

# DOCUMENTATION

## Euris II-Commander

INNOTAS ELEKTRONIK GMBH



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## 2 Table of revisions

REVISION	DATE	CHANGES
1.0	04.02. 2001	First issue
1.1	25.05.2011	Shortform issue created
1.2	15.07.2011	Illustrations updated
1.3	08.08.2011	Some small corrections
1.4	05.10.2011	Changes to softwareversion 1.5.4
1.5	01.03.2012	Changes to softwareversion 2.0.0
1.6	02.05.2012	Changes to softwareversion 3.0.0

# DOCUMENTATION

## Euris II-Commander

### 3 General Purpose

EURIS II-Commander is a PC program, working on Windows operating systems (Windows 2000, Windows XP, Windows VISTA, Windows 7), to read out measuring values, set parameters for the different functions, receive RF data and analysis of wireless MBUS protocols of heat cost allocator EURIS II. Different functionalities of the program are unlocked by an optional key-file.

### 4 System requirements

The program requires one of the following operating systems: Windows 2000, Windows XP, Windows VISTA, Windows 7, min. 1MByte free RAM and min. 13MByte free storage space on your hard disk. An optical interface device with RS232 or USB (recommended) plug is needed for the use as read out or parameter software. For use as receiving and analysis software for wireless MBUS protocols a wireless Mbus receiver device is required. It is recommended to use a wireless MBUS receiver device made by Innotas Elektronik with radiocrafts RF modul.

### 5 Installation

Start the installation by execution the EURIS II-Commanderx\_x\_x\_x.exe and follow the instructions. After the successful installation you have a limited functionality with a DEMO licence.

#### 5.1 Program activation

Under the menu dot „Help | Enter unlock code“ a function extension can be reached by input of another activation key. You cover the key about your supplier.

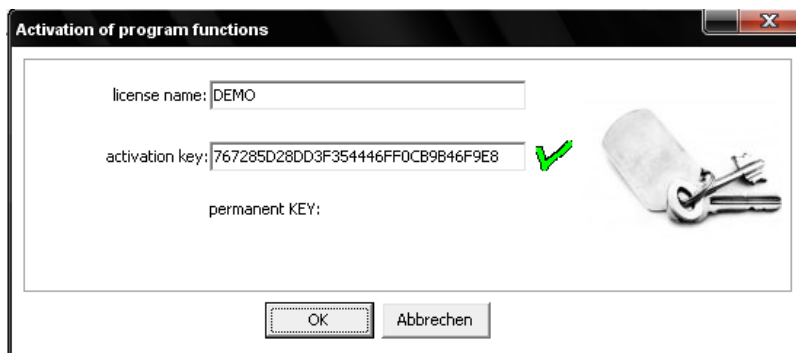


ILLUSTRATION 5-1 ENTER UNLOCK CODE

### 6 Windows scale

For the work on different display devices, notebook, Tablets or desktop PC's a possibility is to be scaled in single windows available the display size.

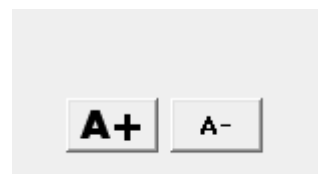


ILLUSTRATION 6-1 WINDOWS SCALE

## 7 Start up

At first after starting the EURISII Commander program the communication ports for optical interface and/or RF communication with wireless MBUS receiver have to be set.

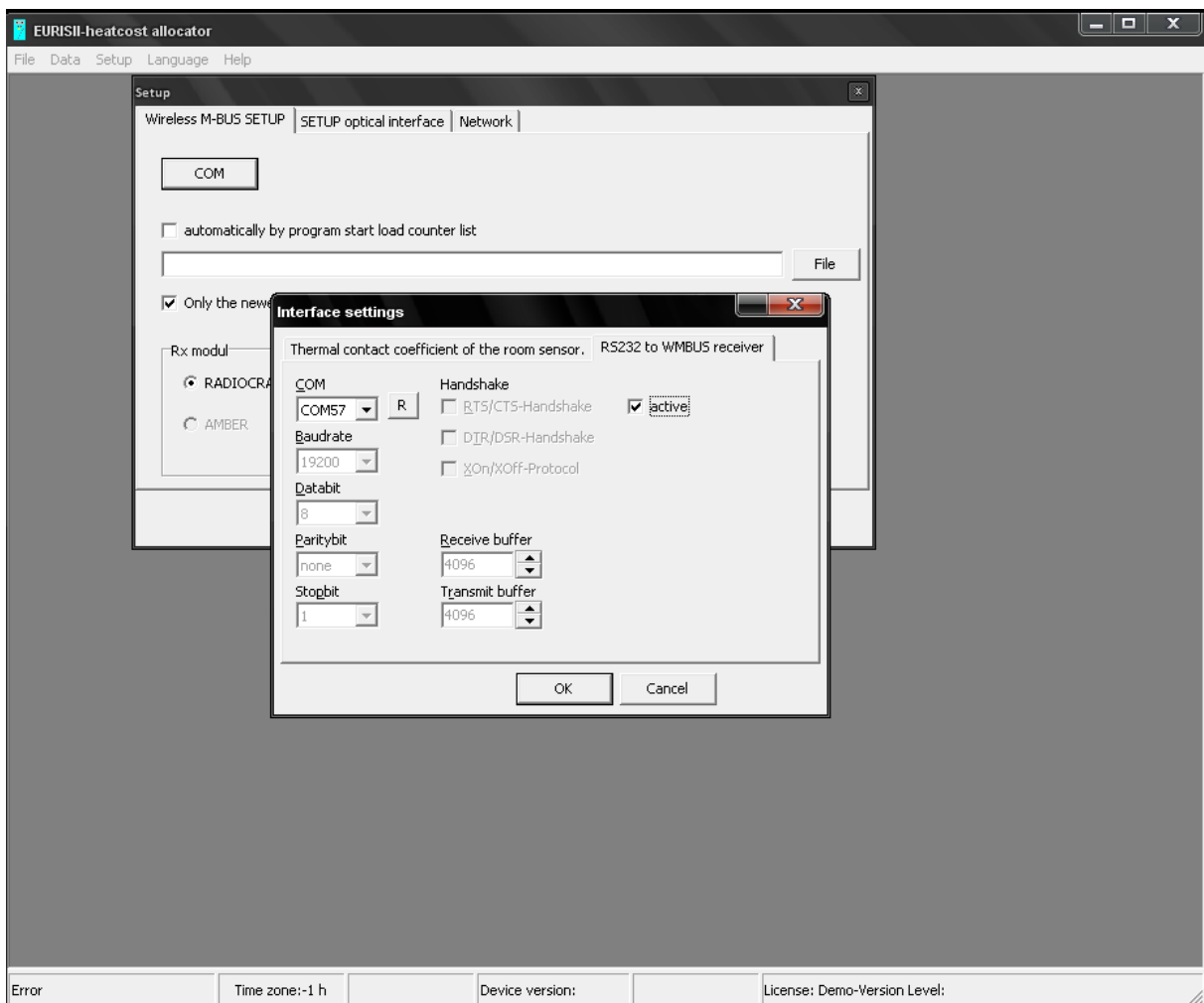


ILLUSTRATION 7-1 SETTING OF COMMUNICATION INTERFACE

Please note, that communication devices like USB- serial adaptors, USB optical interface device or wireless MBUS receiver device has to be connected to your computer. The list of all interfaces COM can be updated by the button with "R".

### 7.1 Menu Setup

Under this menu you find the settings for the communication ports for optical interface device or RF communication with wireless MBUS receiver device. Additionally a register of counters and heat cost allocators for wireless MBUS receiving can be selected and the operating mode of wireless MBUS receiver device can be set for an automatical start up of functions after program start.

For reading out and setting parameters of heat cost allocators via optical interface a log-file can be selected, which logs the read consumption data. For updating the internal clock of heat cost allocators the pre-setting of local time (winter time!) is enabling. There occurs no automatic summer / wintertime conversion. Under the bleed network the address of a server IP can be set which sends the received and filtered data W-MBUS in format CSV to a server. Then this can process the data.

## 7.2 Status bar

Optokopf Online com54						Time zone:-1 h	Device version:	License: INNOTAS ELEKTRONIK Level: 4
Status of COM connection	Time zone ( difference to PC time)		Device version	Status of readinf data	Licens key and accesslevel ( as defined in EURISII.KEY file)			

ILLUSTRATION 7-2 STATUS BAR AND MEANING OF DATA ARRAY

## 7.3 Menu Data

Under this menu you can reach different function windows, with the following meaning:

Menu point	Function
M-Bus read out	Read out of consumption data using (wired) M-Bus commands
Accounting data	Read out of consumption data and logging it to the selected (menu Options) log-file. A window will be opened with all consumption values. In a second window the present content of the log file is shown.
Parameter values	A windows will be opened, where all important parameter values are shown. Some of these values can be changed by user.
Wireless M-Bus	A window will be opened with all functions for reading out wireless MBUS protocols.
Device data	This function is used for factory-made parameter setting of heat cost allocator. It allows the acces to all parameters.

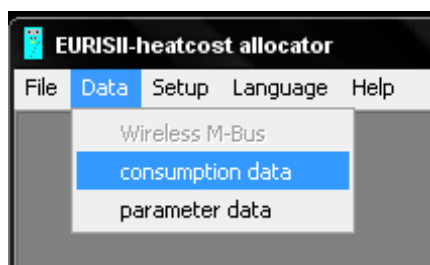


ILLUSTRATION 7-3 MENU DATA

## 7.4 Menu File

There you can load and save parameter files for heat cost allocator Euris II. This function is locked at “normal” operation.

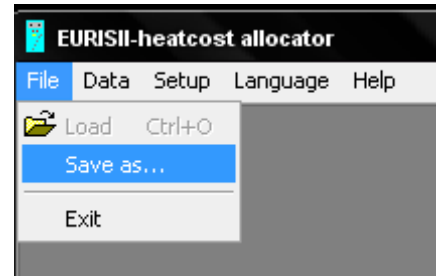


ILLUSTRATION 7-4 MENU FILEI

## 7.5 Accounting values

In window accounting values all values relevant for user are shown

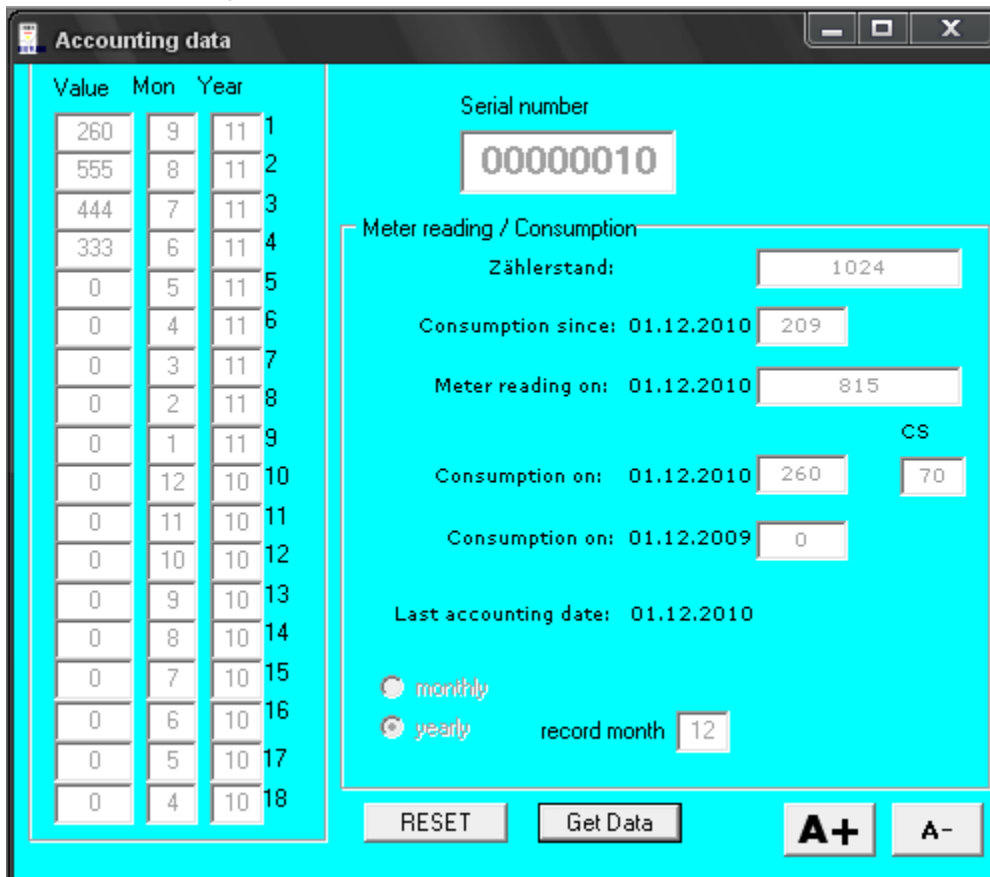


ILLUSTRATION 7-5 ACCOUNTING VALUES

There are two functions available, read out data and reset of all consumption values. Its important to “wake up” the heat cost allocator by pressing the yellow button before starting the communication between computer and the device. After last keystroke the optical interface is active for 15s.

Attention! After expiration of 15s the display remains in active state but the communication ist terminated. To start a new communication cycle a new keystroke is necessary.

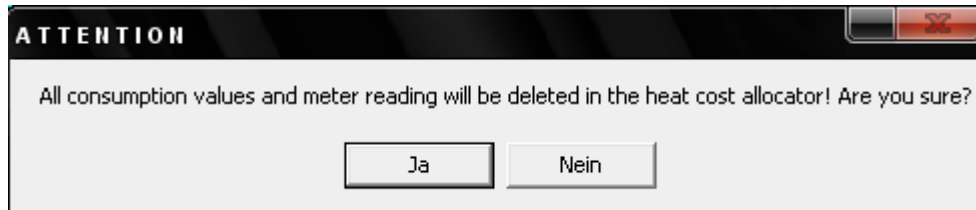


ILLUSTRATION 7-6 WARNING BEFORE COUNTER RESET

A warning window appears before resetting the consumption values.

During read out of data from heat cost allocator a window will be opened, where the log file content with the saved consumption values is shown.

SNR	RTIME	ZS	ZSzumS	VseitS	VzumS	PZS	SDATE	SMODUS
00000001	30.11.2010	500,2999877	480	20	80	65	1.12.2009	Jahr
00000001	30.11.2010	500,2999877	480	20	80	65	1.12.2009	Jahr
00000001	30.11.2010	500,2999877	480	20	80	65	1.12.2009	Jahr
00000001	30.11.2010	500,2999877	480	20	80	65	1.12.2009	Jahr

ILLUSTRATION 7-7 WINDOW WITH LOG-FILE CONTENT

The columns have the following meaning:

SNR	RTIME	ZS	ZSzumS	VseitS	VzumS	PZS	SDATE	SMODUS
Serial number	Time of read out	Meter reading	Meter reading at record date	Consumption since last record date	Consumption at record date	Checking number	Record date	Record cycle (monthly, annual)

## 7.6 Parameters

In window parameters you can change all operating parameters for the different applications of heat cost allocator.

There can be changed the following parameters:

- Time and date
- Start date of heat cost allocator after mounting on heater
- Record cycle (year/month)
- Record month
- Function for activating a measuring free time
- Measuring free months
- U-scale or P-scale
- K2 and KQ at P-scale
- The device can be set to storage mode. The heat cost allocator will be delivered in this state, the device is not in active measuring mode.
- RF-parameters for devices with RF option

**Parameter data**

Serial number: 00000123  Storage mode

**Time**

Day: 2  Mon  Tue  Wed  Thu  Fri  Sat  Sun

Month: 5

Year: 2012

Hour: 13

Minute: 39

Second: 0

autom. PC Time+Time zone

**Errorcode**

CS Error

Measuring error

Sabotage error

Low Batt

RF Error

RESET

Error Date: 0.0

**Parameter Measurement**

Start month: 0

end of period month (end): 12

Record cycle:  every month  Year

Start release

measuring-free months:  activate  Mai  June  July  August

U-Scale  P-Scale

2 Sensors  Remote sensor

ILLUSTRATION 7-8 PARAMETER WINDOW

### 7.6.1 RF Setup

If the heat cost allocator EurisII is equipped with RF option, a window with RF parameter settings can be opened by clicking the button „RF Setup“. There can be set the moment (day, week, month) and cycle of RF transmitting of the heat cost allocator. There you can choose out of 5 weeks/month, because some months have the same weekday more than 4 times. The selection week1 and Monday means, that the heat cost allocator Euris2 transmits the values at first Monday of the month. If a transmission during the entire month is desired, all weeks (1 to 5) have to be chosen. Within a day a transmission window can be defined. During this time the heat cost allocator transmits the data with average value of cycle time. This RF transmission mode is the normal usage for “Walkin” or “Walkby” applications in association with T1 wMBUS protocol. The heat cost allocator transmits the data workdays from 7 to 16 o'clock for example, usual time for the personnel to come around and read out the consumption values. At every change of parameters the program is calculating the frequency of transmissions and the energy requirement needed for this. If the calculated energy consumption is too high to reach the battery lifetime of 10+2 years the area with the calculated values changes to red.

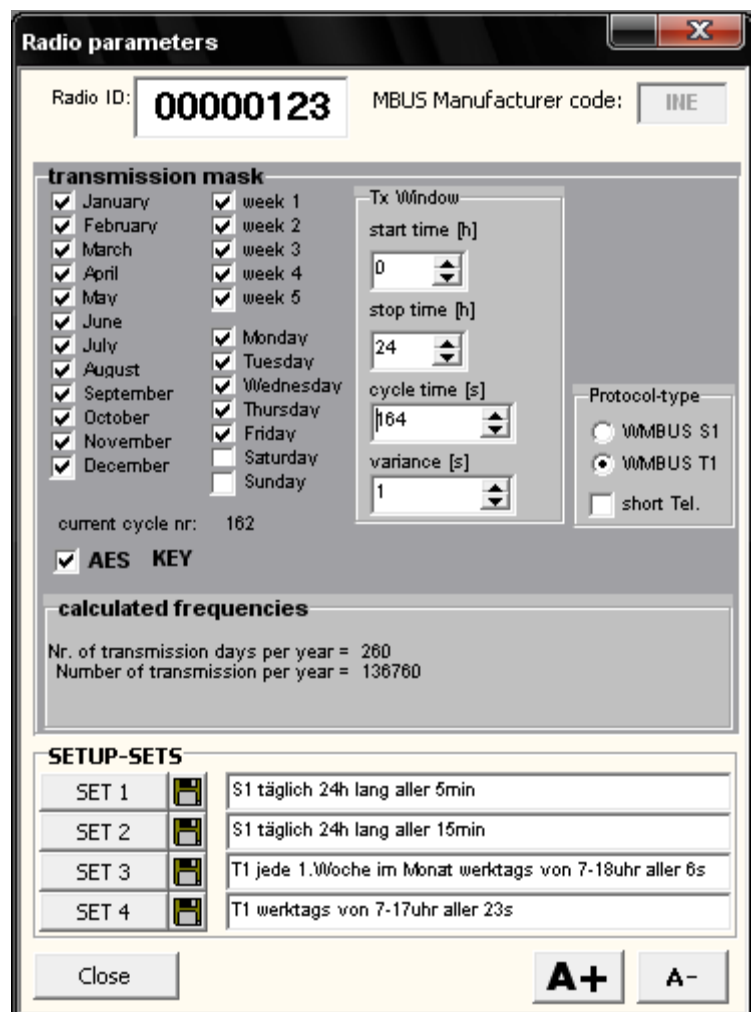


ILLUSTRATION 7-10 RF PARAMETERS

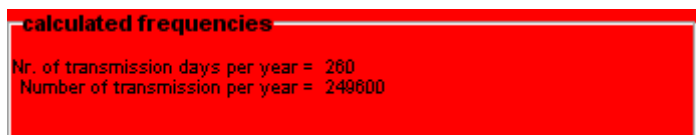


ILLUSTRATION 7-9 CRITICAL ENERGY CONSUMPTION

Additionally an AES-128 encryption of transmitted data according to NTA8130 Mode 5 can be set. The according AES key is calculated by the program. Every heat cost allocator device gets its own AES key! You choose between S1 protocol type and T1 protocol type. In the option T1 can be selected whether it should be a short one or a long telegram. In the long telegram the last 17 month values are included, in addition. S1 protocol type is used for stationary operation of receiver. T1 protocol type will be used for mobile operation (Walkin, Walkby). Four standard setups are pre-defined, to get a working parameter set easily. All parameters can be changed individually. If in the same wireless MBUS RF area appears several devices with the same radio-ID there can be set a new one. The serial number of the device will not be changed by changing the radio-ID!

## 7.7 Wireless M-Bus

In this window will be shown the received data from wireless MBUS receiver device (basing on a radiocrafts transceiver modul). Received data can be encrypted, managed and saved in this window. This window will open after succesful initialisation of the interface connection.

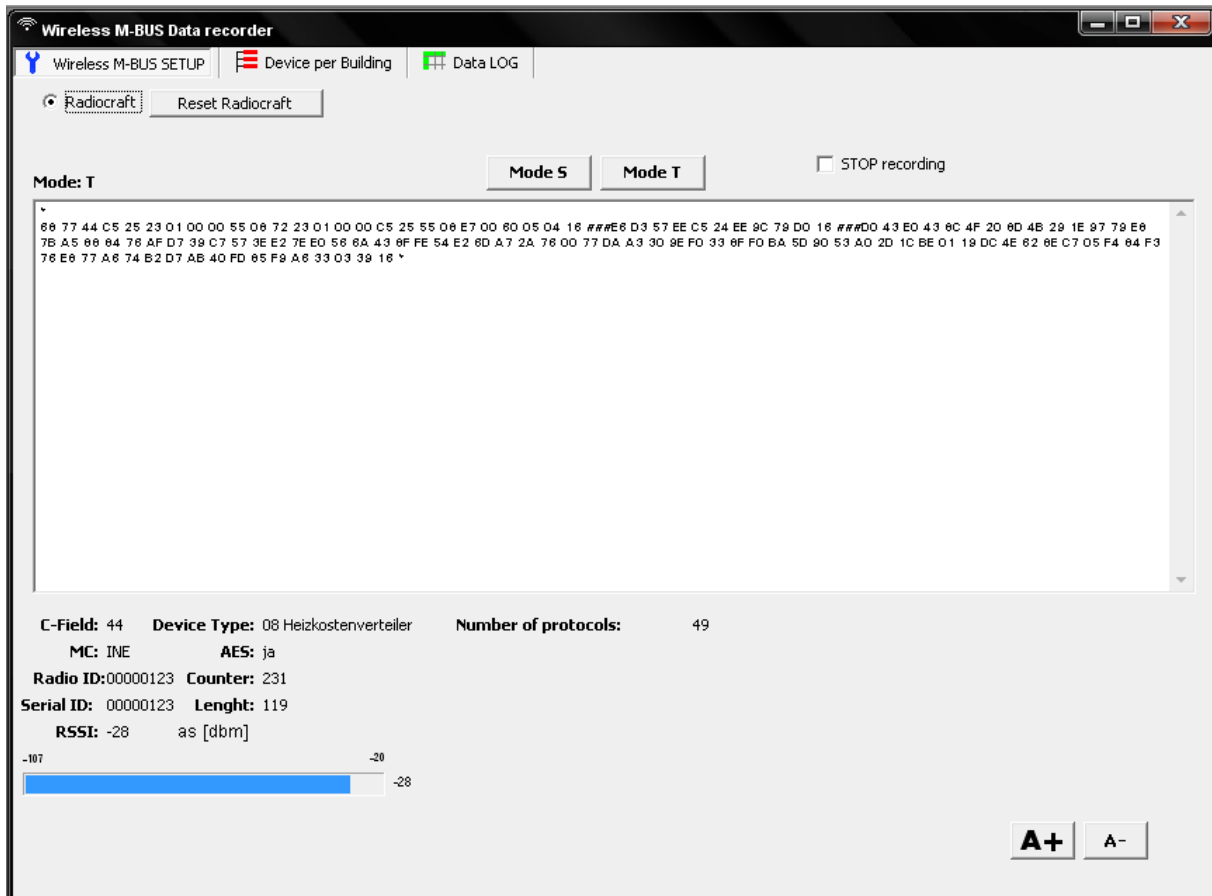


ILLUSTRATION 7-11 WIRELESS M-BUS SETUP

In the window there are 3 tabs. Tab „Wireless M-BUS Setup“ serves for setting of receiving mode T1 or S1. Additionally there is a monitoring area where all received crude data from Radiocrafts modul are shown. In the lower area the decoded MBUS header and the received field strength are shown.

Tab „Device per building“ is used to manage lists of transmitting devices according to a special building or location

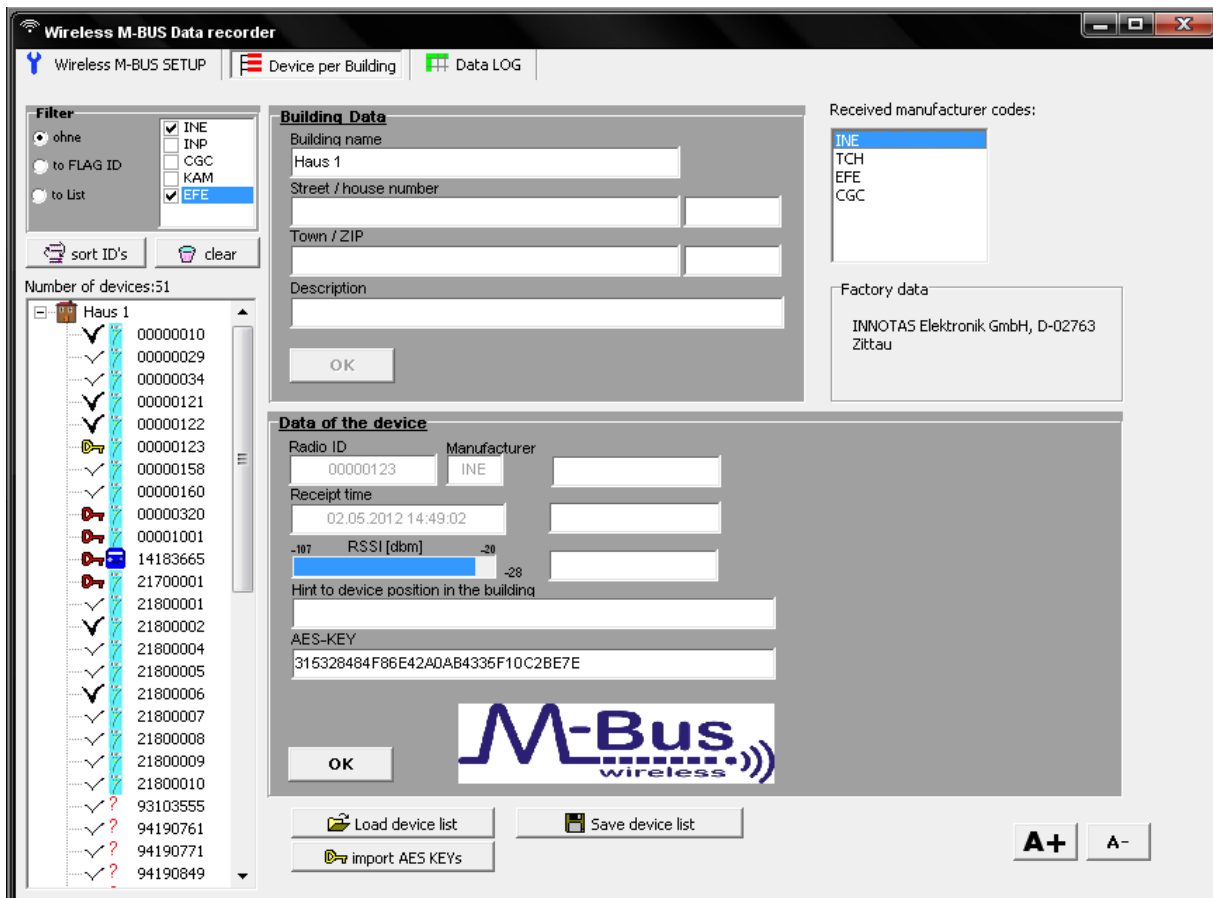
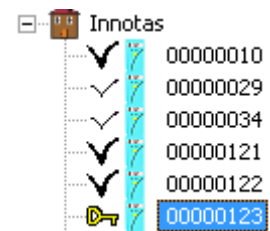


ILLUSTRATION 7-12 DEVICE LIST PER BUILDING

On the left side a register with received devices is shown. It's easy to indicate if the device is a water meter, a heat cost allocator or other (unknown) device and if a successful read out is done.

- |  |          |  |
|--|----------|--|
|  | Innotas  | Building associated with device list                                     |
|  | 00100018 | Successfully received EURISII heat cost allocator without AES encryption |
|  | 00000123 | Successfully received EURISII heat cost allocator with AES encryption    |
|  | 14183665 | Received warm counter with unknown AES encryption                        |
|  | 00045034 | Successfully received known water meter with AES encryption              |
|  | 00000021 | EURISII heat cost allocator, unknown                                     |
|  | 95055573 | Unknown device with unknown data   |



## 7.8 Integrate of other devices into the receipt list

The register can be completed with additional devices by clicking the insert key or using right mouse key menu inserting the radio-ID of the completing device. In addition, the Flag-ID and the media of the measuring point are to be given. If sends the device with one AES encryption the fitting one can be given here also AES key with. He AES key, besides, must be entered in HEX format with 32 characters.

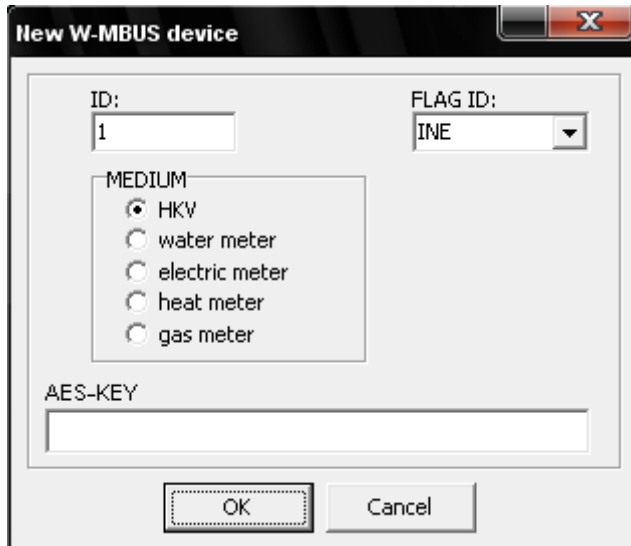


ILLUSTRATION 7-13 THE NEW GETS IN LIST PASTE

## 7.9 Filtering of the received protocols

During scan for devices it is possible to set a filter for all devices, or devices in register. The device list can be loaded from a file. A generated device list can be saved to a file.

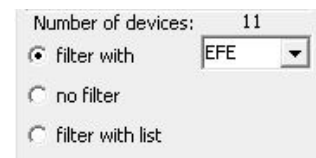


ILLUSTRATION 7-14 SCAN FILTER

## 7.10 Create of a receipt list

In order to put on a receipt list can be scanned after all devices without filter or with filtering on a special Flag-ID. Afterwards one selects in the filter „after list“ and deletes, perhaps, dull devices by select and delete from the list. If needed other devices can be integrated by hand into the list. In the connection the device list can be saved.



ILLUSTRATION 7-15 LOADINGS AND MEMORIES OF RECEIPT LISTS

### 7.10.1 Import AES keys

With it one not everybody AES key by hand these can must enter also automatically are imported. Besides, it is assumed that a file CSV is given in the following format. *Number counter;; media code;; AESKey:*

Other columns can follow and must be separated by a semicolon.

## 7.11 Received data logging

The „Data LOG“ tab shows all received consumption data according to the loaded device list.

The screenshot shows the 'Wireless M-BUS Data recorder' application window. It has three tabs: 'Wireless M-BUS SETUP', 'Device per Building', and 'Data LOG'. The 'Data LOG' tab is active, displaying a table of received data records. The table has columns for Index, RadioID, TCount, MeterID, RTime, Medium, MC, AES, RSSI, Value1, Unit, Value2, Unit, Value3, Unit, Value4, Unit, Value5, and Unit. Below the table, there are control options for 'Only newest data log.' (checked), sorting options (no sort, Sort according to radioID, Sort according to RSSI), and a 'Delete Log' button. At the bottom, there is a 'csv push over IP' section with fields for 'transmit csv data to IP:', 'Port:', and 'activ:', along with a 'Start' button. A 'Save Data as \*.csv' button and zoom controls (A+, A-) are also present.

Index	RadioID	TCount	MeterID	RTime	Medium	MC	AES	RSSI	Value1	Unit	Value2	Unit	Value3	Unit	Value4	Unit	Value5	Unit
19	00000010	230	00000010	02.05.2012 15:38:05	08	INE	nein	-47	000000	HCA	30.04.2012	DATE[1]	000000	HCA[1]	0000	STATE		
3	00000029	58	00000029	02.05.2012 14:44:47	08	INE	nein	-56										
36	00000034	121	00000034	02.05.2012 15:37:23	08	CGC	nein	-60										
10	00000121	0	00000121	02.05.2012 15:38:40	08	INE	nein	-43	000000	HCA	01.12.2000	DATE[1]	28.57	°C	28.8	°C		
7	00000122	0	00000122	02.05.2012 15:38:37	08	INE	nein	-45	000000	HCA	01.12.2000	DATE[1]	28.46	°C	28.68	°C		
6	00000123	9	00000123	02.05.2012 15:38:43	08	INE	ja	-30	000075	HCA	00052	HCA[1]	000000	HCA[2]	000000	HCA[3]	000000	HCA
2	00000158	18	00000158	02.05.2012 14:44:48	08	INE	nein	-44										
1	00000160	157	00000160	02.05.2012 14:44:47	08	INE	nein	-43										
28	00000320	6	00000320	02.05.2012 15:36:43	08	EFE	ja	-42	000000	HCA	07777	HCA[1]	000000	HCA[2]	000000	HCA[3]	000000	HCA
4	00001001	228	00001001	02.05.2012 15:37:26	08	INE	ja	-71										
8	14183665	60		02.05.2012 15:37:08	04	EFE	ja	-56										
52	14677800	71		02.05.2012 15:35:03	02	KAM	ja	-51										
32	21700001	81	21700001	02.05.2012 15:36:30	08	EFE	ja	-28	000000	HCA	00000	HCA[1]	000000	HCA[2]	000000	HCA[3]	000000	HCA
23	21800001	29	21800001	02.05.2012 14:58:09	08	EFE	nein	-58	000012	HCA	00012	HCA[1]	000000	HCA[2]	000000	HCA[3]	000000	HCA
21	21800002	29	21800002	02.05.2012 14:58:04	08	EFE	nein	-53	000013	HCA	00013	HCA[1]	000000	HCA[2]	000000	HCA[3]	000000	HCA
51	21800003	29	21800003	02.05.2012 14:58:13	08	EFE	nein	-56	000013	HCA	00013	HCA[1]	000000	HCA[2]	000000	HCA[3]	000000	HCA
25	21800004	28	21800004	02.05.2012 14:56:17	08	EFE	nein	-56	000013	HCA	00013	HCA[1]	000000	HCA[2]	000000	HCA[3]	000000	HCA
39	21800005	29	21800005	02.05.2012 14:57:53	08	EFE	nein	-59	000014	HCA	00014	HCA[1]	000000	HCA[2]	000000	HCA[3]	000000	HCA
9	21800006	26	21800006	02.05.2012 14:51:23	08	EFE	nein	-57	000014	HCA	00014	HCA[1]	000000	HCA[2]	000000	HCA[3]	000000	HCA
22	21800007	30	21800007	02.05.2012 15:00:08	08	EFE	nein	-59	000014	HCA	00014	HCA[1]	000000	HCA[2]	000000	HCA[3]	000000	HCA
27	21800008	33	21800008	02.05.2012 14:58:10	08	EFE	nein	-54	000013	HCA	00013	HCA[1]	000000	HCA[2]	000000	HCA[3]	000000	HCA
29	21800009	27	21800009	02.05.2012 14:54:22	08	EFE	nein	-67	000014	HCA	00014	HCA[1]	000000	HCA[2]	000000	HCA[3]	000000	HCA
14	21800010	30	21800010	02.05.2012 14:59:46	08	EFE	nein	-57	000014	HCA	00014	HCA[1]	000000	HCA[2]	000000	HCA[3]	000000	HCA
44	93103555		93103555	02.05.2012 15:34:14	80	TCH		-66										
34	94190761		94190761	02.05.2012 15:38:28	80	TCH		-68										
53	94190763		94190763	02.05.2012 15:38:36	80	TCH		-58										

ILLUSTRATION 7-16 DATA LOG

In this window all received data will be shown in a table. The user can choose if every new data record will be appended or if the new data record shall overwrite the older one. After finishing the receiving of all devices the data can be saved to a \*.csv file for editing with another program.

## 8 Construction of the radiograms HKV EURISII

The EHKV sends a long one or a short telegram according to setting And the long telegram is a matter to set radio mode only in the T1.

Construction of the telegrams:

Kurz encr.		Kurz		Lang		
68	Startbyte Radioraft	68	Startbyte Radioraft	68	Startbyte Radioraft	
2C	L Fied Länge	2C	L Fied Länge	6D	L Fied Länge	
44	C Field	44	C Field	44	C Field	
C5	M Field (INE)	C5	M Field (INE)	C5	M Field (INE)	
25	M Field	25	M Field	25	M Field	
97	SerialNr LSB (BCD)	06	SerialNr LSB (BCD)	1	SerialNr LSB (BCD)	
0	SerialNr (BCD)	01	SerialNr (BCD)	0	SerialNr (BCD)	
0	SerialNr (BCD)	00	SerialNr (BCD)	0	SerialNr (BCD)	
0	SerialNr (BCD)	00	SerialNr (BCD)	0	SerialNr (BCD)	
55	Version	55	Version	55	Version	
8	Medium	08	Medium	8	Medium	
72	CI Field 12byte header	72	CI Field 12byte header	72	CI Field 12byte header	
97	SerialNr LSB (BCD)	06	SerialNr LSB (BCD)	1	SerialNr LSB (BCD)	
0	SerialNr (BCD)	01	SerialNr (BCD)	0	SerialNr (BCD)	
0	SerialNr (BCD)	00	SerialNr (BCD)	0	SerialNr (BCD)	
0	SerialNr (BCD)	00	SerialNr (BCD)	0	SerialNr (BCD)	
C5	M Field (INE)	C5	M Field (INE)	C5	M Field (INE)	
25	M Field	25	M Field	25	M Field	
55	Version	55	Version	55	Version	
8	Medium	08	Medium	8	Medium	
6A	Transmission counter	A6	Transmission counter	19	Transmission counter	
0	M-Bus state	00	M-Bus state	0	M-Bus state	
10	Anzahl encr.Block	00	Anzahl encr.Block	0	Anzahl encr.Block	
5	Signat AES Mode	00	Signat AES Mode	0	Signat AES Mode	
57	Encryption verification	2F	Encryption verification	2F	Encryption verification	
14	Encryption verification	2F	Encryption verification	2F	Encryption verification	
D1	DIF (6 digit BCD)	0B	DIF (6 digit BCD)	0B	DIF (6 digit BCD)	
D4	VIF (HCA units)	6E	VIF (HCA units)	6E	VIF (HCA units)	
89	Value LSB	00	Value LSB	0	Value LSB	
91	Value	00	Value	0	Value	
BE	Value MSB	00	Value MSB	0	Value MSB	
90	DIF (16bit Integer)	42	DIF (16bit Integer)	42	DIF (16bit Integer)	month value 1
87	VIF (Date TypeG)	6C	VIF (Date TypeG)	6E	VIF (HCA)	
A2	Value	01	Value	D2	Value	
92	Value	0C	Value	4	Value	
18	DIF (6 digit BCD)	4B	DIF (6 digit BCD)	82	DIF (16bit Integer)	month value 2
6C	VIF	6E	VIF	1	DIFE	
BB	Value LSB	00	Value LSB	6E	VIF (HCA)	
8E	Value	00	Value	0	Value	
E2	Value MSB	00	Value MSB	0	Value	
2	DIF	02	DIF	C2	DIF (16bit Integer)	month value 3
FD	VIF	FD	VIF	1	DIFE	
17	VIFE	17	VIFE	6E	VIF (HCA)	
10	Value	10	Value	0	Value	
0	Value	00	Value	0	Value	
8A	RSSI	3B	RSSI	82	DIF (16bit Integer)	month value 4
16		16		2	DIFE	
			AES-Block2	6E	VIF (HCA)	
				0	Value	
				0	Value	
				C2	DIF (16bit Integer)	month value 5
				2	DIFE	

AES-Block3

6E	VIF (HCA)		
0	Value		
0	Value		
82	DIF (16bit Integer)	month value 6	
3	DIFE		
6E	VIF (HCA)		
0	Value		
0	Value		
C2	DIF (16bit Integer)	month value 7	
3	DIFE		
6E	VIF (HCA)		
0	Value		
0	Value		3
82	DIF (16bit Integer)	month value 8	
4	DIFE		
6E	VIF (HCA)		
0	Value		
0	Value		
C2	DIF (16bit Integer)	month value 9	
4	DIFE		

AES-Block4

6E	VIF (HCA)		
0	Value		
0	Value		
82	DIF (16bit Integer)	month value 10	
5	DIFE		
6E	VIF (HCA)		
0	Value		
0	Value		4
C2	DIF (16bit Integer)	month value 11	
5	DIFE		
6E	VIF (HCA)		
0	Value		
0	Value		
82	DIF (16bit Integer)	month value 12	
6	DIFE		
6E	VIF (HCA)		

AES-Block5

0	Value		
0	Value		
C2	DIF (16bit Integer)	month value 13	
6	DIFE		
6E	VIF (HCA)		
0	Value		
0	Value		
82	DIF (16bit Integer)	month value 14	
7	DIFE		
6E	VIF (HCA)		
0	Value		
0	Value		
C2	DIF (16bit Integer)	month value 15	
7	DIFE		
6E	VIF (HCA)		
0	Value		

AES-Block6

0	Value		
82	DIF (16bit Integer)	month value 16	
8	DIFE		
6E	VIF (HCA)		
0	Value		
0	Value		
C2	DIF (16bit Integer)	month value 17	
8	DIFE		
6E	VIF (HCA)		
0	Value		

0	Value	error bits
2	DIF	
FD	VIF	
17	VIFE	
1	Value	
0	Value	
2F	RSSI	
16		

## 9 Definition of error bits

Error bits are defined as follows:

CS Error	Internal parameter set has a checksum error. Data are inconsistent. This error occurs normally after factory programming only.
Measuring failure	A break or a short of temperature sensor (sensor 1 or 2 or reference) has occurred. This error must be detected for 40 min. for relasing an error. The device shows "Error" in display instantly.
Sabotage	Tamper detection starts at 0:00 o'clock after mounting the heat cost allocator at the heater and activating operating mode. If an act of sabotage was detected the error will be set and saved with according date.
Battery low	Battery end of lifetime date was reached or a voltage of lower than 2,26V was measured during transmission of RF protocol (current peak) .
HF Error	A communication error between controller and RF chip has occurred. This can be caused by a malfunction or temporary disturbance.
RESET	A RESET was detected.

ILLUSTRATION 9-1 DEVICE DATA ERROR BITS



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