

UHF RFID System



BLUEBOX Advant 5238U-PN-C

BLUEBOX
RFid System

Profinet

Preface

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Safety Instructions / Warning - Read before start-up!

- The device may only be used for the intended purpose designed by the manufacturer. The operation manual should be conveniently kept available at all times for each user.
- Unauthorized changes and the use of spare parts and additional devices that have not been sold or recommended by the manufacturer may cause fire, electric shocks or injuries. Such unauthorized measures shall exclude any liability by the manufacturer.
- The liability-prescriptions of the manufacturer in the issue valid at the time of purchase are valid for the device. The manufacturer shall not be held legally responsible for inaccuracies, errors, or omissions in the manual or automatically set parameters for a device or for an incorrect application of a device.
- Repairs may be executed by the manufacturer only.
- Only qualified personnel should carry out installation, operation, and maintenance procedures.
- Use of the device and its installation must be in accordance with national legal requirements and local electrical codes.
- When working on devices the valid safety regulations must be observed.

This manual applies to the following devices:

Description:

Read / write UHF RFID device with one external antenna. ProfiNet communication interface.

Order Number:

5238U-PN-C



This manual is valid as of firmware version:

Order Number	Carrier	Front End
5238U-PN-C	3.05	1.29M

iDTRONIC GmbH
 Donnersbergweg 1
 67059 Ludwigshafen
 Germany/Deutschland

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Phone: +49 621 6690094-0
 Fax: +49 621 6690094-9
 E-Mail: info@idtronic.de
 Web: idtronic.de

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1 Introduction

The **5238U-PN-C** hereinafter named **BLUEBOX** is a read/write RFID device for industrial application that communicates with a 'host' system (typically a PC or a PLC) through a ProfiNet connection. The **BLUEBOX** acts as a joint through a set of commands between the host system and the RFID tag/s (or transponder/s) present near the antenna/s. The same 'master/slave' protocol is used for the communication between the host system ('master') and the **BLUEBOX** ('slave'), independently of the kind of connection (point to point, multidrop net, Ethernet). An USB connection, working as Virtual COM, is also available and used as service interface port to configure the functional parameters and to update the firmware of the device, the 'BLUEBOX Show' software of the SDK is foreseen to explicate these operations. Furthermore the **BLUEBOX** is able to handle 2 channels of digital I/O; each channel can be used as output to drive a low side load or as input either driven by a 'PNP' output or by a 'clean' contact. Warning, when the I/O is used as input, do not use it also as output to avoid conflicts! The **BLUEBOX** is available with an external RF antenna.

2 Technical Specifications

2.1 Electrical Features

Power Supply	24Vdc \pm 10%
Power Ratings	15W @RFout=27dBm
Operating Frequency	840 MHz ... 960 MHz, software configurable
RF Output Power	Max 500mW (27dBm), software configurable 1 dB step
RF Input Sensitivity	-51...-87dBm, software configurable 1 dB step
Antenna	1 external
Antenna Connection	TNC female, 50 Ω
Reading Distance	8 mt ¹
Supported Transponders	ISO 18000-6C (EPC Class-1 Generation-2)
Communication Interface	ProfiNet
Service Interface	USB Virtual COM
Digital Inputs/Outputs	2 optoisolated I/O, Voltage 24Vdc As input: max current 10mA As output: max current 500mA
Status Display	8 LEDs, Buzzer
Connections	M12 connections (Power, I/O, ProfiNet, USB interface)

2.2 Mechanical Features

Dimensions	110 x 140 x 62 mm
Material	PC
Protection Class	IP67

¹ Reading distance depends on transponder type, antenna and environmental conditions.

2.3 Environmental Conditions

Operating Temperature	-20°C ... +55°C
Storage Temperature	-40°C ... +85°C
Humidity	Up to 95%, non condensing

2.4 Reading Performance Tests

The table below shows the minimum RF channel allocation time with different inventory modes with no tags and with 1 tag in front of the antenna. The test has been made using with a 4dBi gain circular antenna with output power of 27dBm and a tag at a distance of 0.5mt from the antenna.

Inventory Mode	Time with No Tag	Time with 1 Tag
Fast Multi Tag	15ms	23ms
Fast Single Tag	15ms	18ms
Standard Multi Tag	15ms	25ms
Standard Single Tag	15ms	20ms

3 Operating Features

In 'continuous' mode the **BLUEBOX** is characterized by the coexistence of 2 'parallel' and asynchronous activities: the tag identification (inventory) and the communication with the 'host' system. The 'continuous' identification activity interacts with the communication activity through a buffer that contains the code of the last identified tags or that is empty indicating the absence of tags. Due to synchronization and filtering reasons, the buffer is handled for each identified tag by a parameter defined as 'hold time' (same as 'filter time' defined below, to be set in the range of 0 ... 99 seconds or 0 ... 99 minutes, default value 1 second) and allows to extend 'artificially' the presence of the tag after it leaves the antenna's influence area; this behavior is observable looking at the yellow led status that is 'on' indicating the presence of tags and also through the activation of the relay nr 1 (if its 'automatic' management is enabled by the flag defined in the general parameters). Through the command 'data request' it is possible to get the data contained in the buffer (tag/s ID/s and optionally tag/s type/s, reading antenna and gate crossing direction in 'gate mode'); the indication of the reading antenna can be enabled/disabled through a flag defined in the general parameters.

The **BLUEBOX** handles also a 1000 elements FIFO queue which is combined with the 'filter time' general parameter (to be set in a range of 0 ... 99 seconds or 0 ... 99 minutes, default value 1 second) that prevents the queue saturation in case of a tag 'continuous' presence. When a tag is identified, the **BLUEBOX** verifies if it belongs to the list of read tags. If the tag do not belong to the list (it is defined as 'new'), its code will be inserted in the queue, a filter time assigned to the tag will be started and the buzzer will be activated for 0.5 seconds (if its 'automatic' management is enabled by the flag defined in the general parameters). Otherwise (the tag belong to the list of read tags), the **BLUEBOX** verifies if the relative filter time is expired. In this case (the filter time is expired), the tag is defined as 'new' and will be processed as described above, otherwise only the relative filter time will be rearmed. Through the command 'queue data request' and the relative 'ack', it is possible to get the data contained in the queue (tag ID and optionally tag type, reading antenna and gate crossing direction in 'gate mode') and unload it; the indication of the reading antenna can be enabled/disabled through a flag defined in the general parameters.

Two subsets of the 'continuous' mode are also defined:

- 'Trigger' mode: the activation and deactivation of the 'continuous' mode is triggered with inputs. The trigger could be level sensitive or edge sensitive depending on the 'extension time' setting (to be set in a range of 0 ... 99 seconds or 0 ... 99 minutes, default value 0 seconds).
- 'Gate' mode: the activation of the 'continuous' mode is triggered with the activation of an input. The deactivation of the 'continuous' mode is

triggered with the activation of the other input but, the activation of the 'continuous' mode could also be extended with the 'extension time' (to be set in a range of 0 ... 99 seconds or 0 ... 99 minutes, default value 0 seconds). The crossing of the gate is managed with a maximum crossing 'gate time' (to be set in a range of 0 ... 99 seconds or 0 ... 99 minutes, default value 0 seconds) which deactivates the 'continuous' mode in case of no successful crossing of the gate within this time. Only with a successful crossing of the gate data (tag ID and gate crossing direction and optionally tag type and reading antenna) are save in buffer and FIFO.

The **BLUEBOX** allows the execution of 'on request' functions. During the execution of these functions, the 'continuous' identification activity will be suspended temporarily; the involved commands are relative to device configuration and tag read/write specific activities.

If not required, the 'continuous' identification activity can be disabled through a flag defined in the general parameters. In this case, the **BLUEBOX** will only execute the 'on request' commands already defined above.

Two 'test' mode are also defined:

- 'RF Reading' test: in 'continuous' mode allows the user to easily and quickly test the read range of the device with fast beeping (100ms) the buzzer (the buzzer must be connected to output 2) for every identified tag. This 'test' mode is stored in non volatile memory and its status is kept at every device restart and until it is disabled.
- 'RF Power' test: allows the user to easily and quickly test the minimum RF output power needed to read a tag in a fixed position. The device sweeps from the minimum RF output power to maximum RF output power or until it finds a tag, increasing the RF power of 1 dB every 500ms with fixed Q selection algorithm and Q=0. It is an 'on request' function which temporarily suspends the 'continuous' mode.

3.1 General Parameters

Hereinafter the configurable general parameter of the **BLUEBOX**.

Parameter	Description	Range	Default
Filter Time	Reading and tag queue management filter time. 0 setting is internally overwritten with 1 second.	0 ... 99 seconds 0 ... 99 minutes	1 sec
Buzzer Management	Buzzer management on 'new tag' event.	Disabled, enabled	Enabled
Output 1 Management	Output 1 management on 'new tag' event.	Disabled, enabled	Disabled

Parameter	Description	Range	Default
Reading Antenna Information	Reading antenna information.	Disabled, enabled	Disabled
Transponder Type Information	Transponder type information.	Disabled, enabled	Disabled
Trigger 'Continuous' Mode with Inputs	'Continuous' mode activation/deactivation management with inputs. See the Input/Output parameters for more details.	Disabled, enabled	Disabled
'Continuous' Mode	'Continuous' mode activation/deactivation. If activated overrides the trigger 'continuous' mode with inputs setting.	Disabled, enabled	Enabled

The general parameters are managed through the 'Read General Parameters' and 'Write General Parameters' commands as described in protocol technical manuals where the parameters 1...7 fields with default values are:

1	2	3	4	5	6	7
0xFF	0x48	0x10	0x00	0x00	Filter Time	Flags
0xFF	0x48	0x10	0x00	0x00	0x01	0x80

Where:

Parameter	Description
Filter Time	Reading management filter time (0 setting is internally overwritten with 1 second): <ul style="list-style-type: none"> Decimal 0 ... 99 for time in seconds (0 ... 99 seconds); Decimal 100 ... 199 for time in minutes (0 ... 99 minutes).
Flags	Flags. Single bits are dedicated to disable (0 value) or enable (1 value) functions: <ul style="list-style-type: none"> Bit 7: Automatic buzzer management; Bit 6: Automatic output 1 management; Bit 5: Reading antenna information in Data Request, Queue Request and Inventory commands; Bit 4: Transponder type information in Data Request and Queue Request commands; Bit 3: Not used; Bit 2: Trigger 'continuous' mode with inputs (see the I/O parameters); Bit 1: Not used; Bit 0: To disable the 'continuous' mode.

3.2 Configuration Parameters

Hereinafter the configurable operational parameters of the **BLUEBOX**.

3.2.1 Ethernet

Hereinafter the configurable Ethernet parameters of the **BLUEBOX**.

Parameter	Description	Range	Default
IP Address	IP address.	-	192.168.4.200
Subnet	Subnet mask.	-	255.255.255.0
Gateway	Gateway address.	-	0.0.0.0

The Ethernet parameters are stored in configuration page nr. 0x80 and are managed through the 'Read Configuration Parameters' and 'Write Configuration Parameters' commands as described in protocol technical manuals where the parameters 1...14 fields with default values are:

1	2	3	4	5	6	7
IP0	IP1	IP2	IP3	0x0B	0xB8	Subnet0
0xC0	0xA8	0x04	0xC8	0x0B	0xB8	0xFF

8	9	10	11	12	13	14
Subnet1	Subnet2	Subnet3	Gateway0	Gateway1	Gateway2	Gateway3
0xFF	0xFF	0x00	0x00	0x00	0x00	0x00

Where:

Parameter	Description
IP0...IP3	IP address.
Subnet0...Subnet3	Subnet mask.
Gateway0...Gateway3	Gateway address.



The IP address, subnet mask and gateway are not writeable because they are set by an IO Controller, IO Supervisor or Engineering System through the DCP protocol.

3.2.2 ProfiNet

Hereinafter the configurable ProfiNet parameters of the **BLUEBOX**.

Parameter	Description	Range	Default
ProfiNet Station Name	The station name of the device in the ProfiNet network.	Variable string 0...240 bytes	
ProfiNet Buffer Length	The ProfiNet IN/OUT buffer size in bytes.	8, 12, 16, 20, 32, 64	16

The ProfiNet parameters are stored in configuration page nr. 0x03 and 0xC0 and are managed through the 'Read Configuration Parameters' and 'Write Configuration Parameters' commands as described in protocol technical manuals.

The parameters 1...7 fields with default values of page 0x03 are

1	2	3	4	5	6	7
0x7E	Buffer Length	0x00	0x00	0x00	0x00	0x00
0x7E	0x02	0x00	0x00	0x00	0x00	0x00

Where:

Parameter	Description
ProfiNet Bufer Length	The ProfiNet IN/OUT buffer size in bytes: <ul style="list-style-type: none"> • 0x00: 8 bytes • 0x01: 12 bytes • 0x02: 16 bytes • 0x03: 20 bytes • 0x04: 32 bytes • 0x05: 64 bytes

The parameters 1...240 fields with default values of page 0xC0 are

1	2	239	240
---	---	-----	-----	-----	-----	-----

ProfiNet Station Name 1	ProfiNet Station Name 2	ProfiNet Station Name 239	ProfiNet Station Name 240
0x00	0x00	0x00	0x00	0x00	0x00	0x00

Where:

Parameter	Description
ProfiBus Station Name	The ProfiNet Sation Name is a null terminated variable string with max length of 240 bytes.



The changed ProfiNet parameters become effective only after a reset of the **BLUEBOX**. Reset the **BLUEBOX** using the 'Reset Device' command or via a hardware reset.



The station name is not writeable because it is set by an IO Controller, IO Supervisor or Engineering System through the DCP protocol.

3.2.1 Input/Output

Hereinafter the configurable Input/Output parameters of the **BLUEBOX**.

Parameter	Description	Range	Default
Input 1 Mode	Input 1 activation / deactivation mode of the 'continuous' mode in 'trigger' mode.	0, 1, 2	1
Input 2 Mode	Input 2 activation / deactivation mode of the 'continuous' mode in 'trigger' mode.	0, 1, 2	0
Extension Time	'Continuous' mode activation/deactivation management with inputs extension time. 1. In 'trigger' mode, if =0 the trigger is level sensitive, otherwise it is edge sensitive and this time defines the 'continuous' mode activation time extension. 2. In 'gate' mode it defines the 'continuous' mode activation time extension after the crossing of the gate.	0 ... 99 seconds 0 ... 99 minutes	0

Parameter	Description	Range	Default
Gate Time	Maximum gate crossing time. If =0 the 'gate' mode is disabled, otherwise it is the maximum gate crossing time.	0 ... 99 seconds 0 ... 99 minutes	0
Debounce Time	The inputs debounce time. If =0 a minimum bounce time of 50ms is internally set.	0.00 ... 0.99 seconds 0.0 ... 9.9 seconds	0

Where the input mode range means

- 0: Disabled;
- 1: ON -> Activate antennas; OFF -> Deactivate antennas;
- 2: OFF -> Activate antennas; ON -> Deactivate antennas;

The input 1 and 2 modes combination allowed are

Input 1 Mode	Input 2 Mode
ON -> Activate antennas; OFF -> Deactivate antennas	Disabled
OFF -> Activate antennas; ON -> Deactivate antennas	Disabled
Disabled	ON -> Activate antennas; OFF -> Deactivate antennas
Disabled	OFF -> Activate antenna 1 & 2; ON -> Deactivate antenna 1 & 2

The Input/Output parameters are stored in configuration page nr. 0x05 and are managed through the 'Read Configuration Parameters' and 'Write Configuration Parameters' commands as described in protocol technical manuals where the parameters 1...7 fields with default values are:

1	2	3	4	5	6	7
Input1 Mode	Input2 Mode	Extension Time	Gate Time	Debounce Time	0x00	0x00
0x01	0x00	0x00	0x00	0x00	0x00	0x00

Where:

Parameter	Description
Input1 Mode	Input 1 activation / deactivation mode of the 'continuous' mode in 'trigger' mode: <ul style="list-style-type: none"> 0x00: Disabled 0x01: ON -> Activate antennas; OFF -> Deactivate antennas 0x02: OFF -> Activate antennas; ON -> Deactivate antennas
Input2 Mode	Input 2 activation / deactivation mode of the 'continuous' mode in 'trigger' mode: <ul style="list-style-type: none"> 0x00: Disabled 0x01: ON -> Activate antennas; OFF -> Deactivate antennas 0x02: OFF -> Activate antennas; ON -> Deactivate antennas
Extension Time	'Continuous' mode activation/deactivation management with inputs extension time. <ul style="list-style-type: none"> In 'trigger' mode, if =0 the trigger is level sensitive, otherwise it is edge sensitive and this time defines the 'continuous' mode activation time extension. In 'gate' mode it defines the 'continuous' mode activation time extension after the crossing of the gate. And the values allowed are: <ul style="list-style-type: none"> Decimal 0 ... 99 for time in seconds (0 ... 99 seconds); Decimal 100 ... 199 for time in minutes (0 ... 99 minutes).
Gate Time	The maximum gate crossing time. If =0 the 'gate' mode is disabled, otherwise it is the maximum gate crossing time: <ul style="list-style-type: none"> Decimal 0 ... 99 for time in seconds (0 ... 99 seconds); Decimal 100 ... 199 for time in minutes (0 ... 99 minutes).
Debounce Time	The inputs anti-bounce time. If =0 a minimum bounce time of 50ms is internally set. <ul style="list-style-type: none"> Decimal 0 ... 99 for time in mseconds (0 ... 990 mseconds) Decimal 100 ... 199 for time in seconds (0.0 ... 9.9 seconds)



The changed Input/Output parameters become effective only after a reset of the **BLUEBOX**. Reset the **BLUEBOX** using the 'Reset Device' command or via a hardware reset.

3.2.2 RF and EPC C1G2 (Class-1 Generation-2)

Hereinafter the configurable RF parameters of the **BLUEBOX**.

Parameter	Description	Range	Default
RF Region	RF geographical region.	Europe (ETSI compliant region), North America (FCC compliant region)	Europe (ETSI compliant region)

Parameter	Description	Range	Default
RF Output Power	RF output power in dBm.	(See the technical specifications section)	20 dBm
RF Input Sensitivity	RF input sensitivity in dBm.	(See the technical specifications section)	-76 dBm
RF Channel	RF channel. Channel 0 stands for default settings of the selected region: <ul style="list-style-type: none"> Europe (ETSI): FHSS on 4 channels (1, 4, 7, 10) in 865.7 – 867.5 MHz, 600kHz span. North America (FCC): FHSS on 50 channels (1 ... 50) in 902.75 – 927.25MHz, 500kHz span. 	0 ... 10 (ETSI) 0 ... 50 (FCC)	0
Antenna 1 Activation	Activation of antenna 1.	Disabled, enabled	Enabled
RF Channel Allocation Time	The maximum period of consecutive transmission on the same RF channel. 0 stands for default settings of the selected region: <ul style="list-style-type: none"> Europe (ETSI): 4 secs in 'continuous' mode, no allocation time in 'continuous' mode triggered by input. North America (FCC): 0.4 secs. 	0.00 ... 0.99 seconds 0 ... 99 seconds	0
RF Channel Pause Time	The minimum time between two consecutive transmissions in the same RF channel. 0 stands for default settings of the selected region: <ul style="list-style-type: none"> Europe (ETSI): 100 ms in 'continuous' mode, no pause time in 'continuous' mode triggered by input. North America (FCC): no pause time. 	0.00 ... 0.99 seconds 0 ... 99 seconds	0
RF Chip Standby Mode	Activation / deactivation of the standby mode of the RF chip during RF off conditions to reduce power consumption and temperature increase.	Disabled, enabled	Enabled

List of region frequencies:

RF Channel	Europe (ETSI compliant region) [MHz]	North America (FCC compliant region) [MHz]
1	865.7	902.75
2	865.9	903.25
3	866.1	903.75
4	866.3	904.25
5	866.5	904.75
6	866.7	905.25
7	866.9	905.75
8	867.1	906.25
9	867.3	906.75
10	867.5	907.25
11		907.75
12		908.25
13		908.75
14		909.25
15		909.75
16		910.25
17		910.75
18		911.25
19		911.75
20		912.25
21		912.75
22		913.25
23		913.75
24		914.25
25		914.75
26		915.25
27		915.75

RF Channel	Europe (ETSI compliant region) [MHz]	North America (FCC compliant region) [MHz]
28		916.25
29		916.75
30		917.25
31		917.75
32		918.25
33		918.75
34		919.25
35		919.75
36		920.25
37		920.75
38		921.25
39		921.75
40		922.25
41		922.75
42		923.25
43		923.75
44		924.25
45		924.75
46		925.25
47		925.75
48		926.25
49		926.75
50		927.25

Hereinafter a cross-table between RF channel internal numeration and ETSI numeration according with EN 302208-1.

Internal RF Channel	ETSI EN 302208-1 RF Channel
1	4
2	5

Internal RF Channel	ETSI EN 302208-1 RF Channel
3	6
4	7
5	8
6	9
7	10
8	11
9	12
10	13



According to ETSI EN 302208-1 only channels 4, 7, 10 and 13 (internal numerated as 1, 4, 7 and 10) could be used at high power! Other RF channels are present only for test purposes and should not be used in normal operation!

Hereinafter the configurable EPC C1G2 (Class-1 Generation-2) parameters of the **BLUEBOX**.

Parameter	Description	Range	Default
Inventory Mode	How the device does an inventory in 'continuous' mode.	Fast Multi Tag, Fast Single Tag, Standard Multi Tag, Standard Single Tag	Standard Multi Tag
Link Frequency	Link Frequency as defined in EPC Class 1 Generation 2 protocol.	40, 160, 256, 320, 640 kHz	160 kHz
Bit Coding	Bit coding as defined in EPC Class 1 Generation 2 protocol.	FM0, Miller 2, Miller 4, Miller 8	Miller 2
Q Selection Algorithm	The Q selection algorithm used for setting the slot-counter parameter as defined in EPC Class 1 Generation 2 protocol.	Dynamic Fixed	Dynamic
Q Value	The Q value used in fixed Q selection algorithm or the starting Q value used in dynamic Q selection algorithm as defined in EPC Class 1 Generation 2 protocol.	0 ... 15	3
Q Initial	The minimum allowed Q value in dynamic Q algorithm mode.	0 ... 15	0

Parameter	Description	Range	Default
Q Final	The maximum allowed Q value in dynamic Q algorithm mode.	0 ... 15	4
Q Adjust Rounds	The maximum Q adjust rounds in dynamic Q algorithm mode.	0 ... 5	3
Inventory Cycles	The inventory cycles in inventory command.	0 ... 5	3
Search Mode	How the device singulates (select) tags in 'continuous' mode.	Dual Target, Single Target	Dual Target
Session	The session used as defined in EPC Class 1 Generation 2 protocol.	S0, S1, S2, S3	S0
Target	The target used as defined in EPC Class 1 Generation 2 protocol.	A, B	A
EPC size	The size of the recognized EPC in bytes. 0 means all EPC sizes,	0, 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32, 34, 36, 38, 40, 42, 44, 46, 48, 50, 52, 54, 56, 58, 60, 62	0
Use AFI	To enable/disable the AFI (Application Family Identifier) management.	Enabled Disabled	Disabled
AFI	The AFI (Application Family Identifier) byte.	0x00...0xFF	0x00
ReadAfterDetect Password	The password to be used to access to tag's memory in ReadAfterDetect mode (Inventory Mode = Standard Single/Multi Tag with Custom Info). Use a '0' password if the access password is not requested.	0x00 0x00 0x00 0x00 ... 0xFF 0xFF 0xFF 0xFF	0x00 0x00 0x00 0x00
ReadAfterDetect Bank	The tag's memory bank to access in ReadAfterDetect mode (Inventory Mode = Standard Single/Multi Tag with Custom Info).	Reserved, TID, User	Reserved
ReadAfterDetect Address	The tag's memory start address to access in the specified memory bank in ReadAfterDetect mode (Inventory Mode = Standard Single/Multi Tag with Custom Info).	0x00 0x00 0x00 0x00 ... 0xFF 0xFF 0xFF 0xFF	0x00 0x00 0x00 0x00
ReadAfterDetect Length	The number of tag's memory blocks (2-bytes length) to access in the specified memory bank in ReadAfterDetect mode (Inventory Mode = Standard Single/Multi Tag with Custom Info). In case of Reserved or User bank selected 0 means no tag's memory block	0 ... 255	0

Parameter	Description	Range	Default
	access, in case of TID bank selected 0 means auto-length (class identifier, manufacturer identifier, serial number).		
ReadAfterDetect EPC Bank Info	The EPC bank info to include in the tag's ID in ReadAfterDetect mode (Inventory Mode = Standard Single/Multi Tag with Custom Info).	PC, EPC, CRC	PC, EPC, CRC

The RF and EPC C1G2 (Class-1 Generation-2) parameters are stored in configuration pages nr. 0x01, 0x02, 0x04 and 0x82 and are managed through the 'Read Configuration Parameters' and 'Write Configuration Parameters' commands as described in protocol technical manuals.

The parameters 1...7 fields with default values are of page 0x01 are:

1	2	3	4	5	6	7
RF Input Sensitivity	Flags	0x00	0x00	0x00	0x00	0x00
0x4C	0x00	0x00	0x00	0x00	0x00	0x00

Where:

Parameter	Description
RF Input Sensitivity	Absolute value of the RF input sensitivity (see the technical specifications section for the possible values).
Flags	Flags. Single bits are dedicated to disable (0 value) or enable (1 value) functions: <ul style="list-style-type: none"> • Bit 7: Not used; • Bit 6: Not used; • Bit 5: Not used; • Bit 4: Not used; • Bit 3: Not used; • Bit 2: Not used; • Bit 1: Not used; • Bit 0: To disable the RF chip standby mode.

The parameters 1...7 fields with default values of page 0x02 are:

1	2	3	4	5	6	7
RF Region	RF Output Power	RF Channel	Antennas Activation	EPC C1G2	RF Maximum Allocation Time	RF Minimum Pause Time

0x02
0x14
0x00
0x01
0x30
0x00
0x00

Where:

Parameter	Description
RF Region	RF geographical region: <ul style="list-style-type: none"> 0x01: North America (FCC compliant); 0x02: Europe (ETSI compliant).
RF Output Power	RF output power (see the technical specifications section for the possible values).
RF Channel	RF channel. Channel 0 stands for default settings of the selected region: <ul style="list-style-type: none"> Europe (ETSI): FHSS on 4 channels (1, 4, 7, 10) in 865.7 – 867.5 MHz, 600kHz span. North America (FCC): FHSS on 50 channels (1 ... 50) in 902.75 – 927.25MHz, 500kHz span. The allowed values are 0x00 ... 0x0A if ETSI compliant region is selected and 0x00 ... 0x32 if FCC compliant region is selected.
Antennas Activation	A byte whose bits are dedicated to disable (0 value) or enable (1 value) the antennas to use: <ul style="list-style-type: none"> Bit 7: Not used. Bit 6: Not used. Bit 5: Not used. Bit 4: Not used. Bit 3: Not used. Bit 2: Not used. Bit 1: Not used. Bit 0: Antenna 1.
EPC C1G2	A byte whose bits are dedicated to manage Q value and session/target parameters: <ul style="list-style-type: none"> Bit 7 ... bit 4: Q value in fixed Q selection algorithm or starting Q value in dynamic Q selection algorithm, as defined EPC Class 1 Generation 2 protocol (0x0=0 ... 0xF=15); Bit 3 ... bit 2: Session as defined in EPC Class 1 Generation 2 protocol (00b=S0, 01b=S1, 10b=S2, 11b=S3); Bit 1: Q selection algorithm (0=dynamic, 1=fixed); Bit 0: Target as defined in EPC Class 1 Generation 2 protocol (0=A, 1=B).
RF Maximum Allocation Time	The maximum period of consecutive transmission on the same RF channel. 0 stands for default settings of the selected region: <ul style="list-style-type: none"> Europe (ETSI): 4 secs in 'continuous' mode, no allocation time in 'continuous' mode triggered by input. North America (FCC): 0.4 secs. The allowed values are: <ul style="list-style-type: none"> Decimal 0 ... 99 for time in mseconds (0 ... 990 mseconds); Decimal 100 ... 199 for time in seconds (0 ... 99 seconds).
RF Minimum Pause Time	The minimum time between two consecutive transmission in the same RF channel. 0 stands for default settings of the selected region:

Parameter	Description
	<ul style="list-style-type: none"> Europe (ETSI): 100 ms, in 'continuous' mode, no pause time in 'continuous' mode triggered by input. North America (FCC): no pause time. <p>The allowed values are:</p> <ul style="list-style-type: none"> Decimal 0 ... 99 for time in mseconds (0 ... 990 mseconds); Decimal 100 ... 199 for time in seconds (0 ... 99 seconds).

The parameters 1...7 fields with default values of page 0x04 are:

1	2	3	4	5	6	7
Inventory Mode	Link Frequency	Bit Coding	0x00	EPC Size	Use AFI	AFI
0x02	0x02	0x01	0x00	0x00	0x00	0x00

Where:

Parameter	Description
Inventory Mode	<p>A byte whose bits are dedicated to manage the inventory mode, the search mode and the ReadAfterDetect info activation parameters:</p> <ul style="list-style-type: none"> Bit 7: Not used. Bit 6: Search mode (how the device singulates tags in 'continuous' mode): <ul style="list-style-type: none"> 0b: Dual Target (the device singulates tags in both A and B states). 1b: Single Target (the device singulates only tags that are in A state). Bit 5: Activation of the ReadAfterDetect with custom info as defined in ReadAfterDetect Password, Bank, Address, Length and EPC Info parameters (0b=OFF, 1b=ON). Bit 4: Activation of the ReadAfterDetect with auto TID info (0b=OFF, 1b=ON). Bit 3 ... bit 0: Inventory mode (how the device does an inventory in 'continuous' mode): <ul style="list-style-type: none"> 0x0: Fast Multi Tag: Inventory mode that does not take the tag to the Opened but to the Acknowledged state. This inventory mode is not as secure as the standard mode, but it is faster. 0x1: Fast Single Tag: The same inventory mode like the Fast Multi Tag, but with the slot count of 1. This has the effect that no anticollision procedure is performed. 0x2: Standard Multi Tag: Inventory mode like defined in the EPC C1G2 standard. 0x4: Standard Single Tag: The same inventory mode like the Standard Multi Tag, but with the slot count of 1. This has the effect that no anticollision procedure is performed. <p>Allowed values are:</p>

Parameter	Description																				
	<table><tr><th>Inventory Mode</th><th>ReadAfterDetect with Custom Info</th><th>ReadAfterDetect with Auto TID</th><th>Search Mode</th></tr><tr><td>Fast Multi Tag, Fast Single Tag</td><td>Disabled</td><td>Disabled</td><td>Dual Target, Single Target</td></tr><tr><td>Standard Multi Tag, Standard Single Tag</td><td>Disabled</td><td>Disabled</td><td>Dual Target, Single Target</td></tr><tr><td>Standard Multi Tag, Standard Single Tag</td><td>Disabled</td><td>Enabled</td><td>Dual Target, Single Target</td></tr><tr><td>Standard Multi Tag, Standard Single Tag</td><td>Enabled</td><td>Disabled</td><td>Dual Target, Single Target</td></tr></table>	Inventory Mode	ReadAfterDetect with Custom Info	ReadAfterDetect with Auto TID	Search Mode	Fast Multi Tag, Fast Single Tag	Disabled	Disabled	Dual Target, Single Target	Standard Multi Tag, Standard Single Tag	Disabled	Disabled	Dual Target, Single Target	Standard Multi Tag, Standard Single Tag	Disabled	Enabled	Dual Target, Single Target	Standard Multi Tag, Standard Single Tag	Enabled	Disabled	Dual Target, Single Target
	Inventory Mode	ReadAfterDetect with Custom Info	ReadAfterDetect with Auto TID	Search Mode																	
	Fast Multi Tag, Fast Single Tag	Disabled	Disabled	Dual Target, Single Target																	
	Standard Multi Tag, Standard Single Tag	Disabled	Disabled	Dual Target, Single Target																	
	Standard Multi Tag, Standard Single Tag	Disabled	Enabled	Dual Target, Single Target																	
Standard Multi Tag, Standard Single Tag	Enabled	Disabled	Dual Target, Single Target																		
Link Frequency	Link Frequency: <ul style="list-style-type: none">0x00: 40 kHz;0x02: 160 kHz;0x04: 256 kHz;0x05: 320 kHz;0x06: 640 kHz.																				
Bit Coding	Bit coding: <ul style="list-style-type: none">0x00: FM0;0x01: Miller 2;0x02: Milller 4;0x03: Miller 8. Allowed values are: <table><tr><th>Link Frequency</th><th>Bit Coding</th></tr><tr><td>40 kHz</td><td>FM0, Miller 2, Miller 4, Miller 8</td></tr><tr><td>160 kHz</td><td>FM0, Miller 2, Miller 4, Miller 8</td></tr><tr><td>256 kHz</td><td>Miller 4, Miller 8</td></tr><tr><td>320 kHz</td><td>Miller 4, Miller 8</td></tr><tr><td>640 kHz</td><td>Miller 4, Miller 8</td></tr></table>	Link Frequency	Bit Coding	40 kHz	FM0, Miller 2, Miller 4, Miller 8	160 kHz	FM0, Miller 2, Miller 4, Miller 8	256 kHz	Miller 4, Miller 8	320 kHz	Miller 4, Miller 8	640 kHz	Miller 4, Miller 8								
	Link Frequency	Bit Coding																			
	40 kHz	FM0, Miller 2, Miller 4, Miller 8																			
	160 kHz	FM0, Miller 2, Miller 4, Miller 8																			
	256 kHz	Miller 4, Miller 8																			
	320 kHz	Miller 4, Miller 8																			
	640 kHz	Miller 4, Miller 8																			
	DRM (Dense Reader Mode):																				
<table><tr><th>Link Frequency</th><th>Bit Coding</th></tr><tr><td>256 kHz</td><td>Miller 4, Miller 8</td></tr><tr><td>320 kHz</td><td>Miller 4, Miller 8</td></tr></table>		Link Frequency	Bit Coding	256 kHz	Miller 4, Miller 8	320 kHz	Miller 4, Miller 8														
Link Frequency	Bit Coding																				
256 kHz	Miller 4, Miller 8																				
320 kHz	Miller 4, Miller 8																				
EPC Size	The size of the recognized EPC in bytes. 0 means all EPC sizes.																				
Use AFI	To enable/disable the AFI (Application Family Identifier) management: <ul style="list-style-type: none">0x00: To disable.0x01: To enable.																				
AFI	The AFI (Application Family Identifier) byte.																				

The parameters 1...14 fields with default values of page 0x82 are:

1	2	3	4	5	6	7
ReadAfterDetect Password0	ReadAfterDetect Password1	ReadAfterDetect Password2	ReadAfterDetect Password3	ReadAfterDetect Bank	ReadAfterDetect Address0	ReadAfterDetect Address1
0x00	0x00	0x00	0x00	0x00	0x00	0x00

8	9	10	11	12	13	14
ReadAfterDetect Address2	ReadAfterDetect Address3	ReadAfterDetect Length	ReadAfterDetect EPC Bank Info	Q	Q Adjust Rounds	Inventory Cycles
0x00	0x00	0x00	0x03	0x00	0x00	0x00

Where:

Parameter	Description
ReadAfterDetect Password0 ... ReadAfterDetect Password3	The password to be used to access to tag's memory in ReadAfterDetect mode. Use a '0' password if the access password is not requested.
ReadAfterDetect Bank	The tag's memory bank to access in ReadAfterDetect mode: <ul style="list-style-type: none"> 0x00: Reserved; 0x02: TID; 0x03: User.
ReadAfterDetect Address0 ... ReadAfterDetect Address3	The tag's memory start address to access in the specified memory bank in ReadAfterDetect mode.
ReadAfterDetect Length	The number of tag's memory blocks (2-bytes length) to access in the specified memory bank in ReadAfterDetect mode. In case of Reserved or User bank selected, 0 means no tag's memory block access; in case of TID bank selected, 0 means auto-length (class identifier, manufacturer identifier, serial number).
ReadAfterDetect EPC Bank Info	The EPC bank info to include in the tag's ID in ReadAfterDetect mode. A byte whose bits are dedicated to disable (0 value) or enable (1 value) functions: <ul style="list-style-type: none"> Bit 7: Not used; Bit 6: Not used; Bit 5: Not used; Bit 4: Not used; Bit 3: Not used;

Parameter	Description
	<ul style="list-style-type: none"> Bit 2: CRC field; Bit 1: EPC field; Bit 0: PC field.
Q	Minimum and maximum Q value to be used in dynamic Q selection algorithm: <ul style="list-style-type: none"> High nibble: minimum Q value (0x0 ... 0xF); Low nibble: maximum Q value (0x0 ... 0xF).
Q Adjust Rounds	Maximum Q adjust rounds in dynamic Q selection algorithm.
Inventory Cycles	The inventory cycles in inventory command.



The changed ReadAfterDetect parameters become effective only after a reset of the **BLUEBOX**. Reset the **BLUEBOX** using the 'Reset Device' command or via a hardware reset.

3.2.3 Dynamic Power Management

Hereinafter the configurable dynamic power management parameters of the **BLUEBOX**.

Parametro	Descrizione	Range	Default
Mode	How the device manages the power in 'continuous' mode.	Off, Up, Up/down	Off
Power Step	The power step in dynamic power management mode activated.	1 ... 5 dB 10 ... 500 mW	1 dB
Time Step	The time step in dynamic power management mode activated.	0.1 ... 9.9 seconds	1.0 sec

The Input/Output parameters are stored in configuration page nr. 0x07 and are managed through the 'Configuration Parameters Reading' and 'Configuration Parameters Programming' commands as described in protocol technical manuals where the parameters 1...7 fields with default values are:

1	2	3	4	5	6	7
Mode	Power Step	Time Step	0x00	0x00	0x00	0x00
0x00	0x01	0x0A	0x00	0x00	0x00	0x00

Where:

Parameter	Description
Mode	Dynamic power management activation / deactivation in 'continuous' mode: <ul style="list-style-type: none"> • 0x00: Off; • 0x01: Up, only increase power by power step every time step; • 0x02: Up / Down, increase power and then decrease it by power step every time step.
Power Step	Power step: <ul style="list-style-type: none"> • 0x01 ... 0x05 for power step in dB (1 ... 5 dB); • 0x81 ... 0xB2 for power step in mW x 10 (10 ... 500 mW).
Time Step	Time step: <ul style="list-style-type: none"> • Decimal 1 ... 99 for time in ms x 100 (0.1 ... 9.9 seconds).



The changed Dynamic Power Management parameters become effective only after a reset of the **BLUEBOX**. Reset the **BLUEBOX** using the 'Reset Device' command or via a hardware reset.

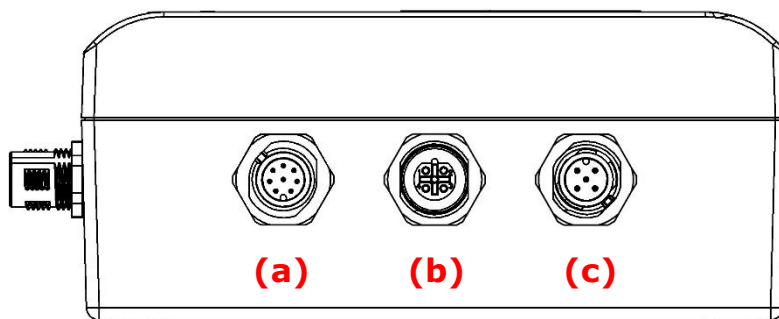
3.3 Device Status

The information about the current status of the **BLUEBOX** shall be read with the 'Read Device Status' command as described in protocol technical manuals where the status bytes 1 and 2 have the following meaning.

Status Byte	Description
Status Byte 1	Byte whose bits have the following meaning: <ul style="list-style-type: none"> • Bit 7: Not used • Bit 6: Not used; • Bit 5: RF status (0=off, 1=on) • Bit 4: 'Continuous' mode (1=enabled) • Bit 3: Not used • Bit 2: Not used • Bit 1: Output 2 status (1=activated) • Bit 0: Output 1 status (1=activated)
Status Byte 2	Byte whose bits have the following meaning: <ul style="list-style-type: none"> • Bit 7: Not used • Bit 6: Not used • Bit 5: Not used • Bit 4: Not used

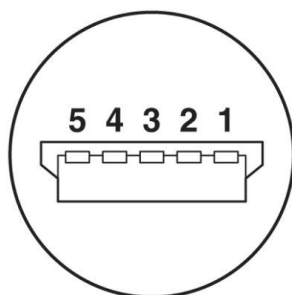
Status Byte	Description
	<ul style="list-style-type: none"> • Bit 3: Not used • Bit 2: Not used • Bit 1: Input 2 status (1=activated) • Bit 0: Input 1 status (1=activated)

4 Connections



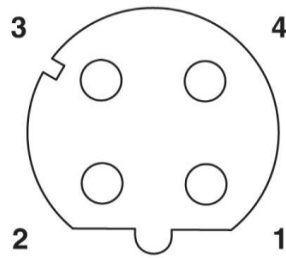
BLUEBOX is designed and developed to allow installation and maintenance experts to perform all power supply, communication and interfacing I/O connections without the need to open the device; for this purpose on the front side of the **BLUEBOX** are placed three M12 connectors (marked in the above picture by letters "a", "b" and "c") whose type and pinout, variable depending on the model of used device, are illustrated in the following paragraphs.

On the left side of the **BLUEBOX** is placed a mini USB type B port for service purpose and future implementations.



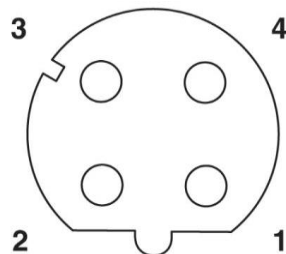
Mini USB B

Pin	No	Min	Typical	Max	Description
+5V BUS	1				+5 Vdc
USB D-	2				USB Data-
USB D+	3				USB Data+
ID	4				-
GND	5				Ground

a) Ethernet0 interface:


4-poles M12 D-coded female connector

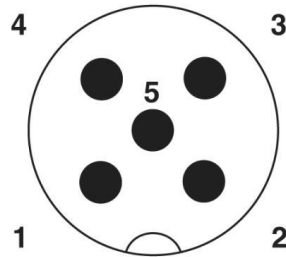
Pin	No	Min	Typical	Max	Description
TX+	1				Transmit data +
RX+	2				Receive data +
TX-	3				Transmit data -
RX-	4				Receive data -

b) Ethernet1 interface:


4-poles M12 D-coded female connector

Pin	No	Min	Typical	Max	Description
TX+	1				Transmit data +
RX+	2				Receive data +
TX-	3				Transmit data -
RX-	4				Receive data -

(c) Power supply and I/O interface:



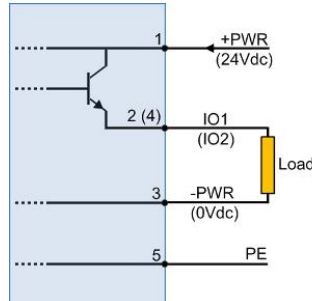
5-poles M12 A-coded male connector

Pin	No	Min	Typical	Max	Description
+ PWR	1	18Vdc	24Vdc	36Vdc	DC power supply
IO1	2				Input 1 / Output 1
- PWR	3				DC power supply return path
IO2	4				Input 2 / Output 2
PE	5				Protected Earth

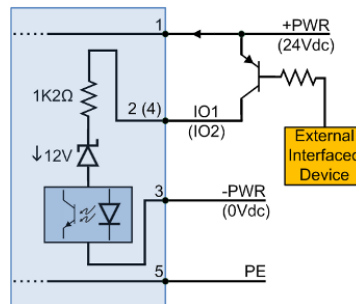
Hereinafter a cross reference table between pin number and the color of the wires of a standard open ended cable.

Pin	No	Wire Cable Color
+ PWR	1	Brown
IO1	2	White
- PWR	3	Blue
IO2	4	Black
PE	5	Grey

If IOx is used as output, the load has to be connected between Output pin 2 (channel 1) or Output pin 4 (channel 2) and -PWR pin 3; max applicable current is 500mA.



If IOx is used as input, a clean contact or PNP transistor has to be connected between +PWR pin 1 and Input pin 2 (channel 1) or Input pin 4 (channel 2); max applicable current is 10mA.



When the I/O is used as input, do not use it also as output to avoid conflicts!

5 Antennas

The **BLUEBOX** is equipped with a connector for an external antenna that is available in various models (items 902xU and 922xU).

The read range of an RFID system always depends on various factors like antenna size, transponder size, transponder IC type, orientation between transponder and device antenna, position of the transponder versus the device antenna, noise environment, metallic environment, etc. Therefore all data about read ranges can only be typical values measured under laboratory conditions. In real live applications the read range may differ from the data mentioned in the datasheet.

The maximum RF output power must be calculated considering the radiating power limits defined in the region of usage.

In Europe region radiating power limits are described in relation to dipole antenna and ERP (Efficient Radiating Power) is used as a measure. The maximum RF output power is defined by the antenna gain, the half power beam width and the cable attenuation on the device - antenna connection. For antennas with a half power beam width of up to 70° a power of $P_{ERP,max} = 2W$ ERP is allowed. For other half power beam widths a reduced power of $P_{ERP,max} = 0.5W$ ERP. The maximum RF output power is defined as:

$$P_{C,max} = P_{ERP,max} - G_{IC} + 5.15 + C_L$$

Where:

$P_{C,max}$	Maximum RF output power in dBm
$P_{ERP,max}$	Maximum ERP power of the antenna in dBm
G_{IC}	Circular antenna gain in dBic
C_L	Cable loss in dB

In North America region radiating power limits are described in relation to isotropic antenna and EIRP (Efficient Isotropic Radiating Power) is used as a measure. The maximum RF output power is defined by the antenna gain, the half power beam width and the cable attenuation on the reader - antenna connection. A power of $P_{EIRP,max} = 4W$ EIRP is allowed. The maximum RF output power is defined as:

$$P_{C,max} = P_{EIRP,max} - G_{IC} - 2.15 + 5.15 + C_L$$















Where:












$P_{C,max}$	Maximum RF output power in dBm
$P_{ERP,max}$	Maximum ERP power of the antenna in dBm
G_{IC}	Circular antenna gain in dBic
C_L	Cable loss in dB

6 Status Indications: LEDs and Buzzer

At the top of **BLUEBOX** are placed LEDs that show to the user about current activities and device status. The available LEDs depend on the **BLUEBOX** version: their meaning is described in the following paragraphs.

Buzzer: The buzzer is activated for 0.5 seconds at the end of the initialization phase. During normal operation, if the 'automatic' management of the buzzer is enabled by the flag defined in the general parameters, the buzzer is activated for 0.5 seconds at every identification of a 'new' tag.

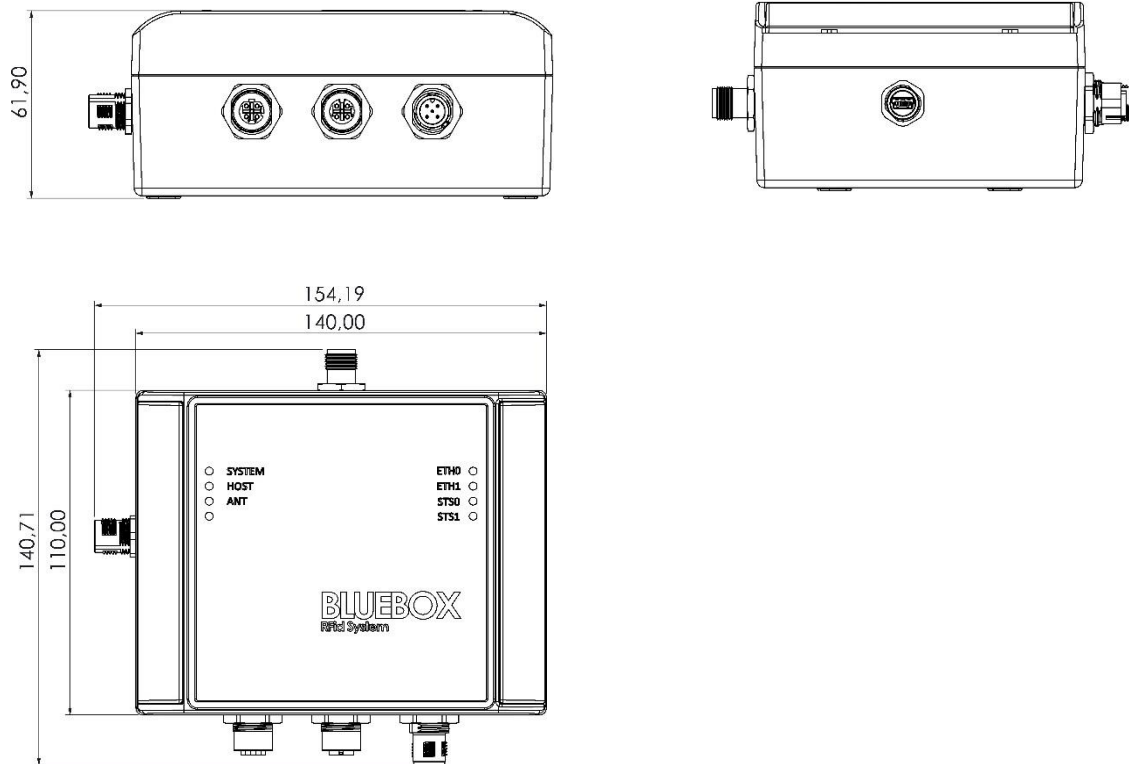
LED	Color	State	Meaning
SYSTEM	 (green)	Blinking	System running
	 (red)	On	System error (or system initialization)
	 (orange)	On	System upgrade
	 (off)	Off	Power supply for the device is missing or hardware defect
HOST	 (green)	Blinking	No HOST connection
	 (green)	On	HOST connection
	 (red)	On	System initialization
	 (off)	Off	Power supply for the device is missing or hardware defect (or system upgrade)
ANT	 (green)	Blinking	Antenna active, no tag detected
	 (green)	Slow Blink	Antenna not active
	 (green)	On	Antenna active, tag detected
	 (red)	On	Antenna error
	 (off)	Off	Power supply for the device is missing or hardware defect (or system initialization or system upgrade)
ETH0	 (green)	On	Link, a connection to the Ethernet0 exists

LED	Color	State	Meaning
	 (red)	Flashing	Activity, the device sends/receives Ethernet0 frames
	 (off)	Off	Etehrnet0 connection is missing or hardware defect
ETH1	 (green)	On	Link, a connection to the Ethernet1 exists
	 (red)	Flashing	Activity, the device sends/receives Ethernet1 frames
	 (off)	Off	Etehrnet1 connection is missing or hardware defect
STS0	 (red)	On	ProfiNet watchdog timeout or ProfiNet channel, generic or extended diagnosis present or ProfiNet system error.
	 (red)	Slow Blink (for 3 secs)	ProfiNet DCP signal service is initiated via the bus.
	 (off)	Off	No ProfiNet error or hardware defect.
STS1	 (red)	On	No ProfiNet configuration or low speed physical link or no physical link.
	 (red)	Slow Blink	No ProfiNet data exchange.
	 (off)	Off	No ProfiNet error or hardware defect.

LED state definition

State	Definition
On	The indicator is constantly on
Off	The indicator is constantly off
Blinking	The indicator turns on and off with a frequency of 2 Hz: on for 250 ms, followed by off for 250 ms
Slow Blink	The indicator turns on and off with a frequency of 1 Hz: on for 500 ms, followed by off for 500 ms
Flashing	The indicator turns on for a short time and then off.

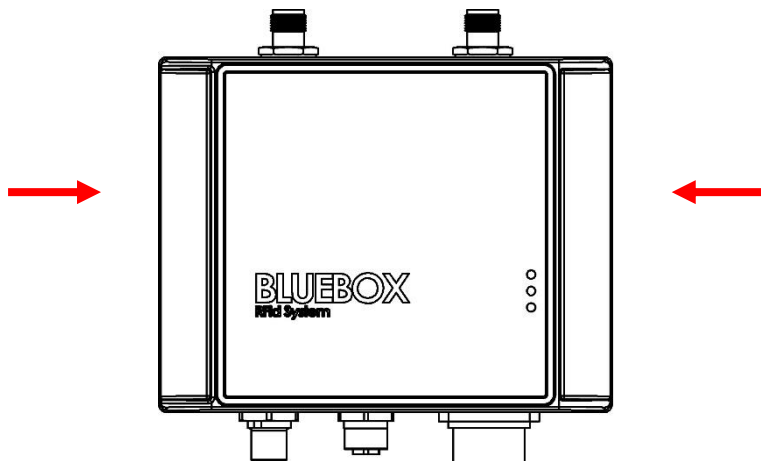
7 Mechanical Drawings



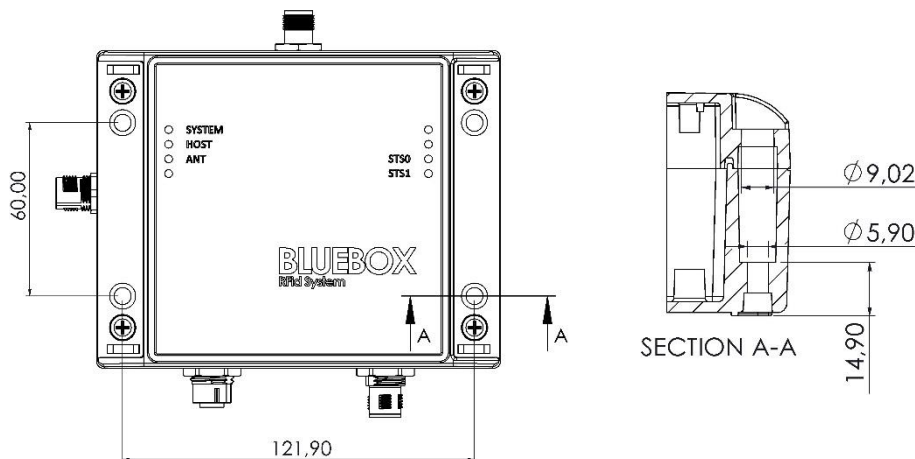
Dimensions in mm.

8 Installation

To install the **BLUEBOX**, it is necessary to remove the lateral hinges of the enclosure (highlighted with red arrows in the image below).



Fix the the enclosure to a support (wall, column, ..) using the 4 holes (already provided within the enclosure and highlighted with red arrows in the image below) and choosing suitable screws.



Dimensions in mm.



The drawing is related to 5239U-C but the fixing holes dimensions are the same for all the items.

9 Document Revision History

Date	Revision	Description
04/07/17	1.00	First release.

A. Regions of Operation

The **BLUEBOX** reader has been designed to work in various regions with differing frequency requirements. This document covers operation in North America and Europe.



In each region, the reader is not locked to only operate in the specific frequencies listed in the respective frequency plan tables shown in next paragraphs. The user is responsible to correctly use the **BLUEBOX** in the relative region.

A.1. Operation in North America

The FCC specifies frequency hopping across the North American spectrum allocated to UHF RFID (902–928 MHz, with hopping occurring between 902.75–927.25 MHz in 500 KHz steps). This specification states that no listen-before-talk is performed, the maximum continuous transmit time on a channel is 0.4 seconds.

RF Channel	Frequency [MHz]
1	902.75
2	903.25
3	903.75
...	...
49	926.75
50	927.25

A.2. Operation in Europe

For European operation, the **BLUEBOX** reader supports the frequency plan listed in the table below and is compliant with the ratified ETSI EN 302-208 specification V.1.4.1. This specification states that no listen-before-talk is performed, the maximum continuous transmit time on a channel is four seconds, and the reader enforces the 100 ms off time before reusing the same channel. In some applications (i.e. conveyor systems) it may be necessary for interrogators to transmit while tags are not present. To accommodate such

requirements, the device shall include within interrogators a means to minimize the overall length of transmission commensurate with the application. This may include the provision of trigger mechanisms within interrogators to initiate transmissions.

RF Channel	Frequency [MHz]
4	865.7
7	866.3
10	866.9
14	867.5

B. '.inf' File

```
;-----  
; Communication Device Class driver installation file  
;-----
```

```
[Version]  
Signature="$Windows NT$"  
Class=Ports  
ClassGuid={4D36E978-E325-11CE-BFC1-08002BE10318}  
Provider=%Soltec%  
DriverVer=27/03/2015,1.1.0.0
```

```
[Manufacturer]  
%Soltec%=DeviceList,ntamd64
```

```
[DeviceList]  
%FH1000_UHF%=Reader, USB\VID_c251&PID_0000  
%BLUEBOXCXUHF%=Reader, USB\VID_c251&PID_0001  
%BLUEBOXCXEUHF%=Reader, USB\VID_c251&PID_0002  
%BB2DESKTOPv2%=Reader, USB\VID_28AD&PID_0004&MI_00
```

```
[DeviceList.ntamd64]  
%FH1000_UHF%=Reader, USB\VID_c251&PID_0000  
%BLUEBOXCXUHF%=Reader, USB\VID_c251&PID_0001  
%BLUEBOXCXEUHF%=Reader, USB\VID_c251&PID_0002  
%BB2DESKTOPv2%=Reader, USB\VID_28AD&PID_0004&MI_00
```

```
;-----  
; Installation  
;-----
```

```
[Reader]  
include=mdmcpq.inf  
CopyFiles=FakeModemCopyFileSection  
AddReg=Reader.AddReg
```

```
[Reader.AddReg]
HKR,,DevLoader,,*ntkern
HKR,,NTMPDriver,,usbser.sys
HKR,,EnumPropPages32,,"MsPorts.dll,SerialPortPropPageProvider"
```

```
[Reader.Services]
AddService=usbser, 0x00000002, DriverService
```

```
[DriverService]
DisplayName=%DRIVER.SVC%
ServiceType=1
StartType=3
ErrorControl=1
ServiceBinary=%12%\usbser.sys
```

```
;-----
; String Definitions
;-----
```

```
[Strings]
Soltec      = "Soltec Soluzioni Tecnologiche Srl"
DRIVER.SVC  = "BLUEBOX USB VCom Driver"
BLUEBOXCXUHF = "BLUEBOX CX UHF USB VCom Port"
BLUEBOXCXEUHF= "BLUEBOX CX E UHF USB VCom Port"
FH1000_UHF  = "FH1000 UHF USB VCom Port"
BB2DESKTOPv2 = "BLUEBOX Gen2 DESKTOP USB VCom Port"
```

C. '.gsdml' File

```
<?xml version="1.0" encoding="iso-8859-1"?>
<ISO15745Profile xmlns="http://www.profinet.com/GSDML/2003/11/DeviceProfile"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="http://www.profinet.com/GSDML/2003/11/DeviceProfile ..\xsd\GSDML-
DeviceProfile-v2.31.xsd">
  <ProfileHeader>
    <ProfileIdentification>PROFINET Device Profile</ProfileIdentification>
    <ProfileRevision>1.00</ProfileRevision>
    <ProfileName>Device Profile for PROFINET Devices</ProfileName>
    <ProfileSource>PROFIBUS Nutzerorganisation e. V. (PNO)</ProfileSource>
    <ProfileClassID>Device</ProfileClassID>
    <ISO15745Reference>
      <ISO15745Part>4</ISO15745Part>
      <ISO15745Edition>1</ISO15745Edition>
      <ProfileTechnology>GSDML</ProfileTechnology>
    </ISO15745Reference>
  </ProfileHeader>
  <ProfileBody>
    <DeviceIdentity DeviceID="0x0108" VendorID="0x011E">
      <InfoText TextID="DeviceDescription_InfoText"/>
      <VendorName Value="Hilscher Gesellschaft für Systemautomation mbH"/>
    </DeviceIdentity>
    <DeviceFunction>
      <Family MainFamily="I/O" ProductFamily="PNS"/>
    </DeviceFunction>
    <ApplicationProcess>
      <DeviceAccessPointList>
        <DeviceAccessPointItem AddressAssignment="DCP;LOCAL" CheckDeviceID_Allowed="true"
DNS_CompatibleName="netx100repns" DeviceAccessSupported="true" FixedInSlots="0" ID="DIM 24"
ImplementationType="netx" LLDP_NoD_Supported="true" MinDeviceInterval="8"
ModuleIdentNumber="0x00002081" MultipleWriteSupported="true"
NameOfStationNotTransferable="true" ObjectUUID_LocalIndex="1" PNIO_Version="V2.31"
PhysicalSlots="0..255" PowerOnToCommReady="5000" PrmBeginPrmEndSequenceSupported="false"
ResetToFactoryModes="2" SharedDeviceSupported="true" SharedInputSupported="false">
          <ModuleInfo>
```

```

<Name TextId="NETX 100 RE/PNS V3.5.35 - V3.5.x"/>
<InfoText TextId="DIM 24_InfoText"/>
<VendorName value="Hilscher Gesellschaft für Systemautomation mbH"/>
<OrderNumber value="2220.000"/>
<HardwareRelease value="2"/>
<SoftwareRelease value="3.5.x"/>
</ModuleInfo>
<CertificationInfo ApplicationClass="" ConformanceClass="C" NetloadClass="III"/>
<SubslotList>
  <SubslotItem SubslotNumber="32768" TextId="x1"/>
  <SubslotItem SubslotNumber="32769" TextId="x1P1"/>
  <SubslotItem SubslotNumber="32770" TextId="x1P2"/>
</SubslotList>
<IOConfigData MaxInputLength="1440" MaxOutputLength="1440"/>
<UseableModules>
  <ModuleItemRef AllowedInSlots="1..255" ModuleItemTarget="1byteinput"/>
  <ModuleItemRef AllowedInSlots="1..255" ModuleItemTarget="2byteinput"
UsedInSlots="1"/>
  <ModuleItemRef AllowedInSlots="1..255" ModuleItemTarget="3byteinput"/>
  <ModuleItemRef AllowedInSlots="1..255" ModuleItemTarget="4byteinput"/>
  <ModuleItemRef AllowedInSlots="1..255" ModuleItemTarget="8byteinput"/>
  <ModuleItemRef AllowedInSlots="1..255" ModuleItemTarget="12byteinput"/>
  <ModuleItemRef AllowedInSlots="1..255" ModuleItemTarget="16byteinput"/>
  <ModuleItemRef AllowedInSlots="1..255" ModuleItemTarget="20byteinput"/>
  <ModuleItemRef AllowedInSlots="1..255" ModuleItemTarget="32byteinput"/>
  <ModuleItemRef AllowedInSlots="1..255" ModuleItemTarget="64byteinput"/>
  <ModuleItemRef AllowedInSlots="1..255" ModuleItemTarget="1byteoutput"/>
  <ModuleItemRef AllowedInSlots="1..255" ModuleItemTarget="2byteoutput"
UsedInSlots="2"/>
  <ModuleItemRef AllowedInSlots="1..255" ModuleItemTarget="3byteoutput"/>
  <ModuleItemRef AllowedInSlots="1..255" ModuleItemTarget="4byteoutput"/>
  <ModuleItemRef AllowedInSlots="1..255" ModuleItemTarget="8byteoutput"/>
  <ModuleItemRef AllowedInSlots="1..255" ModuleItemTarget="12byteoutput"/>
  <ModuleItemRef AllowedInSlots="1..255" ModuleItemTarget="16byteoutput"/>
  <ModuleItemRef AllowedInSlots="1..255" ModuleItemTarget="20byteoutput"/>
  <ModuleItemRef AllowedInSlots="1..255" ModuleItemTarget="32byteoutput"/>
  <ModuleItemRef AllowedInSlots="1..255" ModuleItemTarget="64byteoutput"/>

```

```

</UseableModules>
<VirtualSubmoduleList>
  <VirtualSubmoduleItem ID="DIM 24" SubmoduleIdentNumber="0x00002080"
Writeable_IM_Records="1 2 3 4">
    <IOData IOCS_Length="1" IOPS_Length="1"/>
    <ModuleInfo CategoryRef="DAP Module">
      <Name TextId="NETX 100 RE/PNS V3.5.35 - V3.5.x"/>
      <InfoText TextId="DIM 24_InfoText"/>
    </ModuleInfo>
  </VirtualSubmoduleItem>
</VirtualSubmoduleList>
<SystemDefinedSubmoduleList>
  <InterfaceSubmoduleItem DCP_BoundarySupported="true" DCP_HelloSupported="true"
ID="DIM 24 Interfacesubmodule" NetworkComponentDiagnosisSupported="true"
PTP_BoundarySupported="true" SubmoduleIdentNumber="0x00002081" SubslotNumber="32768"
SupportedMibs="MIB2" SupportedProtocols="SNMP;LLDP"
SupportedRT_Classes="RT_CLASS_1;RT_CLASS_3" TextId="PN-IO">
    <RT_Class3Properties ForwardingMode="Relative" MaxBridgeDelay="5500"
MaxNumberIR_FrameData="256" StartupMode="Advanced;Legacy"/>
    <SynchronisationMode MaxLocalJitter="50" SupportedRole="SyncSlave"
SupportedSyncProtocols="PTCP" T_PLL_MAX="1000"/>
    <ApplicationRelations NumberOfAR="2" StartupMode="Advanced;Legacy">
      <TimingProperties ReductionRatio="1 2 4 8 16 32 64 128 256 512" SendClock="32
64 128"/>
      <RT_Class3TimingProperties ReductionRatio="1 2 4 8 16" SendClock="8 16 32 64
128"/>
    </ApplicationRelations>
    <MediaRedundancy SupportedRole="Client"/>
  </InterfaceSubmoduleItem>
  <PortSubmoduleItem CheckMAUTypeSupported="true" ID="DIM 24 Portsubmodule 1"
IsDefaultRingport="true" LinkStateDiagnosisCapability="Up+Down" MAUTypes="16"
MaxPortRxDelay="340" MaxPortTxDelay="92" PortDeactivationSupported="true"
SubmoduleIdentNumber="0x00002082" SubslotNumber="32769" TextId="Port1"/>
  <PortSubmoduleItem CheckMAUTypeSupported="true" ID="DIM 24 Portsubmodule 2"
IsDefaultRingport="true" LinkStateDiagnosisCapability="Up+Down" MAUTypes="16"
MaxPortRxDelay="340" MaxPortTxDelay="92" PortDeactivationSupported="true"
SubmoduleIdentNumber="0x00002083" SubslotNumber="32770" TextId="Port2"/>

```

```

</SystemDefinedSubmoduleList>
<Graphics>
  <GraphicItemRef GraphicItemTarget="1" Type="DeviceSymbol"/>
  <GraphicItemRef GraphicItemTarget="1" Type="DeviceIcon"/>
</Graphics>
</DeviceAccessPointItem>
</DeviceAccessPointList>
<ModuleList>
  <ModuleItem ID="1byteinput" ModuleIdentNumber="0x00000002">
    <ModuleInfo CategoryRef="Input Module">
      <Name TextId="Module_1byteinput_Name"/>
      <InfoText TextId="Module_1byteinput_InfoText"/>
    </ModuleInfo>
    <VirtualSubmoduleList>
      <VirtualSubmoduleItem ID="1byteinput" SubmoduleIdentNumber="0x00000001">
        <IOData>
          <Input>
            <DataItem DataType="OctetString" Length="1"
TextId="DataItem_1byteinput_inputdata_0_Name"/>
          </Input>
        </IOData>
        <ModuleInfo>
          <Name TextId="Submodule_1byteinput_Name"/>
          <InfoText TextId="Submodule_1byteinput_InfoText"/>
        </ModuleInfo>
      </VirtualSubmoduleItem>
    </VirtualSubmoduleList>
  </ModuleItem>
  <ModuleItem ID="2byteinput" ModuleIdentNumber="0x00000004">
    <ModuleInfo CategoryRef="Input Module">
      <Name TextId="Module_2byteinput_Name"/>
      <InfoText TextId="Module_2byteinput_InfoText"/>
    </ModuleInfo>
    <VirtualSubmoduleList>
      <VirtualSubmoduleItem ID="2byteinput" SubmoduleIdentNumber="0x00000003">
        <IOData>
          <Input>

```



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        <DataItem DataType="OctetString" Length="2"
TextId="DataItem_2byteinput_inputdata_0_Name"/>
    </Input>
</IOData>
<ModuleInfo>
    <Name TextId="Submodule_2byteinput_Name"/>
    <InfoText TextId="Submodule_2byteinput_InfoText"/>
</ModuleInfo>
</VirtualSubmoduleItem>
</VirtualSubmoduleList>
</ModuleItem>
<ModuleItem ID="3byteinput" ModuleIdentNumber="0x00000006">
    <ModuleInfo CategoryRef="Input Module">
        <Name TextId="Module_3byteinput_Name"/>
        <InfoText TextId="Module_3byteinput_InfoText"/>
    </ModuleInfo>
    <VirtualSubmoduleList>
        <VirtualSubmoduleItem ID="3byteinput" SubmoduleIdentNumber="0x00000005">
            <IOData>
                <Input>
                    <DataItem DataType="OctetString" Length="3"
TextId="DataItem_3byteinput_inputdata_0_Name"/>
                </Input>
            </IOData>
            <ModuleInfo>
                <Name TextId="Submodule_3byteinput_Name"/>
                <InfoText TextId="Submodule_3byteinput_InfoText"/>
            </ModuleInfo>
        </VirtualSubmoduleItem>
    </VirtualSubmoduleList>
</ModuleItem>
<ModuleItem ID="4byteinput" ModuleIdentNumber="0x00000008">
    <ModuleInfo CategoryRef="Input Module">
        <Name TextId="Module_4byteinput_Name"/>
        <InfoText TextId="Module_4byteinput_InfoText"/>
    </ModuleInfo>
    <VirtualSubmoduleList>

```

```

<VirtualSubmoduleItem ID="4byteinput" SubmoduleIdentNumber="0x00000007">
  <IOData>
    <Input>
      <DataItem DataType="OctetString" Length="4"
TextId="DataItem_4byteinput_inputdata_0_Name"/>
    </Input>
  </IOData>
  <ModuleInfo>
    <Name TextId="Submodule_4byteinput_Name"/>
    <InfoText TextId="Submodule_4byteinput_InfoText"/>
  </ModuleInfo>
</VirtualSubmoduleItem>
</VirtualSubmoduleList>
</ModuleItem>
<ModuleItem ID="8byteinput" ModuleIdentNumber="0x0000000A">
  <ModuleInfo CategoryRef="Input Module">
    <Name TextId="Module_8byteinput_Name"/>
    <InfoText TextId="Module_8byteinput_InfoText"/>
  </ModuleInfo>
  <VirtualSubmoduleList>
    <VirtualSubmoduleItem ID="8byteinput" SubmoduleIdentNumber="0x00000009">
      <IOData>
        <Input>
          <DataItem DataType="OctetString" Length="8"
TextId="DataItem_8byteinput_inputdata_0_Name"/>
        </Input>
      </IOData>
      <ModuleInfo>
        <Name TextId="Submodule_8byteinput_Name"/>
        <InfoText TextId="Submodule_8byteinput_InfoText"/>
      </ModuleInfo>
    </VirtualSubmoduleItem>
  </VirtualSubmoduleList>
</ModuleItem>
<ModuleItem ID="12byteinput" ModuleIdentNumber="0x0000000C">
  <ModuleInfo CategoryRef="Input Module">
    <Name TextId="Module_12byteinput_Name"/>

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```

    <InfoText TextId="Module_12byteinput_InfoText"/>
  </ModuleInfo>
  <VirtualSubmoduleList>
    <VirtualSubmoduleItem ID="12byteinput" SubmoduleIdentNumber="0x0000000B">
      <IOData>
        <Input>
          <DataItem DataType="OctetString" Length="12"
TextId="DataItem_12byteinput_inputdata_0_Name"/>
        </Input>
      </IOData>
      <ModuleInfo>
        <Name TextId="Submodule_12byteinput_Name"/>
        <InfoText TextId="Submodule_12byteinput_InfoText"/>
      </ModuleInfo>
    </VirtualSubmoduleItem>
  </VirtualSubmoduleList>
</ModuleItem>
<ModuleItem ID="16byteinput" ModuleIdentNumber="0x0000000E">
  <ModuleInfo CategoryRef="Input Module">
    <Name TextId="Module_16byteinput_Name"/>
    <InfoText TextId="Module_16byteinput_InfoText"/>
  </ModuleInfo>
  <VirtualSubmoduleList>
    <VirtualSubmoduleItem ID="16byteinput" SubmoduleIdentNumber="0x0000000D">
      <IOData>
        <Input>
          <DataItem DataType="OctetString" Length="16"
TextId="DataItem_16byteinput_inputdata_0_Name"/>
        </Input>
      </IOData>
      <ModuleInfo>
        <Name TextId="Submodule_16byteinput_Name"/>
        <InfoText TextId="Submodule_16byteinput_InfoText"/>
      </ModuleInfo>
    </VirtualSubmoduleItem>
  </VirtualSubmoduleList>
</ModuleItem>

```

```

<ModuleItem ID="20byteinput" ModuleIdentNumber="0x00000010">
  <ModuleInfo CategoryRef="Input Module">
    <Name TextId="Module_20byteinput_Name"/>
    <InfoText TextId="Module_20byteinput_InfoText"/>
  </ModuleInfo>
  <VirtualSubmoduleList>
    <VirtualSubmoduleItem ID="20byteinput" SubmoduleIdentNumber="0x0000000F">
      <IOData>
        <Input>
          <DataItem DataType="OctetString" Length="20"
TextId="DataItem_20byteinput_inputdata_0_Name"/>
        </Input>
      </IOData>
      <ModuleInfo>
        <Name TextId="Submodule_20byteinput_Name"/>
        <InfoText TextId="Submodule_20byteinput_InfoText"/>
      </ModuleInfo>
    </VirtualSubmoduleItem>
  </VirtualSubmoduleList>
</ModuleItem>

<ModuleItem ID="32byteinput" ModuleIdentNumber="0x00000012">
  <ModuleInfo CategoryRef="Input Module">
    <Name TextId="Module_32byteinput_Name"/>
    <InfoText TextId="Module_32byteinput_InfoText"/>
  </ModuleInfo>
  <VirtualSubmoduleList>
    <VirtualSubmoduleItem ID="32byteinput" SubmoduleIdentNumber="0x00000011">
      <IOData>
        <Input>
          <DataItem DataType="OctetString" Length="32"
TextId="DataItem_32byteinput_inputdata_0_Name"/>
        </Input>
      </IOData>
      <ModuleInfo>
        <Name TextId="Submodule_32byteinput_Name"/>
        <InfoText TextId="Submodule_32byteinput_InfoText"/>
      </ModuleInfo>
    </VirtualSubmoduleItem>
  </VirtualSubmoduleList>
</ModuleItem>

```

```

        </VirtualSubmoduleItem>
    </VirtualSubmoduleList>
</ModuleItem>
<ModuleItem ID="64byteinput" ModuleIdentNumber="0x00000014">
    <ModuleInfo CategoryRef="Input Module">
        <Name TextId="Module_64byteinput_Name"/>
        <InfoText TextId="Module_64byteinput_InfoText"/>
    </ModuleInfo>
    <VirtualSubmoduleList>
        <VirtualSubmoduleItem ID="64byteinput" SubmoduleIdentNumber="0x00000013">
            <IOData>
                <Input>
                    <DataItem DataType="OctetString" Length="64"
TextId="DataItem_64byteinput_inputdata_0_Name"/>
                </Input>
            </IOData>
            <ModuleInfo>
                <Name TextId="Submodule_64byteinput_Name"/>
                <InfoText TextId="Submodule_64byteinput_InfoText"/>
            </ModuleInfo>
        </VirtualSubmoduleItem>
    </VirtualSubmoduleList>
</ModuleItem>
<ModuleItem ID="1byteoutput" ModuleIdentNumber="0x00000003">
    <ModuleInfo CategoryRef="Output Module">
        <Name TextId="Module_1byteoutput_Name"/>
        <InfoText TextId="Module_1byteoutput_InfoText"/>
    </ModuleInfo>
    <VirtualSubmoduleList>
        <VirtualSubmoduleItem ID="1byteoutput" SubmoduleIdentNumber="0x00000002"
SupportedSubstitutionModes="0 1 2">
            <IOData>
                <Output>
                    <DataItem DataType="OctetString" Length="1"
TextId="DataItem_1byteoutput_outputdata_0_Name"/>
                </Output>
            </IOData>

```

```

    <ModuleInfo>
      <Name TextId="Submodule_1byteoutput_Name"/>
      <InfoText TextId="Submodule_1byteoutput_InfoText"/>
    </ModuleInfo>
  </VirtualSubmoduleItem>
</VirtualSubmoduleList>
</ModuleItem>
<ModuleItem ID="2byteoutput" ModuleIdentNumber="0x00000005">
  <ModuleInfo CategoryRef="Output Module">
    <Name TextId="Module_2byteoutput_Name"/>
    <InfoText TextId="Module_2byteoutput_InfoText"/>
  </ModuleInfo>
  <VirtualSubmoduleList>
    <VirtualSubmoduleItem ID="2byteoutput" SubmoduleIdentNumber="0x00000004"
SupportedSubstitutionModes="0 1 2">
      <IOData>
        <Output>
          <DataItem DataType="OctetString" Length="2"
TextId="DataItem_2byteoutput_outputdata_0_Name"/>
        </Output>
      </IOData>
      <ModuleInfo>
        <Name TextId="Submodule_2byteoutput_Name"/>
        <InfoText TextId="Submodule_2byteoutput_InfoText"/>
      </ModuleInfo>
    </VirtualSubmoduleItem>
  </VirtualSubmoduleList>
</ModuleItem>
<ModuleItem ID="3byteoutput" ModuleIdentNumber="0x00000007">
  <ModuleInfo CategoryRef="Output Module">
    <Name TextId="Module_3byteoutput_Name"/>
    <InfoText TextId="Module_3byteoutput_InfoText"/>
  </ModuleInfo>
  <VirtualSubmoduleList>
    <VirtualSubmoduleItem ID="3byteoutput" SubmoduleIdentNumber="0x00000006"
SupportedSubstitutionModes="0 1 2">
      <IOData>

```

```

        <Output>
            <DataItem DataType="OctetString" Length="3"
TextId="DataItem_3byteoutput_outputdata_0_Name"/>
        </Output>
    </IOData>
    <ModuleInfo>
        <Name TextId="Submodule_3byteoutput_Name"/>
        <InfoText TextId="Submodule_3byteoutput_InfoText"/>
    </ModuleInfo>
</VirtualSubmoduleItem>
</VirtualSubmoduleList>
</ModuleItem>
<ModuleItem ID="4byteoutput" ModuleIdentNumber="0x00000009">
    <ModuleInfo CategoryRef="Output Module">
        <Name TextId="Module_4byteoutput_Name"/>
        <InfoText TextId="Module_4byteoutput_InfoText"/>
    </ModuleInfo>
    <VirtualSubmoduleList>
        <VirtualSubmoduleItem ID="4byteoutput" SubmoduleIdentNumber="0x00000008"
SupportedSubstitutionModes="0 1 2">
            <IOData>
                <Output>
                    <DataItem DataType="OctetString" Length="4"
TextId="DataItem_4byteoutput_outputdata_0_Name"/>
                </Output>
            </IOData>
            <ModuleInfo>
                <Name TextId="Submodule_4byteoutput_Name"/>
                <InfoText TextId="Submodule_4byteoutput_InfoText"/>
            </ModuleInfo>
        </VirtualSubmoduleItem>
    </VirtualSubmoduleList>
</ModuleItem>
<ModuleItem ID="8byteoutput" ModuleIdentNumber="0x0000000B">
    <ModuleInfo CategoryRef="Output Module">
        <Name TextId="Module_8byteoutput_Name"/>
        <InfoText TextId="Module_8byteoutput_InfoText"/>
    </ModuleInfo>
    <VirtualSubmoduleList>
        <VirtualSubmoduleItem ID="8byteoutput" SubmoduleIdentNumber="0x0000000A"
SupportedSubstitutionModes="0 1 2">
            <IOData>
                <Output>
                    <DataItem DataType="OctetString" Length="8"
TextId="DataItem_8byteoutput_outputdata_0_Name"/>
                </Output>
            </IOData>
            <ModuleInfo>
                <Name TextId="Submodule_8byteoutput_Name"/>
                <InfoText TextId="Submodule_8byteoutput_InfoText"/>
            </ModuleInfo>
        </VirtualSubmoduleItem>
    </VirtualSubmoduleList>
</ModuleItem>

```

```

</ModuleInfo>
<VirtualSubmoduleList>
  <VirtualSubmoduleItem ID="8byteoutput" SubmoduleIdentNumber="0x0000000A"
SupportedSubstitutionModes="0 1 2">
    <IOData>
      <Output>
        <DataItem DataType="OctetString" Length="8"
TextId="DataItem_8byteoutput_outputdata_0_Name"/>
      </Output>
    </IOData>
    <ModuleInfo>
      <Name TextId="Submodule_8byteoutput_Name"/>
      <InfoText TextId="Submodule_8byteoutput_InfoText"/>
    </ModuleInfo>
  </VirtualSubmoduleItem>
</VirtualSubmoduleList>
</ModuleItem>
<ModuleItem ID="12byteoutput" ModuleIdentNumber="0x0000000D">
  <ModuleInfo CategoryRef="Output Module">
    <Name TextId="Module_12byteoutput_Name"/>
    <InfoText TextId="Module_12byteoutput_InfoText"/>
  </ModuleInfo>
  <VirtualSubmoduleList>
    <VirtualSubmoduleItem ID="12byteoutput" SubmoduleIdentNumber="0x0000000C"
SupportedSubstitutionModes="0 1 2">
      <IOData>
        <Output>
          <DataItem DataType="OctetString" Length="12"
TextId="DataItem_12byteoutput_outputdata_0_Name"/>
        </Output>
      </IOData>
      <ModuleInfo>
        <Name TextId="Submodule_12byteoutput_Name"/>
        <InfoText TextId="Submodule_12byteoutput_InfoText"/>
      </ModuleInfo>
    </VirtualSubmoduleItem>
  </VirtualSubmoduleList>

```



```

</ModuleItem>
<ModuleItem ID="16byteoutput" ModuleIdentNumber="0x0000000F">
  <ModuleInfo CategoryRef="Output Module">
    <Name TextId="Module_16byteoutput_Name"/>
    <InfoText TextId="Module_16byteoutput_InfoText"/>
  </ModuleInfo>
  <VirtualSubmoduleList>
    <VirtualSubmoduleItem ID="16byteoutput" SubmoduleIdentNumber="0x0000000E"
SupportedSubstitutionModes="0 1 2">
      <IOData>
        <Output>
          <DataItem DataType="OctetString" Length="16"
TextId="DataItem_16byteoutput_outputdata_0_Name"/>
        </Output>
      </IOData>
      <ModuleInfo>
        <Name TextId="Submodule_16byteoutput_Name"/>
        <InfoText TextId="Submodule_16byteoutput_InfoText"/>
      </ModuleInfo>
    </VirtualSubmoduleItem>
  </VirtualSubmoduleList>
</ModuleItem>
<ModuleItem ID="20byteoutput" ModuleIdentNumber="0x00000011">
  <ModuleInfo CategoryRef="Output Module">
    <Name TextId="Module_20byteoutput_Name"/>
    <InfoText TextId="Module_20byteoutput_InfoText"/>
  </ModuleInfo>
  <VirtualSubmoduleList>
    <VirtualSubmoduleItem ID="20byteoutput" SubmoduleIdentNumber="0x00000010"
SupportedSubstitutionModes="0 1 2">
      <IOData>
        <Output>
          <DataItem DataType="OctetString" Length="20"
TextId="DataItem_20byteoutput_outputdata_0_Name"/>
        </Output>
      </IOData>
      <ModuleInfo>

```

```

        <Name TextId="Submodule_20byteoutput_Name"/>
        <InfoText TextId="Submodule_20byteoutput_InfoText"/>
    </ModuleInfo>
</VirtualSubmoduleItem>
</VirtualSubmoduleList>
</ModuleItem>
<ModuleItem ID="32byteoutput" ModuleIdentNumber="0x00000013">
    <ModuleInfo CategoryRef="Output Module">
        <Name TextId="Module_32byteoutput_Name"/>
        <InfoText TextId="Module_32byteoutput_InfoText"/>
    </ModuleInfo>
    <VirtualSubmoduleList>
        <VirtualSubmoduleItem ID="32byteoutput" SubmoduleIdentNumber="0x00000012"
SupportedSubstitutionModes="0 1 2">
        <IOData>
            <Output>
                <DataItem DataType="OctetString" Length="32"
TextId="DataItem_32byteoutput_outputdata_0_Name"/>
            </Output>
        </IOData>
        <ModuleInfo>
            <Name TextId="Submodule_32byteoutput_Name"/>
            <InfoText TextId="Submodule_32byteoutput_InfoText"/>
        </ModuleInfo>
    </VirtualSubmoduleItem>
</VirtualSubmoduleList>
</ModuleItem>
<ModuleItem ID="64byteoutput" ModuleIdentNumber="0x00000015">
    <ModuleInfo CategoryRef="Output Module">
        <Name TextId="Module_64byteoutput_Name"/>
        <InfoText TextId="Module_64byteoutput_InfoText"/>
    </ModuleInfo>
    <VirtualSubmoduleList>
        <VirtualSubmoduleItem ID="64byteoutput" SubmoduleIdentNumber="0x00000014"
SupportedSubstitutionModes="0 1 2">
        <IOData>
            <Output>

```

```

        <DataItem DataType="OctetString" Length="64"
TextId="DataItem_64byteoutput_outputdata_0_Name"/>
    </Output>
</IOData>
<ModuleInfo>
    <Name TextId="Submodule_64byteoutput_Name"/>
    <InfoText TextId="Submodule_64byteoutput_InfoText"/>
</ModuleInfo>
</VirtualSubmoduleItem>
</VirtualSubmoduleList>
</ModuleItem>
</ModuleList>
<GraphicsList>
    <GraphicItem GraphicFile="GSDML-011E-0108-NETX100REPNS" ID="1"/>
</GraphicsList>
<CategoryList>
    <CategoryItem ID="DAP Module" TextId="DAP Module_CategoryName"/>
    <CategoryItem ID="Input Module" TextId="Input Module_CategoryName"/>
    <CategoryItem ID="Output Module" TextId="Output Module_CategoryName"/>
</CategoryList>
<ExternalTextList>
    <PrimaryLanguage>
        <Text TextId="DAP Module_CategoryName" Value="Device Access Point Modules"/>
        <Text TextId="DIM 24_InfoText" Value="Firmware version V3.5.35 - V3.5.x. Supports
FastStartup, Identification & Maintenance 1-5, Shared Device, RT and IRT Communication,
Advanced startup."/>
        <Text TextId="DataItem_12byteinput_inputdata_0_Name" Value="Inputs"/>
        <Text TextId="DataItem_12byteoutput_outputdata_0_Name" Value="Outputs"/>
        <Text TextId="DataItem_16byteinput_inputdata_0_Name" Value="Inputs"/>
        <Text TextId="DataItem_16byteoutput_outputdata_0_Name" Value="Outputs"/>
        <Text TextId="DataItem_1byteinput_inputdata_0_Name" Value="Inputs"/>
        <Text TextId="DataItem_1byteoutput_outputdata_0_Name" Value="Outputs"/>
        <Text TextId="DataItem_20byteinput_inputdata_0_Name" Value="Inputs"/>
        <Text TextId="DataItem_20byteoutput_outputdata_0_Name" Value="Outputs"/>
        <Text TextId="DataItem_2byteinput_inputdata_0_Name" Value="Inputs"/>
        <Text TextId="DataItem_2byteoutput_outputdata_0_Name" Value="Outputs"/>
        <Text TextId="DataItem_32byteinput_inputdata_0_Name" Value="Inputs"/>

```

```

<Text TextId="DataItem_32byteoutput_outputdata_0_Name" value="Outputs"/>
<Text TextId="DataItem_3byteinput_inputdata_0_Name" value="Inputs"/>
<Text TextId="DataItem_3byteoutput_outputdata_0_Name" value="Outputs"/>
<Text TextId="DataItem_4byteinput_inputdata_0_Name" value="Inputs"/>
<Text TextId="DataItem_4byteoutput_outputdata_0_Name" value="Outputs"/>
<Text TextId="DataItem_64byteinput_inputdata_0_Name" value="Inputs"/>
<Text TextId="DataItem_64byteoutput_outputdata_0_Name" value="Outputs"/>
<Text TextId="DataItem_8byteinput_inputdata_0_Name" value="Inputs"/>
<Text TextId="DataItem_8byteoutput_outputdata_0_Name" value="Outputs"/>
<Text TextId="DeviceDescription_InfoText" value="PROFINET IO-Device based on netX100"/>
<Text TextId="Input Module_CategoryName" value="Input Modules"/>
<Text TextId="Module_12byteinput_InfoText" value="12 Bytes Input Module"/>
<Text TextId="Module_12byteinput_Name" value="12 Bytes Input"/>
<Text TextId="Module_12byteoutput_InfoText" value="12 Bytes Output Module"/>
<Text TextId="Module_12byteoutput_Name" value="12 Bytes Output"/>
<Text TextId="Module_16byteinput_InfoText" value="16 Bytes Input Module"/>
<Text TextId="Module_16byteinput_Name" value="16 Bytes Input"/>
<Text TextId="Module_16byteoutput_InfoText" value="16 Bytes Output Module"/>
<Text TextId="Module_16byteoutput_Name" value="16 Bytes Output"/>
<Text TextId="Module_1byteinput_InfoText" value="1 Byte Input Module"/>
<Text TextId="Module_1byteinput_Name" value="1 Byte Input"/>
<Text TextId="Module_1byteoutput_InfoText" value="1 Byte Output Module"/>
<Text TextId="Module_1byteoutput_Name" value="1 Byte Output"/>
<Text TextId="Module_20byteinput_InfoText" value="20 Bytes Input Module"/>
<Text TextId="Module_20byteinput_Name" value="20 Bytes Input"/>
<Text TextId="Module_20byteoutput_InfoText" value="20 Bytes Output Module"/>
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```

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<Text TextId="Output Module_CategoryName" value="Output Modules"/>
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Priorisierten Hochlauf, Identification & Maintenance 1-4, Shared Device, RT und IRT
Betrieb, Advanced Hochlauf."/>
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<Text TextId="Module_64byteoutput_Name" Value="64 Byte Ausgang"/>
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<Text TextId="Module_8byteoutput_Name" Value="8 Byte Ausgang"/>
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```



```

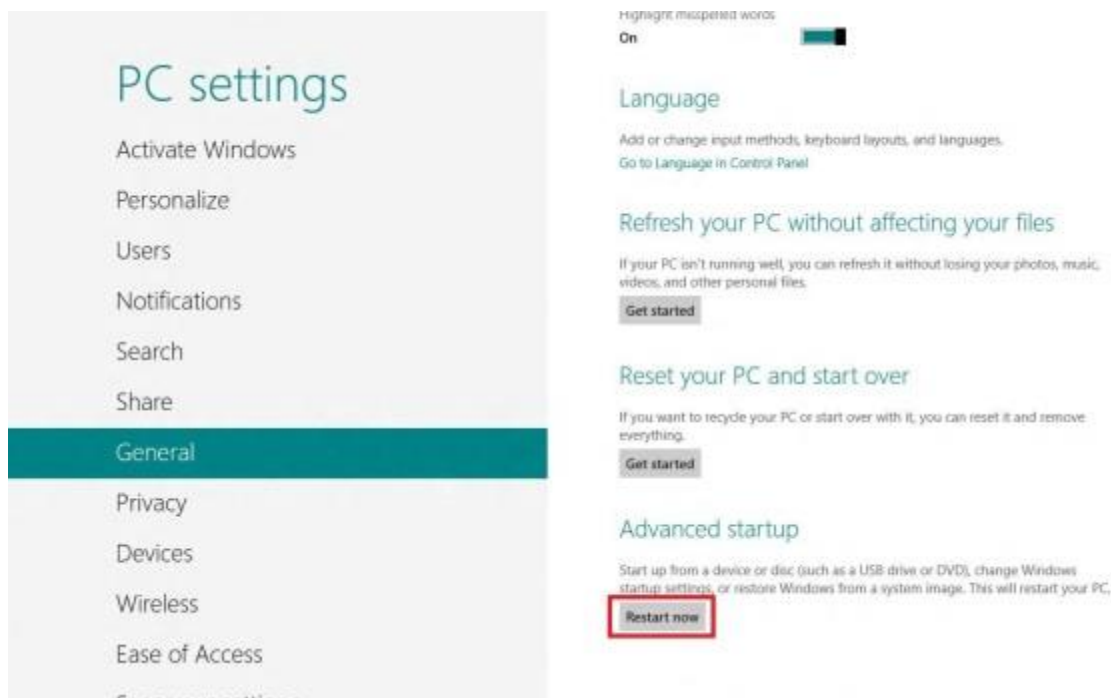
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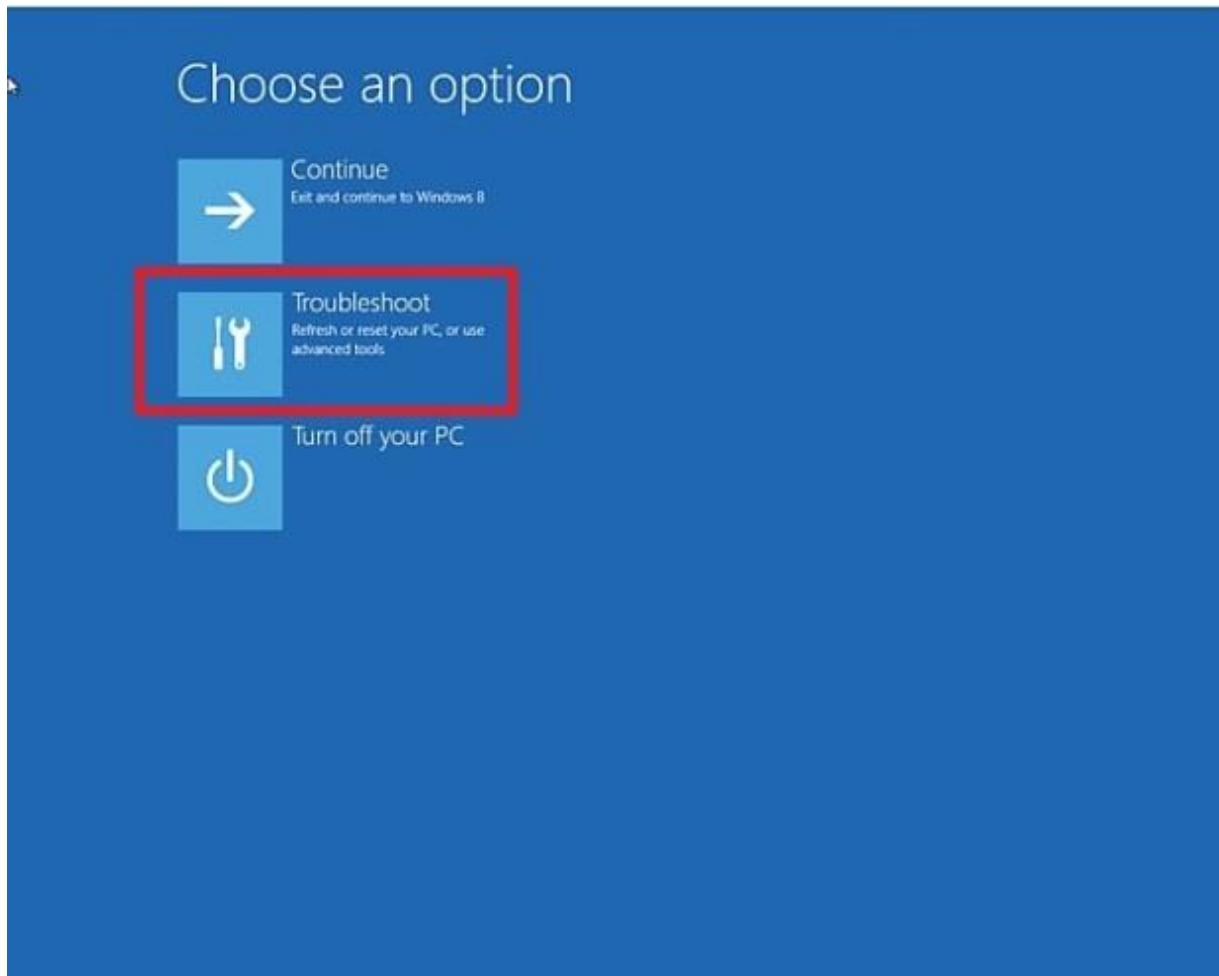
D. Driver Install on Windows 8 OS

Windows 8 does not allow installing drivers that are not signed by Microsoft. Below is described how to de-activate the driver signing check.

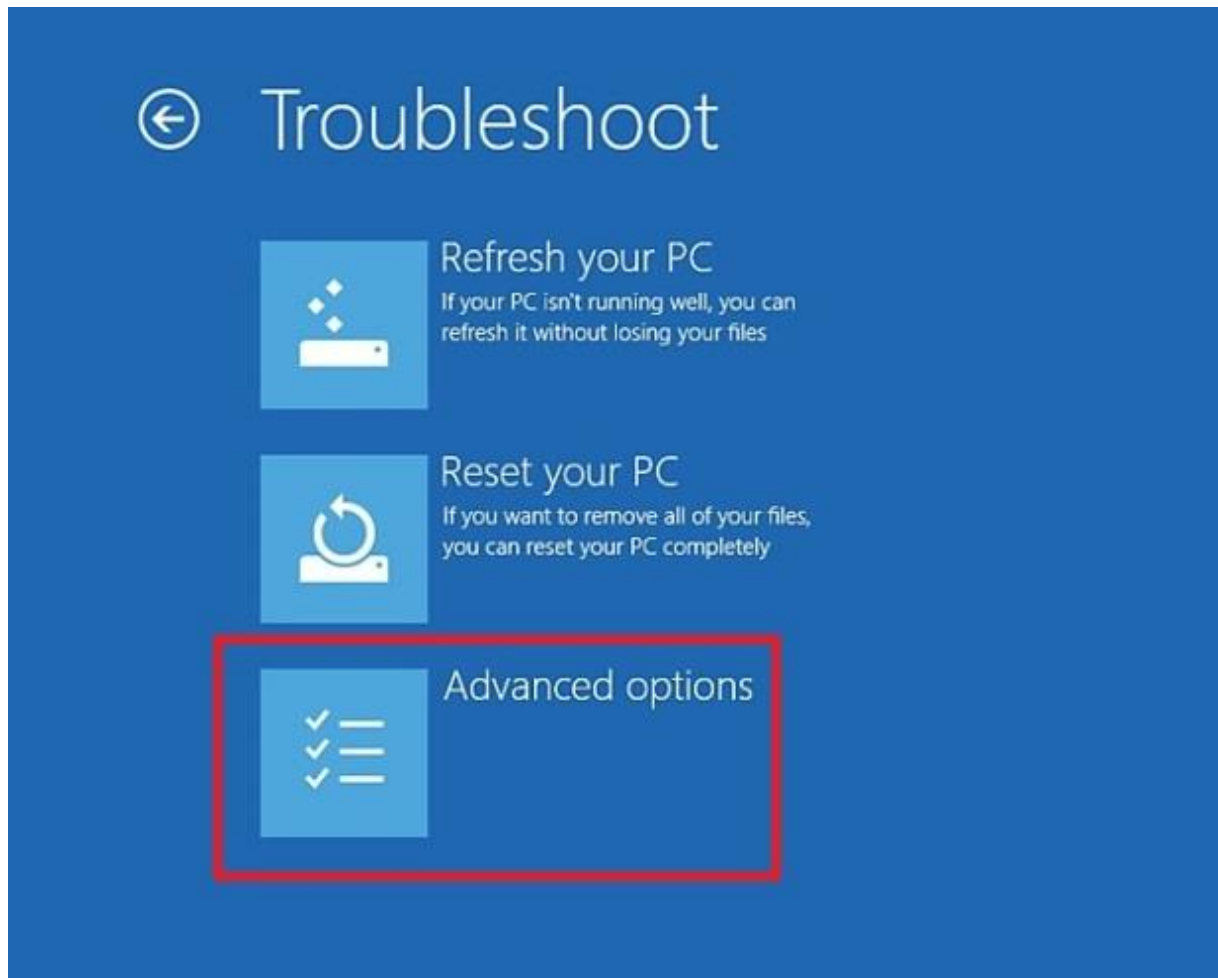
- 1) First, select "**Settings**" on the right side of your screen:
- 2) Select "**Change PC Settings**":
- 3) Navigate to "**General**" settings and then scroll down to "**Advanced Startup**". Click on "**Restart**":



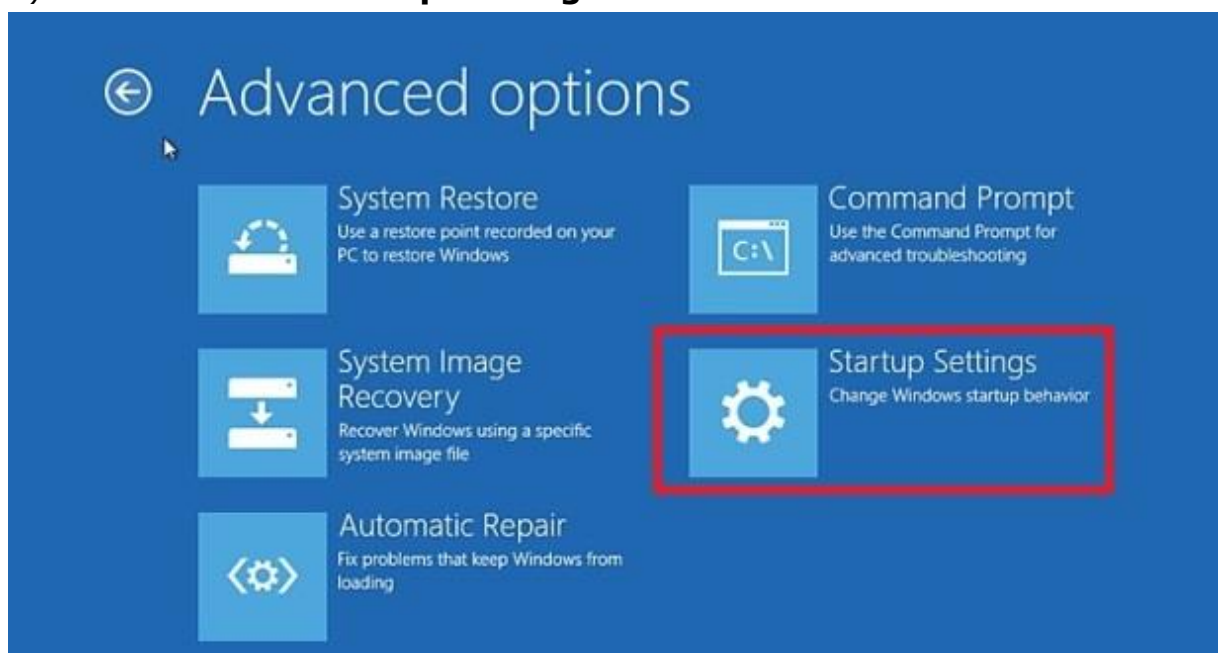
- 4) After that, Click on "**Troubleshoot**":



5) On the next screen, choose "**Advanced Options**":



6) Then click on "**Startup Settings**":



7) Then click on the "**Restart**" button:



8) After your computer reboots, another screen will appear where you will be asked to press a number to choose an option. So press **7** or **F7**:

Startup Settings

Press a number to choose from the options below.

Use number keys or functions keys F1-F9.

- 1) Enable debugging
- 2) Enable boot logging
- 3) Enable low-resolution video
- 4) Enable Safe Mode
- 5) Enable Safe Mode with Networking
- 6) Enable Safe Mode with Command Prompt
- 7) Disable driver signature enforcement
- 8) Disable early launch anti-malware protection
- 9) Disable automatic restart after failure

Press F10 for more options

Press Enter to return to your operating system

- 9) When you install the driver, this prompt will appear on screen. Select **"Install this driver software anyway"**:

