OIS-W: User's Manual

Service Software Development

PROJECT	
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The Aim of the Document

The document describes the „Service Software Development“ of the Ident System OIS-W as an user’s manual. It is addressed to integrators of the system.

The OIS-W hardware is described in the additional document „User’s Manual Hardware“.

For maintenance staff and interested users of the system, a PC based „Service Software Basic“ is available which is described in the additional document „User’s Manual Service Software Basic“.

Baumer Ident supplies the OIS-W preconfigured and set up in parameters. In the normal case the user needn’t read the whole document to succeed in putting the system in operation.

This document is based on the system configuration below:

Terms	Reference-Code
Reader	WR-xxxx (without WR-xx2x)[1] with DSP SW 2.30
Tag	WT-xxxx
Antenna	WA-xxxx
Mounting Aids	WM-xxxx
RF Cable	WC-xxxx
Service Software	WS-02.30

Table 1-1: area of validity

[1] WR-xx2x (with Profibus-DP) is Not yet released!

1 User's Instructions

1.1 Technical hot line

Please report any problems to:

- Baumer Ident @ Baumer Electric AG
  Hummelstrasse 17
  CH-8500 Frauenfeld
  Switzerland

  Tel.: +41-52-728 11 22
  Fax: +41-52-728 11 44
  e-mail: dzehnder@baumerelectric.com

1.2 Certification

The OIS-W was designed, constructed and certified according to the following references:

- BAPT 211 ZV 037/2050; April 97
  Bundesamt für Post und Telekommunikation (D); „Zulassungsvorschrift für Funkanlagen für Identifizierungszwecke"
- BAKOM SR 784.103.12 / 1.33; 1.6.1996
  Bundesamt für Kommunikation (CH), „Technische Anforderungen für Funkanlagen mit geringer Reichweite die im Frequenzbereich 1 GHz bis 25 GHz auf Sammelfrequenzen betrieben werden"
- I-ETS 300 440; Dec. 1995
  ETSI, „Radio Equipment and Systems (RES); Short range devices; Technical characteristics and test methods to be used in the 1 GHz to 25 GHz frequency range", Dec. 1995.

1.3 Warranty

This Baumer Ident product is warranted against defects in material and workmanship for a period of one year from date of delivery. During the warranty period, Baumer Ident will, at its option, either repair or replace products which prove to be defective.

Baumer Ident warrants that its software and firmware designated by Baumer Ident for use with an OIS-W will execute its programming instructions when properly installed on that system. Baumer Ident does not warrant that the operation of the system will be uninterrupted or error-free.

The foregoing warranty shall not apply to defects resulting from improper or inadequate operation by buyer, buyer-supplied software or interfacing, unauthorized modification or misuse, operation outside of the environmental specifications for the product, or improper site preparation or maintenance. Baumer Ident will decline liability for units that have been opened without permission of Baumer Ident.

2 How to install the Service Software based on a PC

To reconfigure, to optimize and for maintenance of the reader a service software is necessary. Please install it on a laptop or PC. The service PC and the service software are no longer required for the actual operation.

2.1 System Requirements

Minimum:
- Processor Intel 486 / 66 MHz
- MS DOS 6.20
- RAM 520 Kbytes free memory (MS-DOS)
- 1 Mbytes hard disk

Optimum:
- Processor Intel 586 / 100 MHz or better
- Microsoft Windows 95 / 98 (service software is a MS DOS application)
- RAM >8 Mbytes
- Hard disk >10 Mbytes
- UART with FIFO

The following are not supported at the moment:
- Microsoft Windows NT

2.2 How to copy the enclosed Files into the Working Directory

Copy the following files from the supplied floppy disk into the working directory on your service PC.

- Develop.exe MS DOS Application
- Help.fon required fonts
- Modern.fon required fonts
- Roman.fon required fonts
- Script.fon required fonts
- OISW.INI defines the colors of the screen display and functions of the keys F1 - F12

2.3 How to install and start-up the Application „DEVELOP.EXE“ with MS-DOS

If you want to start up the application with MSDOS execute one of the following commands:

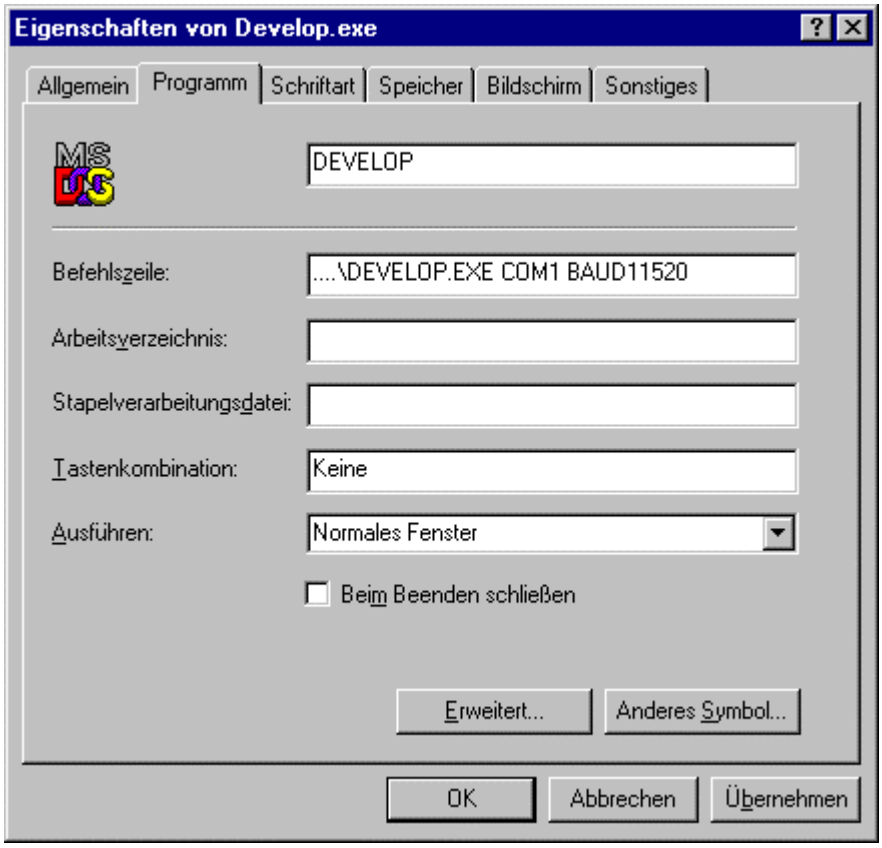
- C:\PATH...**Develop.exe COM1 BAUD115200** [1] // if you use COM1
- C:\PATH...**Develop.exe COM2 BAUD115200** // if you use COM2
- Press „Enter“.

[1] Please note the capitol letters and the spaces!

2.4 How to install and start-up the Application „Develop.exe“ with Windows 95

If you want to use the application with Windows95 proceed as follows:

1. Create a link of the file Develop.exe into the path:
   C:\Windows\Startmenü
2. Click with right mouse key on „Linking of Develop.exe“!
3. Click on „Properties“!
4. Click on „Program“!
5. Supply the instruction line with:
   ..\Develop.exe **COM1 BAUD115200** [1] //if you use COM1
   ..\Develop.exe **COM2 BAUD115200** //if you use COM2



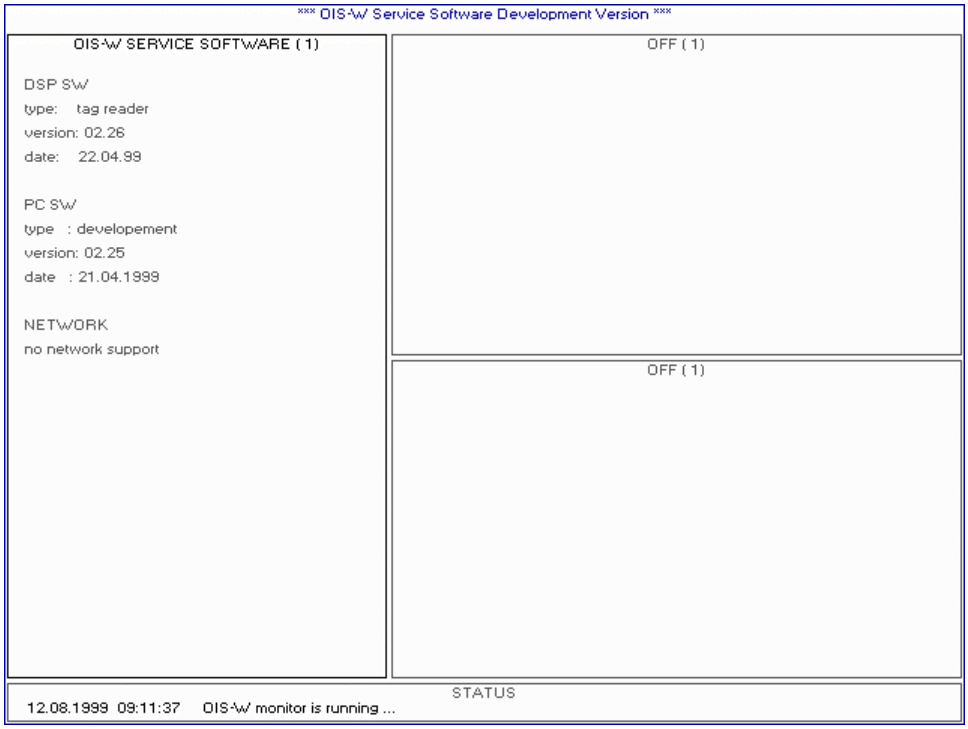
Picture 2-1: start up with windows 95

6. Call Develop.exe in start menu!

[1] Please note the capitol letters and the spaces!

2.5 Starter Picture of the Application „Develop.exe“

After successful start up the following starter picture appears:



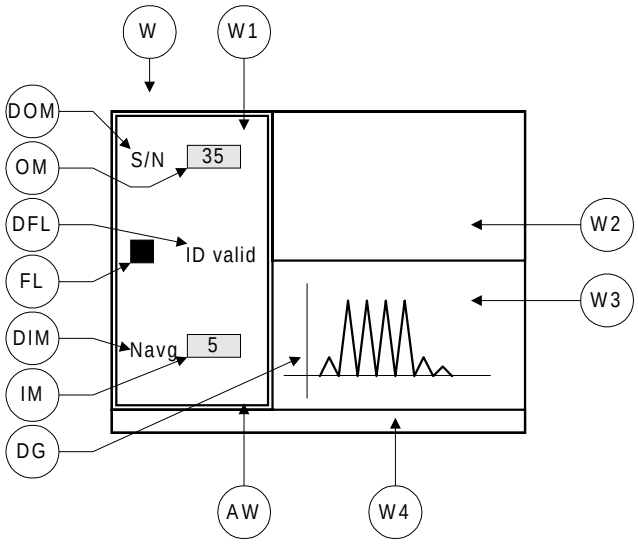
Picture 2-2: Develop.exe start picture

Please note that the entries under DSP SW (type, version, date) only appear if the service PC is connected to the reader (R) and the communication has started up successfully.

3 How to operate the Service Software based on a PC

3.1 Introduction

The service monitor is divided into four windows. Each window contains several pages. The user selects one window as active and can turn its pages like in a book.



Picture 3-1: man machine interface (W)

Abb.	Term
W	Man machine interface
W1	Window 1
W2	Window 2
W3	Window 3
W4	Window 4
AW	Active window
DG	Diagram
IM	Input mask
DIM	Description of the input mask
FL	Flag
DFL	Description of the flag
OM	Output mask
DOM	Description of the output mask

Table 3-1: terms of the man machine interface (W)

3.1.1 Overview

Man machine interface (W)

The man machine interface (W) contains four different windows. Each window is like a book and consists of several pages. The user selects the active window and chooses the required page.

Window 1 (W1)

Page	Term	Contents
1	OIS-W Service Software (1)	• Indicates the DSP SW Version • Indicates the PC SW Version
2	System Information (2)	• Indicates the status of the identification • Indicates the reason for an invalid identification • Indicates the operation mode • Indicates the chosen parameters for the code processing
3	Operation Mode Settings (3)	• Input and display of the operation mode
4	Tag Structure Settings (4)	• Input and display of the tag structure
5	Reader Settings (5)	• Input and display of the reader parameters
6	Interface Settings (6)	• Input and display of the parameters of the serial interface RS 232 (R13) and the serial interface RS 422 (R38)
7	Monitor Settings (7)	• Input and display of the monitor parameters
8	Aux Port Settings (8)	• Input and display of the auxiliary port parameters

Table 3-2: contents of window 1 (W1)

Window 2 (W2)

Page	Term	Contents
1	off	
2	Time Domain Signal	• Indicates the time domain signal after the A/D converter
3	Frequency Domain Signal	• Indicates the calculated frequency domain signal
4	Signal Quality Monitor	• Indicates errors and status information for every code block
5	System Error Monitor	• Indicates errors and status information for the reader
6	Aux Flag Monitor	• Indicates the status information of Aux Ports and Aux Flags
7	enter Bias code	• Not released!
8	Installation and Family Code	• Not released!
9	Analyze Mode	• Indicates the numbers of correct, rejected and false codes; for test purposes only
10	Test Mode	• Not released!
11	Download Reader SW	• Installs a new DSP software from the working directory of your service PC
12	Download FPGA SW	• Installs a new FPGA software from the working directory of your service PC
13	Load Settings from File	• Installs a new configuration file from the working directory of your service PC
14	Save Settings to File	• Saves the configuration file from the reader to the working directory of your service PC
15	Load Code Table from File	• Installs a new code table from the working directory of your service PC to the reader
16	Save Code Table to File	• Saves the code table from the reader to the working directory of your service PC
17	Aux Ports Monitor & Settings	• Displays the status of the digital inputs • Setting of the digital outputs

Table 3-3: contents of window 2 (W2)

Window 3 (W3)

Page	Term	Contents
1	off	
2	Time Domain Signal	• Indicates the time domain signal after the A/D converter
3	Frequency Domain Signal	• Indicates the calculated frequency domain signal
4	Signal Quality Monitor	• Indicates errors and status information for every code block
5	System Error Monitor	• Indicates errors and status information for the reader
6	Aux Flag Monitor	• Indicates the status information of Aux Ports and Aux Flags

Table 3-4: contents of window 3 (W3)

Window 4 (W4)

Page	Term	Contents
1	Status	• Indicates status information about the service software (S) • Indicates help text during input of parameters

Table 3-5: contents of window 4 (W4)

Active window (AW)

The user recognizes the active window through the lit yellow frame and through the yellow header. The active window can be changed with the key „Tab“. Basically entries can only be made in the active mode.

Diagram (DG)

Graphic designs are used in the form of diagrams in window 2 (W2) and window 3 (W3).

Input mask (IM)

The concrete values of the configuration parameters and the name of the files to be transferred are to be put into input masks (IM).

Description of the input mask (DIM)

Each input mask (IM) is uniquely labeled.

Flag (FL)

Operation status and errors are shown with flags (FL) which change their color according to their status.

Description of the flag (DFL)

Each flag (FL) is uniquely labeled.

Output mask (OM)

Important information about the current identification are indicated with the help of output masks (OM).

Description of the output mask (DOM)

Each output mask (OM) is uniquely labeled.

3.2 Keys and Combinations of Keys of the Man Machine Interface

These keys and combinations of keys initiate the following actions:

Keys	Action
ESC, 'x', 'q', 'X' , 'Q'	Quit the application
'1'	Go to next page of window 1
'2'	Go to next page of window 2
'3'	Go to next page of window 3
TAB	Change active window. The user recognizes the active window through the lit yellow frame and through the yellow header. Basically entries can only be made in the active mode.
PAGE UP	Go to next page of active window
PAGE DOWN	Go to previous page of active window
CTRL + PAGE UP	Fast forward of active window (+ 3 pages)
CTRL + PAGE DOWN	Fast backward of active window (+ 3 pages)
HOME	Go to the first page of active window
END	Go to the last page of active window
'f'	Freeze display
RETURN or e	Edit parameters in the active window. Each input in an input mask (IM) has to be followed by a „Return“. Then the cursor goes to the next input mask (IM). To accept the new entries or to execute the new commandos the last input mask (IM) of the active window has to be left with „Return“. If the input mode is quitted with „ESC“, all the entries made are not accepted.
'r'	Reset reader
't'	Software trigger In triggered mode the reader is triggered to start an identification. On page „monitor settings“ the user can configure on which antenna an identification shall be made.
‘m’	Reset AUX port flags; if window ‘Aux Ports Monitor & Settings’ or window ‘Aux Flag Monitor’ or window ‘ID and AUX Port Information’ is visible, an ACK message for AUX_REP is sent in order to reset the AUX port flags.
'B'	Change the baud rate of the service software (S); (doesn’t change baud rate on DSP)[1]
'F5'	Combined display which is used as a standard window combination to observe the identification. The standard window combination is saved in the file OIS_W.ini.
'd'	Display which is used to observe the outgoing data telegram at serial interface RS 232 (R13).
's'	Save all the relevant reader data into a data file into the working directory. This file is required for further analysis in case of identification problems.

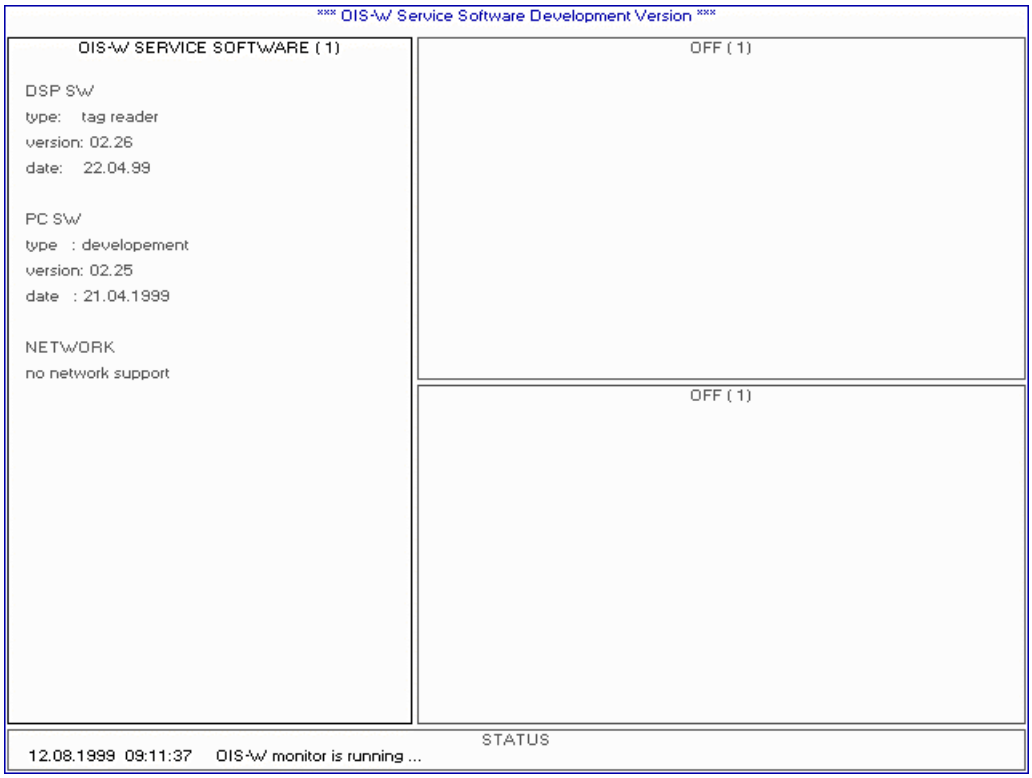
Table 3-6: keys and combinations of keys of the man machine interface (W)

[1] The baud rates always have to be adapted on the PC (installation command) and on the DSP (configuration file)

4 Description of the Man Machine Interface

4.1 Window 1

4.1.1 Page 1: OIS-W Service Software



Picture 4-1: OIS-W service software development (S01)

DSP Software Info

- Type: tag reader
- Version: xx.xx
- Date: xx.xx.xx

PC Software Info

- Type: basic / development / professional
- Version: xx.xx
- Date: xx.xx.xx

Network

Not yet released!

4.1.2 Page 2: System Information

All parameters which are mentioned in the following text are explained in detail in chapters 4.1.3 - 4.1.5.

Picture 4-2: system information

Antenna 1 / Antenna 2

If the flags shine yellow the respective antenna is used. The display corresponds to the parameter „Reader Settings: Ant“.

ID valid

The flag shines green if a valid tag (T) is recognized. It gives the same information as the LED detection status of ant 1 (R10) on the front panel.

ID

This output mask (OM) shows the decoded code.

Shift

This output mask (OM) indicates where the calibrator has been detected in the unit [Bin] within the delay range.

S/N cal.

This output mask (OM) indicates the measured signal-to-noise ratio in the unit [dB]. The signal is measured at the recognized calibrator and the noise within the range defined with the parameter „Reader Settings: Tnoise0“.

S/N Threshold

This output mask (OM) indicates the S/N threshold in the unit [dB]. It corresponds to the parameter „Reader Settings: SNR“.

Signal

This output mask (OM) indicates the signal level of the calibrator in the unit [dB].

AF AGC

This output mask (OM) indicates the value of the automatic gain control. The user doesn't have the possibility the change this parameter.

Invalid Due

If this flag shines red the condition „number of equal codes out of number of measurements“ is not met. This condition is defined through the parameters „Reader Settings: Nequ and Na“.

If the flag shines green the condition is met.

Event Driven

If this flag shines yellow the operation mode „Event Driven Mode“ is selected. The flag corresponds to the parameter „Operation Mode Settings: Mmain“.

Triggered

If this flag shines yellow the operation mode „Triggered Mode“ is selected. The flag corresponds to the parameter „Operation Mode Settings: Mmain“.

TX ON

If this flag shines yellow the reader (R) always sends out an interrogating signal. If the flag doesn't shine the reader (R) sends out an interrogating signal only if the respective antenna (A) is triggered. The flag corresponds to the parameter „Operation Mode Setting: MTxuntrig“.

Bias Code

Not yet released!

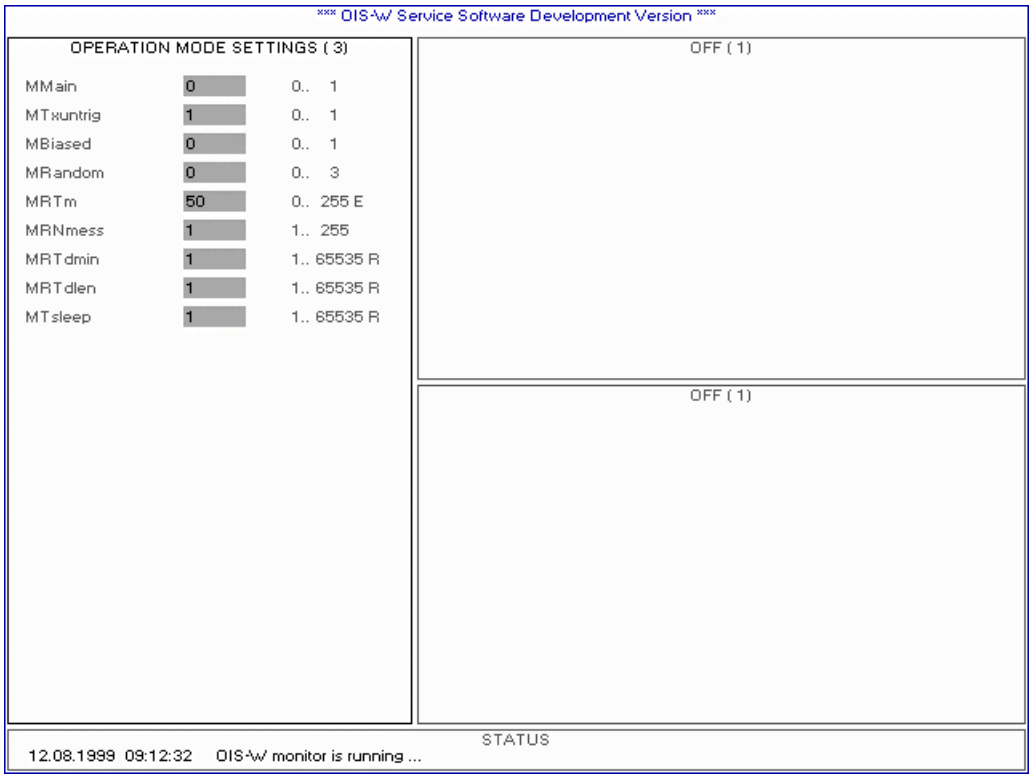
Nequ/Na

This output mask (OM) shows the values of the parameters „Reader Settings: Nequ/Na“ an. These parameters are used for the condition „number of equal codes out of number of measurements“.

Averaging

This output mask (OM) indicates the value of the parameter „Reader Settings: Navg“. This parameter is used for the approximate, moving average and defines the number of measurements.

4.1.3 Page 3: Operation Mode Settings



Picture 4-3: operation mode settings

Name	Description	Range	Default	Remarks
Mmain	main operation mode	0..1	0	0=event driven,1=triggered
Mtxuntrig	transmitter state when not triggered; for triggered and event driven mode	0..1	1	0=off,1=on
Mbiased	biased mode	0..1	0	0=off,1=on
Mrandom	random mode; ramp timing distributions	0..3	0	0=off, 1=uniform distributed, 2,3=not yet released
MRTm	max. measurements per block	0..255	25	the min measurement block corresponds to Parameter „Reader Settings: Nequ“. Also used for triggered mode when random = OFF.
MRNmess	number of measurement blocks	1..255	5	
MRTdmin	min. random delay	1..65535	5	in ramp durations[1]
MRTdlen	range of random delay	1..65535	50	in ramp durations
Mtsleep	sleep time	1..65535	50	in ramp durations

Table 4-1: operation mode settings

[1] Ramp duration = 20 ms

Mmain / MTxuntrig

Operation mode	Mmain	MTxuntrig	Description
Event Driven Mode TX On	0	1	The reader (R) always sends out an interrogating signal and the identification is always activated.
Event Driven Mode TX Off	0	0	The reader (R) sends out an interrogating signal and the identification is activated only if the trigger input is on „1“.
Triggered Mode TX On	1	1	The reader (R) always sends out an interrogating signal. But the identification starts only if the reader (R) is triggered. Three ways to trigger: • trigger input on „1“ • via telegram • for test purpose via service PC keyboard „t“
Triggered Mode TX Off	1	0	The reader (R) doesn’t send out an interrogating signal on stand by mode. If the reader (R) is triggered it sends out an interrogating signal. After a successful identification or after a certain time the reader (R) returns back to stand by mode. Three ways to trigger: • trigger input on „1“ • via telegram • for test purpose via service PC keyboard „t“

Table 4-2: Mmain / MTxuntrig

Mbiased

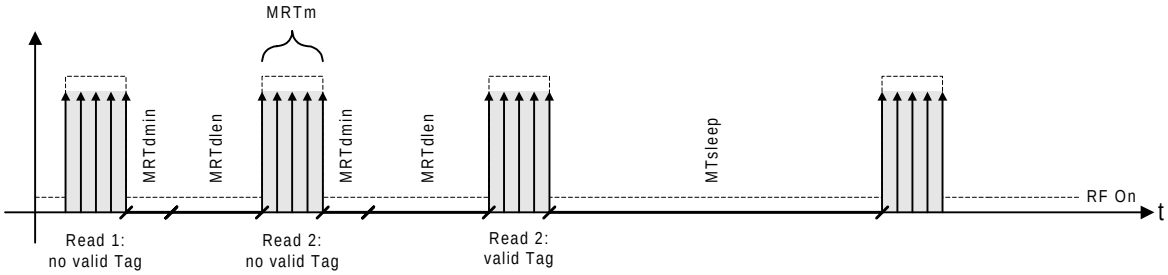
Not yet released!

Mrandom

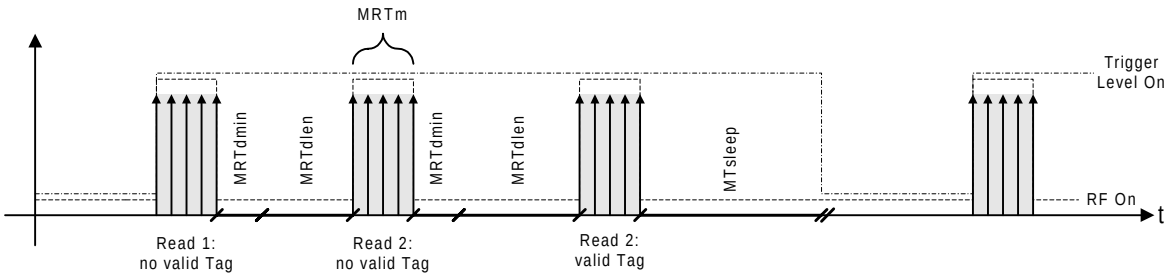
Random mode means that the reader will be switched on for reading during an allowed interval randomly. The random mode reduces the mutual influences of the readers by using different time slots.

Antenna toggling is not allowed for random mode. The reader will automatically turn to event driven mode alternating the antennas as if random mode was not set.

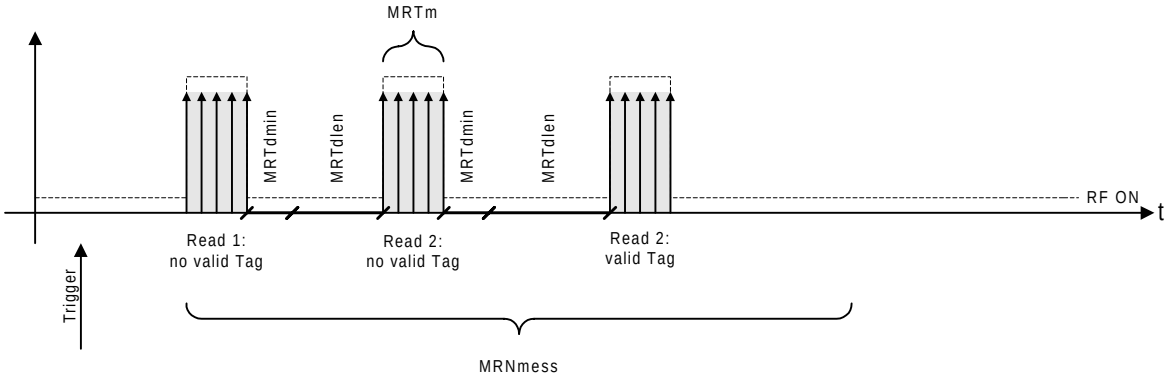
Random Mode combined with Event Driven Mode TX-ON



Random Mode combined with Event Driven Mode TX-OFF



Random Mode combined with Trigger Mode TX-OFF



Picture 4-1: random mode

MRTm

This parameter defines the number of measurements per blocks.

MRNmess

This parameter defines the number of measurement blocks.

MRTdmin

This parameter defines the minimum delay time after a block.

MRTdlen

This parameter defines the range of the random delay.

Mtsleep

This parameter defines the sleep time after a successful identification.

Overview of random parameters

Use the random parameters in combination with the corresponding modes as described below:

Operation mode	Mmain	Mtxuntrig	Mrandom	MRTm	MRNmess	MRTdmin	MRTdlen	MTsleep
Event Driven Mode TX On	0	1	1	X [1]	n.r. [2]	X	X	X
Event Driven Mode TX Off	0	0	1	X	n.r.	X	X	X
Triggered Mode TX On [3]	1	1						
Triggered Mode TX Off	1	0	1	X	X	X	X	n.r.

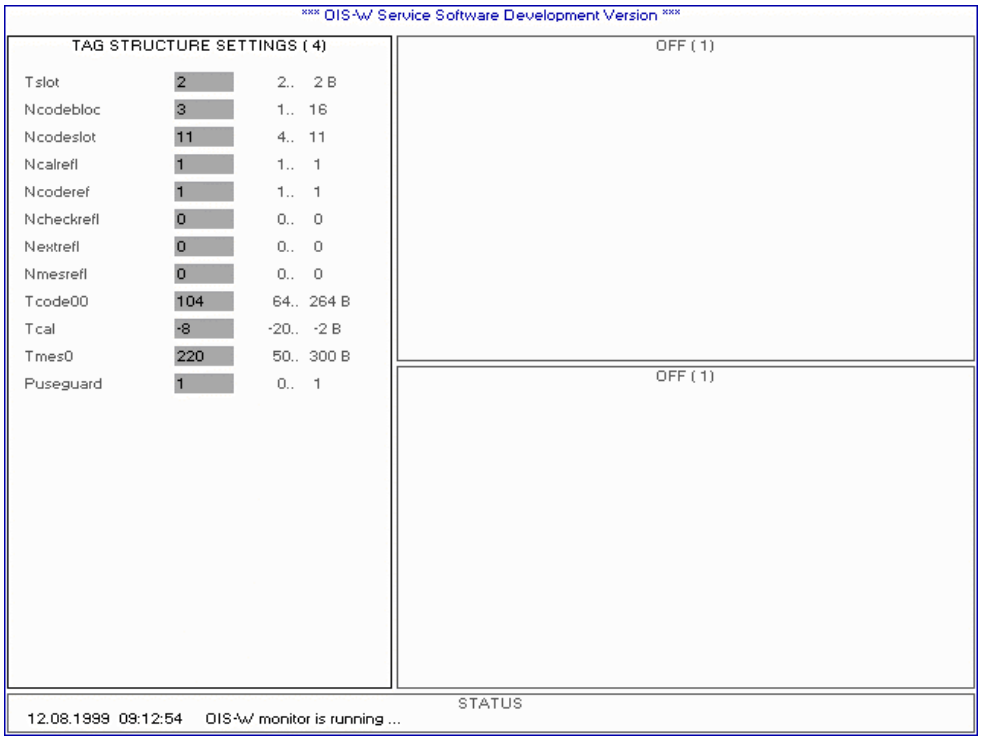
Table 4-1: random mode

[1] X: value according to the definition of the range of the respective parameter

[2] n.r. :not relevant in thois combination

[3] doesn't make any sense

4.1.4 Page 4: Tag Structure Settings



Picture 4-4: tag structure settings

The tag structure makes possible a lot of variations for current and future tag designs. For the current D3 and D4 tags the user can work with the two standard configurations as described in Table 4-2: tag structure settings.

Term	Description	Range	D3-Tag WT-0X1X	D4-Tag WT-0X2X	Remarks
Tslot	Slot width	2B	**2**	**2**	B=FFT bin (=12.5ns)
Ncodebloc	**Number of code blocks**	**1 to 16**	**3**	**4**	
Ncodeslot	Slots per code block	4 to 11	**11**	**11**	if 11 slots are used, the guard slot is mandatory (no tap in slot 11 allowed!)
Ncalrefl	Number of calibration reflectors	1	**1**	**1**	Not yet released
Ncoderef	Number of reflectors per code block	1	**1**	**1**	Not yet released
Ncheckrefl	Number of checksum reflectors	0	**0**	**0**	Not yet released
Nextrefl	Number of code extension reflectors	0	**0**	**0**	Not yet released
Nmesrefl	Number of measurement reflectors	0	**0**	**0**	Not yet released
$Tcode_{00}$	Position of first code slot	64 ... 264 B	**104**	**104**	1000 ... 3300 ns
Tcal	Position of calibrator reflector	-2 ... -20 B	**-8**	**-8**	rel. to Tcodeslot00
$Tmes_0$	Position of first measurement zone	50 ... 300 B	**220**	**220**	625 ... 3750 ns; Not yet released
Puseguard	Use of guard slot in code blocks	0, 1	**1**	**1**	1: with guard slot 0: no guard slot, min spacing of reflectors is 2 slots

Table 4-2: tag structure settings

Tslot
Defines the number of Bins per Slot. At the moment the value is fixed at 2.

Ncodebloc
Defines the number of codeblocks respectively the number of characters per code.

Tag	Ncodebloc	Code Example
D3	3	321
D4	4	4321
D5	5	54321

Table 4-3: Ncodebloc

Mcodeslot
Defines the number of slots per codeblock.

Tag	Ncodeslot	Code Range
D3	3	000-222
D3	4	000-333
D3	11[1]	000-999

Table 4-4: Mcodeslot

Mcalrefl
Not yet released!

Ncoderef
Not yet released!

Ncheckrefl
Not yet released!

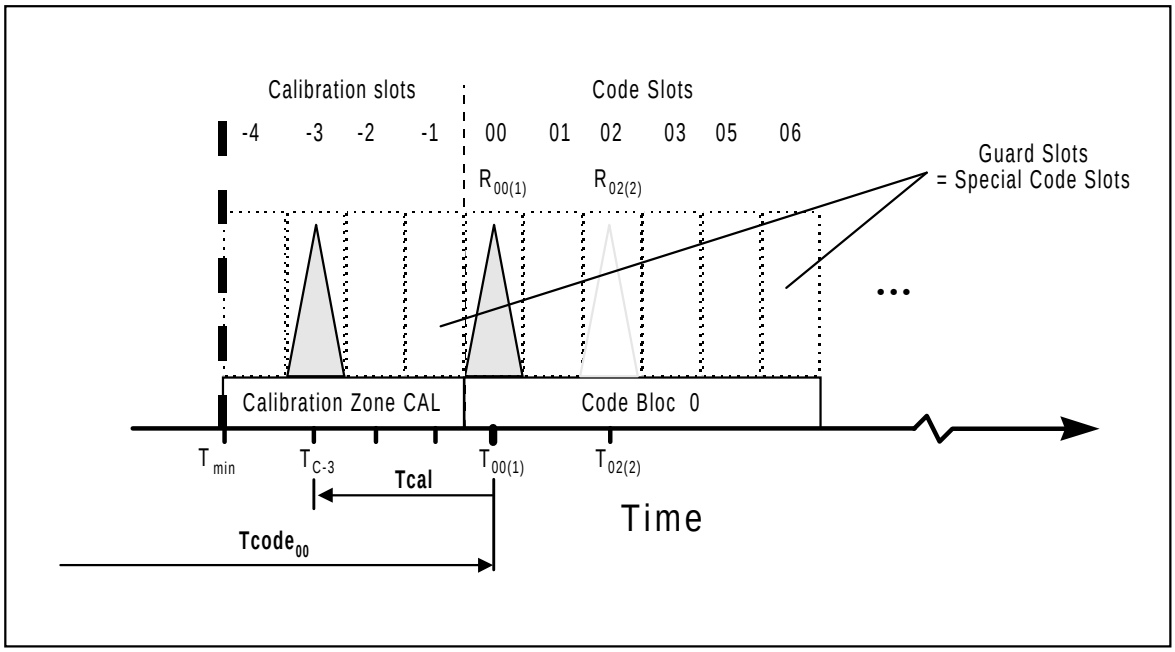
Nextrefl
Not yet released!

Nmesrefl
Not yet released!

[1] 10 Slots plus 1 guard slot

$Tcode_{00}$
Defines the first code slot of the tag structure (without cable and air delay).

Tcal
Defines the position of the calibrator reflector with reference to T_{00}.

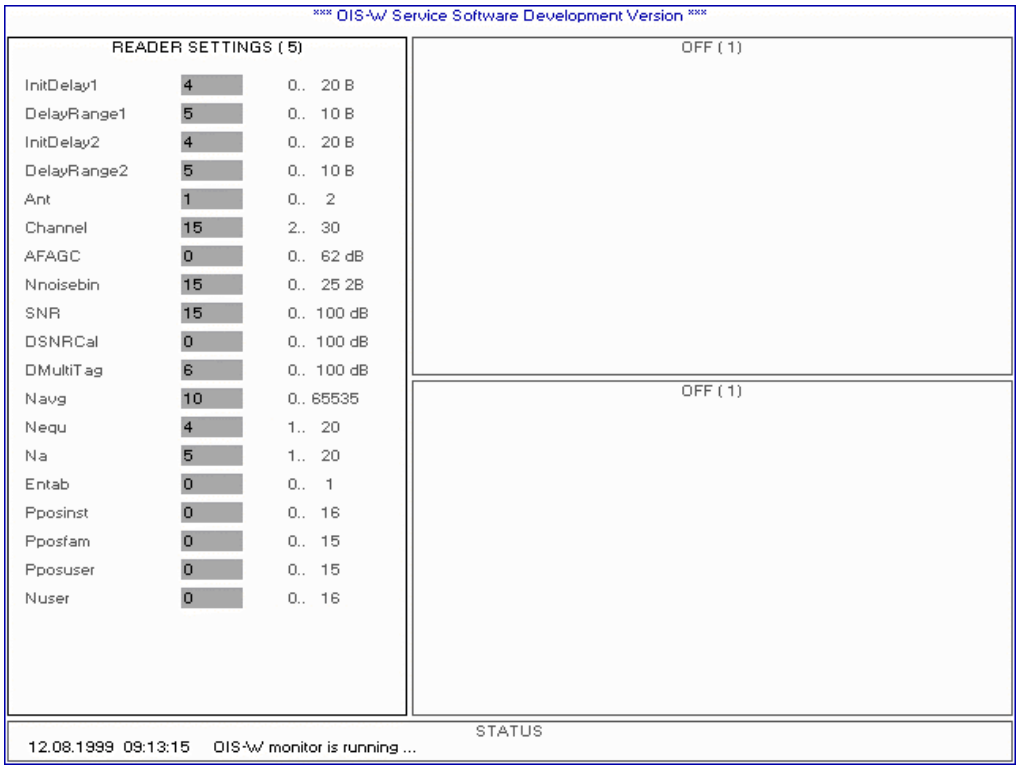


Picture 4-2: $Tcode_{00}$, Tcal

$Tmes_0$
Not yet released!

Puseguard
Not yet released!

4.1.5 Page 5: Reader Settings



Picture 4-5: reader settings

Term	Description	Range	Default	Remarks
InitDelay1	initial delay antenna 1	0…20B[1]	2	reader & cable delays
DelayRange1	delay search range antenna 1	0…10B	5	air delay (6.6ns/m)
InitDelay2	initial delay antenna 2	0…20B	2	reader & cable delays
DelayRange2	delay search range antenna 2	0…10B	5	air delay (6.6ns/m)
Ant	select antenna pair	0, 1, 2	0	o = both alternating; 1=Ant 1; 2=Ant 2
Channel	frequency channel	2 ... 30	15	start frequency
AFAGC	NF AGC attenuation (dB)	0 .. 62 dB	0	0: auto, 1 ... 62: fixed
Tnoisebin	number of Bins used for noise average left and right from reflector slot	0 ... 25 2B	15	0: noise will be zero Note that twice Noisebin are used for calculation!
SNR	signal to noise ratio threshold	0...100 dB	15	
DSNRCal	delta SNR for calibrator	0...100 dB	1	relative to SNR
DmultiTag	multi-tag threshold	0...100 dB	5	relative to strongest peak in block or zone
Navg	number of averages	0 ... 65353	1	
Nequ	number of equal ID's	1…20	3	Nequ ≤ Na, otherwise majority decision switched off
Na	number of acquisitions	1…20	5	
Entab	disable / enable look up table	0...1	0	0 = disabled / 1 = enabled

[1] Unit Bin (B). 1 Bin corresponds to 12.5 ns.

Term	Description	Range	Default	Remarks
Pposinst	first installation code block	0 ... 16	0	currently not used
Pposfam	first family code block	0 ... 15	0	currently not used
Pposuser	first user code block	0…15	0	currently not used
Nuser	number of user code blocks	0...16	4	

Table 4-3: reader settings

InitDelay1 / InitDelay2

This parameter corresponds to the signal propagation within the reader (R) and the rf cable (C). InitDelay is set separately for each antenna (A). For the calculation only the length of one rf cable (C) is used; i.e. the distance between reader (R) and antenna (A).

	Low-Cost rf cable WC-0xxx	Low-Loss rf cable WC-1xxx
Cable length	InitDelay	InitDelay
[m]	[bin]	[bin]
2.5	3	3
3	4	3
5	5	5
10	10	8
15	14	11
20	18	14
25	22	17

Table 4-4: InitDelay

Example:

If you use the following rf cable (C):

- Ant 1: 2 x 5m low-lost rf cable (C) WC-0xxx
- Ant 2: 2 x 25m low-loss rf cable (C) WC-1xxx

Set the following values:

⇒ InitDelay1: 5
⇒ InitDelay2 17

DelayRange1 / DelayRange2

This parameter defines the length of the reading range which is considered when decoding the signal. DelayRange is to be set separately for each antenna (A). Please note that you only change the parameter for the internal decoding. This means that only tags(T) are decoded which are within the limits defined by the parameters InitDelay and DelayRange. These parameters don't influence the maximum reachable reading range of the system.

Range	DelayRange
[m]	[bin]
1	1
2	2
3	2
4	3
5	3
6	4
7	4
8	5
9	5
10	6

Table 4-5: DelayRange

Example:

If you want to cover the following reading range:

- Ant 1: 2m
- Ant 2: 5m

Set the following values:

⇒ DelayRange1: 2
⇒ DelayRange2: 3

Ant

There are three possibilities::

- Ant=0 both antennas are alternatively active
- Ant=1 only antenna 1 is active
- Ant=2 only antenna 2 is active

Please note that in triggered mode the trigger event has a higher priority than the parameter „Ant“. This means that if antenna 2 is triggered at parameter settings „Ant = 1“, antenna 2 nevertheless starts a decoding.

Channel

This parameter defines the starting frequency of the ramp in order to adapt it to the tag medium frequency.

Parameter	Start-frequency
2	2402 MHz
3	2403 MHz
...	...
30	2430 MHz

picture 4-3: channel

AFAGC

This parameter defines the NF AGC attenuation. Normally it is the best way to set this parameter at „0“, that means that NF AGC works automatically.

Nnoisebin

This parameter defines the number of Bins used for noise average left and right from reflector slot.

SNR

This parameter defines the threshold for the S/N- signal. If the current S/N ratio of the calibrator is higher than „SNR“, the S/N- signal is accepted.

Skizze

DSNRCal

This parameter defines by how much the calibrator has to be stronger than the threshold „SNR“.

DMultiTag

This parameter defines by how much the signal peaks have to be stronger than other peaks possibly located in the same area.

Navg

This parameter defines the number of averages with the method of approximate moving averaging. This parameter changes the dynamic of the system decisively. A high value reduces short-time noise signals but it also makes the system slow.

$$S_i = \frac{(Navg-1)xS_{i-1} + S}{Navg}$$

Legend:

S_i: averaged spectrum

S: new spectrum

Navg: weighting constant; range 1 ... 255

Nequ/Na

Theses two parameters define the number of equal codes „Nequ“ out of a number of measurements „Na“.

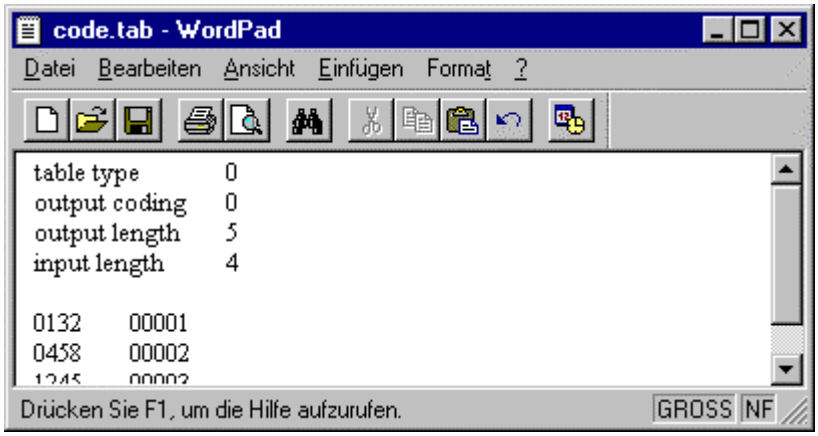
Entab

The tag (T) contains a fix code per definition. The linking of the fix code to an application specific identification number can be made within the reader (R) with the help of a look up table

Ntab = 0 Look up Table not activated

Ntab = 1 Look up Table activated

The look up table is set up with the help of a text editor and saved in the working directory. The download of the look up table to the reader (R) is described in chapter 4.2.15 on page 45.



Picture 4-6: look up table

Name	Description	Range	Default
table type		0	0
output coding		0	0
output length	number of digits of the application specific identification number	1..8	
input length	number of digits of the fix code of the tag	1..8	
left column	code read from the tag		
right column	application specific identification number	8 Hex-character; each character is defined as 0..9, A-F	

Table 4-6: look up table

A total of 10'000 linkings is available.

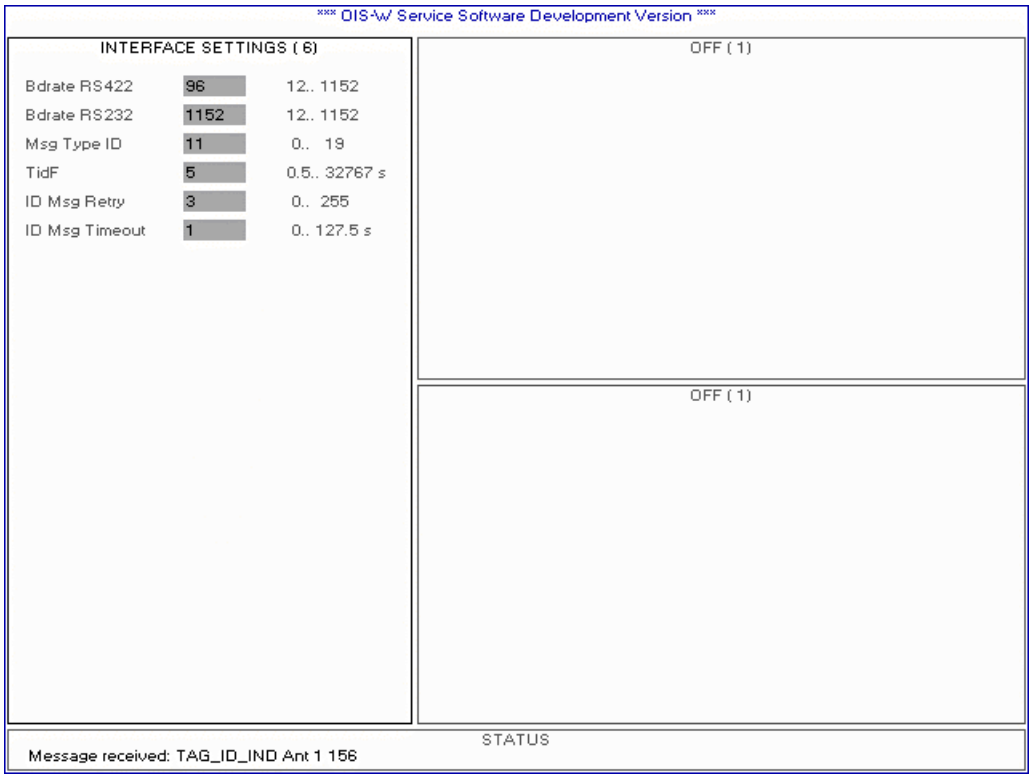
Pposuser
Not yet released!

Ppostfam
Not yet release!

Pposuser
Not yet released!

Nuser
Not yet released!

4.1.6 Page 6: Interface Settings



Picture 4-7: interface settings

Term	Description	Range	Default	Remarks
Bdrate ID Data	Baud rate serial interface RS 422 (R38)	12..1152	1152	9600 baud or 115200 baud
Bdrate Service	Baud rate serial interface RS 232 (R13)	12..1152	1152	9600 baud or 115200 baud
Msg Type ID	Select type of notification after successful reading	0..19	11	1st digit: • 0: RS422 • 1: RS232 2nd digit • 0: OFF • 1: TAG_ID_IND • 2: PARAM_DATA
TidF	Time constant ID filter (res:.5s)	0.5..32768	1	
ID Msg Retry	Max. number transmissions of ID Msg (0 = forever)	0..255	3	
ID Msg Timeout	Time until ID msg is retransmitted (res:0.5s)	0.5..127.5	1	

Table 4-7: interface settings

Bdrate RS422 / ID Data

This parameter defines the baud rate of the serial interface RS 422 (R38).

Bdrate RS232 / Service

This parameter defines the baud rate of the serial interface RS 232 (R13).

Msg Type ID

This parameter defines the kind of information which is put out via serial interface RS 232 (R13) and serial interface RS 422 (R38).

- Msg Type ID=01 TAG_ID_IND via serial interface RS 422
- Msg Type ID=11 TAG_ID_IND via serial interface RS 232, default-value
- Msg Type ID=02 Not yet released!
- Msg Type ID=12 Not yet released!
- Msg Type ID=x0 Not yet released!

TidF

This parameter defines in the operation mode „event driven“ the duration after which the same code is put out again without a different tag (T) having passed the identification point in the meantime.

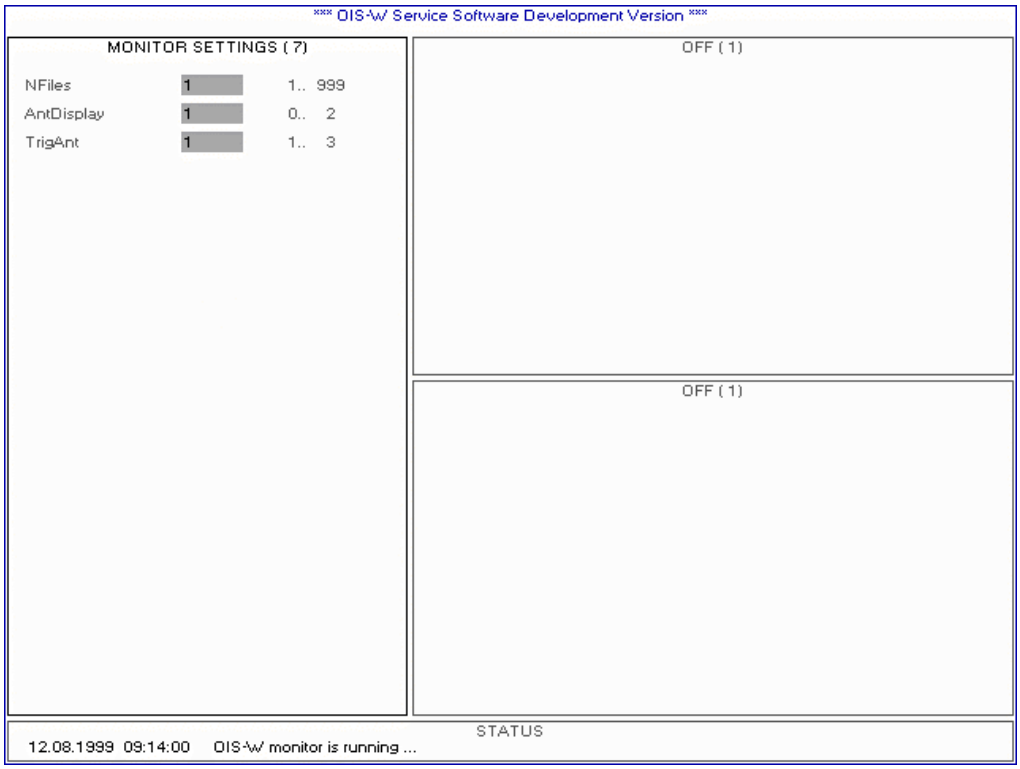
ID_Msg_Retry

If the receiving end doesn’t acknowledge with a „ACK“ the getting of a telegram from the serial interface RS 232 (R13) and serial interface RS 422 (R38), the telegram will be resent. The parameter ID Msg Retry defines the number of repetitions.

ID_Msg_Timeout

This parameter defines the duration between two telegram repetitions.

4.1.7 Page 7: Monitor Settings



Picture 4-8: monitor settings

Name	Term	Range	Default	Remarks
NFiles	Reader data onto disk	1 ... 999	1	
AntDisplay	Antenna to monitor	0 .. 2	1	0= both Antennas, 1=Ant1, 2=Ant2
TrigAnt	Antenna to trigger	1 .. 3	3	1=Ant.1, 2=Ant2, 3=both Antennas

Table 4-8: monitor settings [1]

Nfiles

Defines the number of „pictures“ of a current identification situation which will be stored onto disk when using the function „save reader data onto disk“ (see chapter Remote Diagnostics on page 64).

AntDisplay

Select the antenna (A) which you want to look at with the service PC:

- AntDisplay=0 the data of the antennas 1 and 2 are displayed alternately
- AntDisplay=1 only the data of antenna 1 is displayed
- AntDisplay=2 only the data of antenna 2 is displayed

TrigAnt

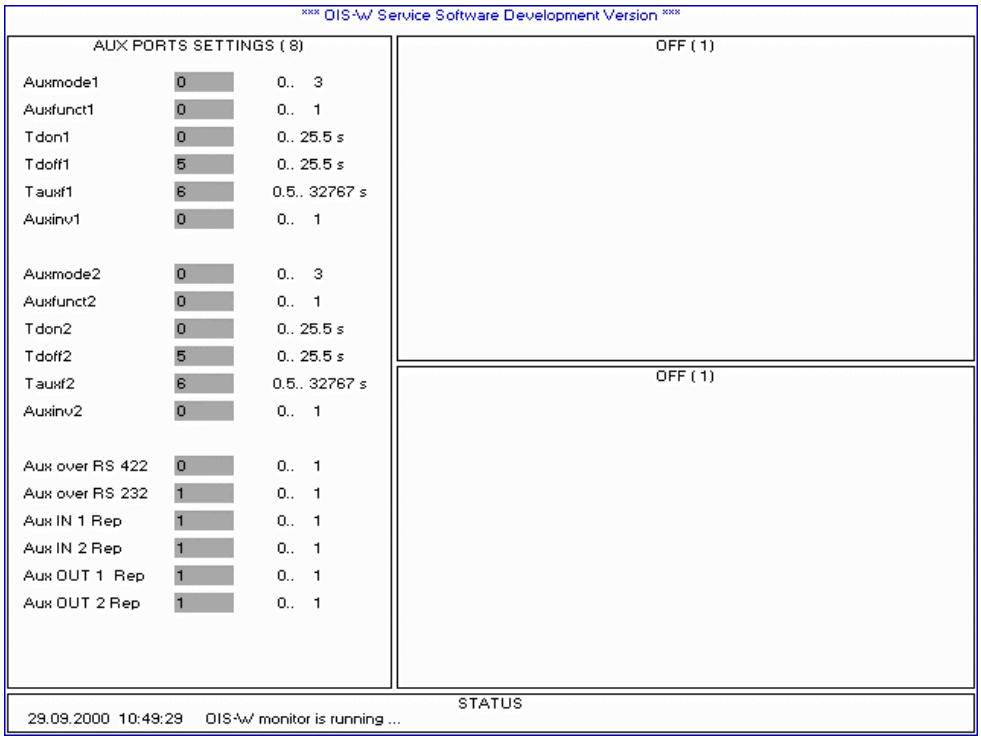
Select the antenna (A) which you want to trigger with the help of key „t“ on your service PC.

- TrigAnt=1 only antenna 1 is selected to be triggered
- TrigAnt=2 only antenna 2 is selected to be triggered
- TrigAnt=3 antennas 1 and 2 are selected to be triggered

[1] These two parameters are not saved in the reader (R). They are only used in the service PC..

4.1.8 Page 8: Auxiliary Ports Settings

A digital output exits for each antenna. Additional digital outputs are available on binary inputs / outputs 2 (R31)



Picture 4-9: aux ports settings

Name	Description	Range	Default	Remarks
Auxmode1 / Auxmode2	Operation mode of AUX output	0 ... 3	0	0=transparent 1=filtered 2=host triggered 3=ID acknowledge for Ant2
Auxfunct1 / Auxfunct2	Operation function of AUX output	0 ... 1	1	0=delayed impulse; 1=delayed turn off
Tdon1 / Tdon2	AUX out1 / 2 on delay time	0 ... 25.5	0	
Tdoff1 / Tdoff2	AUX out1 / 2 off delay time	0 ... 25.5	0	
Tauxf1 / Tauxf2	AUX out1 / 2 on delay time	0.5 ... 32768	0.5	
Auxinv1 / Auxinv2	Invert AUX signal	0 ... 1	0	0=off; 1=on
Aux over RS 422	AUX_REP message via RS 422	0 ... 1	0	0=off; 1=on
Aux over RS 232	AUX_REP message via RS 232	0 ... 1	1	0=off; 1=on
Aux IN 1 Rep / Aux IN 2 Rep	AUX_REP message will be sent after a state change at Aux IN 1 / Aux IN 2	0 ... 1	1	0=off; 1=on
Aux OUT 1 Rep / Aux OUT 2 Rep	AUX_REP message will be sent after a state change at Aux OUT 1 / Aux OUT 2	0 ... 1	1	0=off; 1=on

Table 4-9: aux ports settings

Advice!
If you want to use the digital outputs, please follow the table 4-10. To set the parameters for the time function in the chosen operating mode, please follow also the table 4-10. We gladly advise you on defining the parameters.

Auxmode1 / Auxmode2

There are four ways for the digital output to forward a valid identification:

- Auxmode=0 transparent
- Auxmode=1 filtered
  This filter function decides whether the current code N is unequal to the code N-1. In combination with the time constant Tauxf it is possible to define the duration after which the same code can set the digital output again without a different tag (T) having passed the identification point in the meantime.
- Auxmode=2 Host triggered
  A higher-order system controls the digital output via telegram.
- Auxmode=3 ID acknowledge
  If you use only one antenna (Reader settings: Ant=1 or Ant=2) then you have the possibility to indicate when the host answers the data telegram. The answer telegram is called acknowledge telegram.

Ant	Auxmode1	Auxmode2
1	1 or 2	3
2	3	1 or 2

Table 4-5: ID acknowledge

Using only Ant1:
When the acknowledge arrives within the duration specified by the parameter ID_Msg_Timeout, then the digital output AUX_OUT2 will be „ON“ for the duration specified by the parameter Tdoff2.

Using only Ant2:
When the acknowledge arrives within the duration specified by the parameter ID_Msg_Timeout, then the digital output AUX_OUT1 will be „ON“ for the duration specified by the parameter Tdoff1.

Auxfunct1 / Auxfunct2

There are two different timer functions for the digital outputs:
- Auxfunct=0 Impulse
- Auxfunct=1 Delayed turn-off

Tdon1 / Tdon2

This parameter defines the ON delay of the chosen timer function.

Tdoff1 / Tdoff2

This parameter defines the impulse duration (Auxfunct=0) or the OFF delay (Auxfunct=1).

Tauxf1 / Tauxf2

This parameter defines the time constant of the function „Auxmode“.

Auxinv1 / Auxinv2

The output can be inverted.

Aux over RS 422

The AUX_REP message will be sent via RS 422 interface.

Aux over RS 232

The AUX_REP message will be sent via RS 232 interface.

Aux IN 1 Rep / Aux IN 2 Rep

This parameter defines if the AUX_REP message will be sent after a state change at Aux IN 1 and/or Aux IN 2.

Aux OUT 1 Rep / Aux OUT 2 Rep

This parameter defines if the AUX_REP message will be sent after a state change at Aux OUT 1 and/or Aux OUT 2.

Overview of the operation modes in combination with the timer functions

Operation mode		**Auxiliary Port Settings**						**Timer function**
Mmain	MTxuntrg	Auxmode	Auxfunct	Tdon	Tdoff	Tauxf	Auxinv	
Event Driven Tx Off								
0	0	0	0	0	X[1]	n.r.[2]	X	Impulse without Aux-Filter
0	0	1	0	0	X	X	X	Impulse with Aux-Filter
0	0	2	0	0	X	n.r.	X	Impulse without Aux-Filter
0	0	0	1	0	X	n.r.	X	Delayed turn-off without Aux-Filter
0	0	1	1	0	X	X	X	Delayed turn-off with Aux-Filter
0	0	0	0	X	>0	n.r.	X	Delayed impulse without Aux-Filter
0	0	1	0	X	>0	X	X	Delayed impulse with Aux-Filter
Event Driven Tx On								
0	1	0	0	0	X	n.r.	X	Impulse without Aux-Filter
0	1	1	0	0	X	X	X	Impulse with Aux-Filter
0	1	2	0	0	X	n.r.	X	Impulse without Aux-Filter
0	1	0	1	0	X	n.r.	X	Delayed turn-off without Aux-Filter
0	1	1	1	0	X	X	X	Delayed turn-off with Aux-Filter
0	1	0	0	X	>0	n.r.	X	Delayed impulse without Aux-Filter
0	1	1	0	X	>0	X	X	Delayed impulse with Aux-Filter
Triggered Tx Off								
1	0	0	0	0	X	n.r.	X	Impulse without Aux-Filter
1	0	2	0	0	X	n.r.	X	Impulse without Aux-Filter
1	0	0	0	X	>0	n.r.	X	Delayed impulse without Aux-Filter
Triggered Tx On								
1	1	0	0	0	X	n.r.	X	Impulse without Aux-Filter
1	1	2	0	0	X	n.r.	X	Impulse without Aux-Filter
1	1	0	0	X	>0	n.r.	X	Delayed impulse without Aux-Filter

Table 4-10: overview of the operation modes in combination with the timer functions

Please note: Combination „Auxmode=2 (Host triggered) with Delayed turn off“ doesn’t make any sense.

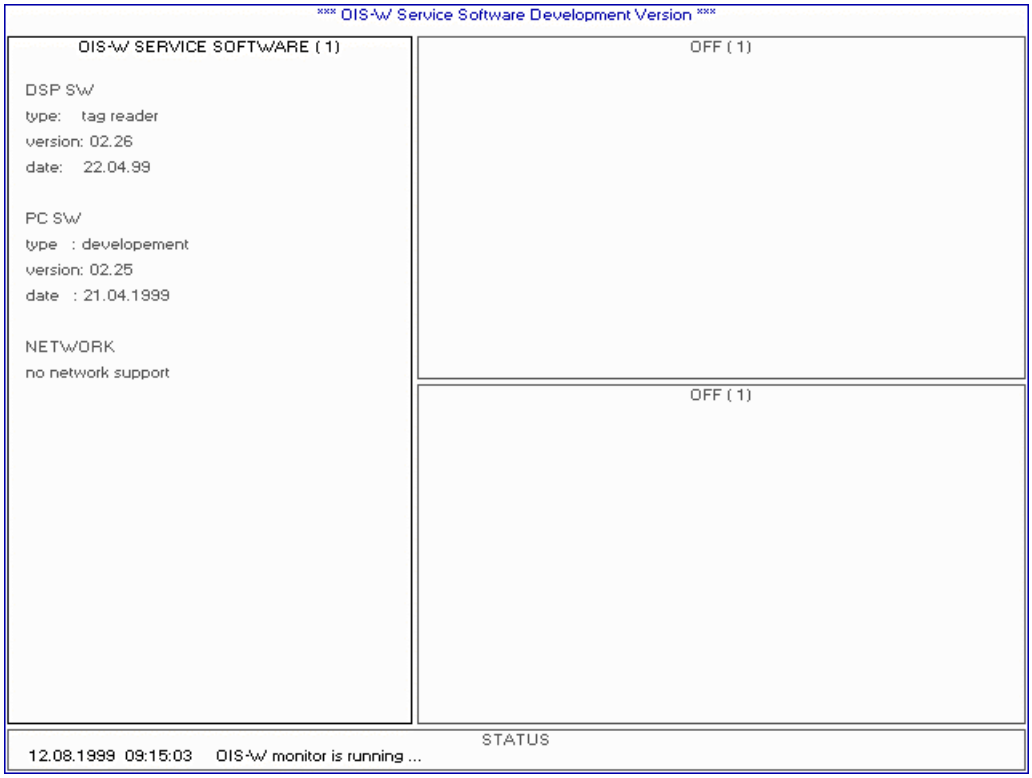
[1] X: value according to the definition of the range of the respective parameter

[2] n.r. : not relevant in this combination

4.2 Window 2

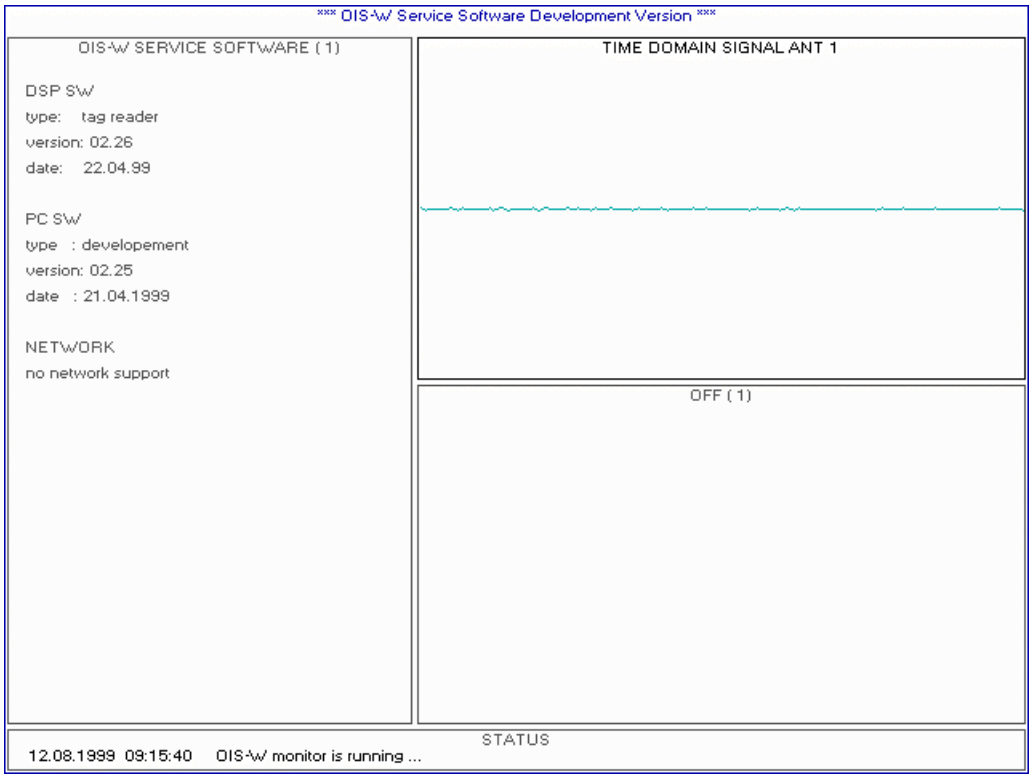
4.2.1 Page 1: OFF

This page doesn't have any meaning for the user.



Picture 4-10: off

4.2.2 Page 2: Time Domain Signal



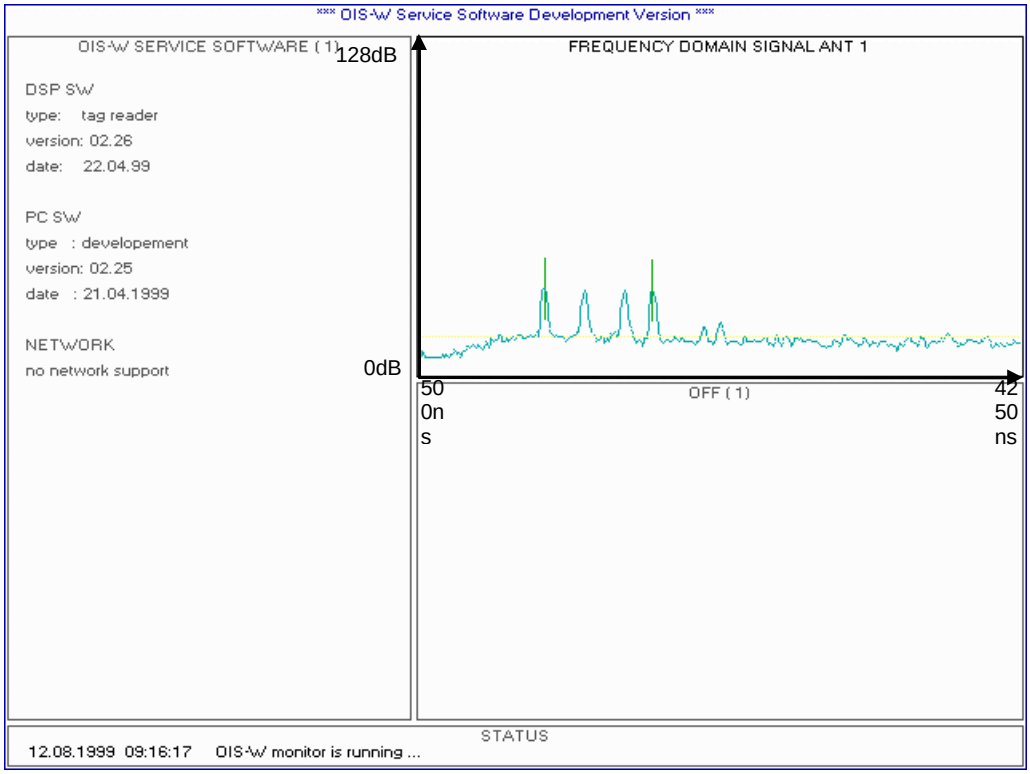
Picture 4-11: time domain signal

Tome Domain Signal

This diagram indicates the time domain signal after the A/D converter. It is the response signal in the audio band which has been mixed down with the help of a local oscillator and filtered. The diagram shows the whole range of the A/D converter. The duration is 16 ms and the resolution 8 Bits.

This diagram is for experienced users only.

4.2.3 Page 3: Frequency Domain Signal



Picture 4-12: frequency domain signal

Advice!
Use this diagram to assess the signal of the tag and the noise of the environment.

Frequency Domain Signal

The diagram indicates the frequency domain signal after the FFT[1]. Frequencies between 1.25 kHz and 10.625 kHz are shown. These frequencies correspond to a propagation delay time of the response signal from 500 ns up to 4250 ns.

The length of the y-axle corresponds to 128 dB (8 bit resolution).

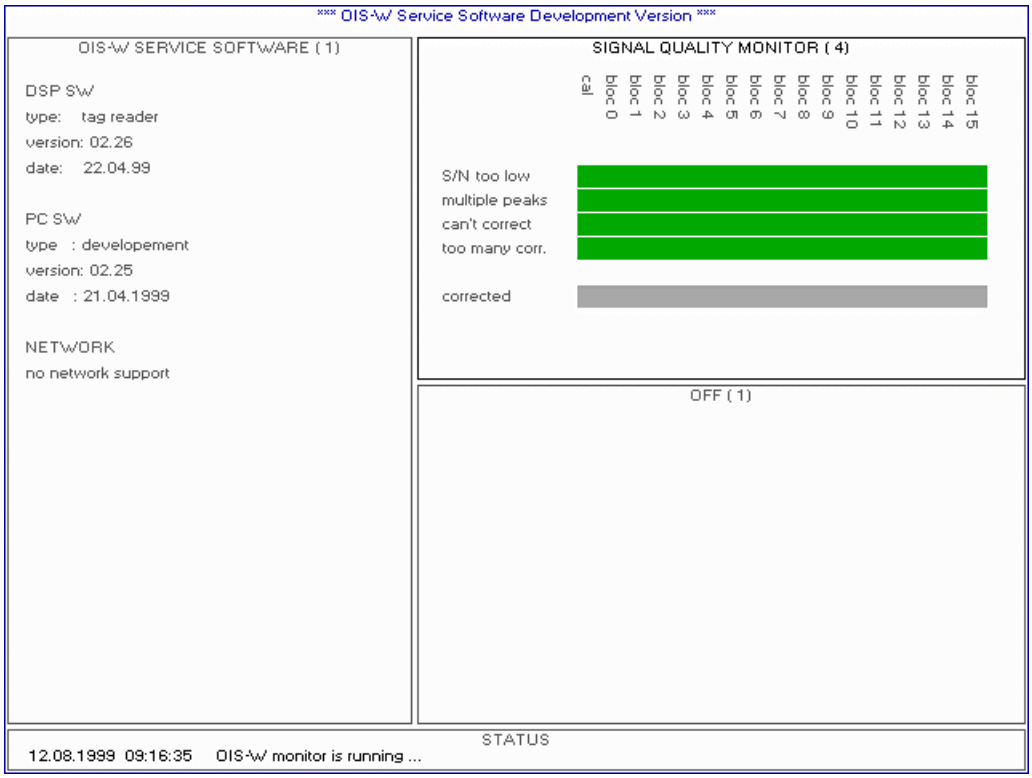
The diagram shows on the left a calibrator amplitude and then three signal amplitudes.

The left of the two vertical marks, which are defined by the parameters InitDelay and DelayRange, is at the calibrator amplitude and the right at the last signal amplitude. The range within which the noise for the S/N ratio is measured is marked in red.

Please note the practical example on page 59.

[1] Fast Fourier Tranformation

4.2.4 Page 4: Signal Quality Monitor



Picture 4-13: signal quality monitor

Advice!
Use the signal quality monitor to assess which bits of the code are interfered.

The blocks stand for the several digits of the code.

S/N too low

If the flag shines green the measured S/N ratio is higher than or equal to the defined threshold SNR[1].

Otherwise the flag shines red.

Multiple peaks

If the flag shines green the signal peak is strong enough with reference to noise peaks possibly located in the same block.

Otherwise the flag shines red.

$P_{Signal} \geq P_{Noise} + DMultiTag$[2]

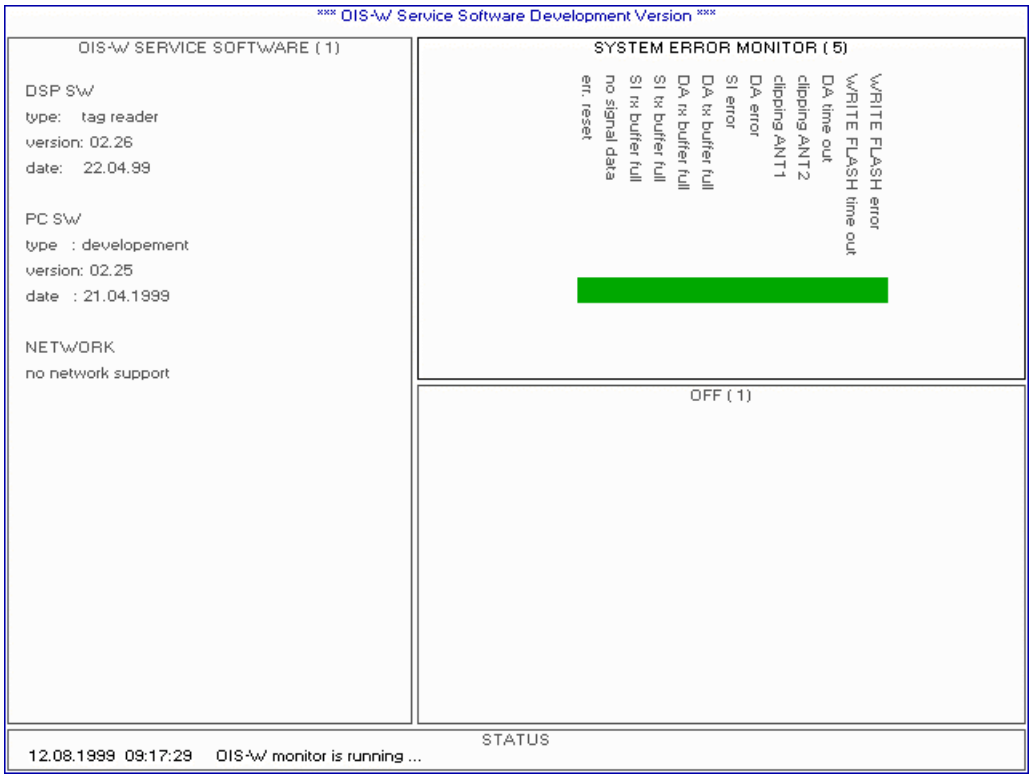
Can't correct / Too many corrections / Corrected

Only for DSP SW test purposes!

[1] Parameter „Reader Settings: SNR

[2] Parameter „Reader Settings: DMultiTag

4.2.5 Page 5: System Error Monitor



Picture 4-14: system error monitor

Error Reset

This flag doesn't have any meaning for the user.

No Signal Data

This flag shines red if the reader (R) doesn't receive a sufficiently strong signal from a tag (T). Otherwise the flag shines green.

SI Rx Buffer full

This flag shines red if the receiving buffer of the serial interface RS 232 (R13) is filled.

SI Tx Buffer full

This flag shines red if the sending buffer of the serial interface RS 232 (R13) is filled.

DA Rx Buffer full

This flag shines red if the receiving buffer of the serial interface RS 422 (R38) is filled.

DA Tx Buffer full

This flag shines red if the sending buffer of the serial interface RS 422 (R38) is filled.

SI Error

This flag shines red if an internal error has happened. Normally the user doesn't have the possibility to fix this.

DA Error

Not yet released!

Clipping Ant 1

This flag shines red if the receiver channel of the antenna 1 is overdriven

Clipping Ant 2

This flag shines red if the receiver channel of the antenna 2 is overdriven.

DA Time Out

This flag shines red if the receiving end of the serial interface RS 232 (R13) or the serial interface RS 422 (R38) doesn't acknowledge within the duration defined with the parameters ID_Msg_Retry[1] and ID_Msg_Timeout[2].

Write Flash error

This flag shines red if an internal reader error in the flash memory has happened.

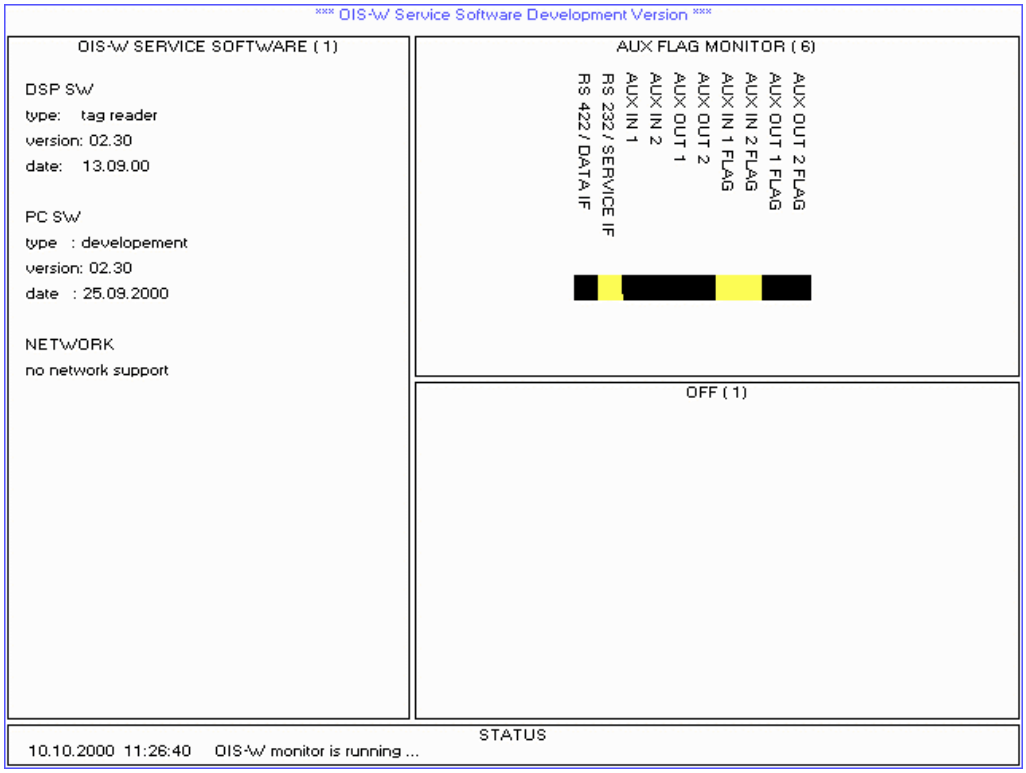
Write Flash time out

This flag shines red if a undefined time delay is caused during downloading SW (DSP-SW, FPGA-SW).

[1] Parameter „Interface Settings: ID Msg Retry"

[2] Parameter „Interface Settings: ID Msg Timeout"

4.2.6 Page 6: Aux Flag Monitor



Picture 4-15: aux flag monitor

RS 422 / DATA IF
This flag shines yellow if the AUX_REP message will be sent via RS 422 interface.

RS 232 / SERVICE IF
This flag shines yellow if the AUX_REP message will be sent via RS 232 interface.

Aux IN 1 / Aux IN 2
This flag shines yellow during a logical “1” at Aux IN 1 / Aux IN 2.

Aux OUT 1 / Aux OUT 2
This flag shines yellow during a logical “1” at Aux OUT 1 / Aux OUT 2.

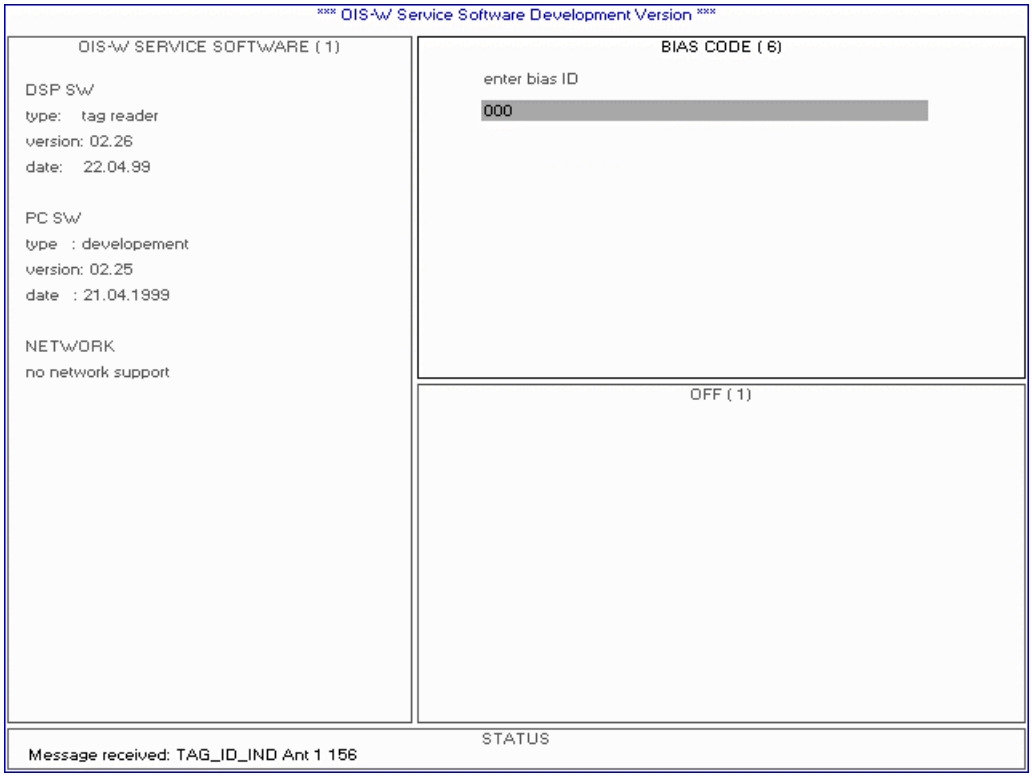
Aux IN 1 FLAG / Aux IN 2 FLAG
This flag shines yellow after a state change at Aux IN 1 / Aux IN 2.

Aux OUT 1 FLAG / Aux OUT 2 FLAG
This flag shines yellow after a state change at Aux OUT 1 / Aux OUT 2.

Advice!
The flag information (Aux IN 1 FLAG, Aux IN 2 FLAG, Aux OUT 1 FLAG, Aux OUT 2 FLAG) will only be reset after a MSG_ACK or a SET_AUX_CONFIG_REQ message.

4.2.7 Page 7: Bias Code

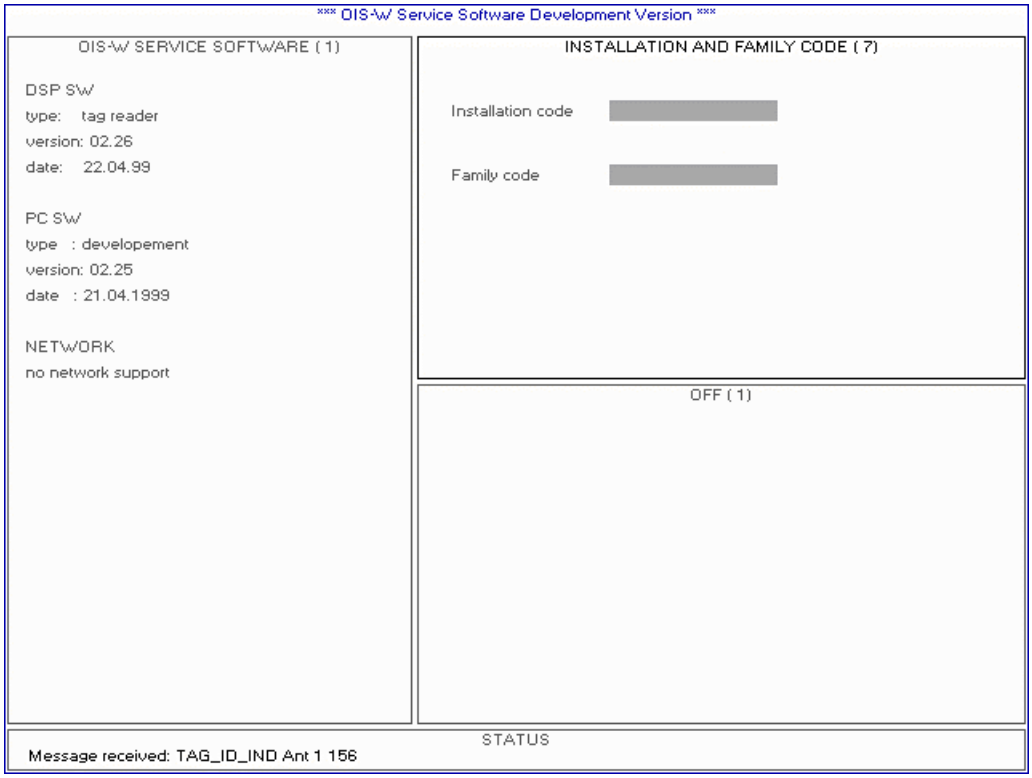
Not yet released!



Picture 4-16: bias code

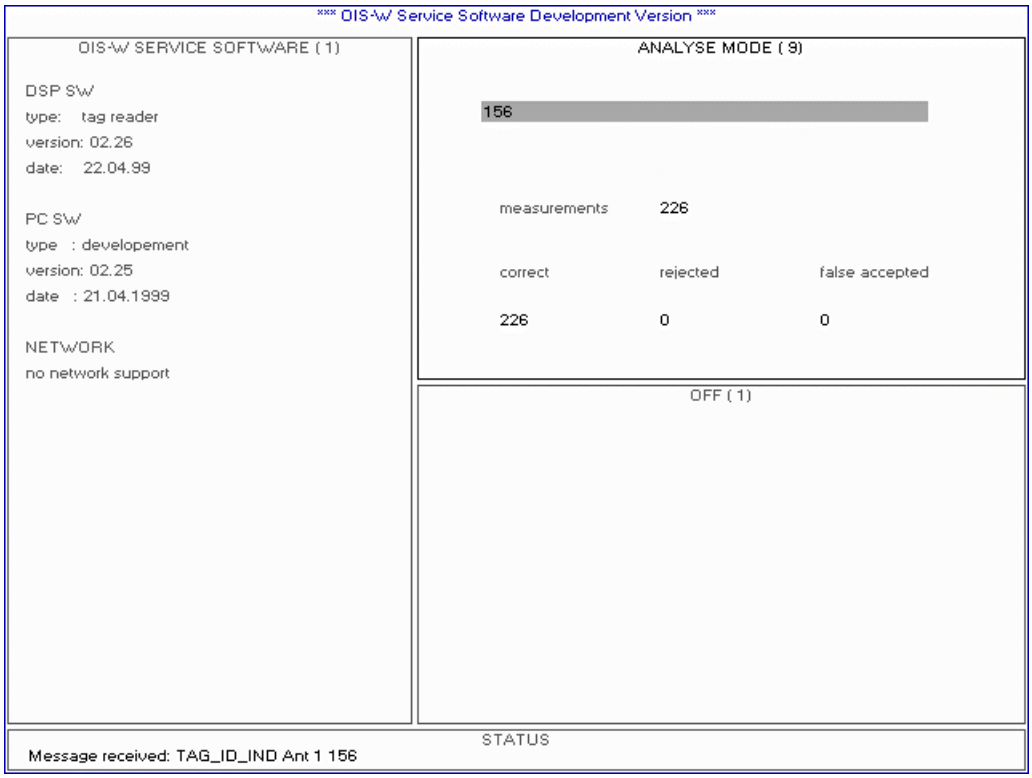
4.2.8 Page 8: Installation and Family Code

Not in operation!



Picture 4-17: installation and family code

4.2.9 Page 9: Analyze Mode



Picture 4-18: analyze mode

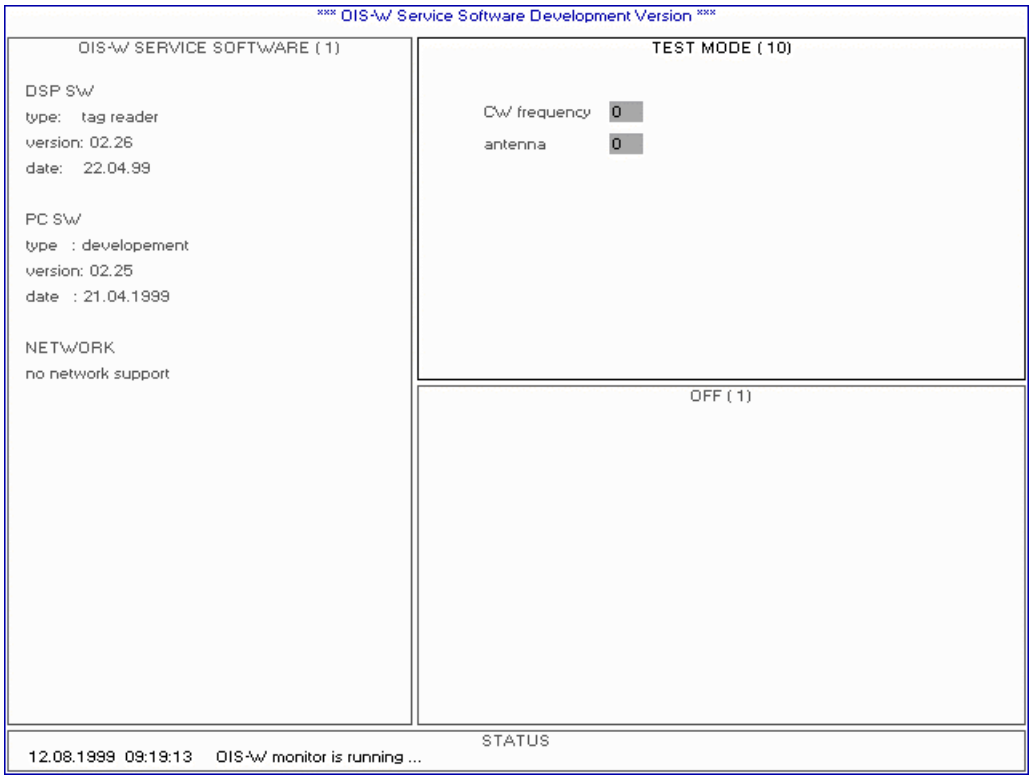
Analyse Mode

You can test the reliability of an identification by using the analyse mode. Enter the expected code and put the tag into the reading area of the antenna. Use only one code for this test. The system will indicate:

- measurements
  Number of measurements
- correct
  Number of correct codes. The codes, which the system has accepted, are equal to the reference code which you have entered.
- rejected
  The reading conditions are not fulfilled.
- falsely accepted
  Number of falsely accepted codes. The codes, which the system has accepted, are not equal to the reference code which you have entered.

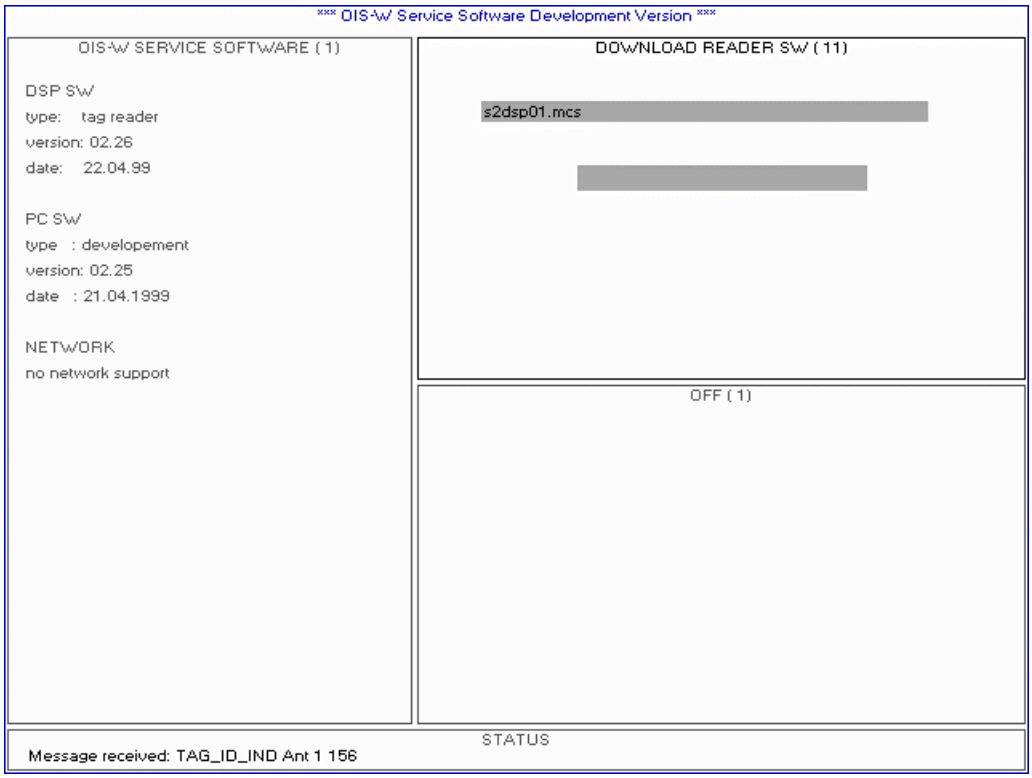
4.2.10 Page 10: Test Mode

Only for hardware test!



Picture 4-19: test mode

4.2.11 Page 11: Download Reader SW



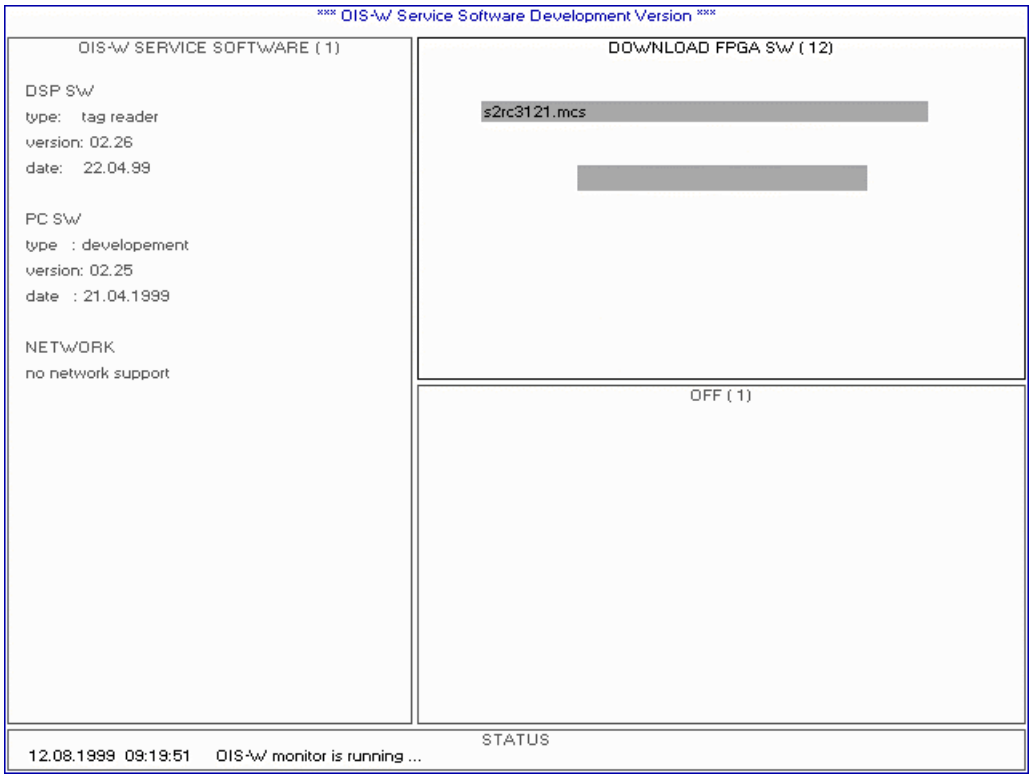
Picture 4-20: download reader SW

Download Reader SW

The user has the possibility to update the DSP-SW in the reader (R) with the help of this input mask. The bar graph indicates the progress of the download.

Advice!
If you need a DSP-SW update for any reason, please use this function to download the update supplied by Baumer Ident.

4.2.12 Page 12: Download FPGA SW

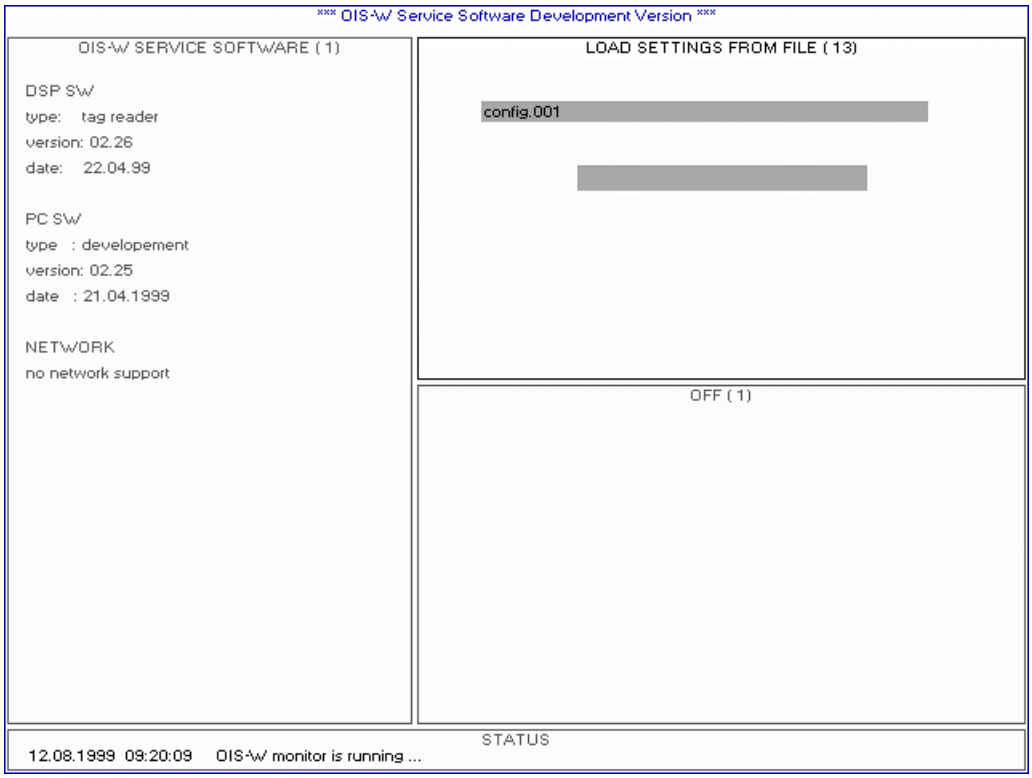


Picture 4-21: download FPGA SW

Download FPGA SW

The user has the possibility to update the FPGA-SW in the reader (R) with the help of this input mask. The bar graph indicates the progress of the download.

4.2.13 Page 13: Load Settings from File

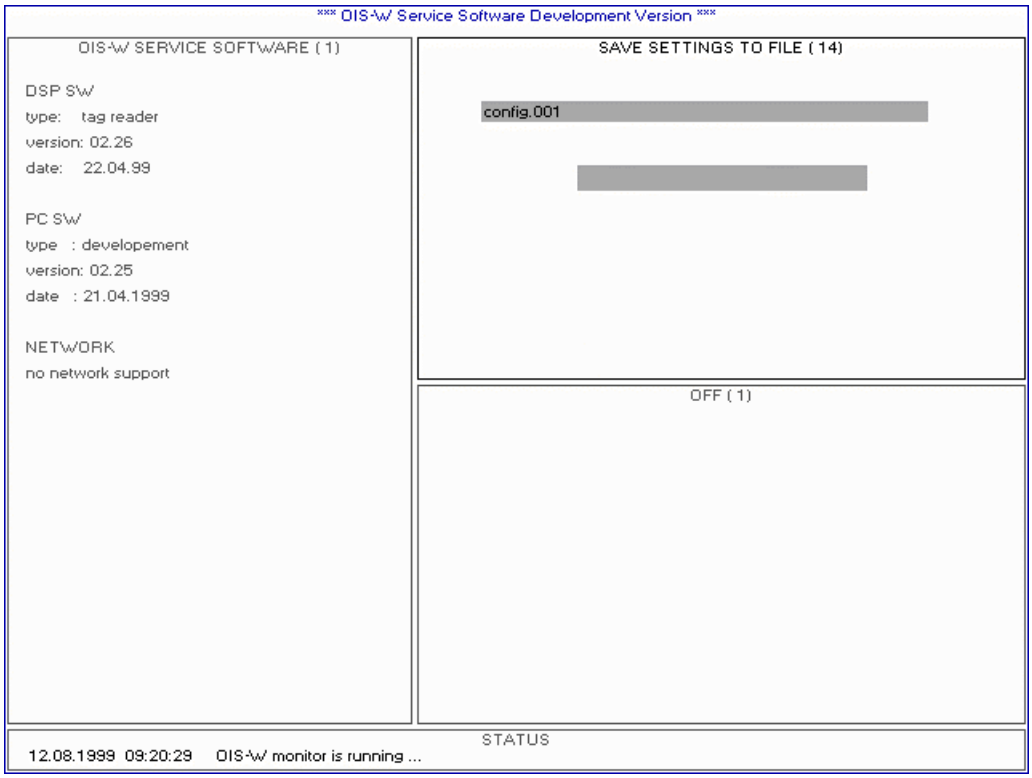


Picture 4-22: load settings from file

Load Settings to File

The configuration file can be stored onto the harddisk of your service PC. The user can download the file from your working directory into the reader with the help of this input mask.

4.2.14 Page 14: Save Settings to File



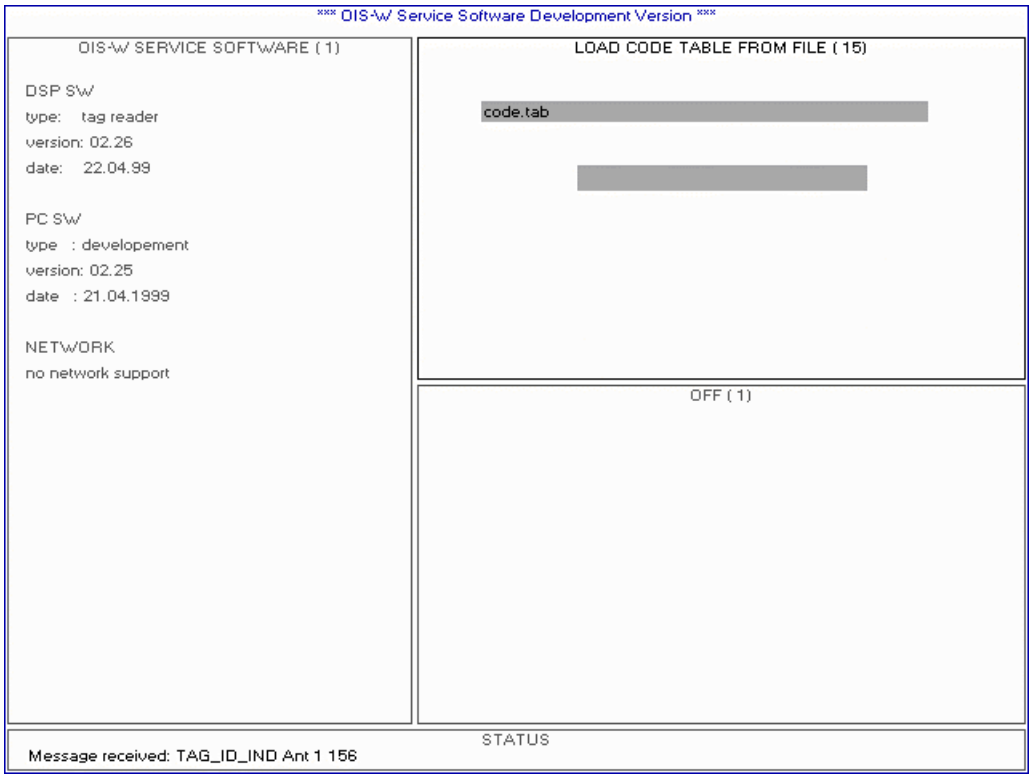
Picture 4-23: save settings to file

Save Settings to File

The configuration file is stored in the reader (R). The user can rename and save it into the working directory of the service PC with the help of this input mask.

Advice!
If you have any problems with the system, please save the configuration file and send it to us.

4.2.15 Page 15: Load Code Table from File



Picture 4-24: load code table from file

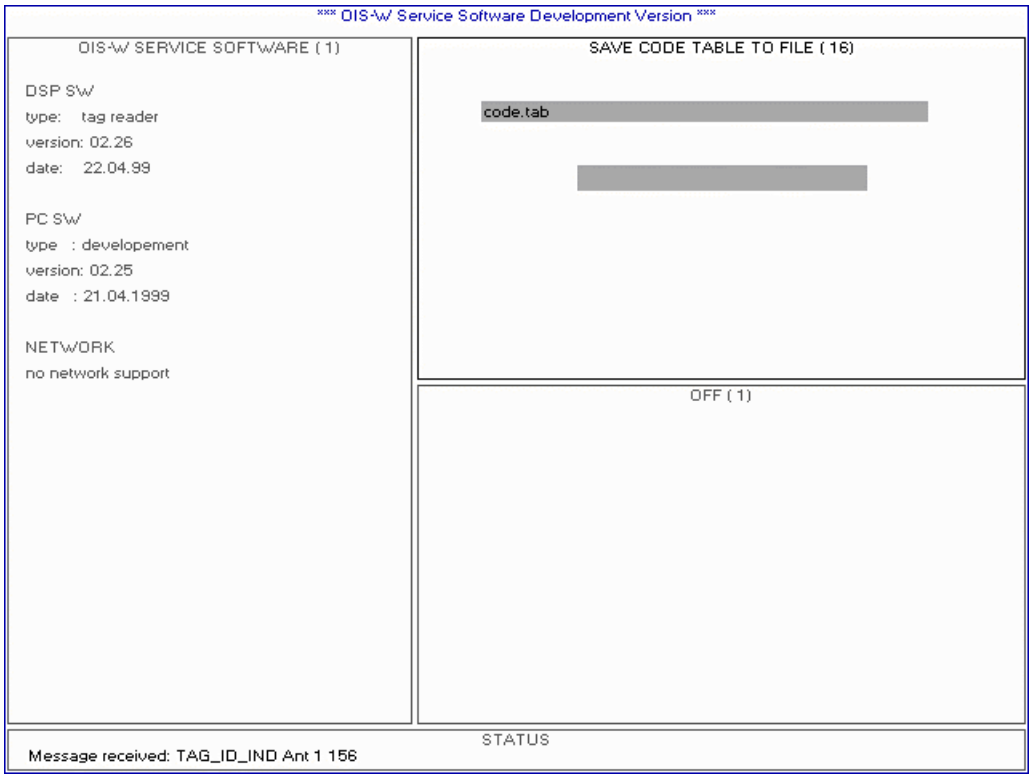
Load Code Table from File

The tag (T) contains a fix code per definition. The linking of the fix code with an application specific identification number can be carried out within the reader (R) with the help of a look up table.

This function allows downloading of the look up table (also called code table) from the working directory of your service PC into the reader (R).

See also parameter „Entab“ on page 22.

4.2.16 Page 16: Save Code Table to File



Picture 4-25: save code table to file

Save Code Table to File

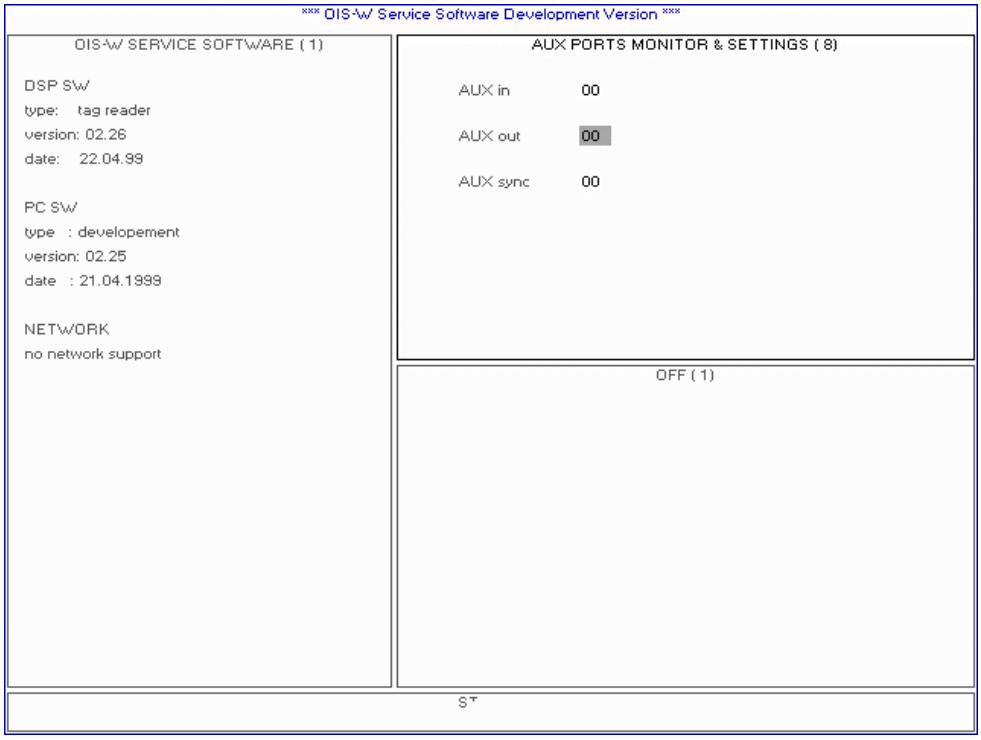
The tag (T) contains a fix code per definition. The linking of the fix code with an application specific identification number can be carried out within the reader (R) with the help of a look up table.

This function allows downloading of the look up table (also called code table) from the reader (R) into the working directory of your service PC .

See also parameter „Entab“ on page 22.

4.2.17 Page 17: Aux Ports Monitor and Settings

Use these functions only for tests.



Picture 4-26: aux ports and settings

Aux In

Aux In is an output mask. It indicates the status of the digital inputs.

Value	Digital input antenna 1[1]	Digital input antenna 2
00	„0“	„0“
01	„1“	„0“
02	„0“	„1“
03	„1“	„1“

Table 4-11: definition Aux In

Aux Out

Aux Out is an input mask. The two digital outputs can be set and reset.

Value	Digital output antenna 1[2]	Digital output antenna 2
00	„0“	„0“
01	„1“	„0“
02	„0“	„1“
03	„1“	„1“

Table 4-12: definition Aux Out

[1] Binary Inputs / Outputs 1 (R39)

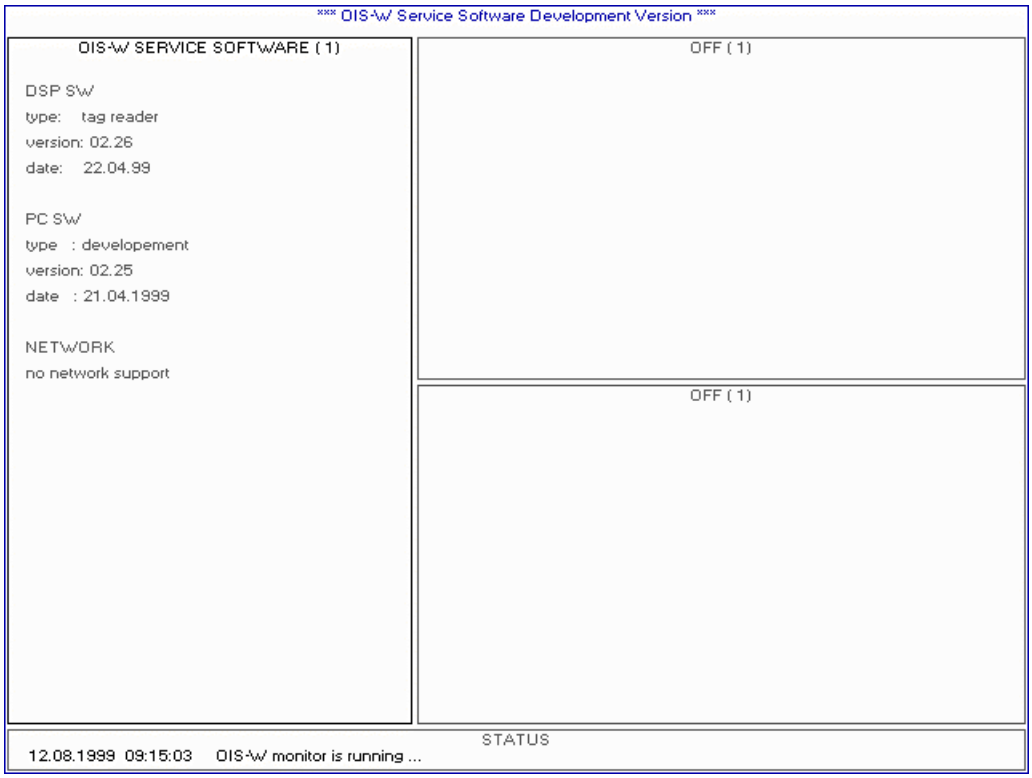
[2] Binary Inputs / Outputs 1 (R39)

4.3 Window 3

All pages of window 3 are also contained in window 2. Due to this fact the user can design his own graphical interface by selecting the respective page of each window.

4.3.1 Page1: OFF

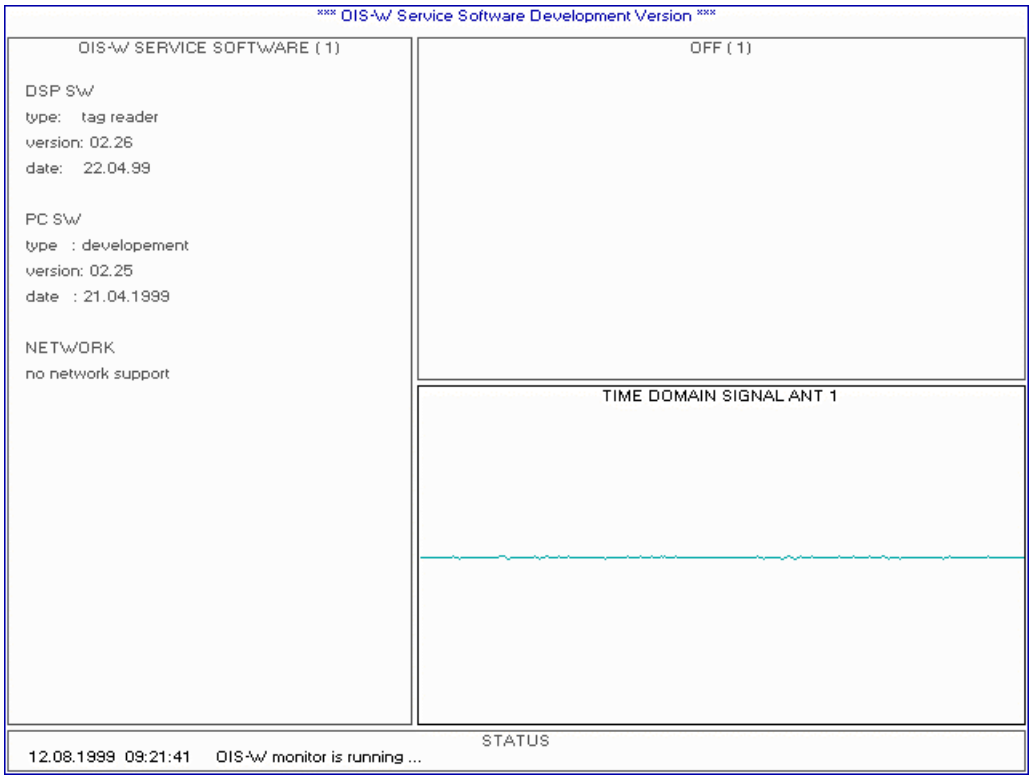
This page doesn't have any meaning for the user.



Picture 4-27. off

4.3.2 Page 2: Time Domain Signal

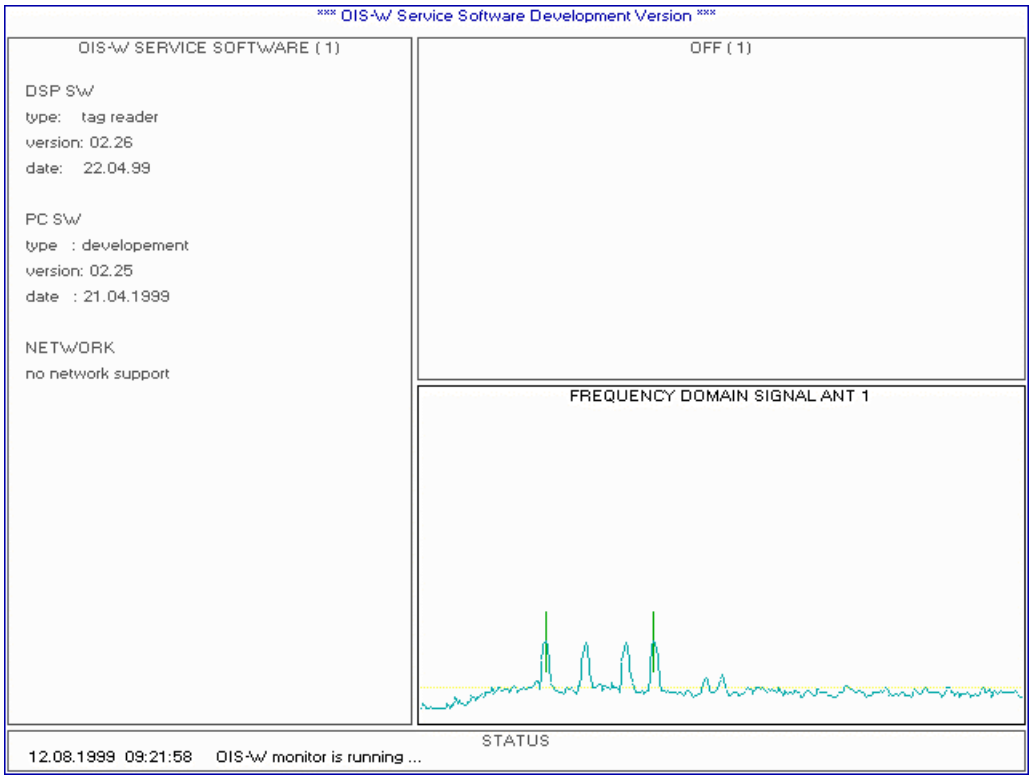
This page is identical with page 2 in window 2 on page 31.



Picture 4-28: time domain signal

4.3.3 Page 3: Frequency Domain Signal

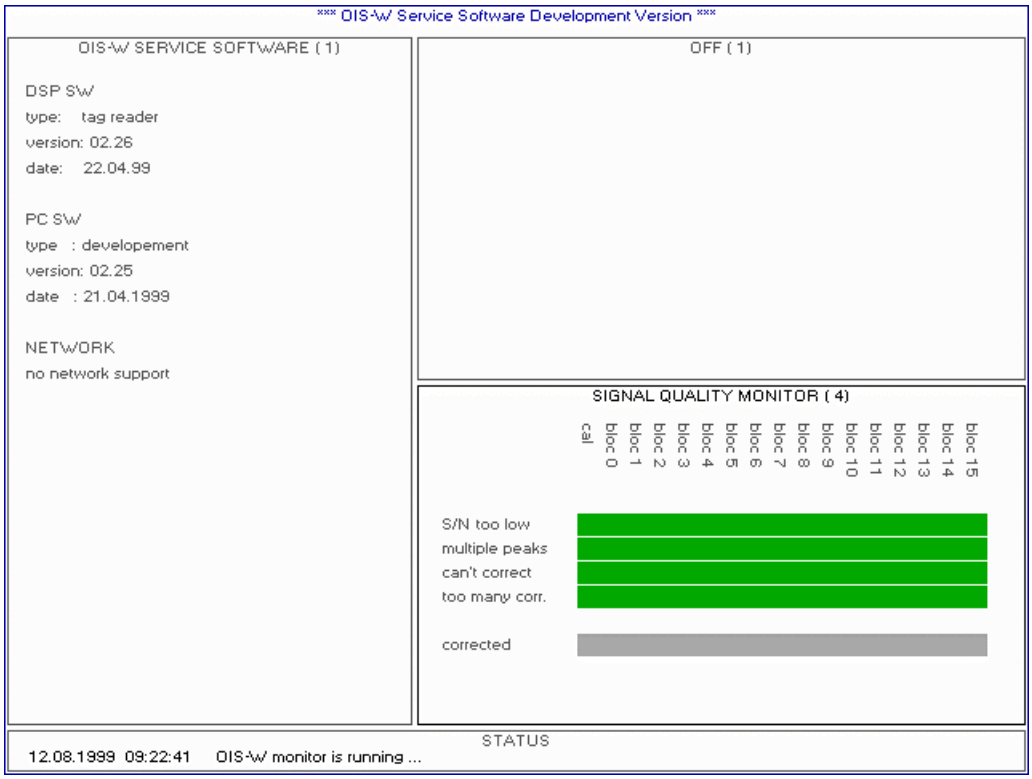
This page is identical with page 3 in window 2 on page 32.



Picture 4-29: frequency domain signal

4.3.4 Page 4: Signal Quality Monitor

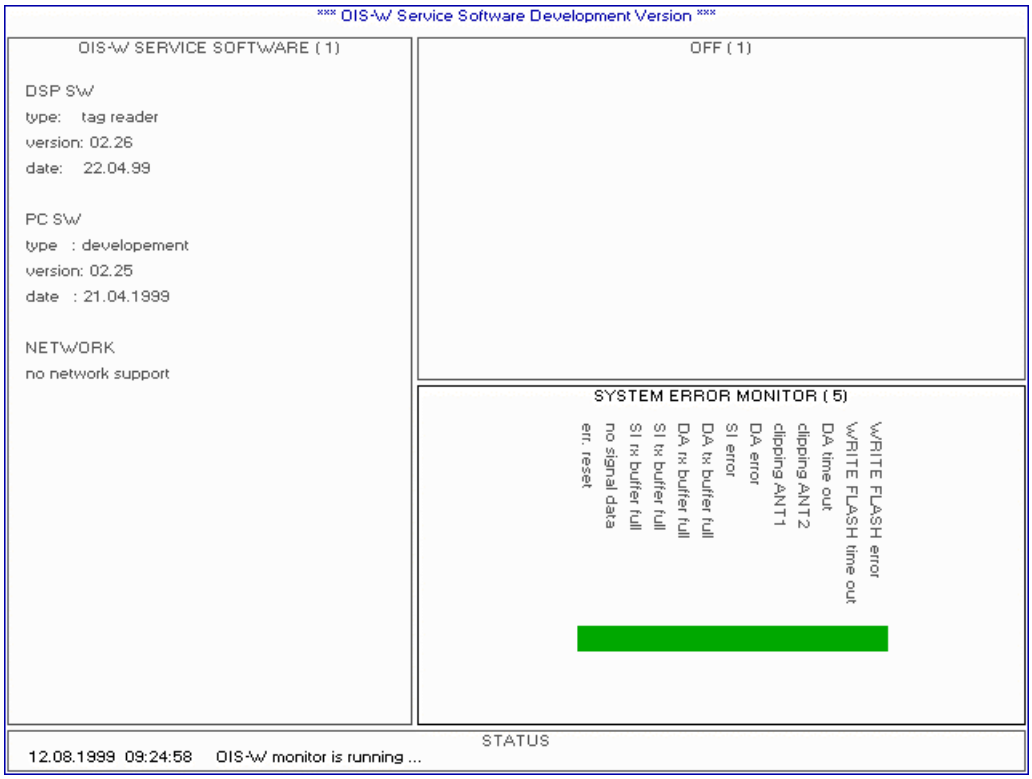
This page is identical with page 4 in window 4 on page 33.



Picture 4-30: signal quality monitor

4.3.5 Page 5: System Error Monitor

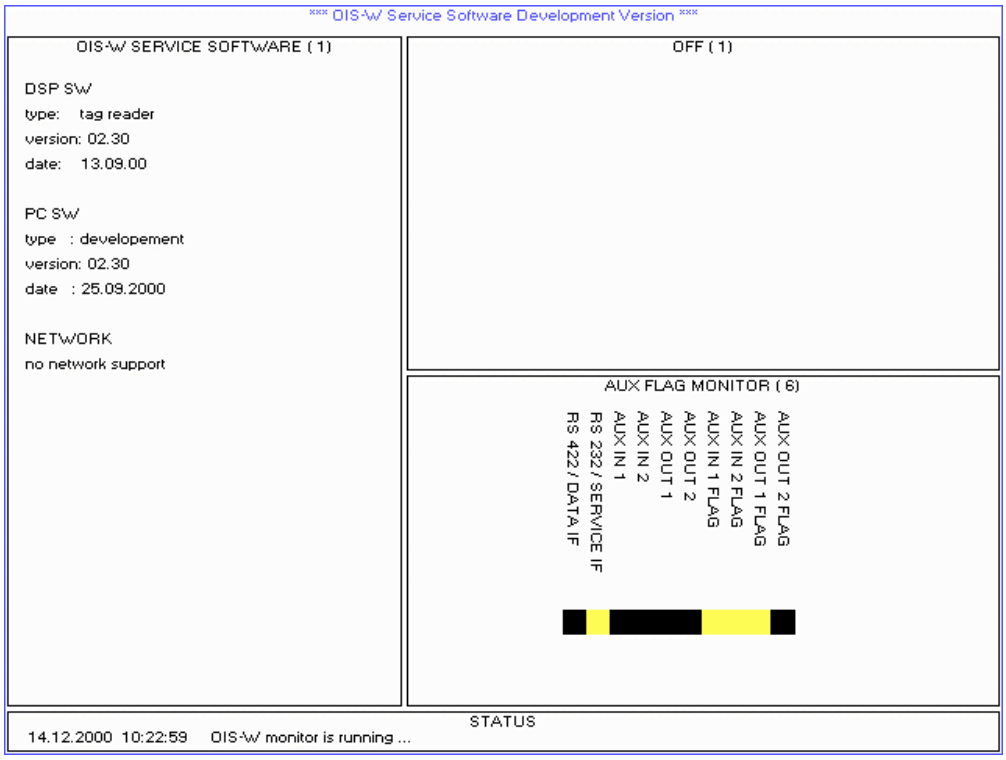
This page is identical with page 5 in window 2 on page 34.



Picture 4-31: system error monitor

4.3.6 Page 5: Aux Flag Monitor

This page is identical with page 6 in window 2 on page 36.



Picture 4-32: aux flag monitor

5 How to put into Practice

5.1 Logistics

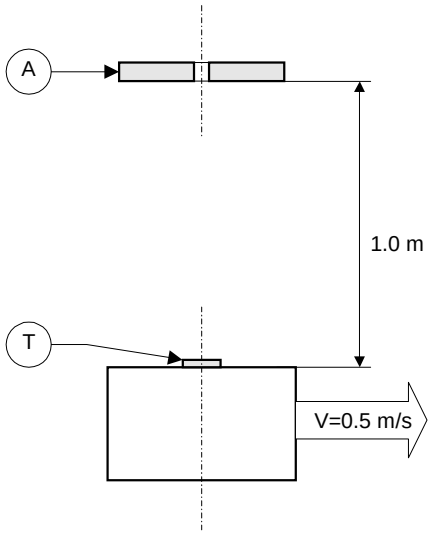
5.1.1 The following Components have been used

Abb.	Terms	Reference-Code
R	Reader	WR-xxxx
T	Tag	WT-xx1x
A	Antenna	WA-xxxx
C	Rf cable	WC-0050
S	Service Software	WS-0210

Table 5-1: components of the application logistics

5.1.2 Instructions for the Application

A tag (T) is fixed at an object and passes the antenna (A) at a defined distance and at a defined maximum speed. Tag (T) and antenna (A) are on the same plane and their surface normals are parallel.



Picture 5-1: application logistics; top view

5.1.3 Table of the Parameters of Configuration

Name	Logistics • one Antenna • Triggered Mode [1]	Logistics • one Antenna • Event Driven Mode
Tag Structure Settings		
Tslot	2	2
Ncodebloc	3	3
Ncodeslot	11	11
Ncalrefl	1	1
Ncoderef	1	1
Ncheckrefl	0	0
Nextrefl	0	0
Nmesrefl	0	0
Tcode00	104	104
Tcal	-8	-8
Tmes0	220	220
Puseguard	1	1
Operation Mode Settings		
MMain	1	0
MTxuntrig	1	1
MBiased	0	0
MRandom	0	0
MRTm	50	50
MRNmess	1	1
MRTdmin	1	1
MRTdlen	1	1
MTsleep	1	1
Reader Settings		
InitDelay1	5	5
DelayRange1	5	5
InitDelay2	5	5
DelayRange2	5	5
Ant	1	1
Channel	15	15
AFAGC	0	0
Nnoisebin	15	15
SNR	10	10
DSNRCal	1	1
DMultiTag	5	5
Navg	5	5
Nequ	2	2

[1] You can trigger with the help of the key „t“ for test purposes (you don’t have to connect the digital inputs)

Name	Logistics	Logistics
Na	3	3
Ntab	0	0
Pposuser	0	0
Nuser	0	0
Interface Settings		
BdrateRS422	96	96
BdrateRS232	1152	1152
Msg Type ID	11	11
TidF	5	5
ID Msg Retry	3	3
ID Msg Timeout	1	1
Monitor Settings		
NFiles	1	1
AntDisplay	1	1
TrigAnt	1	1
Aux Ports Settings		
Auxmode1	0	0
Auxfunct1	0	0
Tdon1	0	0
Tdoff1	0.5	0.5
Tauxf1	0.5	0.5
Auxinv1	0	0
Auxmode2	0	0
Auxfunct2	0	0
Tdon2	0	0
Tdoff2	0.5	0.5
Tauxf2	0.5	0.5
Auxinv2	0	0

Table 5-2: configuration parameter

Advice!
The parameter monitor settings "AntDisplay" and "TrigAnt" are not saved in the reader.
After a restart of the service software these parameters have to be newly inserted.

[1] You can trigger with the help of the key „t“ for test purposes (you don’t have to connect the digital inputs)

5.1.4 Setup of the InterBus-S (only for WR-1x1x)

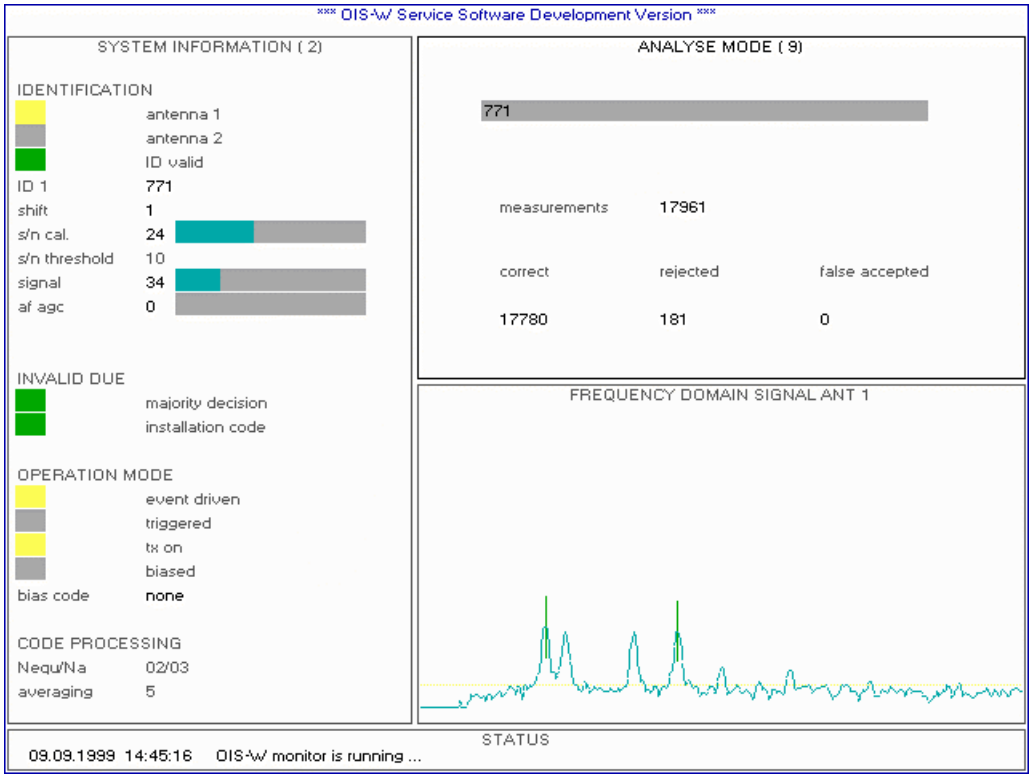
The InterBus-S configurations are listed below. Customer specific applications are available.

- The reader logs on as a simple input device with the ID-Code 0x02.
- The data bus width is defined as 1 word (16 bit).
- The coding of the normal codes is handled with packed BCD, i.e. 4 bit per position for the digits 0...9, 4 positions (0000...9999).
- Messages, which don't contain any codes, are labeled with a hexadecimal number higher than 9 in the very highest position. The lowest three BCD-positions contain a respective message code.
- In the initial state the reader (R) sends out the message 0xF000 (READY).
- After the tag (T) has been triggered by an external signal it sends out for one time the identified code or the message 0xF001 (NO_READ).
  After the next InterBus-S cycle it once sends out the READY-Signal one time only until the next trigger arrives.

5.1.5 Learning by doing

Please carry out the application „Logistics“. Follow the steps below:

1. Connect the hardware components and switch on the reader (R) as described in the user’s manual „2.45 GHz Ident System Hardware“.
2. Install the Service Software Basic (S01 as described in chapter 2!
3. Build up the test arrangement as described in chapter 5.1.2!
4. Put in the configuration parameter as described in chapter 5.1.3!
5. Press the key „F5“!
6. If all the steps have been carried out successfully you will see the following picture on the screen of the service PC:

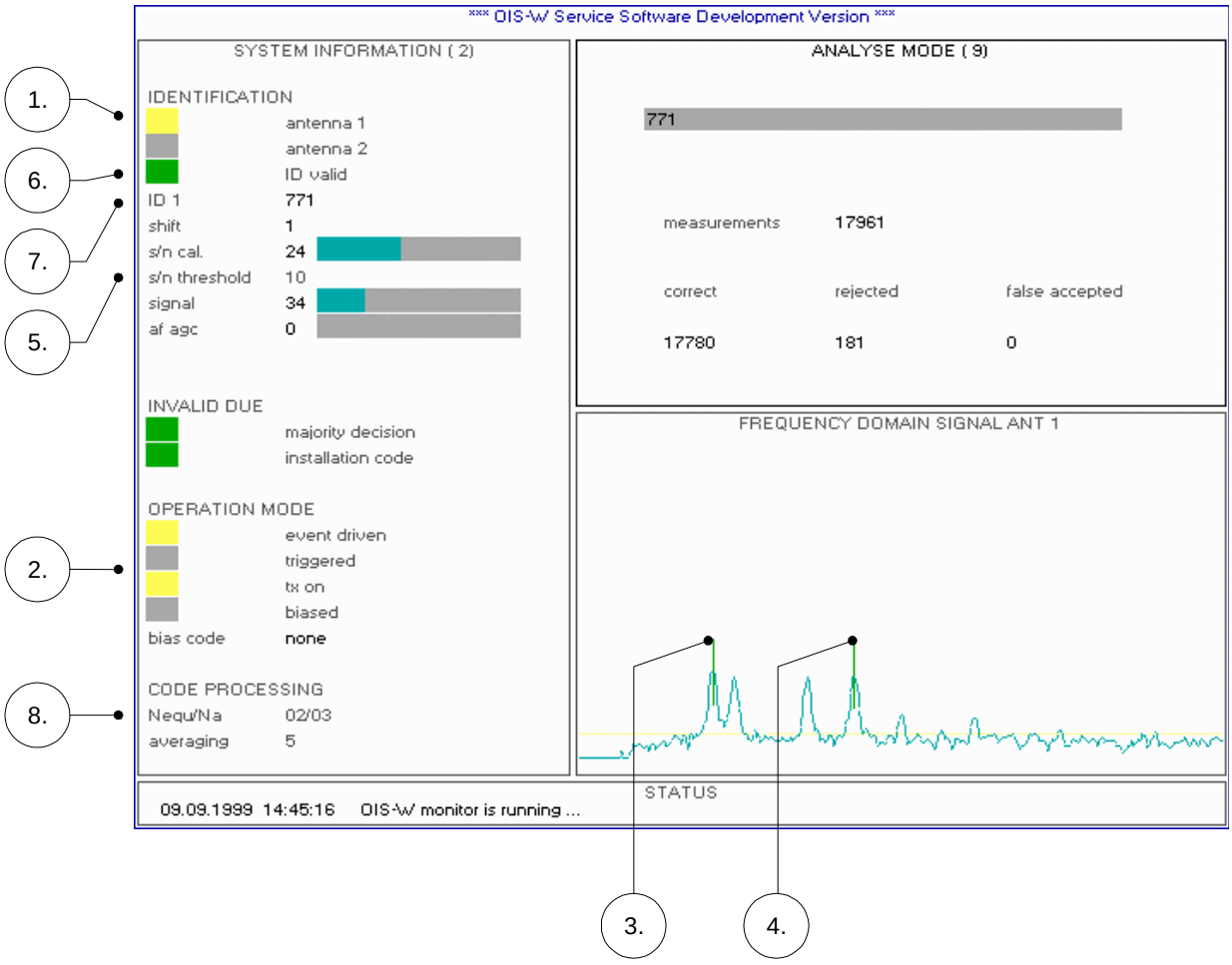


Picture 5-2: successful identification supplied by the Service Software Basic (S01)

Advice!
One standard combination of the pages of the service software is stored under the key "F5". Feel free to change this set-up in file "OISW.INI".

5.1.6 Control of the Settings

Check the following points:



Picture 5-3: control picture identification

1. The identification is made with the selected antenna (A).
   If not: Correct the parameter „Ant“.

2. The operation mode corresponds to the one that you really want.
   If not: Correct the parameters „Mmain“ und „MTxuntrig“.

3. The left mark is at the calibrator.
   If not: Correct the parameters „InitDelay“ und „DelayRange“.

4. The right mark is at the last signal peak.
   If not: Use the tags (T) which have been configured for your system.

5. S/N is higher than S/N Threshold.
   If not: Check the presence and the orientation of the tag (T).
   Optimize the whole arrangement; reading range, angles
   Reduce the parameter „SNR“; it is a matter of fact that this may reduce the reading security.

6. The ID Valid Flag shines green if the identification is successful.
   If not: Repeat steps 1 - 6.

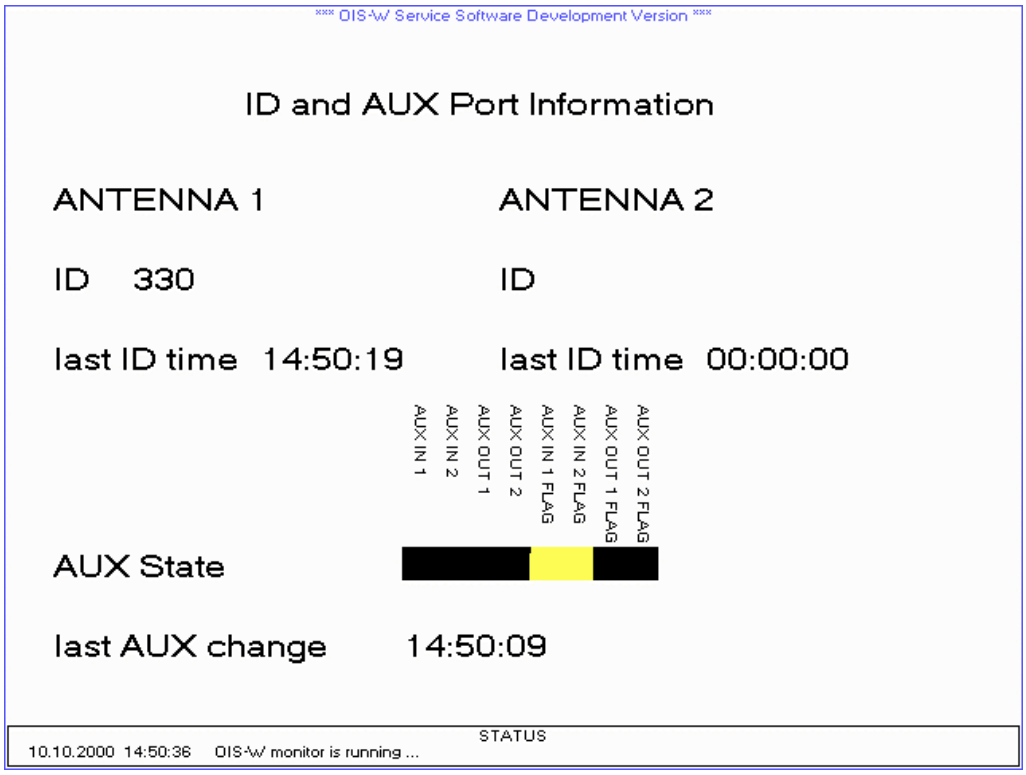
7. The number in the output mask (OM) corresponds to the current tag (T).
   If not: The tag structure settings (configuration file) doesn't correspond to your tags (T). You have the possibility to change the tag structure with the Service Software Development.

8. The reading security is sufficient.
   If not: Raise the parameters „Nequ“ und „Na“.
   As a matter of fact this will extend the internal decoding time and reduce the maximum possible speed of the objects which ought to be identified.

9. The reader status of ant 1 (R09) on the front panel shines green.

10. The detection status of ant 1 (R10) on the front panel shines green.

11. Press „d“ and you will see the outgoing data telegram at the service interface.



Picture 5-1: control picture data

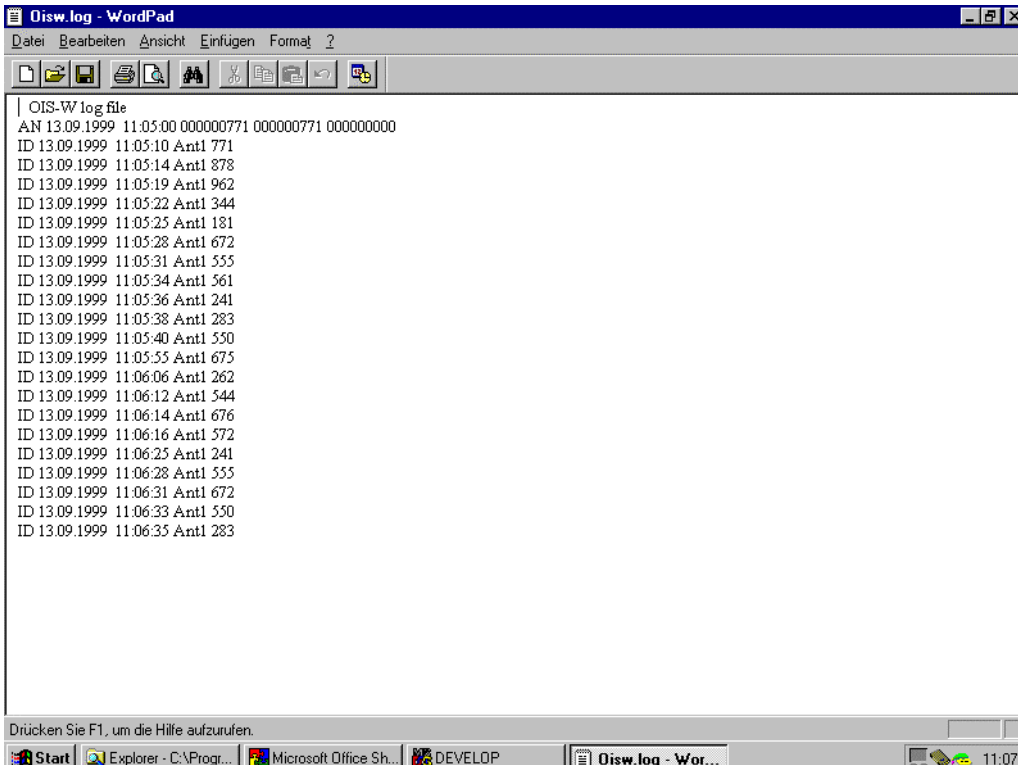
12. Press „d“

13. Press „ESC“ to close the application „Service Software Development“.

5.1.7 Log-File

Open the file oisw.log in the working directory with the help of a text editor (e.g. wordpad). Check the past readings.

Please note:
Whenever you start up the application, the file oisw.log will be recreated and the old entries will be deleted.



picture 5-2: file "oisw.log"

5.2 Access Control

Not yet released!

6 If you have a Problem

The following enumeration list is constantly updated.

- The Service Software Basic (S01 doesn't start up correctly and indicates the following error message:
  error: can't set serial port settings

⇒ Please check the correct spelling (capital letters) in the instruction line:
Develop.exe COM1 BAUD115200

- The Service Software Basic (S01 starts up correctly but the communication to the reader (R) doesn't establish itself.

⇒ Activate the interface on your PC.
(Control panel \ System \ device manager \ LPT and COM devices)

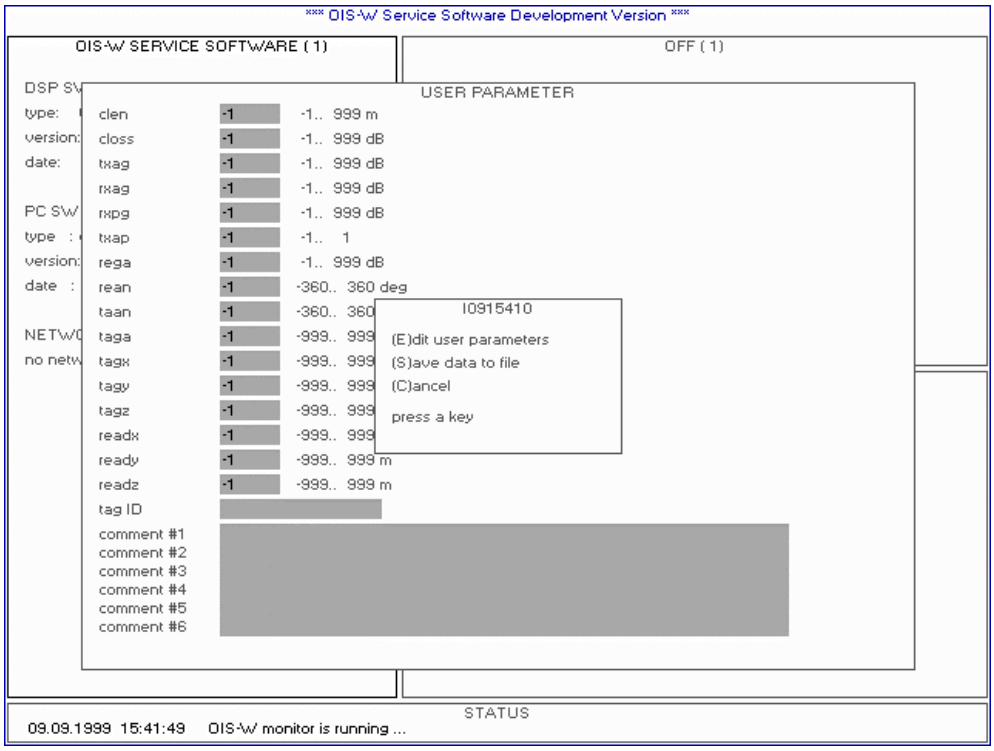
- The red LED system failure 1 (R12) shines constantly after start up

⇒ You have the possibility to reset the reader (R) with the keystroke on „r" on your PC. Or you can just switch off and on the reader (R) with the mains switch (R35. If the system failure 1 (R12) is still on, the reader (R) has a problem which cannot be fixed by the user. Please contact us.

7 Remote Diagnostics

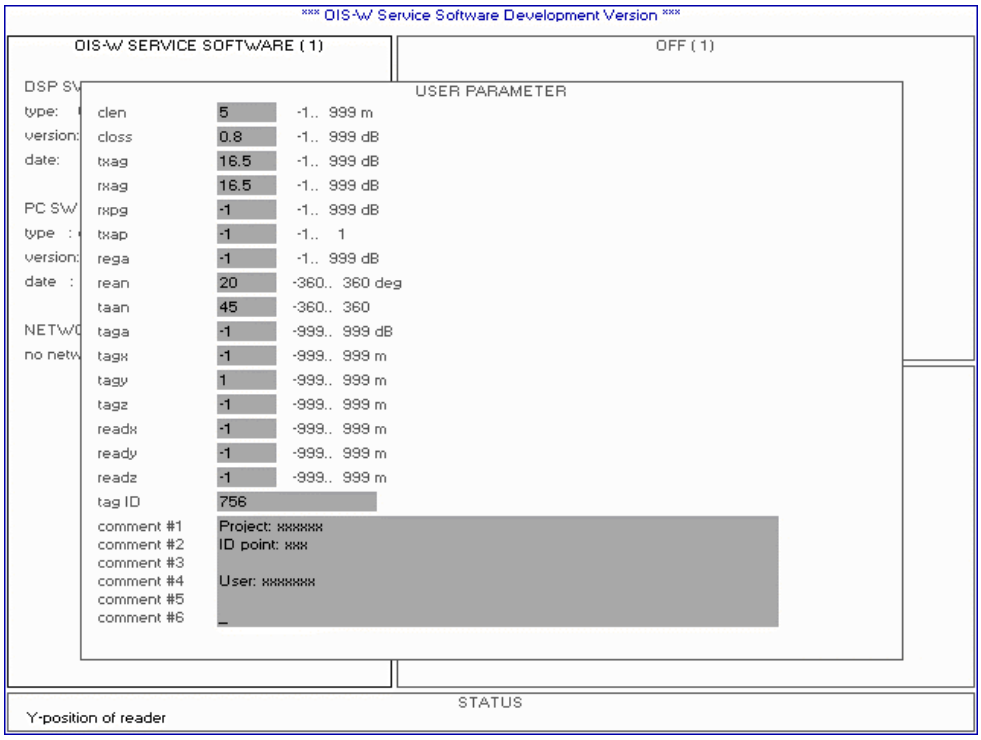
Please follow the steps below in order to save reader data into a data file. This data file will contain all the relevant information about the tag, the reader and the environment, which Baumer Ident needs to check the identification.

1. Start up the application Service Software Development and press „s“.
   The following picture will appear:



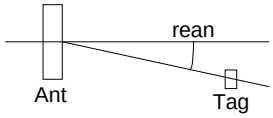
Picture 7-1: remote diagnostics

2. Press „E“ for editing the values for the parameters of the current application.



Picture 7-2: remote diagnostics

3. Insert the required values and press „enter“.

Term	Description	Range	Default	Remarks
clen	cable length	-1 ... 999 m	5	
closs	cable loss per meter	-1 ... 999 dB	0.8	0.4 dB/m: WC-1xxx 0.8 dB/m: WC-0xxx
txag	TX antenna gain	-1 ... 999 dB	14.5	8.5 dB: WA-x1xx 14.5 dB: WA-x3xx 16.5 dB: WA-x4xx
rxag	RX antenna gain	-1 ... 999 dB	-14.5	8.5 dB: WA-x1xx 14.5 dB: WA-x3xx 16.5 dB: WA-x4xx
rxpg	RX preamp. Gain	-1 ... 999 dB	0	only when using an additional rx preamplifier
txap	TX amp. Present	-1 ... 1	0	0: without additional tx amplifier 1: with additional tx amplifier
rega	reader gain	-1 ... 999 dB	0	in preparation
rean	reader angle	-360 ... 360 deg	0	

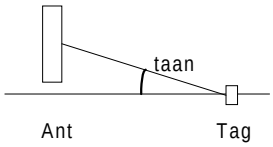
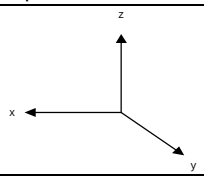
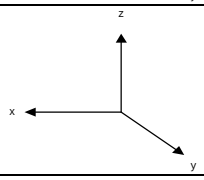
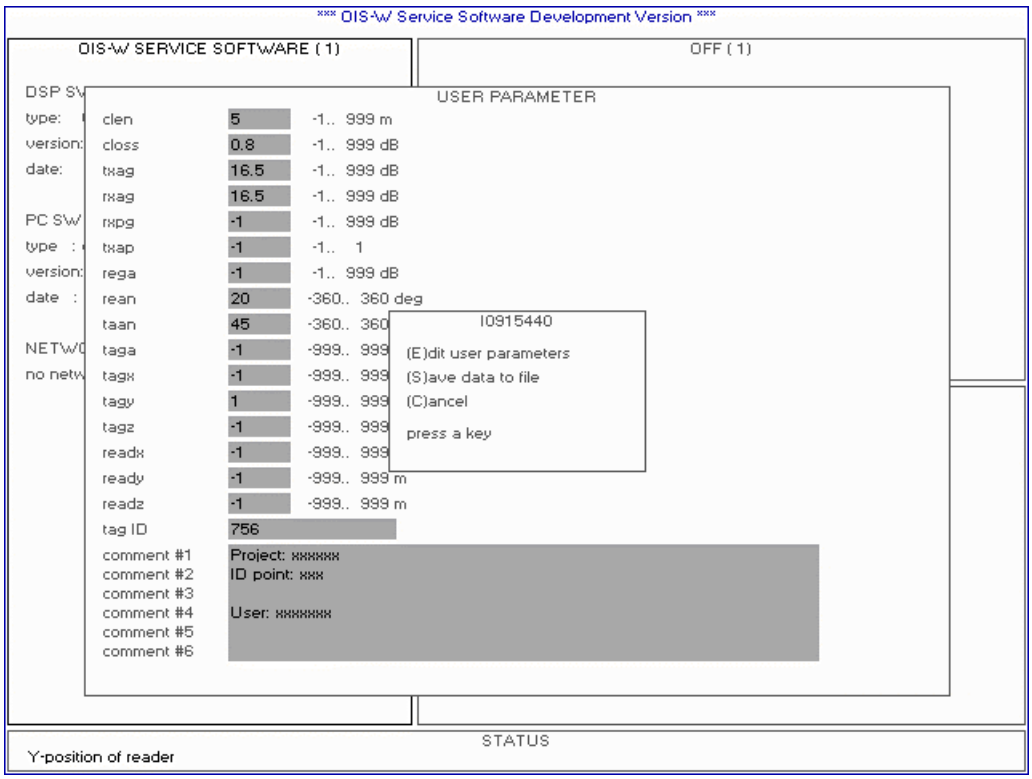
Term	Description	Range	Default	Remarks
taan	tag angle	-360 ... 360 deg	0	
taga	tag gain	-999 ... 999 dB	0	in preparation
tagx tagy tagz	X-position of tag Y-position of tag Z-position of tag	-999 ... 999 m -999 ... 999 m -999 ... 999 m	0 1 0	
readx ready readz	X-position of reader antenna Y-postion of reader antenna Z-position of reader antenna	-999 ... 999 m -999 ... 999 m -999 ... 999 m	0 0 0	
tag ID	tag identification code			
comment # 1	project			
comment # 2	id-point			
comment # 3	user			
comment # 4				
comment # 5				
comment # 6				

Table 7-1: parameters of the data file

4. Press „enter“ after the last input line (comment # 6).



Picture 7-3: remote diagnostics

5. Press „s“ when the tag gets into the reading area of the antenna and reaches the planned reading position.
   The following data file(s) will be created in the working directory:

Terms	Description
filename:	"Mddhhmmi.ccc"
m	= month (A=january, B=february ...)
dd	= day (01..31)
hh	= hour (00..23)
mm	= minute (00..59)
i	= index (0..9)
cou	= counter from 000 to 999

Table 7-2: name of data file

   The numbers of data file which will be created by pressing „s“ are variable (see parameter Nfiles on page26).

6. Send the created data file(s) to Baumer Ident AG by e-mail.

7. Baumer Ident will check the data and make an action plan in collaboration with the user to optimize the identification.

8 Glossary

The table is constantly updated.

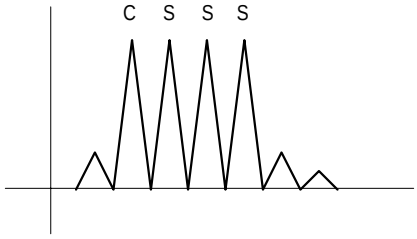
Term	Remarks
DSP	Digital Signal Processor
FPGA	Field Programmable Gate Array
DDS	Direct Digital Synthesizer
IP	Protective quality for protection against direct contact, protection against ingress of solid foreign bodies and protection against spraying water.
SMA	Standard connection
TNC	Standard connection
Calibrator / Signal-Peak	The response signal of the tag (T) consists of several peaks (frequency domain). The first from the left is called Calibrator (C) and the following are called signal peaks (S). The response signal of a code with 3 digits consists of one calibrator and three signal peaks. 
Bin	1 Bin = 12.5 ns

Table 8-1: glossary

9 Notice