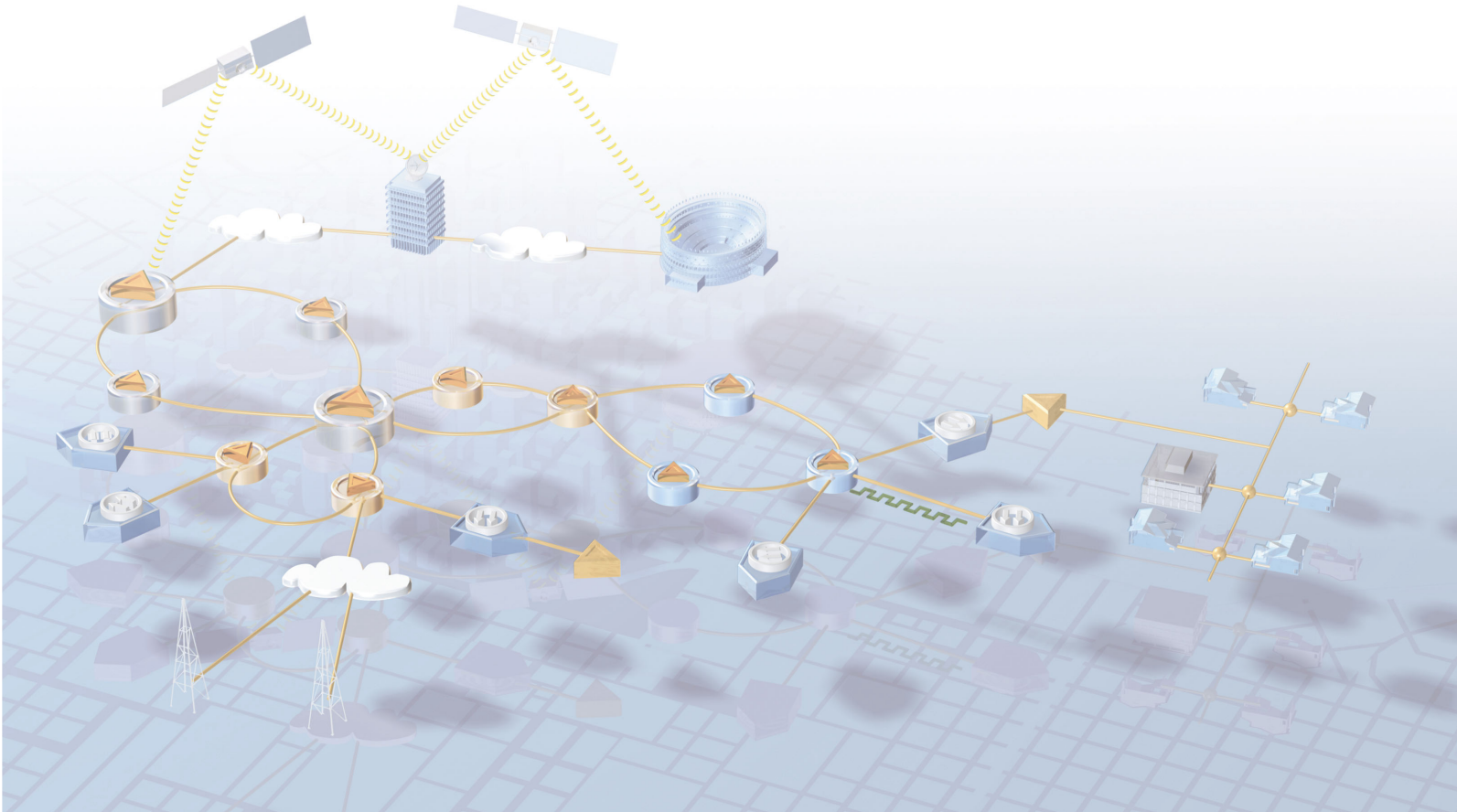


Apollo MKII User's Guide

TCP/IP Interface and Element Manager









For Your Safety

Explanation of Warning and Caution Icons



Avoid personal injury and product damage! Do not proceed beyond any symbol until you fully understand the indicated conditions.

The following warning and caution icons alert you to important information about the safe operation of this product:

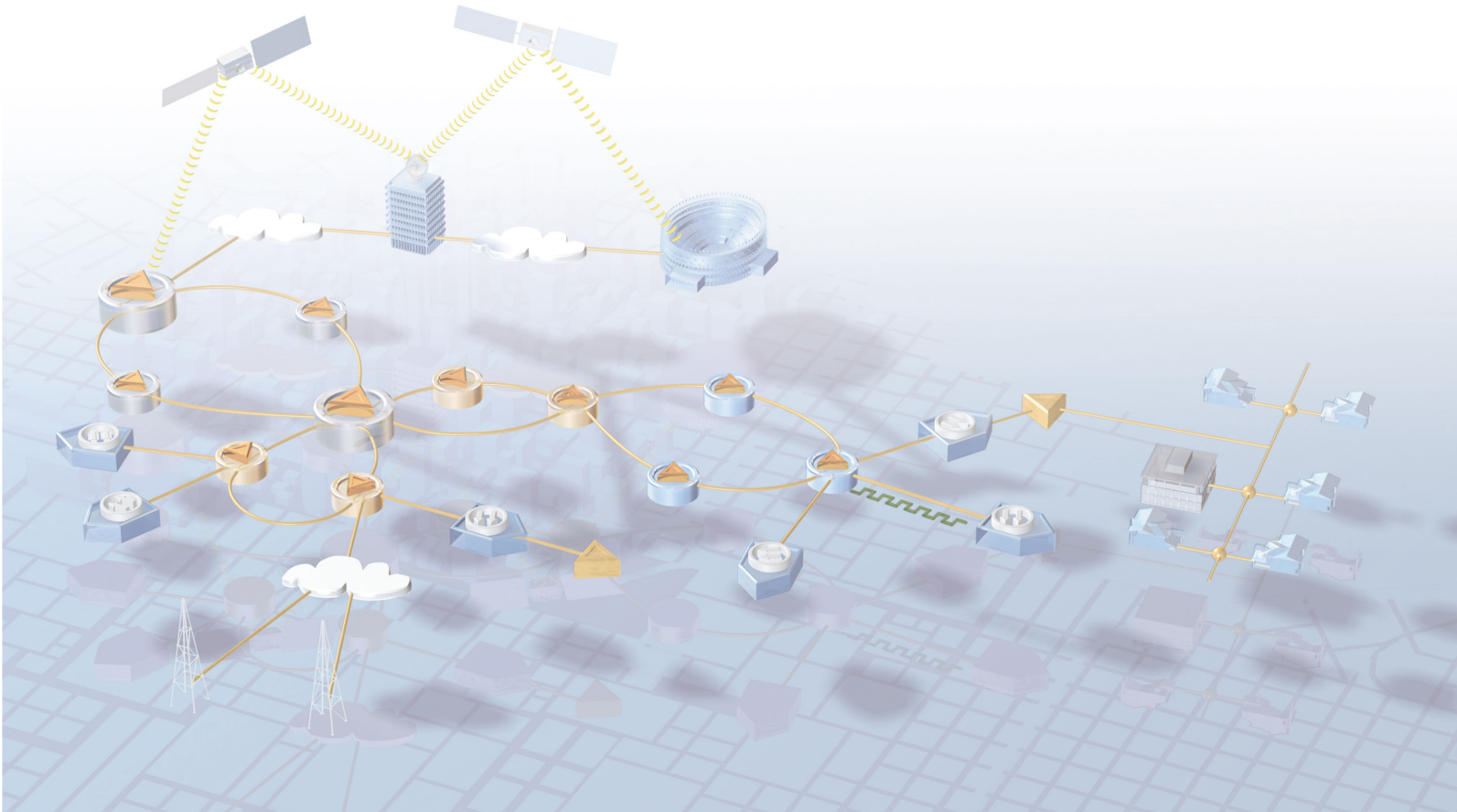
-  **You may find this symbol in the document that accompanies this product. This symbol indicates important operating or maintenance instructions.**
-  **You may find this symbol affixed to the product. This symbol indicates a live terminal where a dangerous voltage may be present; the tip of the flash points to the terminal device.**
-  **You may find this symbol affixed to the product. This symbol indicates a protective ground terminal.**
-  **You may find this symbol affixed to the product. This symbol indicates a chassis terminal (normally used for equipotential bonding).**
-  **You may find this symbol affixed to the product. This symbol warns of a potentially hot surface.**
-  **You may find this symbol affixed to the product and in this document. This symbol indicates an infrared laser that transmits intensity-modulated light and emits invisible laser radiation or an LED that transmits intensity-modulated light.**

Important

Please read this entire guide. If this guide provides installation or operation instructions, give particular attention to all safety statements included in this guide.

Apollo MKII User's Guide

TCP/IP Interface and Element Manager



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Important Safety Instructions

Read and Retain Instructions

Carefully read all safety and operating instructions before operating this equipment, and retain them for future reference.

Follow Instructions and Heed Warnings

Follow all operating and use instructions. Pay attention to all warnings and cautions in the operating instructions, as well as those that are affixed to this equipment.

Terminology

The terms defined below are used in this document. The definitions given are based on those found in safety standards.

Service Personnel - The term *service personnel* applies to trained and qualified individuals who are allowed to install, replace, or service electrical equipment. The service personnel are expected to use their experience and technical skills to avoid possible injury to themselves and others due to hazards that exist in service and restricted access areas.

User and Operator - The terms *user* and *operator* apply to persons other than service personnel.

Ground(ing) and Earth(ing) - The terms *ground(ing)* and *earth(ing)* are synonymous. This document uses *ground(ing)* for clarity, but it can be interpreted as having the same meaning as *earth(ing)*.

Electric Shock Hazard

This equipment meets applicable safety standards. Refer to this equipment's data sheet for details about regulatory compliance approvals.



WARNING!

To reduce risk of electric shock, perform only the instructions that are included in the operating instructions. Refer all servicing to qualified service personnel only.

Electric shock can cause personal injury or even death. Avoid direct contact with dangerous voltages at all times. The protective ground connection, where provided, is essential to safe operation and must be verified before connecting the power supply.

Know the following safety warnings and guidelines:

- **Dangerous Voltages**

- Only qualified service personnel are allowed to perform equipment installation or replacement.
- Only qualified service personnel are allowed to remove chassis covers and access any of the components inside the chassis.

- **Grounding**

- Do not violate the protective grounding by using an extension cable, power cable, or autotransformer without a protective ground conductor.
- Take care to maintain the protective grounding of this equipment during service or repair and to re-establish the protective grounding before putting this equipment back into operation.

Continued on next page

Important Safety Instructions, Continued

Installation Site

When selecting the installation site, comply with the following:

- **Protective Ground** - The protective ground lead of the building's electrical installation should comply with national and local requirements.
- **Environmental Condition** - The installation site should be dry, clean, and ventilated. Do not use this equipment where it could be at risk of contact with water. Ensure that this equipment is operated in an environment that meets the requirements as stated in this equipment's technical specifications, which may be found on this equipment's data sheet.

Equipment Placement



WARNING:

Avoid personal injury and damage to this equipment. An unstable mounting surface may cause this equipment to fall.

To protect against equipment damage or injury to personnel, comply with the following:

- Install this equipment in a restricted access location.
- Do not install near any heat sources such as radiators, heat registers, stoves, or other equipment (including amplifiers) that produce heat.
- Place this equipment close enough to a mains AC outlet to accommodate the length of this equipment's power cord.
- Route all power cords so that people cannot walk on, place objects on, or lean objects against them. This may pinch or damage the power cords. Pay particular attention to power cords at plugs, outlets, and the points where the power cords exit this equipment.
- Use only with a cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with this equipment.
- Make sure the mounting surface or rack is stable and can support the size and weight of this equipment.
- The mounting surface or rack should be appropriately anchored according to manufacturer's specifications. Ensure this equipment is securely fastened to the mounting surface or rack where necessary to protect against damage due to any disturbance and subsequent fall.

Ventilation

This equipment has openings for ventilation to protect it from overheating. To ensure equipment reliability and safe operation, do not block or cover any of the ventilation openings. Install the equipment in accordance with the manufacturer's instructions.

Continued on next page

Important Safety Instructions, Continued

Rack Mounting Safety Precautions

Mechanical Loading

Make sure that the rack is placed on a stable surface. If the rack has stabilizing devices, install these stabilizing devices before mounting any equipment in the rack.



WARNING:

Avoid personal injury and damage to this equipment. Mounting this equipment in the rack should be such that a hazardous condition is not caused due to uneven mechanical loading.

Reduced Airflow

When mounting this equipment in the rack, do not obstruct the cooling airflow through the rack and mount the blanking plates to cover unused rack space. Additional components such as combiners and net strips should be mounted at the back of the rack, so that the free airflow is not restricted.



CAUTION:

Installation of this equipment in a rack should be such that the amount of airflow required for safe operation of this equipment is not compromised.

Elevated Operating Ambient Temperature

Only install this equipment in a humidity- and temperature-controlled environment that meets the requirements given in this equipment's technical specifications.



CAUTION:

If installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment may be greater than room ambient temperature. Therefore, consideration should be given to installing this equipment in an environment compatible with the manufacturer's maximum rated ambient temperature.

Handling Precautions

When moving a cart that contains this equipment, check for any of the following possible hazards:



WARNING:



Avoid personal injury and damage to this equipment! Move any equipment and cart combination with care. Quick stops, excessive force, and uneven surfaces may cause this equipment and cart to overturn.

- Use caution when moving this equipment/cart combination to avoid injury from tip-over.

Continued on next page

Important Safety Instructions, Continued

- If the cart does not move easily, this condition may indicate obstructions or cables that may need to be disconnected before moving this equipment to another location.
- Avoid quick stops and starts when moving the cart.
- Check for uneven floor surfaces such as cracks or cables and cords.

Grounding

This section provides instructions for verifying that the equipment is properly grounded.

Safety Plugs (USA Only)

This equipment is equipped with either a 3-terminal (grounding-type) safety plug or a 2-terminal (polarized) safety plug. The wide blade or the third terminal is provided for safety. Do not defeat the safety purpose of the grounding-type or polarized safety plug.

To properly ground this equipment, follow these safety guidelines:

- **Grounding-Type Plug** - For a 3-terminal plug (one terminal on this plug is a protective grounding pin), insert the plug into a grounded mains, 3-terminal outlet.
Note: This plug fits only one way. If this plug cannot be fully inserted into the outlet, contact an electrician to replace the obsolete 3-terminal outlet.
- **Polarized Plug** - For a 2-terminal plug (a polarized plug with one wide blade and one narrow blade), insert the plug into a polarized mains, 2-terminal outlet in which one socket is wider than the other.
Note: If this plug cannot be fully inserted into the outlet, try reversing the plug. If the plug still fails to fit, contact an electrician to replace the obsolete 2-terminal outlet.

Grounding Terminal

If this equipment is equipped with an external grounding terminal, attach one end of an 18-gauge wire (or larger) to the grounding terminal; then, attach the other end of the wire to a ground, such as a grounded equipment rack.


Safety Plugs (European Union)

- **Class I Mains Powered Equipment** - Provided with a 3-terminal AC inlet and requires connection to a 3-terminal mains supply outlet via a 3-terminal power cord for proper connection to the protective ground.
Note: The equipotential bonding terminal provided on some equipment is not designed to function as a protective ground connection.
- **Class II Mains Powered Equipment** - Provided with a 2-terminal AC inlet that may be connected by a 2-terminal power cord to the mains supply outlet. No connection to the protective ground is required as this class of equipment is provided with double or reinforced and/or supplementary insulation in addition to the basic insulation provided in Class I equipment.
Note: Class II equipment, which is subject to EN 50083-1, is provided with a chassis mounted equipotential bonding terminal. See the section titled **Equipotential Bonding** for connection instructions.

Continued on next page

Important Safety Instructions, Continued

Equipotential Bonding

If this equipment is equipped with an external chassis terminal marked with the IEC 60471-5020 chassis icon () , the installer should refer to CENELEC standard EN 50083-1 or IEC standard IEC 60728-11 for correct equipotential bonding connection instructions.

AC Power

Important: If this equipment is a Class I equipment, it must be grounded.

- If this equipment plugs into an outlet, the outlet must be near this equipment, and must be easily accessible.
- Connect this equipment only to the power sources that are identified on the equipment-rating label normally located close to the power inlet connector(s).
- This equipment may have two power sources. Be sure to disconnect all power sources before working on this equipment.
- If this equipment **does not** have a main power switch, the power cord connector serves as the disconnect device.
- Always pull on the plug or the connector to disconnect a cable. Never pull on the cable itself.
- Unplug this equipment when unused for long periods of time.

Connection to -48 V DC/-60 V DC Power Sources

Refer to this equipment's specific installation instructions in this manual or in companion manuals in this series for connection to nominal -48 V DC/-60 V DC power sources.

Circuit Overload

Know the effects of circuit overloading before connecting this equipment to the power supply.



CAUTION:

Consideration should be given to the connection of this equipment to the supply circuit and the effect that overloading of circuits might have on overcurrent protection and supply wiring. Appropriate consideration of information given on the equipment-rating label should be used when addressing this concern.

General Servicing Precautions



WARNING:

Avoid electric shock! Opening or removing this equipment's cover may expose you to dangerous voltages.

Be aware of the following general precautions and guidelines:

- **Servicing** - Refer all servicing to qualified service personnel. Servicing is required when this equipment has been damaged in any way, such as power supply cord or plug is damaged, liquid has been spilled or objects have fallen into this equipment, this equipment has been exposed to rain or moisture, does not operate normally, or has been dropped.

Continued on next page

Important Safety Instructions, Continued

- **Wristwatch and Jewelry** - For personal safety and to avoid damage of this equipment during service and repair, do not wear electrically conducting objects such as a wristwatch or jewelry.
- **Lightning** - Do not work on this equipment, or connect or disconnect cables, during periods of lightning.
- **Labels** - Do not remove any warning labels. Replace damaged or illegible warning labels with new ones.
- **Covers** - Do not open the cover of this equipment and attempt service unless instructed to do so in the instructions. Refer all servicing to qualified service personnel only.
- **Moisture** - Do not allow moisture to enter this equipment.
- **Cleaning** - Use a damp cloth for cleaning.
- **Safety Checks** - After service, assemble this equipment and perform safety checks to ensure it is safe to use before putting it back into operation.

Electrostatic Discharge

Electrostatic discharge (ESD) results from the static electricity buildup on the human body and other objects. This static discharge can degrade components and cause failures.

Take the following precautions against electrostatic discharge:

- Use an anti-static bench mat and a wrist strap or ankle strap designed to safely ground ESD potentials through a resistive element.
- Keep components in their anti-static packaging until installed.
- Avoid touching electronic components when installing a module.

Fuse Replacement

To replace a fuse, comply with the following:

- Disconnect the power before changing fuses.
- Identify and clear the condition that caused the original fuse failure.
- Always use a fuse of the correct type and rating. The correct type and rating are indicated on this equipment.

Lithium Battery

For equipment with a lithium battery, observe the following rules:

- Do not dispose of used batteries through the regular garbage collection system, but follow the local regulations. The batteries may contain substances that could be harmful to the environment.
- Replace batteries with the same or equivalent type recommended by Scientific-Atlanta.
- Insert batteries correctly. There may be a risk of explosion if the batteries are incorrectly inserted.
- When disposing of this equipment, remove the batteries and dispose of them separately in accordance with local regulations.
- Do not recharge the batteries or expose them to temperatures above 100°C (212°F).

Continued on next page

Important Safety Instructions, Continued

Electromagnetic Compatibility Regulatory Requirements

This equipment meets applicable electromagnetic compatibility (EMC) regulatory requirements. Refer to this equipment's data sheet for details about regulatory compliance approvals. EMC performance is dependent upon the use of correctly shielded cables of good quality for all external connections, except the power source, when installing this equipment.

- Ensure compliance with cable/connector specifications and associated installation instructions where given elsewhere in this manual.

Otherwise, comply with the following good practices:

- Multi-conductor cables should be of single-braided, shielded type and have conductive connector bodies and backshells with cable clamps that are conductively bonded to the backshell and capable of making 360° connection to the cable shielding. Exceptions from this general rule will be clearly stated in the connector description for the excepted connector in question.
- Ethernet cables should be of single-shielded or double-shielded type.
- Coaxial cables should be of the double-braided shielded type.

EMC

Where this equipment is subject to USA FCC and/or Industry Canada rules, the following statements apply:

FCC Statement

This equipment has been tested and found to comply with the limits for a Class A digital device according to Part 15 of FCC Rules. These limits are designed to provide reasonable protection against harmful interference when this equipment is operated in a commercial environment.

This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Industry Canada – Industrie Canadienne Statement

Industry Canada ICES-003: This Class A digital apparatus meets all the requirements of the Canadian Interference-Causing Equipment Regulations.

Industrie Canadienne ICES-003: Cet appareil numérique de la Class A respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

CENELEC/CISPR Statement with Respect to Class A Information Technology Equipment

This is a Class A equipment. In a domestic environment this equipment may cause radio interference in which case the user may be required to take adequate measures.

Continued on next page

Important Safety Instructions, Continued

Modifications

This equipment has been designed and tested to comply with applicable safety and EMC regulations, codes, and standards to ensure safe operation in its intended environment. Refer to this equipment's data sheet for details about regulatory compliance approvals.

Do not make modifications to this equipment. Any changes or modifications could void the user's authority to operate this equipment.

Modifications have the potential to degrade the level of protection built into this equipment, putting people and property at risk of injury or damage. Those persons making any modifications expose themselves to the penalties arising from proven non-compliance with regulatory requirements and to civil litigation for compensation in respect of consequential damages or injury.

Accessories

Use only attachments or accessories specified by the manufacturer.

Preface

About This Guide

Introduction

This guide provides information to install, configure and operate an Apollo MKII™ device. Additionally it shows the purpose of the integrated ROSA™ Element Manager (EM) software and how to use it in combination with the ROSA Network Management System (NMS).

Audience

This guide is intended for users (operators) and service personnel who are responsible for the installation, operation and service of the Apollo MKII. For further information about the definition of operator and service personnel, refer to **Important Safety Instructions**, subtopic **Terminology** earlier in this guide.

Required Knowledge

To use this guide, you should be familiar with ROSA software.

Related Publications

The technical publications listed below provide extra system support. Refer to these publications as you read this User's Guide.

- *ROSA management software is further described in the ROSA 3.0 User's Guides, available for the three ROSA Versions:*
 - ROSA 3.0 Client, part number 6984888
 - ROSA 3.0 Single User, part number 6984882
 - ROSA 3.0 Device Configuration Shell 6984885
- *Copernicus™ (Element Manager) server and software is further described in the Copernicus User's Guide, part number 6985110*

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Chapter 1

Introduction

Overview

Introduction

This chapter gives an introduction on the Apollo MKII and shows the features and benefits. It also gives an overview of the steps that you have to take and guides you through the rest of the chapters.

In This Chapter

This chapter contains the following topics.

Topic	See Page
About the Apollo MKII	1-2
Steps to Take	1-5
Product Information	1-6

About the Apollo MKII

Introduction

Apollo MKII is a platform that offers communication via a TCP/IP Interface combined with equipment management using the integrated ROSA EM software.

Communication

Apollo MKII is a powerful communication organizer used in conjunction with ROSA NMS. It is a successor of the Apollo, with the same functionality. The Apollo MKII extends ROSA's reach by enabling ROSA NMS to communicate with remote equipment over a TCP/IP network.

Apollo MKII is a communication organizer capable of transporting the Scientific-Atlanta RCDS protocol over TCP/IP networks. Apollo continuously polls all devices connected to its serial ports to detect alarm conditions. Once an alarm condition is detected, Apollo MKII reports the alarm to the Copernicus or to the ROSA Single User computer through the IP network connected to the Ethernet port.

Apollo MKII also listens for configuration instructions or status inquiries coming from ROSA NMS and relays these messages to the appropriate device. Apollo MKII supports all equipment that uses the RCDS serial communication protocol (RS-232 or RS-485). If the RS-485 bus is used, up to 32 devices can be connected to the Apollo MKII.

To ensure maximum safety at the monitoring location, Apollo incorporates a built-in check that sends a warning signal to ROSA NMS in case any of the devices are connected/disconnected.

Equipment Management

The integrated ROSA EM software allows management and status control of remote headend, hub and hybrid fiber/coax (HFC) networks. Together with ROSA NMS the network devices can be configured individually or group-wise. In case of a failure or an out-of-spec condition, notifications are generated automatically and the operator gets an alarm message that informs about the actual status of the device.

The ROSA EM software also supports automatic backup and in case of an error scripts will perform the necessary actions to restore the service with the help of a standby device.

The built-in Simple Network Management Protocol (SNMP) interface allows seamless connection to a third party network management system.

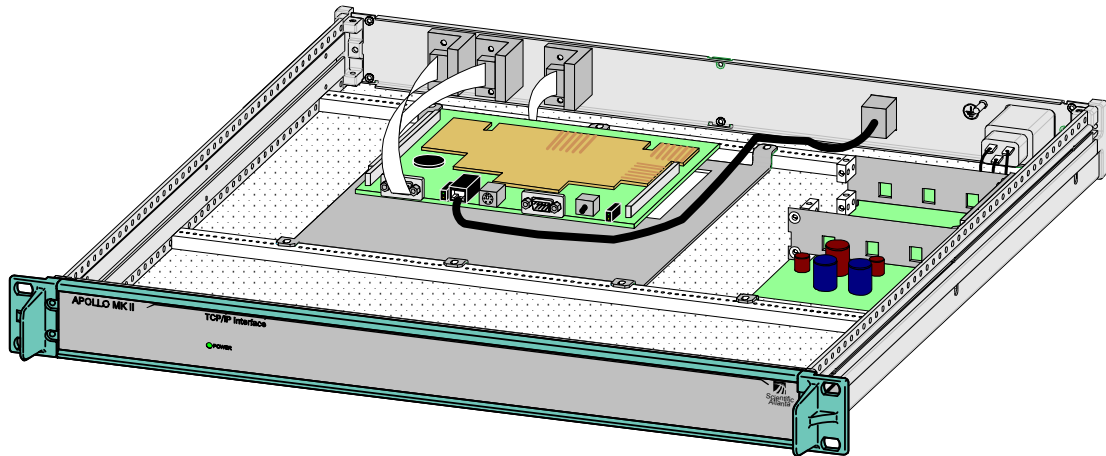
Note: A device can be managed with the integrated ROSA EM software of Apollo MKII, with the Apollo MKII RCDS gateway installed on ROSA NMS or with both systems at the same time.

Continued on next page

About the Apollo MKII, Continued

Illustration

The following illustration shows the Apollo MKII device.



Features and Benefits

The following list describes the features and benefits of the Apollo MKII.

- Elegant monitoring of small sites connected through an IP network
- 10/100Base-T Ethernet connection
- RCDS over TCP/IP bridging function
- Autonomous polling for alarms
- Detection of non-responding devices
- IP network connection can be shared for different purposes (mixed site with devices with Ethernet/IP port and devices with RCDS port).
- Apollo MKII eliminates all IP traffic when no alarms are transmitted and when no configuration work is done; the WAN may for this reason also contain dial-on-demand sections.

The integrated ROSA EM software provides:

- Backup feature where a series of predefined scripts are executed when a device goes into alarm. The service of the failing device is transferred to a standby device.
- SNMP proxy for monitoring and controlling devices.
- Automatic notification of failures and out-of-spec conditions with visual and audible alarms when used in combination with ROSA EM Drivers installed on the ROSA Client or ROSA Single User.

Continued on next page

About the Apollo MKII, Continued

Used Terminology

To identify the different hardware and software parts used in the Apollo MKII concept, here an overview with the used terminology:

- **Apollo MKII hardware:** The Apollo MKII device itself.
 - **Apollo MKII Software:** The software running on the Apollo MKII device.
 - **Apollo Protocol Driver:** This software runs on a Copernicus server or ROSA Single User and takes care of the IP communication with Apollo MKII device(s).
 - **Apollo MKII Driver:** The software installed on a Copernicus or ROSA Single User. It allows checking the state or changing settings of the device.
-

Steps to Take

Introduction

Before you can use the functionality of the Apollo MKII you have to do some steps, like installing the appropriate drivers, configuring the device, All the necessary information is described in the following chapters.

Installation of the Device

First check how you want to use the RCDS port (RS-485 default setting or RS-232) and change the jumper setting if necessary. Install the device in a rack, connect the cables and finally do the network configuration of the Apollo MKII device.

For details about the installation of the Apollo MKII device, see Chapter 2, **Installation**.

Apollo Protocol Driver

The Apollo Protocol driver controls the communication over a TCP/IP network between the Copernicus and one or more Apollo's in the remote sites. These remote sites are defined via the user interface of the Apollo Protocol driver.

For details about the Apollo Protocol driver, see Chapter 3, **Apollo Protocol Driver**.

Apollo Device Driver

When you have defined a remote site in the Apollo Protocol graphical user interface (GUI), an Apollo device becomes available in ROSA. Via the user interface of this Apollo you can detect the devices connected to the Apollo and then map them to Rosa units.

For details about using the Apollo device driver, see Chapter 4, **Apollo MKII Site Configuration**.

ROSA EM Drivers

To use the ROSA EM functionality from a ROSA Client or ROSA Single User, install the ROSA EM Drivers. With these drivers you can add devices, specify groups and change the settings of the devices.

For details about ROSA EM Drivers, see Chapter 5, **ROSA EM Configuration**.

Quick Installation Reference

When you are familiar with the hardware and software installation procedures described in the chapters mentioned above, see **Appendix B** for a **Quick Installation Reference**.

Product Information

Introduction

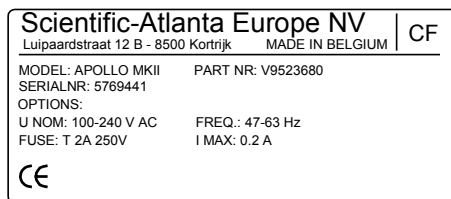
Scientific-Atlanta products can be identified by means of the ID Label attached to the bottom cover plate of the product. The following info is available on the label:

- Company address
- Model number
- Serial number
- Part number
- Nominal supply voltage
- Maximum current

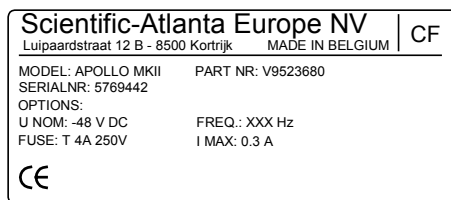
The ID label contains information that you might need under some circumstances. When your unit is failing, the customer services department needs the serial number to create a RAN or RMA number, which is required to return the unit for repair.

ID Label

An identification label for an Apollo MKII with AC power supply:



An identification label for an Apollo MKII with DC power supply (ComBiCon):



An identification label for an Apollo MKII with DC power supply (MATE-N-LOCK):



Note: These identification labels are an example and do not contain exactly the same information as the label attached to your unit (e.g. the serial number is different).

Chapter 2 Installation

Overview

Introduction

This chapter contains information about the installation of the Apollo MKII™ device. It is assumed that all safety precautions and guidelines have been followed prior to perform the installation procedures in this chapter.

It is recommended that the entire installation procedure in this chapter is read prior to perform an Apollo MKII installation.

Qualified Personnel

Only appropriately qualified and trained personnel should attempt to install, operate or maintain the Apollo MKII.



WARNING:

Allow only qualified personnel to install this product. Otherwise, personal injury or equipment damage may occur.

In This Chapter

This chapter contains the following topics.

Topic	See Page
Rack Mounting the Apollo MKII	2-3
Connecting Cables	2-9
Network Configuration	2-23

Section A

Rack Mounting the Apollo MKII

Overview

Introduction

This section describes how the Apollo MKII device is mounted in a 19-inch rack.

In This Section

This chapter contains the following topics.

Topic	See Page
Preparing for Installation	2-4
Cooling Requirements	2-5
Rack Mounting the Apollo MKII	2-6

Preparing for Installation

Before You Start

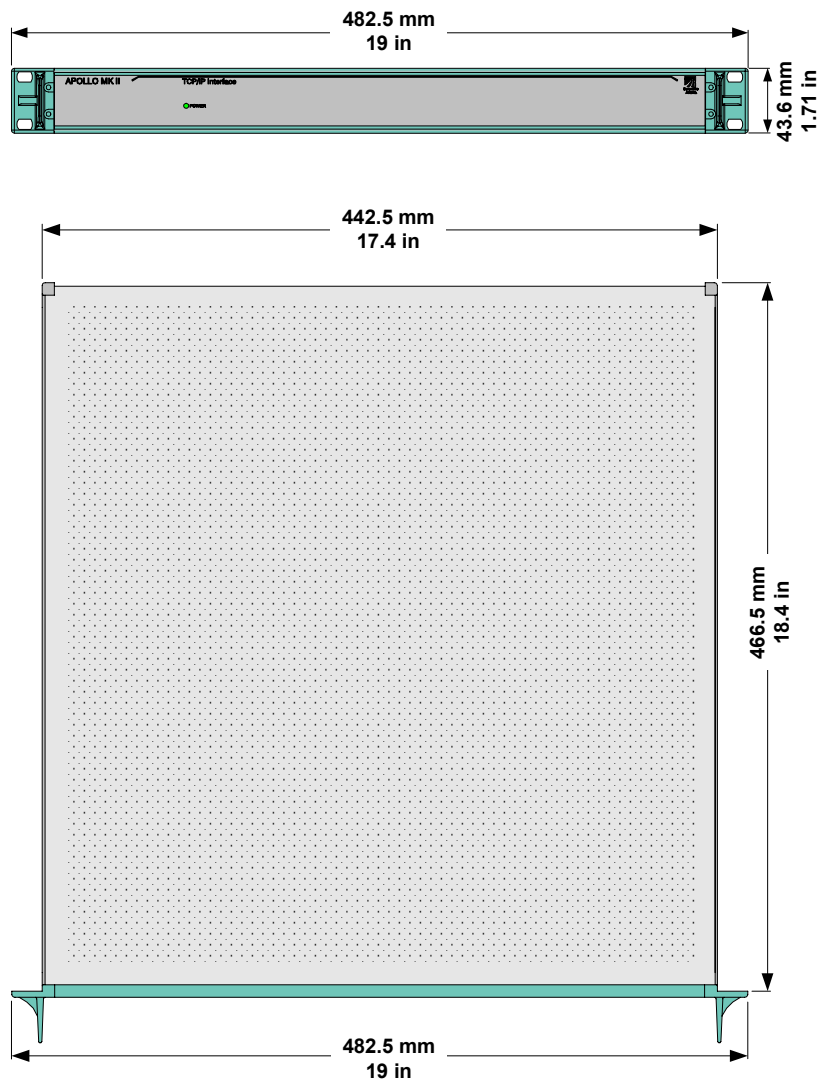
Make sure that the unit is in good condition and that you have all the tools and equipment needed.

Unpacking and Inspecting the Unit

As you unpack the Apollo MKII, inspect it for shipping damage. If you find any damage, contact the customer services department. Refer to the Customer Information chapter for information on contacting the customer services department.

Device Dimension

The following drawing shows the front and top dimensions of the Apollo MKII.



Cooling Requirements

Description

Observe the following cooling guidelines.

- When mounting more than one unit, leave a space of at least one rack unit in between. You can cover these spaces afterwards with ventilation profiles. If you mount other units together with the Apollo MKII, then the airflow must reach all units.
 - Mount additional components, such as combiners and net strips at the back of the 19-inch rack equipment, so that the free airflow between the sides of the unit and the rack is not restricted.
 - Mount ventilation profiles at the bottom and top of the 19-inch rack equipment. This allows the fresh air to enter and the hot air to leave the rack.
 - Place the 19-inch rack equipment in a conditioned room with a constant temperature of about 25 °C.
 - When mounting five or more units on top of one another, the use of fans is necessary. The power of the fan depends on the number of units mounted. For a rack containing 15 units with a free space of one unit between the units, airflow of 300 m³/hour is required. Mounting the fans requires taking into account that the air should blow alongside the units and that it can enter the rack through the lower ventilation profiles.
-

Rack Mounting the Apollo MKII

Tools and Accessories

You need the following tools and accessories for mounting the unit:

- Screwdriver
- Rails and screws

Mounting Requirements

Follow the mounting guidelines below.

- Use 19-inch rack equipment with the appropriate depth.
- Mount the unit adequately to secure optimal operation and reliability.
- We recommend that you mount rack-compatible rails to support the unit properly.
- Pay attention to the mechanical loading and stability to avoid hazardous situations.

Important: If you want to use the RCDS connector for RS-232 instead of the default RS-485, change the internal jumper before you mount the unit. For more information please read **Configuration of the RCDS Port** of the topic **Connecting Cables** in Section B of this chapter.

To Mount the Apollo MKII in a 19-inch Rack

When you have read the **Rack Mounting Safety Precautions** earlier in this section, you are ready to mount the chassis.



CAUTION:

It is of great importance to place the Apollo MKII and its components in a conditioned room within the ambient temperature specifications. For more information, see Appendix A, *Technical Specifications*.

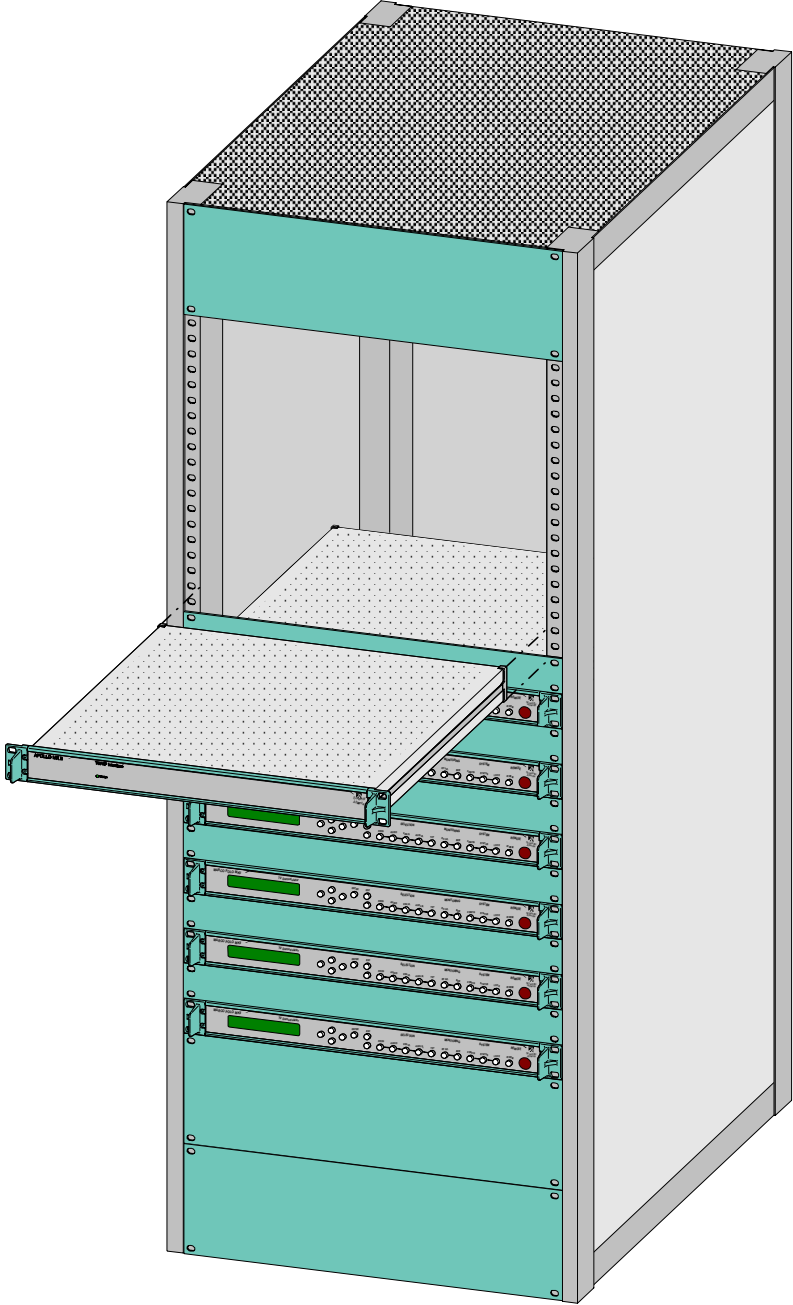
Perform the following procedure to install the Apollo MKII.

1. Unpack the Apollo MKII.
2. Mount the rails in the 19-inch rack equipment to support the device.
3. Slide the Apollo MKII completely in the 19-inch rack equipment.
4. Insert and tighten four mounting screws through the four holes in the Apollo MKII front panel mounting flanges.

Continued on next page

Rack Mounting the Apollo MKII, Continued

The following illustration shows a 19-inch rack with Apollo MKII devices.



Section B

Connecting Cables

Overview

Introduction

This section explains how to connect the power and signal cables to the Apollo MKII.



WARNING:

Use of any other cable for the power connection will invalidate the warranty on the unit and may cause a serious fire hazard.

This product should be operated only from the type of power source indicated on the ID label. If you are not sure of the type of power supply in your location, consult your local power company.

Power supply cords should be routed so that they will not be walked on or pinched by items that are placed on or against them. Pay particular attention to cords at plugs, receptacles, and the point where they exit from the product.

In This Section

This section contains the following topics.

Topic	See Page
Connecting the Power Cable	2-10
Connecting Cables	2-17
Field Wiring Connectors	2-21

Connecting the Power Cable

Before You Start

Power Connection

As our units are designed for continuous operation, some products do not have a power switch. In this case the AC mains cord and/or power supply cable serve(s) as the mains disconnect device.



WARNING:

Make sure that at least one end of the power cable(s) remains easily accessible for unplugging, if you need to turn off the unit. For example, ensure that the socket outlet is installed near the product.

Protective Grounding

You must ensure that the unit is properly connected to earth ground in order to meet safety requirements. Before any other connection is made, the unit must be connected to a grounded socket outlet via the three-wire AC mains cord.



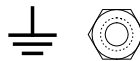
WARNING:

Failure to earth the unit properly can result in personal injury. Do not defeat the earth protection by using an extension cable, power cable, or autotransformer without a protective earth conductor.

Bonding

This connection provides a low impedance connection to earth, in order to meet EMC requirements.

The recommended connector is of the closed-loop double-crimp type. The connector should be fixed with a washer and nut to the bonding terminal bolt. The bonding terminal is indicated by the bonding symbol next to it.



Continued on next page

Connecting the Power Cable, Continued

Mains Voltage

For units powered by the mains voltage, observe the following safety warnings and guidelines:

- Use only power cables approved for use in your country.
- Do not use an extension cord (power cable) without a protective conductor.
- Establish a separate safety earth connection if the power installation of the building does not have a direct connection to earth.
- Do not remove the covers.
- Protect the power cord against damage.
- Make sure that the building installation and/or power supply provides overload protection.

-48 V DC Power Source

For units powered by a -48 V DC power source, observe the following safety warnings and guidelines:

- For chassis modules the chassis acts as power source.
- For independent units and chassis the -48 V DC power source must be connected to the unit either via the screw terminals on the provided field wiring connectors or via the provided power cable. Furthermore, following applies:
 - Use a listed DC rated Branch Circuit protection in accordance with the wire size, and with a maximum of 15A current. The circuit protection must be placed in the hot wire.
 - We recommend a minimum of 1.5 mm² (or AWG16) for 15A fusing.
 - The -48 V DC power source must comply with the safety extra-low voltage (SELV) requirements in the UL 1950 (UL60950), CSA C22.2 No.950 (CSA C22.2 No. 60950), EN 60950 and IEC 60950 standards.
 - The -48 V DC power source must be electrically isolated from the AC source in accordance with the standard of the country where you are installing the product.
 - The wire size of the cable used to connect a product to the DC distribution module or bus bar must have the appropriate wire size to avoid overloading.
 - Always wire the protective earth terminal of the DC power supply connector or cable.

Continued on next page

Connecting the Power Cable, Continued

-48 V DC to -60 V DC Power Source

For units powered by a -48 V DC / -60 V DC power source:

Independent units or chassis can be equipped with a DC power supply, which accommodates both -48 V DC and -60 V DC systems (normal service voltage range not exceeding -36 V DC to -72 V DC). In this case, the device is provided with a dedicated 'MATE-N-LOC' type connector.

The safety considerations for handling dangerous voltages are applicable.



WARNING:

Use the same safety precautions for this power source as for the AC Power source.

For units powered by a -60 V DC power source, observe the following safety warnings and guidelines:

- For chassis modules the chassis acts as power source.
- Use a listed DC rated Branch Circuit protection in accordance with the wire size, and with a maximum of 15 A current. The circuit protection must be placed in the hot wire.
- We recommend a minimum of 1.5 mm² (or AWG16) for 15 A fusing.
- The -60 V DC power source must be electrically isolated from the AC source in accordance with the standard of the country where you are installing the product.
- The wire size of the cable used to connect a product to the DC distribution module or bus bar must have the appropriate wire size to avoid overloading.
- Always wire the protective earth terminal of the DC power supply connector or cable.

Continued on next page

Connecting the Power Cable, Continued

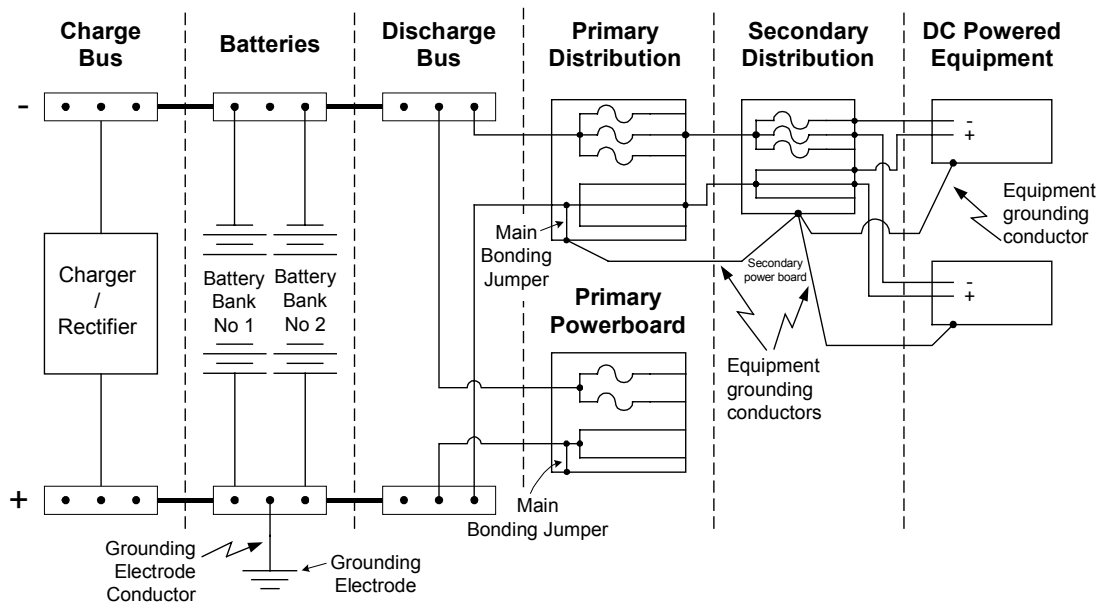
Connection to Centralized DC Power Systems

Only units designed and rated for connection to -48 to -60 Vdc Nominal power sources, and provided with a Mate-N-Lock type of connector are suitable for connection to "Centralized dc Power Systems".

A centralized DC power distribution system (typically -48 V DC) is a power system consisting of open batteries, charger/rectifier circuits, and primary and secondary distribution equipment intended to provide power to equipment loads. Two types of systems exist:

- **Source earthed DC power systems**, in which the connection to the earthing electrode is located at the source and separate earthed and protective earth conductors, are provided throughout the system.
- **DC Power system earthed at the equipment location**, in which the connection to the earthing electrode is located in the area where the load equipment is to be installed.

A typical power distribution arrangement is shown below:

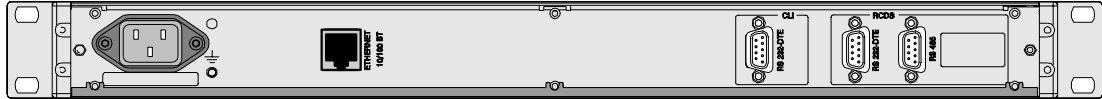


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Connecting the Power Cable, Continued

AC Power Supply

The following illustration shows the mains connector for the AC power supply:
100 - 240 V AC.



CAUTION:

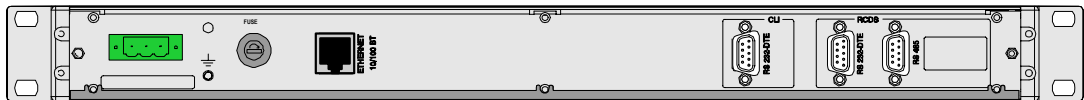
Check if the AC mains source voltage corresponds to the appropriate power input voltage for the unit. This voltage is noted on the rear side of the device.

DC Power Supply

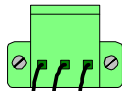
The Apollo MKII can be equipped with a -48 V DC power supply, typically demanded in telecom environments. The -48 V DC devices are provided with a ComBiCon type connector.

Note: The -48 V DC voltage has to be a SELV - voltage (SELV = Safety Extra Low Voltage).

A -48 V DC Apollo MKII is illustrated below.



-48 V DC ComBiCon Power
connector with connections



Power cord
connector (rear view)

-48V
GND
0V

For the correct use of the ComBiCon type connectors, according to their specifications, refer to topic **Field wiring Connectors** further in this chapter.



CAUTION:

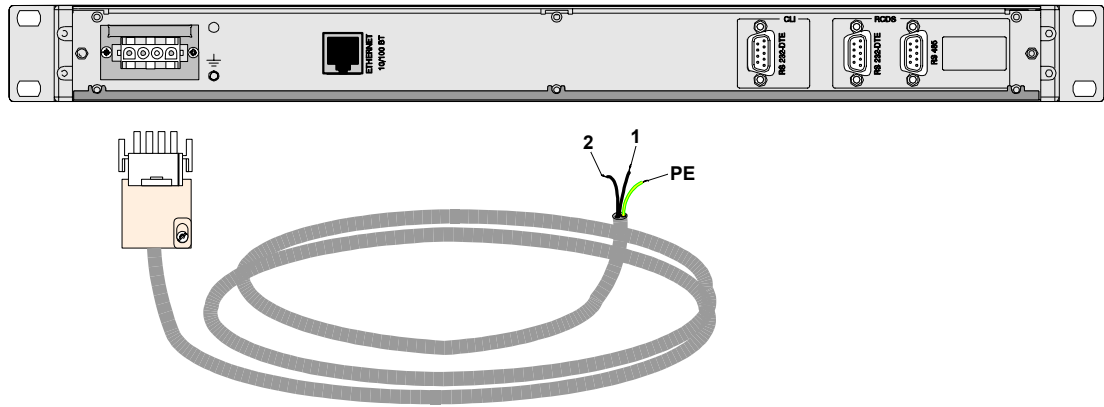
Check if the DC power source voltage corresponds to the appropriate power input voltage for the unit. This voltage is noted on the rear panel of the device.

Continued on next page

Connecting the Power Cable, Continued

Optionally, the Apollo MKII can be equipped with a DC power supply, which accommodates both -48 V DC and -60 V DC systems (range from -36 V DC to -72 V DC). In this case, the Apollo MKII is provided with a dedicated MATE-N-LOC type connector.

A -48 V DC / -60 V DC Apollo MKII with MATE-N-LOC type connector is illustrated below.



The table below explains how to connect the power cord with **MATE-N-LOC**-type connector to your DC power supply distribution system.

Power supply cord	DC power distribution system	Pin No. Connector
Black wire indicated on the PVC insulation by number 1	Positive pole (+DC)	1
Black wire indicated on the PVC insulation by number 2	Negative pole (-DC)	2
-	-	3 (not used)
Green-Yellow	Grounding	4

Note: The Apollo MKII will not be able to power up when the device is polarized incorrectly.

Continued on next page

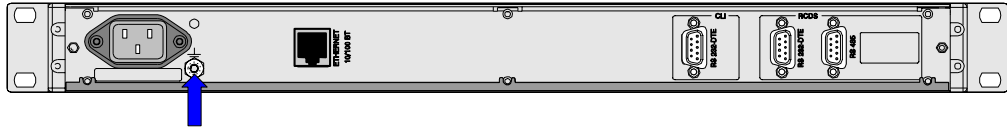
Connecting the Power Cable, Continued

Cabling the Bonding Terminal

Perform the following steps to connect the bonding terminal.

1. Remove the nut and washer from the bonding terminal on the rear panel.
2. Place the eye strap of the bonding wire over the bonding terminal.

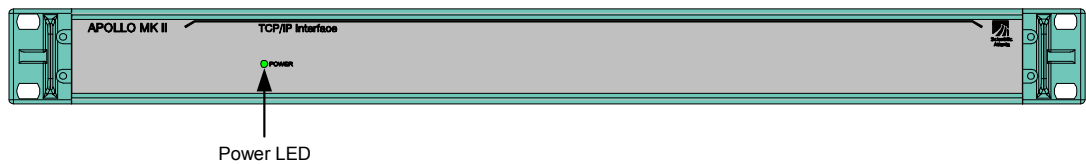
The following illustration indicates the bonding terminal.



3. Replace the washer and nut.
4. Tighten the nut.

Front Panel Description

The Apollo MKII has a front panel with green power LED. When the LED illuminates, power is available (power cable connection).



Connecting Cables

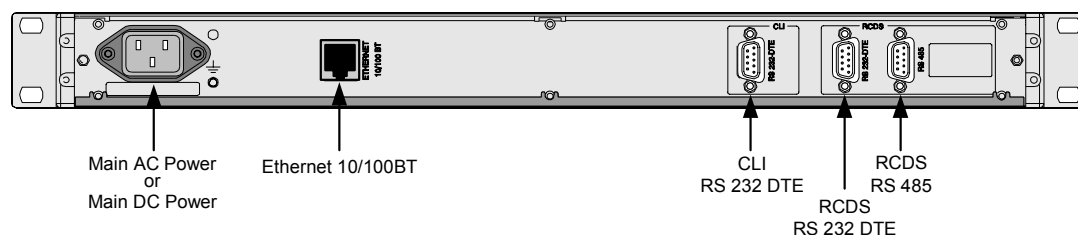
Introduction

The Apollo MKII is carried out with different connectors at the back panel. You will find three 9 pin Sub-D connectors. The RCDS Interface is used to connect with different devices using the RCDS protocol (RS-485/RS-232). The RCDS - RS-485 connector is standard used, a RCDS - RS-232 connector also exists, but can only be used when you set the right jumper settings on the Apollo MKII.

Note: Only one RCDS connector can be used at the same time: RS-485 or RS-232.

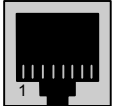
The back panel also has a CLI Interface, which is a serial port that is controlled by the ROSA EM software. Finally there is an Ethernet 10/100BT connection to connect the Apollo MKII with the IP network.

The following illustration shows the connectors at the back panel of the Apollo MKII.



Ethernet Connector

The Apollo MKII is carried out with an RJ-45 connector. This Ethernet connector is used to communicate with the IP Network and allows 10/100Base-T Ethernet.

Connector	Pin	Description (MDIX)	Name
	1	Transmit data +	TD +
	2	Transmit data -	TD -
	3	Receive data +	RD +
	4	Not Used	--
	5	Not Used	--
	6	Receive data -	RD -
	7	Not Used	--
	8	Not Used	--

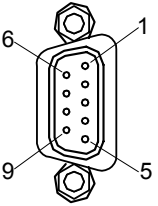
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Connecting Cables, Continued

RCDS Port

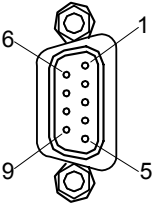
The RCDS Port is found at the back panel of the Apollo MKII. The standard configuration of this 9 pin Sub-D connector is set to RS-485. This allows for simultaneous connection of up to 32 RCDS compatible devices to the Apollo MKII.

The table below describes the pinout configuration of the RCDS - RS-485 Port.

Connector	Pin	Description	Pin	Description
	1	Not Connected	6	Not Connected
	2	RxB	7	GND
	3	TxB	8	Not Connected
	4	RxA	9	Not Connected
	5	TxA		

If you want to connect a single device, commbox, to the RCDS - RS-232 Port you need to reconfigure the jumper settings and you need to connect the cable to the RCDS Port - RS-232 DTE.

The table below describes the pinout configuration of the RCDS - RS-232 DTE Port.

Connector	Pin	Description	Pin	Description
	1	DCD	6	DSR
	2	RxD	7	RTS
	3	TxD	8	CTS
	4	DTR	9	RI
	5	GND		

Continued on next page


Connecting Cables, Continued

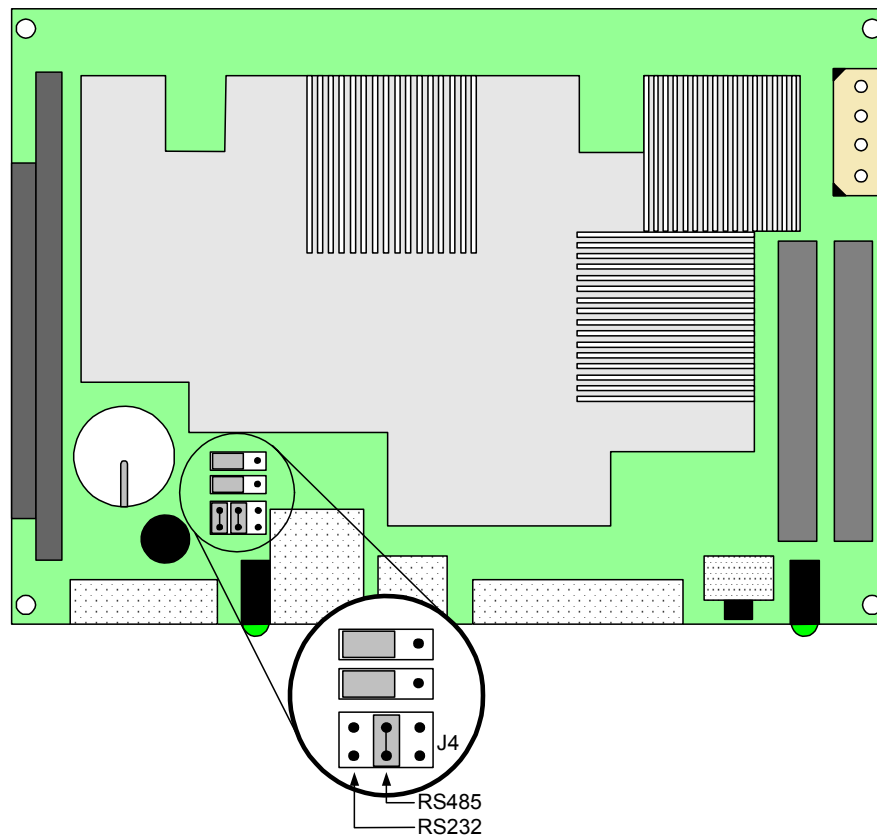
Configuration of the RCDS Port

The RCDS Port can be configured to RS-232 or to the standard RS-485 configuration. To configure the RCDS Port to RS-232 you need to set the jumper J4 on the PCM board inside the Apollo MKII.

Perform the following steps to configure the RCDS Port inside the Apollo MKII.

1. Unplug the power cord to switch off the power supply.
2. Remove the Apollo MKII from its current location for maintenance.
3. Loosen the nine screws (Torx 10) holding the top cover.
4. Lift up the back, pull the top cover backwards and remove it.
5. Locate the jumper J4 on the PCM board inside the Apollo MKII.

 **CAUTION:**
ESD may cause permanent damage to electronic components.



Continued on next page

Connecting Cables, Continued

6. Perform the right jumper settings to configure the RCDS Port.
 - To set the RCDS Port to RS-485 (standard configuration), place a jumper in the middle of J4.
 - To set the RCDS Port to RS-232, place a jumper at the most left on J4.

Note: The previous drawing shows the location of J4 and its settings.

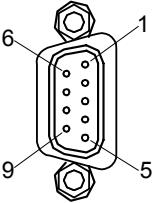
7. Put the top cover onto the chassis.
8. Tighten the nine screws (Torx 10), while pressing the top cover down.
9. Place the Apollo MKII back.
10. Change the connection at the back panel of the Apollo MKII. Place a null modem cable to the RCDS - RS-232 DTE port.

Note: The Apollo MKII allows direct connection with a single device at the RCDS Port - RS-232 DTE.

11. Plug the power cord.

CLI Port

The following table describes the pinout configuration of the CLI serial port and shows how to wire a serial cable to a device, like the VikinX router.

Connector	Pin	Device	Pin	Apollo MKII
	5	Ground	5	Ground
	2	Tx	2	Tx
	3	Rx	3	Rx

Connection Configuration

When the integrated ROSA EM software manages equipment, in the ROSA EM Device driver you have to configure the port to which the equipment is connected.

- COM1: The serial CLI port
- COM2: The RCDS port (RS-485 or RS-232 depending on jumper J4 configuration)

The configuration of the used COM port in the ROSA EM Device driver is explained in the topic **Using ROSA EM** of Chapter 5 **ROSA EM Configuration**.

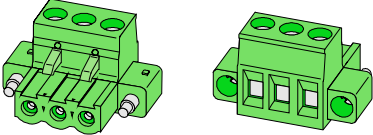
Field Wiring Connectors

Introduction

Some of our products are equipped with built-in Combicon connectors. The mating 'field-wiring' connectors are supplied (see accessory set). For correct use of the ComBiCon type connectors, according to their specifications, see the following paragraphs.

The 3-pins ComBiCon Type Connector

The following table reflects the specifications of the 3-pins Combicon type connector (-48 V DC power supply).

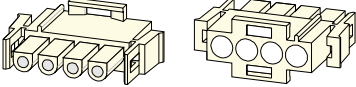
<p>TYPE: COMBICON - B331056 #Contacts = 3; Gender = Female</p>		
<p>IEC/DIN VDE Technical info:</p>	Nominal Voltage	250V
	Nominal Current	12A
	Wire Gauge	0.2-2.5 mm ²
	Strip length	7 mm
	Torque	0.5-0.6 Nm
<p>UL/CSA Technical info:</p>	Nominal Voltage	250V
	Nominal Current	10A
	W.Gauge UL	30-12 AWG
	W.Gauge CSA	28-12 AWG
	Strip length	0.276 in
	Torque	4.4 - 5.3 lb f in

Continued on next page

Field Wiring Connectors, Continued

The 4-pins MATE-N-LOCK Type Connector

The following table reflects the specifications of the 4-pins Mate-N-Lock type connector (-48 V DC to -60 V DC power supply).

TYPE: MATE-N-LOCK plug Part Number: 350-779-4 #Contacts = 4; Gender = Female		
Technical info:	Nominal Voltage	600 V
	Nominal Current	19 A

Section C

Network Configuration

Overview

Introduction

This section describes how to perform network configuration for the Apollo MKII.

In this Section

This chapter contains the following topics.

Topic	See Page
IP Configuration	2-24

IP Configuration

Introduction

You can communicate with the Apollo MKII device from an external network via the specific Apollo Protocol and Apollo Device driver software in ROSA. But before you can do this, the default IP settings of the device should be changed with help of the Scientific-Atlanta's IP Configuration tool.

Notes:

- The Scientific-Atlanta's IP Configuration tool (IPConfigTool.exe) is located on the Configuration Tools CD-ROM (part number 4000976).
- Power on the Apollo MKII device(s) and check if the Power LED on the front is on.
- When the processor of the Apollo MKII is completely booted, the IP Configuration server starts running and the device is ready to receive a new IP address from the Scientific-Atlanta's IP configuration tool.

To Assign an IP Address

When multiple Apollo MKII devices are installed and the serial number of each device is known – *OR* - when a single Apollo MKII device is installed, there is no problem to identify each device separately and you can follow the procedure below:

1. Make sure all Apollo MKII devices are connected to a local Ethernet network.
2. Connect a PC or portable to the same local Ethernet network.

Note: There should be no gateways or routers between PC and Apollo MKII devices.

3. Start the Scientific-Atlanta IP Configuration tool on your PC or portable.

Note: If the tool was already running, just press **Reload**.

Result: The tool returns a list of servers that support the protocol with the following information:

- Device type and serial number
- MAC Address
- IP Address
- Subnet Mask
- Broadcast Address
- Gateway Address.

Continued on next page

IP Configuration, Continued

When multiple Apollo MKII devices are installed and the serial numbers are not known, there is a problem to identify each device separately. Follow the procedure below for each Apollo MKII device that you want to assign an IP address.

1. If a network cable is already connected to the Apollo MKII device, disconnect it now.
2. Connect a PC or portable via a crossed cable to this Apollo MKII device.
3. Start the Scientific-Atlanta IP Configuration tool on your PC or portable.

Note: If the tool was already running, stop it and restart it.

Result: The tool returns the information of just one Apollo MKII device.

4. Select the device and press the **Configure...** command button.

Result: The 'Configure' dialog is displayed.

5. Enter the **IP Address**, the **Subnet Mask** and the **Gateway**. Press **OK** to confirm or **Cancel** to abort the operation.
6. Disconnect the crossed cable and connect the Apollo MKII device back to the Ethernet network.
7. Repeat steps 1 to 6 for every Apollo MKII device on this Ethernet network.

Chapter 3

Apollo Protocol Driver

Overview

Introduction

This chapter contains information concerning the installation and configuration of the Apollo™ Protocol driver.

In This Chapter

This chapter contains the following topics.

Topic	See Page
Driver Installation	3-2
Setting Up Remote Sites	3-4
Message Configuration	3-8

Driver Installation

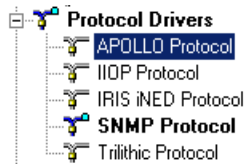
Licensing

Before you can use the Apollo Protocol driver and the Apollo Device Driver, make sure that the appropriate license key 'APOLLO' is available in your license file.

Installing the Apollo Drivers

You have to install the Apollo Protocol driver as well as the Apollo Device Driver. See the ROSA™ User Manual for details about licensing and driver installation.

When you have installed the Apollo Protocol driver, the Apollo Protocol appears under the node 'Protocol Drivers' in the Server Explorer.

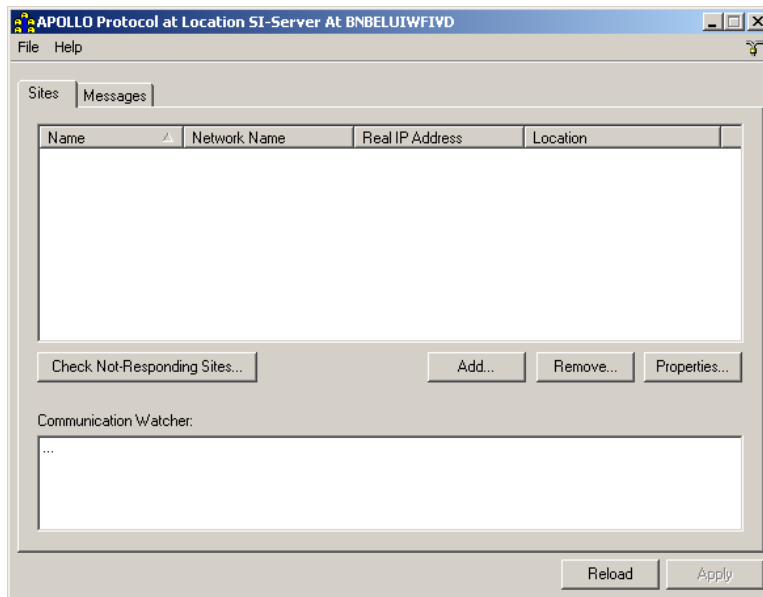


To Open the Apollo Protocol Driver

The Apollo Protocol driver is opened by right clicking on the Apollo Protocol under the 'Protocol Drivers' node in the Server Explorer *or* by double clicking the Apollo Protocol bitmap in a ROSA map.



Result: The 'Apollo Protocol' user interface is displayed.



Continued on next page

Driver Installation, Continued

On this Protocol User Interface, you can add and remove remote sites and change their properties. The GUI has a small Communication Watcher dialog, which displays messages about the site communication status. These messages are logged in a text file named 'Report.txt'. Double-click the Communication Watcher to open the file in Notepad.

The 'Report.txt' file is found at the following location on your server:
'..\Copernicus\Resources\945275934\Report.txt'.

Setting Up Remote Sites

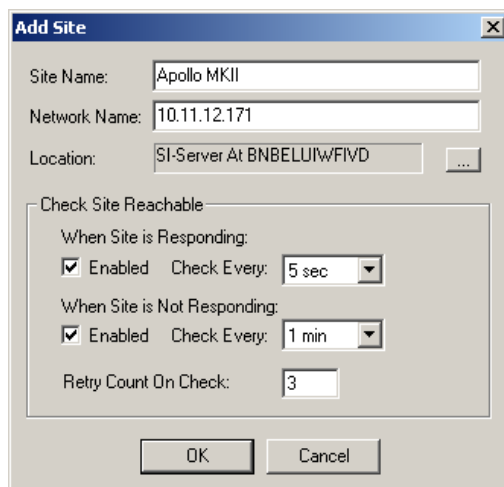
Adding a Site

Important: An Apollo MKII device may only be managed by one Copernicus machine (one Protocol Driver). If this is not the case the Apollo will have unwanted behavior.

For each Apollo MKII connected to the TCP/IP Network, you have to create a site in the Apollo Protocol user interface. You can add sites as follows.

1. On the 'Sites' tab, click **Add**.

Result: The 'Add Site' dialog is displayed.



2. Type a name for the site in the **Site Name** box. This name will also be the name of the Apollo in this site.
3. Type the network name or the IP address of the Apollo MKII in the **Network Name** box.
4. Click the ... button to select a location.

The standard **ROSA Locations** dialog is displayed. Select a location in the **Location** tree and click **OK**. See your ROSA user manual for details about locations. Units connected to the Apollo MKII will be included by default in the selected location, but you can change their unit location later in the Server Explorer.

5. Select the **Enabled** check boxes to enable checking if the site is responding.

Note: Do not select the **Enabled** check box under 'When Site is Responding', if your network contains semi-permanent connections.

6. In the **Check Every** lists, select a time interval.

For more details about these settings, see to check non-responding sites.

Continued on next page

Setting Up Remote Sites, Continued

7. Click **OK** to add the new site.

In case of successful initialization, the Apollo MKII is added under the Units node with the name you gave to the site, and the site details are displayed on the sites tab in the Apollo Protocol user interface. The Communication Watcher displays 'Checking site *SiteName* successful'.

Note: A new site cannot be defined before the Apollo device driver is installed.

Result: The 'Add site failed' dialog displays and the Communication Watcher dialog displays: 'Please install Apollo device driver first!!!'.



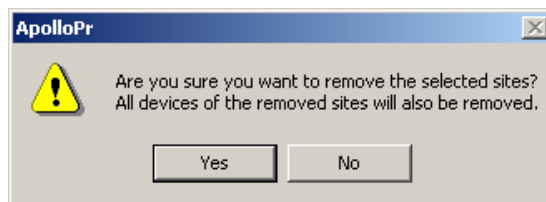
Click **OK** to close the message dialog.

To Remove a Site

You can remove a site as follows.

1. Select the site or sites you want to remove in the 'Sites' list and click **Remove**.

Result: A warning message displays.



2. Click **Yes**, if you are sure to remove the site and all devices in it *or* **No** to cancel.

Continued on next page

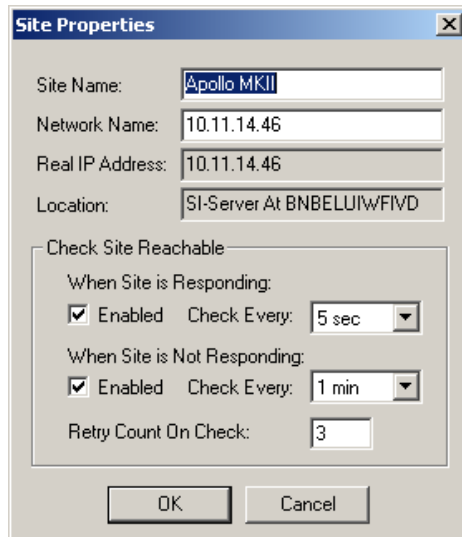
Setting Up Remote Sites, Continued

To Change Site Properties

You can change the site properties as follows.

1. Select the site in the 'Sites' list and click **Properties**.

Result: The 'Site Properties' dialog is displayed.



2. In the **Site Name** box and the **Network Name** box, you can change the site name and the network name.

Note: If the network name is available, the **Network Name** box displays the real IP Address. You cannot change the real IP address. You cannot change the location here but you can via the unit settings in the Server Explorer.

3. Under 'Check Site Reachable', you can change the site checking settings.
4. Click **OK** to apply the changes *or* **No** to restore the previous settings.

To Check Non-Responding Sites

When adding a site or when changing site properties, you can define different checking intervals for responding and not responding sites. Normally, sites become not responding due to network problems and therefore should not be checked as frequently as responding sites.

It is advised to disable checking responding sites if the network connection between the Server and the Apollo MKII contains semi-permanent sections. Each time a check is made, a connection has to be set up. When checking is disabled, sites can only become not responding when you try to log on to the Apollo MKII or to a device connected to the Apollo MKII.

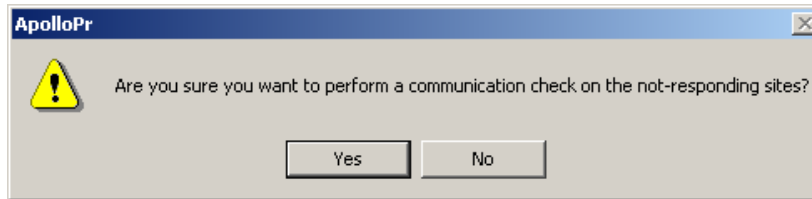
Continued on next page

Setting Up Remote Sites, Continued

You can force the Apollo Protocol driver to check the not responding sites immediately as follows.

1. On the 'Sites' tab, click **Check Not-Responding sites...**

Result: The warning message to check not responding sites displays.



2. Click **Yes** to start checking the not-responding sites.

Result: The results of these checks are displayed in the **Communication Watcher** window.



Message Configuration

Apollo MKII Messages

The Apollo Protocol driver itself does not generate messages, but you can configure the message properties for all Apollo MKII devices at the sites in the 'Sites' list. The three messages that can be generated are.

- Configuration Changed
- Internal Protocol Error
- Unit not responding

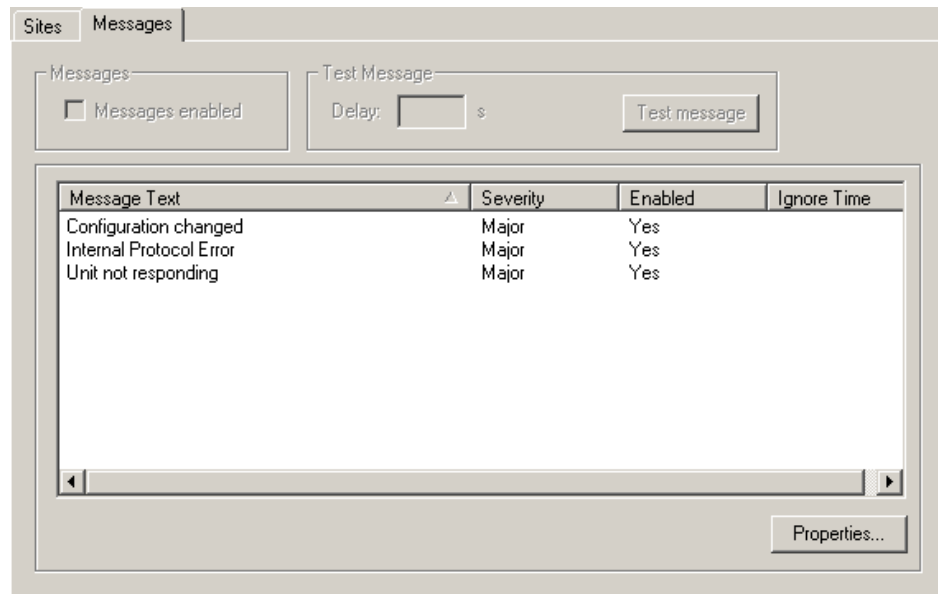
The message source and message subject is the site name. This message is generated when the Apollo MKII in the site is not responding.

To Change the Message Settings

The following procedure describes how to change the message settings.

1. Click the **Messages** tab.

Result: The 'Messages' tab displays.

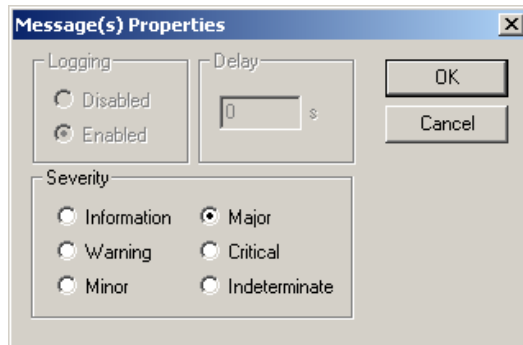


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Message Configuration, Continued

2. Select the 'Configuration changed' message and click **Properties** *or* double-click the message.

Result: The 'Message(s) Properties' dialog is displayed.



3. Under 'Severity', select the severity level you want to give to the message.
4. Click **OK** to apply *or* **Cancel** to restore the previous setting.

Note: The only setting you can change is the severity of the 'Configuration changed' message. You cannot change the properties of the 'Unit not responding' and the 'Internal Protocol Error' messages: these two messages are always enabled and the severity is always **Major**.

Chapter 4

Apollo MKII Site Configuration

Overview

Introduction

This chapter describes how to configure an Apollo MKII™ Site.

In This Chapter

This chapter contains the following topics.

Topic	See Page
General Information on Site Configuration	4-2
Setting Scan Ranges	4-4
Mapping New Devices	4-6
Viewing All Site Devices	4-11
Additional Settings	4-12

General Information on Site Configuration

Introduction

Configuring an Apollo MKII in a remote site is similar to the configuration of a serial port on a Server. You have to define scan ranges for the devices in the site and when the Apollo MKII has found the new devices, you have to assign names and locations and map the devices.

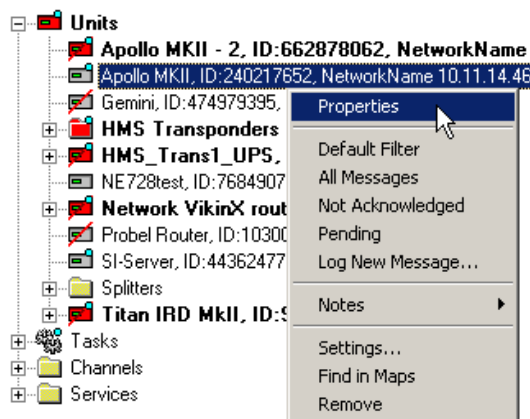
To Open the User Interface of an Apollo MKII

You can open the site in the list on the 'Sites' tab of the Apollo MKII in the remote site as follows.

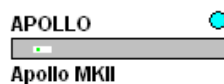
- Double-click the site in the list on the 'Sites' tab of the Apollo Protocol driver. For more details about this driver, see the previous chapter **Apollo Protocol Driver**.

Name	Network Name	Real IP Address	Location
Apollo MKII	10.11.14.46	10.11.14.46	SI-Server At BNBELUI/WFI...
Apollo MKII - 2	10.11.12.171	10.11.12.171	SI-Server At BNBELUI/WFI...

- Right-click the **Apollo MKII** under the 'Units' node in the Server Explorer and then click **Properties**.



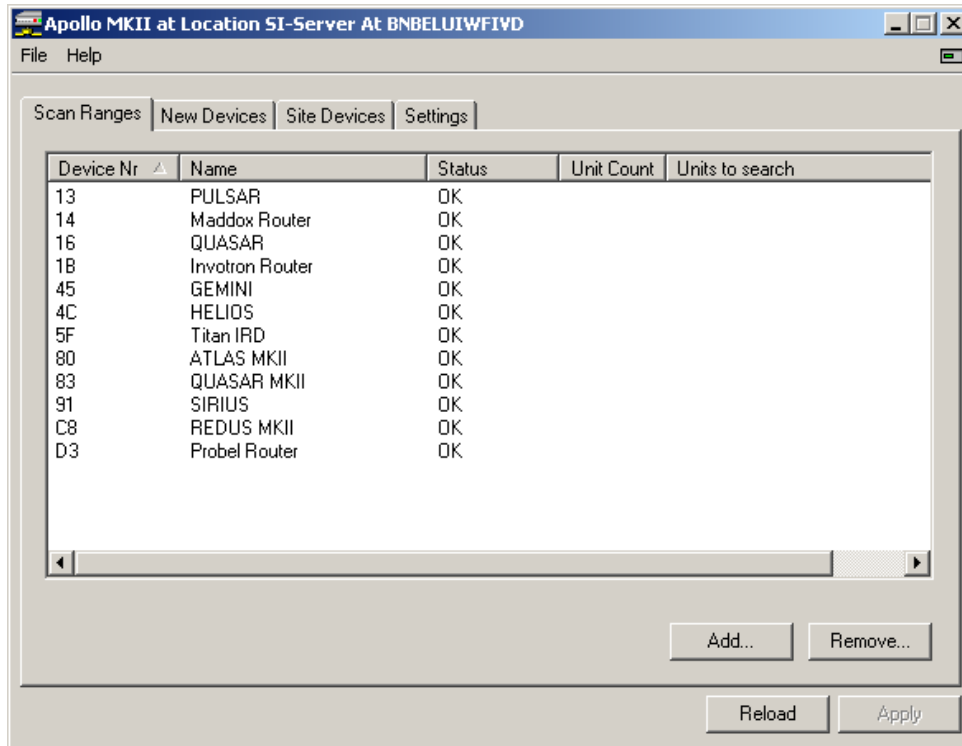
- Double-click the **Apollo MKII** bitmap in a ROSA™ map.



Continued on next page

General Information on Site Configuration, Continued

Result: The 'Apollo MKII' user interface is displayed.



Setting Scan Ranges

About Device Addresses and Scan Ranges

The Apollo MKII cannot detect devices with a remote address equal to zero. In addition all remote addresses of devices of the same device type should be different when connected to the Apollo's serial port. Identical addresses will cause communication problems.

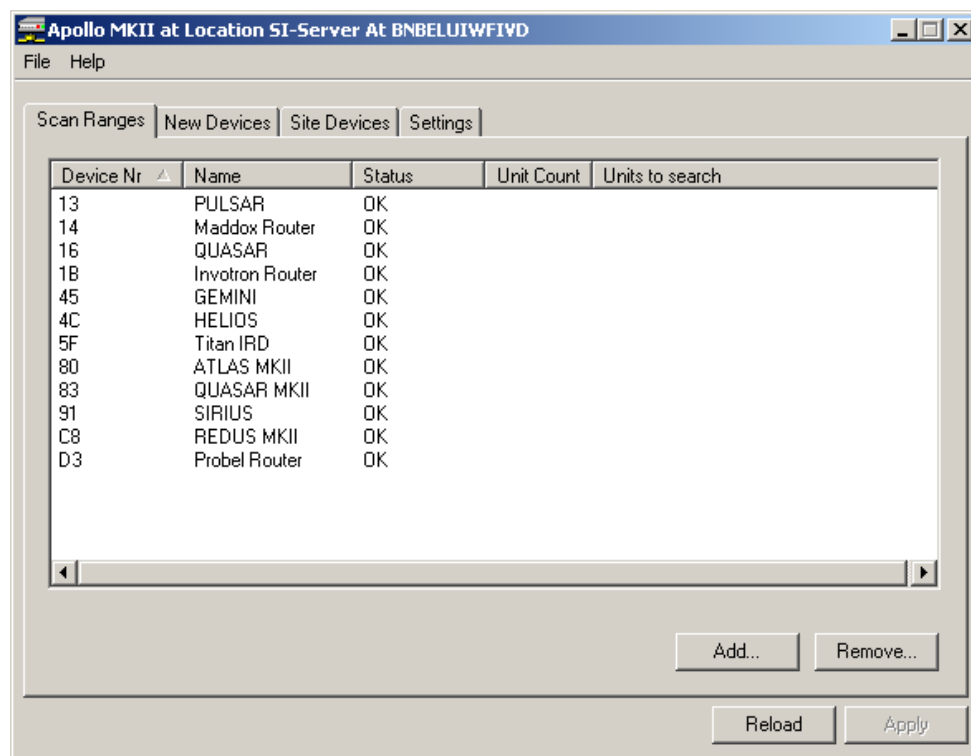
Important: Only create scan ranges for the devices that are actually connected to the serial ports. If, for example five Pulsar modulators are connected to a serial port, only include these five addresses in the scan range for the Pulsar device type. Then the Apollo only has to poll these devices, which improves the polling speed. If you want to add an additional Pulsar afterwards, add its address to the scan range as well.

For devices that support automatic address assignment, you do not have to enter a scan range to detect them. In the "Units to Search" column on the Scan Ranges tab, 'Automatic' indicates that these devices receive an address from the Apollo MKII. See the device's user manual for details about automatic address assignment.

To Add Scan Ranges

The following procedure describes how to add scan ranges.

1. Click the 'Scan Ranges' tab.

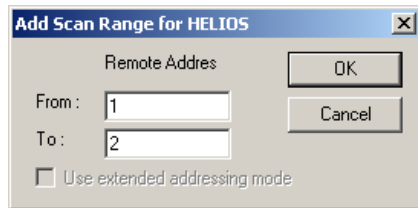


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Setting Scan Ranges, Continued

2. Select a device type and click **Add...**

Result: The 'Add Scan Range' dialog is displayed.



3. In the **From** and **To** boxes, enter the start and end address. These addresses are in hexadecimal format and have a range of 01h to 7Eh.

Note: To add a single remote address, leave the **To** box empty.

4. Click **OK**.
5. To add multiple scan ranges for the same device type, click **Add...** again.

Note: You cannot add more than 350 addresses in total. If the total number of addresses exceeds 350, a message is displayed.

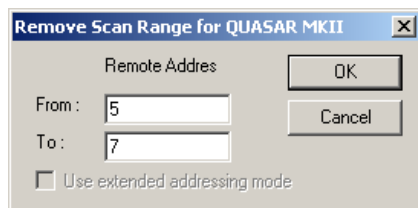
6. You can now map the newly found devices. For details about device mapping, see the next topic **Mapping New Devices**.

To Remove Scan Ranges

The following procedure describes how to remove scan ranges.

1. Select a device type and click **Remove...**

Result: The 'Remove Scan Range' dialog for the device type is displayed.



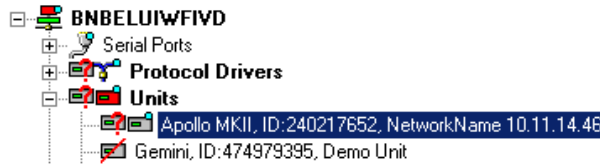
2. In the **From** and **To** boxes, enter the start and end addresses of the range you want to remove. To remove a single address, only type an address in the **From** box and leave the **To** box empty.
 3. Click **OK**.
-

Mapping New Devices

Introduction

Devices with a remote address falling in the added scan range are detected as new devices. You have to assign names and locations to the devices and then map them. When a new device is deleted in the remote site, this is displayed in different ways.

- In the Server Explorer as a device icon with a red question mark in front of the Apollo MKII icon under the 'Units' node and in front of the Units node icon.



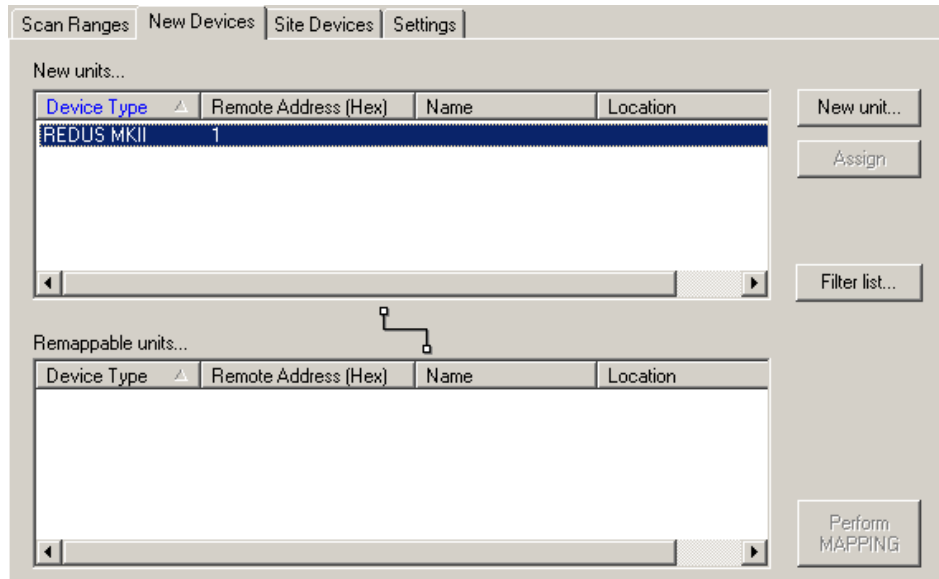
- In the top-right corner of the Apollo user interface.



Assigning Name and Location

The following procedure describes how to assign a name and location to a new device.

1. Click the 'New Devices' tab.

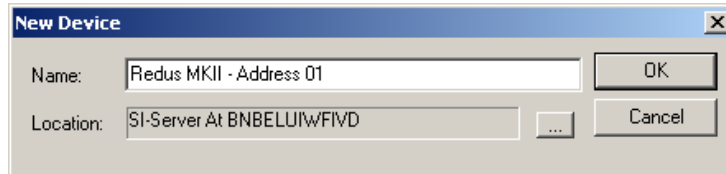


Continued on next page

Mapping New Devices, Continued

2. Select a unit in the 'New Units...' list and click the **New Unit...** command button.

Result: The 'New Device' dialog displays.



3. Enter a **Name** and **Location** for the new device and click **OK**.
4. Repeat steps 1 to 3 for each new unit you want to assign. If all devices are assigned, you can map them all at once.

Changing the Name and Location

To change the settings of a new device, select the device and click **Settings**.

Note: The **New Unit...** button becomes the **Settings** button when you select a device that is already assigned.

Un-assigning a Device

You can un-assign a device, by selecting it and clicking **Unassign**.

Continued on next page

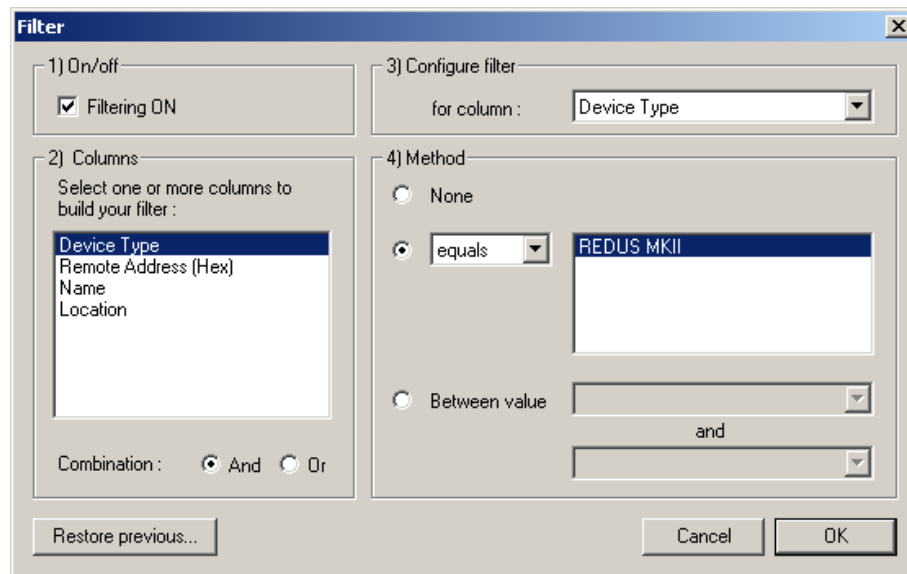
Mapping New Devices, Continued

To Filter the List of New Units

If too many new units are displayed, you can define a filter to display only those units you're interested in. The following procedure describes how to filter the list.

1. Click **Filter list...**

Result: The 'Filter' dialog displays.



2. Under 'On/Off', select the **Filtering ON** check box.
3. Under 'Columns', select one or more columns to build the filter, then select the **And** or **Or** Combination for these columns.
4. Under 'Configure filter', select one of the columns.
5. Under 'Method', select the filter method.
 - **None:** No filtering on that column
 - **Equals/Differs:** First select 'equals' or 'differs', then one or more values in the list.
 - **Between value:** Select two values
6. Repeat step 4 and 5 for each column you selected in step 3.
7. If you want to restore the previous filter, you can click **Restore Previous...** command button.
8. Click **OK** to apply the filter.

Note: The columns used in the filter definition have blue header text.

Mapping Assigned Devices

Once assigned, you can map devices as follows.

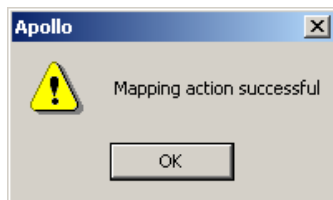
1. Click **Perform MAPPING**.

Note: During mapping, a message ‘Mapping action busy...’ appears in the lower part of the dialog.



2. Mapping devices can take a while. When mapping is completed successfully, a message is displayed.

Result: A warning message dialog displays.



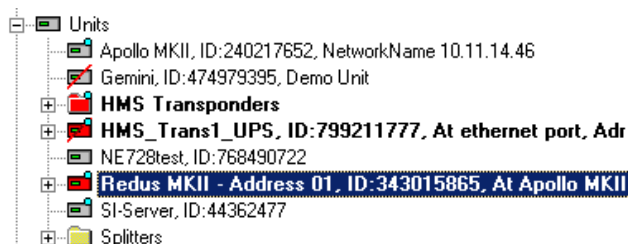
3. Click **OK**.

Result: The mapped devices now appear under the ‘Units’ node in the Server Explorer, just like if they were connected directly to a Copernicus™ server.

Re-mapping Existing Devices

Re-mapping is mainly used when defective devices are replaced. With re-mapping, you can let the spare device take the place of the defective device in ROSA. You still have to reconfigure most of the settings of the device, but you don't need to recreate relations and so on.

Suppose that you have disconnected a defective device from the Apollo MKII. The Apollo still polls the device, but receives no answer anymore. A red line across the device in the Server Explorer indicates that it is no longer responding.



Continued on next page

Mapping Assigned Devices, Continued

The following procedure describes how to re-map a non-responding device.

1. Connect the spare device to the Apollo MKII.

Note: Take care to set the remote address of the spare device correctly. It does not need to be identical to that of the defective one, but it must be unique for the specific device type. It must be within the scan range too; otherwise you have to adapt the scan range. The unit will appear as new unit.

2. On the 'New Devices' tab, select the new device in the 'New Units...' list.

Result: In the 'Remappable units...' list, all inactive (not responding) devices of the same type as the selected new device are listed. The Apollo MKII determines which of the inactive devices is most closely resembling the new device and marks it with a blue pointing hand.

3. In the 'Remappable units...' list, select the device you want to replace with the new device and click **Assign**.

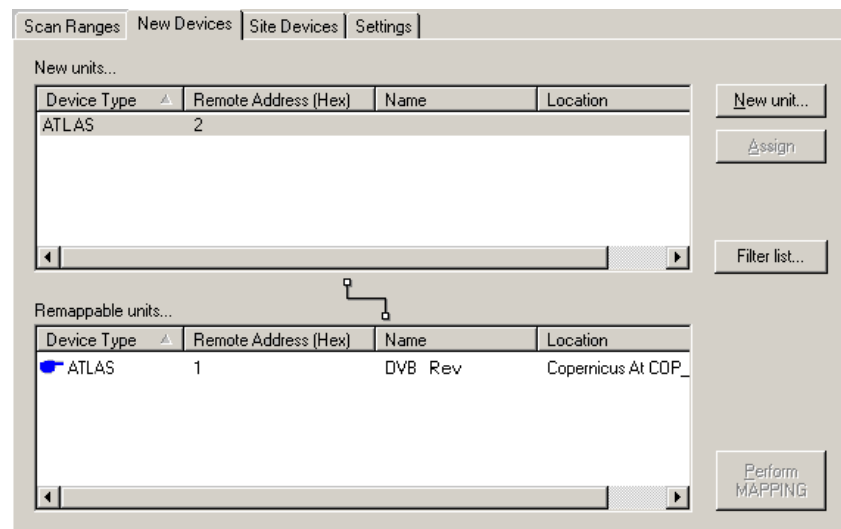
Note: If you assigned a wrong unit, click **Un-assign** and repeat this step.

4. Repeat steps 1 to 3 for each device you want to remap and click **Perform MAPPING**.

Note: During mapping, a message 'Mapping action busy...' appears in the lower part of the dialog. Mapping devices can take a while. When mapping is completed successfully, a message is displayed.

5. Click **OK**.

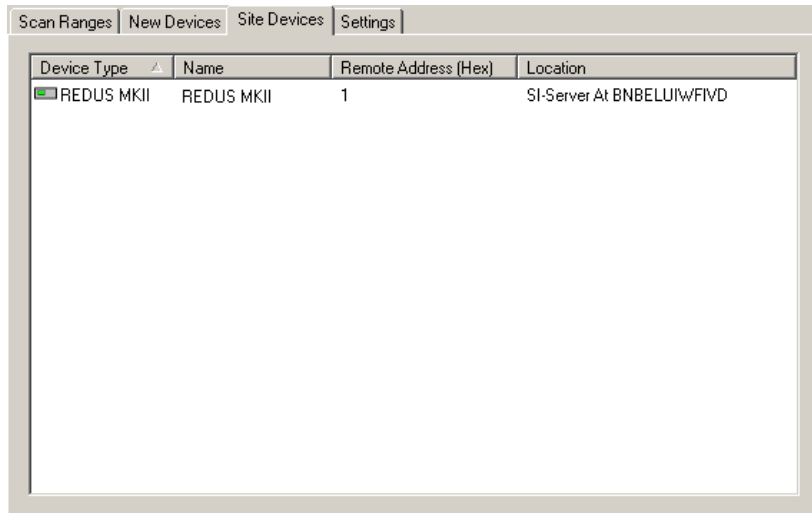
Result: The spare devices now take over the place of the defective devices in ROSA. When a defective device is repaired, you can replace the spare device in the same way the defective device was replaced.



Viewing All Site Devices

To View All Devices in the Remote Site

To view all devices in a remote site, click the 'Site Devices' tab.



Device Type	Name	Remote Address (Hex)	Location
REDUS MKII	REDUS MKII	1	SI-Server At BNBELUIWFVD

On this tab, all devices in the remote site are listed. This is very useful because:

- In the Server Explorer you cannot see whether a device belongs to a site or not.
- If a device belongs to a site you can see here to which site it belongs.

Note: In the 'Site Devices' list, not responding devices are marked with a red line across their icon.

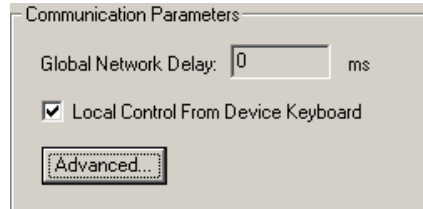
Additional Settings

Local Control Settings

Some devices can be set to local control when they are remotely controlled and set back to remote control via the keyboard of the device. On the Apollo MKII, you can enable or disable this for all devices connected to the Apollo as follows.

1. Click the 'Settings' tab.

Result: The 'Settings' tab displays.



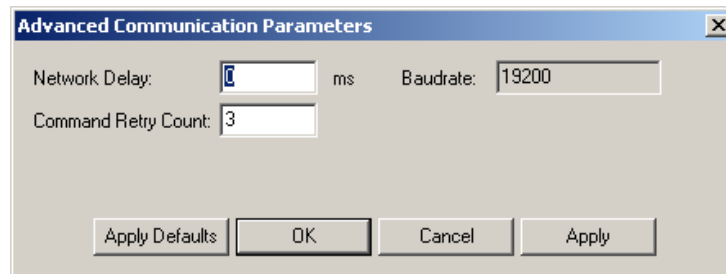
2. To enable or disable local control, respectively select or clear the **Local Control From Device Keyboard** check box.
3. Click **Apply**.

RCDS Communication Parameters

You can change some parameters of the RCDS communication between the Apollo MKII and the devices connected to it.

1. On the 'Settings' tab, click **Advanced...**

Result: The 'Advanced Communication Parameters' dialog is displayed.



2. In the **Network Delay** box, type a value between 0 and 2000 ms.

Note: The value you enter here becomes the 'Global Network Delay' on the 'Settings' tab. The default network delay is 90 ms. To keep the communication reliable, do not enter a value lower than 90.

Continued on next page

Additional Settings, Continued

3. In the **Command Retry Count** box, type a number between 3 and 10. The default is 3 times. This is the number of times an RCDS command is resent to the device if the device does not acknowledge the command.
Note: Normally, you should not change these parameters. But in some cases it may be necessary to change the parameters:
 - If Commbbox Communication Organizers are cascaded after the Apollo MKII, you might have to increase the network delay.
 - If the connection contains a cable modem and the communication appears to be unreliable, try increasing the command retry count.
 4. If you want to restore the default settings, click **Apply Defaults**.
 5. Click **Apply** to apply these settings without closing the dialog or **OK** to apply them and close the dialog.
-

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Chapter 5

ROSA EM Configuration

Overview

Introduction

This chapter describes how to configure ROSA™ to be able to manage Scientific-Atlanta Equipment with help of the Apollo MKII™ ROSA EM functionality.

In This Chapter

This chapter contains the following topics.

Topic	See Page
ROSA EM Drivers	5-2
Using ROSA EM	5-8
Backup Operation	5-13

ROSA EM Drivers

Introduction

This topic explains the steps you have to take in ROSA before you can manage Scientific-Atlanta equipment.

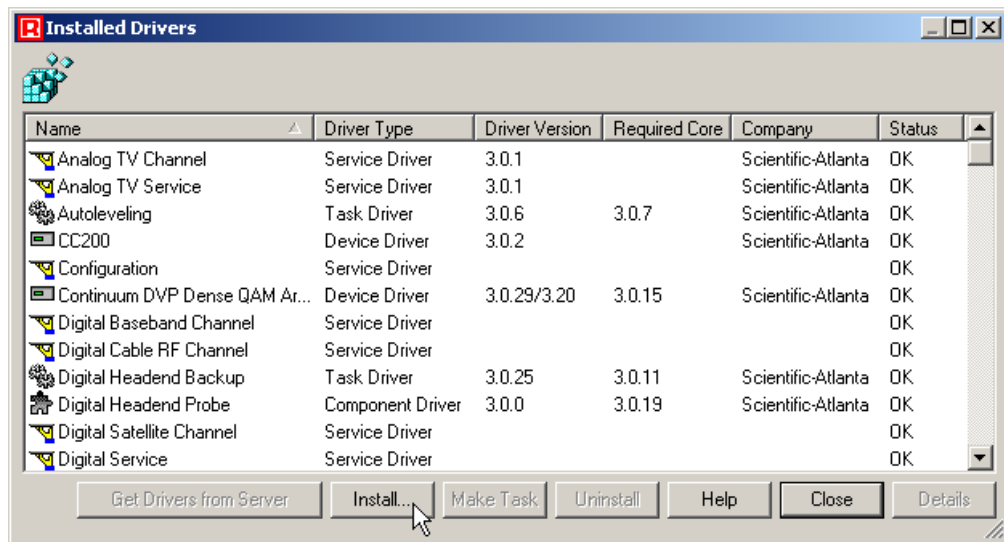
Installation of ROSA EM Drivers

Install the ROSA EM drivers as explained in the procedure below.

1. In ROSA click on the **Resource Drivers** icon.



Result: The 'Installed Drivers' dialog is opened.



2. Click in the **Install...** button.

Result: An 'Open' dialog appears.

3. In the 'Look in' combo box browse to the directory where the ROSA EM driver files are located.

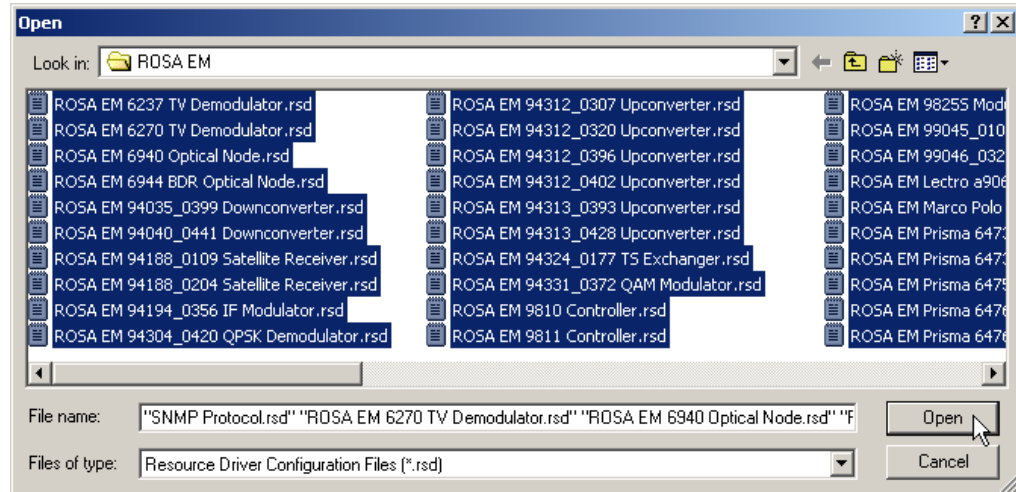
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ROSA EM Drivers, Continued

4. Select all ROSA EM '.rsd' files and also include the 'SNMP Protocol.rsd' file.

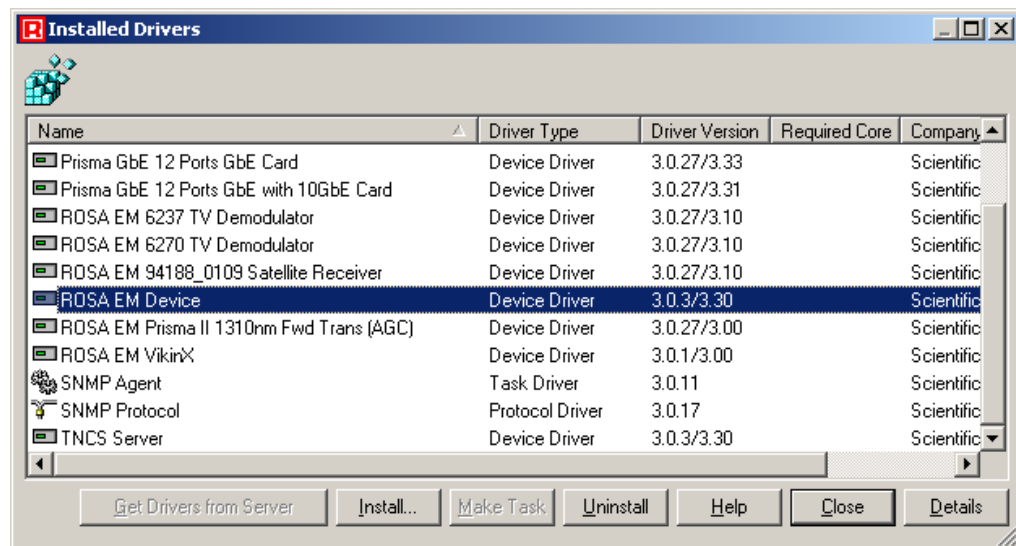
Notes:

- To make a selection of multiple files use the [Shift] or [Ctrl] key in combination with the mouse.
- You can also select just the files you need. In this case make sure that you include the 'ROSA EM Device.rsd' file in your selection.



5. Click on the **Open** button.

Result: The selected ROSA EM drivers are installed and the 'Installed Drivers' dialog is updated.



6. Close the 'Installed Drivers' dialog.

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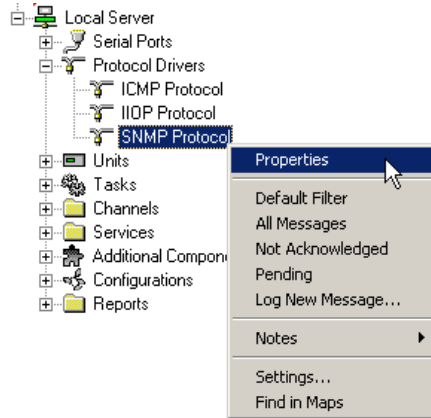
ROSA EM Drivers, Continued

Mapping ROSA EM Agent

Following steps show you how the ROSA EM Agent of the Apollo MKII device is mapped to the ROSA EM Device driver.

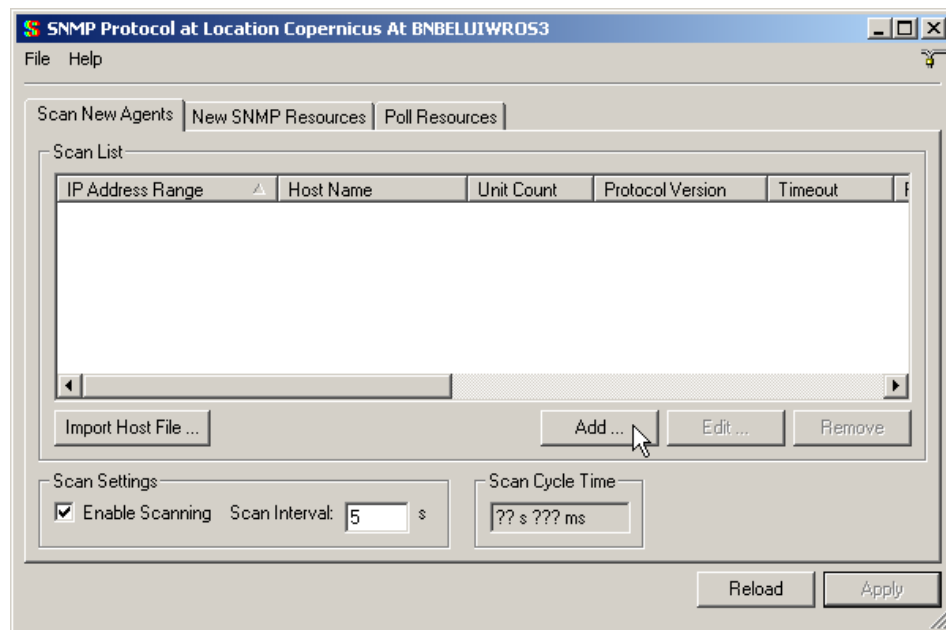
1. In the Server Explorer of ROSA open the 'Protocol Drivers' node and right-click on **SNMP Protocol**.

Result: A driver menu appears.



2. Select **Properties**.

Result: The SNMP Protocol user interface is opened.



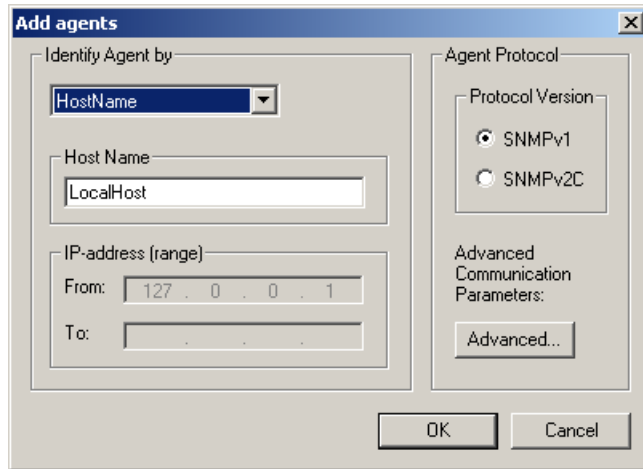
Note: Initially the 'Scan List' will be empty, but in case you already make use of the SNMP Protocol driver for some agents, they are shown in this list.

Continued on next page

ROSA EM Drivers, Continued

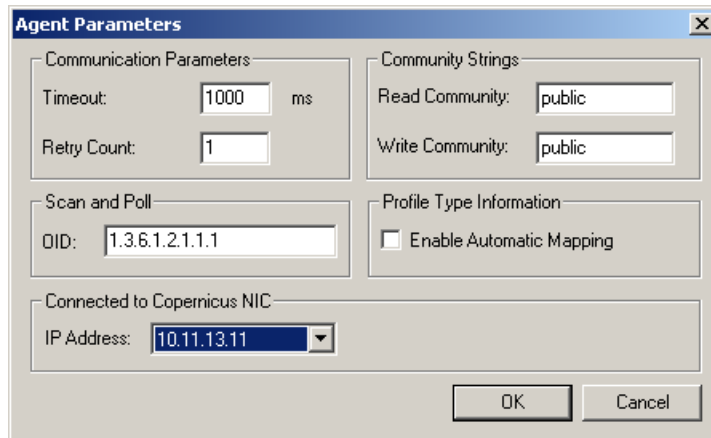
3. Click on the **Add...** button to add a new SNMP agent.

Result: The 'Add agents' dialog appears.



4. Leave the default settings as they are:
 - 'Identify Agent by' shows **HostName**.
 - 'Host Name' shows **LocalHost**.
 - The 'Protocol Version' is set to **SNMPv1**.
5. Click on the **Advanced...** button at 'Advanced Communication Parameters'.

Result: The 'Agent Parameters' dialog is displayed.



6. In the 'Community Strings' area change the strings as follows:
 - At 'Read Community' enter **public**.
 - At 'Write Community' enter **public**.

Continued on next page

ROSA EM Drivers, Continued

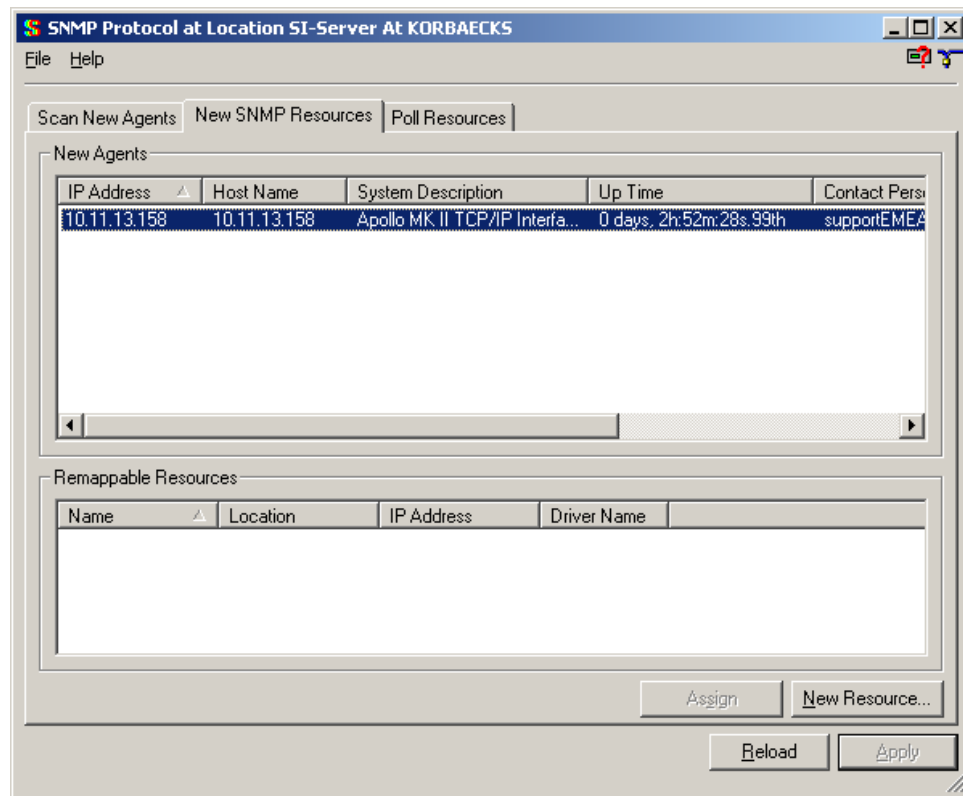
7. First click on the **OK** button to close the 'Agent Parameters' dialog and secondly click on the **OK** button to close the 'Add agent' dialog.

Result:

- The 'Scan List' (also) shows the last agent you added.
- The 'Apply' button at the bottom of the user interface becomes enabled.

8. Click on the **Apply** button to add the agent.

Result: After a couple of seconds a red question mark appears in the upper right corner indicating a new SNMP agent is detected.



9. Click on the 'New SNMP Resources' tab of the user interface.
10. In the 'New Agents' list select the agent you just added.

Result: The 'New Resource...' button below becomes enabled.

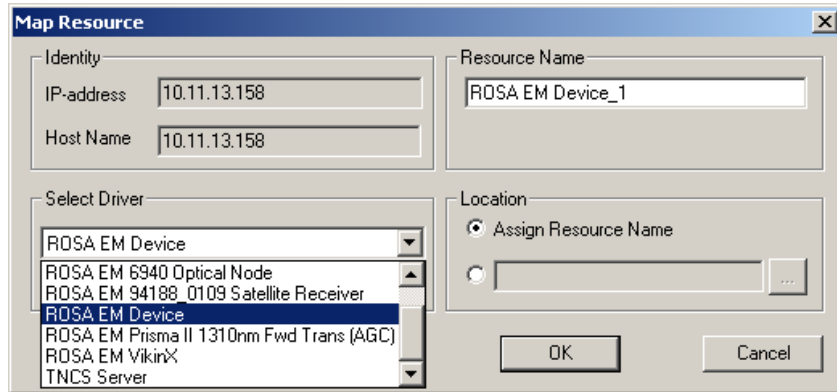
11. Click on the **New Resource...** button.

Result: The 'Map Resource' dialog appears.

Continued on next page

ROSA EM Drivers, Continued

12. Make the following changes:
 - At 'Select Driver' select **ROSA EM Device**.
 - At 'Resource Name' you can enter the name of the ROSA EM Device driver, as it will appear at the 'Units' node of the ROSA Server Explorer.

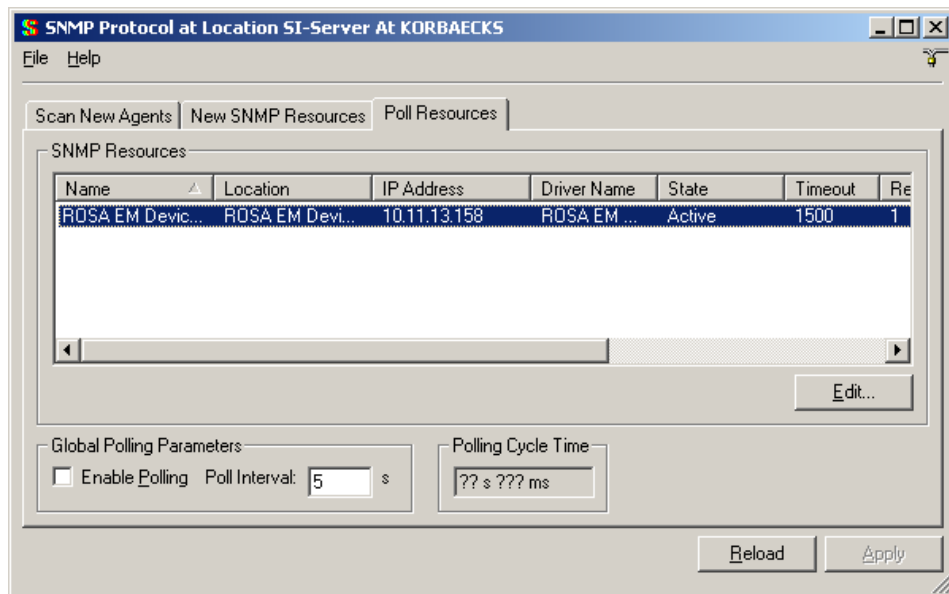


13. Click on the **OK** button.

Result: The agent will be mapped on the ROSA EM Device driver.

14. Click on the 'Poll Resources' tab of the user interface.

Result: The 'SNMP Resources' list shows that the ROSA EM Device driver state is 'Active'. The driver can now be used to manage Scientific-Atlanta equipment.



15. Close the SNMP Protocol user interface.
-

Using ROSA EM

Introduction

The previous topic showed how the ROSA EM drivers were installed and how to map the ROSA EM Agent to the ROSA EM Device driver. The result of these actions:

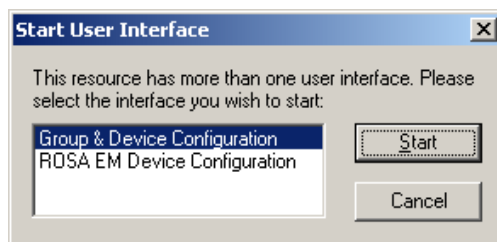
- The ROSA EM Device resource appears as a unit in the ROSA Server Explorer.
- During the mapping action the ROSA EM Device resource queried the inventory of units in ROSA EM of the Apollo MKII and every unit for which a ROSA EM driver is installed, will also appear as a unit in the ROSA Server Explorer.

ROSA EM Device Configuration

To configure the ROSA EM Device, do the following steps.

1. In the ROSA Server Explorer look for the ROSA EM Device at the 'Units' node.
2. Right-click the unit and select **Properties** from the menu.

Result: A dialog called 'Start User Interface' appears.



Note: The difference between both selections is:

- With 'Group & Device Configuration' you can start the ROSA EM Device user interface that allows you to manage Scientific-Atlanta equipment (adding or removing devices, checking the device state, ...). See the next sub topic **Equipment Management** for more information.
- With 'ROSA EM Device Configuration' you can start the configuration user interface of the ROSA EM Device driver itself. It allows you to view and/or change settings (e.g. alarm settings, system settings, ...).

3. Select 'ROSA EM Device Configuration' and click on the **Start** button.

Result: The ROSA EM Device configuration user interface is opened.

4. Click on the 'System Settings' tab page of the user interface and in the 'Sub Pages' tree view on the left side, click on **System Settings**.

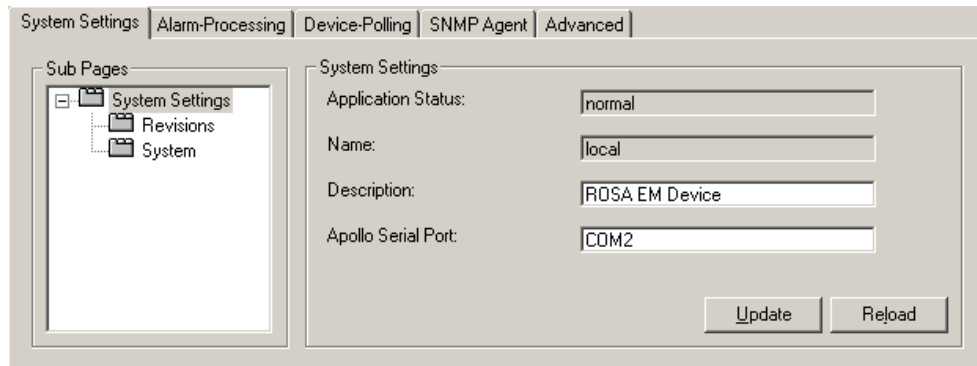
Result: On the right side of the tree view the 'System Settings' appear.

Continued on next page

Using ROSA EM, Continued

- At 'Apollo Serial Port' enter the port to which the equipment is connected.

Note: Default the port COM2 is used and it corresponds with RCDS RS-485. For more information concerning the ports, see the topic **Connecting Cables** in Chapter 2 **Installation**.



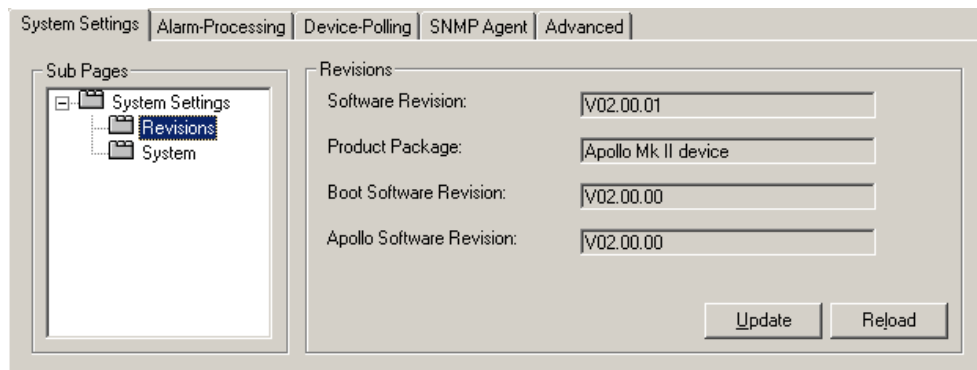
The screenshot shows the 'System Settings' tab selected in the top navigation bar. On the left, a 'Sub Pages' tree view shows 'System Settings' expanded. The main content area is titled 'System Settings' and contains the following fields:

- Application Status: normal
- Name: local
- Description: ROSA EM Device
- Apollo Serial Port: COM2

At the bottom right, there are 'Update' and 'Reload' buttons.

- In the tree view, click on **Revisions**.

Result: The versions of the Apollo MKII software parts are displayed.



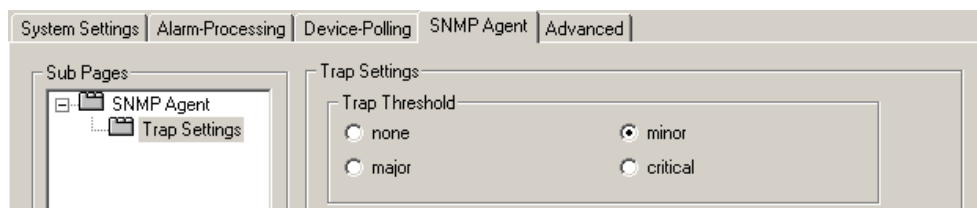
The screenshot shows the 'Revisions' tab selected in the top navigation bar. In the 'Sub Pages' tree view, 'Revisions' is highlighted. The main content area is titled 'Revisions' and contains the following fields:

- Software Revision: V02.00.01
- Product Package: Apollo Mk II device
- Boot Software Revision: V02.00.00
- Apollo Software Revision: V02.00.00

At the bottom right, there are 'Update' and 'Reload' buttons.

- Click on the 'SNMP Agent' tab page of the user interface and in the 'Sub Pages' tree view on the left side, click on **Trap Settings**.

Result: On the right side of the tree view the 'Trap Settings' appear.



The screenshot shows the 'SNMP Agent' tab selected in the top navigation bar. In the 'Sub Pages' tree view, 'Trap Settings' is highlighted. The main content area is titled 'Trap Settings' and contains the following field:

- Trap Threshold: none minor major critical

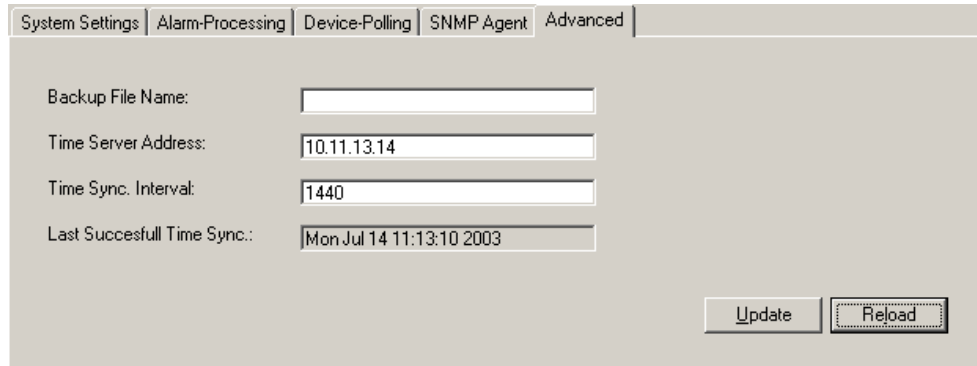
- At 'Trap Threshold' you can specify on which level a trap is sent.

Note: If you select 'none', there will be no traps sent at all.

Continued on next page

Using ROSA EM, Continued

- Click on the 'Advanced' tab page of the user interface.



- The time of the Apollo MKII can be synchronized with a time server:
 - Time Server Address:** Enter the IP address of the server that has a time service running and that supports the DAYTIME protocol.
 - Time Sync. Interval:** Enter the time in seconds after which a time synchronization has to be performed.

Example: On the Copernicus server install and start the time service. On the user interface of the ROSA EM Device enter the IP address of the Copernicus and specify the synchronization interval.

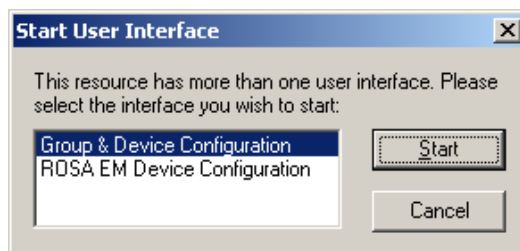
- If you changed something on the user interface the 'Apply' button is enabled. Click on **Apply** to confirm the changes or click on **Reload** to restore the old settings.

Equipment Management

To add and manage Scientific-Atlanta equipment using ROSA EM, check the steps in the following procedure to get a brief overview of the possibilities.

- In the ROSA Server Explorer look for the ROSA EM Device unit at the 'Units' node.
- Right-click the unit and select **Properties** from the menu.

Result: A dialog called 'Start User Interface' appears.

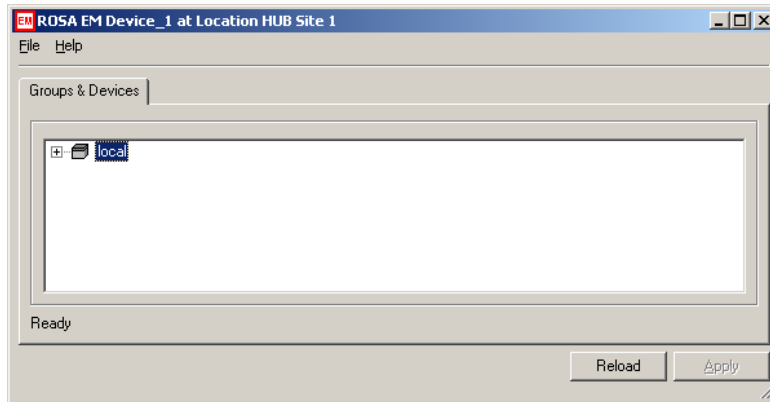


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Using ROSA EM, Continued

3. Select 'Group & Device Configuration' and click on the **Start** button.

Result: The ROSA EM Device user interface is opened.

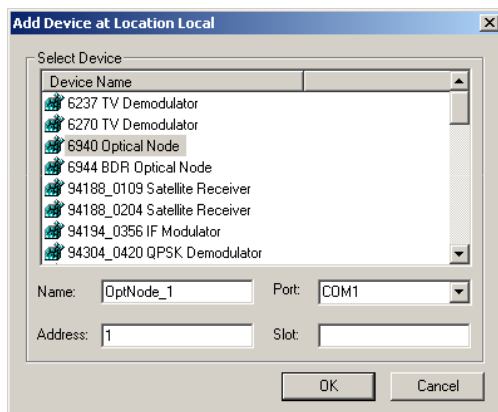


4. In the ROSA EM Device user interface you can add devices and groups to the 'Local' node. Right-click on the 'Local' node and select **Add Device**.



Result: The 'Add Device at Location Local' dialog is opened.

5. Enter the following information:
 - In the 'Select Device' list, choose a device type.
 - At 'Name' specify the name of the device.
 - At 'Port' select the communication port on which the device is connected.
 - At 'Address' specify the device address to access the correct device.
 - If necessary specify the slot number at 'Slot'.



Note: Some devices use Ethernet connections and the expected address is an IP address of the format 'x.x.x.x' where x is a decimal number from 0 to 255.

Continued on next page

Using ROSA EM, Continued

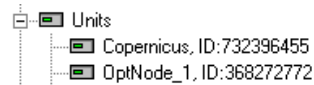
- When finished click on the **OK** button.

Result: The device is added and can be seen on:

- The ROSA EM Device user interface



- The ROSA Server Explorer at the 'Units' node



- To open the user interface, select the device in the ROSA Server Explorer, right-click and select **Properties**.

Result: The user interface opens.

Additional Information

Some additional information about the possibilities of ROSA EM equipment management:

- The ROSA EM Device driver has SNMP trap synchronization: at startup it will force the ROSA EM Agent of the Apollo MKII device to regenerate all active traps.
 - Responding/Not responding status of each unit is displayed.
 - Ability to add or remove devices via the ROSA EM Device user interface.
 - Ability to add or remove groups via the ROSA EM Device user interface.
-

Backup Operation

Introduction

The integrated ROSA EM software of the Apollo MKII supports automatic backup and in case of an alarm, scripts perform the necessary actions to repair the service with help of a backup device.

Note: At the moment the backup functionality is only available for Scientific-Atlanta Stellar XT™ devices. Additional scripts for backup of other devices can be created by Scientific-Atlanta on request.

Operation

Since the backup operation is based on the relay alarms and macro triggering of the devices, the backup is only possible for devices with alarm contacts and macro support. The maximum number of 'regular' devices that can be assigned to a backup device is restricted to 8.

Each time a device is polled, the internal system is triggered. When the system detects an alarm that can trigger a backup, a check script is launched to see if backup is allowed or not. With every new polling of the device, the check script reevaluates the alarm condition.

If the check script returns that no backup is allowed, no further action is taken. When the script returns that backing up is allowed, the backup is executed. From that moment, the check script is not executed anymore and the device remains in backup (even when the conditions checked by the check script are not met anymore).

Configuration

Before the backup system can operate properly some configuration is needed:

- **Macros:**

The backup script does the actual backup of the device. The backup functionality of the device is provided via macros and the backup script triggers a macro on the backup device. This requires that on the backup device macros need to be configured for each 'regular' device it can backup. This macro will configure the backup device exactly the same as the 'regular' device in case of backup. You can also configure a macro that will be triggered on the backup device when the device is restored.

- **Alarms:**

The following alarms can be used to trigger a backup:

- Relay A Status
- Relay B Status
- Not-responding

You can configure which alarm(s) trigger relay A or B.

Continued on next page

Backup Operation, Continued

- **Backup device:**

The name of the backup device should be configured

- **Priorities:**

A priority can be assigned to every device. This priority will be used when 2 or more devices need to be backed up or when a backup is already active. The device with the highest priority will be backed up. If a device with a lower priority is in backup it will be restored and the higher priority device will be backed up.

Note: The priority can range from 1 to 99, where 1 is the highest priority and 99 the lowest.

- **Input- and output routers:**

A device might be connected to an input- and/or output-router. In case of backup these routers need to be switched. In order to do so, the names of the routers can be configured together with the input and/or output to which the device is connected. This configuration is needed for the backup device as well, since the backup scripts need to know to which inputs and/or outputs the routing needs to be changed.

- **Backup and restore scripts:**

The entire backup and restore is script driven and scripts are defined for:

- Checking whether the device can be backed up.
- Backing up the device.
- Switching the input router.
- Switching the output router.
- Restoring the device.
- Switching back the input router.
- Switching back the output router.

Backup Example

An example of backup configuration and operation in a Stellar XT topology can be found in **Appendix C - Backup Configuration**.

Chapter 6

Upgrading and Information

Overview

Introduction

This chapter describes how to upgrade the software of the Apollo MKII device and how to obtain information.

In This Chapter

This chapter contains the following topics.

Topic	See Page
Software Upgrading	6-2
Getting Information	6-4

Software Upgrading

Apollo MKII Software

The Apollo MKII software can be remotely upgraded using FTP. The software exists of three parts:

- The boot software
- The Apollo software
- The ROSA EM software

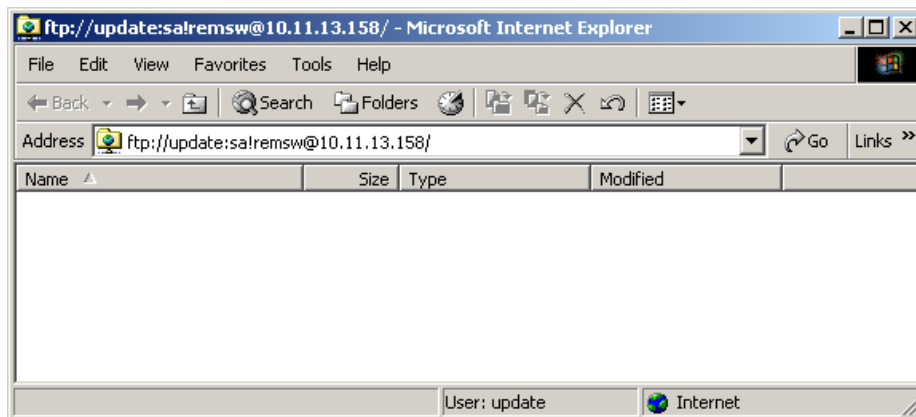
In case an upgrade is needed, you should contact the customer services department for the most recent software file(s) with the extension '.rpm'.

Upgrading

The following procedure explains how to upgrade the embedded software.

1. Launch the Internet Explorer Browser.
2. In the 'Address' bar enter the following:
ftp://update:sa!remsw@<Apollo_IP_Address>/
where <Apollo_IP_Address> is the IP address of your Apollo MKII device.

Result: An Internet Explorer window is opened.



3. Simply drag-and-drop an '.rpm' upgrade file into the Internet Explorer Window one at the time.

Notes:

- The processing and upgrade starts after the file has been transferred to the Apollo MKII. During the upgrade, the Apollo MKII and connected devices may become inaccessible during a few seconds. This is a normal situation.
- Once the software is installed, the file will disappear from the Explorer Window if you refresh the window with [F5] or the 'Refresh' button.

Continued on next page

Software Upgrading, Continued

- During upgrading from ROSA EM or Apollo software and something goes wrong during the upgrade e.g. power failure, the Apollo MKII may be out of service temporarily. Repeat the upgrade procedure to install the software again.
 - When something goes wrong during the upgrade of the boot software, the only solution is to return the product for repair as described in Chapter 7 **Customer Information**.
4. The new software starts up as soon as the software upgrade is successfully completed resulting in a warm start of the device.
 5. Repeat steps 3 to 4 for every '.rpm' upgrade file you received.
 6. The new software version can be checked with the MIB variables:
 - saSYSTEMBooSofRev: For the boot software
 - saSYSTEMSofRev: For the ROSA EM software
 - saSYSTEMApoSofRev: For the Apollo software

Note: Instead of using the Internet Explorer Browser, you can also start an FTP session to the Apollo MKII device. Enter the following information to get access:

- Username: update
- Password: sa!remsw

Transfer one '.rpm' upgrade file to the Apollo MKII device at the time.

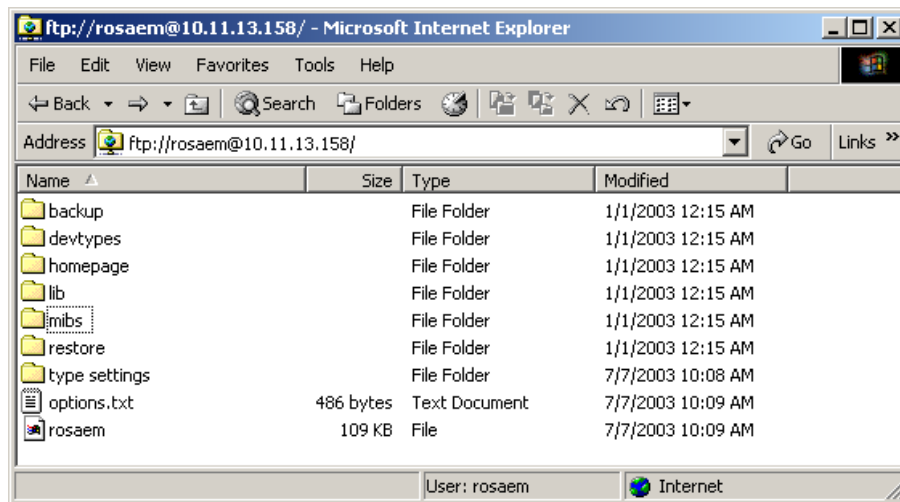
Getting Information

MIB Files

Do the following steps to obtain the MIB files.

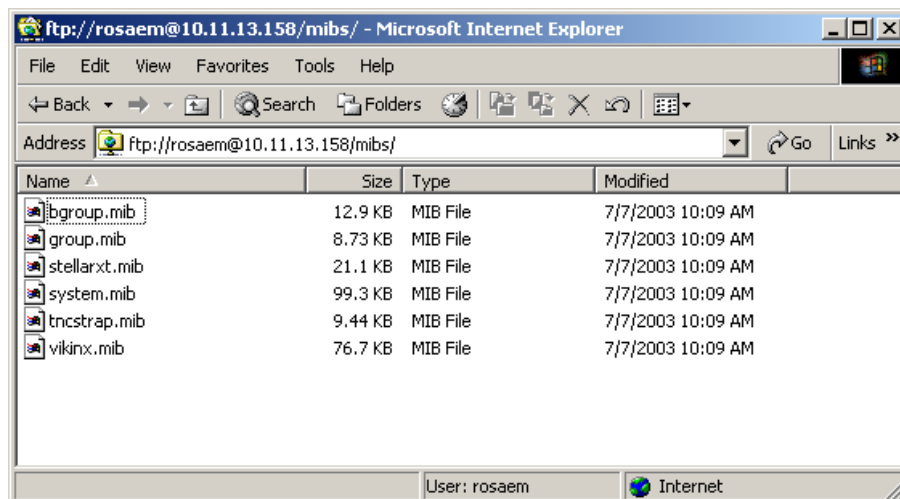
1. Launch the Internet Explorer Browser.
2. In the 'Address' bar enter the following:
ftp://rosaem:@<Apollo_IP_Address>/
where <Apollo_IP_Address> is the IP address of your Apollo MKII device.

Result: An Internet Explorer window is opened.



3. Open the **mibs** directory to view the MIB files.

Result:



Chapter 7

Customer Information

Overview

Introduction

This chapter contains information on obtaining product support and returning products to Scientific-Atlanta.

In This Chapter

This chapter contains the following topics.

Topic	See Page
Product Support	7-2
Return Products for Repair	7-4

Product Support

Obtaining Support

IF...	THEN...
you have general questions about this product	contact your distributor or sales agent for product information or refer to product data sheets on www.scientificatlanta.com .
you have technical questions about this product	call the nearest <i>Technical Support</i> center or Scientific-Atlanta office.
you have customer service questions or need a return material authorization (RMA) number	call the nearest <i>Customer Service</i> center or Scientific-Atlanta office.

Support Telephone Numbers

Use the following table to find the Technical Support and Customer Service telephone numbers in your area.

Region	Assistance Centers	Telephone and Fax Numbers										
North America	SciCare™ Broadband Services Atlanta, Georgia United States	<ul style="list-style-type: none"> For Technical Support, call: <table> <tr> <td>Toll-free</td> <td>1-800-722-2009</td> </tr> <tr> <td>Local</td> <td>770-236-6943</td> </tr> </table> For <i>Customer Service</i> questions or to request an RMA number, call: <table> <tr> <td>Toll-free</td> <td>1-800-722-2009</td> </tr> <tr> <td>Local</td> <td>770-236-6900</td> </tr> <tr> <td>Fax</td> <td>770-236-5477</td> </tr> </table> 	Toll-free	1-800-722-2009	Local	770-236-6943	Toll-free	1-800-722-2009	Local	770-236-6900	Fax	770-236-5477
Toll-free	1-800-722-2009											
Local	770-236-6943											
Toll-free	1-800-722-2009											
Local	770-236-6900											
Fax	770-236-5477											
Europe	Belgium	<ul style="list-style-type: none"> For Technical Support, call: <table> <tr> <td>Telephone</td> <td>32-56-445-197</td> </tr> <tr> <td>Fax</td> <td>32-56-445-155</td> </tr> </table> For <i>Customer Service</i> questions or to request an RMA number, call: <table> <tr> <td>Telephone</td> <td>32-56-445-133</td> </tr> <tr> <td>Fax</td> <td>32-56-445-118</td> </tr> </table> 	Telephone	32-56-445-197	Fax	32-56-445-155	Telephone	32-56-445-133	Fax	32-56-445-118		
Telephone	32-56-445-197											
Fax	32-56-445-155											
Telephone	32-56-445-133											
Fax	32-56-445-118											
Asia-Pacific Australia	Hong Kong	<table> <tr> <td>Telephone</td> <td>852-2522-5059</td> </tr> <tr> <td>Fax</td> <td>852-2522-5624</td> </tr> </table>	Telephone	852-2522-5059	Fax	852-2522-5624						
Telephone	852-2522-5059											
Fax	852-2522-5624											

Continued on next page

Product Support, Continued

Region	Assistance Centers	Telephone and Fax Numbers
Brazil	Brazil	<ul style="list-style-type: none">• For <i>Technical Support</i>, call: Telephone 55-11-3845-9154 ext 230 Fax 55-11-3845-2514• For <i>Customer Service</i> questions or to request an RMA number, call: Telephone 55-11-3845-9154 ext 244 Fax 55-11-3845-2514
South America, other than Brazil	Argentina	Telephone 54-23-20-403340 ext 109 Fax 54-23-20-403340 ext 103
Mexico Central America	Mexico	Telephone 52-55-52-61-8731 ext 8731 Fax 52-55-52-61-8699

Return Products for Repair

Introduction

You must have a return material authorization (RMA) number to return a product. Contact the nearest customer service center and follow their instructions.

Returning a product to Scientific-Atlanta for repair includes the following steps:

- Obtaining a RMA number
- Obtaining a customer service center shipping address
- Packing and shipping the product

Obtaining an RMA Number and Shipping Address

You must have an RMA number to return products.

RMA numbers are valid for 60 days. If you already have a number, but it is older than 60 days, you must contact a customer service representative to revalidate the number. You can return the product after the RMA number is revalidated.

Follow these steps to obtain an RMA number and shipping address.

1. Contact a customer service representative to request a new RMA number or revalidate an existing one.

Refer to the earlier section titled **Support Telephone Numbers** to find a customer service telephone number in your area.

2. Provide the following information to the customer service representative:
 - Product name, model number, part number, serial number (if applicable)
 - Quantity of products to return
 - A reason for returning the product
 - Your company name, contact, telephone number, email address, and fax number
 - Any service contract details
 - Purchase order number of repair disposition authority, if available

Result: The customer service representative issues the RMA number and provides the shipping address.

Continued on next page

Return Products for Repair, Continued

2. **Notes:** If you cannot provide a purchase order number:
- (Continued)
- A proforma invoice listing all costs incurred will be sent to you at the completion of product repair.
 - Customer service must receive a purchase order number within 15 days after you receive the proforma invoice.
 - Products can accrue costs through damage or misuse, or if no problem is found. Products incurring costs will not be returned to you without a valid purchase order number.
3. Proceed to **Packing and Shipping the Product.**

Packing and Shipping the Product

Follow these instructions to pack the product and ship it to Scientific-Atlanta.

1. Are the product's original container and packing material available?
 - If **yes**, pack the product in the container using the packing material.
 - If **no**, pack the product in a sturdy, corrugated box, and cushion it with packing material.

Important:

- You are responsible for delivering the returned product to Scientific-Atlanta safely and undamaged. Shipments damaged due to improper packaging may be refused and returned to you at your expense.
 - Do not return any power cords or accessories.
2. Write the following information on the outside of the container:
 - Your name
 - Your complete address
 - Your telephone number
 - RMA number
 - Problem description

Note: Absence of the RMA number may delay processing of product repair and/or result in the equipment being returned unrepaired. Include the RMA number in all correspondence.
 3. Ship the product to the address provided by the customer service representative.

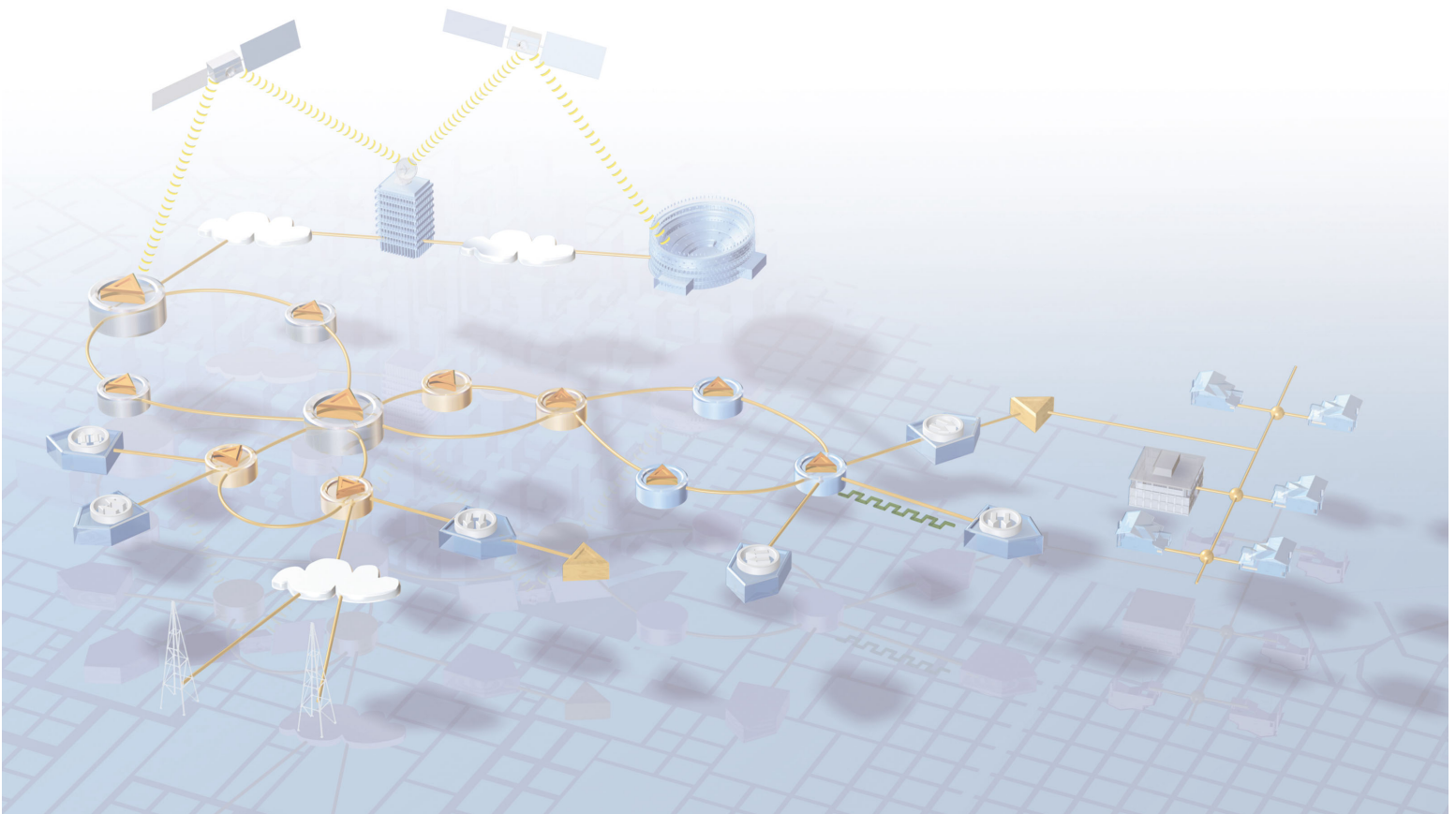
Note: Scientific-Atlanta does not accept freight collect. Be sure to prepay and insure all shipments.
-

Appendices

Appendix A — Technical Specifications

Appendix B — Quick Installation Reference

Appendix C — Backup Configuration



Appendix A

Technical Specifications

Overview

Introduction

This appendix describes the technical specifications of the Apollo MKII™.

In This Appendix

This appendix contains the following topics.

Topic	See Page
General Specifications	A-2
Remote Control and Configuration Ports	A-3

General Specifications

Temperature

Item	Specification
Ambient temperature range	
• Within Specs	0 to 50 °C / 32 to 122 °F
• Operation	0 to 50 °C / 32 to 122 °F
• Storage	-20 to 80 °C / -4 to 176°F

Power Supply

Item	Specification
Power Supply AC	
• Nominal Input Voltage Range	100 - 240 V AC
• Fuse	T 2 A - 250 V AC
• Power Consumption	13 W
• Max Current	0.2 A
Power Supply DC (optional)	
• Nominal Input Voltage Range	-48 V DC - -60 V DC
• Fuse	T 4 A - 250 V AC
• Power Consumption	11 W
• Max Current	0.3 A

Weight and Dimensions

Item	Specification
Weight	Approx. 5 kg / 9.71 lbs
Dimensions	
• In mm	44.5 H x 483 W x 470 D
• In inches	1.75 H x 19 W x 18.5 D

Remote Control and Configuration Ports

Ports

Item	Specification
Ethernet port	10/100Base-T port, RJ-45 connector
RCDS Port (selection between RS-485 <i>or</i> RS-232 with jumper configuration)	
• RS-485	Male, 9 pin Sub-D connectors.
• RS-232 DTE	Male, 9 pin Sub-D connectors.
CLI Port	Male, 9 pin Sub-D connector (RS-232 DTE)

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Appendix B

Quick Installation Reference

Overview

Introduction

This appendix gives an overview of the steps to take to install an Apollo MKII™.

In This Appendix

This appendix contains the following topics.

Topic	See Page
Installation Steps	B-2

Installation Steps

More Information

This 'Quick Installation Reference' gives a summary of the installation procedures described in the different chapters of this manual. If you are not familiar with these procedures, please read the entire manual first before continuing.

Scenario 1

If you are installing multiple Apollo MKII devices and you know the serial number of each device – OR - you are configuring a single Apollo MKII device.

Repeat the following steps for each device

1. Decide whether you want to connect one to 31 RCDS devices via RS-485 or a single device via RS-232.
Note: If you want to use RS-232, see the sub topic **Configuration of the RCDS Port** in topic **Connecting Cables**, Section B **Connecting Cables** of Chapter 2 **Installation**.
2. Mount the Apollo MKII in the rack where it will be used.
3. Install the RCDS devices that will be managed by the Apollo MKII, and connect these devices to the correct Apollo MKII RCDS port.
4. Power on the Apollo MKII device, and check that the **Power** LED on the front is on.

Common steps for all devices

5. Connect all Apollo MKII devices to the local Ethernet network
6. Connect at least one PC or portable to the same local network.
7. Start the Scientific-Atlanta IP Configuration tool. If the tool was already running, press reload.
8. Look to the topic **IP Configuration** in Section C **Network Configuration** of Chapter 2 **Installation** to assign an IP address, net mask and gateway address to each of the Apollo MKII devices.
9. On the Copernicus that will manage the Apollo MKII:
 - If this driver is not yet installed, install the **Apollo Protocol** driver now.
 - Open the Apollo Protocol **Properties**, and add an entry for each Apollo MKII device.
 - Double-click on the line representing the Apollo MKII device, and configure which RCDS devices are connected to the Apollo MKII.
 - Wait until the RCDS devices appear under **New Devices**.
 - Map these devices.
 - You can now access the RCDS devices from ROSA/Copernicus.

Continued on next page

Installation Steps, Continued

Scenario 2

If you are installing multiple Apollo MKII devices and you don't know the serial number of each devices.

Repeat the following steps for each device

1. Decide whether you want to connect one to 31 RCDS devices via RS-485 or a single device via RS-232.
Note: If you want to use RS-232, see the sub topic **Configuration of the RCDS Port** in topic **Connecting Cables**, Section B **Connecting Cables** of Chapter 2 **Installation**.
2. Mount the Apollo MKII in the rack where it will be used.
3. Install the RCDS devices that will be managed by the Apollo MKII, and connect these devices to the correct Apollo MKII RCDS port.
4. Power on the Apollo MKII device, and check that the **Power** LED on the front is on.
5. If a network cable is already connected to the Apollo MKII device, disconnect it now.
6. Connect a PC or portable via a crossed cable to the Apollo MKII.
7. Start the Scientific-Atlanta IP Configuration tool. If the tool was already running, stop it and restart it.
8. Look to the topic **IP Configuration** in Section C **Network Configuration** of Chapter 2 **Installation** to assign an IP address, net mask and gateway address to each of the Apollo MKII devices.
9. Disconnect the crossed cable, and connect the Apollo MKII device back to the Ethernet network.

Common steps for all devices

10. On the Copernicus that will manage the Apollo MKII:
 - If this driver is not yet installed, install the **Apollo Protocol** driver now.
 - Open the Apollo Protocol **Properties**, and add an entry for each Apollo MKII device.
 - Double-click on the line representing the Apollo MKII device, and configure which RCDS devices are connected to the Apollo MKII.
 - Wait until the RCDS devices appear under **New Devices**.
 - Map these devices.
 - You can now access the RCDS devices from ROSA/Copernicus.

Appendix C

Backup Configuration

Overview

Introduction

This appendix gives an example on how to configure backup for a topology with help of the ROSA™ EM functionality of the Apollo MKII™.

In This Appendix

This appendix contains the following topics.

Topic	See Page
General	C-2
Configuration	C-3
Backup Operation	C-8
Restore Operation	C-10

General

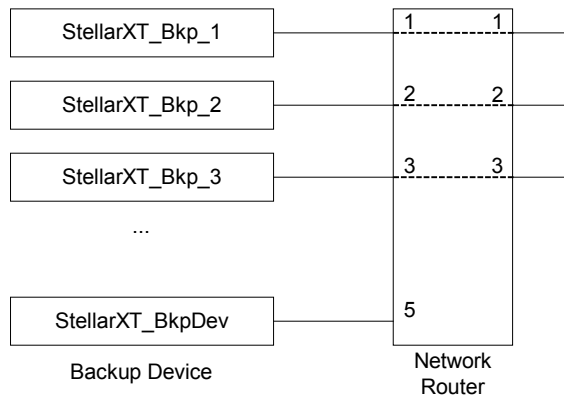
Before You Start

In this appendix you can find the configuration steps that are needed to obtain backup operation on a Stellar XT topology. For more information concerning the operation, please refer to the topic **Backup Operation of Chapter 5 - ROSA EM Configuration**.

Before starting with the configuration, it is assumed that all necessary ROSA EM drivers are installed properly and that the Stellar XT devices are available in the ROSA Server Explorer.

Topology

The topology exists of Stellar XT devices (one device is used as a backup device) and an output router.



Configuration

Normal Devices

The normal devices in the topology are: StellarXT_Bkp_1, StellarXT_Bkp_2 and StellarXT_Bkp_3. The following procedure shows how to configure these devices.

1. In the ROSA Server Explorer right-click on the name of a normal Stellar XT device and select **Properties**.

Example: The selected device is StellarXT_Bkp_1.

Result: The user interface opens.

2. Select the 'Backup' tab page of the user interface. In the 'Sub Pages' tree view on the left side click on **General Config**.

The screenshot shows a configuration window with two tabs: 'Status_Configuration' and 'Backup'. The 'Backup' tab is selected. On the left, a 'Sub Pages' tree view shows a folder structure: 'Backup_1.2.2.0.1.0' containing 'General Config', 'Device Scripts', 'Input Router', and 'Output Router'. 'General Config' is selected. The main area is titled 'General Config' and contains several fields:

- Restore Mode: manual (dropdown)
- Priority: 1 (text input)
- Triggers: relay_A (dropdown)
- Comm. Error as Trigger: yes (dropdown)
- Backup device: StellarXT_BkpDev (text input)
- Backup Macro Number: z1 (dropdown)
- Restore Macro Number: z1 (dropdown)

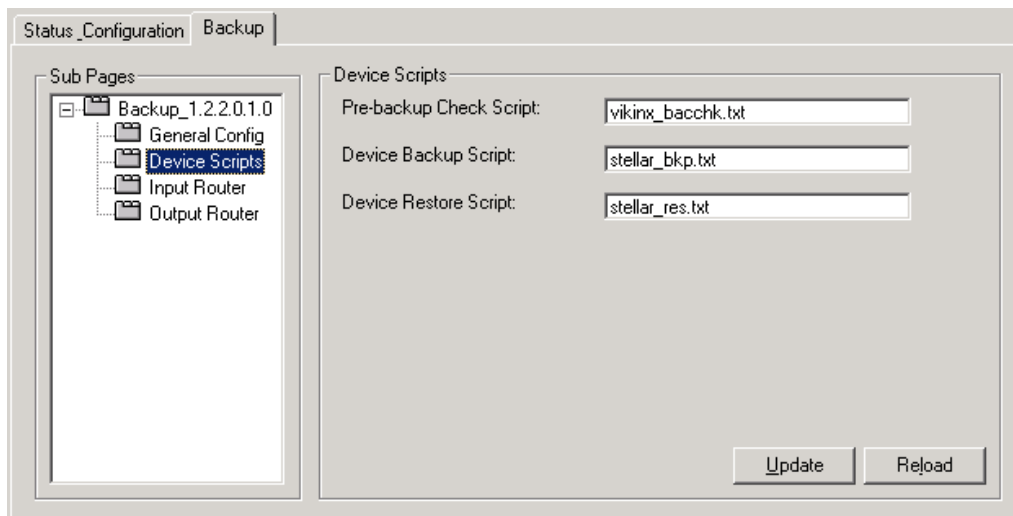
At the bottom right, there are 'Update' and 'Reload' buttons.

3. Enter the following configuration information:
 - **Restore Mode:** Define how the restore is performed.
 - **Priority:** Assign a priority to the selected device.
 - **Triggers:** Specify the source that will be the trigger for backup.
 - **Comm. Error as Trigger:** Specify if a communication error can be a trigger for backup.
 - **Backup device:** Enter the name of the Stellar XT backup device.
 - **Backup Macro Number:** Select the macro number that corresponds with the backup operation for the selected device.
 - **Restore Macro Number:** Select the macro number that corresponds with the restore operation for the selected device.

Continued on next page

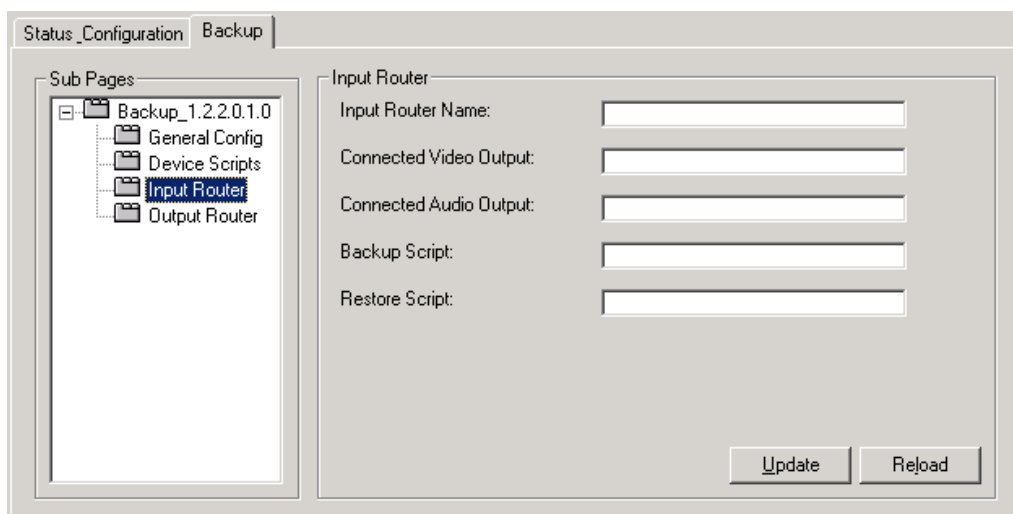
Configuration, Continued

4. In the 'Sub Pages' tree view click on **Device Scripts**.



The screenshot shows a web interface with two tabs: 'Status_Configuration' and 'Backup'. The 'Backup' tab is active. On the left, a 'Sub Pages' tree view shows a folder structure: 'Backup_1.2.2.0.1.0' containing 'General Config', 'Device Scripts' (highlighted in blue), 'Input Router', and 'Output Router'. The main area is titled 'Device Scripts' and contains three text input fields: 'Pre-backup Check Script' with the value 'vikinx_bacchk.txt', 'Device Backup Script' with 'stellar_bkp.txt', and 'Device Restore Script' with 'stellar_res.txt'. At the bottom right are 'Update' and 'Reload' buttons.

5. Specify the scripts used by the device:
 - **Pre-backup Check Script:** Enter the name of the script that checks if backup is possible for the selected device.
 - **Device Backup Script:** Enter the name of the script that is called in case of a backup operation.
 - **Device Restore Script:** Enter the name of the script that is called in case of a restore operation.
6. In the 'Sub Pages' tree view click on **Input Router**.



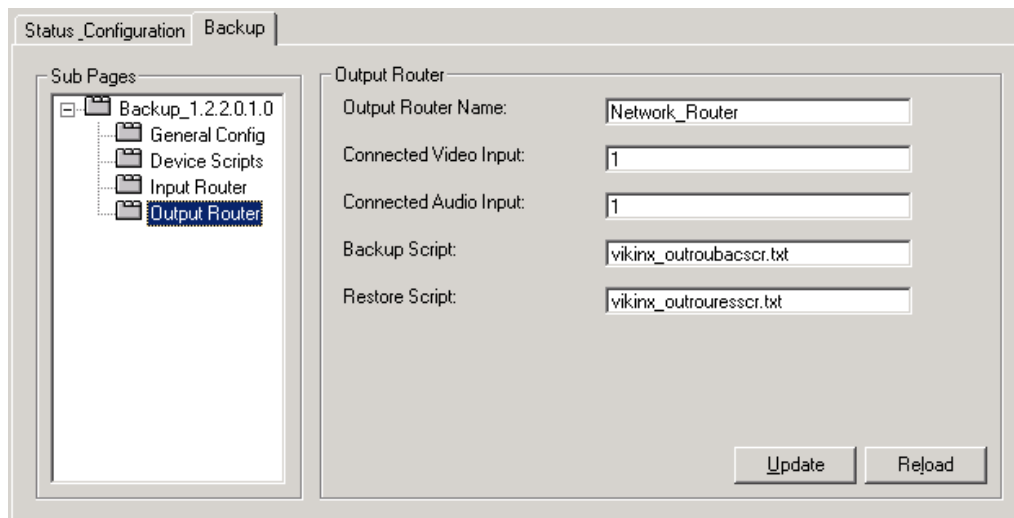
The screenshot shows the same web interface as before, but the 'Input Router' item in the 'Sub Pages' tree view is now highlighted in blue. The main area is titled 'Input Router' and contains five text input fields: 'Input Router Name', 'Connected Video Output', 'Connected Audio Output', 'Backup Script', and 'Restore Script'. All fields are currently empty. At the bottom right are 'Update' and 'Reload' buttons.

7. Since there is no input router present in the topology example, leave all edit fields empty.

Continued on next page

Configuration, Continued

8. In the 'Sub Pages' tree view click on **Output Router**.



The screenshot shows a web-based configuration interface. At the top, there are two tabs: 'Status_Configuration' and 'Backup'. The 'Backup' tab is active. On the left, there is a 'Sub Pages' tree view with the following structure: 'Backup_1.2.2.0.1.0' (expanded), 'General Config', 'Device Scripts', 'Input Router', and 'Output Router' (selected and highlighted in blue). On the right, the 'Output Router' configuration page is displayed. It contains five input fields: 'Output Router Name' (value: Network_Router), 'Connected Video Input' (value: 1), 'Connected Audio Input' (value: 1), 'Backup Script' (value: vikinx_outroubacscr.txt), and 'Restore Script' (value: vikinx_outrouresscr.txt). At the bottom right of the configuration area, there are two buttons: 'Update' and 'Reload'.

9. Enter the following information concerning the output router:
 - **Output Router Name:** Enter the name of the output router.
 - **Connected Video Input:** Enter the router input port number to where the video signal of the selected Stellar XT device is connected.
 - **Connected Audio Input:** Enter the router input port number to where the audio signal of the selected Stellar XT device is connected.
 - **Backup Script:** Enter the name of the script that is called to switch the output router in case of a backup operation.
 - **Restore Script:** Enter the name of the script that is called to switch the output router in case of a restore operation.
10. Click on **Apply** to confirm all entries.
11. Repeat steps 1 to 10 for all the other normal devices that take part of the backup configuration.

Backup Device

The backup device in the topology is named StellarXT_BkpDev. The procedure below shows how to configure this device.

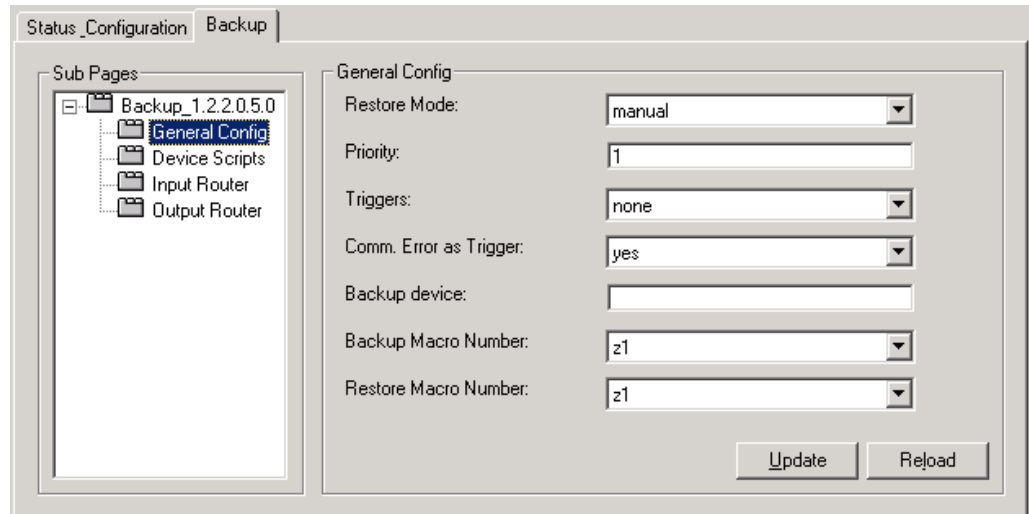
1. In the ROSA Server Explorer right-click on the name of the Stellar XT backup device and select **Properties**.

Result: The user interface opens.

Continued on next page

Configuration, Continued

2. Select the 'Backup' tab page of the user interface. In the 'Sub Pages' tree view on the left side click on **General Config**.

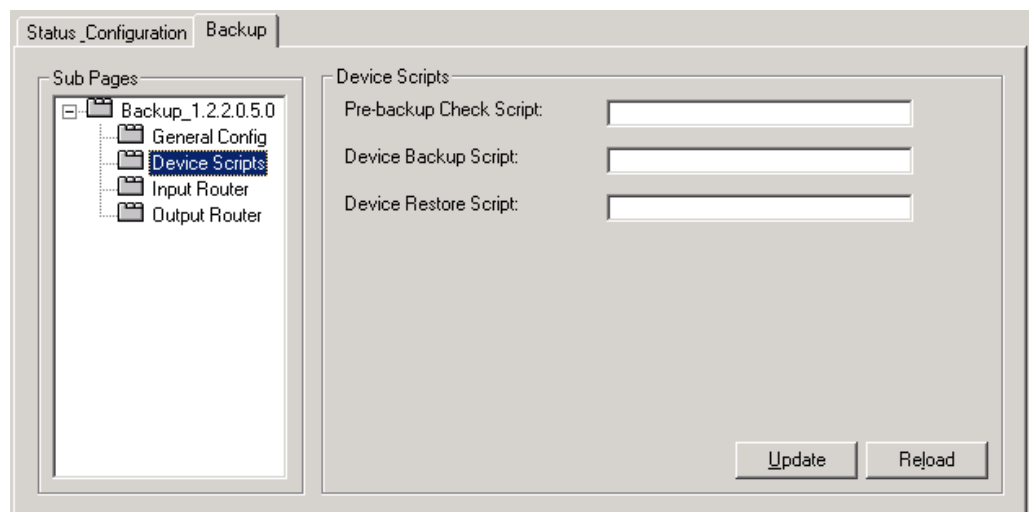


The screenshot shows a web interface with two tabs: 'Status_Configuration' and 'Backup'. The 'Backup' tab is active. On the left, a 'Sub Pages' tree view shows a folder 'Backup_1.2.2.0.5.0' containing 'General Config', 'Device Scripts', 'Input Router', and 'Output Router'. 'General Config' is selected. The main area is titled 'General Config' and contains the following fields:

Restore Mode:	manual
Priority:	1
Triggers:	none
Comm. Error as Trigger:	yes
Backup device:	
Backup Macro Number:	z1
Restore Macro Number:	z1

At the bottom right are 'Update' and 'Reload' buttons.

3. Only a few edit fields are of importance in case of a backup device:
 - **Restore Mode:** Not important.
 - **Priority:** Not important.
 - **Triggers:** Specify that there is no trigger for backup.
 - **Comm. Error as Trigger:** Not important.
 - **Backup device:** Leave this edit field empty.
 - **Backup Macro Number:** Not important.
 - **Restore Macro Number:** Not important.
4. In the 'Sub Pages' tree view click on **Device Scripts**.



The screenshot shows the same web interface as above, but now the 'Device Scripts' sub-page is selected in the tree view. The main area is titled 'Device Scripts' and contains three text input fields:

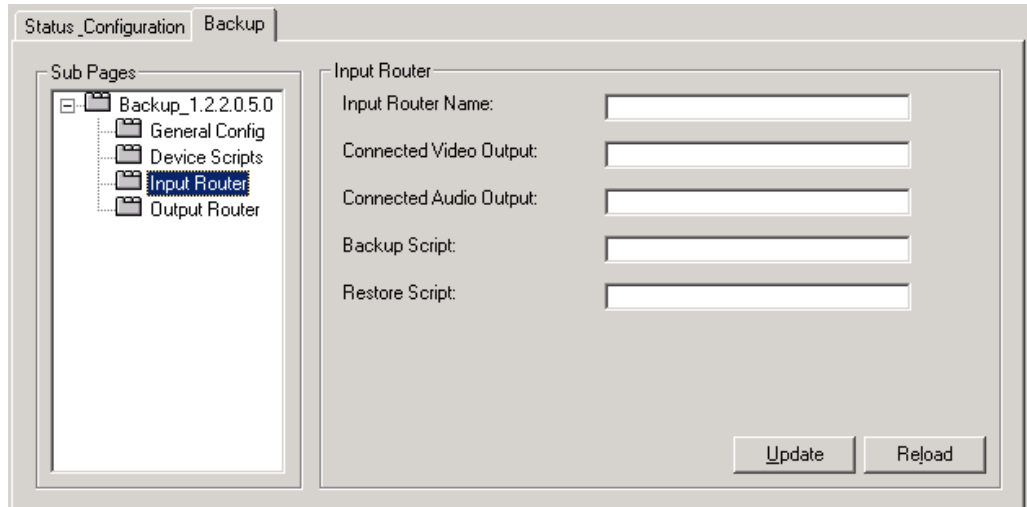
Pre-backup Check Script:	
Device Backup Script:	
Device Restore Script:	

At the bottom right are 'Update' and 'Reload' buttons.

Continued on next page

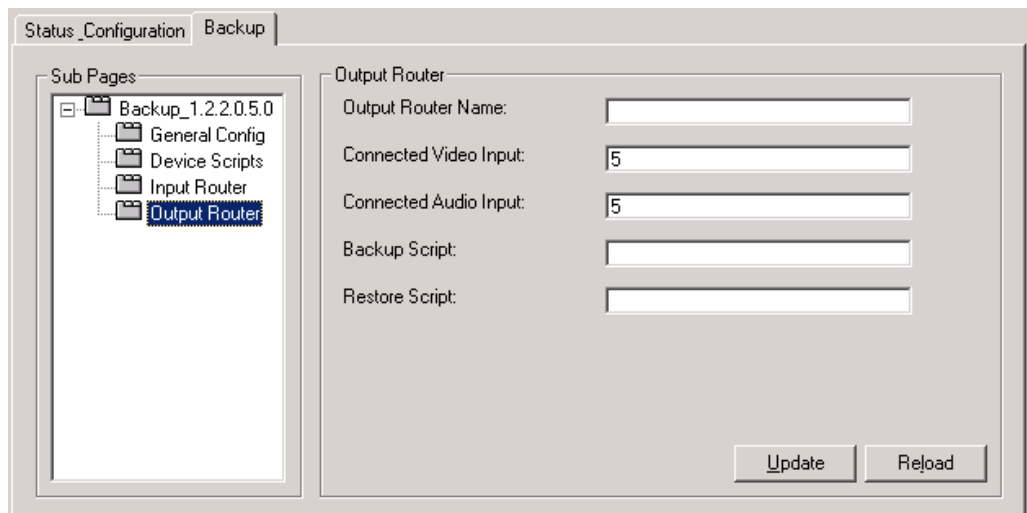
Configuration, Continued

5. Leave all edit fields empty.
6. In the 'Sub Pages' tree view click on **Input Router**.



The screenshot shows a configuration window with two tabs: 'Status_Configuration' and 'Backup'. On the left, a 'Sub Pages' tree view is expanded to show 'Backup_1.2.2.0.5.0', which contains 'General Config', 'Device Scripts', 'Input Router', and 'Output Router'. The 'Input Router' sub-page is selected. The main area displays the 'Input Router' configuration fields: 'Input Router Name', 'Connected Video Output', 'Connected Audio Output', 'Backup Script', and 'Restore Script'. All these fields are empty text boxes. At the bottom right, there are 'Update' and 'Reload' buttons.

7. Since there is no input router present in the topology example, leave all edit fields empty.
8. In the 'Sub Pages' tree view click on **Output Router**.



The screenshot shows the same configuration window, but now the 'Output Router' sub-page is selected in the 'Sub Pages' tree view. The main area displays the 'Output Router' configuration fields: 'Output Router Name', 'Connected Video Input', 'Connected Audio Input', 'Backup Script', and 'Restore Script'. The 'Connected Video Input' and 'Connected Audio Input' fields contain the number '5'. All other fields are empty. At the bottom right, there are 'Update' and 'Reload' buttons.

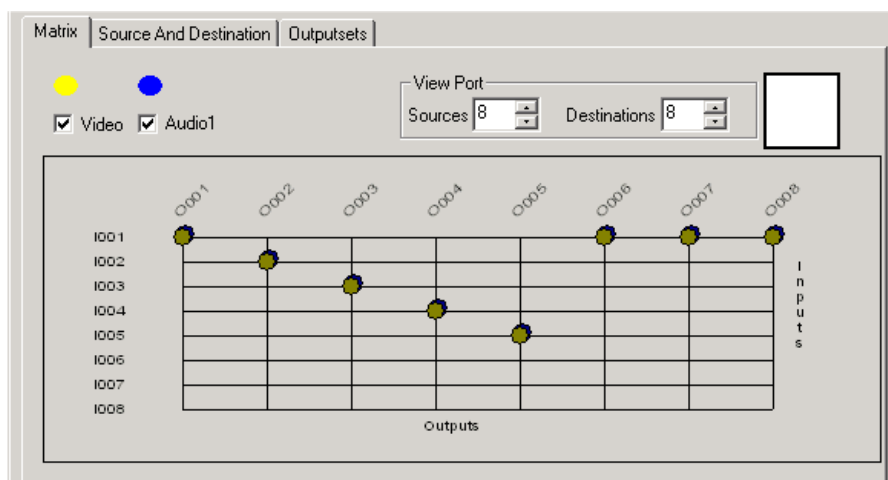
9. Just enter the router input port numbers to where the video and audio signal of the Stellar XT backup device are connected.
 10. Click on **Apply** to confirm all entries.
-

Backup Operation

Before Backup

To check if the configuration of the Stellar XT topology devices is correctly done, try to simulate an error condition that will trigger the backup operation. But first check if the following requirements are fulfilled:

- The output router has to be configured for a normal operation condition:
 - Right-click on the output router name and select **Properties**.
 - On the 'Matrix' tab page set the router cross points according to the topology.
Input port 1 is internally routed to output port 1,
Input port 2 is internally routed to output port 2,
Input port 3 is internally routed to output port 3,
...



- Click on **Apply** to confirm the routing.
- Leave the user interface open to see the changes in case of a backup operation.
- In the previous topic **Configuration** the normal Stellar XT devices are set to use the 'Relay A' status as a trigger for backup. Configure the alarm processing in such a way that when a certain alarm occurs, it is reflected in the status of Relay A.
Example: A good alarm to test is 'Input Loss'.
- The topology is ready for testing. Generate an alarm to trigger the backup.
Example: Generate an 'Input Loss' on the StellarXT_Bkp_1 by removing the signal to the input of the device.

Continued on next page

Backup Operation, Continued

After Backup

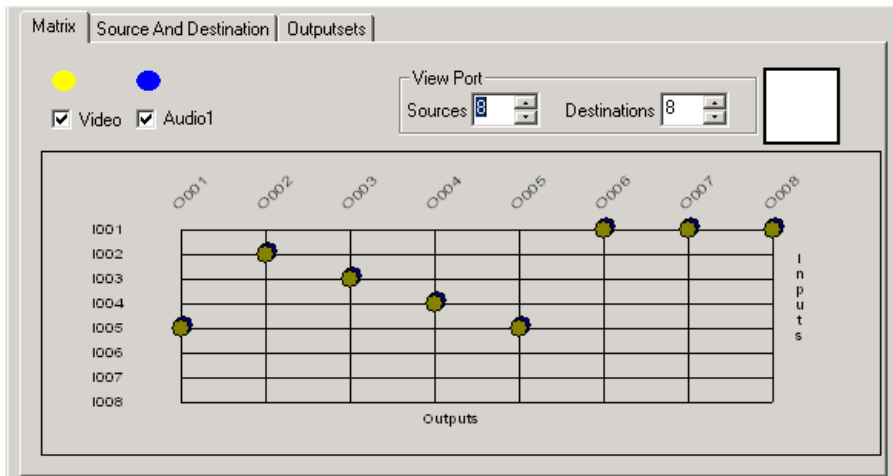
Check the following items to see if the backup operation is successful.

Signal Recovery

Due to the input signal removal, the output signal of StellarXT_Bkp_1 is interrupted. After backup the output signal recovers, but is now generated by StellarXT_BkpDev.

Router Switching

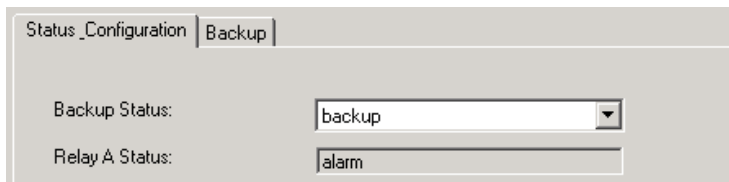
On the user interface of the output router, the cross point 'input port 1 to output port 1' has changed to 'input port 5 to output port 1' with help of the backup script.



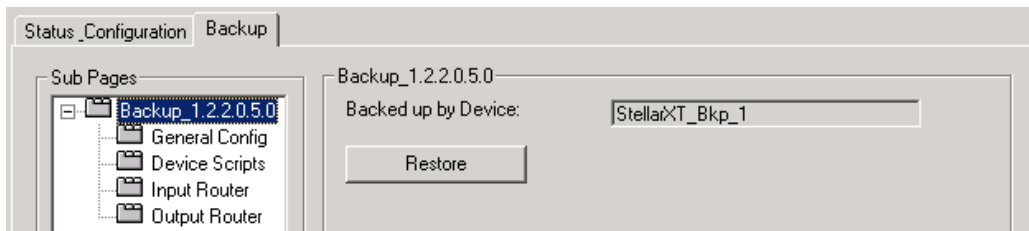
Device Status

The 'Status Configuration' tab page of the Stellar XT user interfaces shows the status:

- A normal device indicates the alarm status of Relay A and that it is in backup.



- The backup device indicates that it replaces a normal device. On the 'Backup' tab page the name of the normal device in backup can be seen.



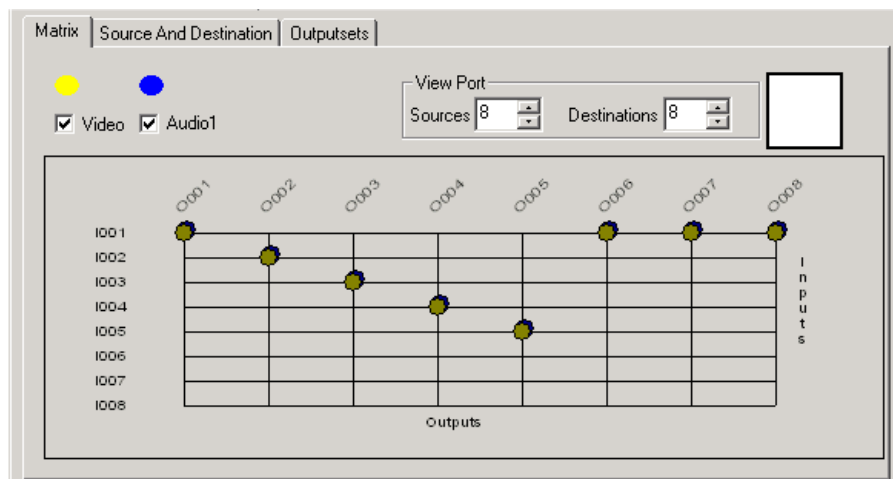
Restore Operation

Restore Mode

In the topology example of the topic **Configuration** the restore mode is set to 'manual':

- Restore is not executed automatically once the alarm condition disappears.
- The restore operation must be started manually.

During the restore operation the output router is switched back to the original routing with help of the restore script.



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Glossary

Term, Acronym, Abbreviation	Meaning
AC	Alternate Current
AWG	American Wire Gauge
CSA	Canadian Standards Association
DC	Direct Current
EM	Element Manager
EMC	ElectroMagnetic Compatibility
EN	European Norm
ESD	ElectroStatic Discharge
HFC	Hybrid Fiber/Coax
IEC	International Electro technical Commission
ID	Identification
IP	Internet Protocol
LED	Light Emitting Diode
MAC	Medium Access Control
NMS	Network Management System
PC	Personal Computer
PCM	Process Control Module
RAN	Return Authorization Number
RMA	Return Material Authorization
RCDS	Remote Control and Diagnostics System
ROSA	RCDS Open System Architecture
RX	Receiver
SELV	Safety Extra-Low Voltage
SNMP	Simple Network Management Protocol

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