IDENT SYSTEM

Barcode Reader EVS138/EVS144

Configuration Manual

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1. General

The EVS144/138 can be adapted to most installations. The user adapts the reader by choosing from the functions available and setting the applicable parameters. On delivery, the reader has a default configuration, so that the user needs only to change parameters where necessary.

Configuration is done with the program ***EVS144Config.exe*** on an Windows PC, which can also be used as an installation and troubleshooting tool.

1.1 Connection of the PC
A standard USB port of the PC is connected to the USB connector of the EVS144/138 detector unit.

1.2 Installation
Copy the two files ***EVSConfig*** and ***EVSsetup*** from the included USB memory stick to a folder in the PC.

Connect the PC to the detector unit with the included USB cable or with a standard USB to USB mini cable.
The green LED on the detector unit should stop linking for a couple of seconds and then start blinking again.
Wait until the PC is done with the automatic USB installation procedure.
Check in the PC Control panel and the Unit handler which COM port the PC has assigned to the new USB unit.
This Com port number shall be used later when configuring the ***EVS144Config*** software.

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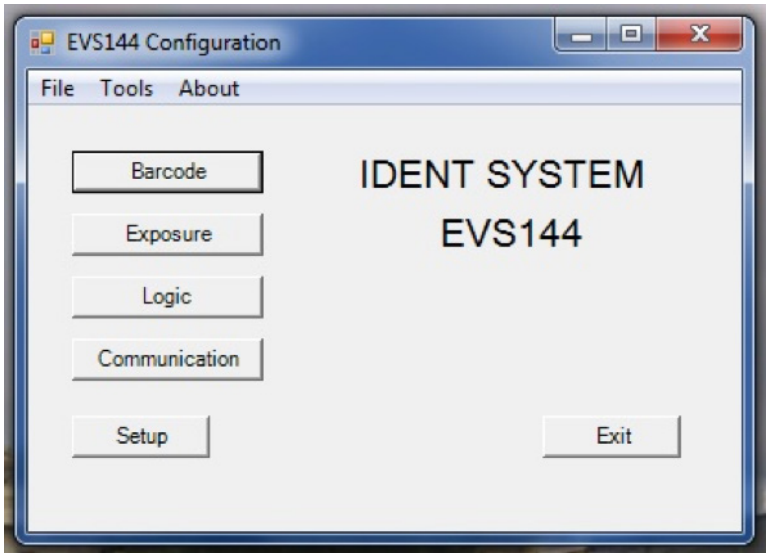
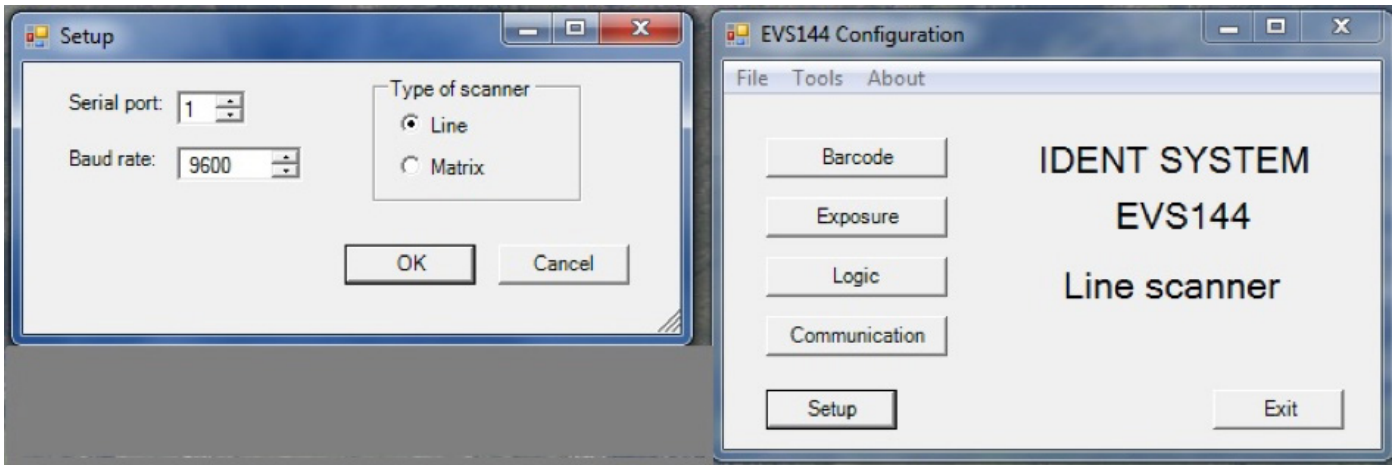
2. Configuration software

Start the EVS144 Configuration program. The program will open in the main meny (below).

2.1 Main menu
Always start with the "**Setup**" click box and choose "**Type of scanner**", "**Line**" or "**Matrix**".
Also choose "**Serial port**" and "**Baude rate**"



2.1.1 Setup
Serial port



This is where the serial port number that was chosen by the PC in the installation procedure shall be typed.

Baud rate
The transmission speed of the RS232 and USB port can be specified between 1200 up to 19200.

Type of scanner
The type of scanner should be specified here, Line scanner or Matrix scanner.

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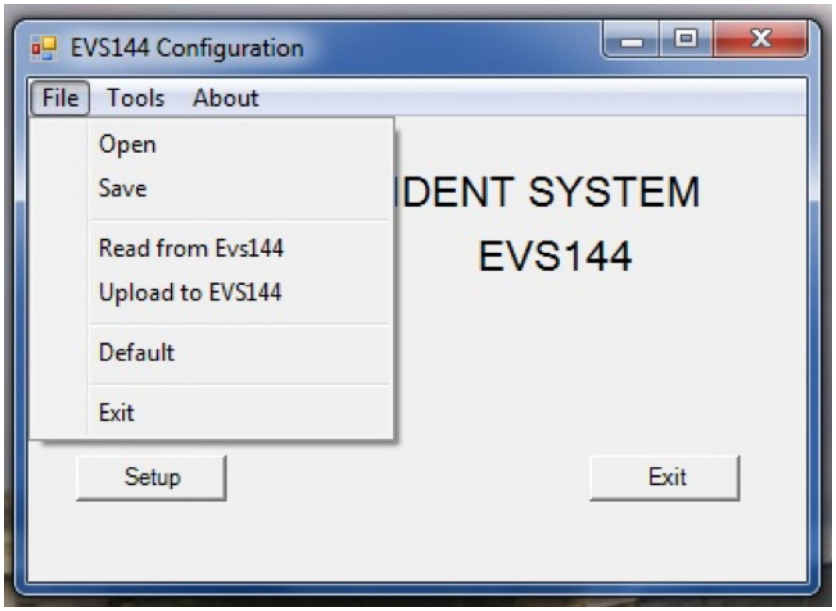
2. Configuration software

2.2 Top menu

2.2.1. Files

File handling and EVS144/138 upload/download of configuration data.



The configuration data sets can be stored as files in the computer. Before beginning editing the configuration, select the old configuration with **"Open"** and chose the desired configuration or, if connected to the EVS144/138 detector unit, chose **"Read from Evs144"** to read the actual configuration of the connected EVS144/EVS138.
Perform your changes in the configuration and save them on your computer with the **"Save"** button and then do **"Upload to Evs144"** to update the configuration in the EVS144/138.

Open
Open already saved files in the PC.

Save
Save configuration files on the PC.

Read from EVS144
Read configuration parameter set from connected EVS144/138.

Upload to EVS144
Upload configuration parameter set to connected EVS144/138.

Default
Load the configuration factory default settings.

Exit
Back to the Main Meny.

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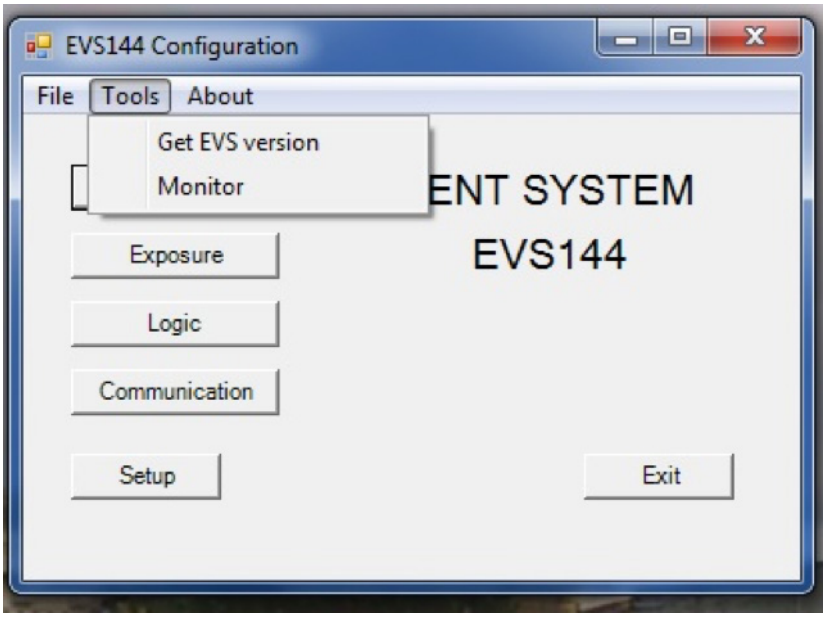
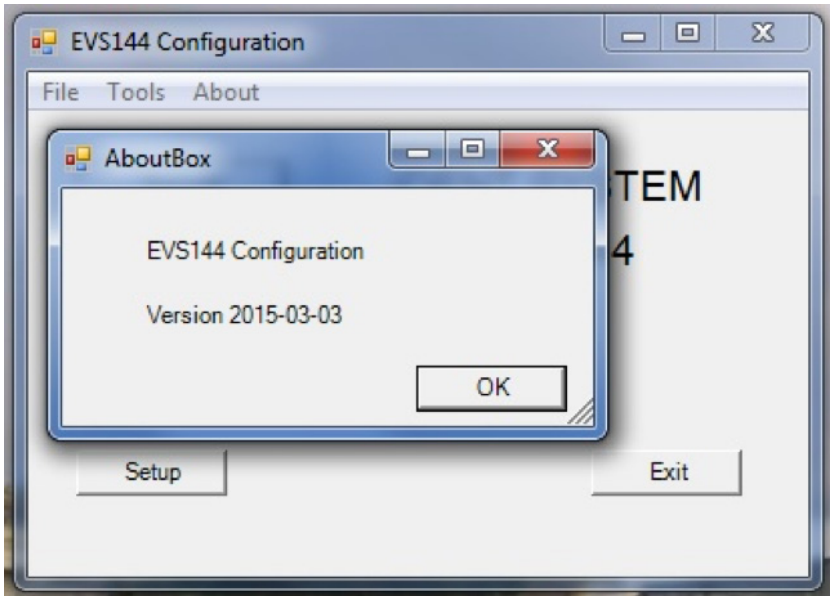
2.2.2. Tools



Get EVS Version
This is used for showing the Detector and Camera software versions.

Monitor
This is used for monitoring the read result of the bar code.

2.2.3. About
This shows the version of the Configuration software.



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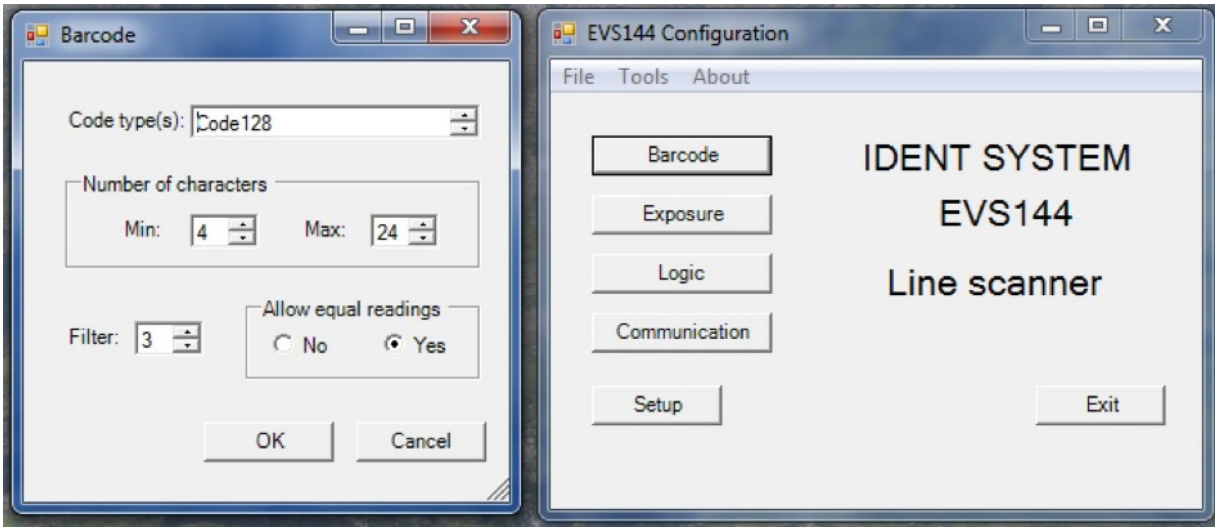
2. Configuration software

2.3 Configuration
Configuration of EVS144/138 for customer adapting using the click box menus

2.3.1 Barcode
This meny is valid only when **"Type of scanner"** is chosen to **"Line"**



Code type
Chose the code type that should be read.

Possible code types are:
- **Code 128**
- **2/5 Interleaved**
- **Code128 and Interleaved 2/5**
- **2/4 interleaved inverted**

Number of characters
Chose the number of characters of the code. If you want the EVS144 to read different code lengths, set min and max length. If you want the EVS144 to read only one code length, for example 14 characters, type the same number in both boxes, min 14 and max 14.

Filter
Number of CCD pixels needed to be used in the evaluation of a bar.

Allow equal readings
If set to **"Yes"** the EVS144/138 can read the same code time after time.
If set to **"No"** the EVS144/138 read the same code only once.

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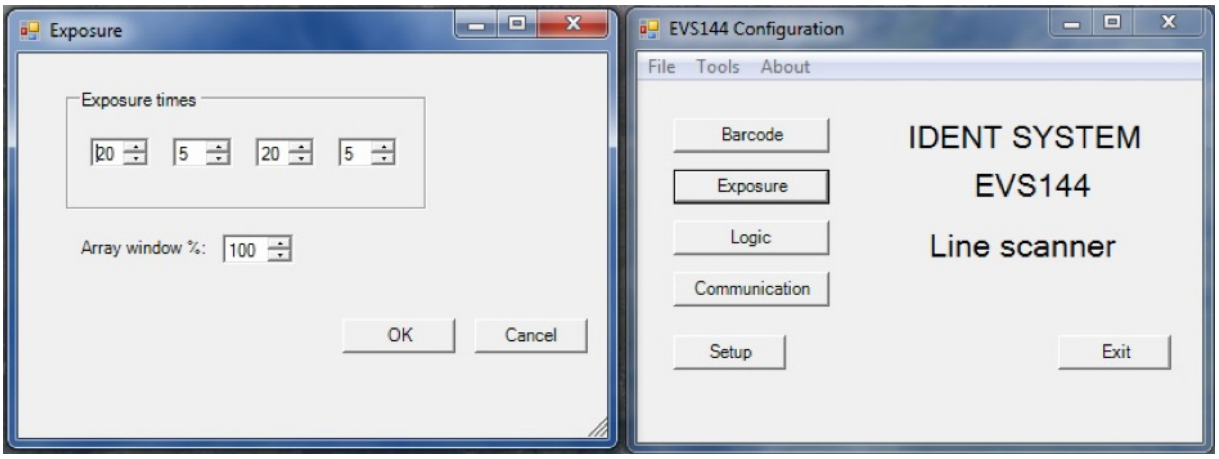
2.3.2 Exposure

This meny is valid only when **"Type of scanner"** is chosen to **"Line"**.



Exposure times

Four different exposure times can be chosen for different code and environment conditions.

Array window

The length of the cameras sight line can be adjusted to prevent reading of unwanted codes close to the wanted code.

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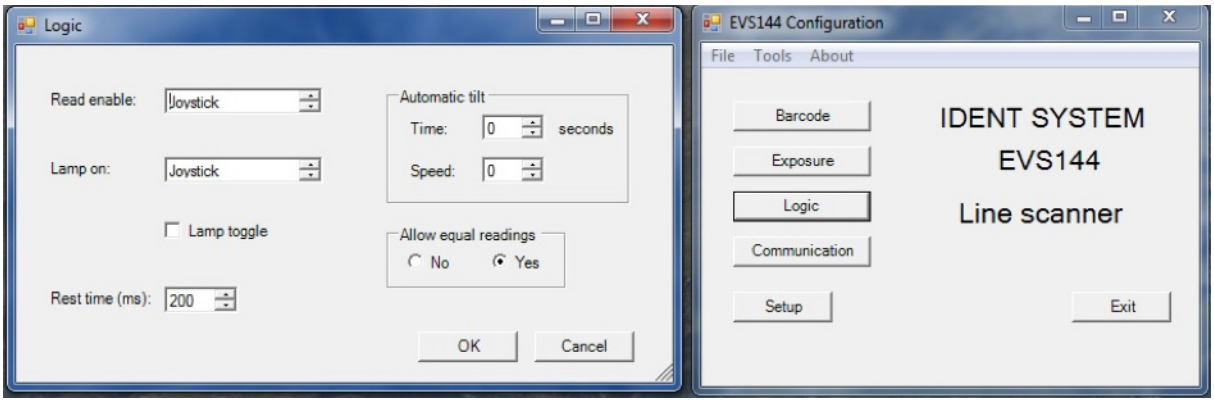
2. Configuration software

2.3.3 Logic



Read enable
Eight different ways to enable reading of bar code are available:

"Always"	Reading is always enabled.
"Joystick"	Reading is enabled only when the joystick is moved.
"Button Down"	Reading is enabled only when the top button on the joystick is pressed.
"Input"	Reading is triggered by the digital input.
"Input impulse"	Reading is triggered by an impulse from the digital input and then scan for barcode for 10s.
"Button up"	Reading is enabled only when the top button on the joystick is not pressed.
"Button Enter"	An **"Enter"** code is sent to the host computer when pressing the top button on the joystick.
"Spec9"	Customer adaptation.
"Spec10"	Customer adaptation.

Lamp on
Four different ways to turn the spotlight on is available:

"Joystick"	The spotlight turns on when moving the joystick.
"Always"	The spotlight is always on. This is used for test purpose.
"Button off"	EVS144 spotlight turns off to read with external light sources when the top button on the joystick is pressed.
"Never"	The spotlight is always off.
"Code Ok"	The system digital output goes on when a Bar code has been read.

Lamp toggle
When this box is marked the spotlight will blink synchronized with the exposure time. This function should normally not be activated.

Rest time
This is the time in milliseconds that the camera is blind after each reading.

Automatic Tilt (EVS144)
This is used when only up and down movement of the Pan/Tilt motor is needed.

"Time"	The period of time that the up movement shoud remain.
"Speed"	At what speed the movement should be performed.
"Allow Equal readings"	If set to Yes the EVS144 can read the same code time after time. If set to No the EVS144 read the same code only once.

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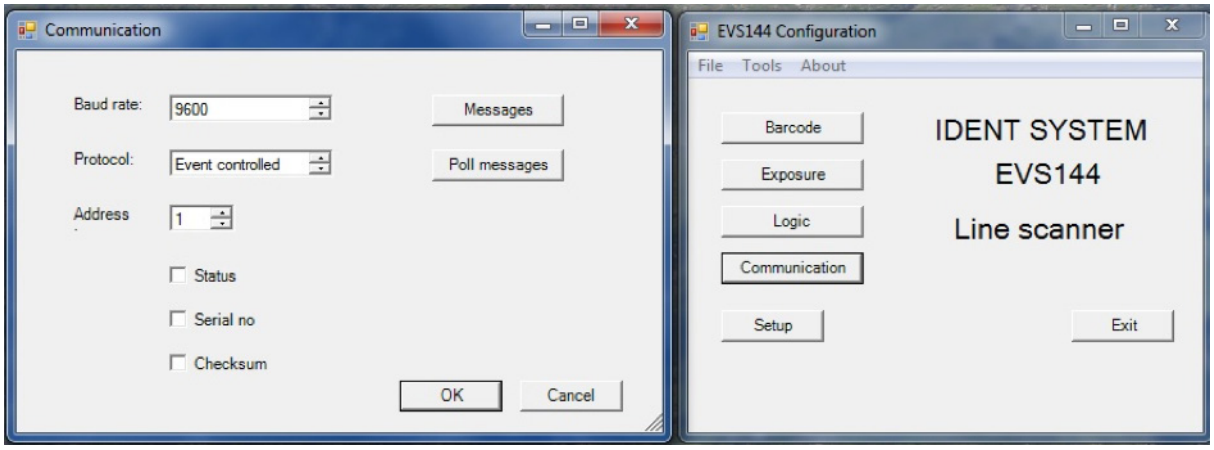
2.3.4 Communication



Baud rate
The transmission speed of the RS232 and USB port can be specified between baud rate 1200 up to 19200.

Protocol
"Event controlled" The host message is transmitted as soon as the bar code has been read.
"Polling" The host message is transmitted on request from the host.

Address
The **"Reader Id"** of the EVS138 reader that is specified in the Poll message.
See the Communication protocol specification at the end of this document.

Status
The system status of the system, Indicates if there was a read failure or a Polling request failure.

Serial no
A serial number can be included in the host message. **0** in the first message after reset, then **1** to **9** circulating.

Checksum
A checksum can be added in the host message.
See the Communication protocol specification at the end of this document.

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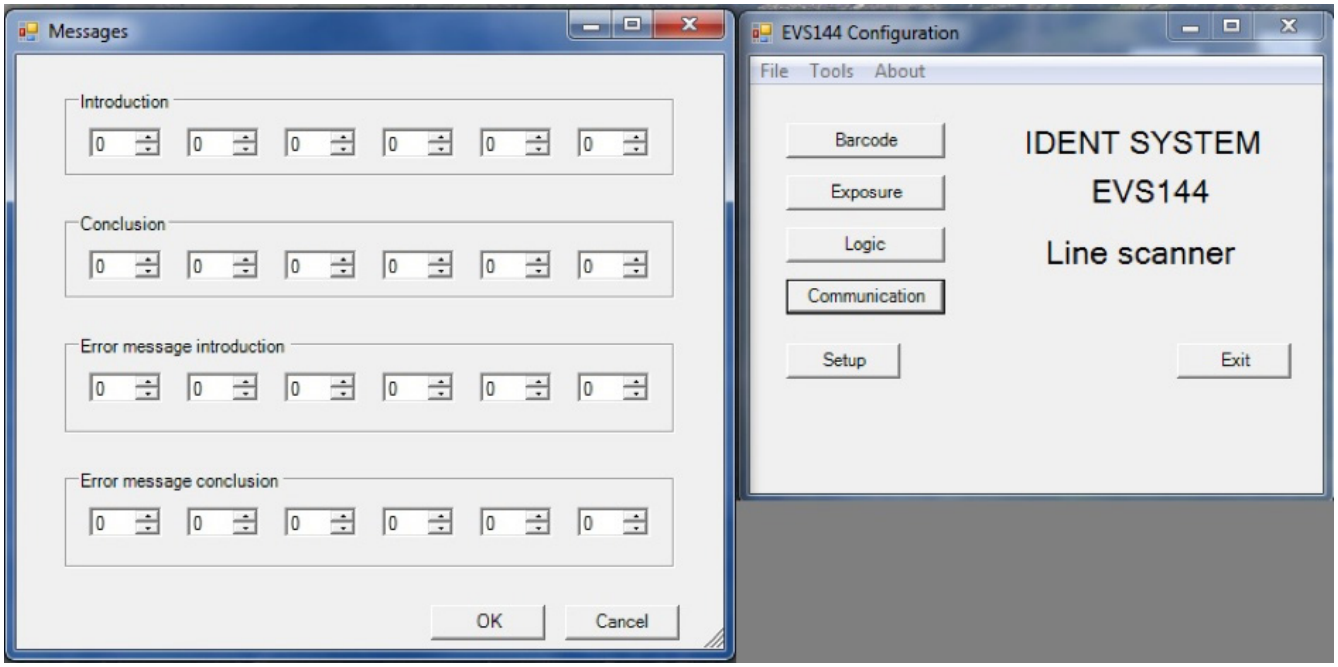
2.3.5 Messages
Host message composition when no polling is used.



Introduction
Here one can specify up to six characters to be sent before the code to the host computer.

Conclusion
Here one can specify up to six characters to be sent after the code to the host computer.

Error message introduction
Here one can specify up to six characters to be sent before the error message to the host computer when reading has failed.

Error message conclusion
Here one can specify up to six characters to be sent after the error message to the host computer when reading has failed.

See the character code list at the end of this document.

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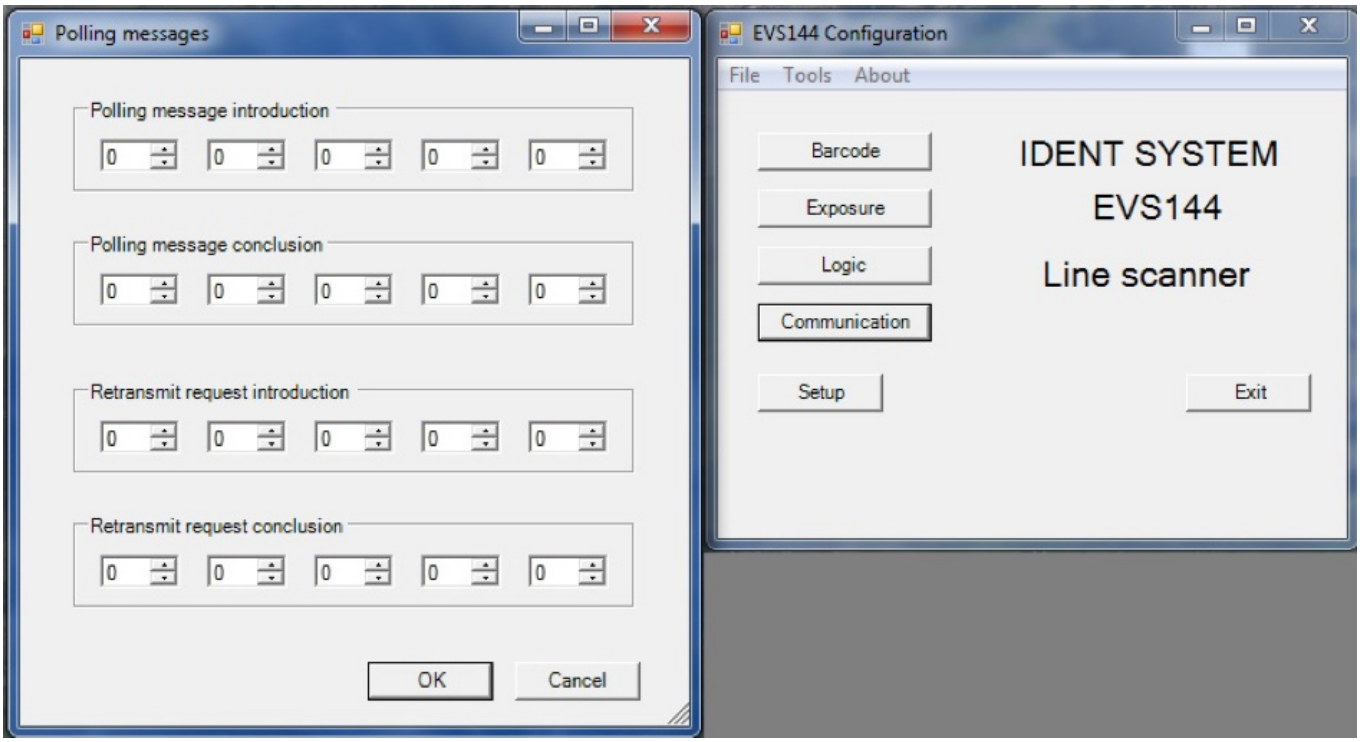
2.3.6 Poll messages
Host message composition when polling message is used.



Polling message introduction
Here one can specify up to five characters to be sent before the code to the host computer.

Polling message conclusion
Here one can specify up to five characters to be sent after the code to the host computer.

Retransmit request introduction
Here one can specify up to five characters to be sent to the host computer when reading has failed.

Retransmit request conclusion
Here one can specify up to five characters to be sent to the host computer when reading has failed.

See the character code list and application example at the end of this document.

`'CR'` or **`'LF'`** are not allowed. This will conflict with terminal commands using the same serial port.

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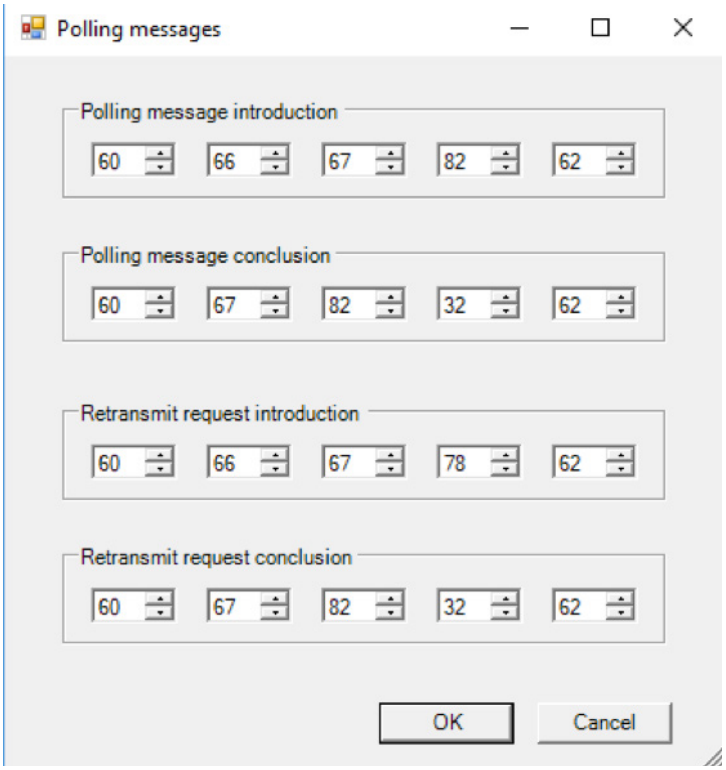
3. Communication character code list

-	0	1	2	3	4	5	6	7	8	9
0	NUL	SOH	STX	ETX	EOT	ENQ	ACK	BEL	BS	HT
1	LF	VT	FF	CR	SO	SI	DLE	DC1	DC2	DC3
2	DC4	NAK	SYN	ETB	CAN	EM	SUB	ESC	FS	GS
3	RS	US	SP	!	¨	#	$	%	&	´
4	(	)	*	+	’	-	.	/	0	1
5	2	3	4	5	6	7	8	9	:	;
6	<	=	>	?	@	A	B	C	D	E
7	F	G	H	I	J	K	L	M	N	O
8	P	Q	R	S	T	U	V	W	X	Y
9	Z	[	\	]	^	_	‘	a	b	c
10	d	e	f	g	h	i	j	k	l	m
11	n	o	p	q	r	s	t	u	v	w
12	x	y	z	{	l	}	~	DEL		

4. Communication protocol specifications

Example of polling messages



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4. Communication protocol specifications

Polling protocol
The polling protocol is compatible with protocols used in older EVS Bar Code Cameras. When the polling protocol is used the reader sends a message only at the request of the host system. Internally in the Central Unit the messages are stored in a queue waiting for a request to send. The reply messages are of three different kinds:

Read message after a bar code reading.
Error message sent e.g. after a failed reading.
Empty queue message when nothing new is to report. This is a special case of the error message with a specific status bit set.

Read Message structure
This message is sent by the reader after a successful reading.

Description	Length (characters)	Comment
Introduction	0–5	Defined in configuration
Reader ID	2	`'01'` to `'32'`, MSD first
Serial number	0 or 1	`'0'` in the first message after reset, then `'1'` to `'9'` circulating
Status	0, 4 or 6	
Code alternative	0 or 1	
The code string	max. 50	
Check sum	0 or 2	See below
Conclusion	0–5	Defined in configuration

The check sum is calculated by hexadecimal addition of the 7-bit characters of the message from and including the serial number and including the code string. The lowest 8 bits are saved and sent in hexadecimal ASCII with the most significant character first.

Example of check sum calculation:
Message **4150** is to be calculated for check sum.

4 has **34** HEX as ASCII code
1 has **31** HEX as ASCII code
5 has **35** HEX as ASCII code
0 has 30 HEX as ASCII code
Sum: **CA** HEX

The lowest 8 bits, that is, the last two characters, are saved and sent as a check sum. The message **4150** + **checksum** will then be **4150CA**

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4. Communication protocol specifications

Error message structure

This message is sent by the reader after a failed reading

Description	Length (characters)	Comment
Introduction	0–5	Defined in configuration
Reader ID	2	'01' to '32', MSD first
Serial number	0 or 1	'0' in the first message after reset, then '1' to '9' circulating
Status	0, 4 or 6	
Check sum	0 or 2	
Conclusion	0–5	Defined in configuration

Polling and control message structures

This message is sent by the host to request a new message from the reader and optionally at the same time control the reading cycle and digital outputs.

Description	Length (characters)	Comment
Introduction	0–5	Defined in configuration
Reader ID	2	'01' to '32', MSD first
Sensor control	0 or 1	'0' for off and '1' for on
Output control	0 or 1	'0' for off and '1' for on
Conclusion	0–5	Defined in configuration

Resending request message structure

This message is sent by te host to request a resending of the latest message from the reader, e.g. if the check sum fails.

Description	Length (characters)	Comment
Introduction	0–5	Defined in configuration
Reader ID	2	'01' to '32', MSD first
Conclusion	0–5	Defined in configuration

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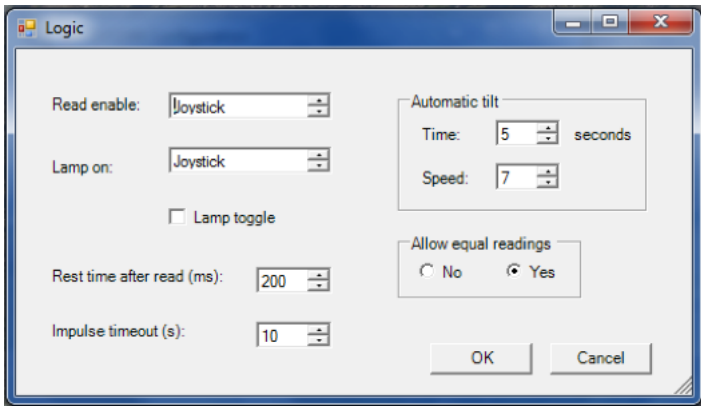
Appendix

EVS144 setup for tilt scanning by external trigger

This modification is intended for cases when an external trigger is used for starting the pan/tilt heads movement and the scanning process. For example in cases where the unit is used as a fixed mounted unit in a packing station or a at a conveyor belt or similar.

Configuration
Use the Config144 software to configure the pan movement of the Pan/Tilt unit. On the main menu of the software there is a “Logic” button. Open that section and use the values as shown in the “Time” and “Speed” windows below as examples for values of the Tilt movement. This example makes the Tilt scaning movement move upwards for 5 sec and then down to the start position again with the speed of 7 in the 10 step speed value.

The camera will start looking for the code as soon as the movement begins.



See also the complete configuration manual for more information about the setup of the system.

Connecting the trigger signal
The trigger signal should come from a potentia-free contact relay connected to EVS144 as shown in the picture below. It is not possible to connect a sensor directly to the system. There must be a relay in between to achieve this as shown below. This arrangement is done by the customer.

EVS144 Central Unit Joystick connector
(EVS144 Installation manual, Pos 4 in chapter 3.1, page 6)