A MITEL
PRODUCT
GUIDE

Unify OpenScape Alarm Response Professional

OScAR-Pro V5
OScAR-Pro Satellite

Service Manual
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Mitel

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1 Conventions and Operating Instructions

Readers and requirements

This Service Manual is designed to assist all persons who perform the initial installation, start-up and configuration of the OScAR Satellite system.

Content

1.1 Description of the Chapters in this Document
1.2 Notations and Symbols
1.3 Data Protection and Data Security

1.1 Description of the Chapters in this Document

This document also includes the following chapters:

Chapter	Description
Chapter 2, "Product Overview"	This chapter provides a general overview over the fields of application of DAKS-Satellite, its performance features, protocols and system messages, as well as the way in which the contact information is translated, the configuration and the hardware.
Chapter 3, "Application and Functionality Details"	This chapter covers in detail the different functions of the ESPA4.4.4 interface as well as the switching inputs/outputs of DAKS-Satellite. This includes the activation of DAKS Broadcast groups via ESPA 4.4.4 interface or digital inputs and the direct control of the digital outputs by the DAKS server, but also status messages regarding digital outputs and direct messages on the status regarding digital inputs (incl. their status changes) to the DAKS server.
Chapter 4, "System Start-Up of DAKS-Satellite"	This chapter covers the first-time start-up of DAKS-Satellite and includes the safety instructions in German, Finnish, Danish and Swedish that must be heeded during the process.
Chapter 5, "Configuration of the USB Port of the Service PC"	This chapter shows you how to configure the Service PC to carry out the basic configuration of DAKS-Satellite via the Service PC's USB port.
Chapter 6, "Start-Up Functions and Configuration via VCON"	This chapter covers the startup functions via USB terminal access and the configuration of DAKS-Satellite via the service tool VCON. This includes the IP parameters, the functions of the digital inputs and outputs, and the individual interfaces and hardware ports.
Chapter 7, "Hardware"	This chapter covers the hardware properties of DAKS-Satellite and all product components.
Chapter 8, "The Service and Configuration Tool VCON"	This chapter shows you how to use the service and configuration tool VCON to configure of the application, and for the service functions.
Chapter 9, "Administration of Certificates via VCON and TLS/MTLS"	This chapter covers the general application of the Transport Layer Security (TLS) and of the certificates within DAKS-Satellite. Both the setting of the TLS parameters and the administration of the certificates is carried out via the service tool VCON.
Chapter 10, "Conformity, Licenses"	This chapter covers the declaration of conformity and the license terms of DAKS-Satellite.

Table 1-1 Description of the Chapters in this Document

1.2 Notations and Symbols

Notations

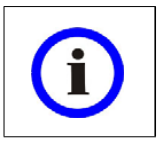
The following definitions are used in this document:

`Text`	All texts from files that are described in this document, and all entries that are added to these files, appear in the monospace font Courier.
The password 123456...	Details and instructions in the continuous text that are of particular importance or must be heeded are output in bold print. In the same way, buttons and menus also appear in bold print.
The file `global.cfg`	Files and directories are output in the monospace font Courier.
<Placeholder>	Entries and outputs, both of which may vary dependent on the individual situation in which they appear, are placed in <angle brackets> and are in italics.
[beginning of value range ... end of value range; default] or [X]	All default values and all value range details from data fields are placed in squared brackets and appear in italics. The entry [x] after an option offered for a database field indicates that this option is also the default value.

Table 1-2 Notations

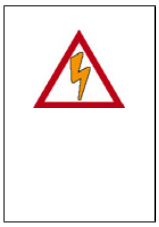
Symbols

The following symbols are used in this document:



Note:
The info "i" is used to indicate additional helpful information.

Caution!
The exclamation mark is used to indicate important information which the reader should treat with particular caution.



Warning!
The warning sign is used to alert you to a hazardous or high risk situation. It means that you are currently exposed to a risk or hazardous situation that may cause physical injury.

Before you start working with any apparatus, please always be aware of the risks that may arise in connection with the device's electric currents and follow the standard practices to avoid accidents.

1.3 Data Protection and Data Security

In order to comply with the legal provisions that apply when providing service - be it service at the customer's site or teleservice - we strongly urge all readers to follow the below-listed rules. This will not only help you protect the interests and concerns of customers and clients, but also avoid unwanted implications for yourself.

Please help ensure complete data protection and data security by being aware of these issues as you work.

- Always make sure that only authorized persons have access to your client and customer data.
- Assign passwords whenever you can. Do not grant unauthorized persons access to your passwords, for example by writing them down.
- Always make sure that no unauthorized persons can process (e. g. save, edit, transmit, block, or delete) or utilize customer data in any way.
- Always make sure that no unauthorized persons have access to data storage media, for example to backup disks or logging and protocol printouts. This applies both to service work and to the storage and transport of data carriers.
- Always make sure that every data storage medium that is no longer needed is properly and fully destroyed. Also be careful not to leave behind any papers that could become openly accessible to others.

We urge all readers to work together closely with the contact persons of your clients. This not only builds trust but also helps to reduce your own workload.

2 Product Overview

Overview

This chapter provides a general overview over the fields of application of OScAR Satellite, its performance features, protocols and system messages, as well as the way in which the contact information is translated, the configuration and the hardware.

Content

2.1 Fields of Application
2.2 Conversion from ESPA 4.4.4. to µESPA-X
2.3 Conversion of Contact I/O Info to µESPA-X
2.4 System Messages via the Digital Outputs
2.5 Start-up, Configuration and Service
2.6 Hardware
2.7 Certifications

2.1 Fields of Application

OScAR Satellite adds a powerful peripheral component to the OScAR server, also known as OScAR, which has long distinguished itself through its extensive worldwide installed base. OScAR-Satellite further increases the versatility and flexibility of OScARpro or OScAReco, respectively.

In light of the growing centralization of services, including but not limited to the link-up of peripheral systems and devices via TCP/IP-LAN, we are faced with a greater need for peripheral converters for contact- and serial interfaces to LAN. OScAR Satellite fully meets this requirement.

To communicate in the direction of the OScAR server, OScAR Satellite employs the µESPA-X protocol, i.e. a specific version of the general XML-based ESPA-X interface tailored to the communication between the OScAR server and OScAR Satellite.

As a standard feature, OScAR Satellite supports redundant OScAR installations, i.e. it facilitates the connectivity both to a main and to a backup OScAR server with automatic switch-over.

2.2 Conversion from ESPA 4.4.4. to µESPA-X

The host system, for example as a nurse call system in a hospital, communicates with OScAR Satellite via ESPA 4.4.4

OScAR Satellite converts this serial interface (either RS232 or RS422) to µESPA-X in the direction of the OScAR server, and activates preconfigured OScAR groups with the proper information as received from the host system.

Here, the behavior is, to the greatest extent possible, identical to a direct ESPA 4.4.4. coupling between a host system and a OScAR server, including the support of callback calls to the patient rooms.

In the Software Version 2.1x, the following qualifications apply to OScAR Satellite:

- No support of callback calls in combination with prepared calls in callback waiting positions (e.g. for 'Tunstall NewLine C201' nurse call systems).
- No support of 'Call type = 23' for nurse calls w. selection option for the contacted nurse to choose, if the callback to the initiator shall be made over the phone or via the nurse call system.

2.3 Conversion of Contact I/O Info to µESPA-X

Contact indicators, e.g. level recognition, temperature controllers or simple operator console keys, are connected to the digital inputs of OScAR Satellite.

OScAR Satellite converts the activation of such contacts into µESPA-X in the direction of the OScAR server, and activates the OScAR groups that are configured in the system, including the specific contact details.

OScAR Satellite supports 3 types of contact detectors:

- Simple standard contacts
- Enhanced standard contacts (if needed with alarm-stop function and variably adjustable alarm delays before and in between alarm activations)
- Control panel keys with start/stop toggle function and, if needed, corresponding status outputs (up to 9 possible when not needed for system messages, see below)

2.4 System Messages via the Digital Outputs

OScAR Satellite comes with digital outputs and a relay output with normally closed and working contact.

These outputs facilitate the signaling of:

- system statuses, for example the overall operational readiness, or the availability and status of the individual interfaces, or
- specific active processes (e.g. the generation of control panels, see above).

2.5 Start-up, Configuration and Service

OScAR Satellite comes with a USB interface to a PC for the start-up functions, including a terminal emulation program; these start-up functions include:

- the configuration of the IP parameters,
- the configuration of the access protection
  (enabled/blocked service functions via LAN),
- the setting of the date and time, and
- the activation of the repair system.

The additional basic configuration, the parameterization of the application and the service functions are carried out via LAN and the service tool VCON, which must be properly installed on the PC.

The basic configuration of OScAR Satellite includes:

- the editing of the IP parameters set via USB,
- the configuration of the serial interface (COM),
- the configuration of the µESPA-X interface(s) to the OScAR server(s), and
- the configuration of the digital I/Os.

The parameterization of the application OScAR Satellite covers:

- the parameterization of the ESPA 4.4.4. interface,
- the parameterization of the functions of the digital inputs, and
- the parameterization of the functions of the digital outputs.

In addition, the VCON service console offers the following service functions:

- save and restore the configuration data
- save and restore the entire microSD card, including the programs, licenses, basic configuration data, and application data
- activate, deactivate and administrate the monitoring outputs and the enhanced trace outputs
- install software updates.

2.6 Hardware

OScAR Satellite comes as a tabletop unit in a convenient box size (size 165 mm x 105 mm x 30 mm) and has the following features:

- computer core with a µClinux™ operating system and anti-virus protection,
- LAN interface (10/100-Base-T) to the service tool (VCON) and for connectivity to the OScAR server(s) via µESPA-X
- Power-over-Ethernet Class 2 in Mode A or B (IEEE 802.3af, max. 6.5 W) from the LAN switch, or via PSU (PoE injector: 100 … 240 VAC)
- Serial asynchronous interface RS232/RS422 (electrically isolated) for the
  - Host coupling via ESPA 4.4.4 (e.g. to a nurse call system) or
  - Coupling via the ADX-42 adapter (RS485 adapter), where needed with inhouse cabling, to a remote IOG-11A module with up to 16 I/O modules:
    - either I/O modules with 8xIN fed with no short circuit and line break detection, and with 2xOUT
    - or I/O modules with 4xIN with short circuit and line break detection, and 2xOUT (both I/O modules types possible in any combination)
- USB/COM service interface for the terminal emulation program (startup functions)
- 16 digital inputs with internal power supply, incl. short circuit and line break detection
- 8x digital outputs for system and process messages, electrically isolated from all other interfaces and from each another
- 1x relay output for system and process messages, with make and break contact (max. 30 W)
- Pluggable microSD card

The below picture illustrates OScAR Satellite and its periphery components:

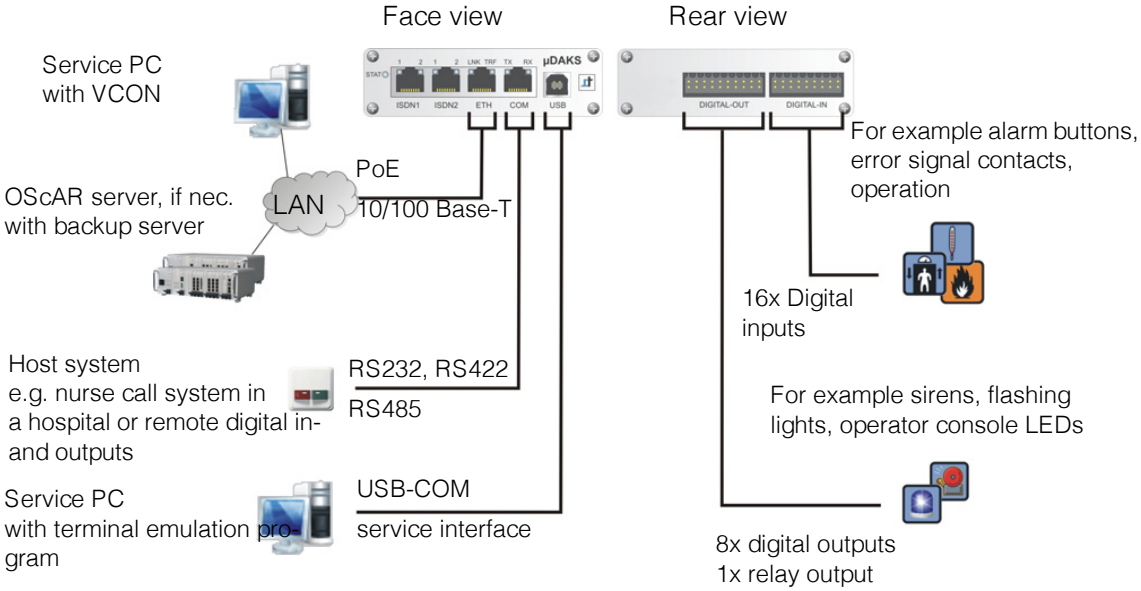


Image 2-1 Overview OScAR Satellite

2.7 Certifications

This product is certified in these countries (all country codes in keeping with ISO 3166):

- All EU countries:
  AT, BE, BG, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IT, LT, LU, LV, MT, NL, PL, PT, RO, SE, SI, SK
- The following non-EU countries:
  AU, CA, CH,HK, MY, NZ, PH, RU, SG, TH, TR, US

Fire security and life safety features were not evaluated during the UL test.

3 Application and Functionality Details

Overview

This chapter covers in detail the different functions of the ESPA4.4.4 interface as well as the switching inputs/outputs of OScAR-Satellite. This includes the activation of OScAR Broadcast groups via ESPA 4.4.4 interface or digital inputs and the direct control of the digital outputs by the OScAR server, but also status messages regarding digital outputs and direct messages on the status regarding digital inputs (incl. their status changes) to the OScAR server.

Content

3.1 The µESPA-X Connection(s)
3.2 ESPA 4.4.4 Interface via OScAR Satellite
3.2.1 General information
3.2.2 Callback to the initiator (patient)
3.2.3 Setup
3.2.4 Connection error to ESPA 4.4.4
3.2.5 Connection error to the OScAR server
3.2.6 Receipt and interpretation of ESPA 4.4.4 records
3.2.7 Matrix chart
3.2.8 Start a process
3.2.9 Delete a call received from ESPA 4.4.4
3.2.10 End of Broadcast signal from the OScAR server
3.3 Status Requests and Status Messages
3.3.1 Status messages received from the OScAR server
3.3.2 Receive status request from ESPA 4.4.4
3.4 Digital Contact Inputs
3.5 Digital Outputs

3.1 The µESPA-X Connection(s)

OScAR Satellite establishes µESPA-X connections to the OScAR servers in these ways:

- OScAR Satellite connects to the main server and to the redundancy server (if configured).
- Provided the connection to the main server is available, OScAR-Satellite switches it to active and uses the main server to launch Broadcasts.
- If the connection to the main server is not available, OScAR Satellite switches the connection to the redundancy server to active, instead.
- If neither of these two servers is available, OScAR Satellite will alternately check both servers every 5 seconds. The server that is reached the first will be switched to active.
- If the redundancy server is switched to active, OScAR Satellite will check every 5 seconds if the main server is available again and, when so, switch back to the main server as soon as all processes in the redundancy server have been completed and ended. Here, new processes will continue to be be started in the redundancy server until the switch over has been completed.

Caution!
To force a switch-over from the redundancy to the main server, no process may be active in OScAR Satellite, i.e. neither an ESPA 4.4.4 process, nor any process that was started through a contact input may still be ongoing.

The OScAR server is available for OScAR Satellite when these conditions apply:

- The main server can be reached via µESPA-X.
- The login to µESPA-X was successful.
- The OScAR server has channels for alarms and alerting over the telephone.
- The OScAR server is not in the hot standby mode.

A connection error to the OScAR server will occur in the following situations:

- The µESPA-X connection is closed due to an error (e.g. mains failure, OScAR server defect).
- No response to an ESPA-X request was received for more than 10 seconds.

3.2 ESPA 4.4.4 Interface via OScAR Satellite

3.2.1 General information

The host system, for example as a nurse call system in a hospital, communicates with OScAR Satellite via ESPA 4.4.4.

OScAR Satellite converts this serial interface (either RS232 or RS422) to µESPA-X in the direction of the OScAR server and activates preconfigured OScAR groups, incl. the proper information received from the host system.

Here, the behavior is, to the greatest extent possible, identical to a direct ESPA 4.4.4 coupling between a host system and a OScAR server, including the support of callback calls to the patient rooms.

In the present Software Version, the following qualifications apply to OScAR Satellite:

- No support of callback calls in combination with prepared calls in callback waiting positions (e.g. for 'Tunstall NewLine C201' nurse call systems).
- No support of 'Call type = 23' for nurse calls w. selection option for the contacted nurse to choose, if the callback to the initiator shall be made over the phone or via the nurse call system.

In combination with a OScAR server, OScAR Satellite enables calls to entire subscriber groups:

- with output of a variable text
- with evaluation of the priority
- with different types of callback:
  - callback bed-by-bed, directly to the individual telephone of the calling patient (through the PBX)
  - callback bed-by-bed, directly to the individual voice station of the calling patient (through the nurse call system)
  - callback room-by-room, directly to the individual room loudspeaker of the calling patient (through the nurse call system)
- including deletion of calls initiated from the nurse call system, including synchronization at restart
- with expanded reports or status-information

OScAR Satellite signals the following status changes to the host system:

- call in processing
- callback initiated
- call ended with/without success (detailed)
- call ended after call to patient,
  if needed with call processing information (save/cancel call)

The OScAR server supports the following interfaces for callback calls to the nurse call system:

- analog or digital
- with or without dial-thru capability
- one- or multi channel per station
- if needed with a DTMF decoder:
  - to accept details identifying the patient room loudspeaker that needs to be addressed (by the nurse call system)
  - for signaling between the nurse and the patient during the call (conversion of the keypad information from the telephone to DTMF via the OScAR server)

The below image illustrates the functions of OScAR-Satellite as interface between the nurse call system and the OScAR server:

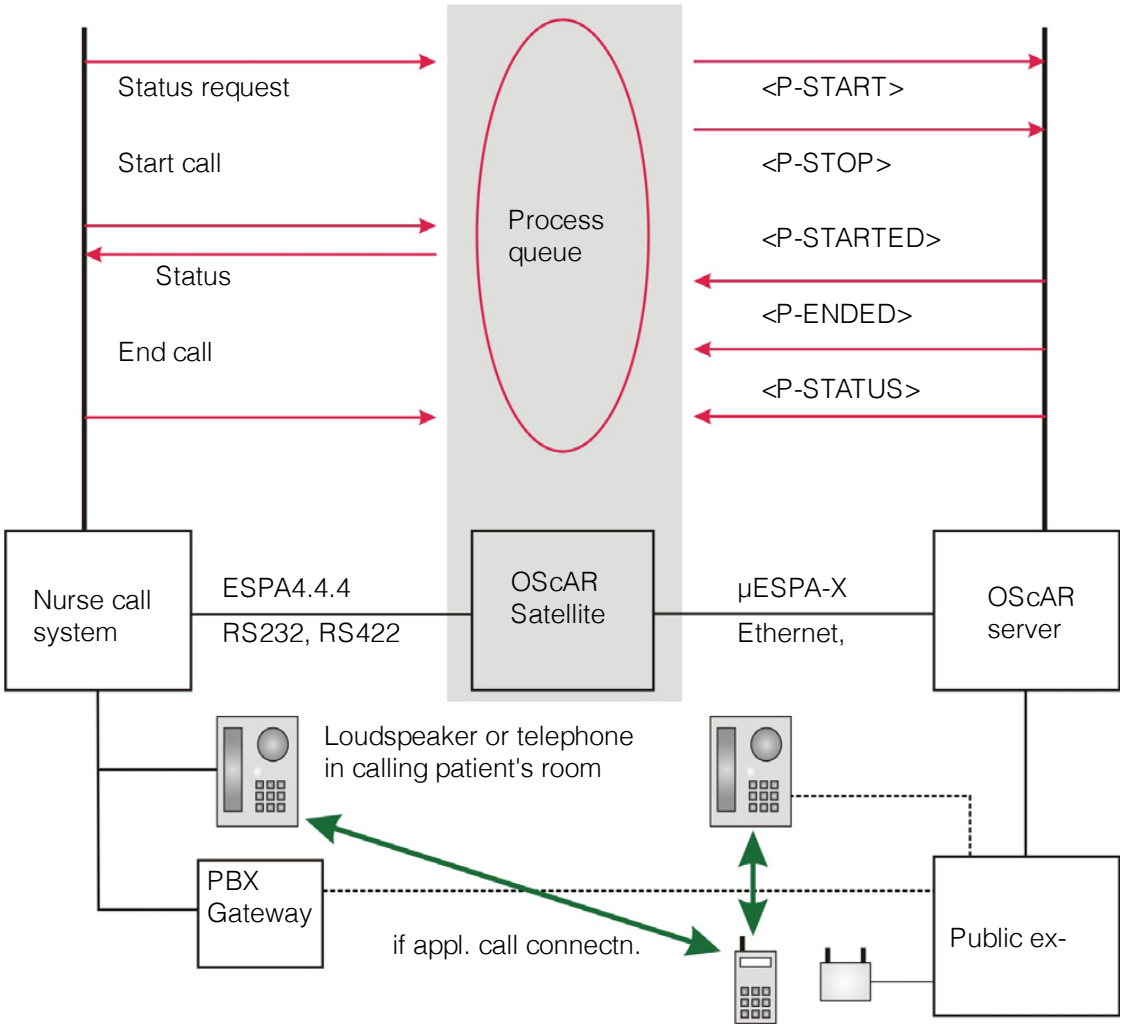


Image 3-1 Properties of a process

OScAR Satellite opens and controls the connection to the host system via ESPA 4.4.4 and the OScAR server through µESPA-X. After that, OScAR Satellite accepts data sets from both sides and translates these into the terminology of the respective other side.

OScAR-Satellite saves all ESPA 4.4.4 processes - hereafter "processes" - in a process queue (configurable, max. length 50) in order to store the ESPA 4.4.4 status information.

➤ see Section 3.2 ,"ESPA 4.4.4 Interface via OScAR Satellite"

This status information is queried by the host system, and not signalled by OScAR on an event-triggered basis. In the event µESPA-X interface errors occur, OScAR-Satellite can use the ESPA 4.4.4 interface to send corresponding error messages for all processes that are directed to the host system.

Broadcast groups are administrated in the OScAR server, with each group being able to consist of either only one or of many members (subscribers).

The relevant group is addressed or selected by way of its identifier (= call address).

➤ see Section 3.2.6 ,"Receipt and interpretation of ESPA 4.4.4 records"

In detail, the processes follow the below-described sequence:

- OScAR Satellite accepts commands that trigger Broadcasts via the serial interface,
- OScAR Satellite writes the Broadcasts requests into an internal process queue,
- OScAR Satellite forwards the Broadcast request to the OScAR server via µESPA-X.
- The OScAR server carries out the Broadcasts.
- The OScAR server reports back both the interim and the final result to OScAR Satellite.
- If requested, OScAR Satellite reports the status messages or the final results to the host system via the serial interface.

Note:
For more information on the customization of Broadcasts in the OScAR server and the possibilities that these settings offer (e.g. the various ACK options, callbacks to the initiator etc.) please see the pertinent OScAR User Manual.

3.2.2 Callback to the initiator (patient)

The reached subscriber (nurses or caregiver) can confirm a call positive or negative, and also trigger a callback call to person who initiated the call

If a callback call connection is made, the reached subscriber can select from several signaling options:

- delete the call,
- save the call,
- escalate the call to a higher level.

For this, OScAR Satellite can be adjusted to define which special call signalings ('1' and '#') are evaluated by the OScAR server during a callback call ('key prioritize', 'key note', 'key stop').

When the nurse ends the callback call by going on hook or by pressing the corresponding key (key is configurable, see below), the connection to the called patient is also released.

When the call is ended because the patient hangs or through the nurse call system, the connection to the nurse is still retained for another 8 seconds. After this time the OScAR server releases the connection. During this time, the nurse can still signal with the pound key "#" or "1", if needed.

In parallel system dial-up of subscribers, OScAR will cancel parallel calls the moment the callback call is through-connected.

In combination with a nurse call system interface that features a DTMF decoder (typical for 'Total-Walther medicall 800'), the OScAR server enables a transparent dialog between the nurse and the nurse call interface during the callback call, including the conversion of keystrokes from keypad signaling to DTMF in the direction of the nurse call interface ('keypad echo').

However, in combination with a nurse call interface without a DTMF decoder, or in callback calls to a telephone, it is the nurse who signals by keystroke in the direction of the OScAR server. In return, the OScAR server sends a corresponding dataset to OScAR Satellite, where the information in translated into a message and sent to the nurse call system.

➤ see Section 3.3 ,"Status Requests and Status Messages"

3.2.3 Setup

Note:
From the point of view of the host system OScAR Satellite is always a 'Device' only, never a 'Control Station'!

In detail, the following parameters must be administrated:

- The physical interface parameters (baud rate, start bits etc.)
  ➤ see Section 6.3.2 ,"Configure the Serial interface (COM port)"

The settings may vary dependent on the host system, but generally the interface is configured with the following parameters:

- Baud rate 1200
- Parity even
- Data bits 7
- Stop bits 2
- Interface type RS232

- The basic configuration of the ESPA 4.4.4 protocol (ESPA 4.4.4 addresses)
  ➤ see Section 6.3.2 ,"Configure the Serial interface (COM port)"

Usually, the following ESPA 4.4.4 addresses are configured:

- external address 1
- local address 2

- The basic configuration of the OScAR-Satellite connections (ESPA-X-Client):
  - ESPA-X Client-1 Main server
  - ESPA-X Client-2 Redundancy server

  ➤ see Section 6.3.3 ,"Configure the µESPA-X interface"
- The behavior of the interface with regard to individual data sets with callback calls
  ➤ see Section 3.2 ,"ESPA 4.4.4 Interface via OScAR Satellite"

To configure callback calls with enhanced options, the below settings must be made for the individual nurse calls systems:

	Siemens HiCall	Ackermann clinocom 21	Total Walther medicall 800
extended status	yes	yes	yes
keypad echo	no	no	yes
1 disconnects	no	no	no
# disconnects	yes	yes	yes
key prioritize	Off	Off	Off
key note	1	1	1
key stop	#	#	#

Table 3-1 Configuration of individual nurse call systems

3.2.4 Connection error to ESPA 4.4.4

OScAR Satellite opens the serial interface (COM) and thereupon operates with the ESPA 4.4.4 protocol.

The ESPA4.4.4 protocol itself does not contain heartbeats. If no messages from the controller are received for more than 10 minutes, OScAR Satellite assumes an interrupted connection.

In this case, OScAR Satellite will send a corresponding message through VCON and, if needed, switch a contact output. Nonetheless, all processes that have already been started will continue unaffected. Nonetheless, all processes that have already been started will continue.

➤ see Section 3.5 ,"Digital Outputs"

3.2.5 Connection error to the OScAR server

In the event of an error regarding the connectivity to the OScAR server, OScAR Satellite answers with the following measures:

- Change-over to the redundancy server (if so configured)
- Activation of processes that are still open (i.e. not yet started) on the redundancy server
- Switching of the ESPA 4.4.4 status of all processes to 'Call terminated' (Call Status = '5')
- Switching of a digital output or relay output (if so configured)

For further information regarding the build-up of the connection and the general behavior when the connection is lost in comb. with a backup server:

➤ see Section 3.1 ,"The µESPA-X Connection(s)"

3.2.6 Receipt and interpretation of ESPA 4.4.4 records

The ESPA 4.4.4 specification of OScAR Satellite is based on the below documentation that also offers further information on the ESPA 4.4.4 protocol, but also on the evaluation of the ESPA 4.4.4 records, and on the behavior of nurse call systems when used in combination with a OScAR server:

- ESPA 4.4.4, serial data interface for paging equipment, November 1984
  ➤ "OScARpro Server Configuration Manual"

The below table lists the ESPA 4.4.4 records that are accepted and the values that these records may contain.

Record	ID	Valid Entries/Comments
Call address	'1'	1 .. 4x '0' .. '9' Group identifier
Display message	'2'	only display text: 0 .. 160 ASCII characters Display text for callback to the telephone: + 1 .. 6x '0' .. '9', '*', '#' Call number of the patient + <Space> separator + 153 .. 158x ASCII characters Display text Note: Pursuant to the ESPA 4.4.4 protocol, only 128 characters are allowed and can be truncated subject to the end devices that are used.

Table 3-2 Evaluation of ESPA 4.4.4 records

Record	ID	Valid Entries/Comments
Call type	'4'	Signal the call empty set 'Call type' = 3 '0'/'3' only call, no callback '2' callback possible over the phone or to the nurse call system '21' callback possible over the phone '22' callback possible to the nurse call system '4' no callback, no reports sent to the nurse call system Delete the call '1' delete the call '11' delete all calls Note: OScAR Satellite does not support the function 'Start call with callback' with selection to callback over the phone or to the nurse call system (Call type = '23').
Beep coding	'3'	'0' .. '5', '8', '9' no effect '6' Emergency call signaling, if configured for that subscriber in the OScAR server, otherwise external call signaling '7'' always alarm call signaling
Number of transmissions	'5'	'0' .. '9' not evaluated
Precedence	'6'	'1' The OScAR server always activates the 'Special dial options'. '2' The OScAR server activates camp on and intrusion, if the 'Special dial options' are not activated.
Nurse call interface	'E'	0 .. 3 ASCII characters Connection type if needed+ <comma>, ':', <Space> Separator + 1 .. 10x '0' .. '9', '*', '#' Callback phone number to call patient
Call ID	'I'	'0000' .. '9999' Event number
Call status	'7'	'1' Busy '2' In Queue '3' Paged '4' Absent '5' Call terminated '6' Ack. from called party '7' Speech channel open '71' Speech channel open (paged) '72' Speech channel open (absent) '8' Fault indications
System status	'8'	not used

Table 3-2 Evaluation of ESPA 4.4.4 records

3.2.7 Matrix chart

The following features matrix covers all combination options for the contents of data sets in keeping with the interpretation of the ESPA 4.4.4 data sets, and the functions that result therefrom.

If the host system sends data sets that are invalid from the point of view of this table, OScAR Satellite will respond with a transmission error ('1' NAK) and discard the received data.

Header	Display message			Nursecall-Interface	Call type	Beep coding	Number of transmissions	Precedence	Call ID	Call status	System status	Function
	Call address	Display text	Phone no.									
Data sent from of ESPA 4.4.4 in the direction of OScAR Satellite												
'1'	x	+	-	o	'0'/ '3'	+	o	+	+	o	o	Start call without callback
'1'	x	x	x	-	'2'	+	o	+	+	o	o	Start call with callback to the phone [1)]
'1'	x	+	-	x	'2'	+	o	+	+	o	o	Start call with callback through the nurse call interface [1)]
'1'	x	+	x	o	'21'	+	o	+	+	o	o	Start call with callback to the phone [1)]
'1'	x	+	o	x	'22'	+	o	+	+	o	o	Start call with callback through the nurse call interface [1)]
'1'	x	+	o	o	'4'	+	o	+	o	o	o	Start call without callback, no process feedback
'1'	-	o	o	o	'1'	+	o	+	x	o	o	Delete several calls with Call ID
'1'	x	o	o	o	'1'	o	o	+	x	o	o	Delete a call with Call ID
'1'	x	+	o	+	'1'	+	+	+	-	o	o	Delete a call without Call ID
'1'	-	o	o	o	'11'	o	o	o	o	o	o	Delete all calls
'3'	x	o	o	o	o	o	o	o	x	o	o	Status request for a call with a Call ID
'3'	x	+	o	+	+	+	+	+	-	o	o	Status request for a call without a Call ID
'3'	-	o	o	o	o	o	o	o	o	o	o	Status request for all calls
Polling												Status request for all calls
Data sent from OScAR Satellite in the direction of ESPA 4.4.4												
'2'	x	-	-	-	-	-	-	-	-	-	-	Status message with Call ID
'2'	x	x	o	o	o	o	o	o	-	x	-	Status message without Call ID

'x' compulsory '-' not allowed 'o' is ignored '+' is used, if available

Table 3-3 ESPA4.4.4 matrix chart

1. If no nurse call interface or patient call number available, a nurse call without callback will be started alternatively.

3.2.8 Start a process

When OScAR Satellite receives a call from the host system, it differentiates between the following scenarios:

- Standard case
  - Here, OScAR Satellite places the call into the process queue, sends a corresponding message to the connected OScAR server, and reports the acceptance of this call to the host system (ACK).
  - Next, OScAR Satellite sets the ESPA 4.4.4 status of the newly started process to 'In Queue' (Call Status = '2').
  - Provided the setting 'send 'paged' info' = 'A 'status request' is immediately answered with 'paged' is properly configured, OScAR Satellite will immediately set the ESPA 4.4.4 status to 'Paged' (Call Status = '3'). No further status messages of the actual running process will be signalled back to the host system.
- Process queue full

  If the process queue is full (length of the process queue = 'process queue length'), the call will not be accepted and the system will signal 'Busy' to the host system (= '2' NAK).
- Identical processes

  If a call with the exact same display text is already in the process queue, OScAR Satellite will report to the nurse call system 'In Queue' (Call Status = '2'), and then also send back all status messages for the already ongoing process to this call.

Under any of the below-listed conditions, the call will be deleted from the process queue and OScAR Satellite will report an error to the nurse call system:

- OScAR Satellite receives a final result from the OScAR server.
  ➤ see Section 3.2.10 ,"End of Broadcast signal from the OScAR server"
- The connection between OScAR Satellite and the host system or the OScAR server is lost.
  ➤ see Section 3.2.4 ,"Connection error to ESPA 4.4.4"
  ➤ see Section 3.2.5 ,"Connection error to the OScAR server"
- OScAR Satellite was unable to start a Broadcast, e.g. because of an interrupt of the telephone connection(s) between the OScAR server and the PBX.

3.2.9 Delete a call received from ESPA 4.4.4

First OScAR Satellite identifies the corresponding process(es) using these ESPA 4.4.4 records:

- To delete several calls:
  - the Call ID
- To delete a call:
  - the Call ID and the Call address
  - the call address, display type, beep coding, priority, nurse call interface and the number of transmissions

OScAR Satellite directly forwards the end of a call for all identified processes (one or more) to the OScAR server and deletes the corresponding message from its internal process queue.

If the setting 'process queue length' = 'clear call always, except in conversation' is configured, the call connections that are already routed between the reached subscribers and the OScAR server or patient will not be released early, even though OScAR Satellite signals the end of the process to the OScAR server.

If OScAR Satellite fails to find a matching call in its internal process queue, the message will be ignored.

3.2.10 End of Broadcast signal from the OScAR server

When the OScAR server signals the end of a Broadcast, OScAR Satellite distinguishes, for the feedback of the status information in the direction of ESPA 4.4.4, between the following:

- 'extended status' = 'no'
  - ESPA 4.4.4-Status = 'paged' (Call Status = '3')
  - End of a Broadcast with no specifically defined number of subscribers that must be reached, or sufficient number of subscribers successfully reached for a Broadcast with a defined number of subscribers that must be reached
  - ESPA 4.4.4 status = 'call terminated' (Call Status = '5')
    Unable to successfully reach sufficient number of subscribers for a Broadcast with a defined number of subscribers that must be reached
- 'extended status' = 'yes'
  - ESPA 4.4.4 status = 'positive' (Call Status = '9P')
    The call was ended with positive results, the subscriber was reached and no callback call was triggered
  - ESPA 4.4.4 status = 'negative' (Call Status = '9N')
    The call was ended with negative results, either no subscriber reached or no subscriber confirmed positive
  - ESPA 4.4.4 status = 'key' (Call Status = '9K')
    The call was ended with positive result, the subscriber has at least confirmed by pressing a key, no callback call was triggered
  - ESPA 4.4.4 status = 'speech' (Call Status = '9S')
    The call was ended, callback call was triggered, there was no special signaling during the call
  - ESPA 4.4.4 status = 'speech + 1' (Call Status = '91')
    The call was ended, no callback call was triggered, during the active call the alerted subscriber pressed '1'
  - ESPA 4.4.4 status = 'speech + #' (Call Status = '9#')
    The call was ended, no callback call was triggered, during the active call the alerted subscriber pressed the pound key '#'

3.3 Status Requests and Status Messages

3.3.1 Status messages received from the OScAR server

During the processing of a Broadcast, the OScAR server sends status messages to OScAR Satellite. In general, these status messages from the OScAR server have no effect on the ESPA 4.4.4 status, with the following exception:

When the OScAR server signals, in the status message, a routed and active call between the OScAR server and a Broadcast subscriber, and the setting "accelerated "paged callback info after successful build-up of the callback connection" is configured, OScAR Satellite will immediately set the ESPA 4.4.4 status to 'Paged' (Call Status = '3').

3.3.2 Receive status request from ESPA 4.4.4

The ESPA 4.4.4 status is set or edited in the following situations:

- After the start of a process
  ➤ see Section 3.2.8 ,"Start a process"
- When receiving a status message from the OScAR server
  ➤ see Section 3.3.1 ,"Status messages received from the OScAR server"
- When receiving a message from the OScAR server on the end of the Broadcast
  ➤ see Section 3.3.1 ,"Status messages received from the OScAR server"
- In the event of a connection error

➤ see Section 3.2.4 ,"Connection error to ESPA 4.4.4"
➤ see Section 3.2.5 ,"Connection error to the OScAR server"

OScAR Satellite saves the ESPA 4.4.4 status that results from these events and reports it to the nurse call system via the ESPA 4.4.4 interface in the below-listed situations:

- Status request for one or several processes
- Polling = Status request for all processes

➤ see Section 3.2.7 ,"Matrix chart"

First OScAR Satellite identifies the corresponding process(es) using these ESPA 4.4.4 records:

- Status request for several processes
  – the Call ID
- Status request for one process:
  – the Call ID and the Call address
  – the call address, display type, beep coding, priority, nurse call interface and the number of transmissions
- OScAR Satellite sends the saved ESPA 4.4.4 status of the requested process to the nurse calls system.
- If it is unable to find the matching process, OScAR Satellite will send a 'fault-indication' (Call Status = '8') to the nurse call system.

A status message contains the following ESPA 4.4.4 records:

- Process identification:
  – with Call ID:
  ESPA 4.4.4 records in this order: Call ID, call address, call status
  – without Call-ID:
  ESPA 4.4.4 records that were transmitted when the call was started (if needed, only part of the listed items): 'Call address', 'Display message', 'Call type', 'Beep coding', 'Priority', 'Nursecall interface', 'Number of transmissions'
- ESPA 4.4.4 status

➤ see Section 3.2.7 ,"Matrix chart"

3.4 Digital Contact Inputs

The below list covers in detail the functions of the digital inputs and digital outputs of OScAR-Satellite. This includes the activation of OScAR Broadcast groups via digital inputs and the direct control of the digital outputs by the OScAR server, but also the status messages regarding digital outputs and direct messages on the status regarding the digital inputs (incl. their status changes) to the OScAR server.

On the application level, OScAR Satellite supports 3 different types of contact inputs for normal operation:

- simple standard contacts,
- enhanced standard contacts (if needed with alarm-stop function and variably adjustable alarm delays before and in between alarm activations),
- control panel buttons with start/stop toggle function and, if needed, corresponding status outputs (up to 9 possible, provided the outputs are not needed for system messages).

The below table lists the parameters of the different types:

Contact input Function	Operator Console Button with Toggle Function	Simple Standard Contact	Enhanced Standard Contact
Delayed alarm process start, with adjustable time during which the input must be active constantly, without interruption	no	no	yes/no
Alarm process stop when the input becomes inactive	no	no	yes/no
Evaluation of the input activation for active alarm processes	yes, invokes process stop	no	no
Save the request to start an alarm process (and delayed start) if unable to start the process (no connection to the OScAR server)	no	yes	yes
Inter-Broadcast settling time between the end of an alarm process end and the next earliest re-start, with the length of time configurable	no	no	yes/no
Reactivation of the alarm process if input is active, at the end of the inter-Broadcast settling time	n/a	n/a	• When contact is active [1. 2.] • When contact is active and upon reactivation during the settling time [1. 3] • Never (system considers later activations only) [4]

Table 3-4 Overview of the parameters of digital contact inputs

1. If a delayed alarm process start is configured, the corresponding timer will only start at the end of the inter-Broadcast settling time.
2. Typical configuration for long settling times, when the error does not need to re-occur during the inter-Broadcast settling time for the Broadcast to be restarted, but only to be still pending or still be in queue-up at the end of this time period.
3. Typical configuration for long settling times when the error does not need re-occur during the inter-Broadcast settling time for the Broadcast to be restarted.
4. Typical configuration for short settling times; prevents alarm calls from being re-triggered immediately after the Broadcast end.

OScAR Satellite starts Broadcasts in the OScAR server. For this, Broadcast groups must be administrated in the OScAR server, with each group consisting of either only one or of many members (subscribers).

The relevant group is addressed by using the so-called Group ID which is administrated in the OScAR server, and which must also be configured at the corresponding digital input.

➤ see "OScARpro, OScAR-TT User Manual".
➤ see "OScAReco User Manual"

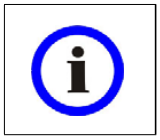
In detail, the processes follow the below-described sequence:

- OScAR Satellite accepts status changes of the digital inputs.
- OScAR Satellite writes the Broadcasts requests into an internal queue.
- OScAR Satellite adds the administrated display text and forwards them to the OScAR server via µESPA-X.
- The OScAR server carries out the Broadcasts.
- The OScAR server reports the final result to OScAR Satellite.
- If an inter-Broadcast settling time is configured, OScAR Satellite activates, at the end of the Broadcast, a timer that makes sure that the process is not re-started through this contact before the process ends.

When booted, OScAR Satellite verifies if any contacts have already been activated and, if so, treats them as if they were activated at the time of the system start. This may mean that a process is started immediately.

After a connectivity problem between OScAR Satellite and the OScAR server, all processes that were started via contact inputs will be deleted from the OScAR-Satellite process queue.

➤ see Section 3.2.5 ,"Connection error to the OScAR server"



Note:
For more information on the customized configuration of Broadcasts and their further possibilities and options, please see the pertinent User Manual.

3.5 Digital Outputs

The digital outputs can be used to realize the following functions:

- to signal the system states of OScAR Satellite (e.g. 'Ready for operation'),
- Realization of operator console contacts with feedback in combination with contact inputs, e.g. via an integrated light-emitting diode. The feedback contact signals that an µESPA-X process that has been started by a particular input is currently active and ongoing.
  If the µESPA-X process cannot be started, there will be no feedback when the contact output is activated.
- Switching of outputs by the OScAR server

In detail, the following parameters must be administrated here:

- Physical parameters of the contact outputs (phase angle)
  ➤ see Section 6.3.4 ,"Configure the Digital I/O"
- Assignment of the system states to the contact outputs
  ➤ see Section 6.4.1 ,"Set the parameters for the digital input functions"

4 System Start-Up of OScAR-Satellite

Overview

This chapter covers the first-time start-up of OScAR Satellite and includes the safety instructions in German, Finnish, Danish and Swedish that must be heeded during the process.

Content

4.1 General Safety Instructions
- 4.1.1 Safety instructions for Denmark
- 4.1.2 Safety instructions for Finland
- 4.1.3 Safety instructions for Sweden

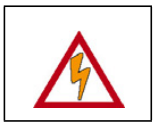
4.2 Preparatory Steps for OScAR-Satellite and VCON
4.3 Connect and Test the Digital Inputs
4.4 Connect and Test the Digital Outputs and the Relay Output
4.5 Create and Test the µESPA-X Connection
4.6 Connect and Test the Host System(s) via the COM port(s)
4.7 Configuration and Test the OScAR Satellite Application
4.8 Save the OScAR Satellite Configuration

To set up OScAR-Satellite, follow the instructions in the following section step by step (where appropriate, optional steps can be omitted):

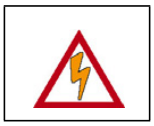
No.	Step
1.	Prepare OScAR-Satellite and VCON ➤ see Section 4.2, "Preparatory Steps for OScAR-Satellite and VCON" required
2.	Connect and test the digital inputs ➤ see Section 4.3, "Connect and Test the Digital Inputs" avail. as option
3.	Connect and test the digital outputs and the relay output ➤ see Section 4.4, "Connect and Test the Digital Outputs and the Relay Output" avail. as option
4.	Establish and test the connection ➤ see Section 4.5, "Create and Test the µESPA-X Connection" required
5.	Link-up and test the host system via COM port(s) ➤ see Section 4.6, "Connect and Test the Host System(s) via the COM port(s)" required
6.	Configure and test OScAR-Satellite ➤ see Section 4.7, "Configuration and Test the OScAR Satellite Application" required
7.	Save the OScAR-Satellite configuration in a backup ➤ see Section 4.8, "Save the OScAR Satellite Configuration" required

Table 4-1 Preparatory steps for OScAR Satellite and VCON

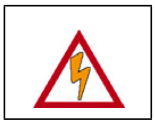
4.1 General Safety Instructions



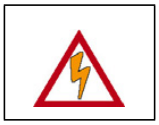
Warning!
Always make sure you read the installation instructions carefully before you connect the system to the electric power source.



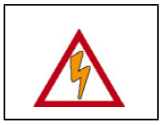
Warning!
Please follow the general safety instructions and the recommended measures for ESD protection.



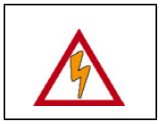
Warning!
OScAR may not be operated in explosion-risk areas or rooms.



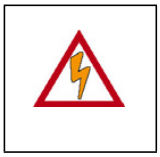
Warning!
OScAR may only be operated on switches with PoE (Power over Ethernet) or PoE injectors. Please follow the safety information and safety instructions of these devices.



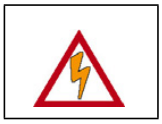
Warning!
After disconnecting the Ethernet power cord, make sure that no current-carrying parts of the Ethernet power plug come into contact with metallic objects.



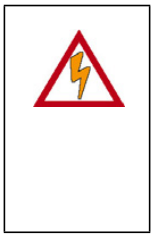
Warning!
During a thunderstorm, do not perform any operations on the system and do not connect or pull any cables or cords.



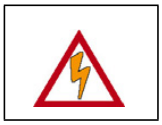
Warning!
The sockets marked "ETH", "USB", "COM", "DIGITAL OUT", "DIGITAL IN", and "AUDIO" are safety switches with an extra low voltage (Safety Extra Low Voltage, SELV). Always make sure that SELV switches are only connected to other SELV switches.



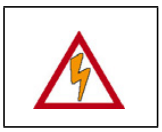
Warning!
The sockets marked "ISDN 1" and "ISDN 2" are safety switches with TNV-1 circuits.



Warning!
OScAR is designed as a tabletop solution for operation in an EDP or lab environment, and requires a surrounding that is dry, clean, well-ventilated, and air conditioned.
OScAR is cooled exclusively by way of convection, i.e. no fans are built into OScAR.
For more details on the required ambient temperature and the humidity:
➤ see Section 7.1, "Specification of DAKS-Satellite".



Warning!
OScAR may only be repaired or serviced by the producer and with the original parts. No components or parts of the boards may be replaced or exchanged by the user.

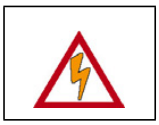


Warning!
This product may only be disposed in keeping with the pertinent statutory laws and regulations.
Note: OScAR has no batteries.

4.1.1 Safety instructions for Denmark

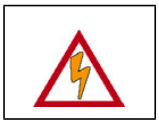
Vigtigt!
Lederen med grøn/gul isolation må kuntilsluttes en klemme mærket (IEC 417, No. 5019) eller (IEC 417, No. 5017).
For tilslutning af de øvrige ledere, se medfølgende installationsvejledning".

4.1.2 Safety instructions for Finland



Variotus!
Laite on liitettävä suojamaadoituskoskettimilla varustettuun pistorasiaan.

4.1.3 Safety instructions for Sweden



Varning!
Apparaten skall anslutas till jordat uttag.

4.2 Preparatory Steps for OScAR-Satellite and VCON

How to prepare OScAR-Satellite and VCON, step by step:

No.	Step
1.	Place OScAR-Satellite into the right position. Be careful to follow the general safety information as you place the device. ➤ see Section 4.1, "General Safety Instructions"
2.	Check the system requirements for the service PC. ➤ see Section 5.1, "System Requirements"
3.	Install the USB device driver for OScAR-Satellite. ➤ see Section 5.2, "Install the USB driver"
4.	Carry out the initial connect of OScAR-Satellite to the Service PC. ➤ see Section 5.3, "Connect DAKS-Satellite to the Service PC for the First Time"
5.	Configure the USB port of the Service PC. ➤ see Section 5.4, "Configure the USB Port of DAKS-Satellite"
6.	Set up the terminal for the configuration of OScAR-Satellite. ➤ see Section 5.5.1, "Use a terminal emulation program for the basic configuration of DAKS-Satellite"
7.	Enter the IP access data. The entry of the IP access data makes it possible to carry out the further installation through the VCON service tool. ➤ see Section 6.2, "Configuration of the IP Access Data"
8.	Set the clock in OScAR-Satellite. ➤ see Section 6.2.2, "Set the clock"
9.	Install VCON. ➤ see Section 8.11, "Install VCON" To do so, you first need to carry out all of the steps mentioned above in this chapter.
10.	Connect OScAR-Satellite with VCON. ➤ see Section 8.2.1, "Set up and edit a VCON connection"
11.	OScAR-Satellite and VCON are now prepared and ready for use.

Table 4-2 Preparatory steps for OScAR-Satellite and VCON

4.3 Connect and Test the Digital Inputs

How to connect and test the digital inputs, step by step:

No.	Step
1.	Connect the digital inputs of OScAR-Satellite. When connecting the digital inputs, you need to specify if you want the connection also to include line break and short circuit detection. ➤ see Section 7.2.8, "Digital inputs" ➤ see Section 7.3.8, "Special connector for digital inputs" In this context, please be careful to note the different wiring of the digital inputs. The connection is made with the special plug for digital inputs, included in the delivery.
2.	Start VCON and set up the LAN connection to OScAR-Satellite. ➤ see Section 8.2, "Start VCON"
3.	Open the configuration for the process "OScAR-Satellite Application": Select if you want the Broadcast ID or the contact activation number also to be transmitted to the OScAR server when the contact is activated.
4.	Open the configuration of the process "Server/Contact Manager on Services". ➤ see Section 8.6.2, "Output in the Process list" ➤ see Section 8.6.3, "Properties/settings"
5.	Carry out the configuration for the digital inputs. For the configuration of the digital inputs, please make the following settings and bear in mind that they must correspond to the external wiring: • Phase angle • Short circuit and line break detection ➤ see Section 6.3.4, "Configure the Digital I/O"
Test the digital inputs	
6.	Open the Terminal window for the process "OScAR Satellite/Contacts on Hardware". ➤ see Section 8.8, "The Terminal Window"

Table 4-3 Connect and test the digital inputs

No.	Step

7.	Activate the monitoring of the digital inputs.
	Enter the command `mon 4` and press <enter>.
	
	The following output will appear:
	`INFO: 0x00000001 <--`
	`ERROR: 0x00000002 <--`
	`inputs: 0x00000004 <--`
	`outputs: 0x00000008`
	`DEBUG: 0x80000000`
	`cur. mask: 0x00000007`
	
	Note:
	The monitoring 'INFO' and 'ERROR' cannot be deactivated.
	➤ see Section 8.7, "Monitoring".
	
	If a change is made to a digital contact input, it is shown in the following format:
	`input #<contact id>: <old status> -> <new status>`
	• `<contact id>` digital input ID 1 .. 16
	• `<old, new status>` = `<2V`
	= `2..6V`
	only for switching with short circuit-
	= `6..10V`
	or line break detection
	= `>10V`
	
	This output refers to the physical switching of the contact input and the voltages that are actually applied.
	➤ see Section 7.2.8, "Digital inputs"
	
	For more information on the switching states that result, when seen from the application's vantage point, from the input voltages in combination with the individual settings of the contact inputs:
	➤ see Section 6.3.4, "Configure the Digital I/O"

8.	Test the contact input for switching without short circuit- and line break detection. Close and open the contact input you want to test. For example, for the digital contact input 8 the Terminal window will read: • Close the contact `input #8: >10V -> <2V` • Open the contact `input #8: <2V -> >10V`

Table 4-3 Connect and test the digital inputs

No.	Step
7b.	Test the contact input for switching with short circuit- and line break detection (optional). Close and open the contact input you want to test. For example, for the contact input 8 the Terminal window will read: • Close the contact `input #8: 6..10V -> 2..6V` • Open the contact `input #8: 2..6V -> 6..10V` Short circuit the contact input you want to test. For example, for the contact input 8 the Terminal window will read: • Input previously closed `input #8: 2..6V -> <2V` • Input previously open `input #8: 6..10V -> <2V` • previous line break `input #8: >10V -> <2V` Simulate a line break for the contact input you want to test. For example, for the contact input 8 the Terminal window will read: • Input previously closed `input #8: 2..6V -> >10V` • Input previously open `input #8: 6..10V -> >10V` • Previous short circuit `input #8: <2V -> >10V` Finally, enter `mon 0` and press `<enter>` to deactivate all monitoring again.
8.	The digital inputs are now connected, tested and ready for operation.

Table 4-3 Connect and test the digital inputs

4.4 Connect and Test the Digital Outputs and the Relay Output

How to connect and test the digital outputs and the relay output, step by step:

No.	Step
1.	Connect the digital outputs and the relay output of OScAR-Satellite. The connection is made using the special plug for digital outputs. ➤ see Section 7.2.8, "Digital inputs" ➤ see Section 7.3.9, "Special connector for digital outputs"
2.	Start VCON and set up the LAN connection to OScAR-Satellite. ➤ see Section 8.2, "Start VCON"
3.	Open the configuration of the process "Server/Contact Manager on Services". ➤ see Section 8.6.2, "Output in the Process list" ➤ see Section 8.6.3, "Properties/settings"
4.	Carry out the configuration for the digital outputs. When configuring the digital outputs do not forget to bear in mind the phase angle for the external wiring. ➤ see Section 6.3.4, "Configure the Digital I/O"
Test the digital outputs	
5.	Open the Terminal window for the process "OScAR Satellite/Contacts on Hardware". ➤ see Section 8.8, "The Terminal Window"

6.	Activate and deactivate the digital outputs.
	Use the command `out <contact id> <0, 1>` and press <enter> to activate or deactivate the digital outputs (always mind the phase angle):
	The following output will then appear:
	`2010-02-22 12:36:07.4600 [00000001]: force output #<contact id>: <0, 1>`
	• `<contact id>` digital output ID 1 .. 8
	• `<0 ,1>` = `0` deactivate digital output or deactivated
	= `1` activate digital output or deactivated
	e.g. activate contact output 8
	`out 8 1`
	`2010-02-22 12:36:07.4600 [00000001]: force output #8: 1`
	
	Caution!
	Please bear in mind that contacts outputs are only reset or modified by the application after the next change (change of a status, Broadcast launch etc.). If needed, reboot OScAR-Satellite now.

7.	To reboot OScAR-Satellite, pull the Ethernet cable cord and plug it back in.
8.	The digital outputs are now connected, tested and ready for operation.

Table 4-4 Connect and test the digital outputs and the relay output

4.5 Create and Test the µESPA-X Connection

How to create and test the µESPA-X connection, step by step:

No.	Step
1.	Start VCON. ➤ see Section 8.2, "Start VCON"
2.	Open the configuration for the process "Server/ESPA-X Manager on Services". ➤ see Section 8.6.2, "Output in the Process list" ➤ see Section 8.6.3, "Properties/settings"
3.	Carry out the basic configuration of the µESPA-X interface. In any case, OScAR Satellite must be connected to the preferred ESPA-X server. Where applicable, OScAR-Satellite can also be connected to an ESPA-X backup server. Note: OScAR-Satellite can only be connected to a OScAR server as an ESPA-X server. To carry out the basic configuration of the ESPA-X interface, you need the following parameters for the preferred and, where applicable, for the backup server: • the IP address and the IP port of the ESPA-X server • the login name and the login password of the ESPA-X server • TLS encryption yes/no This data must be administrated accordingly in the OScAR server. For more information: ➤ see "OScARpro Server Configuration Manual" Now configure the following ESPA-X clients: • Preferred ESPA-X server ESPA-X-Client-1 -> required • Redundancy server ESPA-X-Client-2 -> optional ➤ see Section 6.3.3, "Configure the µESPA-X interface"

Table 4-5 Create and test the µESPA-X connection

No.	Step
Test the µESPA-X connection	
4.	Open the Terminal window of the process "OScAR Satellite/ESPA-X-Client on Services". ➤ see Section 8.8, "The Terminal Window"

5.	Verify the output in the Terminal window.
	
	Note:
	Please note that in the below outputs, some line are cut off.
	
	The following messages appear in the Terminal window when OScAR-Satellite connects to the ESPA-X-Client-1 and to the ESPA-X-Client-2.
	
	`**********`
	`* tetronik GmbH *`
	`* ESPA-X-Client *`
	`* Version: 1.00 *`
	`* Compiled: May 03 2016 *`
	`* Copyright (c) 1994 - 2016 All rights reserved. *`
	`**********`
	
	`URL ESPA-X-Client-1 on hardware port ESPAXCLIENT_1 registered.`
	`connection= , host=19`
	`URL ESPA-X-Client-2 on hardware port ESPAXCLIENT_2 registered.`
	`connection= , host=19`
	
	OScAR-Satellite establishes a connection to the preferred ESPA-X server (ESPA-X-Client-1)
	
	`Opening URL ESPA-X-Client-1 ...`
	`Creating adpater CTFLAdapterCtrl ...`
	`Creating adpater CTFLAdapterESPAXclient ...`
	`Creating core session for connection ESPA-X-Client-1 ...`
	`ESPA-X: New connection from TCP address= 192.168.69.76.`
	`ESPA-X: TCP address= 192.168.69.76 is valid. New session created.`
	`TCP port= 2023, Se`
	`Login on ESPA-X server user='sess1'...`
	`Intern login on ESPA-X server ok.`
	`Login on ESPA-X server ok.`
	`URL ESPA-X-Client-1 successfully opened.`
	
	OScAR-Satellite establishes the connection to the backup (redundancy) ESPA-X server (ESPA-X-Client-2):
	
	`Opening URL ESPA-X-Client-2 ...`
	`Creating adpater CTFLAdapterCtrl ...`
	`Creating adpater CTFLAdapterESPAXclient ...`
	`Creating core session for connection ESPA-X-Client-2 ...`
	`ESPA-X: New connection from TCP address= 192.168.69.75.`
	`ESPA-X: TCP address= 192.168.69.75 is valid. New session created.`
	`TCP port= 2023, Se`
	`Login on ESPA-X server user='sess2'...`
	`Intern login on ESPA-X server ok.`
	`Login on ESPA-X server ok.`
	`URL ESPA-X-Client-2 successfully opened.`

Table 4-5 Create and test the µESPA-X connection

4.6 Connect and Test the Host System(s) via the COM port(s)

How to connect and test a host system via COM port, step by step:

No.	Step
1.	Connect the host system to the serial interface(s) (COM port). Be aware of the PIN assignment of the serial interface and bear in mind the wiring plan of the COM interface for RS232/RS422. ➤ see Section 7.2.6, "COM port" ➤ see Section 7.5.3, "Wiring plan of the COM interface"
2.	Start VCON. ➤ see Section 8.2, "Start VCON"
3.	Open the configuration of the process "Server/Serial Manager on Services". ➤ see Section 8.6.2, "Output in the Process list" ➤ see Section 8.6.3, "Properties/settings"
4.	Carry out the configuration of the serial interface. You need the following details to configure the serial interface: • Interface (RS232, RS422) with baud rate, parity, data bits, stop bits • ESPA 4.4.4 address of OScAR-Satellite or host system ➤ see Section 6.3.2, "Configure the Serial interface (COM port)"
Test a serial connection between the host system and OScAR Satellite.	
5.	Open the Terminal window for the process "OScAR Satellite/Serial on Hardware". ➤ see Section 8.8, "The Terminal Window"

6.	Activate the monitoring of the data traffic on the first serial interface by entering the command **mon 8** and press <enter>.
	The following output will appear:
	`INFO: 0x00000001 <--`
	`ERROR: 0x00000002 <--`
	`XML: 0x00000004`
	`device 0 Rx/Tx data (tester view): 0x00000008 <--`
	`device 0 Rx/Tx data (service view): 0x00000010`
	`device 0 Rx/Tx data (Rel.6 view): 0x00000020`
	`device 0 Rx/Tx payload data : 0x00000040`
	`device 0 Rx/Tx HOST - short info : 0x00000080`
	`device 0 Rx/Tx HOST - Hex data : 0x00000100`
	`DEBUG: 0x80000000`
	`cur. mask: 0x0000000b`
	Note:
	Please remember that the monitor items 'INFO' and 'ERROR' cannot be deactivated!
	➤ see Section 8.7, "Monitoring"

Table 4-6 Connect a host system via the COM port, with testing

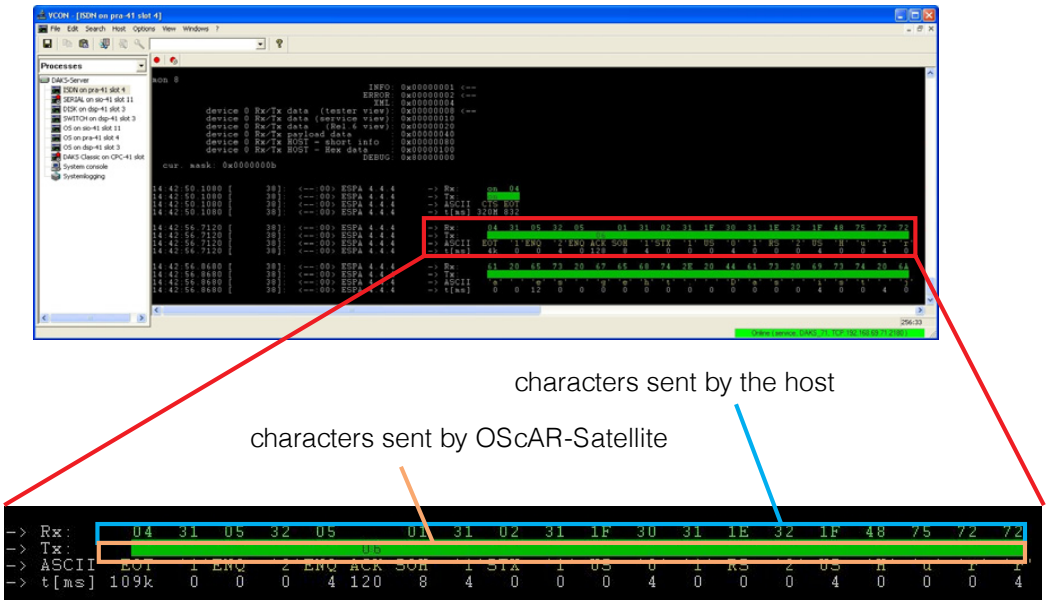
No.	Step
7.	Launch an ESPA 4.4.4. call at the host system. The Terminal window will output the characters received and sent by OScAR-Satellite (20 characters per line). The below picture gives you an example of the communication between OScAR Satellite and a host system: • The host selects OScAR-Satellite using the string: `'1' ENQ '2' ENQ` • OScAR-Satellite answers with `ACK`, • The host sends data: `SOH '1' STX '1' US '0' '1' ...`  If no output can be made, or if either the host or OScAR-Satellite fail to send any characters altogether, be careful to check the COM port connectors as well as the basic configuration of the serial interface. ➤ see Step 4 The configuration of the interface is complete and successful once a bi-directional communication commences and OScAR-Satellite answers with: `ACK` or `NAK`. For more communication details and a complete interpretation of the ESPA 4.4.4 data sets: ➤ see Section 3.2, "ESPA 4.4.4 Interface via DAKS-Satellite" Finally, enter `mon 0` and press <enter> to deactivate all monitoring again.
8.	The host system is connected via COM port, tested and ready for operation.

Table 4-6 Connect a host system via the COM port, with testing

4.7 Configuration and Test the OScAR Satellite Application

How to configure and test OScAR Satellite, step by step:

No.	Step
1.	Configure the Broadcast groups in the OScAR server. To start Broadcasts from OScAR-Satellite, you need to administrate the Broadcasts in the OScAR server first. Note: If the parameter 'Function digital inputs' is set to: 'Control of OScAR alarm Groups', make sure you write down the Group IDs of the Broadcasts groups that you want the system to launch, as you will need these details as you proceed with the administration of OScAR Satellite. ➤ see pertinent user manual ➤ see Section 3.2, "ESPA 4.4.4 Interface via DAKS-Satellite"
2.	Start VCON. ➤ see Section 8.2, "Start VCON"
3.	Open the configuration for the process "Server/OScAR-Satellite Application". ➤ see Section 8.6.2, "Output in the Process list" ➤ see Section 8.6.3, "Properties/settings"
4.	Set the parameters for the digital inputs. The digital inputs can be set up in form of one of the following contact types: • simple standard contact: see Step 4a • enhanced standard contact: see Step 4b • operator console contact with toggle function:see Step 4c To do so, use the already configured group ID(s).
4a.	Digital inputs for simple standard contacts Simple standard contacts require no further parameterization. When activated, a Broadcast is automatically started. When they are deactivated, the Broadcast will not be canceled. ➤ see Section 6.4.1, "Set the parameters for the digital input functions" ➤ see Section 3.4, "Digital Contact Inputs"
4b.	Digital inputs for enhanced simple contacts Can only be administrated when the parameter 'Function digital inputs' is set to: 'Control of OScAR alarm Groups'. ➤ see Section 6.4, "Configure the Application via VCON" Enhanced standard contacts offer various possibilities of parameterization, such as delay of the start, process end upon deactivation, inter-broadcast settling time and activation-assessment during the process run time. ➤ see Section 6.4.1, "Set the parameters for the digital input functions" ➤ see Section 3.4, "Digital Contact Inputs"

Table 4-7 Configuration and test of OScAR Satellite

No.	Step
4c.	Digital inputs for operator console contacts with toggle function (Can only be administrated when the parameter 'Function digital inputs' is set to: 'Control of OScAR alarm Groups'!) ➤ see Section 6.4, "Configure the Application via VCON" Operator console contacts are used when a Broadcast shall be started via a button, and the same button shall also be used to end the Broadcast again: As feedback, a digital output can be set to match an operator console button, i.e. the digital contact output is activated when the process is started and deactivated when the process ends (e.g. for control of an LED that is built into the button. ➤ see Section 6.4.1, "Set the parameters for the digital input functions" If the Broadcast cannot be started there will be no corresponding feedback and the digital output will not be activated. ➤ see Section 6.4.1, "Set the parameters for the digital input functions" ➤ see Section 3.4, "Digital Contact Inputs"
5.	Set the parameters for the digital outputs and the relay output. The digital contact outputs can be used to realize the following functions: • Signal the system states of OScAR Satellite (e.g. the system's operational readiness), or the remote-activation of the OScAR server. • In combination with digital inputs: to realize operator console contacts with feedback (see Step 4c). ➤ ee Section 6.4.1, "Set the parameters for the digital input functions" ➤ see Section 3.2, "ESPA 4.4.4 Interface via DAKS-Satellite"
6.	Set the parameters for the ESPA 4.4.4. interface. The parameterization of the ESPA 4.4.4. interface includes the following parameters: • Process and status requests: Length of the process queue, timeout for status requests after the end of a process, behavior when sending 'paged' • Establishing and ending call connections: Activate speakerphone, disconnect (do not disconnect) calls after the process end • Ongoing calls: Evaluation of keystrokes during ongoing calls, e.g. between nurses and patients ➤ see Section 6.4.1, "Set the parameters for the digital input functions" ➤ see Section 3.2, "ESPA 4.4.4 Interface via DAKS-Satellite"

Table 4-7 Configuration and test of OScAR Satellite

No.	Step
Test the application	
7.	Open the Terminal window of the process "OScAR Satellite/OScAR-Satellite Application". ➤ see Section 8.8, "The Terminal Window"

8.	Test the µESPA-X connection and switch-over to the backup system.
	To test the switching to the backup server, interrupt the network connection between the preferred ESPA-X server and OScAR-Satellite.
	
	Note:
	Please remember that when interrupting the network connection of the ESPA-X server, all other network services of the server will also be lost.
	
	The following outputs will now appear in the Terminal window:
	
	• After a timeout, OScAR-Satellite will detect that the connection to the preferred OScAR server (ESPA-X-Server 1) has been lost.
	
	`ESPA-X [1]::connection deactivated`
	`ESPA-X [1]::connection closed`
	
	• A connection will be established to the backup server (ESPA-X-Server 2)
	
	`ESPA-X connection 2 set to active`
	
	• The system status will be set and, where needed, one or several contact outputs will be activated (if so configured).
	
	`System-Status set to: ESPA-X no. 1 disconnected`
	`System-Status set to: ESPA-X no. 1 NOT active`
	`System-Status set to: ESPA-X no. 2 active`
	
	Reconnect the ESPA-X-Server 1 with the network by plugging the ethernet cable cord back in.
	• OScAR-Satellite will detect that the preferred ESPA-X server (ESPA-X-Server 1) can be reached again, and will activate this server (only if no more processes are still active in OScAR Satellite).
	
	`ESPA-X connection 1 set to active`
	
	• The system status will be set and, where needed, one or several contact outputs will be activated (if so configured).
	
	`System-Status set to: ESPA-X no. 2 NOT active`
	`System-Status set to: ESPA-X no. 1 active`

Table 4-7 Configuration and test of OScAR Satellite

No.	Step

9.	Start a Broadcast in the OScAR server via ESPA 4.4.4.
	Set off a nurse call via ESPA 4.4.4, e.g. by pressing a call button.
	The following example is an illustration of the messages that are output in the Terminal window.
	• OScAR-Satellite receives an ESPA 4.4.4 record and places it in the process queue.
	`Start-Call -> started: [idx: 0]`
	`Header: 'call to pager'`
	`Call type: 'standard call'`
	`Call address: '1004'`
	`Call ID: '0000'`
	`Display message: 'nurse call'`
	`Beep coding: '2'`
	`Priority: 'high'`
	`number of 'ESPA 4.4.4' calls in queue: 1`
	• The system status will be set and one or several contact outputs will be activated (if so configured).
	`System-Status set to: ESPA 4.4.4. active`
	`System-Status set to: minimal 1 alarm process active`
	• OScAR-Satellite sends an ESPA-X dataset in the direction of the OScAR server, waits for the corresponding response and receives the response as expected.
	`ESPA-X [1]::Call start request (1.): idx: 0 Ref: uAdapt:00000015 TAN: -`
	`Waiting ESPA-X response: idx: 0 Ref: uAdapt:00000015 TAN: ??? [timeout: 5 s]`
	`ESPA-X [1]::Call start response: idx: 0 Ref: uAdapt:00000015 TAN: 276360112`
	• OScAR-Satellite answers to a status inquiry received from the nurse call system with 'in queue'.
	`Status request -> answered: [idx: 0]`
	`Header: 'call to pager'`
	`Call type: 'standard call'`
	`Call address: '1004'`
	`Call ID: '0000'`
	`Call Status: 'in queue'`
	• OScAR-Satellite receives a message from the OScAR server reporting the start of the Broadcast.
	`ESPA-X [1]::Call started indication: idx: 0 Ref: uAdapt:00000015 TAN: 276360112`
	• The subscriber listed in the Broadcast accepts the call, sends a positive confirmation and hangs up again. The OScAR server reports the end of the Broadcast and the result: 'positive confirmed'.
	`ESPA-X [1]::Call ended indication: idx: 0 Ref: uAdapt:00000015 TAN: 276360112 Result: Positive confirmed End-Reason: Finished Info:`

Table 4-7 Configuration and test of OScAR Satellite

No.	Step

10.	Start a Broadcast in the OScAR server through a digital contact input.
	Start a Broadcast in the OScAR server via OScAR Satellite by activating an already configured contact input.
	The following example is an illustration of the messages that are output in the Terminal window.
	• A contact input activates a Broadcast group (where needed with after a time delay for enhanced standard contacts).
	`Digital-In -> status started: [idx:  55] Group-ID: 1166`
	• A contact input activates a Broadcast group (where needed with after a time delay for enhanced standard contacts).
	`ESPA-X [1]::Call start request (1.): idx:  55 Ref: uAdapt:00000014  TAN: -`
	`Waiting ESPA-X response: idx:  55 Ref: uAdapt:00000014  TAN: ??? [timeout: 5 s]`
	`ESPA-X [1]::Call start response: idx:  55 Ref: uAdapt:00000014 TAN: 276356800`
	• The system status will be set and one or several contact outputs will be activated (if so configured).
	`System-Status set to: minimal 1 alarm process active`
	• OScAR-Satellite receives a message from the OScAR server reporting the start of the Broadcast.
	`ESPA-X [1]::Call started indication: idx: 55 Ref: uAdapt:00000014 TAN: 276356800`
	• The subscriber listed in the Broadcast accepts the call, sends a positive confirmation and hangs up again. The OScAR server reports the end of the Broadcast and the result: 'positive confirmed'.
	`ESPA-X [1]::Call ended indication: idx:  55 Ref: uAdapt:00000014 TAN: 276356800  Result: Positive confirmed End-Reason: Finished Info:`

11.	Start a Broadcast in the OScAR server by transmitting a change of a contact state.
	Start a Broadcast in the OScAR server via OScAR Satellite by activating an already configured contact input.
	The following example is an illustration of the messages that are output in the Terminal window.
	• The information indicating the first contact was closed is sent to the OScAR server.
	`2016-05-04 16:31:52.4080 [00000001]: Contact-Status ==>`
	`1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 <== send to OScAR`
	• The information indicating the first contact was opened is sent to the OScAR server.
	`2016-05-04 16:31:52.7200 [00000001]: Contact-Status ==>`
	`0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 <== send to OScAR`

Table 4-7 Configuration and test of OScAR Satellite

No.	Step

12.	Test the digital outputs and the relay output.
	To test the digital outputs and the relay output, you need to create the corresponding system states that have been defined for the individual outputs.
	➤ see Section 6.4.1, "Set the parameters for the digital input functions"
	
	When these individual system states are reached, the following outputs must appear in the Terminal window and, if assigned, the corresponding output must be set:
	• system active
	This output is appears when the OScAR Satellite application is up and running.
	`System-Status set to: system active`
	• ESPA 4.4.4 active
	This output appears when the ESPA 4.4.4 connection is active.
	`System-Status set to: ESPA 4.4.4 active`
	• one ESPA-X client active
	This output appears when either the preferred ESPA-X server or the backup server is active.
	`System-Status set to: system one ESPA-X client active`
	• primary ESPA-X client connected
	This output appears when OScAR-Satellite is connected to the preferred OScAR server.
	`System-Status set to: ESPA-X no. 1 connected`
	• primary ESPA-X client active
	This output appears when OScAR-Satellite is utilizing the preferred OScAR server to start processes.
	`System-Status set to: ESPA-X no. 1 active`

Table 4-7 Configuration and test of OScAR Satellite

No.	Step

	• secondary ESPA-X client connected
	This output appears when OScAR-Satellite is connected to the backup server.
	`System-Status set to: ESPA-X no. 2 connected`
	• secondary ESPA-X client active
	This output appears when OScAR-Satellite is using the backup server to start processes (output is only shown when the preferred ESPA-X server cannot be reached).
	`System-Status set to: ESPA-X no. 2 active`
	• min. 1 channel short circuit or line break
	This output appears when at least one short circuit or line break has been detected for a contact input for which the detection of such errors has been activated.
	`System-Status set to: minimal one channel short circuit or line break`
	• min. 1 alarm process active
	This output appears (in the setting: 'Remote digital inputs of OScAR'), when a Broadcast process has been started via a contact input or via ESPA 4.4.4, and is still active.
	This output appears (in the setting: 'Control of OScAR alarm groups'), when a Broadcast process has been started via ESPA4.4.4 and is still active.
	`System-Status set to: minimal 1 alarm process active`
	• queue full
	This output appears when more process requests are sent to OScAR-Satellite via ESPA 4.4.4 than can fit into its queue.
	`System-Status set to: queue full`
	• process active - triggered by input #1 .. 16
	These contact outputs are set when a process has been activated through the corresponding contact input, (only becomes visible with the settings: 'Control of OScAR alarm groups').
	`System-Status set to: process active - triggered by input #1.. 16`
	• contact triggered by OScAR-Server
	One of these outputs appears when the OScAR server switches a contact output of OScAR-Satellite (only becomes visible in the setting: 'Remote digital inputs of OScAR').
	`remote OScAR contact n set to active`
	`remote OScAR contact n set to passive`

Table 4-7 Configuration and test of OScAR Satellite

4.8 Save the OScAR Satellite Configuration

How to save the OScAR Satellite configuration, step by step:

No.	Step
1.	Save the configuration. ➤ see Section 8.4.3, "Save the configuration in a backup" Export the configuration for documentation purposes. ➤ see Section 8.6.4, "Export a configuration"
2.	Save the entire system for a possible later recovery of the functionalities. ➤ see Section 8.4.2, "Create a complete backup"

Table 4-8 Save the OScAR Satellite configuration

Note:
For more information on how to save and restore the settings of OScAR Satellite as well as on the configuration and the database, and for details how to run a backup of the entire system:
➤ see Section 8.4, "Data Backup Functions"

5 Configuration of the USB Port of the Service PC

Overview

This chapter shows you how to configure the Service PC to carry out the basic configuration of OScAR Satellite via the Service PC's USB port.

Content

The following areas are covered in this chapter:

5.1 System Requirements
5.2 Install the USB driver
5.2.1 Installation of the USB driver for OScAR-Satellite
5.3 Connect OScAR-Satellite to the Service PC for the First Time
5.4 Configure the USB Port of OScAR-Satellite
5.5 Basic Configuration of OScAR-Satellite via USB port
5.5.1 Use a terminal emulation program for the basic configuration of OScAR-Satellite
5.5.2 Terminal function of VCON

5.1 System Requirements

The following components are needed in order to install and configure the Service PC:

- Service PC
  - Operating system:
    - Windows 10
    - Windows Server 2016
    - Windows Server 2019
- OScAR-Satellite Installation CD
- Where applicable a terminal emulation program, e.g. Putty or Hyperterminal (only if the terminal function of VCON is not used).

5.2 Install the USB driver

Caution!
Do not connect OScAR-Satellite to the Service PC before you install the driver. The first-time, i.e. initial, connection of OScAR-Satellite is only made in the next step of the start-up.

➤ see Section 5.3, "Connect OScAR-Satellite to the Service PC for the First Time"

Caution!
In the Version 6.xx, the USB driver is also compatible with the 64-bit operating systems Windows 10.

An update from Version 4.xx to Version 6.xx is not possible. Please remove (uninstall) Version 4.xx first. After that, install the Version V6.xx anew.

5.2.1 Installation of the USB driver for OScAR-Satellite

Note:
The USB driver is only shown in the device manager after you connect OScAR-Satellite.

How to install the USB driver for OScAR-Satellite, step by step:

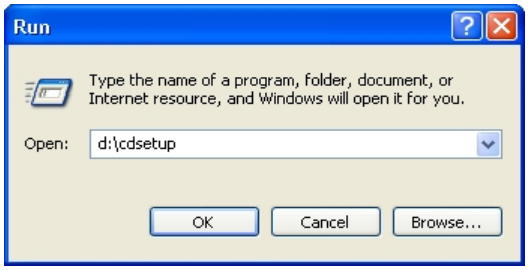
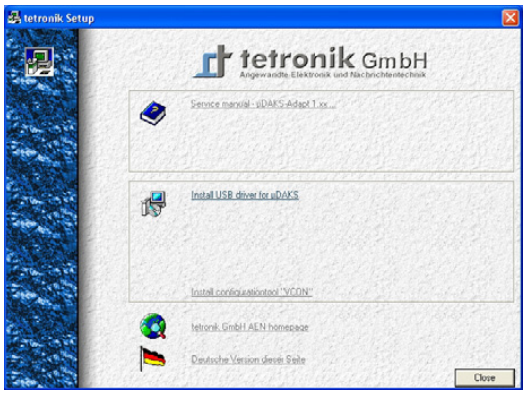
No.	Step	
1.	Place the Installation CD in the CD-ROM drive of the PC. If the installation software fails to start automatically, you can also start the installation manually in Windows. Here you can select: Start -> Run... . Enter: *<CD-Rom drive>*:\cdsetup Confirm with Ok.	
2.	In the window "tetronik Setup" choose the menu item: Install the USB driver for OScAR-Satellite...	
3.	This will open the Device Driver Installation Wizard. Now click Next.	

Table 5-1 Install the USB driver

No.	Step	
4.	The installation has been completed with success. Now click on Finish.	

Table 5-1 Install the USB driver

5.3 Connect OScAR-Satellite to the Service PC for the First Time

With the initial connection of OScAR-Satellite to the Service-PC, Windows initializes the hardware driver. Before this you must have already installed the USB diver for the pertinent hardware platform.

➤ see Section 5.2, "Install the USB driver"

How to connect OScAR-Satellite to the Service PC for the first time, step by step:

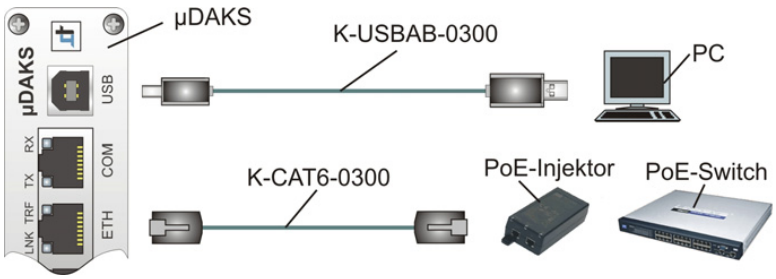
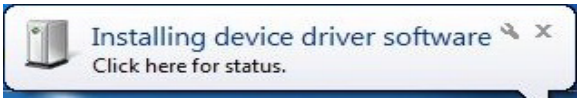
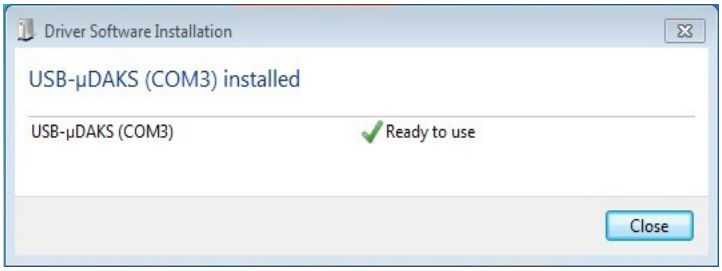
No.	Step
1.	Connect a PC to the USB port of OScAR-Satellite and connect OScAR-Satellite with the power supply (PoE).  • OScAR-Satellite — Connection to the USB port of OScAR • K-USBAB-0300 — USB connector cable • K-CAT6-0300 — The patch cable • PC — PC as terminal to OScAR-Satellite • PoE injector, PoE switch — Power supply of OScAR-Satellite and connectivity to the LAN
2.	The USB driver software is now automatically installed on the Service PC with which you have just connected OScAR-Satellite. 
3.	The software needed to connect 'USB Serial Port' (in this example: COM3) and 'USB Serial Converter' was successfully installed. End with Close. 

Table 5-2 Connect OScAR-Satellite to the Service PC for the first time

5.4 Configure the USB Port of OScAR-Satellite

To be able to configure the USB port of OScAR-Satellite, you must have already installed the USB driver and connected OScAR-Satellite at least once to the Service PC.

➤ see Section 5.2, "Install the USB driver"
➤ see Section 5.4, "Configure the USB Port of OScAR-Satellite"

How to configure the USB port of OScAR-Satellite, step by step:

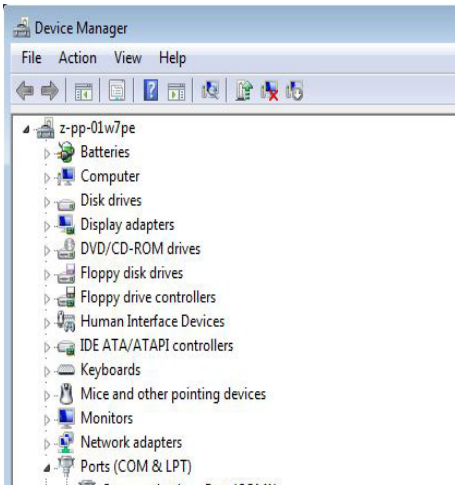
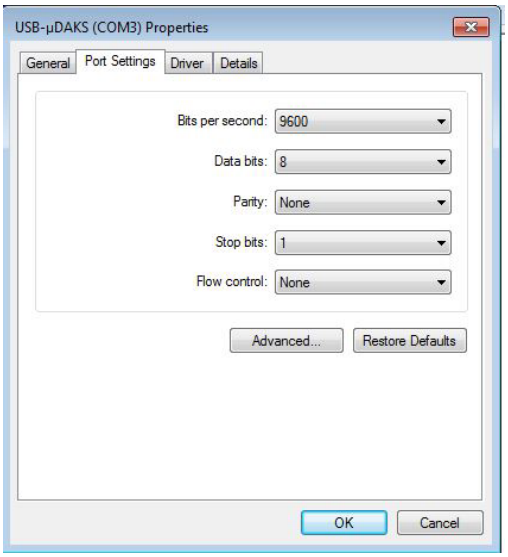
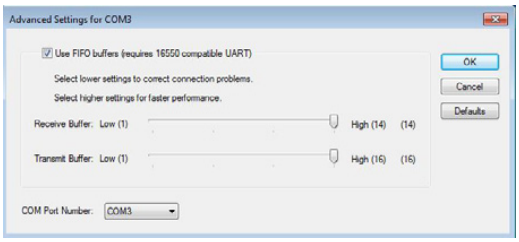
No.	Step	
1.	Open the Device Manager: • Either by making a right mouse click in the workplace's context menu on 'Administration', • Or via the control panel	
2.	This will open the window "OScAR-Satellite (COMxx) Properties". Open the tab "Port Settings" and select the following parameters: • Bits per second 9600 • Data bits 8 • Parity None • Stop bits 1 • Flow control None Now Click Advanced.	
3.	This will lead you to the following enhanced parameters. Select the free COM port you want to use. Confirm with Ok. The installation is now completed. In the next step, you can now configure the terminal emulation program for the operation with OScAR-Satellite.	

Table 5-3 Configure the USB port of OScAR-Satellite

5.5 Basic Configuration of OScAR-Satellite via USB port

There are two ways to carry out the basic configuration of OScAR-Satellite:

– either via a terminal emulation program

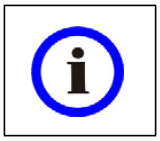
➤ see Section 5.5.1, "Use a terminal emulation program for the basic configuration of OScAR-Satellite"

– via the terminal function integrated of VCON

➤ see Section 5.5.2, "Terminal function of VCON"

5.5.1 Use a terminal emulation program for the basic configuration of OScAR-Satellite

To configure OScAR-Satellite via a terminal emulation program (e.g. Windows-Hyperterminal), you first need to connect and configure the terminal emulation program. To do so, start by carrying out all of the steps mentioned above in this chapter.



Note:
Please note that when OScAR-Satellite is rebooted, the terminal emulation program must also reconnect or, where applicable, also be rebooted (e.g. Hyperterminal).

How to connect and configure the terminal emulation program, step by step:

No.	Step
1.	Start Windows Hyperterminal or a comparable terminal emulation program.
2.	Select the COM port configured for OScAR-Satellite. ➤ see Section 5.4, "Configure the USB Port of OScAR-Satellite"
3.	Enter the following parameters in the terminal emulation program: • Baud rate 9600 baud • Data bits 8 • Stop bits 1 • Parity none
4.	Connect a PC to the USB port of OScAR-Satellite and connect OScAR-Satellite with the power supply (PoE). ➤ Section 5.3, "Connect OScAR-Satellite to the Service PC for the First Time"

Table 5-4 connect and configure

No.	Step
5.	OScAR-Satellite loads the operating system and the required applications. The below start message (example) will now pop up with important information on the application and on the individual software components: Version <App-Ver> 2016 tetronik http://www.tetronik.com ---------- ... 2010-02-17 17:24:52.5680 [00000001]: TFL Version <TFL-Version> (<Date>) (OS: <OS-Version>) • OScAR-Satellite — Name of the application • App-Version — Version of the application • TFL-Version — Version of the services • OS-Version — Version of the operating system

Table 5-4 connect and configure

5.5.2 Terminal function of VCON

If you want to use the terminal function of VCON for the initial configuration of OScAR-Satellite, you need to configure the USB terminal access first.

➤ see Section 8.2.1, "Set up and edit a VCON connection"

➤ see Section 5.5.1, "Use a terminal emulation program for the basic configuration of OScAR-Satellite"

6 Start-Up Functions and Configuration via VCON

Overview

This chapter covers the startup functions via USB terminal access and the configuration of OScAR Satellite via the service tool VCON. This includes the IP parameters, the functions of the digital inputs and outputs, and the individual interfaces and hardware ports.

Content

The following areas are covered in this chapter:

6.1 Initial Start-Up Functions Using the USB Terminal Access
6.2 Configuration of the IP Access Data
6.2.1 Configure the IP access parameters
6.2.2 Set the clock
6.2.3 Activate the repair system
6.3 Configuration via VCON and LAN Interface
6.3.1 Configure the IP parameters
6.3.2 Configure the Serial interface (COM port)
6.3.3 Configure the µESPA-X interface
6.3.4 Configure the Digital I/O
6.4 Configure the Application via VCON
6.4.1 Set the parameters for the digital input functions
6.4.2 Set the parameters for the digital output functions
6.5 Configure NTP and the System Clock
6.6 SSL

6.1 Initial Start-Up Functions Using the USB Terminal Access

Note:
Before you put OScAR-Satellite into operation via the USB terminal access, be sure you configure the Service PC first.

ä see Chapter 5, "Configuration of the USB Port of the Service PC"

Note:
To leave entries that are available or suggested to you unaltered, simply click <enter>.
In all other cases, edit or delete the available or suggested value, enter the value that you want to use instead, and confirm your entry with <enter>.

6.2 Configuration of the IP Access Data

When configuring the IP access data, you can set the following OScAR-Satellite parameters:

- IP address
- Network mask
- Gateway
- DNS
- the IP-Port to connect VCON
- Authorization to access OScAR-Satellite via VCON

6.2.1 Configure the IP access parameters

How to configure the IP access data of OScAR-Satellite, step by step:

No.	Step
1.	Connect OScAR-Satellite to the power supply and start the terminal emulation program, or alternatively start VCON.
2.	Wait for the Start Message.
3.	Enter the keyword `ipcfg` and confirm your entry with <enter>.

4.	The following output will e.g. appear:
	
	`IP configuration`
	`----------------`
	
	`VCON access`
	`-----------`
	`Access VCON LAN`
	`(none, support, service, user): service`
	
	Enter the VCON access authorization and confirm your entry with <enter>, or adopt the access authorization that is suggested to you by pressing <enter>.
	ä see Section 8.1.2, "Access authorization"
	• none
	- access via VCON blocked
	- for special safety requirements
	• user
	- allow access for the users 'User'
	- for simple configuration and monitoring options
	• service
	- Allow access for the users 'User' and 'Service'
	- for extended configuration and monitoring options
	- for software download, license upgrades
	- for default level for normal security requirements
	- for configurations following delivery
	• support
	- allow access for users 'User', 'Service' and 'Support'
	- only for tetronik 3rd level support w. special access protection
	- extended configuration and monitoring options
	- software download, license upgrades root console

5.	The following output will e.g. appear: `VCON Port : 2180` Enter the IP port (default = 2180) for the VCON access and confirm your entry with <enter>.
6.	The following output will e.g. appear: `VCON whitelist <1 .. 10> = 0.0.0.0` For the whitelist entries, specify the IP addresses that are authorized to access OScAR-Satellite via VCON and confirm your entry with <enter>. If all no entries are made in the whitelist (all entries empty), or if they carry the IP address '0.0.0.0', VCON may access OScAR-Satellite from any IP address.

Table 6-1 Configure IP access data

No.	Step

7.	The following output will e.g. appear for the first LAN interface:
	
	`network #1`
	`---------------`
	`IP V4 address : 192.168.20.100` (delivery state ex works)
	
	Enter the IP address and confirm your entry with <enter>.

8.	The following output will e.g. appear: `IP V4 network mask : 255.255.0.0` (= delivery state ex works) Enter the network mask and confirm your entry with <enter>.
9.	The following output will e.g. appear: `IP V4 gateway address : 192.168.1.1` (delivery state ex works) Enter the Gateway address and confirm your entry with <enter>.

10.	The following output will e.g. appear:
	
	`IP V4 address for DNS #1 : 0.0.0.0`
	`IP V4 address for DNS #2 : 0.0.0.0`
	
	Enter the IP addresses of maximally 2 DNS and confirm your entry with <enter>.
	If the list of IP address of the DNS entries is empty, or if the list contains the entries "0.0.0.0", no DNS will be used.

11.	The following output will appear: `save config? (yes/no):` Complete the entry of IP parameters. Enter '`yes`' or '`no`' and confirm your entry with <enter>: • `no` All entries are discarded • `yes` Save your entries with 'yes'
12.	Caution! Remember that your changes will only take effect after the next reboot of OScAR-Satellite. To reboot, enter the command `reboot` in the terminal emulation program, or pull the ethernet power cable and wait for a moment before you plug it back in again.
13.	OScAR-Satellite starts and goes into operation. The system access via VCON is possible once it is enabled and OScAR-Satellite is ready for operation. This means the green LED is lit up or blinking. ä see Section 7.2.4, "Status indicator"

Table 6-1 Configure IP access data

6.2.2 Set the clock

How to set the OScAR-Satellite clock, step by step:

No.	Step
1.	Connect OScAR-Satellite to the power supply and start the terminal emulation program. ä see Section 5.5.1, "Use a terminal emulation program for the basic configuration of DAKS-Satellite"
2.	In the terminal emulation program, enter the command `setrtc` and confirm your entry with <enter>.

3.	The following output will e.g. appear:
	`enter current time/date`
	`(yyyy-mm-dd HH:MM:SS): 2010-2-11 14:46:22`
	Enter the correct date and time and confirm your entry with <enter>. If you want to retain the time, delete the entry and confirm with <enter>.

4.	If a different time is entered, the system will output: `2010-2-11 14:46:22.0 [00000001]: rtc set`
5.	The time will adopted without a reboot of OScAR-Satellite.

Table 6-2 Set the clock

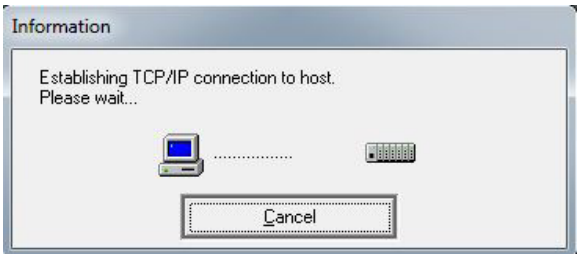
6.2.3 Activate the repair system

Description

When OScAR-Satellite and its applications fail to start correctly, your need to boot the repair system.

Once this is done, VCON can connect and you can run a new system installation or upload a previous system backup from the microSD card.

How to start the repair system, step by step:

No.	Step
1.	Connect OScAR-Satellite to the power supply and start VCON. ä see Section 8.2, "Start VCON"
2.	If you have not yet configured a serial TCP/IP+COM connection, configure this connection now. ä see Section 8.2.1, "Set up and edit a VCON connection"
3.	Due to the fact that a connection to OScAR-Satellite does not yet exist, the following window will now pop up:  Close this window, go to the tree and click the serial connection "Serial <COM...>" to OScAR-Satellite.
4.	This will open the VCON Terminal window 'Serial <COM...>'.

5.	After the start message in the Terminal window, the following output will appear with the current date.
	This outputs for example:
	`rtc: 2013-07-03 11:45:12`
	`repair:`

6.	Enter the keyword `repair` within 5 seconds and confirm your entry with <enter>.

7.	The repair system will now start and output, for example:
	`2013-07-03 11:45:15.3027 [00000001]: TFL Version 1.71b (Jun 26 2013) (FR: 1.70 ; VM 1.0 )`
	
	`2013-07-03 11:45:15.8262 [00000001]: VCON listening on port 2180`

8.	To carry out an installation via VCON you must at least have the authorization 'service'.
9.	Connect VCON with OScAR-Satellite. The following options are available: • Restore a backup of the microSD card • Carry out a new installation of OScAR-Satellite using a bootstrap file ä see Section 8.4.1, "Upload installation files, license files and backups"

Table 6-3 Activate the repair system

6.3 Configuration via VCON and LAN Interface

Description

The OScAR-Satellite configuration is carried out via VCON. The tree structure below illustrates the process list, sorted by components.

- see Section 8.6.2, "Output in the Process list"
- see Section 8.6.3, "Properties/settings"

Caution!
Changes made to the green VCON parameters, i.e. parameters that are shown against a green background, do not require a reboot of OScAR-Satellite, and take effect immediately. In contrast, any changes made to VCON parameters that are NOT green, i.e. all parameters that are not shown against a green background, always require a restart of OScAR-Satellite to take effect.

6.3.1 Configure the IP parameters

Description

The IP parameters include IP addresses, Ethernet parameters, network masks and IP ports.

Parameters:

Tree structure	Parameters	Value range	Description
Server +IP Manager Service			
	link mode	10base/half, 10base/full, 100base/half, 100base/full, [auto negotiation]	Transmission parameter of Layer 1 of the Ethernet interface
+ VCON access	VCON port	IP port [2180]	IP port for the VCON access to OScAR-Satellite
	VCON backup Port	IP-Port [2181]	IP port for the access of VCON to OScAR-Satellite, to create a backup
	IP whitelist 1 .. 10	IP address [0.0.0.0]	IP addresses entitled to access OScAR-Satellite via VCON. If no entries are made in this list there is no access restriction at all.
+ IP #1	IP V4 address	IP address [0.0.0.0]	IP address of OScAR-Satellite
	IP V4 network mask	Network mask [0.0.0.0]	Network mask of the network that is home to the OScAR-Satellite (subnet mask)
	IP V4 gateway address	IP address [0.0.0.0]	IP address of the Gateway ex-works, for communication with network components outside the subnet of the first/second
	IP V4 address for DNS #1, 2	IP address [0.0.0.0]	IP address of the DNS server

Table 6-4 IP parameter settings

6.3.2 Configure the Serial interface (COM port)

Description

The serial interface settings affect the hardware configuration and the configuration of the selected protocol.

Parameters:

Tree structure	Parameters	Value range	Description
Server +Serial Manager Service + Ports			
+Serial-1	protocol	[not used], ESPA 4.4.4, IOG-11	Protocol of the serial interface • ESPA 4.4.4 = Standard protocol for host coupling • IOG-11 = Protocol to connect an IOG-11A module with downstream digital in- and outputs
	The following entries only become visible for: 'protocol' = 'ESPA 4.4.4'		
	baud rate	300 .. 38,400 [9600]	Baud rate
	parity	[no], even, odd	• no parity • even parity • odd parity
	data bits	7, [8]	Number of data bits
	stop bits	[1], 2	Number of stop bits
	interface type	[RS232], RS422	The type of the serial interface
ESPA 4.4.4	virtual port	[Serial-1]	Virtual interface used by the protocol
	local address	1 .. 10 [2]	ESPA 4.4.4 address of OScAR-Satellite
	external address	1 .. 10 [1]	ESPA4.4.4. address of the external system
	timeout for polling after process ended [s]	1 .. 300 [120]	Duration of the last saving of the last status of a completed call to inquire the status from the host System

Table 6-5 Serial interface parameter settings

Tree structure	Parameters	Value range	Description
	send 'paged' info	[default], 'status request' is immediately answered with 'paged', accelerated 'paged callback info' after successful build-up	send information 'Paged': • After the nurse call is ended (terminated) • When the process start was received via ESPA 4.4.4 • As soon as the callback call connection is built up
	amount of Status Info records w/o specific Status Requests	0.. 5, [5]	Number of 'Status Information records' that are sent without 'Status Request'; '0' = deactivated
	process queue length	1 .. 50, [10]	The number of ESPA 4.4.4. processes that can be saved by OScAR Satellite
	keypad echo	yes, [no]	Forward all keypad signals made by the reached subscriber during an active speech connection, to the callback destination (nurse call system)
	extended status	yes, [no]	Activate extended status messages
	callback with speaker phone control	yes, [no]	Activate speakerphone control during the callback call
	clear call always, except in conversation	[yes], no	Delete pending nurse calls only if no call connection established
	Extended settings, only shown when: 'extended status' = yes		
	# disconnects	yes, [no]	The call is disconnected when the '#' key is pressed
	1 disconnects	yes, [no]	The call is disconnected when the key '1' is pressed
	key prioritize	[off], 1, #, no input	Key for prioritization
	key note	[off], 1, #, no input	save and
	key stop	[off], 1, #, no input	End the nurse call

Table 6-5 Serial interface parameter settings

6.3.3 Configure the µESPA-X interface

Description

The µESPA-X settings affect the access data to the ESPA-X server(s) as well as the heartbeat interval.

Parameters:

Tree structure	Parameters	Value range	Description
Server + ESPA-X Manager Service + ESPA-X connections + ESPA-X-Client-1, 2			
	The name of the ESPA-X client	30 characters [OScAR-Satellite]	The name of the client when logging in to ESPA-X. This name is transmitted to the ESPA-X server at the log-in and serves information purposes only.
	ESPA-X server login name	12 characters [sysadm]	The name of the registered ESPA-X user
	ESPA-X server login password	12 characters [sysadm]	The password of the registered ESPA-X user
	IP port	IP port [2023]	The IP port of the ESPA-X server that is used by the client for registration
	IP host	IP address [0.0.0.0]	The IP address of the ESPA-X server used by the client for registration
	Use SSL	[yes], no	Apply/do not apply SSL
	heartbeat interval (sec)	5 .. 110 [30]	The interval in which the client sends its heartbeats to the ESPA-X server

Table 6-6 The settings of ESPA-X

6.3.4 Configure the Digital I/O

Description

The settings of the digital inputs and outputs affect their physical properties.

Parameters:

Tree structure	Parameters	Value range	Description
Server + Contact Manager Service + Inputs			
+ Intern-1 .. 16	phase	[normally open], normally closed	The phase angle defines the input state upon which the application will consider it as active: • normally open working current function = the external contact that is closed when in the active state (for recommended link-up = contact switching to 'U-') • normally closed closed current function = the external contact that is open in active state (for recommended link-up = contact switching to 'U-')
	detect line breaks	yes, [no]	Activate/deactivate short circuit/line-break detection (requires external wiring). ä see Section 7.2.8, "Digital inputs"
	detect short circuit	yes, [no]	

Table 6-7 The settings of the digital inputs and outputs

Tree structure	Parameters	Value range	Description
+ Inputs-Std			
+ IOG-11 A1.. P8	phase	[normally open], normally closed	The phase angle defines the input state upon which the application will consider it as active: • normally open working current function = the external contact that is closed when in the active state (for recommended link-up = contact switching to 'U-') • normally closed closed current function = external contact, open in the active mode (for recommended link-up = contact switching to 'U-')
+ Outputs			
+ Intern 1 .. 8 + IOG-11 A1.. P2	phase	[normally open], normally closed	The phase angle determines the output state that is taken by the contact when it is activated by the application: • normally open The contact is closed • normally closed The contact is opened

Table 6-7 The settings of the digital inputs and outputs

Tree structure	Parameters	Value range	Description
+ Relay			
+ Digital-Relay-1	phase	[normally open], normally closed	The phase angle defines the output state that is taken by the relay when it is activated by the application: • normally open REL-NO is closed REL-NC is opened • normally closed REL-NO is opened • REL-NC is closed

Table 6-7 The settings of the digital inputs and outputs

6.4 Configure the Application via VCON

Note:
For a detailed overview of the individual parameters:
ä Chapter 3, "Application and Functionality Details".

6.4.1 Set the parameters for the digital input functions

Parameters:

Tree structure	Parameters	Value range	Description
Server			
+OScAR-Satellite Application	Function of digital inputs	[Control of OScAR alarm groups], Remote digital inputs of OScAR	The activation of contacts is transmitted to the OScAR server, selectively as: • Broadcast ID: here, the administration of the Broadcast ID is in OScAR-Satellite, or as • Contact input number: here, the administration of the Broadcast ID is in the OScAR server. In this mode, the OScAR server can also switch output contacts of OScAR-Satellite.
+ Inp: Intern-1..16 + Inp: IOG-11 A1.. P8			
+Input	trigger type	[standard simple], standard enhanced, toggle	The type of evaluation for the digital contact input: • simple standard contact • enhanced standard contact[1)] • Operator console contact (toggle function[1)]
+Short Circuit	group ID on active	4 digits [ ]	The ID of the Broadcast group that is started when a contact is active
+Line Break	display text on active	30 characters [ ]	Display text that is output on the display of the subscribers when a Broadcast is launched
	The following entries are only shown for the 'trigger type' = 'standard enhanced'		

Table 6-8 Set the parameters for the digital input functions

Tree structure	Parameters	Value range	Description
	minimal activation time before start [s]	0 .. 99999 [0]	The minimum time during which a contact input must be active for a process to be started (long-time debouncing)
	damping period [s]	1 .. 99999 [1]	The time period during which a contact input will not, after the end of a process, start a new process (inter-broadcast settling time)
	stop process on contact inactive	yes, [no]	Flag indicating if the contact will stop the process if deactivated.
	restart trigger event	new activation required after damping period, contact active with new activation during damping period, [contact active (independent of new activation)]	The condition upon which a newly activated contact will, after the end of the inter-broadcast settling time (damping period), start a new process: • New activation after the end of the inter-broadcast settling time (damping period) • New activation during the inter-broadcast settling time (damping period) • Switch contact to active after the end of the inter-broadcast settling time/ damping period (also w/o new activation)

Table 6-8 Set the parameters for the digital input functions

1. This selection can only be made when the parameter 'Function digital inputs' is set to: 'Control of OScAR alarm Groups'.

6.4.2 Set the parameters for the digital output functions

Parameters:

Tree structure	Parameters	Value range	Description
Server +OScAR-Satellite Application			
+ Out: Intern 1.. 8 + Out: IOG-11 A1..P2	output contact assignment	[ESPA4.4.4. active]	One of the following functions can be assigned to every output: • system active The system is ready for operation. • ESPA4.4.4. active The COM port is open, the ESPA 4.4.4 protocol is activated, the interval of the activity on the interface is: < 10 min. • one ESPA-X client active One of the ESPA-X connections is active. • primary ESPA-X client connected The preferred ESPA-X client is connected to the ESPA-X server. • primary ESPA-X client active The preferred ESPA-X client is active. • secondary ESPA-X client connected The backup ESPA-X client is connected with the ESPA-X server. • secondary ESPA-X client active The backup ESPA-X client is active. • min. one channel short circuit or line break A minimum of one short circuit or line break was detected. • min. one alarm process active At least 1 alarm process is active.

Table 6-9 Set the parameters for the digital output functions

Tree structure	Parameters	Value range	Description
			• queue full The process queue is full. • IOG config error Wrong configuration of the IOG modules, • process active - triggered by input #1... 16 One process has been started from a contact input 1 .. 16 and is still active. (Only becomes visible in the setting: 'Control of OScAR alarm groups'.) • Contact triggered by OScAR-Server The contact output is controlled by the OScAR server. (Only becomes visible in the setting: 'Remote digital inputs of OScAR'.)

Table 6-9 Set the parameters for the digital output functions

6.5 Configure NTP and the System Clock

The internal real-time clock of OScAR-Satellite can be synchronized via maximally 2 NTP servers (NTP host #1, #2). If this time is not synchronized for more than 2 hours, an output will automatically be triggered via VCON, the printer and Syslog.

Parameters:

Tree structure	Parameters	Value range	Description
Server +Time Service + SNTP			
	NTP host #1, #2	[IP address]	IP address of the NTP server 1 or 2
	time zone	(GMT-12:00) International Date Line West (GMT-11:00) Midway Island, Samoa (GMT-10:00) Hawaii (GMT-09:30) French Polynesia (GMT-09:00) Alaska (GMT-08:00) Pacific Time (US and Canada); Tijuana (GMT-07:00) Chihuahua, La Paz, Mazatlan (GMT-07:00) Mountain Time (US and Canada) (GMT-06:00) Guadalajara, Mexico City, Monterrey (GMT-06:00) Central Time (US and Canada) (GMT-06:00) Central America (GMT-06:00) Sascatcewan (GMT-05:00) Indiana (East) (GMT-05:00) Bogota, Lima. Quito (GMT-05:00) Eastern Time (US and Canada) (GMT-04:30) Caracas (GMT-04:00) La Paz (GMT-04:00) Santiago (GMT-04:00) Atlantic Time (Canada) (GMT-04:00) Manaus (GMT-03:30) Newfoundland and Labrador (GMT-03:00) Buenos Aires, Georgetown (GMT-03:00) Greenland (GMT-03:00) Brasilia (GMT-02:00) Mid-Atlantic (GMT-01:00) Cape Verde Islands (GMT-01:00) Azores	

Table 6-10 System clock and NTP parameters

Tree structure	Parameters	Value range	Description
	time zone	(GMT) Casablanca, Monrovia (GMT) Greenwhich mean time (GMT) Dublin, Edinburgh, Lisbon, London (GMT+01:00) Amsterdam, Berlin, Bern, Rome. Stockholm, Vienna (GMT+01:00) Belgrade, Bratislava, Budapest, Ljubljana, Prague (GMT+01:00) Sarajevo, Skopje, Warsaw, Zagreb (GMT+01:00) Brussels, Copenhagen, Madrid, Paris (GMT+01:00) West Central Africa (GMT+02:00) Minsk (GMT+02:00) Cairo (GMT+02:00) Helsinki, Kiev, Riga, Sofia, Tallinn, Vilnius (GMT+02:00) Athens, Bucharest, Istanbul (GMT+02:00) Jerusalem (GMT+02:00) Windhoek (GMT+02:00) Harare, Pretoria (GMT+03:00) Kuwait, Riyadh	

Table 6-10 System clock and NTP parameters

Tree structure	Parameters	Value range	Description
		(GMT+03:00) Baghdad (GMT+03:00) Nairobi (GMT+03:00) Moscow, St. Petersburg, Volgograd (GMT+03:30) Teheran (GMT+04:00) Abu Dhabi, Muscat (GMT+04:00) Baku (GMT+04:00) Yerevan (GMT+04:00) Tblisi (GMT+04:30) Kabul (GMT+05:00)Yekaterinburg (GMT+05:00) Islamabad, Karachi, Tashkent (GMT+05:30) Chennai, Kolkata. Mumbai, New Delhi (GMT+05:45)Kathmandu (GMT+06:00) Astana, Dhaka (GMT+06:00) Almaty, Novosibirsk (GMT+06:00) Sri Jayawardenepura (GMT+06:30) Yangon (Rangoon) (GMT+07:00) Krasnoyarsk (GMT+07:00) Bangkok, Hanoi, Jakarta (GMT+08:00) Beijing, Chongqing, Hong Kong SAR, Urumqi (GMT+08:00) Irkutsk, Ulaanbaatar (GMT+08:00) Kuala Lumpur, Singapore (GMT+08:00) Taipei (GMT+08:00) Perth (GMT+09:00) Seoul (GMT+09:00) Osaka, Sapporo, Tokyo (GMT+09:00) Yakutsk (GMT+09:30) Darwin (GMT+09:30) Adelaide (GMT+10:00) Canberra, Melbourne, Sydney (GMT+10:00) Brisbane (GMT+10:00) Hobart (GMT+10:00) Vladivostok (GMT+10:00) Guam, Port Moresby (GMT+11:00) Magadan, Solomon Islands, New Caledonia (GMT+11:30) Kingston (GMT+12:00) Fiji Islands, Kamchatka, Marshall Islands (GMT+12:00) Auckland, Wellington (GMT+13:00) Nuku'alofa (GMT+14:00) Kiribati	
	DST	yes. [no]	Switch/do not automatically switch to summer daylight saving time.

Table 6-10 System clock and NTP parameters

6.6 SSL

Description

The area 'SSL' is used to list, view and administrate imported certificates.

Tree structure	Parameters	Value range	Description
Server			
+SSL Service			
	allow self signed	yes, [no]	Allow certificates that are self-signed
	allow outdated	yes, [no]	Allow certificates also if their validity date has expired
	allow unknown issuer (CA)	yes, [no]	Allow certificates also if their issuer (CA) is unknown
+ Machine Certificate	This area is used for the certificate that is currently used by OScAR-Satellite.		
+Issuer	This area is used for details on the issuer of the certificate.		
Trusted Certificates	This area is used to list all certificates that have been uploaded to the memory of trusted certificates.		
+Certificate	Action	[none], remove certificate	Use 'remove certificate' to delete a certificate
+ Issuer	This area is used for details on the issuer of the certificate.		
+ Temporary Certificates	This area is used to list all certificates that are allowed on a temporary, i.e. time-limited basis.		
+ Certificate	Action	[none], add to "trusted certificates"	The IP address of the ESPA-X server that is used by the client for registration
+ issuer	This area is used for details on the issuer of the certificate.		

Table 6-11 Parameterization SSL

7 Hardware

Overview

This chapter covers the hardware properties of OScAR-Satellite and all product components.

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- 7.2.6 COM port
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- 7.2.8 Digital inputs
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- 7.3.2 Digital I/Os
  - 7.3.2.1 Electric power supply for IOG or IOM modules7.3.2.2Gateway: IOG-11A
  - 7.3.2.3 RS485 Adapter
  - 7.3.2.3 RS485 Adapter
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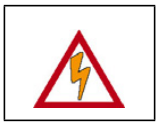
- 7.5.3 Wiring plan of the COM interface
- 7.5.4 Wiring plan of the COM interface line extension

7.1 Specification of OScAR-Satellite

The below table lists the properties of OScAR-Satellite:

Description	Value
Dimensions	• height: 30 mm • width: 105 mm • depth: 165 mm
Weight	450 g
Power supply	Power-over-Ethernet (PoE) Class 2 Mode A or Mode B in keeping with IEEE 802.3af Max. power consumption 6.5 W
Ventilation	Convective air cooling
Operating temperature	5 °C .. 35 °C
Humidity	Max. 95 %, non-condensing
MTBF	> 400,000 h (over a 5-year period under report)
Certifications/ Declarations of conformity	• EN 55022 • EN 55024 • EN 60950-1 • IEC 60950-1 • FCC Part 15 B • CE Marking • UKCA Marking • CB Scheme • CB Reports • C-Tick

Table 7-1 Specification OScAR-Satellite



Warning!
All external components that are connected to OScAR-Satellite must meet and comply with the pertinent legal provisions that are currently in force in the country in which they are operated.

7.2 OScAR-Satellite Product Components

7.2.1 Rear panel of the population option C

The population option C comes with contact I/O (= without audio I/O)

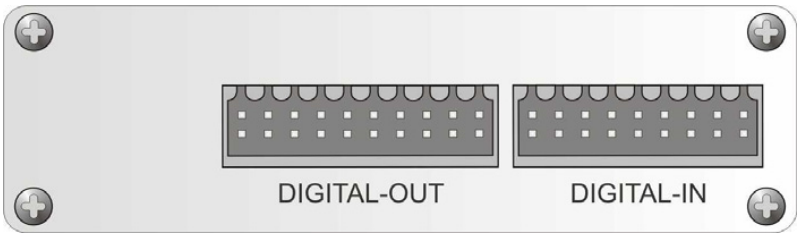


Image 7-1 Rear panel of the population option C

7.2.2 Front panel of the table top housing - with one COM port

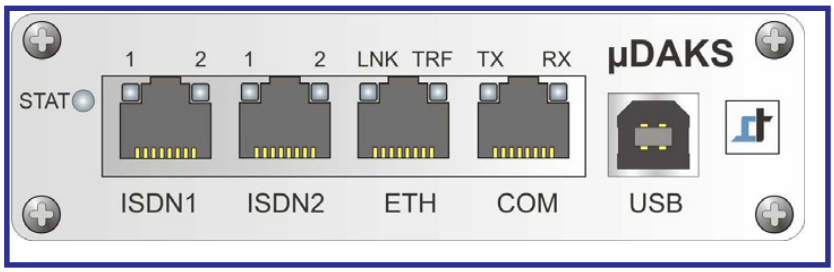


Image 7-2 Front panel of table top housing - with one COM port

7.2.3 Front panel of the table top housing - prepared for three COM ports

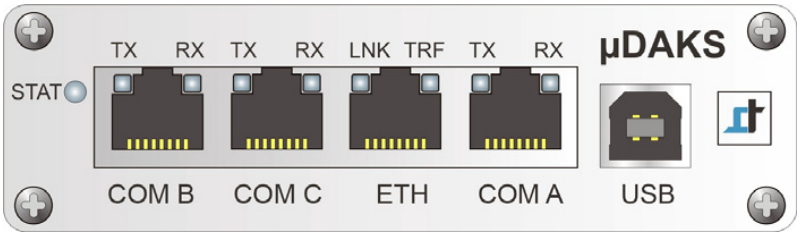


Image 7-3 Front panel of the table top housing - prepared for with three COM ports

7.2.4 Status indicator

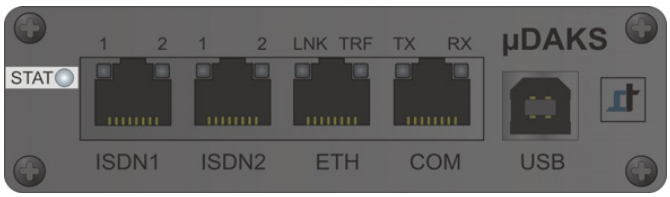


Image 7-4 Status indicator

Element	Description	
Status	Status indicator via LED:	
	• OFF	If the status indicator does not light up, either OScAR-Satellite is not connected to the power supply, or the servicing switch or PoE injector is not connected or not activated (turned to ON).
	• red	Reset
	• red blinking	Internal error
	• Yellow	Currently booting
	• yellow blinking	The basic system is ready and the operating system is operating; the application or other software components are not active
	• green-red blinking	OScAR-Satellite is not enabled
	• green-yellow blinking	Application has started, working data is missing
	• green	The connection to at least one ESPA-X server has been established
	• green blinking	No connection established to an ESPA-X server

Table 7-2 Status indicator

7.2.5 Ethernet interface

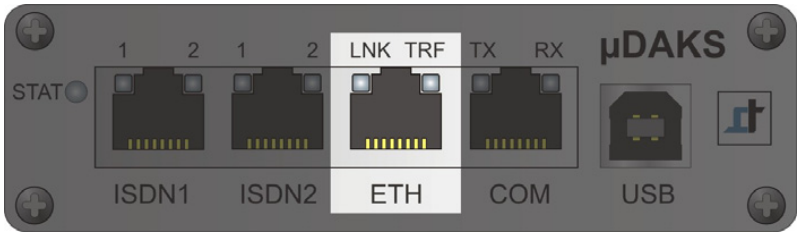


Image 7-5 Ethernet interface

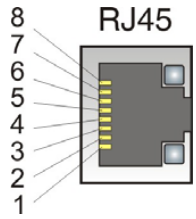
Element	Description
ETH	RJ45 jack for connectivity with the LAN (10-,100-Base-T) and for the power supply via PoE: Pin assignment:  Pin 1: Tx+ Pin 2: Tx- Pin 3: Rx+ Pin 4: + PWR Pin 5: + PWR Pin 6: Rx- Pin 7: - PWR Pin 8: - PWR
LED LNK	Physical contact to the LAN (link): • red Reset • green: Link 100 Mbit/s • yellow: Link 10 Mbit/s • OFF: No link
LED TRF	Activity of the Ethernet interface: • red Reset • green: Traffic • OFF: No traffic

Table 7-3 Ethernet interface

7.2.6 COM port

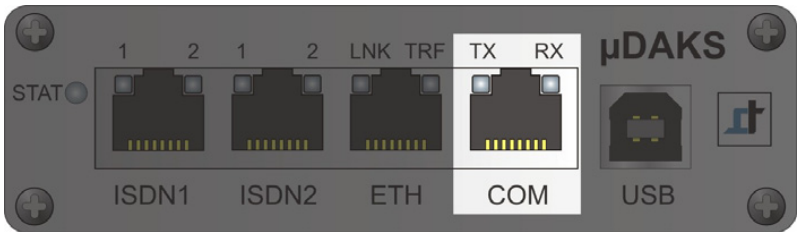


Image 7-6 COM port

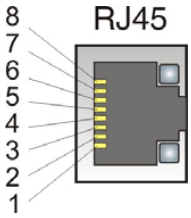
Element	Description
COM COM A, B and C	RJ45 jack for connectivity to external add-ons (electrically isolated): • RS232 • RS422 • RS485 (in combination with external additional/auxiliary circuit) Pin assignment:  Pin 1: RS232 n. c. RS422 n. c. Pin 2: RTS Tx+/Y Pin 3: GND GND Pin 4: TxD Tx-/Z Pin 5: RxD Rx+/A Pin 6: n. c. n. c. Pin 7: CTS Rx-/B Pin 8: DTR n. c.
LED TX	Status indicator: • Tx blinks green when outbound data traffic is active
LED RX	Status indicator: • Rx blinks green when inbound data traffic is active

Table 7-4 COM port

7.2.7 USB interface

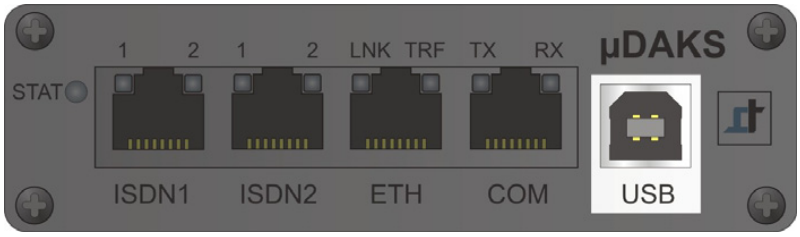


Image 7-7 USB interface

Element	Description
USB	USB plug type B: Pin assignment: Pin 1: V_{Bus} Pin 2: D- Pin 3: D+ Pin 4: GND

Table 7-5 USB interface

7.2.8 Digital inputs

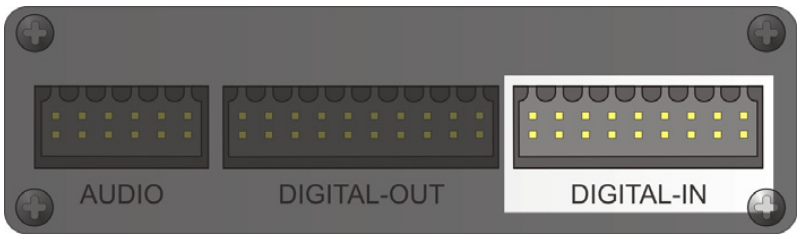


Image 7-8 Digital inputs

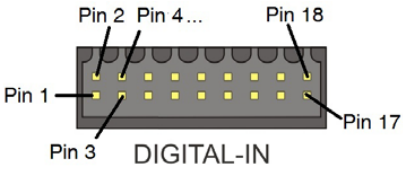
Element	Description
DIGITAL-IN	16 digital inputs: • Internal feeding for direct connectivity of contacts Pin assignment:  Pin 1: IN1 Pin 2: IN2 Pin 3: IN3 Pin 4: IN4 Pin 5: IN5 Pin 6: IN6 Pin 7: IN7 Pin 8: IN8 Pin 9: IN9 Pin 10: IN10 Pin 11: IN11 Pin 12: IN12 Pin 13: IN13 Pin 14: IN14 Pin 15: IN15 Pin 16: IN16 Pin 17: INCOM Pin 18: INCOM

Table 7-6 Digital inputs

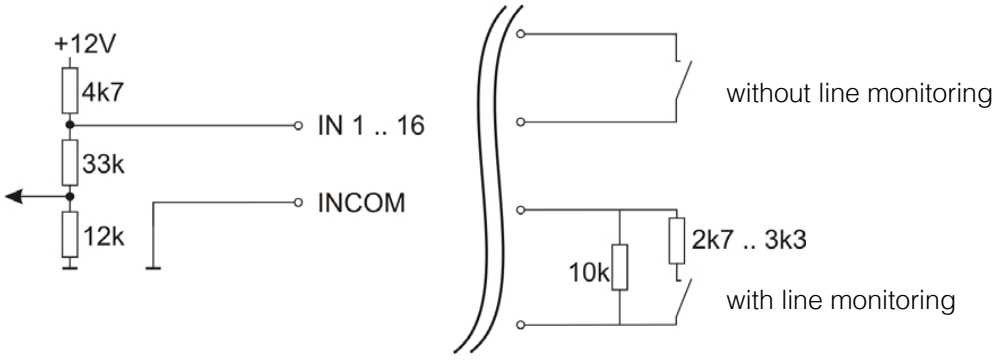


Image 7-9 Digital input wiring

7.2.9 Digital outputs

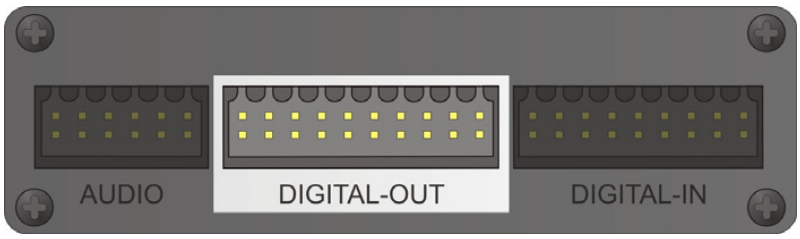


Image 7-10 Digital outputs

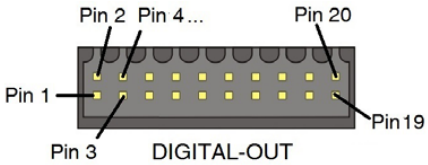
Element	Description
DIGITAL-OUT	8 digital outputs (electrically isolated, also from one another): • U_{max} 60 V DC • I_{max} 0.1 A • R_{ON} 11 Ω 1 Relay output (electrically isolated): • U_{max} 60 V DC • I_{max} 1 A • P_{max} 30 W Pin assignment:  Pin 1: GND Pin 2: REL-NC Pin 3: REL-C Pin 4: REL-NO Pin 5: OUT1A Pin 6: OUT1B Pin 7: OUT2A Pin 8: OUT2B Pin 9: OUT3A Pin 10: OUT3B Pin 11: OUT4A Pin 12: OUT4B Pin 13: OUT5A Pin 14: OUT5B Pin 15: OUT6A Pin 16: OUT6B Pin 17: OUT7A Pin 18: OUT7B Pin 19: OUT8A Pin 20: OUT8B

Table 7-7 Digital outputs

Image 7-11 Digital output wiring

7.2.10 microSD card

- Order number: TNK:UD-SD-2G
- Function: The microSD card is used for mass storage in OScAR-Satellite. It is here that all non-volatile data that is needed to by OScAR-Satellite to operate is stored (e.g. the operating system, driver, license information, applications, application data and protocols).
- Technical details: Storage capacity: 2 GB

Caution!
The microSD card TNK:UD-SD-2G may not be replaced with any commercially available microSD card.

7.3 Accessories

7.3.1 The DCE-01 adapter

- Order number: TNK:A-DCE-01
- Function: Adapter from RJ45 to SUB D-09-F to connect OScAR-Satellite to a DTE (e.g. to a PC), with local handshake
➤ see Section 7.5, "Wiring Plans"

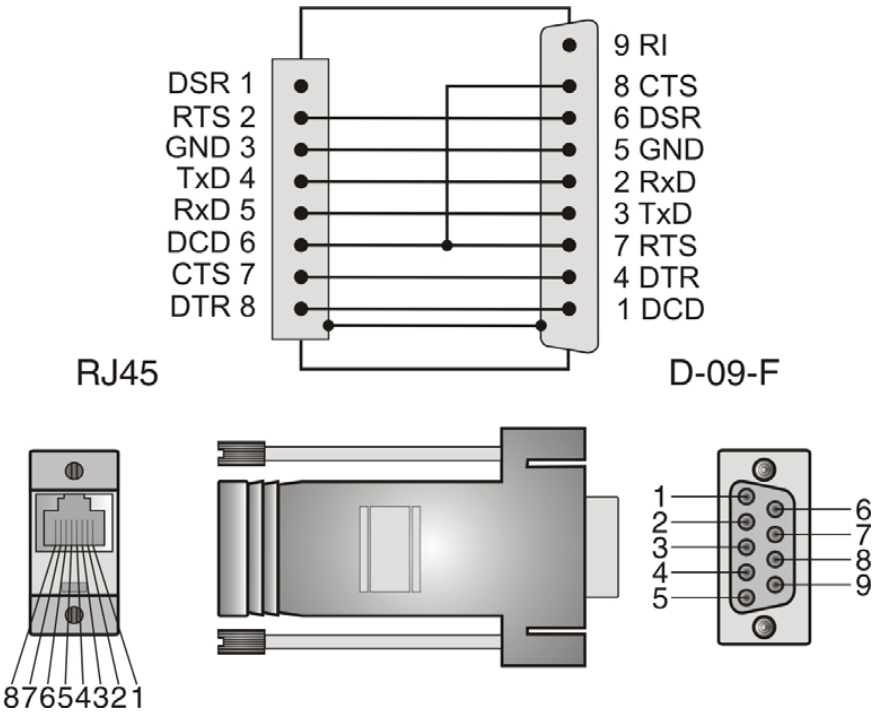


Image 7-12 DCE adapter with a local handshake

7.3.2 Digital I/Os

7.3.2.1 Electric power supply for IOG or IOM modules

- Order number: TNK:ML50.100
- Function: Electric power supply of the external contacts
- Technical details: Input voltage: U_{in} = 115/230 V AC
  Output voltage: U_{out} = 24 V DC

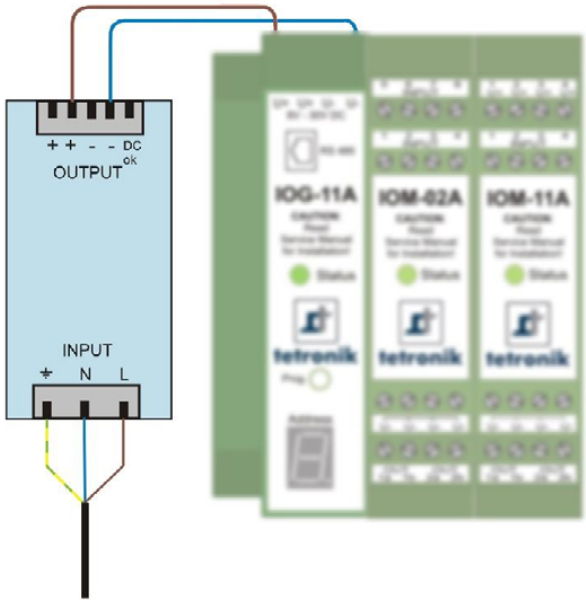


Image 7-13 Electric power supply for IOG- or IOM modules

7.3.2.2 Gateway: IOG-11A

- Order number: TNK:IOG-11A
- Function: Gateway to connect the IOM boards

Technical details:

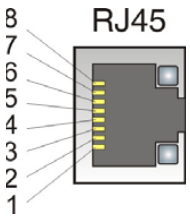
Module	Element	Description
	U+ / U-	Power supply: • 8 .. 30V DC • > 6W
	RS485	• RJ-45 jack • Connection to the serial interface of OScAR-Satellite via RS485 adapter, LAN cable (only for remote mounting) junction box with inhouse wiring, and additional LAN cable • The max. line length between OScAR-Satellite and the last and farthest away IOG-11A module may not exceed 1000 m. • Bus connection; up to 8 IOG-11A modules can be connected to a serial interface of µOScAR. Pin assignment:  RS485 Pin 1: Pin 2: Pin 3: Pin 4: Pin 5: Pin 6: Pin 7: A+ Pin 8: B-
	Status	Status indicator: • OFF — no voltage • red — no data traffic between OScAR-Satellite and Gateway • red blinking — no valid data traffic between OScAR-Satellite and Gateway • yellow — Valid data traffic, but not explicitly directed to this Gateway's address • green/yellow blinking — Wrong VCON configuration of the IOM modules, in OScAR-Satellite • green — OK, a communication with this Gateway took place during the last 2 s • green blinking — OK, data traffic at bus

Table 7-8 IOG-11A technical details

Module	Element	Description
	Prog.	Setting of the bus address of the IOG-11A module: You need a thin object for this operation, for example a paper clip. • Long press (>5 s): Switches the module into the programming mode (7-segment display is blinking) • Short press: Changes the module's bus address from '0' to '8' and then from '1.' to '8.'. (Address '0' = Module is out of operation) – Address: '1' to '8.' = Termination resistor is not activated '1.' to '8.' = Termination resistor is activated Note: At the module that is located last in the chain (is at the farthest distance to OScAR-Satellite) the built-in termination resistor must be activated. • Long press again (>5 s): Switches the module back to the operation mode (7 segment display is no longer blinking).
	Address	• Output of the currently configured module address • When the decimal marker is enabled, it indicates that the termination resistor is activated

Table 7-8 IOG-11A technical details

Caution!
Before you plug in (connect) or disconnect the modules IOG and IOM, always make sure the IOG-11A Gateway is disconnected from the supply voltage.
➤ see Section 7.3.2.4, "I/O Module Standard"
➤ see Section 7.3.2.5, "I/O Module Secure"

7.3.2.3 RS485 Adapter

- Order number: A-ADX-42
- Function: Adapter to realize the RS485 bus

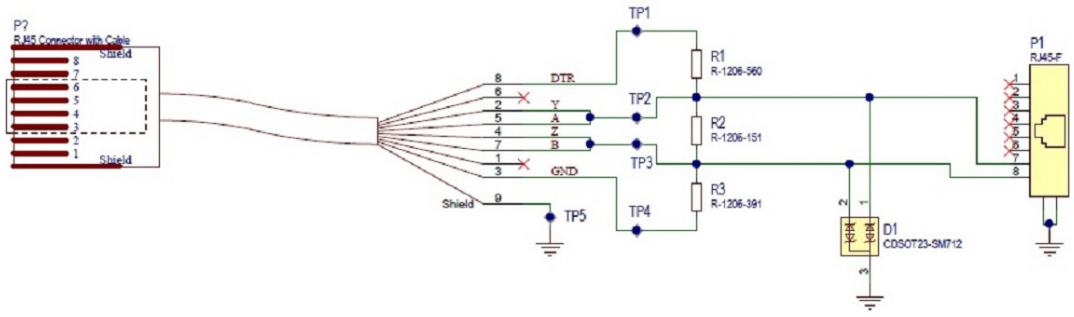


Image 7-14 ADX-42

7.3.2.4 I/O Module Standard

- Order number: TNK:IOM-02A
- Function: Connection for 8 digital signals without short circuit or line break detection, and 2 digital outputs

Technical details:

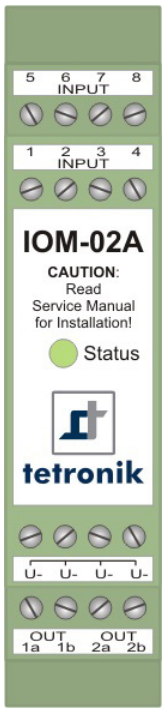
Module	Element	Description
	U- U- U- U- (internally connected)	GND
	INPUT 1..8	Digital inputs • electrically isolated • common negative pole • R_{IN} 15 kΩ • Internal feed 12 V DC
	OUT 1a, 1b, 2a, 2b	Digital outputs • electrically isolated, also from one another • U_{max} 60 V • I_{max} 100 mA • R_{ON} 11 Ω
	Status	Status indicator • OFF no voltage • red no communication between I/O module (IOM) and Gateway (IOG) • green OK

Table 7-9 I/O Module Standard

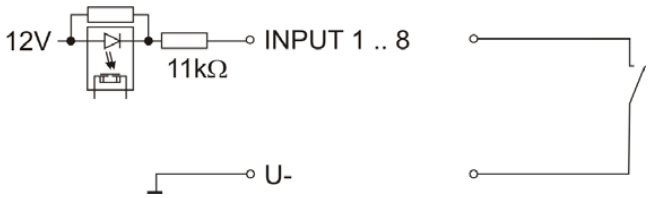


Image 7-15 Digital input wiring: Utilization of the internal voltage source, contact switching to minus

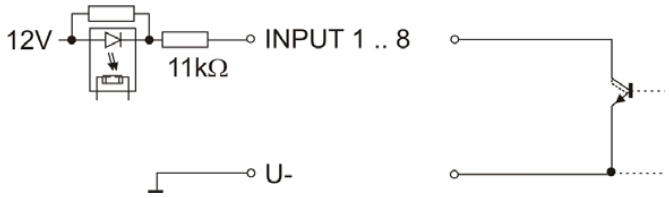


Image 7-16 Digital input wiring: Utilization of the internal voltage source, Open Collector switching to minus

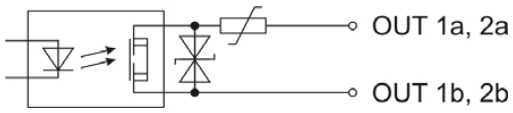


Image 7-17 Wiring of the digital outputs

7.3.2.5 I/O Module Secure

- Order number: TNK:IOM-11A
- Function: Connection for 4 digital signals with short circuit- and line break detection, and 2 digital outputs

Technical details:

Module	Element	Description
	U+ 1..4	Power supplies • U 12 V • R_{int} 4.7 kΩ
	U- U- U- U- (internally connected)	GND
	INPUT 1..4	Digital inputs • electrically isolated • common negative pole • Switching thresholds 1, 6 and 10V DC For short circuit and line break detection in combination with external circuitry • R_{IN} 15 kΩ • Feeding Internal feed 12 V DC or external feed U_{max} 60 V DC
	OUT 1a, 1b, 2a, 2b	Digital outputs • electrically isolated, also from one another • U_{max} 60 V DC • I_{max} 100 mA • R_{ON} 11 Ω
	Status	Status indicator • OFF no voltage • red no communication between I/O module (IOM) and Gateway (IOG) • green OK

Table 7-10 I/O Module Secure

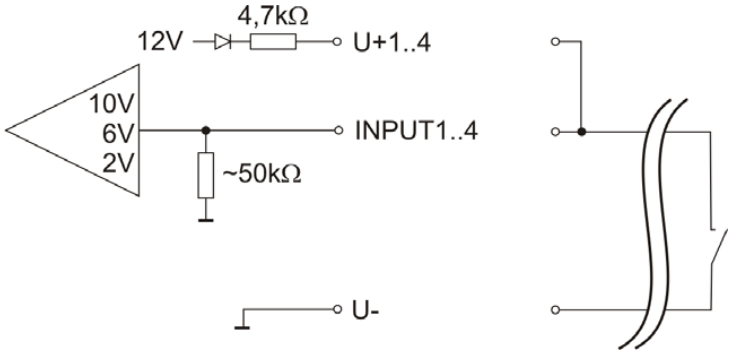


Image 7-18 Digital input wiring: Utilization of the internal voltage source, contact switching to minus, without line break detection

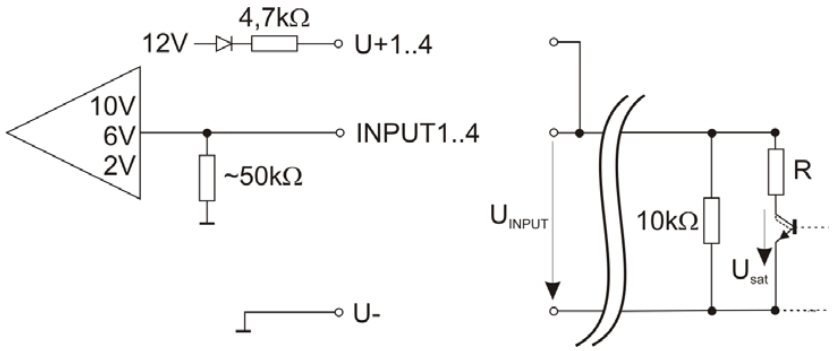
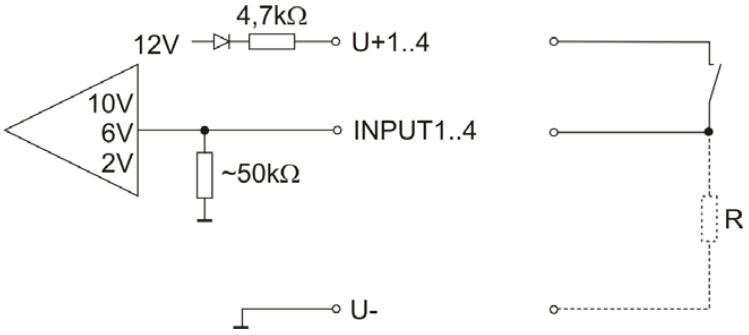


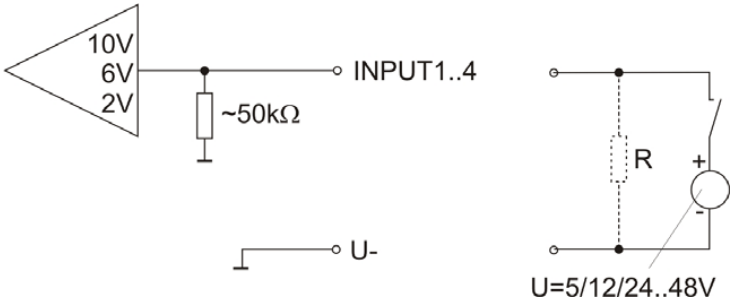
Image 7-19 Digital input wiring: Utilization of the internal voltage source, contact switching to minus, with line break detection



Note:

IOM-11 input is high impedance, if needed apply R~10kΩ

Image 7-20 Digital input wiring: Utilization of the internal voltage source, contact switching to plus, without line break detection



Note:

IOM-11 input is high impedance, if needed R required = 5/12/24..60 V

Image 7-21 Digital input wiring: Utilization of an external voltage source

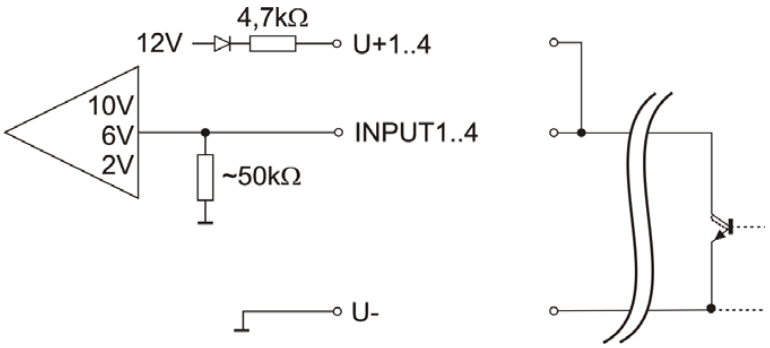
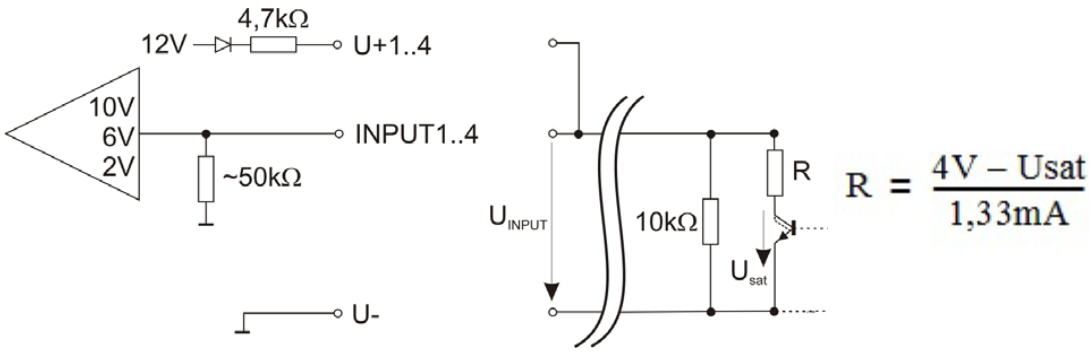


Image 7-22 Digital input wiring: Utilization of the internal voltage source, Open Collector without monitoring



Note:

Dimensioning of R (U_{INPUT} = 4V)

Image 7-23 Digital input wiring: Utilization of the internal voltage source, Open Collector with monitoring

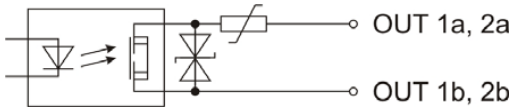
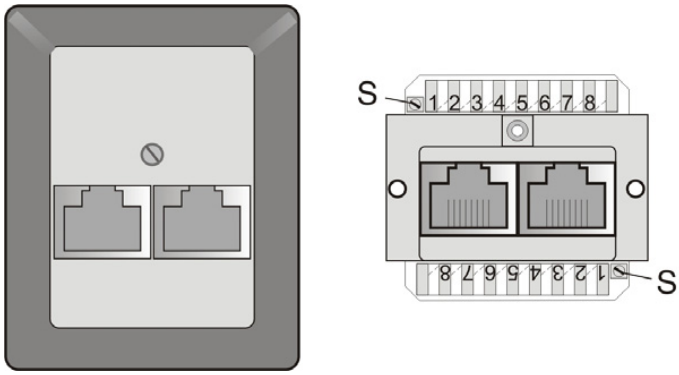


Image 7-24 Wiring of the digital outputs

7.3.3 Twin outlet line jack unit (shielded)

- Order number: TNK:UAE/8/8AP-S
- Function: Connection of the IOG module at OScAR-Satellite



7.3.4 Single outlet line jack unit RS422 (unshielded)

- Order number: TNK:UAE8AP
- Function: The single outlet line jack unit is used for line extension via RS422
  ➤ see Section 7.5.3, "Wiring plan of the COM interface"

The Pin assignment of the RJ45 socket results from the interface to which it is connected.

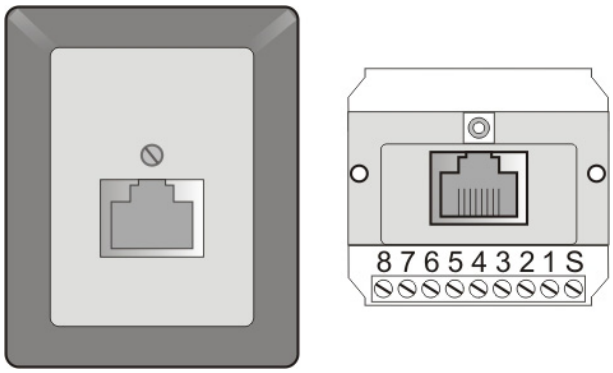


Image 7-25 Single outlet line jack unit RS422 (unshielded)

7.3.5 USB cable cord

- Order number: TNK:K-USBAB-0300
- Function: To connect OScAR-Satellite to a PC

Technical details:

- Length 3.00 m
- Connection: Plug type A/B

7.3.6 Patch cable cord

- Order number: TNK:K-CAT6-0300
- Function: Connector cable to link up various interfaces (for example LAN, RS232, RS422)

Technical details:

- Length 3.00 m
- Category: CAT6, shielded
- PIN assignment In keeping with EIA/TIA T568A or EIA/TIA T568B, resp.

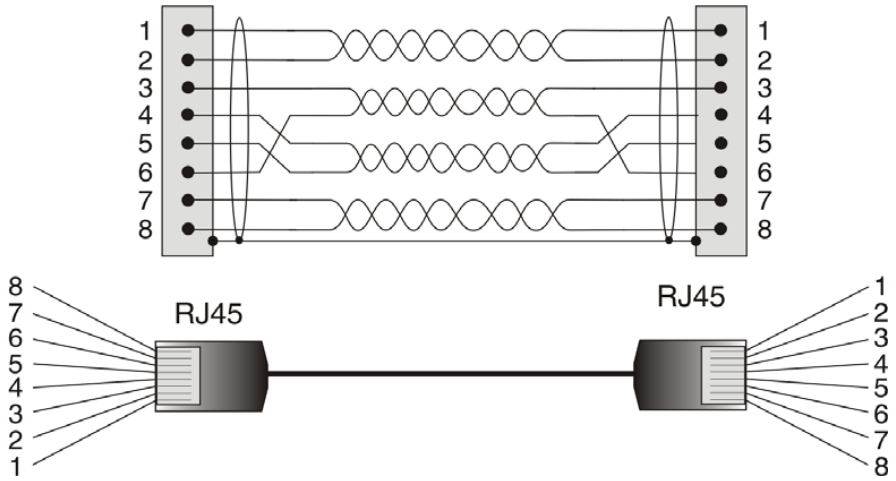


Image 7-26 Patch cable cord

7.3.7 PoE injector

Order number: TNK:POE1

Function: Power supply of OScAR-Satellite via Power over Ethernet, incl. connection of OScAR-Satellite to the LAN in keeping with IEEE 802.3af

Technical details:

- Input voltage: 100 ... 240VAC at 50-60Hz
- max. power consumption: 400 mA
- Output voltage: 48V
- Output current: 320 mA

Image 7-27 PoE injector

Connector specification:

- IN: In keeping with 10/100/1000BaseT
- OUT: In keeping with IEEE 802.3af
- Power: IEC socket to connect the PSU to the power supply

7.3.8 Special connector for digital inputs

- Order number: TNK:ST-2L18
- Function: 18-pin clamp connector to connect the digital inputs

The below picture illustrates the line connector in the spring-cage system.

The connectors have a straight outlet direction with a 3.5 mm pitch.

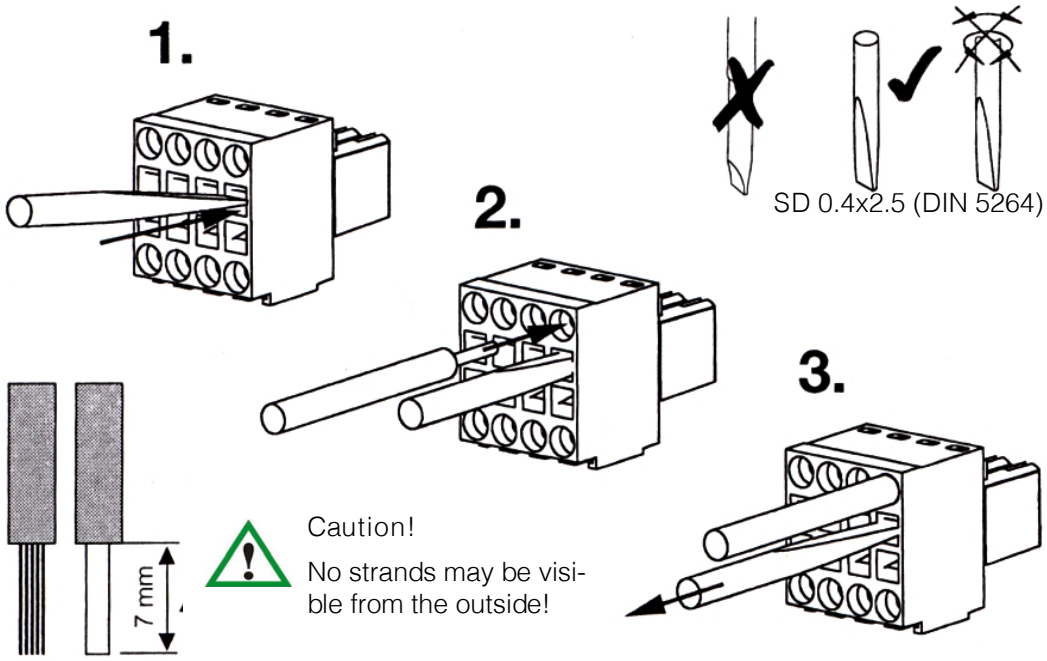


Image 7-28 Special connector for digital I/O, audio (AF)

7.3.9 Special connector for digital outputs

- Order number: TNK:ST-2L20
- Function: 20-pin clamp connector to link up the digital outputs

The picture Image 7-28 illustrates the line connector in the spring-cage system.

The connectors have a straight outlet direction with a 3.5 mm pitch.

7.3.10 Rating data for line connections of the digital I/O

The line connections of the digital inputs and digital outputs meet the following rating data in keeping with IEC 60664-1 / IEC 61984:

Description	Size	Value
max. clamping range	mm^2	0.08...1
single wire H05(07) V-U	mm^2	0.2...1
fine wire H05(07) V-K	mm^2	0.2...1
fine wire with end splice (German short: AEH)	mm^2	0.13...0.34
End splice (AEH) with plastic collar	mm^2	0.13...0.34
Stripping length	mm	7

Table 7-11 Rating data for line connections of the digital I/O

7.4 Hardware Operations

Overview

The first part of this section summarizes the general safety instructions that must be heeded when putting OScAR-Satellite into operation. The sections that follow thereafter offer step-by-step instructions how to carry out the different hardware operations on OScAR-Satellite.

Warning!

Always make sure you follow the below safety instructions.

➤ see Section 4.1, "General Safety Instructions"
➤ see Section 4.1.1, "Safety instructions for Denmark"
➤ see Section 4.1.2, "Safety instructions for Finland"
➤ see Section 4.1.3, "Safety instructions for Sweden"

7.4.1 How to open and close the casing

Warning!

Before you carry out any service work on OScAR-Satellite, be sure you always disconnect the Ethernet interface as the electric power supply as well as ALL other connections.

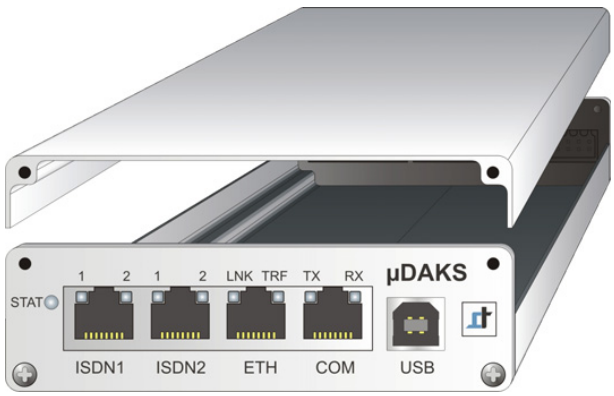
Step	Description
1.	• Disconnect the Ethernet connection • Pull all other connections ➤ see Warning!
2.	 Now remove the UPPER fastening screws at the face and rear panel of the casing.
3.	 Remove the casing top.

Table 7-12 Open and close the casing

Step	Description
4.	Now close the casing again, in the reverse order of steps. Caution! Be mindful of the mounting direction of the casing top and, if needed, make a note of it. Note that the casing top is not symmetrical and must, in the reassembly, be placed back in the exact same direction as before.
5.	Plug in all connections to OScAR-Satellite with the exception of the Ethernet connection. Plug in the Ethernet connection to OScAR-Satellite. ➤ see Warning!

Table 7-12 Open and close the casing

7.4.2 How to insert and remove the microSD card

The microSD card does not need to be replaced unless there is a defect on the card itself.

How to insert and remove a mircroSD-card, step by step:

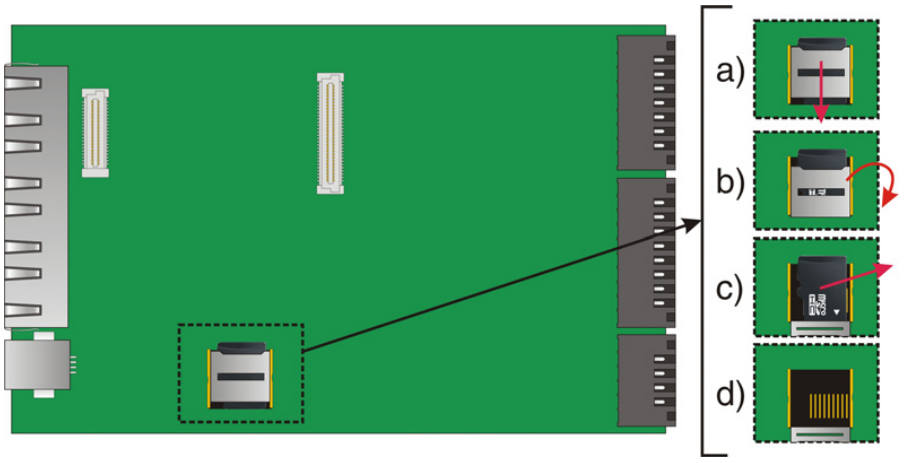
Step	Description
1.	Open the casing. ➤ see Section 7.4.1, "How to open and close the casing"
2.	 To remove the microSD card: a) Slide the metal lid towards the board's edge. b) Flip the metal lid up. c) Remove the microSD card. d) The contacts of the microSD card retainer are now visible.
3.	Insert the microSD card you want to mount in the reverse order of the above-mentioned steps 2a) through 2d). Please bear in mind for the microSD card: • the contacts must face downward • the groove must point to the left
4.	Now close the casing again. ➤ see Section 7.4.1, "How to open and close the casing"

Table 7-13 How to insert and remove the microSD card

7.5 Wiring Plans

7.5.1 Wiring plan of the USB port

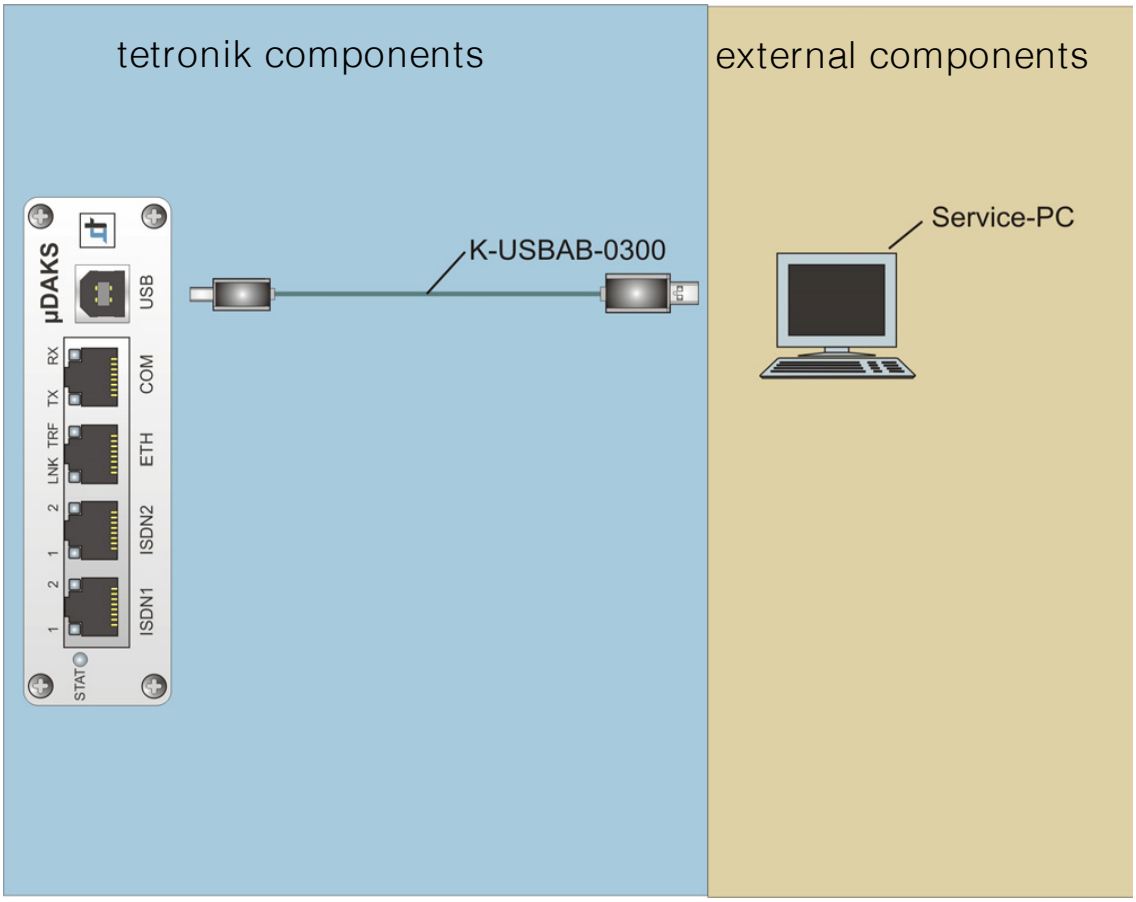


Image 7-29 USB wiring plan

Element	Description
K-USBAB-0300	USB cable cord
Service PC	PC with VCON or with a separate terminal emulation program for the configuration and servicing purposes

Table 7-14 USB wiring plan

7.5.2 Wiring plan of the Ethernet interface with power supply

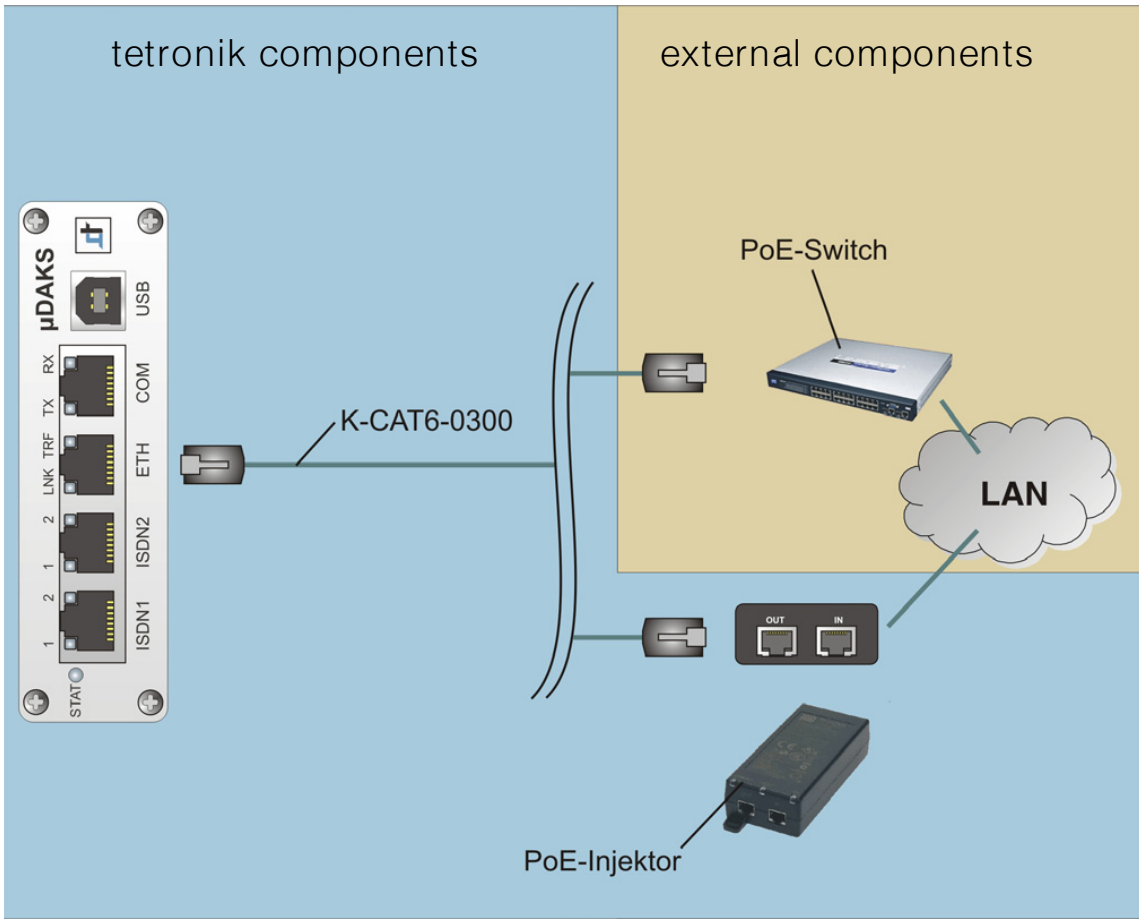


Image 7-30 Ethernet wiring plan

Element	Description
K-CAT6-0300	Standard patch cable
PoE switch	Selectable power supply: either from a POE switch or from a PoE Injector looped into the data line.
PoE injector	

Table 7-15 Ethernet wiring plan

7.5.3 Wiring plan of the COM interface

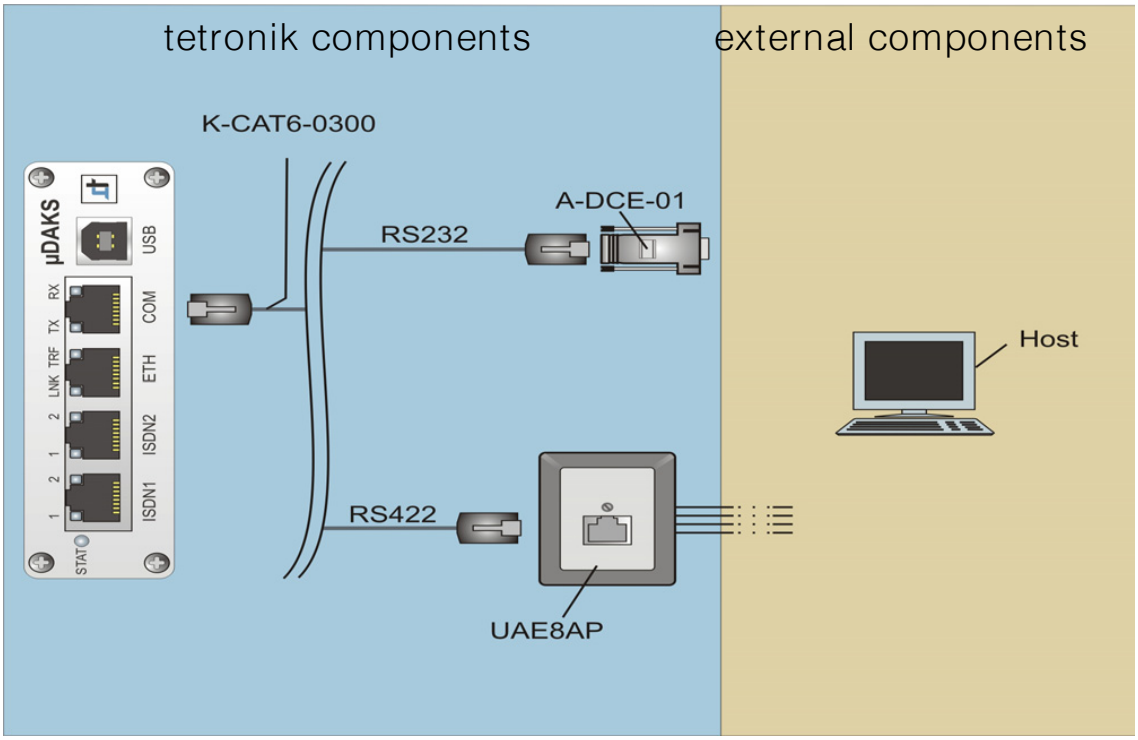


Image 7-31 Wiring plan COM interface

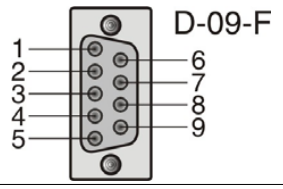
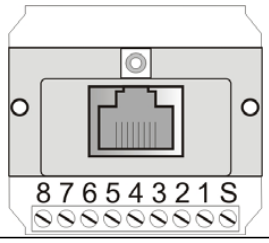
Element	Comment
K-CAT6-0300	Standard patch cable
PC/Host	Data Terminal Equipment (DTE), e.g. a nurse call system, connected either via RS232 or via RS422
A-DCE-01	Adapter to connect OScAR-Satellite to a DTE device  Pin 1: DCD Pin 2: RxD Pin 3: TxD Pin 4: DTR Pin 5: GND Pin 6: DSR Pin 7: RTS Pin 8: CTS Pin 9: RI
UAE8AP	Socket for an RS422 interface.  Pin 2: Tx+/Y Pin 3: GND Pin 4: Tx-/Z Pin 5: Rx+/A Pin 7: Rx-/B Pin 1, 6, 8: n. c.

Table 7-16 Wiring plan COM interface

7.5.4 Wiring plan of the COM interface line extension

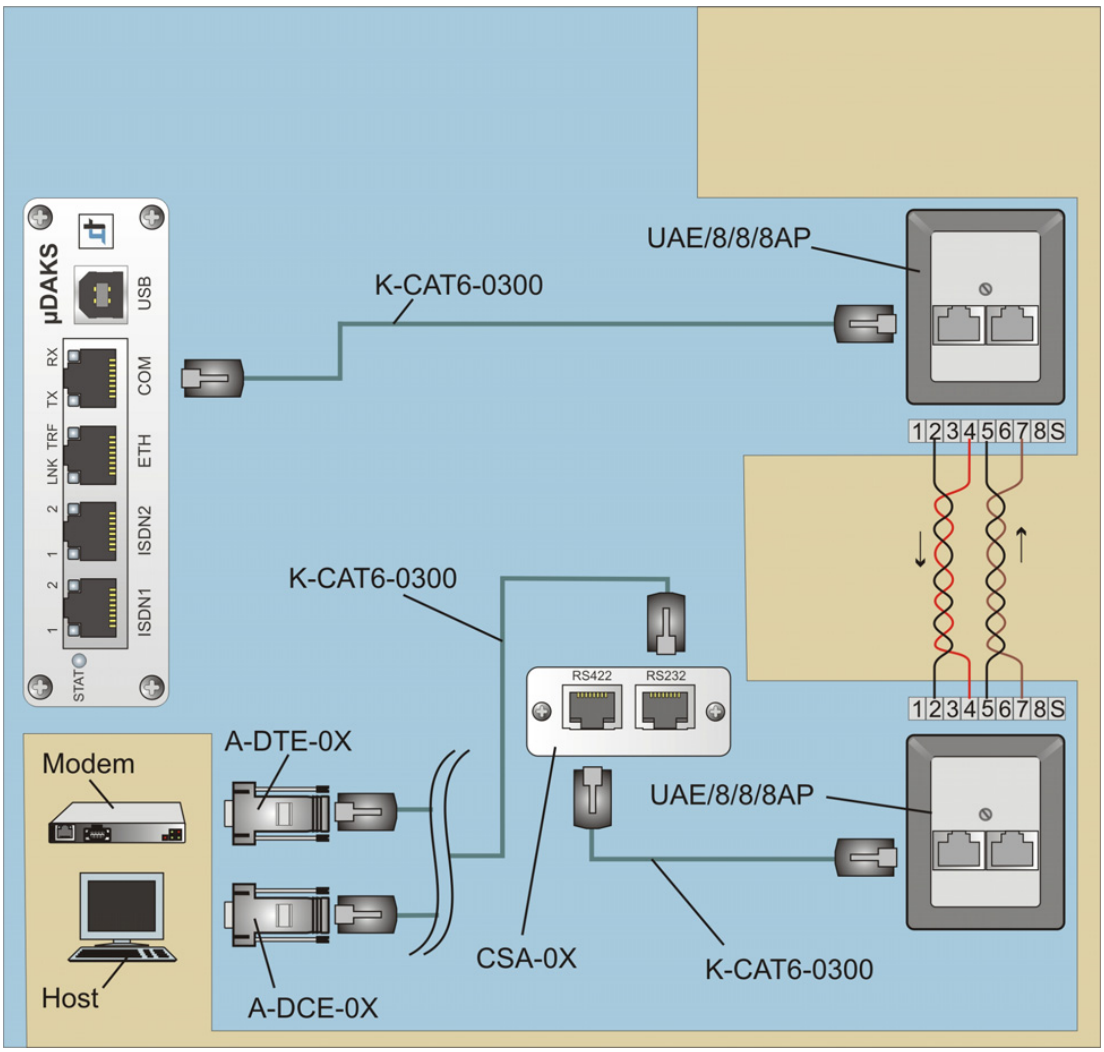


Image 7-32 Wiring plan of the COM interface line extension

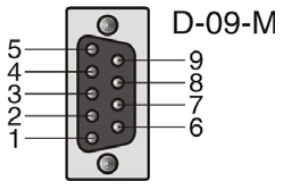
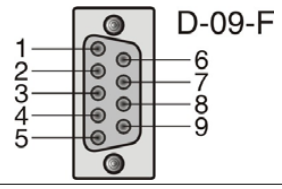
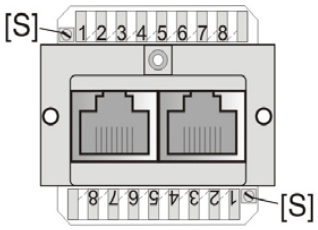
Element	Comment
Modem	Data Communication Equipment (DCE)/Modem, e.g. a GSM radio modem
A-DTE-0X	Adapter to connect OScAR-Satellite to a DCE device  Pin 1: DCD Pin 6: DSR Pin 2: RxD Pin 7: RTS Pin 3: TxD Pin 8: CTS Pin 4: DTR Pin 9: n. c. Pin 5: GND
PC/Host	Data Terminal Equipment (DTE), e.g. a call system
A-DCE-0X	Adapter to connect OScAR-Satellite to a DTE device  Pin 1: DCD Pin 6: DSR Pin 2: RxD Pin 7: RTS Pin 3: TxD Pin 8: CTS Pin 4: DTR Pin 9: n. c. Pin 5: GND
K-CAT6-0300	Standard patch cable
UAE/8/8/8AP	Socket for an RS422 interface.  Pin 2: Tx+/Y Pin 3: GND Pin 4: Tx-/Z Pin 5: Rx+/A Pin 7: Rx-/B Pin 1, 6, 8: n. c.
CSA-0x	Conversion from RS422 to RS232

Table 7-17 Wiring plan of the COM interface line extension

8 The Service and Configuration Tool VCON

Overview

This chapter shows you how to use the service and configuration tool VCON to configure of the application, and for the service functions.

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- 8.1.3 The window "Change password"
- 8.1.4 Logging

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- 8.2.1 Set up and edit a VCON connection
- 8.2.2 Connect with OScAR-Satellite

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8.11 Install VCON

8.12 Uninstall VCON

8.1 Introduction

8.1.1 General information

VCON is a service and configuration tool that is used for the setup and the maintenance of OScAR-Satellite. The connection between OScAR-Satellite and VCON is established with TCP/IP through the LAN, for example to carry out the basic configuration of OScAR-Satellite via USB. Described below are the various operations that are carried out via VCON:

- Upload the installation files
  Software and updates are installed through files that are uploaded to OScAR-Satellite via VCON,
  ➤ see Section 8.4.1, "Upload installation files, license files and backups"
- Upload the license files
  New license information is imported in form of a file that is uploaded to OScAR-Satellite via VCON:
  ➤ see Section 8.4.1, "Upload installation files, license files and backups"
- Tracing (error logging)
  For the tracing of OScAR-Satellite processes, you can activate/deactivate monitor outputs. These outputs are shown in the Terminal windows of the individual processes and, where applicable, also in the System logging window, with various options for user-friendly evaluation.
  ➤ see Section 8.8, "The Terminal Window"
  ➤ see Section 8.9, "The System Logging Window"
- Configuration of the application(s)
  The configuration of OScAR-Satellite, including where applicable the OScAR-Satellite application(s), is carried out through configuration trees with parameter lists.
  ➤ see Section 8.5, "Settings"

Caution!
Any changes made to green VCON parameters do not require a reboot of OScAR-Satellite and take effect immediately. In contrast, changes of VCON parameters that are NOT green, i.e. all parameters that are not shown against a green background, always require a restart of OScAR-Satellite to take effect.

- Install and uninstall VCON
  ➤ see Section 8.11, "Install VCON"
  ➤ see Section 8.12, "Uninstall VCON"

8.1.2 Access authorization

Caution!
The access authorization for VCON is defined in the IP parameters of OScAR-Satellite. This also includes the option to block the IP access for VCON altogether.
➤ see Section 6.2, "Configuration of the IP Access Data"

To logon to VCON you can use the following users, each with different permissions:

- User:
  - Login:
    - Login name: "user"
    - Initial password: "user"
  - Authorizations:
    - Read permission for all outputs in the Terminal window and the System logging window
    - Read permission for all settings of the Components
    - Read permission for all trace settings
- Service:
  - Login:
    - Login name: "service"
    - Initial password: "service"
  - Authorizations:
    - Read permission for all outputs in the Terminal window and the System logging window
    - Read and write permission for all settings of the Components
    - Read and write permission for all trace settings
- Support:
  Only the tetronik Support Team is authorized to log in as "Support".

➤ Section 8.2, "Start VCON"

Caution!
Bear in mind that the default passwords of the above-mentioned users 'User' and 'Service' must be changed after the initial login!
➤ see Section 8.4.1, "Upload installation files, license files and backups"

8.1.3 The window "Change password"

Open the user dialog to change the password:

- via the menu bar: Host → Change password...

In this window the user who is currently logged-in can change his/her own password. He/she cannot, however, change the passwords of other users.

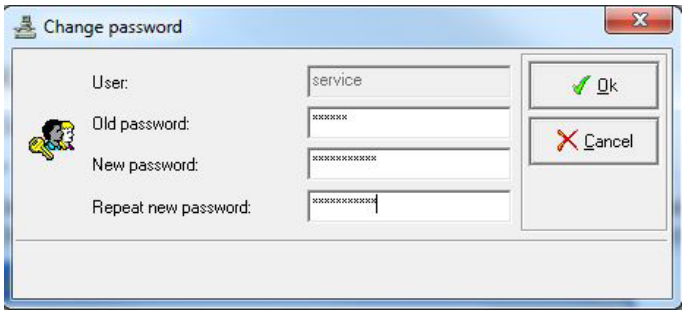


Image 8-1 Change password

Description of the fields in the window 'Change password'

Menu bar/ button	Description
User	The user name (cannot be edited) is output as read-only.
Old password	Here, the logged-on user must enter his/her old password as authentication to ensure that no unauthorized user can change the password of another user.
New password	In the next step, enter the new password and confirm it to avoid erroneous entries that would lead to the loss of the password.
Repeat new password	

Table 8-1 Change password

8.1.4 Logging

In OScAR-Satellite, outputs are logged in two different ways:

- Logging in the Terminal window
  Every OScAR-Satellite process owns a proprietary Terminal window to output the system, error and trace messages, all of which are shown unfiltered and all of which are written into files where applicable.
  ➤ see Section 8.8, "The Terminal Window"
- Logging in the System logging window
  Messages that appear in a specific format are additionally registered and shown in the System logging window, and automatically saved in log files.
  ➤ see Section 8.9, "The System Logging Window"

8.2 Start VCON

8.2.1 Set up and edit a VCON connection

Before a VCON connection to OScAR-Satellite can be established, it must configured via TCP/IP.

In addition, you can also configure a serial connection to OScAR-Satellite (TCP/IP+COM) if you want the USB terminal access also to be carried out via VCON.

How to configure a VCON connection to OScAR-Satellite, step by step:

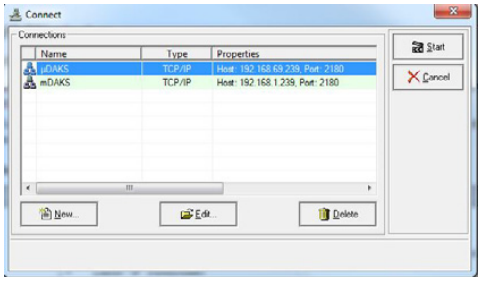
No.	Step	
1.	Start the program 'VCON.exe' from the desktop via: Start → Program files → tetronik → VCON or open the user dialog to connect with OScAR-Satellite via the menu: File → Connect...	
2.	This will open the user dialog to administrate the connections to OScAR-Satellite: • Button New... Use this button to add a new connection. ➤ Continue with Step 3 • Button Edit Use this button to edit a connection. ➤ Continue with Step 3 • Button Delete Delete the connection (with a security prompt) • Button Start ➤ Login to OScAR-Satellite ➤ see Section 8.2.2, "Connect with OScAR-Satellite" • Button Cancel End program	

Table 8-2 Set up a VCON connection

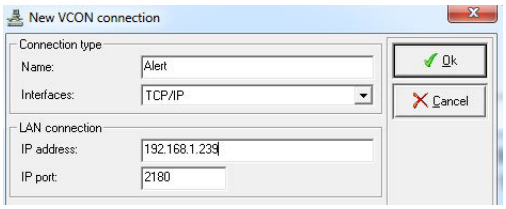
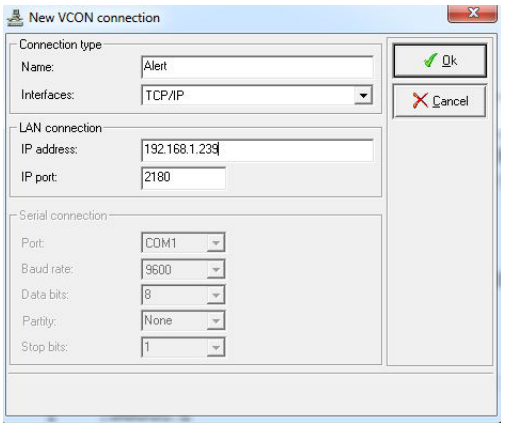
No.	Step	
3.	Enter the following parameters to configure the TCP/IP connection and, where applicable, the USB connection: • Name The name under which this connection is listed in the selection list of the login window. ➤ see Step 1 • Interface Select the connection type via which you want to connect to OScAR-Satellite: – e.g. for LAN- and USB access – TCP/IP+COM • IP address The IP address of OScAR-Satellite for the VCON connection • IP Port The IP port of OScAR-Satellite for the VCON connection (default: 2180) Confirm with Ok. ➤ see Section 6.2.1, "Configure the IP access parameters" Note: Ex works, the OScAR Satellite has the IP address 192.168.20.100 and listens at the port 2180.	
4.	If you want to additionally configure a serial TCP/IP+COM connection, also enter the following parameters: • Port Select the serial interface you want to utilize. (Default: COM1) • Baud rate Select the baud rate that shall be applied. (Default: 9600). • Data bits Select the number of data bits that shall be used. (Default: 8) • Parity Select the parity that shall be applied. (Default: none) • Stop bits Select the number of stop bits. (Default: 1) Confirm with Ok.	

Table 8-2 Set up a VCON connection

8.2.2 Connect with OScAR-Satellite

How to connect VCON with OScAR-Satellite, step by step:

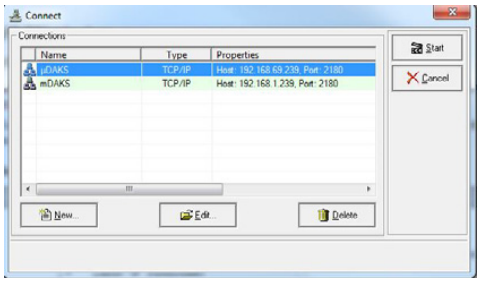
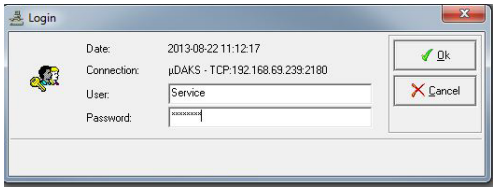
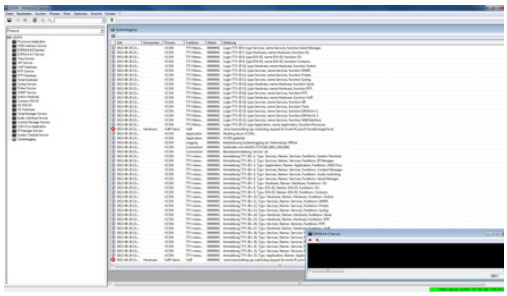
No.	Step	
1.	Start the program 'VCON.exe' from the desktop via: Start → Program files → tetronik → VCON Or open the user dialog to connect with OScAR-Satellite via the menu: File → Connect...	
2.	Choose the connection you want to use. Click Start. Note: For more information on the configuration or editing of the connection data: ➤ see Section 8.2.1, "Set up and edit a VCON connection"	
3.	Enter your user details: • User • Password Confirm with Ok.	
4.	This will open the main VCON window.	

Table 8-3 Set up connection between VCON and OScAR-Satellite

8.3 Main View

The main view (or root level) of VCON consists of the following areas:

- Menu bar
  ➤ see Section 8.3.1, "The menu bar, toolbar and keyboard shortcuts"
- Toolbar
  ➤ see Section 8.3.1, "The menu bar, toolbar and keyboard shortcuts"
- List of Processes
  ➤ Section 8.6, "List of Processes"
- Window area
  ➤ see Section 8.8, "The Terminal Window"
  ➤ see Section 8.9, "The System Logging Window"

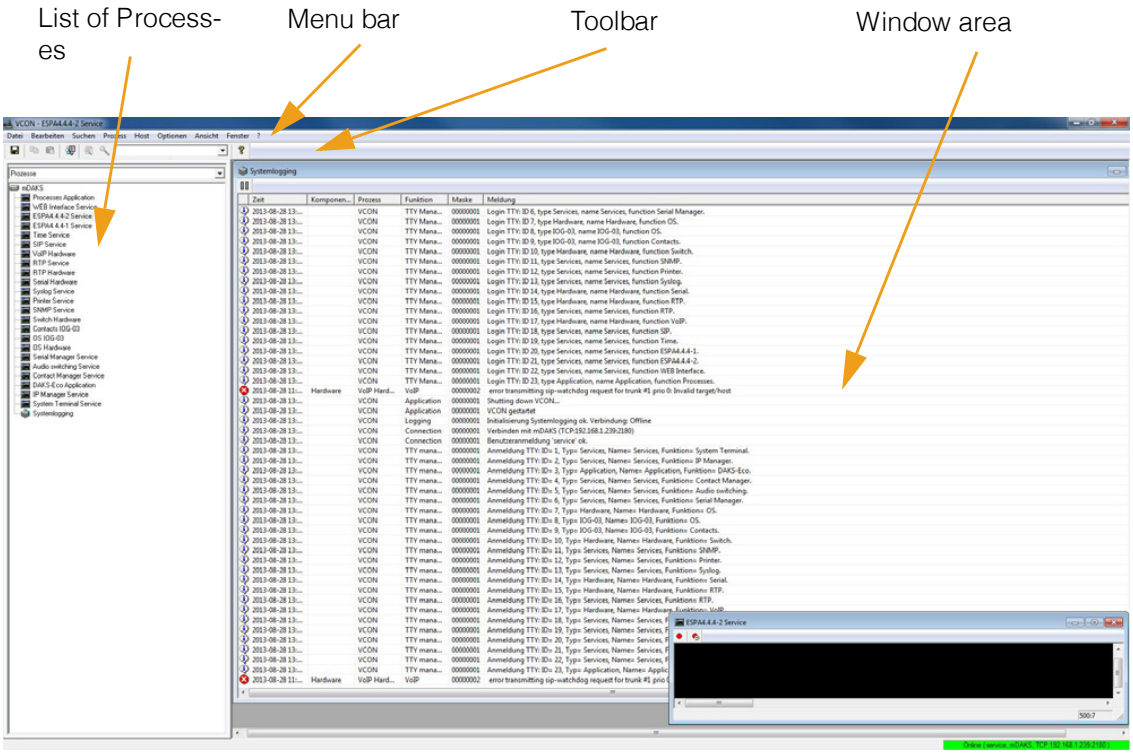


Image 8-2 VCON main view

8.3.1 The menu bar, toolbar and keyboard shortcuts

The below list gives you a full overview of the functions that can be reached through the menu bar, through the toolbar or via the hotkeys, i.e. the keyboard shortcuts.

Menu item	Terminal window	Sys. log. window	Description
Summary of the pull-down menu 'File'			
Connect...	X	X	Connect VCON with OScAR-Satellite. ➤ see Section 8.2.2, "Connect with OScAR-Satellite"
Auto login	X	X	Select this item if, in the event a connection error occurs, you want VCON to automatically setup a new connection to OScAR-Satellite. When such an event occurs, VCON will use the most recent connection data, including the last login name and password.
Save content... 	X		Save the contents of a Terminal window. ➤ see Section 8.8.4, "Save"
`Close` `Alt+F4`	X	X	Use this menu entry to close the program
Summary of the pull-down menu 'Edit'			
Copy `Ctrl+C` 		X	Copy contents of the System logging window or other marked texts (does not include the Terminal window), and paste them to the clipboard.
Copy `Ctrl+Shift+C` 	X		Copy contents of the Terminal window and paste them to the clipboard
Paste `Ctrl+Shift+V` 	X		Paste from the clipboard to the Terminal window and insert at the cursor position, or copy to a dialog box
Pause `Ctrl+P` 		X	This menu item ends the output in the System logging window. When you press the pause button again, all messages that have arrived in the meantime are automatically output. ➤ see Section 8.9.1, "General information"

Table 8-4 The menu items, icons and buttons of VCON

Menu item	Terminal window	Sys. log. window	Description
Summary of the pull-down menu 'Search'			
Find marked text `Ctrl+F3`	X		Use this menu item to browse the Terminal window for the text that is currently marked, ➤ see Section 8.8.3, "Search for a specific word or term in the Terminal window" Use this menu item to browse the System logging window for the marked text. ➤ see Section 8.9.2, "Browse the System logging window for a term or similar message"
Find selected text in system logging window `Ctrl+Shift+F3`	X		Use this menu item to browse the System logging window for a particular text that is currently marked in the Terminal window. ➤ see Section 8.8.3, "Search for a specific word or term in the Terminal window"
Find next similar message `Ctrl+F3`		X	Browse the System logging window for similar messages, i.e. for messages of the same type. ➤ see Section 8.9.2, "Browse the System logging window for a term or similar message"
Find message in the matching terminal `Ctrl+Shift+F3`		X	Use this menu item to browse the Terminal window for a particular text that is currently marked in the System logging window. ➤ see Section 8.9.2, "Browse the System logging window for a term or similar message"
Filters... 		X	Filter the system logging entries. ➤ see Section 8.10, "Filter System Messages"
Summary of the pull-down menu 'Process'			
Properties/settings... Doubleclick the Processes list	X		Use this menu item for output of the process properties and to configure the process, provided the process has parameters that can be configured. ➤ see Section 8.6.3, "Properties/settings"
Configure current monitoring...	X		Use this menu item to configure the monitoring outputs in the Terminal window and/or the System logging window, to trace the processes in detail. Note that the outputs that are activated here will be lost at the next system start. ➤ see Section 8.7.2, "Configure current monitoring"
Configure start-up monitoring...	X		Use this menu item for permanent monitor outputs in the Terminal and/or System logging window, for a detailed tracing of process cycles. Bear in mind that the monitoring outputs that are activated here will not be lost at the next system start. ➤ see Section 8.7.3, "Configuration of the start-up monitoring"
Log terminal output temporarily	X		Click here to log terminal outputs in log files temporarily After the next reboot of VCON, the terminal outputs are no longer active! ➤ see Section 8.8.2, "Logging"

Table 8-4 The menu items, icons and buttons of VCON

Menu item	Terminal window	Sys. log. window	Description
Log terminal output permanently	X		Click here to permanently log terminal outputs in log files. When VCON is booted, these terminal outputs are automatically activated. ➤ see Section 8.8.2, "Logging"
Print current process configuration...	X		Use this menu item to show the configuration details of a process. ➤ see Section 8.6.4, "Export a configuration"
Print entire server configuration...	X		Use this menu item to open the window "Complete configuration" with the configuration details of the entire server. ➤ see Section 8.6.4, "Export a configuration"
Summary of the pull-down menu 'Host'			
Upload VCON transfer file...	X	X	Use this menu item to upload installation, update or license files to OScAR-Satellite. ➤ see Section 8.4.1, "Upload installation files, license files and backups"
Create system backup...	X	X	Use this menu item to save the entire microSD card as a backup. ➤ see Section 8.4.2, "Create a complete backup"
Save configuration...	X	X	Use this menu item to save the configuration of OScAR-Satellite in a backup file. ➤ see Section 8.4.3, "Save the configuration in a backup"
Upload configuration...	X	X	Use his menu item to upload a previously saved OScAR-Satellite configuration, ➤ see Section 8.4.4, "Upload a configuration"
Enter activation code...	X	X	Reserved for future server function Hardware Upgrade
Change password...	X	X	Use this menu item to change the login data of the user who is currently logged in. ➤ see Section 8.4.1, "Upload installation files, license files and backups"
Summary of the pull-down menu 'Options'			
Settings...	X	X	Use this menu item to configure the VCON settings. ➤ see Section 8.5, "Settings"
Languages	X	X	Select a language (German, English)
Summary of the pull-down menu 'View'			
Processes list `Ctrl+Shift+Z`	X	X	Use this menu item to show/hide the list of all processes
Summary of the pull-down menu 'Windows'			
Cascade	X	X	Use this menu item to cascade all windows
Tile horizontally	X	X	Use this menu item to tile all windows

Table 8-4 The menu items, icons and buttons of VCON

Menu item	Terminal window	Sys. log. window	Description
Summary of the pull-down menu '?'			
About tetronik VCON...	X	X	Click this icon to open the 'About VCON' window with the VCON version number and copyright information, and with the tetronik contact details plus additional information on VCON. ➤ see Section 8.3.2, "About VCON"
Search and filter functions			
	X	X	Use this icon to browse all saved system logging files for the search text that is entered, or to search for this text in the Terminal- and System logging window that is currently open. ➤ see Section 8.8.3, "Search for a specific word or term in the Terminal window"
Word search in the System logging window	X	X	Click here to search the System logging window for specific terms and to have the filter results output in a separate System logging window, as an entry in the Process list and there under: System logging. ➤ see Section 8.10.2, "Use the word search"
Filter search in the System logging window	X	X	Use this menu item to search the System logging window for relevant data sets or text and to output the filter results in a separate System logging window, incl. an entry in the Process list under System logging. ➤ see Section 8.10.2, "Use the word search"

Table 8-4 The menu items, icons and buttons of VCON

8.3.2 About VCON

You can open the window 'About VCON' with details on VCON:

- via the menu bar:? → Info about tetronik VCON...

The following details are output:

- Product name
- Version number
- the contact details of the producer, tetronik GmbH
- Copyright information and Author rights
- Disclaimer

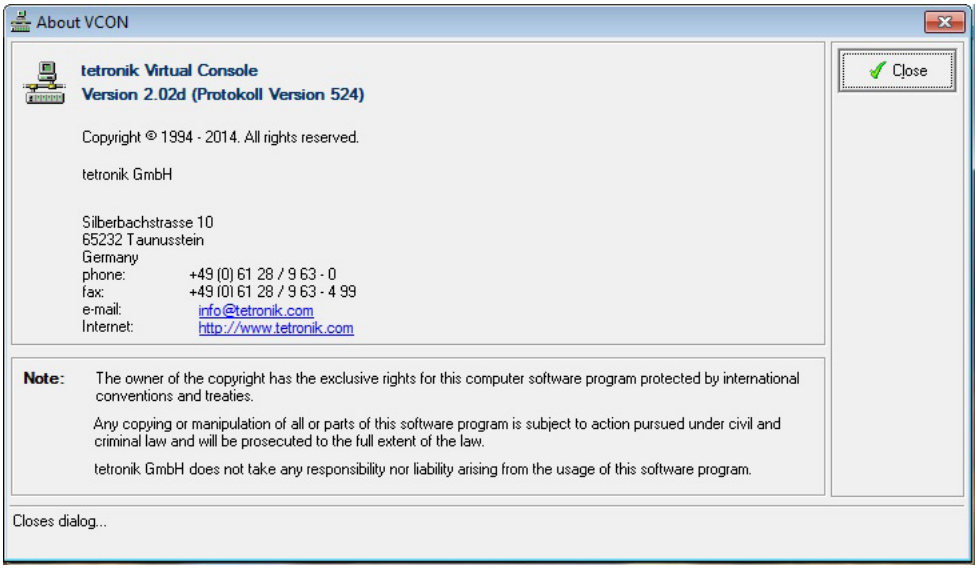
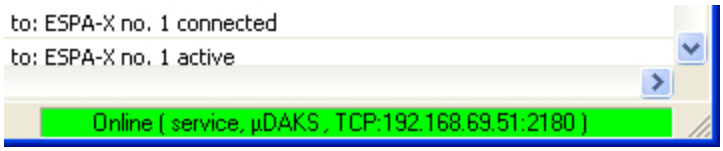


Image 8-3 About VCON

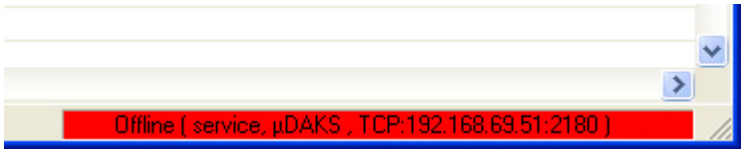
8.3.3 Status bar

The status bar signals the connection status between VCON and OScAR-Satellite:

- Online
  VCON and OScAR-Satellite are properly connected and VCON is fully operational with all of its functions.



- Offline
  With this status VCON and OScAR-Satellite are not connected. However, the function to filter and search for system messages is still available, even when there is no connection. If messages have already been received in any of the different Terminal windows, the search functions can also be applied to these windows.



The messages in the status bar consist of the following elements:

`<connection status>(<user name>, <connection status>, <connection type>:<connection parameters>)`

The different elements stand for:

- `<connection state>` — The state of the connection between VCON and OScAR-Satellite:
  ➤ see above
- `<user name>` — The name of the user
  ➤ see Section 8.1.2, "Access authorization"
- `<connection name>` — The name of the connection to OScAR-Satellite:
  ➤ see Section 8.2.1, "Set up and edit a VCON connection"
- `<connection type>` — The type of the connection: TCP
  ➤ see Section 8.2.1, "Set up and edit a VCON connection"
- `<connection parameter>` — The parameters of the connection: IP address and IP port,
  ➤ see Section 8.2.1, "Set up and edit a VCON connection"

8.4 Data Backup Functions

8.4.1 Upload installation files, license files and backups

VCON can be used to transfer installation-, license- or backup files to OScAR-Satellite using the so-called VCON transfer files (*.vtf). Every VCON transfer file contains the following data:

- The version of the file(s) you want to upload
- The reference data of the file(s) you want to upload
- The type of the file(s) you want to upload:
  - License file
    Every license file contains the performance features of OScAR-Satellite and of the respective application, e.g. the number of enabled channels, the functions that have been activated etc.
  - Installation file
    Every installation file contains the files for the application(s), the operating system, and the drivers that are used.
  - Backup of the microSD card
    A backup contains a complete backup of the internal microSD card, with the entire operating system data, program data, and process- and license data, but without the boot area and the repair system. Before an installation file is imported, VCON automatically runs a backup of the microSD card.

For more information on the upload of backup files with the help of the repair system:

➤ see Section 6.2.3, "Activate the repair system"

How to upload a VCON transfer file, step by step:

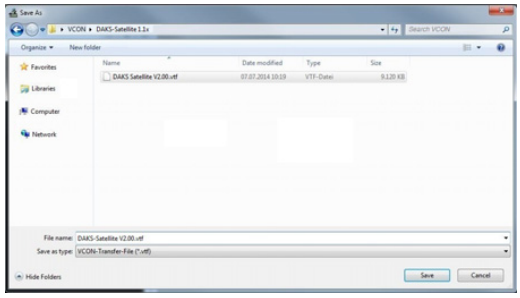
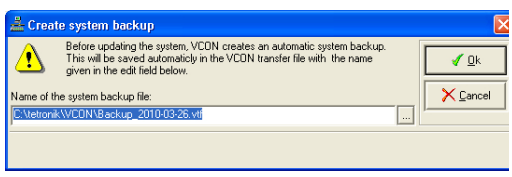
No.	Step	
1.	Click the menu item: Host -> Upload VCON transfer file...	
2.	Select the VCON transfer file you want to upload to OScAR-Satellite. Next, click Open.	
3.	In the first step, VCON runs a backup of the microSD card. To do so, select the file name. Confirm with Ok.	

Table 8-5 Upload a VCON transfer file

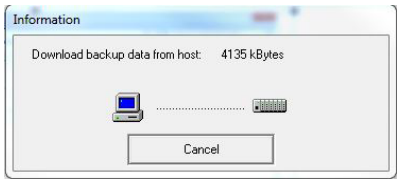
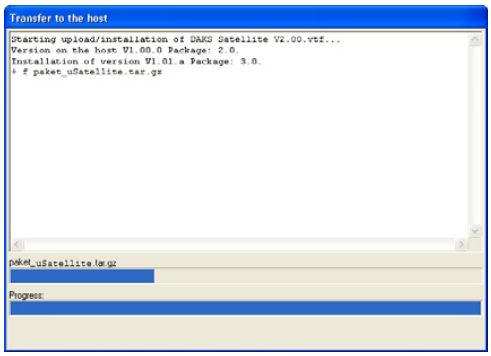
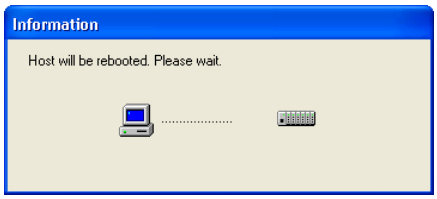
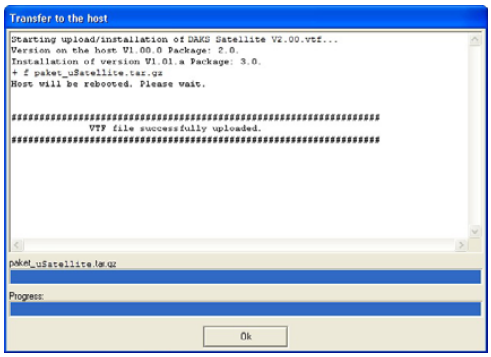
No.	Step	
4.	During the backup, the progress is shown in form of an activity bar.	
5.	The upload progress for the VCON transfer file is shown in form of a progress bar.	
6.	Next, OScAR-Satellite will reboot. Please wait.	
7.	This message will pop up when the upload of the VCON transfer file is completed. Confirm with Ok. The VCON transfer file has been successfully imported.	

Table 8-5 Upload a VCON transfer file

8.4.2 Create a complete backup

Use this function to create a complete backup of the microSD card (menu item in VCON: 'Create system backup').

To do so, VCON will create a VCON transfer file that can be imported later as installation file.

➤ see Section 8.4.1, "Upload installation files, license files and backups"

How to create a complete backup, step by step:

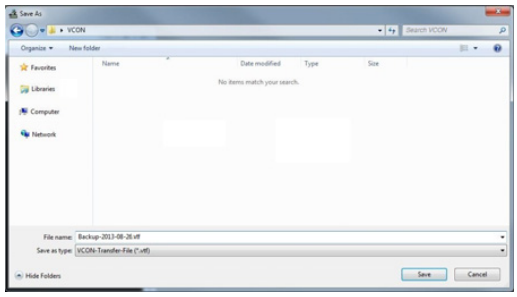
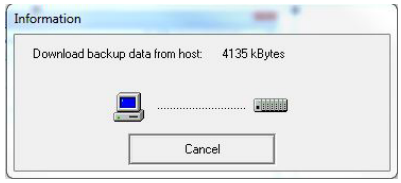
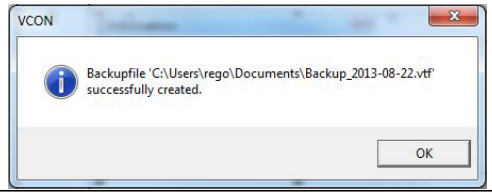
No.	Step	
1.	Click the menu item: Host -> Create system backup...	
2.	Assign a name to the backup file. Next, click Save.	
3.	During the saving process, the progress is shown in form of a progress bar. Please wait. This process may take a few minutes.	
4.	This message appears after the backup file has been successfully saved. Confirm with Ok.	

Table 8-6 Create a complete backup

8.4.3 Save the configuration in a backup

This function makes it possible to save the entire configuration data of VCON as a backup, in an XML file.

This file can be uploaded to OScAR-Satellite whenever needed in order to restore a specific (defined) system configuration.

➤ see Section 8.4.4, "Upload a configuration"

How to save the configuration, step by step:

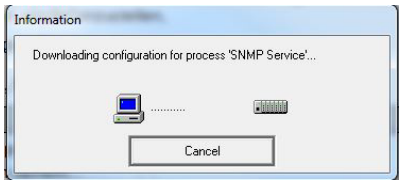
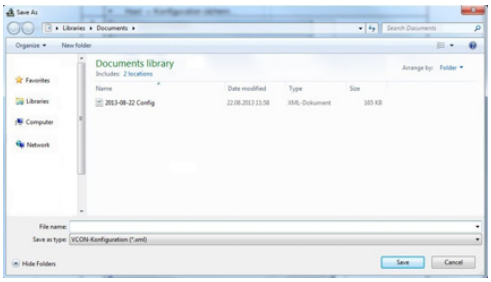
No.	Step	
1.	Click the menu item: Host -> Save configuration...	
2.	VCON queries the configuration data of the individual processes in OScAR-Satellite. Please wait.	
3.	Assign a name to the backup file. Next, click Save. The backup file will now be saved under the name you selected.	

Table 8-7 Use VCON to save the configuration

8.4.4 Upload a configuration

This function makes it possible to upload a previously saved to OScAR-Satellite. In this way, you can restore a previously defined system configuration whenever needed.

How to upload the configuration, step by step:

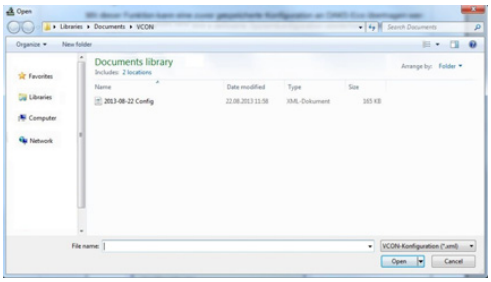
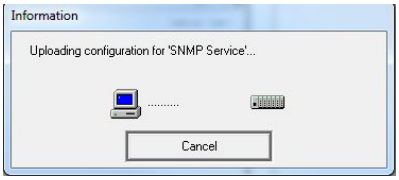
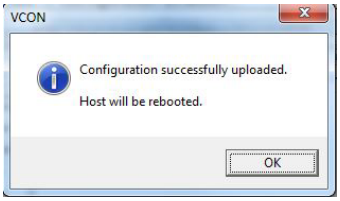
No.	Step	
1.	Click the menu item: Host -> Upload configuration...	
2.	Select the name of the previously saved configuration. Next, click Open.	
3.	During the upload of the system configuration, the progress is shown in form of a progress bar. Please wait.	
4.	The configuration data has been uploaded successfully. Caution! To apply, reboot OScAR-Satellite. Pull the Ethernet cable cord (PoE) and plug it back in.	

Table 8-8 Upload a configuration

8.5 Settings

Open the user window to edit the VCON settings:

- via the menu bar: Options → Settings...

The user window 'Settings' consists of two tabs:

- the tab 'Terminal': ➤ see Section 8.5.1, "Terminal"
- the tab 'Paths': ➤ see Section 8.5.2, "Paths"

8.5.1 Terminal

The Terminal settings relate to the view of the Terminal windows.

➤ see Section 8.8, "The Terminal Window"

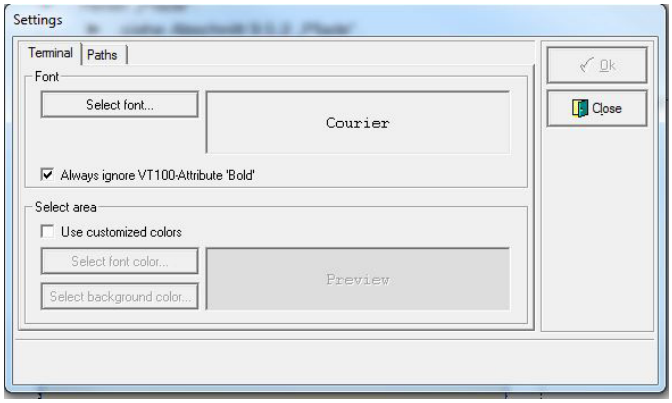


Image 8-4 VCON user window 'Settings' - Tab 'Terminal'

Summary of the fields in the window 'Settings'

Menu bar/ button	Description
Font	
Select font...	This will open the Windows standard window to select a font (not shown here).
Always ignore VT100-Attribute 'Bold'	If the VT100 attribute 'Bold' is ignored, characters will no longer be output in bold in the Terminal window. Whenever characters are output in bold print, the messages automatically have, even though the number of characters has not been increased, a greater width and appear wider. • Default: [yes]

Table 8-9 VCON user window 'Settings' - Tab 'Terminal'

Menu bar/ button	Description
Select font color...	
Use customized colors	• yes When this box is ticked, the colors that are chosen here will be used for texts that are marked in the Terminal window. • no When this box is not ticked, the font color of texts that are marked in the Terminal window will be black against a light gray background. • Default: [no]
Select font color... Select background color...	Click either of these buttons to open the standard Windows user dialog, and select a color (not shown here).

Table 8-9 VCON user window 'Settings' - Tab 'Terminal'

8.5.2 Paths

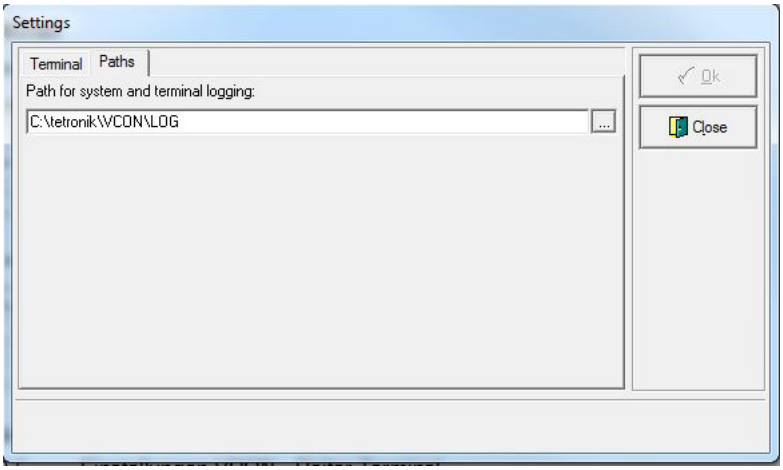


Image 8-5 VCON window 'Settings' - Tab 'Paths'

Summary of the fields in the window 'Settings'

Menu bar/ button	Description
Path for system logging and terminal logging	The path to which all files are written that contain outputs of the Terminal and the System logging window. • Default: [<Installation path>\LOG]

Table 8-10 VCON user window 'Settings' - Tab 'Paths'

8.6 List of Processes

8.6.1 General information

This section covers the way in which OScAR-Satellite processes are shown in the VCON tree structure.

All processes that run in OScAR-Satellite are defined by their specific components and their individual functions.

- Component
  A component constitutes a logically or also a physically delimited area in OScAR-Satellite.
  OScAR-Satellite supports the following components:
  - Services — The services and basic functions of OScAR-Satellite
  - Hardware — These are the hardware components of OScAR-Satellite
  - Application — The applications of OScAR-Satellite
- Function
  The function of a process describes the task that that process has. This includes for example the application OScAR-Satellite and the serial interface.
- Process
  A process represents precisely one instance of a particular function. It is determined by the function and the component.

8.6.2 Output in the Process list

The following criteria can be used to sort the Processes list:

- Processes
  All processes are itemized in a list.
- Components
  The top hierarchy node lists all components. On the next lower child node, the processes are listed that are assigned to the individual component.
- Functions
  The top hierarchy node indicates the respective function, all of which are listed in alphabetical order. The processes that share these functions can be found on the next lower node.

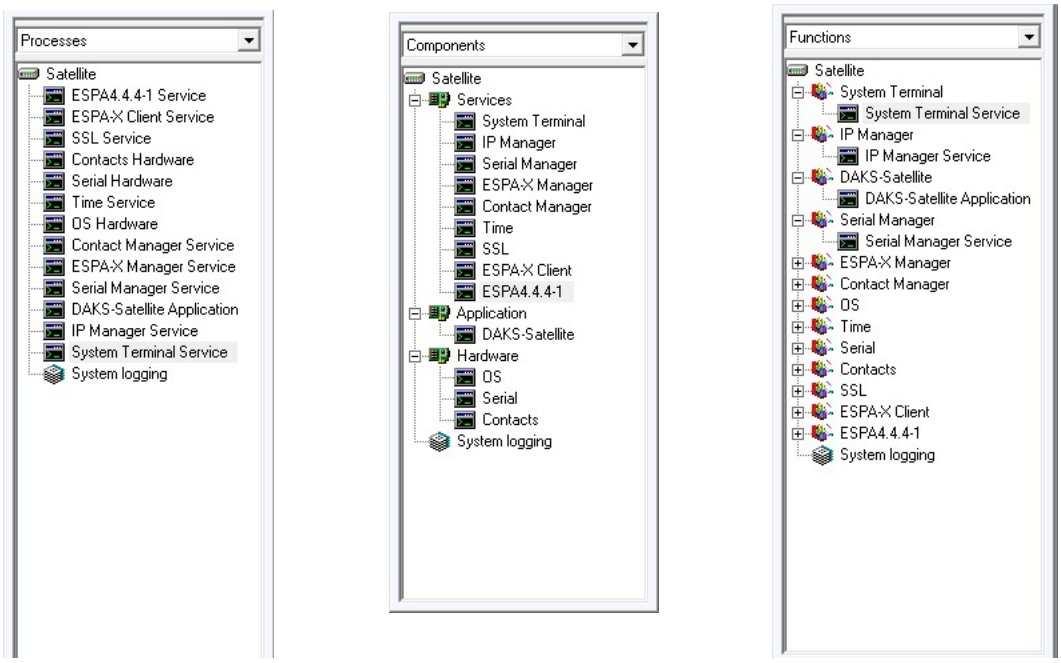


Image 8-6 The structure of the Process list: a) Processes, b) Components, c) Functions

8.6.3 Properties/settings

The user window with the properties and settings of a process can be opened:

- via the menu bar: Process → Properties/settings...
- via the context menu: Properties/settings...
- via double click: make a double click on the process in the Process list

Either of these commands will open a user window with the settings and properties of the process (➤ see Image 8-7), as well as with the option to enter changes (➤ see Image 8-8).

If you need a complete list that covers all parameters and value ranges, and a description thereof, please see Section 6.3, "Configuration via VCON and LAN Interface".

- Properties
  - Function — The function of the process
  - Component name — The the name of the component
  - Component type — The type of the component

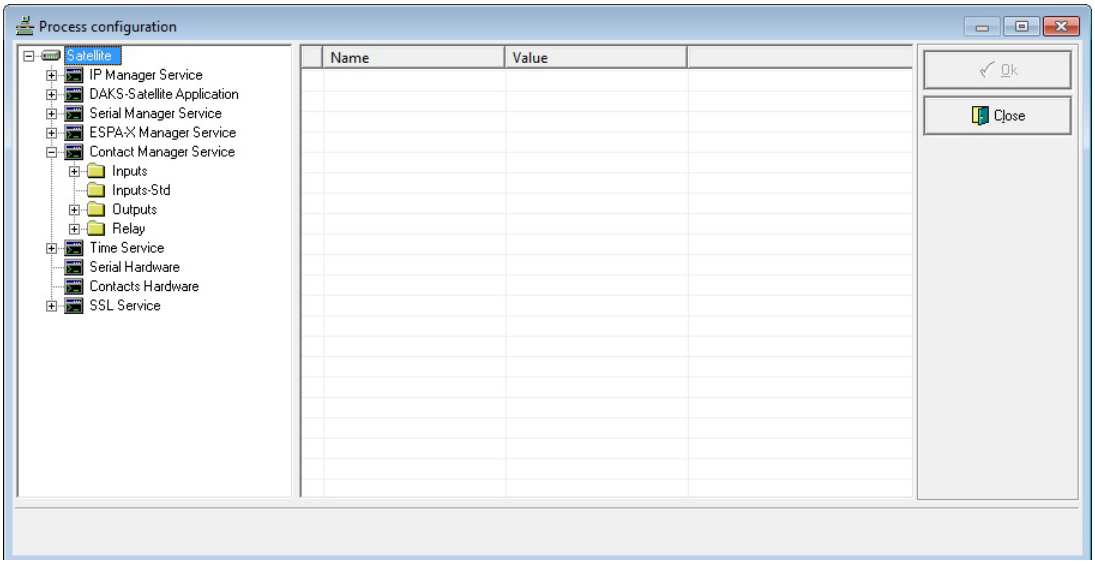


Image 8-7 Properties of a process

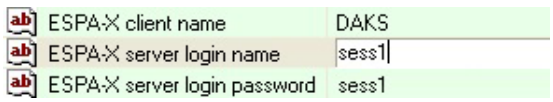
- Settings

  Not all processes can be parameterized. If parameters can be edited they are output in an edit window where they are shown in form of a tree structure.

  Depending on the data type of the respective parameter, the user window will display the following edit fields:

  - Edit field

    The edit fields are used for alphanumeric entries. The entries that are made in these fields are verified by the system once the user has proceeded to the next area. If the system detects that a supported value range of an edit field has been exceeded, it will automatically send a warning, and the entry can be corrected.
    Example: "ESPA-X client name" in the ESPA-X configuration:



– Selection field
Selection fields have a drop-down combobox from which you can choose settings.
Example: "detect short circuits" in the configuration of the Digital inputs:

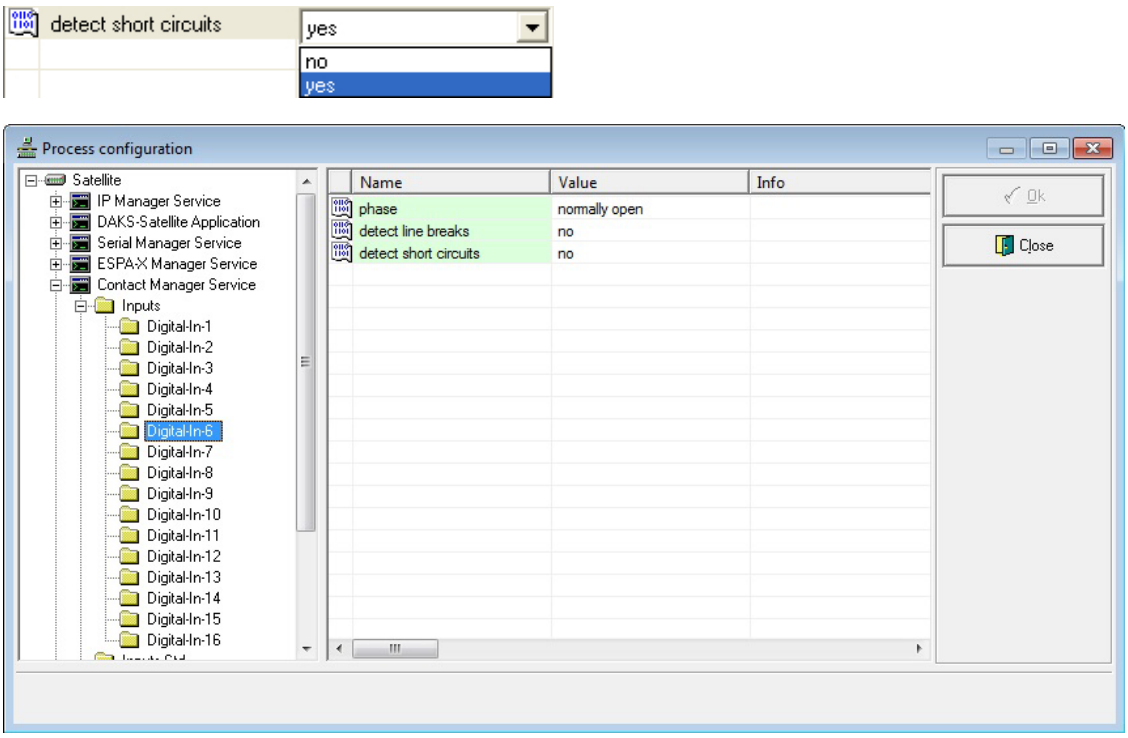


Image 8-8 Settings of a process

8.6.4 Export a configuration

This function makes it possible to export the OScAR-Satellite configuration or individual modules, for documentation purposes. Here, the information is saved in a text format and written to a file. The data is formatted in form of a tree and can be easily further processed for documentation.

To save the configuration proceed as follows:

- via the menu bar: Process → Process configuration report... (for the data of this process)
- via the menu bar: Process → Server configuration report... (for the data of all processes)

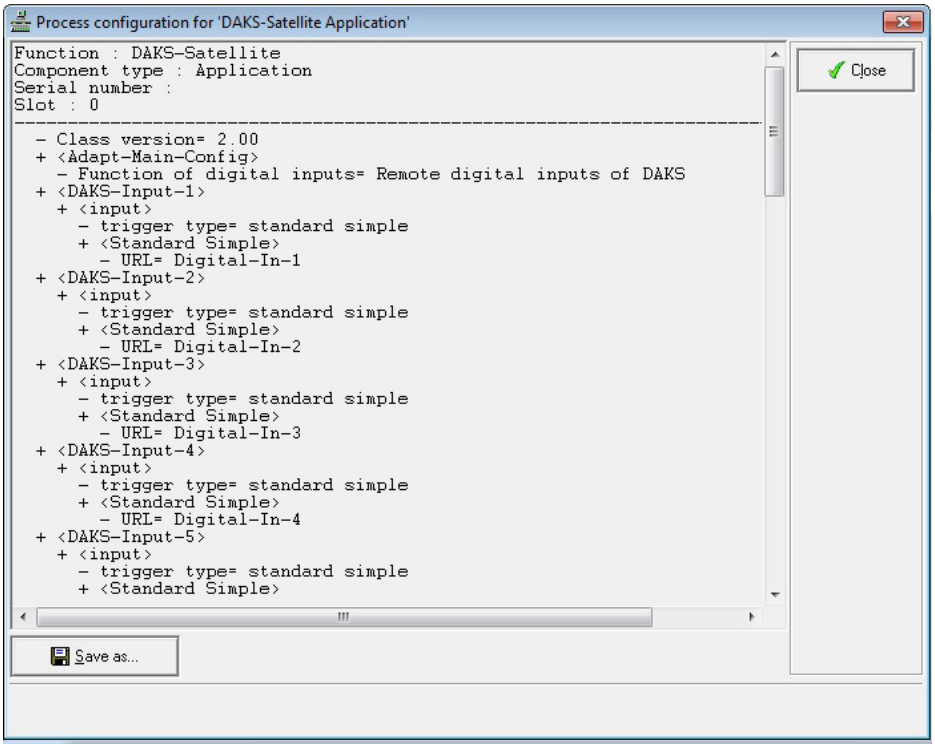


Image 8-9 Process configuration

This outputs the configuration of the selected process, or of the entire OScAR-Satellite, in a tree:

➤ see Section 6.3, "Configuration via VCON and LAN Interface"

To save, click Save as... Next, the standard Windows dialog to save a file will pop up (user window not shown here). Enter the location where you want to save the file and confirm with OK.

8.7 Monitoring

The monitor outputs in the Terminal window and/or System logging window enable you to trace the various process cycles in detail. Here, the user can specify which outputs shall be shown by OScAR-Satellite. This includes the option to activate the monitor outputs on a temporary or on a permanent basis.

Note that the outputs that are activated on a temporary basis only will be lost at the next system start. In contrast, outputs that are activated on a permanent basis will be automatically re-activated by OScAR-Satellite after the next system start.

8.7.1 Manual monitoring

In the Terminal window, enter by hand the command `mon` and press <enter> to list all monitor items of the respective process, including its name and its identifier, and to see which monitor items are currently active (`cur. mask: 0x... , <--`).

```
mon
                                                INFO: 0x00000001 <--
                                               ERROR: 0x00000002 <--
                                              inputs: 0x00000004
                                             outputs: 0x00000008
                                               DEBUG: 0x80000000
   cur. mask: 0x00000003
```

To start the monitor items you want to activate, enter the command `mon`, followed by the identifier of the logic disjunction "OR" of the individual monitor items (hexadecimal), and press <enter>, for example:

```
mon 0xC
                                                INFO: 0x00000001 <--
                                               ERROR: 0x00000002 <--
                                              inputs: 0x00000004 <--
                                             outputs: 0x00000008 <--
                                               DEBUG: 0x80000000
   cur. mask: 0x000000F
```

Enter `mon 0` to deactivate all monitor items.

Note:
The monitor items 0x1 (INFO) and 0x2 (ERROR) cannot be deactivated in the Terminal window.

Caution!
The monitoring settings that are made in this user window will not be lost with the next restart of OScAR-Satellite.
For more information on how to activate permanent monitoring outputs:
➤ see Section 8.7.3, "Configuration of the start-up monitoring"

8.7.2 Configure current monitoring

Open the user window to read and edit the active monitoring of a process:

- via the menu bar: Process → Configure current monitoring...
- via the context menu: Configure current monitoring...

Either of these options will open a user dialog in which you can configure temporary monitoring settings for traces.

The monitoring outputs appear in the matching Terminal windows of the processes and/or in the System logging window.

➤ see Section 8.8, "The Terminal Window"
➤ see Section 8.9, "The System Logging Window"

Caution!
The monitoring settings that are made in this user window will not be lost with the next restart of OScAR-Satellite.
For more information on how to activate permanent monitoring outputs:
➤ see Section 8.7.3, "Configuration of the start-up monitoring"

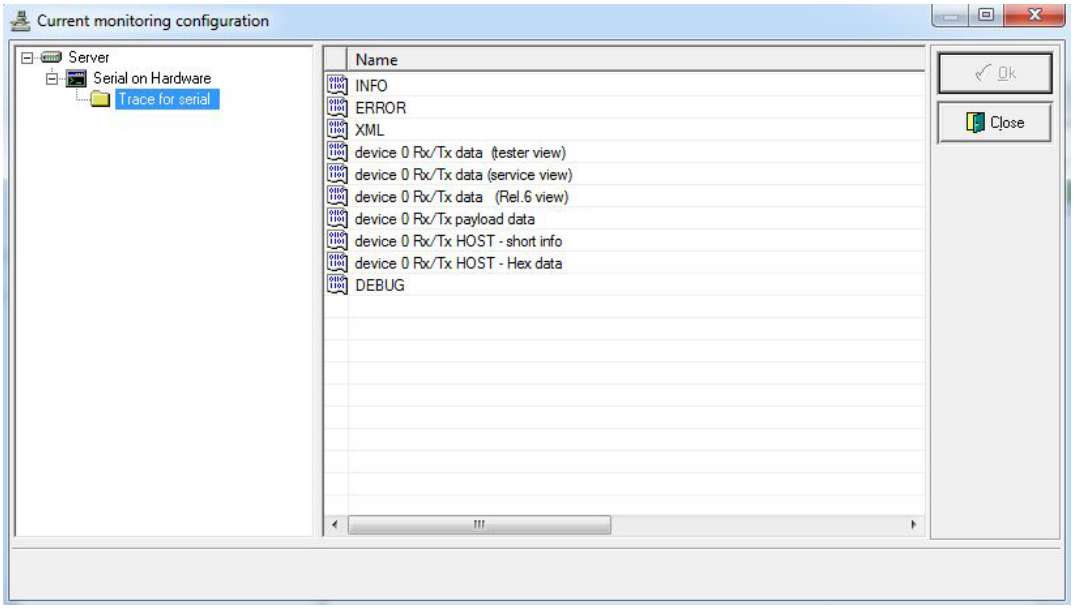


Image 8-10 Configure current monitoring

The individual monitoring outputs can be activated ('Yes') or deactivated ('No') with a selection list.
.

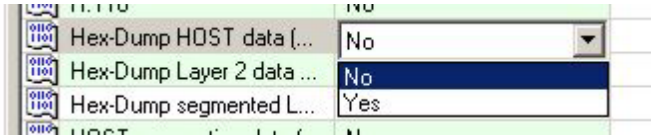


Image 8-11 Configure current monitoring Yes/No

8.7.3 Configuration of the start-up monitoring

Open the user window to edit the Start-up configuration for the monitoring of a process:

- via the menu bar: Process → Configure Start-up monitoring...
- or via the context menu: Configure start-up monitoring...

Either of these commands will open a user window (➤ see Image 8-11) with the option to enter permanent monitoring settings for tracing.

The monitoring outputs appear in the matching Terminal windows of the processes and/or in the System logging window.

➤ see Section 8.8, "The Terminal Window"

➤ see Section 8.9, "The System Logging Window"

Caution!

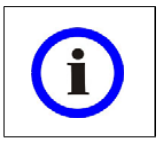
The monitoring settings made in this user window will not be lost at the next restart of OScAR-Satellite.

Please bear in mind that large amounts of data may be added to the hard disc drive when you save data via the Terminal window and/or the System logging window.

For more information on how to edit the settings:

The only difference in this user window is the name, which now reads: 'Start-up monitoring configuration'.

➤ see Section 8.7.2, "Configure current monitoring".



Note:

The monitor items 0x1 (INFO) and 0x2 (ERROR) cannot be deactivated in the Terminal window.

8.8 The Terminal Window

8.8.1 General information

The individual OScAR-Satellite processes write their process- and error messages as well as their monitoring outputs to the Terminal windows.

System outputs are additionally output in the System logging window.

➤ see Section 8.9, "The System Logging Window"

Caution!
The logging in the System windows may only be carried out in consultation with Support, as the activation of certain monitor items may restrict the performance of OScAR-Satellite and can also generate very large amounts of data.

8.8.2 Logging

The outputs in the Terminal windows can be written into files. The logging of Terminal outputs in files can either be carried out on a temporary basis, or permanently:

- Activate temporary logging
  If the logging is activated on a temporary basis, all terminal outputs are written in a logfile for as long as VCON is active. After a new new start of VCON, however, the Terminal outputs will no longer be written to the logfile.
  Activate/deactivate temporary logging:
  – via the menu bar: Process → Log terminal output temporarily
  – via the context menu: Log terminal output temporarily
  – Toolbar:
- Activate permanent logging
  If the logging is activated on a permanent basis, all terminal outputs will also be logged after a reboot of VCON.
  Activate/ deactivate the permanent logging:
  – via the menu bar: Process → Log terminal output permanently
  – via the context menu: Log terminal output permanently
  – Toolbar:
  For each process, VCON creates an separate subdirectory with the name of the respective process, and adds it to a directory that can be freely determined by the user.
  ➤ see Section 8.5.2, "Paths"
  It is here that the system will then add a new logfile for each day, with the following file name:
  Format of the log file name: yyyy-mm-dd.log
  – yyyy year, 4 digits
  – mm month, 2 digits
  – dd day, 2 digits

The following table gives you an example of a logfile. Here, the activation of the logging process triggered by VCON after a system reboot is earmarked separately.

2010-02-17 13:54:27.6760 ********** 2010-02-17 13:54:27.6760 * tetronik GmbH 2010-02-17 13:54:27.6760 * Digital-IO 2010-02-17 13:54:27.6760 * Version: 1.00 2010-02-17 13:54:27.6760 * Compiled: Feb 12 2010 2010-02-17 13:54:27.6760 * Copyright (c) 1994 - 2010 All rights 2010-02-17 13:54:27.6760 ********** 2010-02-17 13:54:27.7360 16 licenses for inputs. 2010-02-17 13:54:27.7360 8 licenses for outputs. 2010-02-17 13:54:27.7360 1 licenses for relay. => Logging started: 2010-02-17 14:03:46.0327 2010-02-17 14:56:25.1880 [00000004]: input #16: 0 -> 2 2010-02-17 14:56:25.3240 [80000000]: rec: cmd 'cO' len 8 2010-02-17 14:56:25.3240 [00000008]: output #7: 1 2010-02-17 14:56:28.8920 [00000004]: input #8: 0 -> 1 2010-02-17 14:56:28.3800 [80000000]: rec: cmd 'cO' len 8 2010-02-17 14:56:28.3800 [00000008]: output #6: 1 2010-02-17 14:56:30.8680 [00000004]: input #2: 0 -> 1 2010-02-17 14:56:33.3000 [00000004]: input #5: 0 -> 2 2010-02-17 14:56:36.7960 [00000004]: input #12: 0 -> 3 2010-02-17 14:56:39.6440 [00000004]: input #10: 0 -> 1 2010-02-17 14:56:42.8280 [00000004]: input #16: 2 -> 0 2010-02-17 14:56:42.0480 [80000000]: rec: cmd 'cO' len 8 2010-02-17 14:56:42.0480 [00000008]: output #7: 0 2010-02-17 14:56:44.0120 [00000004]: input #8: 1 -> 3 2010-02-17 14:56:46.7800 [00000004]: input #8: 3 -> 1 2010-02-17 14:56:48.1720 [00000004]: input #5: 2 -> 0 2010-02-17 14:56:53.0600 [00000004]: input #16: 0 -> 2 2010-02-17 14:56:53.2640 [80000000]: rec: cmd 'cO' len 8 2010-02-17 14:56:53.2640 [00000008]: output #7: 1 2010-02-17 14:56:56.3840 [00000004]: input #16: 2 -> 0 2010-02-17 14:56:56.5240 [80000000]: rec: cmd 'cO' len 8 2010-02-17 14:56:56.5240 [00000008]: output #7: 0 2010-02-17 14:57:00.4400 [00000004]: input #16: 0 -> 2 2010-02-17 14:57:00.6040 [80000000]: rec: cmd 'cO' len 8 2010-02-17 14:57:00.6040 [00000008]: output #7: 1 2010-02-17 14:57:05.8080 [00000004]: input #16: 2 -> 0	VCON new start

Table 8-11 Example of a logfile of the Terminal window

8.8.3 Search for a specific word or term in the Terminal window

VCON enables you to browse outputs in Terminal windows for specific texts. When the wanted word is found, the system will highlight it in the presented results. The search begins with the first character in the buffer of the Terminal window. To go to the next finding of the search term, simply repeat the search functions as described below.

In addition, you can also browse the System logging window for a text or words that are marked in the Terminal window.

How to browse the Terminal window for a word or term, step by step:

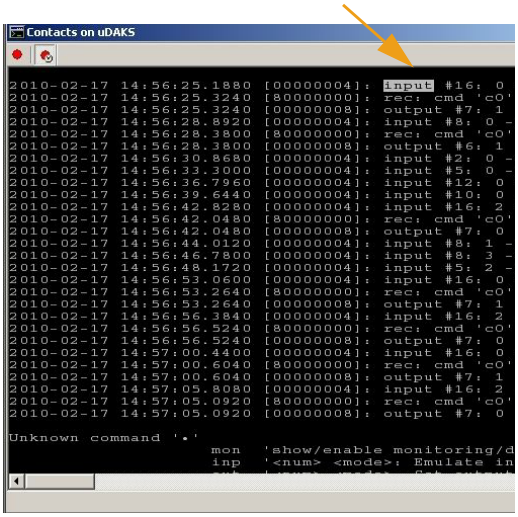
No.	Step	
1.	Give the Terminal window in which you want to carry out the search the focus in either of these two ways: • Make a left mouse click on the Terminal window. • Go to the process list and click the process that is part of the Terminal window.	
2.	Enter the search key (a term or word) you are looking for in the search box of the tool-bar. Go to the toolbar and click the magnifying glass. Note: Bear in mind that the search terms are case sensitive.	
3.	VCON will highlight the search results in the Terminal window.	Search results 
4.	Simply click the magnifying glass again if you want to continue the search for more findings of the term or text you entered. ➤ see Step 3	

Table 8-12 Search for a specific word in the Terminal window

How to browse the Terminal window for a marked text, step by step

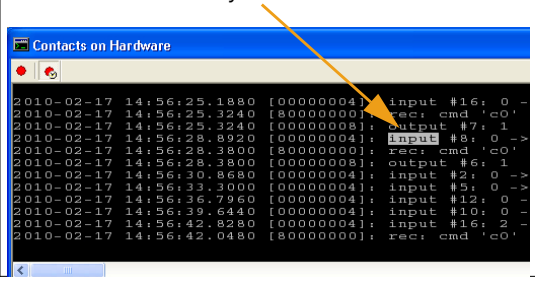
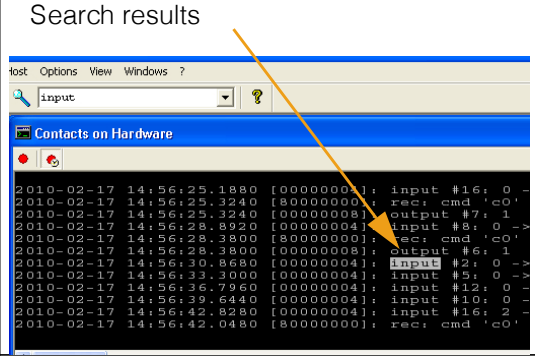
No.	Step	
1.	In the Terminal window, mark the wanted text.	Search key 
2.	Now start the search in either of these ways: • via the menu bar: Search → Find next • via the context menu: Find next similar message • via the keyboard shortcut: Ctrl+F3	
3.	VCON will highlight the search results in the Terminal window.	Search results 
4.	You can continue looking for the term by re-activating the search process. ➤ see Step 2	

Table 8-13 Search for a marked text in the Terminal window

How to browse the System logging window for a marked word or term, step by step:

This search function makes it possible to create a direct shortcut between the Terminal window and the System logging window, and by doing so to browse the System logging window for a message from the Terminal window.

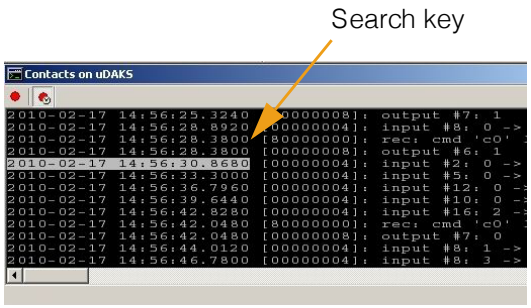
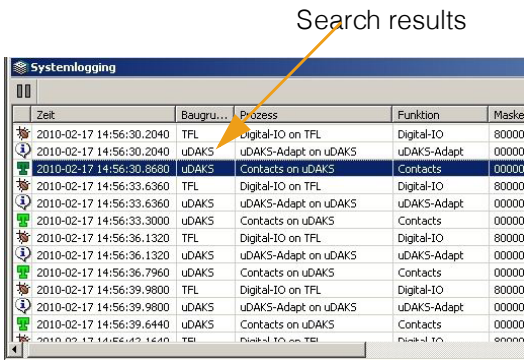
No.	Step	
1.	In the Terminal window, mark the wanted text.	
2.	Now start the search in either of these ways: • via the menu bar: Search → Find selected text in system logging window • via the context menu: Find selected text in System logging window • Shortcut: Ctrl+Shift+F3 • Toolbar:	
3.	VCON will highlight the search results in the System logging window.	

Table 8-14 Search for a marked text in the System logging window

8.8.4 Save

Open the user dialog to save the contents of Terminal windows:

- via the menu bar: File → Save content...
- Toolbar:

Note:
In addition to logging Terminal outputs permanently or temporarily in a file, you can also save the contents of Terminal windows spontaneously, i.e. ad hoc.

The following contents can be saved:

- Save entire content of the window
  If no text is marked in the window, VCON will automatically save the entire content of the Terminal window in a text file, including the areas that only become visible when scrolling the window.
- Save marked text only
  If a text is marked in the window, the text will be saved in a text file.

The standard Windows dialog "Save as..." will pop up. Use this window to select the location where and the file name under which you want to save the text file. (➤ see Image 8-12).

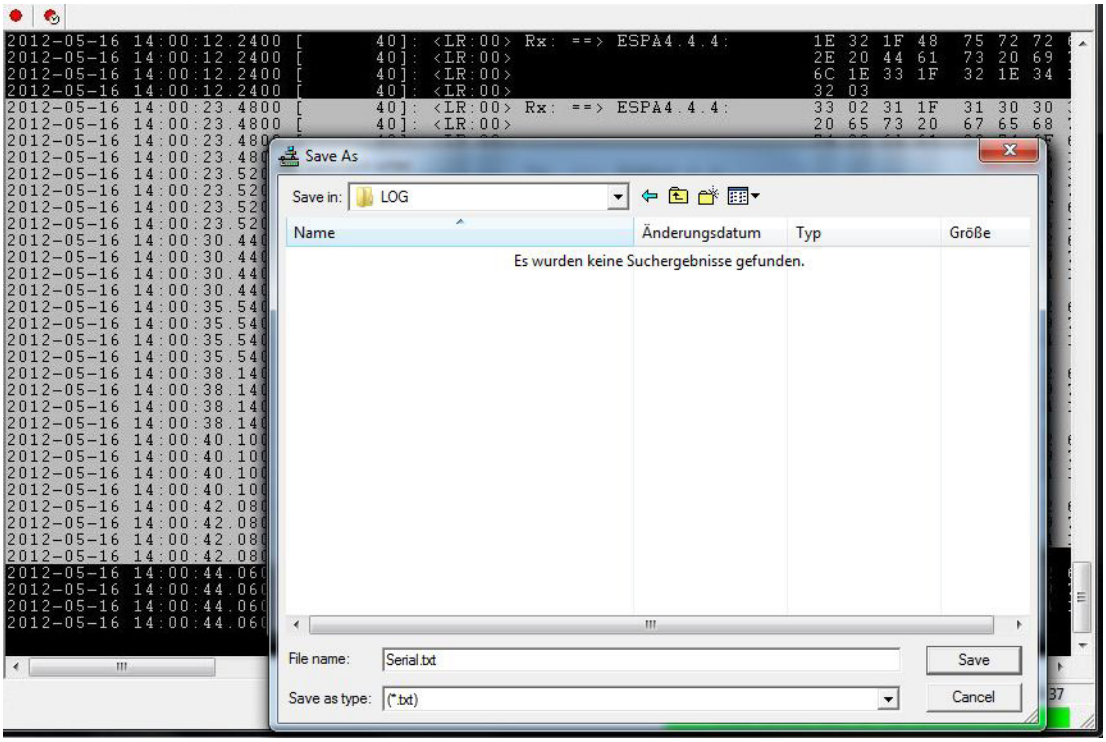


Image 8-12 Save the contents of a Terminal window

8.9 The System Logging Window

8.9.1 General information

The System logging window outputs the following messages in one list:

- VCON system messages
  The VCON system messages include for example:
  – Activation messages
  – Messages regarding the connection status between OScAR-Satellite and VCON
- Process reports
  The various processes first send their messages to their assigned Terminal window. VCON then filters all messages that have the below format, outputs these messages also in the System logging window and saves them in log files:
  yyyy-mm-dd HH:MM:SS.µµµµ [xxxxxxxx]: <text>

  – yyyy the year
  – mm the month
  – dd the day
  – HH the hour
  – MM the minute
  – SS the second
  – µµµµ the 100 µ seconds
  – xxxxxxxx the code of the monitor point (bit encoding)
  – <text> the message in plaintext

  The process reports include, for example:
  – Info messages:
    Information generated from within the process
  – Error reporting:
    Messages generated in the event of an error or malfunction
  – Trace messages:
    Activation and deactivation of trace messages,
    ➤ see Section 8.8, "The Terminal Window" or
    ➤ see Section 8.7, "Monitoring"

  Due to the large amount of messages that are received, especially if the monitoring of outputs is activated, the analysis of the relevant information can be rather time consuming.

  For this reason, VCON offers the option to search for system messages both in the window that is currently open and throughout all log files that are stored on the hard disc drive, and to filter these messages.

  ➤ see Section 8.9.2, "Browse the System logging window for a term or similar message"
  ➤ see Section 8.10, "Filter System Messages"

The below image shows the System logging window:

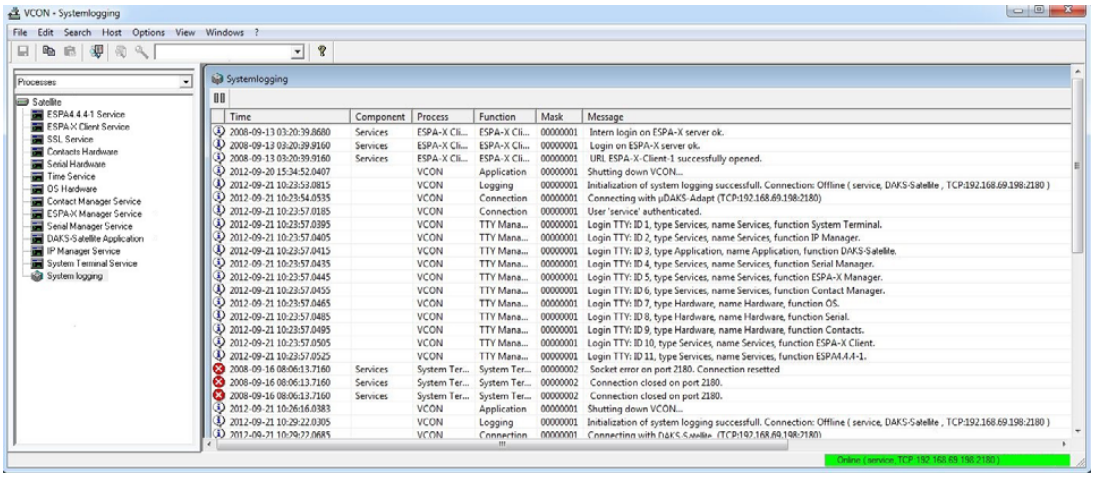


Image 8-13 The System logging window

Description of the columns and functions in the System logging window

Menu bar/ button	Description
Symbol	• Process information • Problem report • Trace message • Debug message
Time	The date and time when the message was generated in OScAR-Satellite (time stamp is assigned automatically, by the process).
Component	The Component that generated the message
Process	The process that generated the message
Function	The function in which the message was generated
Mask	The monitoring mask of trace messages. ➤ see Section 8.6, "List of Processes"
Message	The message in plaintext.
	Activate/deactivate the pause mode During the pause mode, no further outputs will be shown in the System logging window. Nonetheless, the system will continue to write all messages into the logfile. After the end of the pause mode, all messages that have meanwhile arrived will be displayed.

Table 8-15 The System logging window

Note:
System messages can only be sorted by column during the pause mode. To sort by column, simply make a left mouse click on the column header.

8.9.2 Browse the System logging window for a term or similar message

You can browse the System logging window for search terms or similar messages. Also, the system offers the option to track a message that is shown in the System logging window also in the Terminal window, in which it originally appeared. The search starts at the beginning of the list. To go to the next finding of the search term, simply repeat the search functions as described below.

How to search for a term or word, step by step:

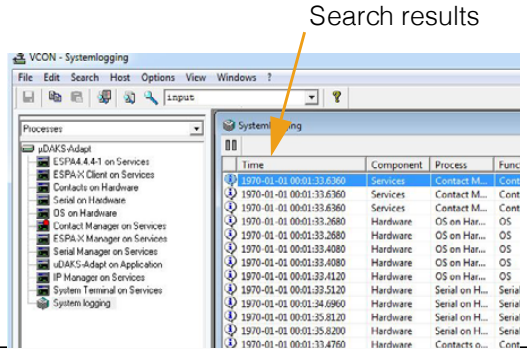
No.	Step	
1.	Place the focus on the System logging window in either of these ways: • by making a left mouse click in the System logging window or • Go to the process list and click 'System logging'.	
2.	Enter the search key (a term or word) you are looking for in the search box of the toolbar. Go to the toolbar and click the magnifying glass. Note: Bear in mind that the search terms are case sensitive.	
3.	VCON will highlight the search results in the System logging window. Here, the system always highlights the entire column in which this particular search term was found.	
4.	Simply click the magnifying glass again if you want to continue the search for more findings of the term or text you entered. ➤ see Step 3	

Table 8-16 Word search

How to find the next similar message, step by step:

With this search function, VCON uses the text of the message as the search criterion. Other search criteria, e.g. the time, process or monitor mask, will not be considered or taken into account.

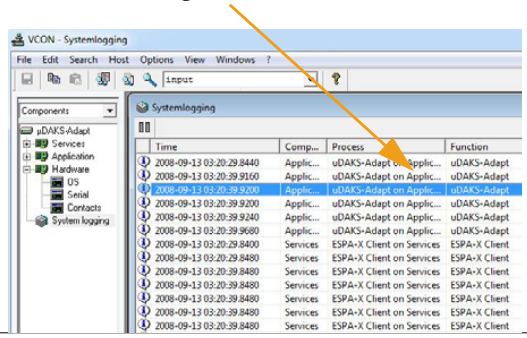
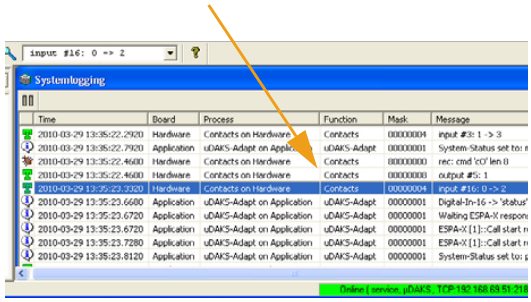
No.	Step	
1.	Mark the message you are looking for in the System logging window.	Search message 
2.	Now start the search in either of these ways: • via the menu bar: Search → Find next • via the context menu: Find next similar message • via the keyboard shortcut: Ctrl+F3	
3.	VCON will highlight the search results in the System logging window.	Search results 
4.	You can continue looking for the term by re-activating the search process. ➤ see Step 2	

Table 8-17 Find next similar message

Find message in the matching Terminal window

Use this function to create a direct link between the Terminal window and the System logging window. Every message that is shown in the System logging window has a related and matching message in a Terminal window. These related and corresponding outputs can be found quickly and effectively.

How to browse the Terminal window for a matching message, step by step:

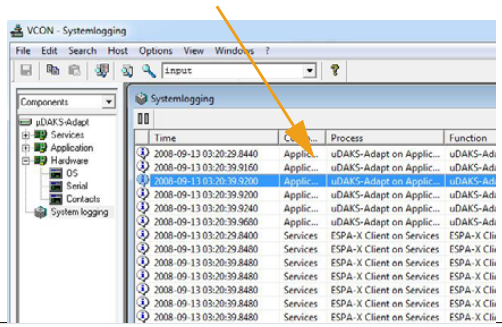
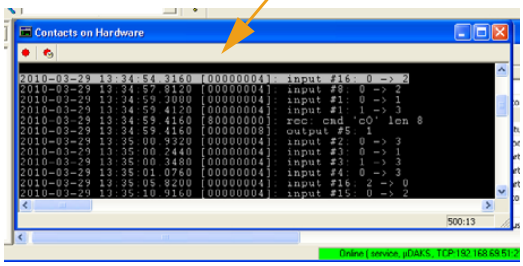
No.	Step	
1.	Mark the message you are looking for in the System logging window.	Search message 
2.	Now start the search in either of these ways: • via the menu bar: Search → Find message in the matching Terminal window • Context menu: Find message in the matching Terminal window • Shortcut: Ctrl+Shift+F3	
3.	VCON will highlight the search results in the Terminal window.	Search results 

Table 8-18 Find message in the matching terminal

8.10 Filter System Messages

8.10.1 General information

The filter tool is a convenient and easy way to browse for relevant data sets in the system logging details. The filter is applied to all messages that are output in the current System logging window as well as to all previous messages that have already been saved in the system logging files.

After a filter has been applied, the system will open a new System logging window with the filtered messages.

Note:
The filter continues its operation even while new messages arrive. When the search criterion applies to one of the new messages, that message is automatically added to the filter window. The output of new messages can be deactivated by using the pause mode.

➤ see Section 8.9.1, "General information"

After the pause mode ends, all system messages will be shown that have arrived in the meantime, and that match the filter criterion.

Caution!
Please bear in mind that when system logging information is saved on the hard disc drive over a longer period of time, the time response when using a filter can be rather long because of the large amount of data that must be filtered. For long calculation periods, VCON uses a progress bar and offers the option to cancel the filter process.

8.10.2 Use the word search

An easy way of filtering is to search the System logging window for a specific word or text, and to have the search results output in form of a list.

How to use the word search, step by step:

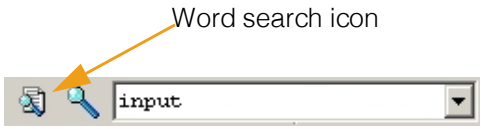
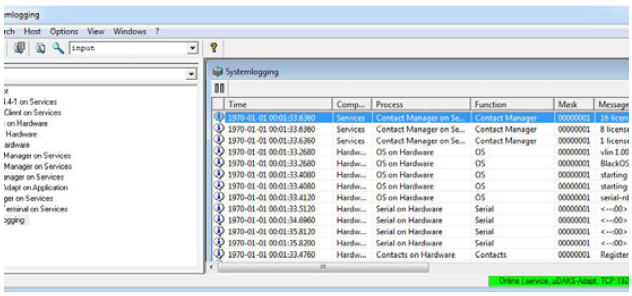
No.	Step	
1.	Enter the search key (a term or word) you are looking for in the search box of the toolbar. Go to the toolbar and click the word search icon. Note: Bear in mind that the search terms are case sensitive.	
2.	VCON will add a separate System logging window with the filtered word search results in the process list, and here in form of a child node to the node 'System logging'. Click this entry in the process list to bring the window to the front (top).	

Table 8-19 Use a word search in the System logging window

8.10.3 Apply Global filters

Global filters provide complex filtering options that go beyond simple word searches. With global filters, you can also apply such search criteria as specific time periods, but also process types or logic connections (AND/OR/NOT).

How to use a global filter, step by step:

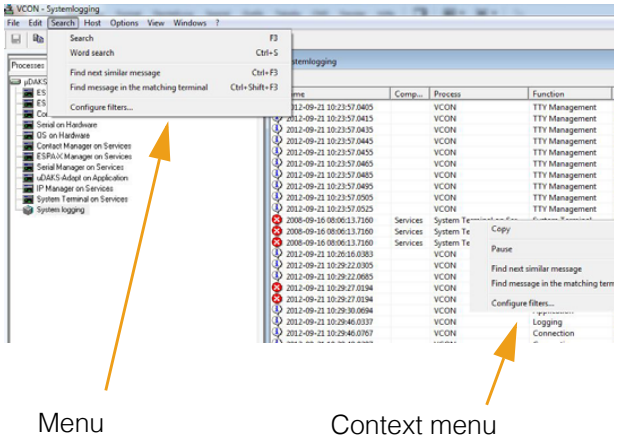
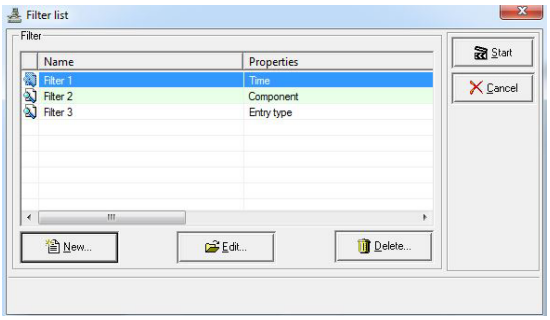
No.	Step	
1.	Place the focus on the System logging window in either of these ways: • by making a left mouse click in the System logging window or • Go to the process list and click 'System logging'.	
2.	Open the filter list: • via the menu bar: Search → Configure filters... • via the context menu: Configure filters... • via the Toolbar: ➤ see Section 8.10.4, "Filter list"	
3.	Mark the filter that you want to apply to the list of system messages. Click Start.	

Table 8-20 Apply global filters

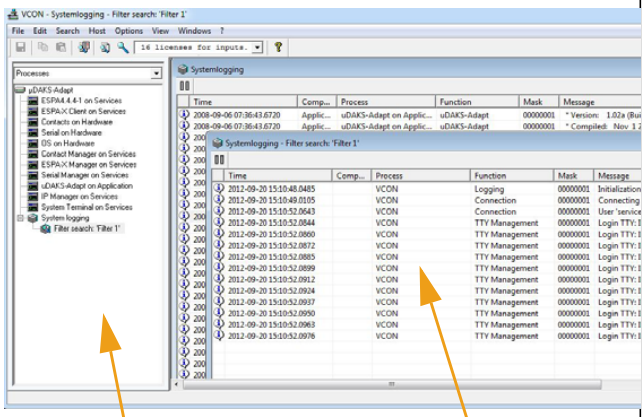
No.	Step	
4.	This will open the System logging window with filtered results. For an easy navigation, a separate entry is created for each activated filter in the process list, and added as a child node to: 'System logging'.	 Filter window in the Processes list System logging window with filter results

Table 8-20 Apply global filters

8.10.4 Filter list

Open the Filter list window:

- via the menu bar: Search → Configure filters...
- via the context menu: Configure filters...
- Toolbar:

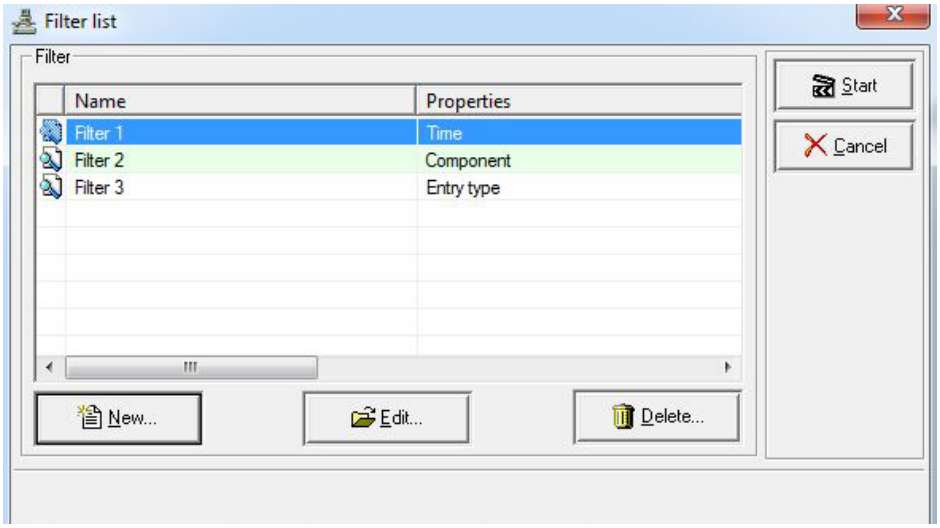


Image 8-14 Filter list

Summary of the fields in the window 'Filter list'

Menu bar/ button	Description
New...	Use this button to add a new filter to the list. ➤ see Section 8.10.5, "Edit filter settings"
Edit...	Use this button to edit the settings of the selected filter. ➤ see Section 8.10.5, "Edit filter settings"
Delete	Use this button to delete the selected filter from the filter list.
Start	Use this button to activate the selected filter.
Cancel	Use this menu item to close the dialog.

Table 8-21 Filter list

8.10.5 Edit filter settings

Open the user window to edit the settings of a filter:

- via the dialog Filter list: New... / Edit...
  ➤ see Section 8.10.4, "Filter list"

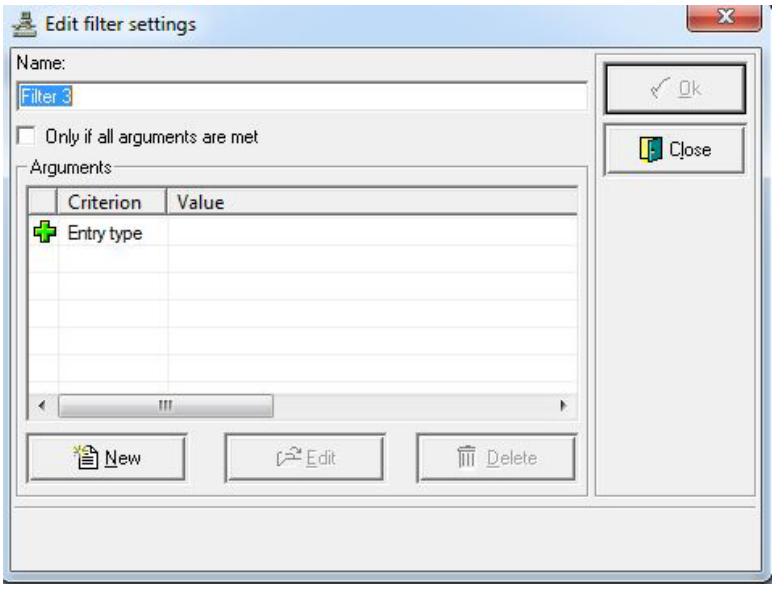


Image 8-15 Edit filter settings

Description of the fields in the window 'Edit filter settings'

Menu bar/ button	Description
name	The name with which this filter is output in the filter list.
Only if all arguments are met	• yes This option corresponds to the logic conjunction "AND" of the below argument list. • no This option corresponds to the logic disjunction "OR" of the below argument list.

Table 8-22 Edit filter settings

Menu bar/ button	Description
Arguments	
List	The list of all arguments that must be considered when this filter is applied.
New	Create a new argument ➤ see Section 8.10.6, "Edit the argument of a filter"
Edit	Edit a selected argument ➤ see Section 8.10.6, "Edit the argument of a filter"
Delete	Delete a selected argument
OK	Save the filter settings
Close	Close Window

Table 8-22 Edit filter settings

8.10.6 Edit the argument of a filter

Open the user window to edit the criterion or argument of a filter:

- via the user window 'Edit filter settings' New... / Edit...
  ➤ see Section 8.10.5, "Edit filter settings"

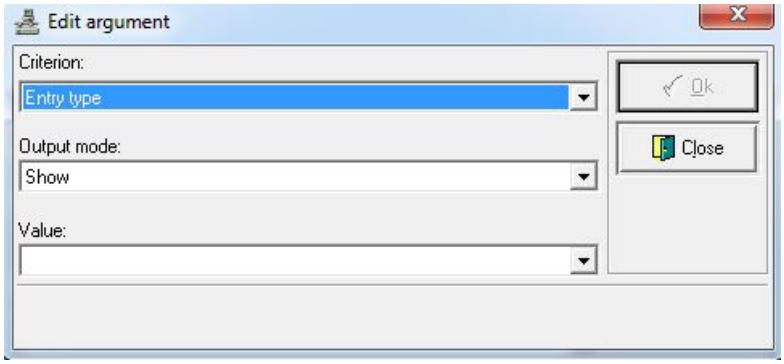


Image 8-16 Edit argument

Description of the fields in the window 'Edit argument'

Menu bar/ button	Description
Criterion	Enter here the criterion that is searched by VCON in combination with the value specified below.
Output mode	• Show With this option, the system will output the log entry that was found. • Hide With this option, the system will hide the entry that was found. This is equivalent to a negation of the argument itself.
Values and conditions	List of all values and conditions that must be considered when this filter is applied: e.g. "Value" or "from ... to ..."
OK	Save the argument settings
Close	Close Window

Table 8-23 Edit argument

8.11 Install VCON

How to install VCON, step by step:

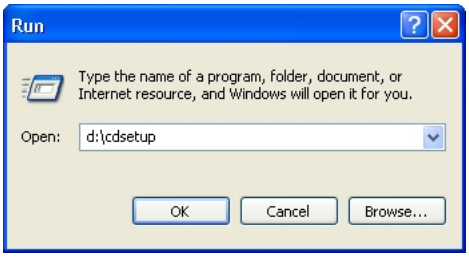
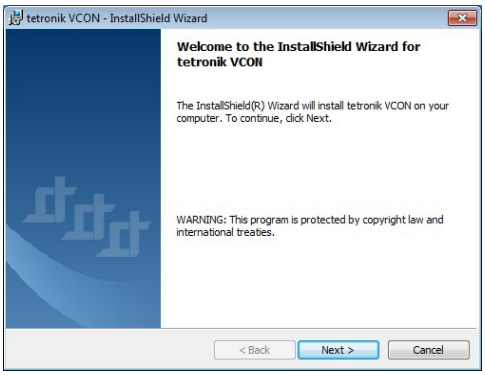
No.	Step	
1.	Place the Installation CD in the CD-ROM drive of the PC. If the installation software fails to start automatically, you can also start the installation manually in Windows: Select Start -> Run.... Enter: *<CD-ROM drive>*:\CDsetup Confirm with Ok.	
2.	In the window "tetronik Setup" choose the menu item: Install the service and configuration tool ''VCON" .	
3.	You can now begin with the installation. Now click Next.	

Table 8-24 Install VCON

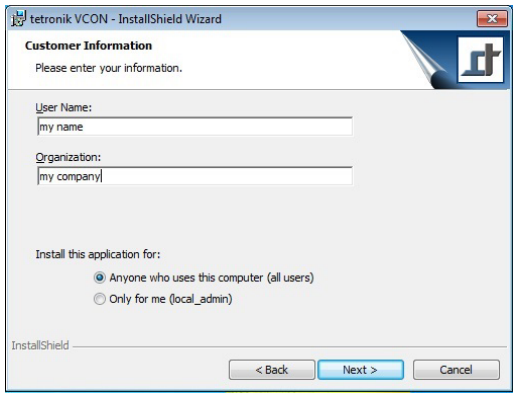
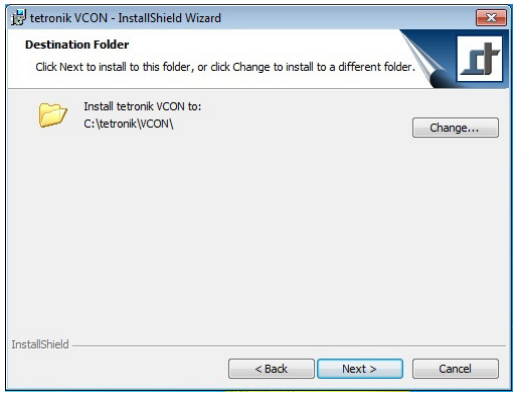
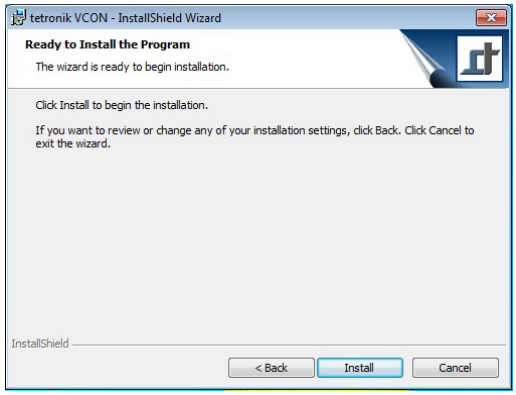
No.	Step	
4.	• Enter the user name and the name of the organization or company. • Specify if you want the software to be installed for all users of this PC, or only for you. Now click Next.	
5.	To change the installation path, click the button Change... and select the new path in the next user window (not shown here). Now click Next.	
6.	The installation settings have been successfully entered. You can now start with the installation. Click Install.	

Table 8-24 Install VCON

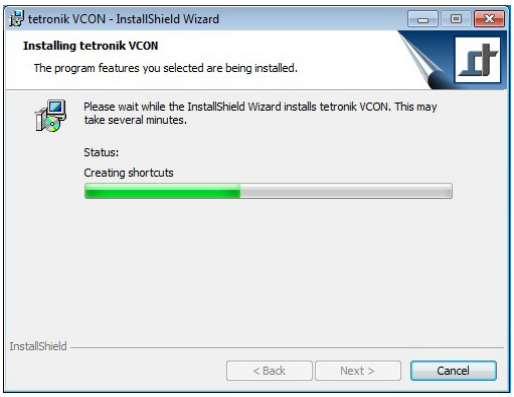
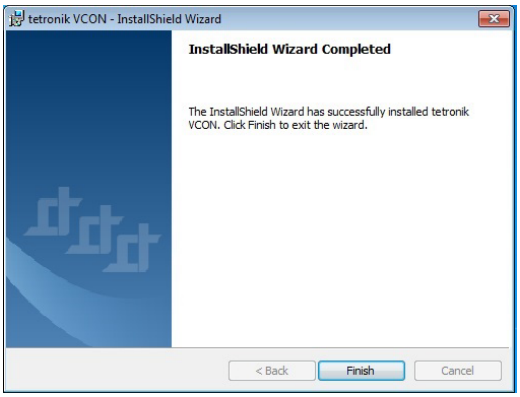
No.	Step	
7.	The installation will now be carried out. Please wait.	
8.	The installation has been completed with success. Now click on Finish. The installation of VCON is now fully completed. VCON is now ready for operation.	

Table 8-24 Install VCON

8.12 Uninstall VCON

How to uninstall VCON, step by step:

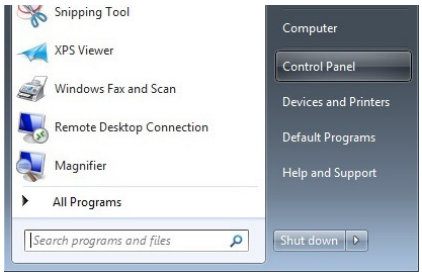
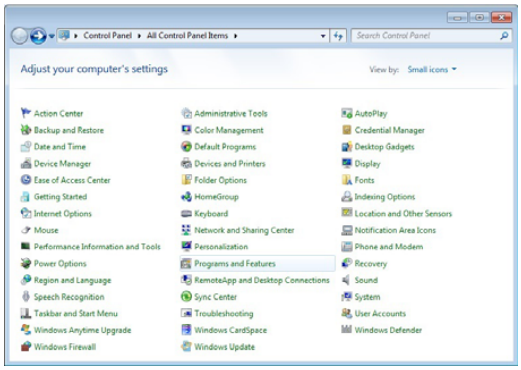
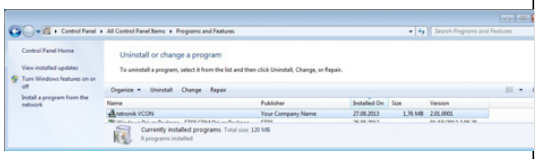
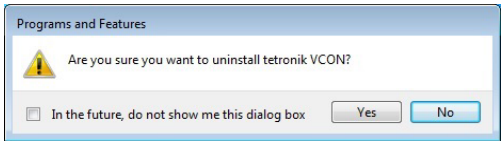
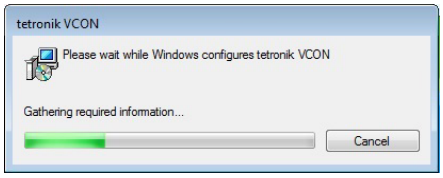
No.	Step	
1.	Open the Windows Control Panel.	
2.	Click Add or Remove Programs.	
3.	Select the entry 'tetronik VCON'. Click Remove.	
4.	You can now begin with the removal of the tool. Now click Next.	
5.	The software will now be removed. Please wait.	

Table 8-25 Remove VCON

9 Administration of Certificates via VCON and TLS/MTLS

Overview

This chapter covers the general application of the Transport Layer Security (TLS) and of the certificates within OScAR-Satellite. Both the setting of the TLS parameters and the administration of the certificates is carried out via the service tool VCON.

Content

The following areas are covered in this chapter:

9.1 Administration of Certificates with VCON
9.2 Configure and Administrate Certificates
9.2.1 Import trusted certificates
9.2.2 Generate and export self-signed certificates
9.2.3 Create certificate signing requests and import signed certificates
9.2.4 Export the certificate you are currently using
9.3 Mutual Transport Layer Security (MTLS)
9.4 Administration of Certificates in VCON
9.4.1 Example: Machine certificate in VCON

General Details

OScAR-Satellite utilizes the Transport Layer Security protocol (TLS) to transmit ESPA-X data sets safely between the DAKS Server and itself, OScAR-Satellite.

Here, all signaling data is transferred from one point to the other in an encrypted form (end-to-end signaling security), and both parties verify the identify the of the sending partner through certificates, i.e. through mutual authentication (Multiplexed Transport Layer Security, MTLS). Optionally, OScAR-Satellite can also operate without authentication (TLS).

Any transfer of data through the TLS protocol with authentication requires valid certificates of the communication partners.

The encryption algorithm used for TLS is negotiated during the connection build up. Here, the Advanced Encryption Standard (AES) is applied, with a code length of 256 bit.

Voice data (RTP and RTCP data streams)

To transfer voice data (RTP and RTCP data streams) safely and securely between OScAR and the communications partner (e.g. PBX systems, telephones and other devices), the Framework Secure Real-Time Transport Protocol (SRTP) is used.

In this process, the Advanced Encryption Standard (AES) with the code-exchange procedure SDES for data encryption is applied. The code length (master key length) is 128 bit. The message authentication is effected through HMAC-SHA1 (Hash Message Authentication Code-Secure Hash Algorithm).

9.1 Administration of Certificates with VCON

General Details

VCON can be used for the administration of certificates, offering the below-listed functions.

➤ see Section 6.6, "SSL"

- Upload certificates to the memory of trusted certificates
- Create an own, self-generated certificate
- Create a certificate signing request (CSR), for signing by a certificate authority such as VeriSign
- Export a OScAR machine and CA certificate (machine certificate or CA certificate)

Note:
OScAR-Satellite exclusively supports PEM (Base64)-encoded X.509 certificates.

9.2 Configure and Administrate Certificates

9.2.1 Import trusted certificates

Use this menu item to import a certificate to OScAR-Satellite via VCON. The certificate that is imported in this way is automatically added to the memory of trusted certificates.

How to import trusted certificates, step by step:

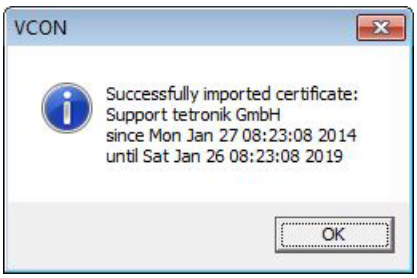
No.	Step
1.	Give the focus to the Terminal window "SSL". To do so, go to the Processes list and click the process "SSL".
2.	Go to the menu bar, click the item "Certificates" and select: Trusted certificate store ➤ Import certificate...
3.	Next, select the certificate you want to import. Confirm with OK.
4.	The selected certificate is imported to OScAR-Satellite, and added to: "Trusted certificates". ➤ see Section 6.6, "SSL" The following message will pop up:  Click OK.

Table 9-1 Import certificates via VCON

9.2.2 Generate and export self-signed certificates

Use this menu item to:

- create a tetronik-CA signed certificate,
- export the tetronik-CA certificate.

How to create a tetronik-CA signed certificate, step by step:

A self-signed certificate is, for example, always needed when the IP address of the OScAR-Satellite is changed and the PBX system must verify the IP address in the OScAR certificate.

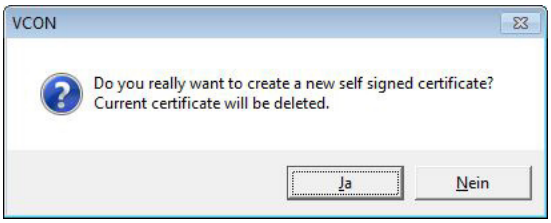
No.	Step
1.	Give the focus to the Terminal window "SSL". To do so, go to the Processes list and click the process "SSL".
2.	Go to the menu bar, click the item "Certificates" and select: Self-signed certificate ➤ Create tetronik-CA signed certificate...
3.	The following message will appear:  Confirm with Yes.
4.	A new self-signed certificate is generated and saved in OScAR-Satellite, where it is added to the folder: "Machine Certificate". ➤ see Section 6.6, "SSL"

Table 9-2 Create tetronik-CA signed certificate

How to export a tetronik-CA signed certificate, step by step:

Use this menu item to export the tetronik-CA certificate.

No.	Step
1.	Give the focus to the Terminal window "SSL". To do so, go to the Processes list and click the process "SSL".
2.	Go to the menu bar, click the item "Certificates" and select: Self-signed certificate ➤ Export tetronik-CA...
3.	In the next user dialog window, enter a name and the path where you want to save this certificate. Finally, click "Delete".

Table 9-3 Export tetronik-CA certificate

9.2.3 Create certificate signing requests and import signed certificates

Use this menu item to:

- create a certificate signing request (CSR)
- upload a certificate that was created by a certificate authority (CA)

How to create a certificate signing request (CSR), step by step:

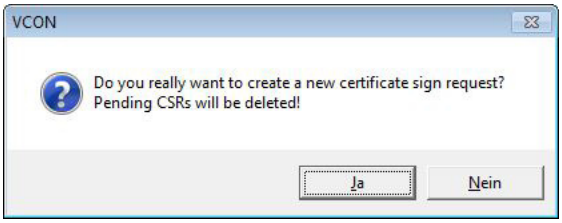
No.	Step
1.	Give the focus to the Terminal window "SSL". To do so, go to the Processes list and click the process "SSL".
2.	Go to the menu bar, click the item "Certificates" and select: Certificate signing request ➤ Create certificate signing request (CSR)...
3.	The following message will appear:  Confirm with Yes.
4.	In the next user dialog window, enter a name for the certificate signing request (CSR) and the path where you want to save it. Finally, click "Delete".

Table 9-4 Create certificate signing request (CSR)

How to import signed certificates, step by step:

No.	Step
1.	Give the focus to the Terminal window "SSL". To do so, go to the Processes list and click the process "SSL".
2.	Go to the menu bar, click the item "Certificates" and select: Certificate signing request ➤ Import signed certificate...
3.	Choose the signed certificate you want to import. Confirm with Yes.

Table 9-5 Import signed certificates

9.2.4 Export the certificate you are currently using

Use this menu item to export the own certificate that is currently being used.

How to export the certificate you are currently using, step by step:

No.	Step
1.	Give the focus to the Terminal window "SSL". To do so, go to the Processes list and click the process "SSL".
2.	Go to the menu bar, click the item "Certificates" and select: Currently used own certificate ➤ Export currently used own certificate...
3.	In the next user dialog window, enter a name for the certificate and the path where you want to save it. Finally, click "Delete".

Table 9-6 Export your currently used certificate

9.3 Mutual Transport Layer Security (MTLS)

Make sure the below requirements are met to enable communication between OScAR and the PBX system via MTLS.

Step 1:

Make sure that both the OScAR Server and the PBX system have valid certificates and that both parties are able to authenticate one another. To do so, the certificate of the PBX system is usually imported to the OScAR Server and vice versa.

Step 2:

Configure the OScAR Server and the PBX system for the operation with MTLS. While you do so, please be mind that other ports and PBX peer addresses are utilized for the communication via TLS.

9.4 Administration of Certificates in VCON

VCON provides an overview of all certificates that are available in OScAR-Satellite, including their content. This makes it possible to verify their details whenever needed, e.f. their validity, CA and organization.

9.4.1 Example: Machine certificate in VCON

Tree structure	Name	Example	Description
+SSL			
+ Machine Certificate			
+ tetronik GmbH			
	Serial Number	1382947901 (0x526e1c3d)	Serial number of the certificate
	CN (Common Name)	192.168.96.202	IP address of OScAR-Satellite
	Organization	tetronik GmbH	Name of the organization or business
	Organizational Unit	tetronik GmbH	Unit of the organization or business
	alt IP	192.168.96.203	Alternative IP address of OScAR-Satellite
	Address	DE, Hessen, Taunusstein	Address of the organization or business
	Mail	info@ tetronik.com	The email address of the organization or business
	Function	SSL CLI, SSI SRV	Function of the certificate
	Hash	0xf59e2703	The "Hash" of the certificate
	Valid since	Mon Oct 28:08:11:19 2013 UTC	The date and time since when the certificate has been valid
	Valid until	Sat Oct 27:08:11:19 2014 UTC	The date and time since upon which the certificate will become invalid

Table 9-7 Certificate example

Tree structure	Name	Example	Description
	Certificate status	OK	The status of the certificate: • OK The certificate is valid • expired in x days Starting 60 days prior to the expiry of the "Valid until" date, the system will signal how many more days the certificate will remain valid. • expired The certificate is no longer valid. • not valid yet The certificate is not yet valid.

Table 9-7 Certificate example

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