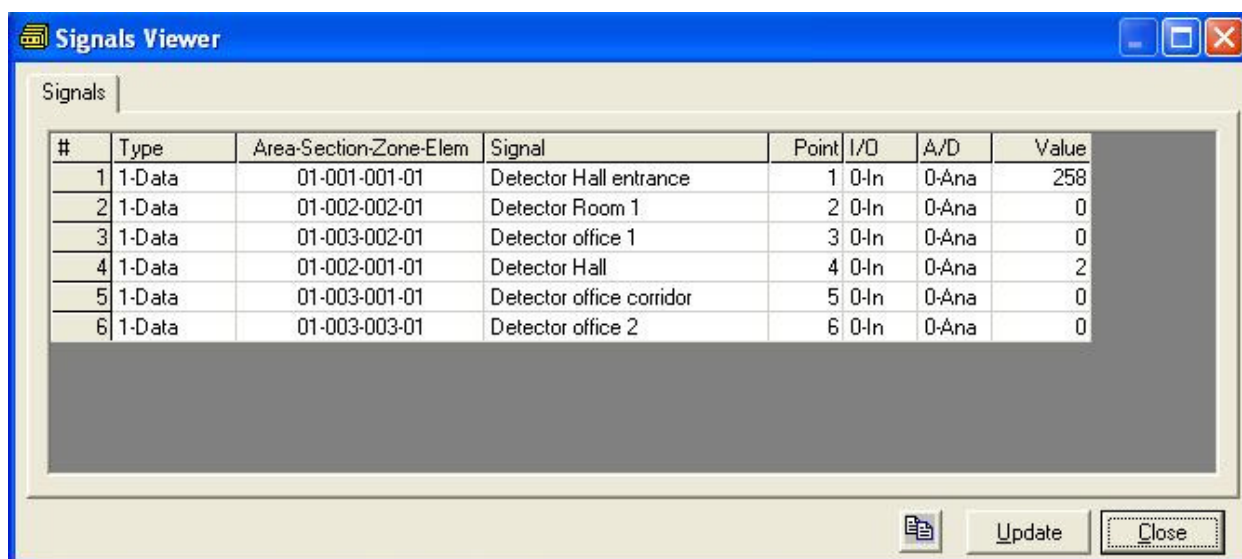
When the configuration has been saved (button *Accept*) and the IntesisBox configuration binary file has been generated (remember to select yes when asked if you want to generate the IntesisBox file), to send the configuration file to IntesisBox click on the button **Send File**. The process of file transmission can be monitored in the *IntesisBox Communication Console* window. If the file transmission is ok, IntesisBox will reboot automatically with the new configuration loaded.



Remember that saving the configuration and generating the IntesisBox file only saves to the hard disk on the PC the configuration files. **Do not forget to send the configuration binary file to the IntesisBox (using button *Send File*) after saving the configuration.**

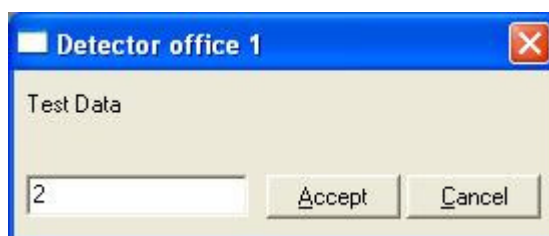
3.8 Signals viewer

Once IntesisBox is running with the correct configuration, to supervise the status of the configured signals, select menu *View -> Signals*. The Signals Viewer window will be opened. This window shows all the active IntesisBox's signals with its main configuration parameters and its real time value in the column Value. After a reset of IntesisBox or after sending a configuration file to the IntesisBox, all the signal's values will be updated automatically in the signals viewer, in case you connect to the IntesisBox when it is already running, you should press the *Update* button to get updated values, press just once the button to update all the signal values, from this moment the signal values will be maintained updated until the connection is closed.



The signals viewer can be used although only one system is connected to the IntesisBox, *AlgoRex* or *Modbus*, and is very useful for supervision and test.

It is possible to force a specific value to any signal for test purposes, to do so just double click on the row and select the desired value and Accept in the Data Test window. The new value entered will be available through the *Modbus* interface, the same way as if it has been received from the *AlgoRex* panel.

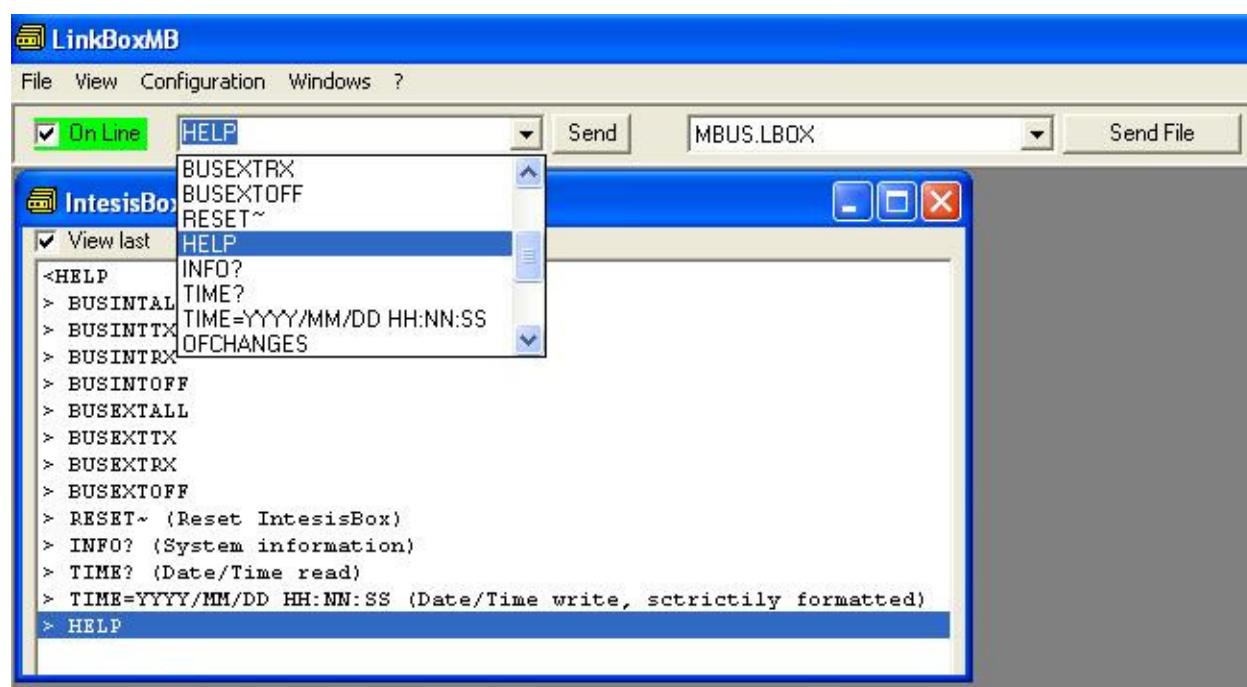


This tool is very useful to test the communication in the modbus side from the modbus master device for example, without the need to have the *AlgoRex* panel connected and running.

The signals viewer window has a button to copy to the Windows Clipboard all the contents of the window (in tab separated text format).

3.9 System commands

LinkBoxMB includes an option to send to IntesisBox a set of system commands for debugging and control purposes; this list is available in the commands list as shown in the figure below. To send a command to IntesisBox just select it from the list, or type it with the correct format, and press *Enter* or click on button *Send*. IntesisBox will act accordingly with the command received; the process can be monitored in the IntesisBox Communication Console window. The use of some of these commands can be critical for IntesisBox normal functioning, having this in mind use only these commands following the recommendations of Intesis Software technical support. A list of the more commonly used commands and the way to use them will be returned by IntesisBox after sending the command HELP.



3.10 Files

LinkBoxMB saves the integration configuration in the following files inside the project folder:

PROJECT.INI	Ini file containing general information referent to the project
ALGOREXPRN.INI	Ini file containing the information referent to the connection window and other special adjustments
ALGOREXPRN.DAT	Text file (tab separated values) with the signals information (signals list). This file can be edited (with Excel for example) to change the configuration quicker and easier. Later on, when selecting <i>Configuration</i> -> <i>IntesisBox</i> in LinkBoxMB, if the changes have been made respecting the correct format, all the changes in the configuration done from Excel will be reflected in the signals list.
ALGOREXPRN.LBOX	Binary file created from the information in the two files described above. This is the file downloaded to the IntesisBox.

It is strongly recommended to back up the project folder containing these files in external media, once the installation process is finished. This way you will be able to do future configuration changes in case of reinstallation of LinkBoxMB due, for example, to a failure of the hard disk in the PC where LinkBoxMB was installed.

The configuration cannot be uploaded from IntesisBox to LinkBoxMB, only can be downloaded; the download file ALGOREXPRN.LBOX does not contain all the integration information, as for example the signals description.

4. Set-up process and troubleshooting

4.1 Pre-requisites

It is necessary to have the Modbus master device operative and well connected to the Modbus port of IntesisBox, remember to respect the maximum of 15 meters cable distance if using RS232 communication.

It is necessary to have the Algorex panel with an RS232 printer port operative and at a distance of IntesisBox installation site of 15 meters maximum (due to RS232 communication).

Connectors, connection cables, PC for LinkBoxMB, and other auxiliary material, if needed, are not supplied by Intesis Software for this standard integration. The items supplied by Intesis Software for this integration are:

- IntesisBox-Modbus Server device with Algorex RS232 printer port external protocol firmware loaded.
- LinkBoxMB software to configure IntesisBox.
- Console cable needed to download the configuration to IntesisBox.
- Product documentation.

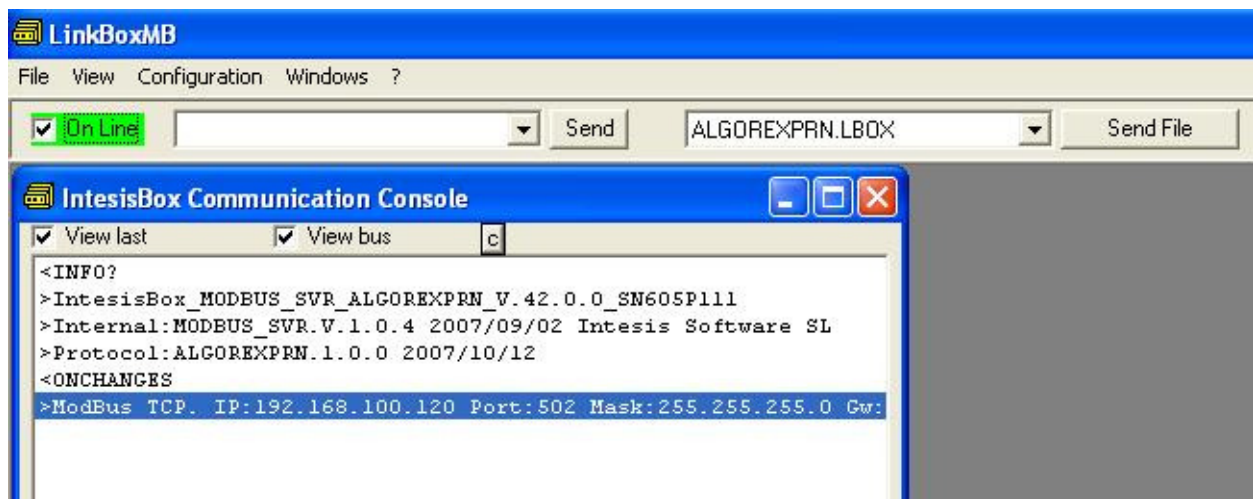
4.2 Set-up procedure

1. Install LinkBoxMB on your laptop, use the setup program supplied for this and follow the instructions given by the Installation wizard.
2. Install IntesisBox in the desired installation site. The mounting can be on DIN rail or on a stable not vibrating surface (DIN rail mounted inside a metallic industrial cabinet connected to ground beside the Cerberus communication interface or Panel is recommended).
3. Connect the communication cable coming from the Modbus master device to the port marked as **Modbus** of IntesisBox (used either RS232, RS485 or Ethernet port depending on the type of Modbus communication to use). (See details for this communication cable in section *Connections* of this document).
4. Connect the communication cable coming from the RS232 port of the Algorex RS232 printer port to the port marked as **Algorex** of IntesisBox. (See details for this communication cable in section *Connections* of this document).
5. Power up IntesisBox. The supply voltage can be 9 to 30 Vdc or just 24 Vac. Take care of the polarity of the supply voltage applied.

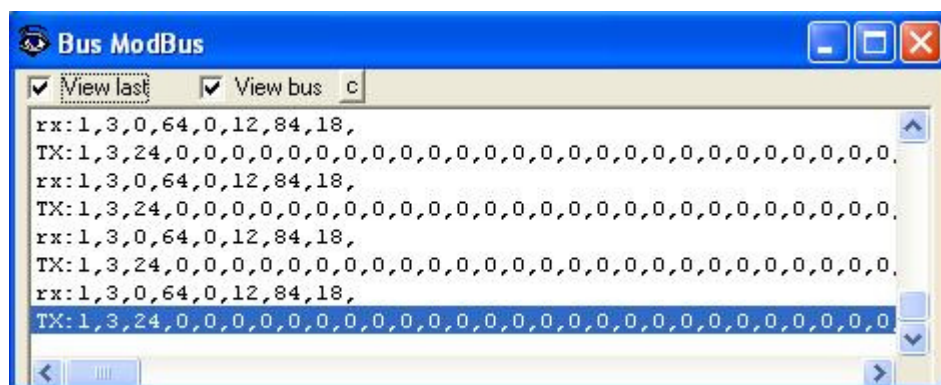
WARNING! In order to avoid earth loops that can damage IntesisBox and/or any other equipment connected to it, we strongly recommend:

- The use of DC power supplies, floating or with the negative terminal connected to earth. **Never use a DC power supply with the positive terminal connected to earth.**
- The use of AC power supplies only if they are floating and not powering any other device.

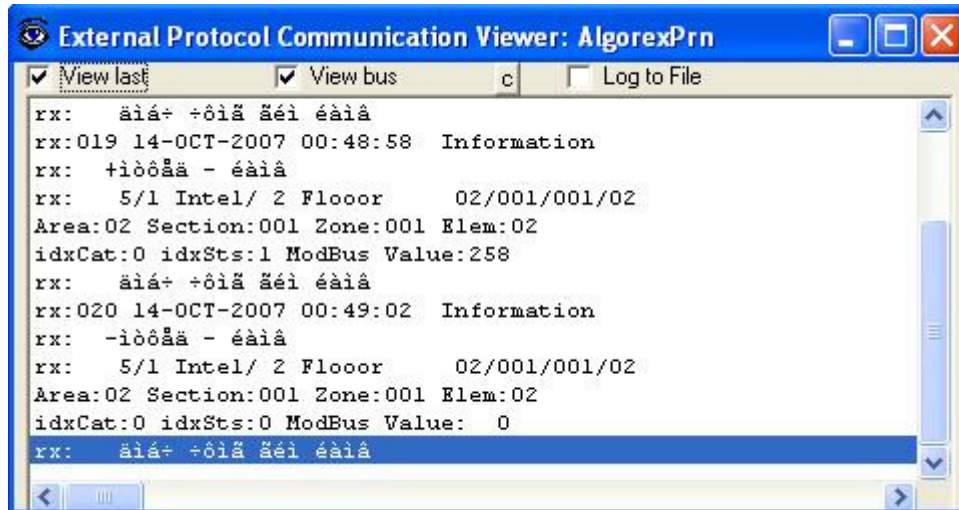
6. Connect the communication cable coming from the serial port of your laptop PC to the port marked as **PC Console** of IntesisBox. (See details for this communication cable in section *Connections* of this document).
7. Open LinkBoxMB, create a new project selecting a copy of the one named **DEMO AlgorexPrn** and give it the name desired, select the serial port used to connect to IntesisBox (menu Configuration -> Connection) and switch working mode to *on-line* (checkbox *off-line/on-line*). The IntesisBox identification must appear in the *IntesisBox communication console* window as showed below.



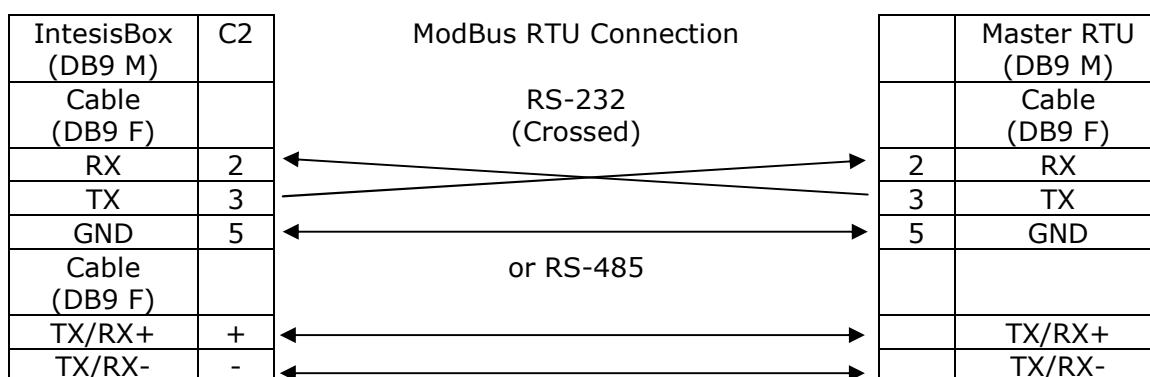
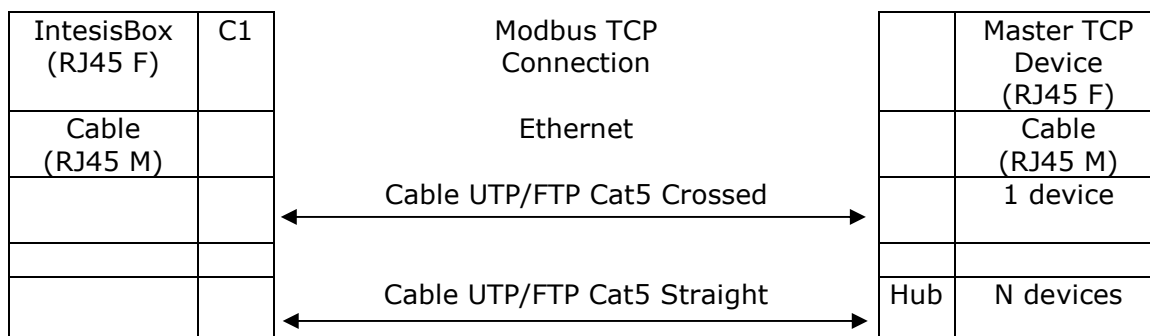
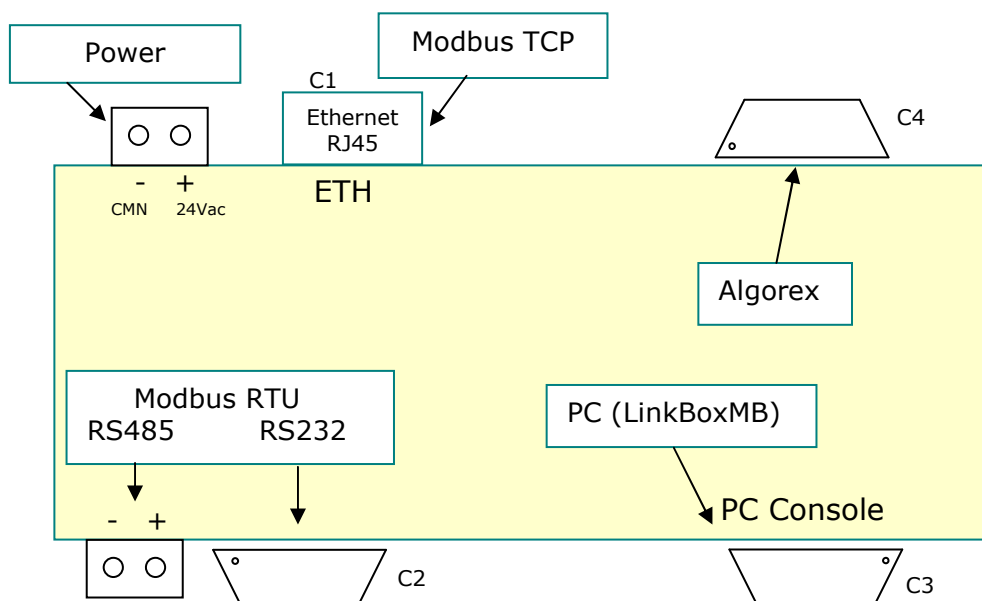
8. Modify the configuration as desired, save it and download the configuration file to IntesisBox as explained before.
9. Open the *Modbus Communication Viewer* window (menu View -> Bus -> Modbus) and check that there is communication activity, some TX frames and some other rx frames. This means that the communication with the Modbus master device is ok. In case there is no communication activity between IntesisBox and the Modbus master device check that it is operative, check the baud rate, and check also the communication cable used to connect both devices. (See details for this communication cable in section *Connections* of this document).

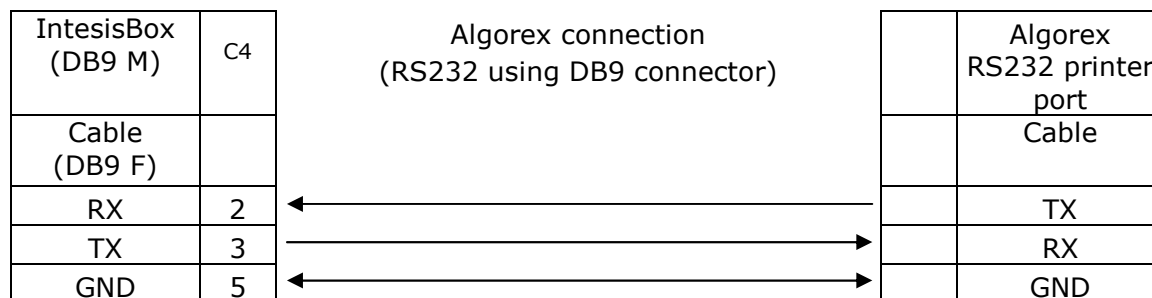
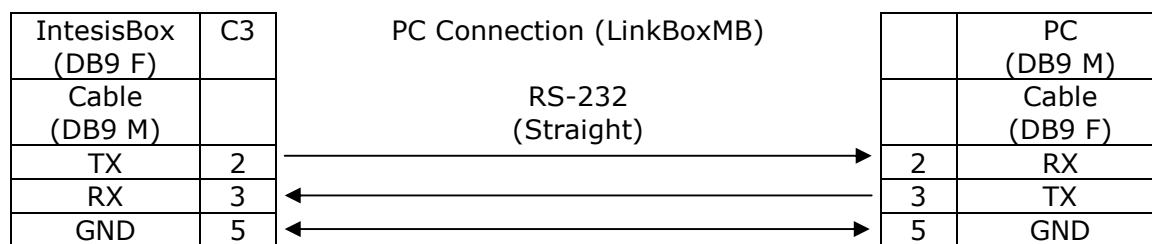


10. Open the *External Protocol Communication Viewer* window (menu View -> Bus AlgorexPrn) and check that there is communication activity, some RX frames as showed in the figure below. This means that the communication with the Algorex panel is ok. In case of no communication activity between IntesisBox and Algorex check that the RS232 printer port of Algorex panel is operative and configured, and check also the communication cable used to connect both devices. (See details for this communication cable in section *Connections* of this document).

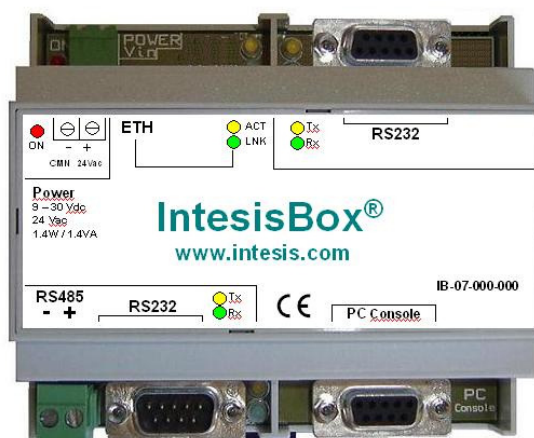


5. Connections





6. Technical characteristics



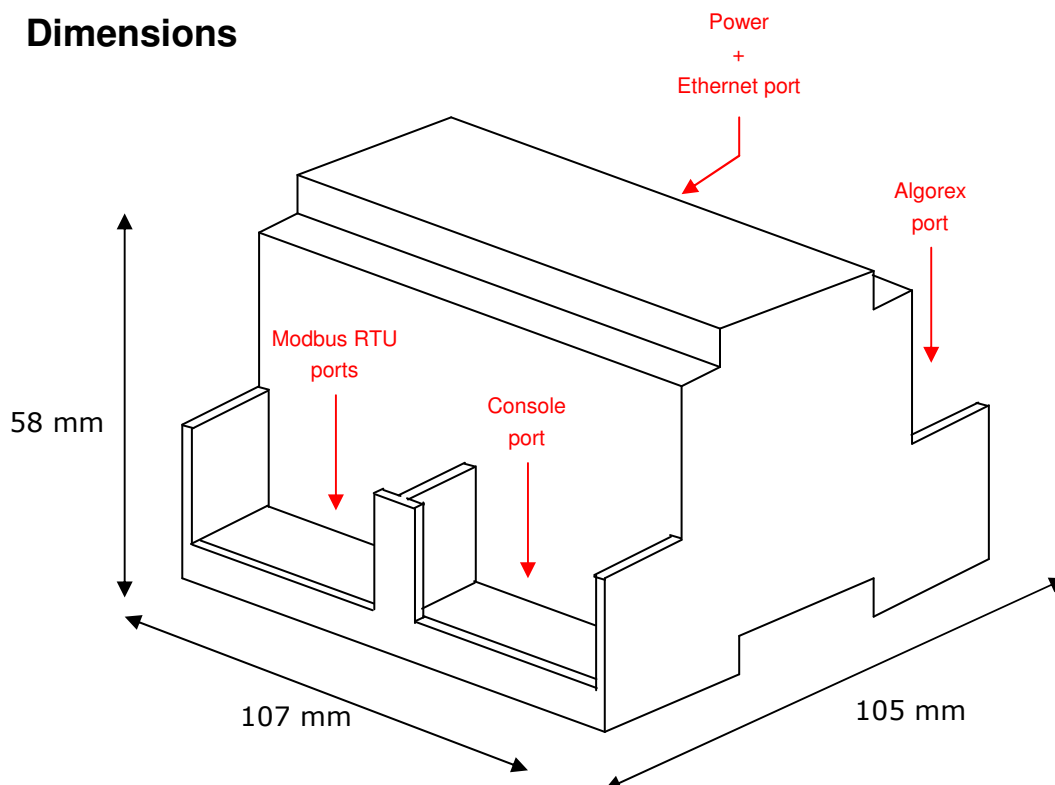
Enclosure	Plastic, type PC (UL 94 V-0). Dimensions: 107mm x 105mm x 58mm.
Colour	Light Grey. RAL 7035.
Power	9 to 30Vdc +/-10% 1.4W. 24Vac +/-10% 1.4VA. Plug-in terminal bloc for power connection (2 poles).
Mounting	Surface. Wall. DIN rail EN60715 TH35.
Modbus TCP port	1 x Ethernet 10BT RJ45.
Modbus RTU ports	1 x RS232. DB9 male connector (DTE). 1 x RS485. Plug-in terminal bloc (2 poles).
AlgoRex port	1 x RS232. DB9 male connector (DTE).
LED indicators	1 x Power. 2 x AlgoRex port activity (Tx, Rx). 2 x Modbus RTU port activity (Tx, Rx). 2 x Ethernet port link and activity (LNK, ACT).
Console port	RS232. DB9 female connector (DCE).
Configuration	Via console port. ¹
Firmware	Allows upgrades via console port.
Operational temperature	-40 °C to +70 °C
Operational humidity	5% to 95%, non condensing
Protection	IP20 (IEC60529).
RoHS conformity	Compliant with RoHS directive (2002/95/CE).

¹ Standard cable DB9male-DB9female 1,8 meters long is supplied with the device for connection to a PC COM port for configuring and monitoring the device. The configuration software, compatible with Windows® operating systems, is also supplied.

7. Functional characteristics

General	
Max. points	4000
AlgoRex interface	
Type	Serial RS232 for connection to AlgoRex serial printer port. Compatible with <i>International 3</i> message layout.
Configuration parameters	<ul style="list-style-type: none"> Baudrate. Every possible combination of event category (Alarm, Fault, Activation...) and status (Active, Acknowledged, Clear) of an element (detector, callpoint...) in the AlgoRex system can be freely associated to a numerical value. <i>This numerical value will be the point's value read from Modbus when the associated Cerberus element is in this Event category/status. All the points are of type analog from the point of view of Modbus.</i> Country dependent texts used in AlgoRex printer port can be freely configured in the gateway.
Interactivity with AlgoRex system	AlgoRex points can only be read from the gateway, not written.
Modbus interface	
Device type	Slave.
Modbus modes supported	TCP, RTU RS232 or RS485.
Modbus TCP configuration parameters	<ul style="list-style-type: none"> IP address. Subnet mask. Default gateway. TCP port.
Modbus RTU configuration parameters	<ul style="list-style-type: none"> RS232/RS485. Baud rate. Slave number.
Points	
Parameters configurable per point	<p>Generic fields.</p> <ul style="list-style-type: none"> Point description. Useful to identify the point's location into the building. Active (Yes/No). Useful to deactivate points maintaining the configuration for later use. <p>AlgoRex related fields.</p> <ul style="list-style-type: none"> Area. Section. Zone. Element. <p><i>This four fields uniquely identify the element into the AlgoRex system and can be directly imported from an EP7 or EP5 Cerberus structure definition file.</i></p> <ul style="list-style-type: none"> Event category. <p>Modbus related fields .</p> <ul style="list-style-type: none"> Point address (1...5000). <p>This can be automatically assigned by the gateway configuration software tool.</p>
Modbus data types	All the points are of data type UNSIGNED INT in the Modbus interface.

8. Dimensions



Recommended available space for its installation into a cabinet (wall or DIN rail mounting), with space enough for external connections

