

INSTRUCTION MANUAL

All Sky Imager
Operator Manual

ASI-16



EKO

Table of Content

1	Introduction	3
1.1	Overview	3
1.2	Read This First	3
1.3	Intended Use, Qualified Installation	4
2	Important General Remarks	5
2.1	This Operator Manual	5
2.2	Identification, Name-Plate, Technical Data	5
2.3	Incoming Delivery: Check of Packaging and Content	5
2.4	Use of Packaging, Waste Disposal, Recycling	6
3	Safety Warnings - Safe Installation	7
3.1	Qualified and Trained Personnel	7
3.2	Critical Out-Door / In-Door Installation	7
3.3	Specific Safety Risks and Warnings	8
3.3.1	WARNING! - RISK OF INJURY OR DAMAGE BY ELECTRICITY	8
3.3.2	WARNING! - RISK OF INJURY DURING MECHANICAL MOUNTING	8
3.3.3	WARNING! - RISK OF ELECTRICAL DAMAGES AND INJURIES	8
3.3.4	WARNING! - RISK OF INJURY BY COMPONENTS FALLING DOWN	8
3.3.5	WARNING! - RISK OF DAMAGE THROUGH LIGHTNING STROKE	8
3.3.6	WARNING! - RISK OF DATA LOSS - NO "ZERO-TOLERANCE" USE	9
3.3.7	ADVISE! - TAKE SPECIAL CARE WITH THE GLASS DOME	9
4	Internet Services: CRM - FTP - DDNS	10
4.1	How to connect to CMS Internet Services	10
4.2	CMS CRM: To check and manage imager settings (and clients)	10
4.2.1	"Imagers": Check MAC-ID, change location, create LI/PW-sets.	11
4.2.2	"Clients": Create new clients, change client data, allocate imagers.	12
4.3	CMS FTP: To up/download JPG images, docs and software	12
4.4	CMS DDNS: To access ASI Imagers via WAN (Internet)	12
5	Network and Software - Installation	13
5.1	IT Administration - LAN (WAN) - Basics (Pre-Requirements)	13
5.2	HTTP Access to ASI-16 Imager Homepage	13
5.3	Network Storage (FTP, NAS, Fileshare)	13
5.4	Setup of PC's / LT'S for Monitoring and Configuration	14
5.5	ASI-16/50 Imager - Electrical and Network Hardware Connections	14
5.6	HELP: Common IP-Access problems after relocation	15

5.7	Use of ASI-MANAGER for ASI-IP Identification	15
5.8	HELP: ASI-IP cannot be identified via "ASI-Manager"	16
5.8.1	Find out and note the MAC-ID of your ASI-16	17
5.8.2	Generate ALIAS-IP via "CMS-ASI16_Alias-IP-Generator.xml"	17
5.8.3	STILL PROBLEMS to access, even via ALIAS-IP?	17
5.9	Software Update and Restore (ASI-Manager)	18
6	Customizing ASI Imager (Configuration)	20
6.1	HELP: How to work best with this Operator Manual Section	20
6.2	Web Browser Access - Login Procedure	20
6.3	ASI-16 Main Page - Home Page - Summary	21
6.4	Home Page - Navigation and Data Content	22
6.5	Imager Network / LAN Settings	24
6.6	Imager Location, GPS Coordinates, Time Zone	24
6.7	JPG Image Capturing - Shooting	25
6.8	Network Storage Settings for JPG (FTP, NAS, FileShare)	27
6.9	Backup Storage (Temporary Storage on CF Card)	28
6.10	Peripherals Controlled (Settings, Data Logger)	28
6.11	Networking - CMS-DDNS (Dynamic Domain-Name)	30
6.12	Security Settings - User Name - Password	30
6.12.1	WARNING - Security Data are lost after each software update/restore	31
6.13	Service - Maintenance (Reboot, PeriCon Firmware Update)	31
7	Mechanical Installation Guide	32
8	Commercials	36
8.1	Terms of Warranty	36
8.2	Contact	37
8.3	Licenses, Liability, Confidentiality, Copyrights	38
8.3.1	MPEG-4 VISUAL TECHNOLOGY	38
8.3.2	LIABILITY	38
8.3.3	CONFIDENTIALITY	38
8.3.4	COPYRIGHTS	38
9	Appendix	39
9.1	Spare Parts - Part Order Numbers	39
9.2	Declaration of Conformity:	40

1 Introduction

1.1 Overview

CMS-Schreder ASI-16/50 is the latest and most advance total sky imager for scientific and operational meteorology, atmospheric science, climate research and industrial solar energy operations, based on state-of-the-art network and web browser technology, "High Power over Ethernet" for most easy cabling, and a rugged outdoor proof housing.

Its camera hardware features a robust coated quartz glass dome, 180°/360° fisheye optics, about 4-Megapixle resolution sensor with superb image quality, and an IR-cut filter avoid degradation of the sensor by long time direct exposure to the sun disk.

The ASI imaging software presents life stream videos via a user friendly web GUI, captures pre-scheduled all sky JPG pictures, and automatically transfers those JPGs to a network file storage via standard protocols (TCP/IP, FTP, File Share, HTTP). In case of network or network file storage down, the imager will temporarily backup JPG's on the built-in 4 GB CF memory, and will restart transfers as soon as the network is up again.

The ASI-16/50 comes with built-in ventilation and up to 60W airflow heating, to minimize condensation on the glass dome and to quickly remove eventual raindrops and snow. The system has been tested for harsh environments from -40°C up to more than +50°C air temperature. Its double-cover design combined with its forced ventilation will minimize the risk of damages because of long time exposures to very strong direct sun radiation.

When combined with the CMS "Cloud Analysis Software" (FindClouds, CBH, ...) the ASI images can be used to calculate cloud coverage ratio, thick and thin cloud ration, average cloud base height (with two ASI-16 combined), and in the near future also cloud movement (direction, relative speed), and sun shadowing forecasts. For further details, limitations and restrictions please refer to the corresponding software documentation.

With its outstanding combination of advanced software and hardware, the ASI-16 Imager is indisputably the top choice for atmospheric scientists and for solar energy industrials.

1.2 Read This First

ASI-16 is a "network device", to be connected to a minimum 100 MBit LAN (Local Area Network), via a router or switch. Its network installation, configuration and use should be straightforward for those who have basic networking knowledge.

IMPORTANT: For proper function, especially for storing the captured images, the ASI-16 requires a "Network Storage" to be available via LAN. It can be a local or remote FTP server, a NAS, or a file share on a server or PC. - This "Network Storage" hardware is NOT included in CMS ASI scope of delivery, and must be prepared by the customers.

1.3 Intended Use, Qualified Installation

ASI-16 is intended to be used for capturing all-sky images in the visible spectrum, for online or later visual display, inspection and analysis of clouds during daytime. It shall be mounted at an elevated location with a best-possible 180° field of view to the sky and the horizon, and with a minimum of disturbing obstacles (trees, buildings, masts, ...).

2 Important General Remarks

2.1 This Operator Manual

This Manual is an essential and integrated part of the equipment. The information herein will help you to maintain the equipment in safe and stable working conditions.

Before starting to work with the equipment you must read and understand this manual.

Keep this manual close to the equipment, during the entire life cycle of the equipment. Any person which intends to work on the equipment, must first read and confirm having understood this manual. In case of that this manual has got lost or damaged, please contact your CMS sales representative or CMS in Austria for receiving a new copy.

Modifications on the equipment and on this manual are subjected to the manufacturer or his authorized representative, only. You shall use original spare parts as supplied or approved by the manufacturer. - What so ever non-authorized modifications and use of what so ever non qualified spare parts will lead into loss of warranty.

2.2 Identification, Name-Plate, Technical Data

The ASI-16 imager is marked with a "Name-Plate Sticker", indicating the equipment name and model code (ASI-16/50), year and month of manufacturing, serial number (16nnn) and the LAN adapter MAC-ID. This name plate sticker is applied inside the cover hood, and smaller stickers on the "Peripherals Controller Box" and the bottom of the imager head.

Image Sensor	1/2.5" Progressive CMOS	External AC Power:	110V-240V, 50/60 Hz
Sensor Resolution	2560 x 1920, 5 Megapixel	Power consumption:	<20W / Heater On: <80W
Useable Resolution	1920x1920 (Fisheye)	Dimensions:	D= 180mm, H= 80/150/210mm
Focal Length	f = 1.5 mm	Operating Temp.:	From -40°C to +50°C
Aperture	F2.8	Dimensions:	D= 180mm, H= 80/150/210mm
Field of View	180°	Weight (Imager):	2,7 kg, including rod footer
WDR Technology	WDR Enhanced	JPG file upload:	HTTP, SMTP, FTP, NAS server
		Backup Storage:	MicroSD CF card, 4 GB

2.3 Incoming Delivery: Check of Packaging and Content

Upon receiving the delivery, immediately check the packaging and the content for any visible damages. If so, make pictures for evidence and document in writing, and send your damage claim

to your forwarder, to your CMS agent and to CMS in Austria, for qualified damage insurance claims. - Also check completeness of the scope of delivery, and immediately report any eventually missing components.

2.4 Use of Packaging, Waste Disposal, Recycling

Packaging material should be stored and used for later safe transportation and shipping.

Upon end-of-life of whatsoever materials, equipment, components, accessories and wear parts, all such parts must be recycled and/or disposed according to applicable local laws and regulations at the country of operations. - During warranty time, defective spare parts must be returned to CMS, or must be recycled/disposed as above, subject to corresponding notice and advise by CMS or your local CMS agent.

3 Safety Warnings - Safe Installation

3.1 Qualified and Trained Personnel

This equipment must be installed, configured operated and maintained by such personnel ONLY, which has/have all necessary theoretical and practical knowledge, education and training to perform such tasks, especially sensitive and potentially risky or dangerous tasks related to mechanical, electrical and IT-related works.

Before starting to work with the equipment the operator or engineer must fully read and understand this manual. Knowledge of the technology and works involved, and detailed knowledge and understanding of the entire content of this manual is a fundamental requirement for safe and stable long lasting performance of this equipment.

3.2 Critical Out-Door / In-Door Installation

A part of ASI-16 components (Imager Head) is prepared to be installed in harsh out-door environment. But another part of the components (HPoE Injector, DC Power Supply, network router cable)) MUST be installed in in a dry indoor-like environment.

Check the below description to identify outdoor-prepared and indoor-only components:

	<p><u>OUT-DOOR PREPARED:</u></p> <ul style="list-style-type: none">- ASI-16 All Sky Imager- Rod mounting footer- 3 screws and rings, M8
	<p><u>OUTDOOR <-> INDOOR:</u></p> <p>Special HPoE-CAT5 Cable Typical length: 20m (10m) Other length: upon request</p>
	<p><u>IN-DOOR - ONLY !!!</u></p> <ul style="list-style-type: none">- Special CMS HPoE Injector- Power Adapter (48VDC / 90W)- AC Power Cord (100V-240V) <p>WARNING: Must be installed at dry and safe place with an indoor-like environment.</p>



NOTICE: The components as displayed in the picture(s) of this manual may deviated from the design of components in your delivery. Although slightly different in design, the basic minimum functions and the way of use will remain as described. - Significant changes will be described in the "Appendix".

3.3 Specific Safety Risks and Warnings

3.3.1 WARNING! - RISK OF INJURY OR DAMAGE BY ELECTRICITY

Before starting any works, have the DC power adapter disconnected from main power!

3.3.2 WARNING! - RISK OF INJURY DURING MECHANICAL MOUNTING

When working on an elevated platform or a ladder, you must wear qualified personal safety equipment (safety shoes, safety helmet, safety rope, roof railings) and tools.

3.3.3 WARNING! - RISK OF ELECTRICAL DAMAGES AND INJURIES

The components above marked as "INDOOR-ONLY" (special CMS HPoE Injector, Power Adapter, AC Power Cord) must be installed at indoor at a dry and safe place, or inside a water- and humidity-tight electrical cabinet. It MUST NOT be installed at an open outdoor place with the risk of exposure to water (rain, snow, ...) or high (condensing) humidity. - Water or high humidity may cause direct and indirect damage to the equipment and the network, and may lead to injury and even death by electrical shocks.

3.3.4 WARNING! - RISK OF INJURY BY COMPONENTS FALLING DOWN

Mechanical installation of the ASI-16 imager (mounting on an instrumentation mast or an instrumentation platform) must be performed by personnel experienced and trained in such work, and with qualified knowledge about the situation at the installation site. Personnel must ensure to mount the equipment at a stable and safe site, must properly fix and secure the equipment from falling down, even in the case of special environmental conditions (strong winds, tornados, earthquakes, ...). The equipment falling down may cause severe injury and even death.

3.3.5 WARNING! - RISK OF DAMAGE THROUGH LIGHTNING STROKE

Typically the ASI-16 will be installed at an elevated outdoor location, which increases the probability of a direct or indirect lightning stroke. It is technically impossible to protect the equipment from receiving or forwarding the lightning stroke pulse. The equipment DOES NOT INCLUDE any counter measures. - It is subject to the customer's decision to implement qualified measures at the point-of-entry (LAN connection, AC power connection), to protect his own internal

or peripheral equipment, and to connect or not-connect the mounting rod/platform to earthing / ground.

3.3.6 WARNING! - RISK OF DATA LOSS - NO "ZERO-TOLERANCE" USE

The equipment is NOT qualified for zero-tolerance applications. Although thoroughly tested, CMS cannot exclude residual risks of short term or long term data losses and/or system down. The equipment MUST NOT be used for super-critical applications.

3.3.7 ADVISE! - TAKE SPECIAL CARE WITH THE GLASS DOME

The "glass dome" is a critical sensitive optical component. Do not touch the dome with any tool, do not let it drop down, and use multiple soft wet tissues without any pressure when cleaning, to avoid scratches. A scratched dome is not subject to warranty replacement!

4 Internet Services: CRM - FTP - DDNS

CMS-Schreder provides some Internet-based services, which run on a CMS service-server connected via a very powerful hub, with 24h/7d supervised operations.

The CRM-service is critical and IMPORTANT for "daily use", because some settings directly influence the behaviour of ASI software updates / restores via the ASI-Manager.

Other services (FTP, DDNS) are provided for customer convenience, only. Those services may help the customer to speed up installation, or enable more easy access via Internet. Later on the customer may continue to use the CMS server services, or the customer may setup his own services on his own network and IT infrastructure.

4.1 How to connect to CMS Internet Services

Before or upon delivery of your imager you should have received an email with your "Personal Username/Password-Set" (LI/PW). - There is ONE individual LI/PW for each CMS agent/client account, or for a client sub-account generated by a CMS agent.

Username: The CMS account number of the agent/client (for example 20123).
Imager LI Name: "LI" followed by the same account number (for example LI20123)
Password: A combination of letters and digits, issued by CMS or by the agent.

This is the "one-for-all" LI/PW to be used for Imagers as well as for Internet Services.

With this LI/PW the customer/agent can access ALL imagers allocated to his account.

NOTICE: An Imager Login Name MUST start with "LI", followed by the account number.

With the same LI/PW you can access CMR to check and manage imager settings.

And you can use it to access your CMS-FTP-storage place through any FTP-Client

4.2 CMS CRM: To check and manage imager settings (and clients)

Open THIS WEB URL: <https://service.schreder-cms.com/crm/>

To further log-on, enter your "one-for-all" LI/PW (username and password).

Now, depending on if you are an "AGENT" or a "CLIENT", at the top line you will see a different number of navigation buttons. As "Client" you will see just one button "Imagers", with a list of your imagers. - As "Agent" you also will see "Clients", to manage your clients.

4.2.1 "Imagers": Check MAC-ID, change location, create LI/PW-sets.

To change settings for this imager, permanently. Settings will be transferred to the imager at the next RESTORE (!) by using the ASI-Manager. CRM settings will replace all eventual local changes on the imager via the imager Web-Gui! - New LI/PW and some other parameters will be transferred also by an ASI-Manager UPDATE!

Client: The Client/Customer (or the Agent) allocated to this Imager.

MAC-ID: The MAC-ID of the Imager, very important for ALIAS-IP's.

Note: To be used for important remarks or comments.

Firmware: Low level firmware of the imager camera head.

Location: Imager title and subtitle, GPS coordinates, for display at the ASI-GUI
Uncheck "customer location", if you want to change those settings.

Dynamic DNS: All entries are "read-only", for check and copy/paste only.

Domain: The CMS DDNS domain name of this imager.
Alternate HTTP Port 8080 eventually has to be changed,
if the WAN router is using "port translation".

IP Address: Latest updated WAN IP address of the imager.

Last Update: Last time the Imager has sent an IP update ping.

Imager Calibration: DO NOT CHANGE any of the settings herein!
CMS has calibrated the data before delivery.
Change of settings may reduce image quality!

Login / Password: Enter or change up to two additional LI/PW for this imager.
The Username(s) MUST begin with an ALPHA symbol!
New or changed LI/PW can be used AFTER the next UPDATE
or RESTORE of the imager by using the latest ASI-Manager.

[Press the green \[UPDATE\] button to permanently store your changes.](#)

Offline Package: To generate and download a "software update package".
Only for clients / installations with very strict firewall regulations.
Only for updates, if the ASI-Manager has no Internet access.

Step 1:"Create a new package"

Select "Restore" or "Update" mode.

Same as online with the ASI-Manager.

Step 2:"Download"

Download the ZIP package to your PC/LT

Move this ZIP-file to a storage "within the strong firewall".

Use the offline-version of the ASI-Manager to run the update.

Activity Log: Shows all automated (API) activities, like updates and restores.
Also allows to manually enter multiple remarks with time stamps.
For example to log eventual problems, defects and solutions.

4.2.2 "Clients": Create new clients, change client data, allocate imagers.

Available for AMS agents, only. To create new "Clients", and relocate Imagers.

4.3 CMS FTP: To up/download JPG images, docs and software

Install and/or use a professional FTP-client, for example FileZilla or PowerCute.

URL: <ftp://ftp.schreder-cms.com/>

Login: Username/Password : Use your "one-for-all" LI/PW set.

Your LI/PW will automatically access/open your personal CMS-FTP storage place.

To download JPG images, navigate in the "/asi16_data/" directory structure.

There is a subdirectory for each imager, and below a subdirectory for each day.

For example: .../asi16_data/ asi_16017/ 20161130.

Others directories will contain helpful documents, important software, and tools.

Amongst others, it contains the ASI-Manager, necessary for ASI installation/update.

4.4 CMS DDNS: To access ASI Imagers via WAN (Internet)

DDNS ("Dynamic DNS") allocates a "Domain Name" (URL) to a static or dynamic WAN-IP. For example the auto-created "16008-8b.asi.schreder-cms.com:8080" for SN16008. For further details please refer to section 6.10 in this manual.

5 Network and Software - Installation

Before installing a new ASI-16 Imager to an outdoor location, we strongly recommend to run software and LAN network setup, online updates to the latest software, and a pre-test IN-DOOR, in the office! - LAN network configuration and software settings should be tested BEFORE moving the ASI-16 to its final outdoor location.

5.1 IT Administration - LAN (WAN) - Basics (Pre-Requirements)

CMS ASI-16 is a typical "Networking Device", basically comparable to other professional and industrial advanced "IP cameras". All external communication works via TCP/IP, Ethernet LAN/WAN and standard CAT-5 100 MBit (or better) network infrastructure.

Within the LAN, the imager can be accessed via its (primary and/or alias) IP address. In the WAN it can be accessed via CMS-DDNS URL, if opened by your IT administrator.

Online configuration, monitoring and online updates work via HTTP (primary port 80, secondary port 8080) or as defined in the Imager Configuration. - We recommend to keep the secondary HTTP port at 8080 and eventually translate this port at the router, as otherwise "online updates" from outside (via WAN and CMS-DDNS-URL) will not work!

Life Video Streaming works via Standard Streaming Ports.

5.2 HTTP Access to ASI-16 Imager Homepage

IT Administration should prepare measures, as (a) to open all necessary ports on the firewalls and routers, (b) implement a router rule at the DHCP server to allocate a fixed IP to the imager MAC-ID, (c) implement a router rule for 8080 port forwarding and port translation if the Imager HTTP homepage shall be accessed via WAN / Internet.

5.3 Network Storage (FTP, NAS, Fileshare)

The ASI-Imager is designed to automatically send JPG images to a "Network Storage".

To permanently store captures JPG images, ASI must have LAN/WAN access to the (LAN- or WAN-) IP-address or the DNS-URL of a "Network Storage" (FTP, NAS, FileShare, ...).

Upon delivery, every ASI is set up to use the "CMS-FTP-Service", with a customer-specific FTP-Account (ftp://ftp.schreder-cms.com/ - Clients all-in-one Username/Password).

The customer is entitled to use this CMS-provided FTP account free of charge for a storage capacity of up to about 1 GB . - WARNING: CMS cannot guarantee availability and stability of this service, and cannot be held responsible for eventual loss of data. CMS FTP shall not be used as a long-term safe storage place. The customer shall be fully responsible for regular downloads and for clean-up and delete of old data.

Before switching to a customer-internal "Network Storage", customer's IT Administration, shall allocate such comparable services (FTP, FileShare, ...) and storage capacity at any internal or external server or PC or NAS which can be accessed by the ASI imager. - The Network Storage must work with a LI-Name and Password. - The password must consider the "limited character set" for non-alpha/numeric characters used in multi-platform web browser interfaces.

5.4 Setup of PC's / LT'S for Monitoring and Configuration

A local PC/LT is necessary for monitoring, configuration and SW updates, ONLY!

Daily operation of an ASI-16 does NOT require any PC with dedicated software.

This PC/LT must be connected to a network router/switch and to the internet. The below standard software (or comparable) must be prepared before working with the ASI-16.

- Install and/or update your web browser (Firefox, Chrome, MS Internet Explorer).
- Install and/or update Oracle JAVA: <https://www.java.com/en/>
- Install or update Apple Quicktime 7: <http://www.apple.com/uk/quicktime/download/>
- Re-check your web browser security settings. The web browser must allow to run plugins, especially run Java and QuickTime Viewer.
- Install a FTP client (e.g. FileZilla, <https://filezilla-project.org/download.php>).
Download the entire FTP/service folder including important necessary tools.
Check for FTP URL and login with your "CMS client account data".
- Copy "CMS-ASI-Manager_nnn.jar" to your desktop or any other convenient place.
CMS-ASI-Manager can be found in the FTP/service download package.

5.5 ASI-16/50 Imager - Electrical and Network Hardware Connections

Check the below image and description how to electrically connect ASI components:



- (1) Connect one end of the CMS HPoE cable to the ASI-16 HPoE jack at the bottom of the imager. - Before inserting the plug you need to remove the "rod mounting footer".
- (2) Connect the other end of the CMS HPoE cable to the CMS HPoE injector. CMS HPoE injector design may vary depending on version.
- (3) Use a CAT-5 patch cable (not included) to connect the RJ45 jack on the HPoE injector to your LAN (network) router/switch/port.
- (4) Connect 48V DC power supply cable to DC plug on the HPoE injector.
- (5) Power-on the AC/DC power supply (connect to 110V/240V AC supply).
- (6) Now the fan will start, and one or more LEDs will be illuminated.

5.6 HELP: Common IP-Access problems after relocation

After moving an ASI-16 from one location to another, and sometimes even after initial delivery of a pre-tested imager out of CMS-Austria or out of a local CMS-agent, we frequently experienced a very typical "human problem".

At the "previous installation site", the ASI IP-settings have been changed from "Get IP automatically" (from DHCP service) to "Use fixed IP" with the fixed LAN-IP-settings of the "previous" network. - Upon delivery someone forgot to set back the IP settings to "Get IP automatically". - Consequently, the Imager cannot be identified in the "new" LAN, at least not by the most-easy to use tools (ASI-Manager, NetScan, ...).

So, if the ASI-Manager cannot find the Imager-IP after delivery or relocation, please do not waste time and DIRECTLY proceed with using the "ALIAS -IP", as described under 5.8.

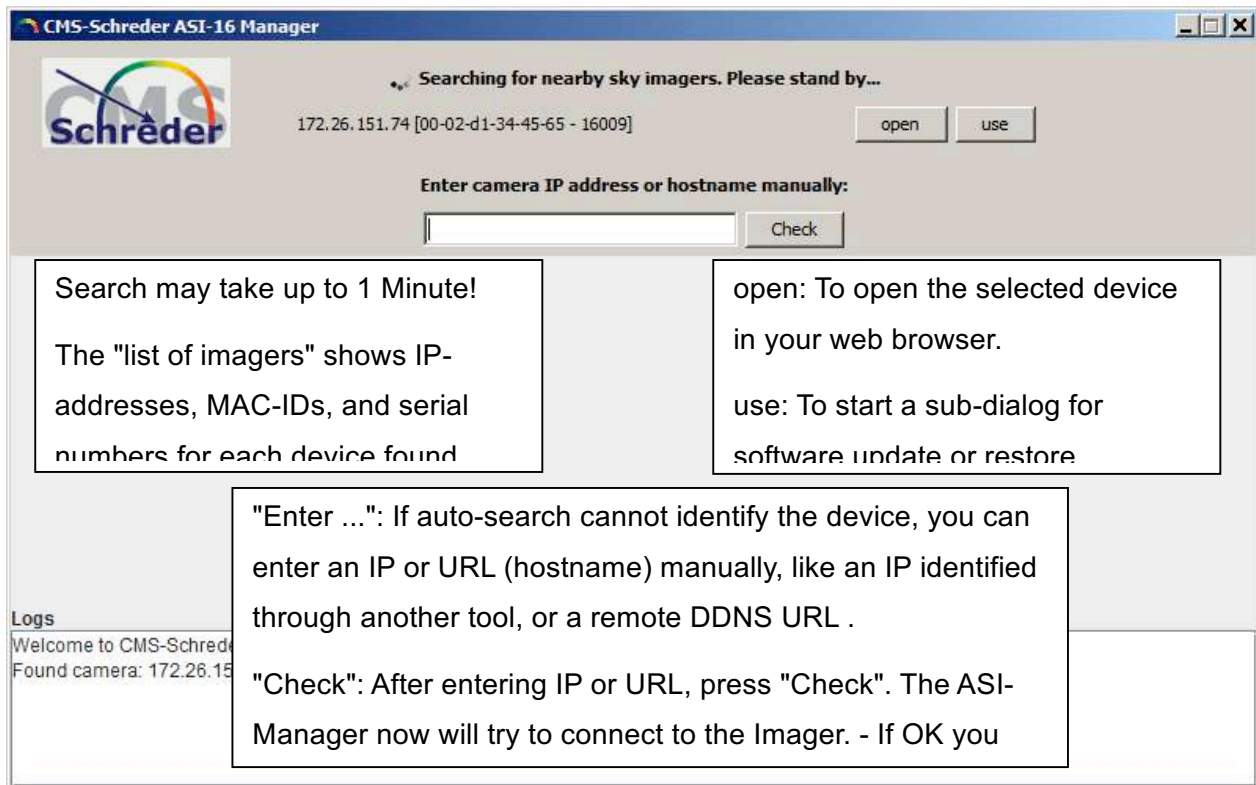
5.7 Use of ASI-MANAGER for ASI-IP Identification

IMPORTANT NOTICE: Before using the ASI-Manager, please ALWAYS check for the latest version. The latest version can be downloaded from CMS FTP or CRM.

To identify one or more ASI-16 imager IP's on the LAN (network), to open ASI-16 in the web browser (Firefox, Chrome, ...), and to restore or update ASI-16 software.

In most LAN (TCP/IP network) environments the IP address of an ASI-16 device can be identified through the "CMS ASI Manager", automatically. The "auto-detection" function may NOT work in networks with very strong or exotic firewall settings, and/or when moving an ASI device with fixed IP settings to another network environment. - In such case please use "CMS ASI-16 Alias-IP-Generator", and/or contact your network administrator.

Start the "CMS-ASI-Manager" software, and it will start searching for imager devices:



5.8 HELP: ASI-IP cannot be identified via "ASI-Manager"

The "automatic search function" requires the PC and the ASI-16 to have IP's within the same IP subdomain range, for example a range like "192.168.2.nnn". If the ASI-16 System/Network-Type is set to "Get IP automatically", usually the (router) DHCP service will allocate corresponding IP addresses, automatically. - But, if the ASI-16 was set to "Use fixed IP ..." in networks with another subdomain range (e.g. "10.0.0.nnn", 172.16.150.nnn), and then the imager is connected to another network with another subdomain range, the ASI-manger search CANNOT identify and work with this "now strange" imager IP.

Every ASI-16 has a built-in hardcoded "Alias IP" based on its hardcoded MAC ID.

This "Alias IP" can be calculated by using the "CMS-ASI16_Alias-IP-Generator.xml", or (in the future) by a similar function integrated into the ASI-Manager.

The "Alias Generator" available for FTP-download within your CMS-FTP-Storageplace.

5.8.1 Find out and note the MAC-ID of your ASI-16

The most easy and quick way will be to go to your CMS-CRM-Account and check:

CMS CRM URL: <https://service.schreder-cms.com/crm/>

Click the imager serial number, and see the MAC-ID at top-left in the configuration page.

The MAC-ID is printed along with the Serial number, on labels on the ASI-16 PeriControl Electronic Box and on the top mounting plate near the heating element. To see the labels you need to take off the Cover hood by loosening the three hand screws.

5.8.2 Generate ALIAS-IP via "CMS-ASI16_Alias-IP-Generator.xml"

Alias IP Generator for CMS ASI-16						
Enter ASI-16 MAC ID, and get Alias IP for browser access.						
MAC ID:	00	02	D1	33	45	65
Alias IP for browser:	169	254	69	101		

Enter the last four symbols of the MAC ID into the generator. The leading symbols do not matter.

Note the generated "Alias IP".

Enter this "Alias IP" in your web browser, and login as described.

You should NOT use the "Alias IP" for day-to-day use! Immediately after first Login you should set the Imager to "Get IP automatically", to receive a qualified IP dataset via DHCP.

Change the ASI network settings AS SOON AS POSSIBLE!

See Section 6.4 for further explanation and details!

5.8.3 STILL PROBLEMS to access, even via ALIAS-IP?

The below recommended procedures require help by someone experienced in basic LAN adapter configuration, (fixed IPs, IP range, subnet masks, standard gateway, etc.)

The ASI "Alias -IP" is within an IP-Range specified for such purpose, but is outside a LAN-IP-Range. - Some LAN routers/switches/firewalls are not allowed to connect to a device outside their LAN-IP-Range. - In such case you need to connect the ASI directly to a PC/LT, without any switch/router, change LT/PC LAN-adapter settings to the Alias-IP-range, access the Imager via Alias-IP and set Network to "Get IP automatically".

5.9 Software Update and Restore (ASI-Manager)

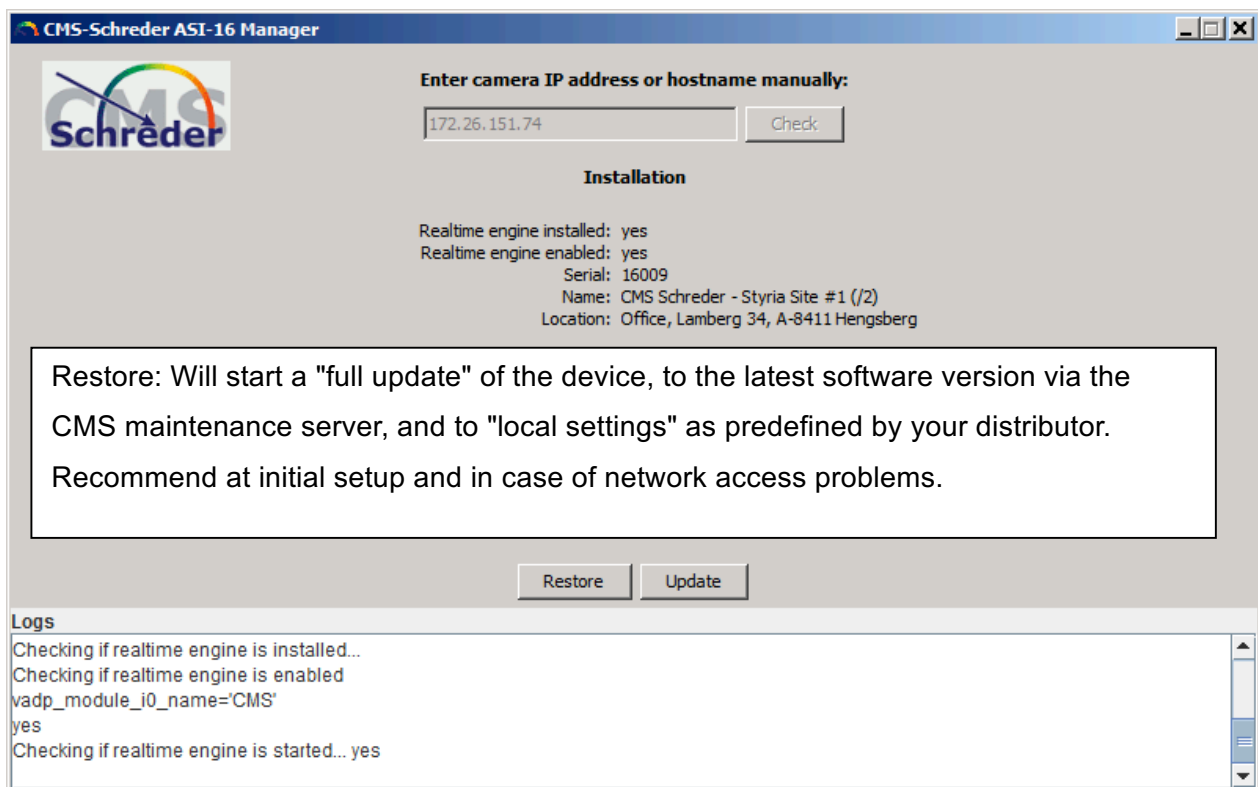
IMPORTANT NOTICE: Before using the ASI-Manager, please ALWAYS check for the latest version. The latest version can be downloaded from CMS FTP or CRM.

HELP: Before localizing any setting, you should run a "Software Restore", as described in the next section. "Software Restore" will update your system to the very latest software release, and will clean up any outdated or corrupted old local settings. Very likely your local CMS agent has already predefined some settings customized for your site.

WARNING: After a Restore or Update all locally set or changed Login/Password-sets will be deleted and lost! Only PI/PW defined in CMS-CRM will remain permanent. So, go to CMS-CRM and setup your camera-specific LI/PW, in addition to your all-in-one CMS LI/PW. - The all-in-one CMS LI/PW will continue to work in any case.

For software restores or update your network PC/LT must be connected to the Internet!

In the ASI-Manager click on "open" near the ASI-device you want to update.



- Confirm the notification popup window, and the update process will start.
- Some steps take 20-30 seconds without any change on the screen. Be patient!
- Wait for about 2-3 minutes till another popup window shows "update completed."
- Closed the ASI manager, and closed the the web browser.

- Re-open the ASI-16 in your web browser.

HELP: If, after waiting for at least 5 minutes, you do not see the "update completed" popup, you need to close the ASI-Manager, start ASI-Manager again, and restart "Restore". - In rare cases you need to power-off ASI-16 for about 15 seconds.

6 Customizing ASI Imager (Configuration)

6.1 HELP: How to work best with this Operator Manual Section

When going through this section, in parallel you should have opened an ASI-16 in your web browser, and read and click in parallel. - You either can use your own ASI-16. - Or you may visit one of the CMS "Public Imagers". Upon request CMS will send you a DDNS-URL and a LI/PW Set. - Please avoid storing/saving changes to those "public" imagers. If it happens by mistake, please either immediately run a "Restore" via ASI-Manager, and/or or send CMS a short email as soon as possible, and CMS will run the "Restore".

Please navigate by selecting a top navigation bar topic (Home/ Imager/ System/ ...) and then clicking one of the left side topics. - After changing one or more parameters within one page/frame, press <Save>. To reset to previous settings press <reset> or leave / change the page without pressing <Save>.

6.2 Web Browser Access - Login Procedure

To access any ASI-16 you always need to log-in via a username and a password.

You have received your "all-in-one" CMS-username/password from CMS.

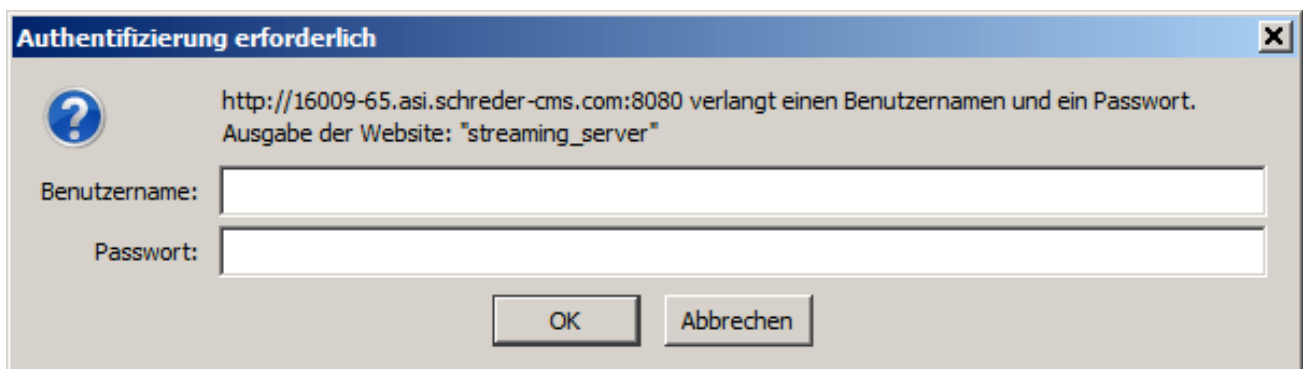
This LI/PW allows you to access all your imagers, CMS-FTP and CMS-CRM.

Open your web browser (Firefox, Chrome, Internet Explorer).

Enter the imager IP or URL or use the bookmark in your web browser

As soon as requested, please enter your "CMS account" username and password.

You can use one single "CMS client account" login for all your ASI-16 devices.



The Imager Login Name MUST START with "LI", followed by the account number.

Customer defined Login Names MUST START with at least one Alpha Symbol!

The Login-window will show up in the language of your operating system.

Please wait a while, as the first time login may take some time.

If the browser does not continue, press <F5> to refresh your browser cash, and re-enter Login name and Password.

- If requested by your browser, please PERMANENTLY allow the installation of some plugins, the access to the website, accept of certificates, and maybe some more requests and warnings. Likely, after such warnings, you must press <F5>, and/or close and re-open your browser and press <F5> again (clear browser cache).
- After some time you should see the CMS ASI-16 main page. - Especially when you connect the very first time, it may take more than 30 seconds.
- As soon as you can see the ASI main page, we recommend to add this page to your "browser favourites", for more easy access in the future.
- If you can see the ASI-16 main page, but without an sky image view, then please recheck your browser settings. Likely you browser has blocked one plugin, or a plugin installation has been corrupted.

6.3 ASI-16 Main Page - Home Page - Summary

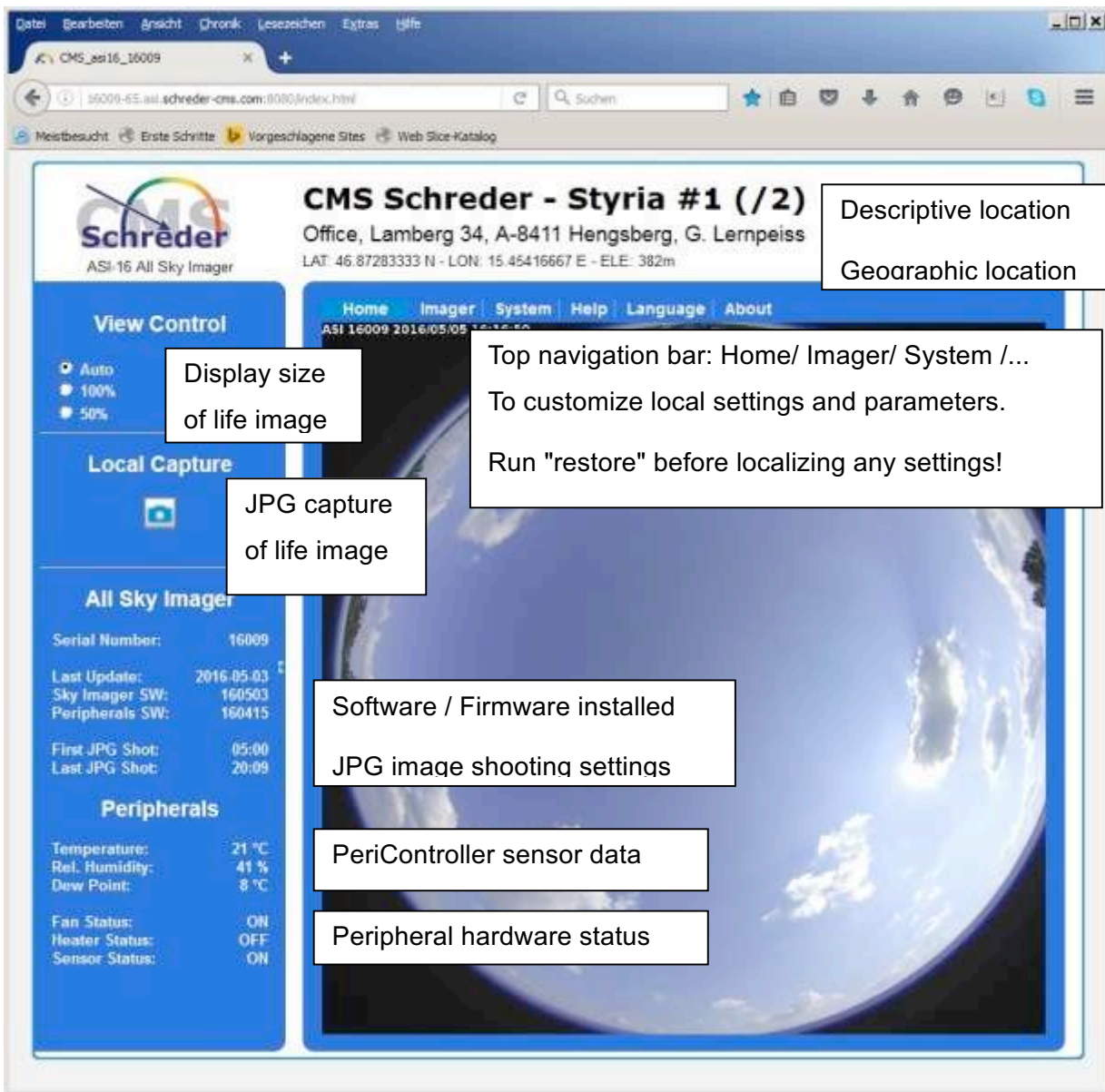
Within a LAN the "ASI-16 Homepage" can be accessed through its LAN IP adress. As soon as the "Home Page" is displayed you should add this page to browser "favorites".

NOTICE: Sometimes, depending on web browsers, the screen may hang up or may look corrupted. In such case press [F5] and/or [Ctrl-F5] to refresh and/or clear browser cash.

Sometimes, after pressing [F5], if the screen still looks corrupted, you first need to switch to another configuration screen, and then back to the screen requested.

After a reboot or restart it will take about 2 minutes till all data, especially "peripherals data", will be available. - From time to time press "F5" to refresh web browser display.

Please identify and note "Last Update" (last software update performed on this device), "Sky Imager SW" (software version now installed in the imager head), and "Peripherals SW" (firmware version installed on the peripherals controller).



6.4 Home Page - Navigation and Data Content

On the top and left side of the screen, the ASI-16 "Home Page" displays the most important real-time data and settings of the imager. On the top it also includes the "navigation bar" to access all sub-pages for configuration and maintenance. And in the centre it includes a "semi-live video-stream" of the camera.

Top Side:

Location Text: Description of Company, Location, and GPS Coordinates

"Google Maps" will display a map with using the GPS data

Navigation Bar: To select sub-folders for configuration and maintenance

Home	The Imager Home-page (Main Page)
Imager	Imager-specific setting and functions
Location	Title text, GPS coordinates, timezone settings
Capture	Schedules and parameters for JPG image capturing
Storage	Network storage settings for JPG storage
Peripheral	Peripherals Controller settings, data logger
System	General System settings and functions
Network	IP configuration, DDNS configuration
Security	Temporary additional usernames / passwords
SD Card	Check and format SD/CF memory
Service	Reboot, generate reports, test tools
Help	The software part of this manual
Language	Select alternative GUI languages
About	CMS Schreder reference data

Left Side:

View Control: To change the size of the live video display.

Local Capture: Capture one JPG image for review and local storage

All Sky Imager: Parameters and settings

Serial Number:	The serial number of this imager (camera head)
Last Update:	Date and time of the last software update/restore
xx/yyy SW:	Software version of Imager / PeripheralController
First JPG at/after:	The time at or after the first JPG shot of the day
Last JPG before/at:	The time before or at the last JPG shot of the day

Peripherals: Data and hardware status of the Peripherals Controller.

Temperature/ Rel. Humidity/ Dew Point: Data from the environment sensor.
NOTICE: The sensor is mounted relatively close to the (heated) outer hood and to the PeriCon electronics. So, temperature may be displayed 1-3°C higher than real. Upon special request CMS can deliver and "upgrade kit" to mount the sensor in a distance to the imager.

Fan/ Heater/ Sensor Status: OFF / ON / ERR (=Error, blocked, broken)

6.5 Imager Network / LAN Settings

TOP BAR: System - SIDE BAR: Network / Network Type:

The network settings should follow the regulations of your IT administrator.

Below the description of a most commonly used setup with "dynamic IP":

The screenshot shows the 'Network type' configuration page in the CMS Schreder web interface. The page is titled 'Network type' and has tabs for 'Network type' and 'Port'. Under the 'LAN' section, there are two radio buttons: 'Get IP address automatically' (selected) and 'Use fixed IP address'. Below these are input fields for IP address (172.25.151.74), Subnet mask (255.255.255.0), Default router (172.25.151.212), Primary DNS (195.58.160.194), and Secondary DNS (106.68.161.122). There are also empty fields for Primary WINS server and Secondary WINS server. Checkboxes for 'Enable UPnP presentation' (checked) and 'Enable UPnP port forwarding' (unchecked) are present. At the bottom, there are radio buttons for 'PPPoE' and 'Enable IPv6' (unchecked), and 'Reset' and 'Save' buttons.

- Navigate to /System/ Network/ Network-type, immediately.
- Set LAN to "Get IP address automatically".
- Click "Save" at the bottom, and close the web browser.
- Power-off ASI-16 for about 15 seconds, by disconnection DC power supply power cable.

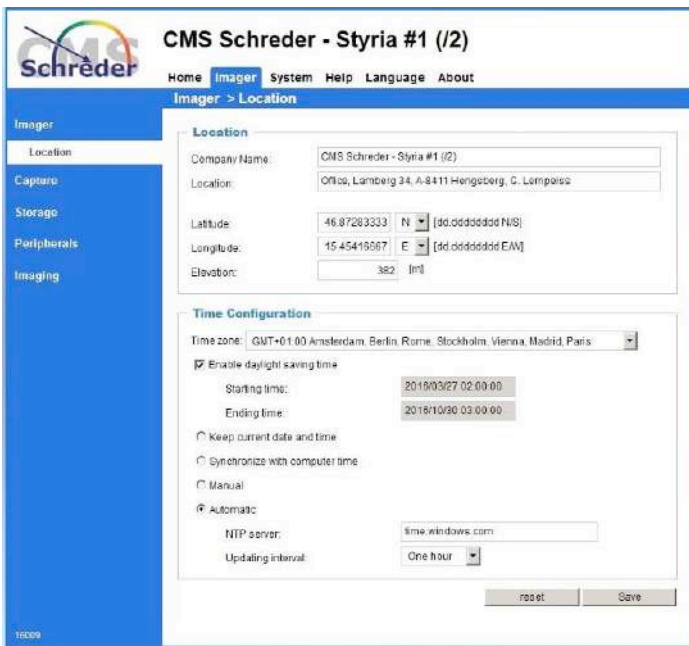
- Start "ASI-Manager" again, and let it search for ASI imagers.
- Now your (new) ASI-16 Imager should be displayed in the ASI Manager list.
- Click on "open" to login and open the selected new imager in your web browser.
- Proceed with "Login", software update, and with basic system setup.

6.6 Imager Location, GPS Coordinates, Time Zone

TOP BAR: Imager - SIDE BAR: Imager/ Location:

Location settings and Time settings MUST be configured according to the installation site.

Parameters are used to calculate time of sunrise, sunset for capturing start/stop, and calculation of the position of the solar disc within each individual JPG image.



Company Name:

A descriptive text, to be displayed on the web page and stored within JPG images.

Location:

A descriptive text, to be displayed on the web page and stored within JPG images.

Latitude, Longitude, Elevation:

GPS coordinates and elevation above sea level, stored with JPG images.

The GPS coordinates and elevation is very critical for the operation of the imager and for CMS analysis software.

Enter GPS data with most high precision, minimum "nn.123456" precision.

Time Configuration: Local time system used within the ASI-16:

We recommend to set the imager to your local time zone and daylight saving.

For analysis-critical " time-stamps" used for and stored into JPG images we recommend to use the Filename-Time-Settings in the JPG-Image-Capturing configuration. For CMS analysis software this parameter must be set to "Use GMT".

Time zone: Select the "Time zone" of the location of your ASI-16 site.

Enable daylight ...: To be checked if your country uses "daylight saving".

Time synchronisation: Should be set to "Automatic",

Automatic: Enable imager time to be synchronized with an NTP time server,.

NTP server: Internet URL or IP of a "NTP time server" accessible by the ASI-16.

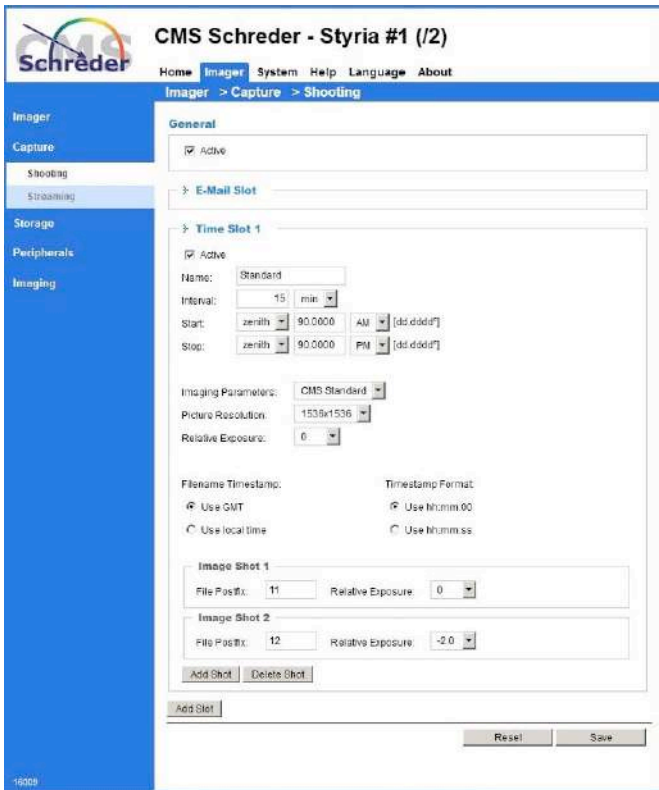
Updating interval: "One hour", to try time synchronisation once per hour.

6.7 JPG Image Capturing - Shooting

TOP BAR: Imager - SIDE BAR: Capture/ Shooting:

Parameters for automated capturing of JPG images. Images will either be sent immediately to a TPC/IP connected "file server" (usually FTP, eventually also NAS or HTTP). Whenever there is no access to the file server (LAN/ WAN/ fileserver down), images will be temporarily stored on a built

in flash memory, and will be transmitted automatically as soon as the file server can be accessed, again.



JPG Capture Scheduler:

Scheduler configuration when and how to store JPG images to a file server.

Active:

Set "General/ Active" and "Time Slot1/ Active" to enable JPG image storage.

E-Mail Slot: Not fully implemented!

To send JPG's to an email account.

Time Slot 1 (2, ...):

One (or more, up to three) sets of predefined parameters, to capture one, typically two, or up to four JPG images within defined time intervals.

Name: To identify different "Time Slots". The first "time slot" should be "Standard".

Interval: 15 min:

A set of JPG's will be sent at e.g. 10:00, 10:15, 10:30, 10.45, ...

Start [Zenith]: First JPG image set will be captured at/after sunrise (= zenith/ 90° AM).

Stop [Zenith]: Last JPG image set will be captured before/at sunset (= zenith/ 90° PM).

Pre/post Zenith Time correction: Through the [+/-] parameters you can modify the scheduler, to start/stop capturing up to 1 hour before/after sunrise/sunset time.

Capturing will be done at the per-hour timeslots as defined in "intervals. If, for example, "Interval" is set to 15min, and actual Start[Zenith] time is 06:07, then the first JPG shot of the day will be captured at 06:15, and NOT at 06:07.

"Zenith control" requires correct settings of local imager time and local GPS coordinates. It may not work for zenith angles above 90°. Minimum allowed zenith angle depends on GPS coordinates and day-of-year. For further details please refer to side documents.

When changing from "zenith" to "time", you can enter fixed start/stop times.

Imager parameters: "CMS Standard". Not to be changed, for CMS software.

Picture resolution: Select resolution for higher or lower quality and JPG filesize.

Relative exposure: The "relative exposure level", represented by virtual relative "aperture" or virtual relative "lens opening". - Value "0" means the standard exposure as generated by the built-in automatic exposure control (AGC, ...). - Value "-2" means "under-exposure" comparable to closing the lens iris (aperture) on a mechanical optics, accordingly. ASI-16 does not have a mechanical iris, but uses electronic gain level and exposure time control.

Filename / Timestamp / Format: Parameters to manage automatically generated JPG filenames. - Must NOT be changed when using CMS cloud analysis software!

Image Shot 1/2:

Configuration of one or more images to be captured within the respective "Time Slot".

NOTICE: Capturing of each individual image will take about 5-10 seconds, because of processing time for automated exposure control. Therefore the actual file-time for the first image will 5-10 seconds past "time interval" time. Additional images will be further delayed by additional 5-10 seconds for each image within one "Time Slot". - Please consider, when setting "interval" to 15 seconds maybe sometimes a second image might get lost.

Default settings: Every 15 [...] minutes the imager will send two JPG's, the first one with standard exposure ("0"), and a second one with maximum under-exposure ("-2.0"). Parameters MUST NOT be changed when using CMS analysis software.

6.8 Network Storage Settings for JPG (FTP, NAS, FileShare)

TOP BAR: Imager - SIDE BAR: Storage/ Server Settings:

Captured JPG images will be sent automatically to a "Network Storage".

For image storage we recommend to use an FTP server. - Alternatively we provide server configurations for "Network storage" (NAS devices, network file servers), or for HTTP.



The Network Storage or FTP-server server IP/URL and the corresponding login data.

For testing and initial operation you may use the FTP server provided by CMS. Later on you may change it to an FTP server or a Network Storage of your company.

When using the CMS FTP service, you MUST NOT change the pre-defined LI/PW settings!

WARNING:

After a Software "RESTORE" via ASI-Manager the

Server Settings will be reset to the CMS-FTP account data! - Take Notes!

Button "Test":

To check and verify if the Storage Server can be accessed via the entered settings.

Use the "Test" button BEFORE permanently save settings via "Save server".

With "Test" the Imager will try to send a "test.txt" file to the root of the storage.

A second browser window will pop up and will indicate if the test transmission was successful, or if it failed. If failed, then recheck the settings (IP/URL, LI/PW, ...), and check if the storage is online and can be accessed. Take special care of the formats used.

6.9 Backup Storage (Temporary Storage on CF Card)

TOP BAR: Imager - SIDE BAR: Storage/ Backup Setting:

It there is any temporary problem with the online "Network Storage" access, like router down or network down or WAN down or storage server down, ASI-16 will temporarily store JPG's within the imager. Later on, as soon as the "Network Storage" is back online for a reasonable time, ASI-16 will transfer temporarily stored images to the network storage.

The low-priority process of sending "backup images" will be merged into the more important high-priority process of capturing and sending "new images". Therefore sending all backup images may take some time, depending on the quantity. Multiple connection breakdowns during the recovery process may eventually cause loss of some images.

Backup delay: Initially data are stored in a non-remanent RAM memory.

After the delay time data are moved to a remanent CF-memory.

In case of a power-down within this period data will be lost.

Maximum load: Usually all data, even if marked as transferred, will be kept;
If this parameter exceeded, transferred data will be deleted;

Emergency load: If this parameter exceeded, a part of "older data" are deleted,
till the CF memory has reached a free capacity of about 50%..
Means: Some "old data" will be lost, newer data will survive.

6.10 Peripherals Controlled (Settings, Data Logger)

TOP BAR: Imager - SIDE BAR: Peripherals / General:

ASI-16/50 (Advanced) incorporates a secondary "Peripherals Controller" (PeriCon), physically and logically separated from the "Main Controller" in the imager camera head.

The PeriCon Hardware is mounted in a separate box at the bottom mounting plate.

PerCon-V1 includes a separate microcontroller, a sensor for outdoor temperature and humidity, electronics to manage and monitor fan and heater, DC power conversions, and UART low level serial communication to the imager "Main Controller".

PeriCon-V2 includes additional optional features, like additional external and internal sensors, advanced heating and power management, and GC-RTC-based timing.

Peripherals: Data as delivered by the PeriCon. - Please press [F5] for refresh.
The same data also are displayed at the Imager homepage.

Temperature/ Rel. Humidity/ Dew Point: Data from the environment sensor.

NOTICE: The T/RH sensor is mounted relatively close to the (heated) outer hood and to the PeriCon electronics. So, the temperature may be displayed 1-3°C higher than real. - Upon special request CMS can deliver and "upgrade kit" to mount the sensor in a distance to the imager.

Fan/ Heater/ Sensor Status: OFF / ON / ERR (ERR = Error, blocked, broken)

Settings: To managed the ON/OFF status of the heater, and datalogger data.

Heater Threshold: Minimum outdoor temperature, to switch on the heater.

Dewpoint Thr...: Minimum dewpoint deviation, to switch on the heater.

Datalogger Int...: Time interval to get PeriCon data updates from PeriCon.

Logs: Current data as received from / sent to the PeriCon "Data Logger".
All Data are stored in the "peridata.csv" file, once a day, along with images.
Important data are also stored in the JPG image "EXIF" data structure.

Command: To send special and encrypted command to PeriCon;
(Commands and encryption code upon special request).

Description of "field identifier codes" used by Data Logger

RX: SQNR=57326;	Time stamp, seconds after midnight, low precision; The timestamp is INVALID for ca. 3 minutes after reboot;
STAT=100222;	Hardware status flags; 1=off, 2=on, 9=Error;
TMPA=5;	Outdoor Temperature, by environmental sensor;
*) TMPB=19;	Temperature near the air heating coil;
*) TMPC=16;	Temperature inside the imager (camera) head;
RHUA=65;	Outdoor Relative Humidity, by environmental sensor;
UINA=48;	Primary Input Voltage (HPoE line entry point)

IFAN=204;	Fan sensing current, Fan is ON (mA);
IHEA=1251;	Heater current, Heater is ON (mA);
SWVNR=160815;	Software version of PeriCon Firmware;
TTEMP=15;	Threshold heater temperature;
TDEWP=5;	Threshold dewpoint difference temperature;
UFAN=500;	Upper limit (blocked) for fan current (mA);
ILFAN=5;	Lower limit (broken) for fan current (mA);
IUHEA=3000;	Upper limit (shortcut) for heater current (mA);
MSDLY=15;	Message delay, time between messages (sec);
FNDLY=30;	Fan delay time, retry after "Error" (sec);
SFLAG=30;	Status-Flag time, update interval status flags (sec);
TX: B15	Command to set TTEMP to 15°C;
C5	Command to set TDEWP to 5%;
I15	Command to set MSDLY to 15 seconds;
...	Additional commands are hidden (not displayed);

*) Those data are available with 2nd generation ASI hardware, only.
Second generation ASI hardware starts with SN 16020, and higher.

6.11 Networking - CMS-DDNS (Dynamic Domain-Name)

TOP BAR: System - SIDE BAR: Network / DDND - HTTP:

For customers which do not have a fixed (static) WAN IP, or which do not want to formally disclose this fixed static IP, CMS provides a free of charge non-public DDNS-Service. If enabled, ASI-software automatically synchronizes its WAN IP with CMS-DDNS-Server, and CMS-Server will publish the auto-generated URL based on the ASI serial number.

Secondary Port: Must be "8080" if your want to run online-updates via Internet.
For access via Internet, setup a router rule for port forwarding.
In case of multiple ASI within the same LAN, use port translation.

Enable ... DDNS: Please check, if you want to use this CMS-DDNS service.
WARNING: If checked, ASI will send messages to the CMS server.

6.12 Security Settings - User Name - Password

TOP BAR: System - SIDE BAR: Security:

Each ASI comes with a pre-defined set of User/Password LogIn's, stored in CMS-CRM.

Most important: Your personal CMS "Customer" LI/PW, based on your account ID.
It can be used at any time, at delivery or after any update/restore.

Also, up to you: Your personal LI/PW, as defined by you via the CRM account.
It can be used after entry at CRM and the next update/restore.
Please enter secondary password in CRM, and run "update".

6.12.1 WARNING - Security Data are lost after each software update/restore

The ASI Web-GUI allows to (temporarily) enter new users with passwords, and/or allows to (temporarily) change user names and passwords and rights. ALL THOSE CHANGES WILL BE LOST after any "software restore" and/or "software update", for example by using the ASI-Manager tool. - Please take carefully note of Network Settings and Security Date before and software update or restore, or total imager reset! - Use CMS-CRM to setup permanently available Username/Password sets.

6.13 Service - Maintenance (Reboot, PeriCon Firmware Update)

TOP BAR: System - SIDE BAR: Maintenance:

Reboot: To reboot the imager. May take up to 5 minutes.

Export configuration file: Generate a backup of a part of local configurations

Export server ... report: Generate a package to help analyse problems or bugs.
Please send this package to CMS support, via Email.

Upload configuration: Do NOT used this function for standard recovery!
ALWAYS use ASI-Manager for recovery (restore)!
This function is available for very special cases, ONLY!
WARNING! - MISUSE WILL DAMAGE THE SYSTEM!

Image Calibration: Tools for testing and calibration by CMS, only!
CMS has already optimized settings before delivery.
Approved data are stored in/ taken from CMS-CRM.

Upgrade controller firmware: To upgrade the PeriCon microcontroller firmware.
(This function is available for 2nd generation ASI, SN 16020 or higher, only!)

As soon as a new software is available, CMS will send a new package.
(In the future the ASI-Manager will deliver and store such package automatically.)

Upload new firmware [Search]: Search for the new package on your PC.

Upload: Start the upload to the PeriCon microcontroller.

7 Mechanical Installation Guide

Below a step-by-step guide for mounting and ASI-16 at a typical outdoor location.



Prepare imager components and tools.

- Preinstalled HPOE CAT5 cable
- Screwdriver for M3 screws
- Allen key for M8 screws
- Compass and small mirror



Place the "rod mounting footer" onto your instrumentation rod, but do not fix screws.

To reduce eventual diameter tolerances and to improve fixing you may apply one or two layers of adhesive rubber tape.



Connect the HPOE Cable to the corresponding



Lift ASI-16 imager with the cable already

<p>ASI connector.</p> <p>Turn and push screw a few times, before inserting the plug. Insert plug , then push and turn screw a few times, until fixed.</p>	<p>connected on top of rod mounting footer.</p> <p>Notice the imager base plate to match with the footer plate, to allow M8 screws to fit. There is only one single working position!</p>
---	---



<p>Fix the ASI imager to the rod mounting footer, using M8 screws plus washers.</p>	<p>Tighten M8 screws by using the Allen Key. Unloose screws for later service / repair.</p>
---	---



<p>Adjustment of SOUTH orientation:</p>	<p>Fixing of SOUTH orientation adjustment:</p>
---	--

You will find a mark on the Imager Hood or near the dome. - This mark must show SOUTH direction, as precisely as possible.

Use a precision compass to identify SOUTH direction. Align ASI-16 imager by rotating the rod mounting footer.

Fix position of rod mounting footer by tightening the three M3 screws.

In case of later service the footer shall remain on the rod. Imager shall be removed by unloose M8 screws, only. Therefore, no further re-alignment will be required!



Prepare to adjust "levelling":

Unloose thee hex-nuts and three hand-nuts, to allow about 10mm of free vertical (up-down) movement of the imager.

Identify "levelling instrument":

Find the "levelling instrument" on top of the imager, very close to the glass dome. For best levelling bubble and ring must match.



Watch levelling instrument, either by looking from top or by using a mirror.

Adjust levelling by rotating hex nuts.

The air bubble in the levelling instrument must show in the centre of the ring mark.

Fix adjustment by tightening hand nuts.



WARNING:

The CMS HPoE Injector and the Power Supply must be installed in a dry and safe place without the risk of exposure to water or strong (condensing) humidity!

Electrical connection (inside building):

1. Connect HPoE cable to CMS injector.
2. Connect power supply to injector.
3. Connect router LAN cable to injector.
4. Connect power supply to AC power.

Check basic electrical operation:

Check imager controller box for illuminated LED(s). Colour and number of LEDs vary, depending of ASI-16 release version. At least one LED must be illuminated.

8 Commercials

8.1 Terms of Warranty

Seller hereby warrants the equipment to be free from defects in materials and workmanship, and the equipment being tested to perform according to material and critical specification, but warranty is limited to environmental and functional and operational restrictions, and limited to qualified installation, configuration and operation strictly according to Seller's instructions and to be performed under Buyer's responsibilities,

Within the limits of what is set forth above and below, Seller agrees to repair or replace, without cost of labour and parts to Buyer, any defective equipment or Buyer-serviceable modules or components, when such defect occurs within a period of twelve (12) months from the date in which Seller's goods have been put into use. The warranty duration is 12 months from installation date but never more than 18 months from invoice date, even if, for any reason, the equipment will not be utilized.

Buyer must immediately notify Seller of any defect, specifying the serial number of the equipment. At Seller's sole decision and notice, Buyer either shall send to Seller the defective item for repair or replacement, delivery at the Buyer's costs, and Seller will perform the repairs or provide a replacement within a reasonable period of time, or Seller will deliver replacement equipment or replacement spare parts and Buyer will perform the repair works. In any case, if not otherwise confirmed by Seller, Buyer shall be obliged to immediately, not later than 2 weeks after notice, return the defective equipment or defective components or modules to Seller, otherwise if Buyer fails to return Seller shall be entitled to charge and Buyer shall be obliged to pay the list price of the replacement parts delivered. Upon effecting such repair or replacement, Seller shall have fulfilled its warranty obligations.

Seller is not responsible for defects resulting from improper use of the equipment, lack of proper maintenance, tampering with the equipment, or by repairs effected by the Buyer which have not been approved by Seller in writing and in advance, or by the Buyer using spare parts not being delivered or approved by Seller, or the Buyer not strictly following Seller's instructions and advise for User repair and service procedures.

Seller will not be liable for any injury to persons or things, or for any direct or indirect commercial damages (loss of revenue or profit) due to the failure of operation or the loss of imager data, or instability or non-reliability of data generated by Seller's software.

Seller does not warrant the compliance of its equipment with the laws of non-EEC countries in which the equipment may be installed. Buyer shall indemnify and hold Seller harmless against any

claim by third parties resulting from failure to comply with the aforesaid non-ECC laws and standards.

8.2 Contact

CMS Ing. Dr. Schreder GmbH.

Lofererstrasse 32, A-6322 Kirchbichl, Austria

Tel.: +43 (5332) 77056-00, Fax: +43 (5332) 77056-14,

Email: info@schreder-cms.com, Web: www.schreder-cms.com

8.3 Licenses, Liability, Confidentiality, Copyrights

8.3.1 MPEG-4 VISUAL TECHNOLOGY

THIS PRODUCT IS LICENSED UNDER THE MPEG-4 VISUAL PATENT PORTFOLIO LICENSE FOR THE PERSONAL AND NON-COMMERCIAL USE OF A CONSUMER FOR (i) ENCODING VIDEO IN COMPLIANCE WITH THE MPEG-4 VISUAL STANDARD ("MPEG-4 VIDEO") AND/OR (ii) DECODING MPEG-4 VIDEO THAT WAS ENCODED BY A CONSUMER ENGAGED IN A PERSONAL AND NON-COMMERCIAL ACTIVITY AND/OR WAS OBTAINED FROM A VIDEO PROVIDER LICENSED BY MPEG LA TO PROVIDE MPEG-4 VIDEO. NO LICENSE IS GRANTED OR SHALL BE IMPLIED FOR ANY OTHER USE. ADDITIONAL INFORMATION INCLUDING THAT RELATING TO PROMOTIONAL, INTERNAL AND COMMERCIAL USES AND LICENSING MAY BE OBTAINED FROM MPEG LA, LLC. PLEASE REFER TO [HTTP://WWW.MPEGLA.COM](http://www.mpeg-la.com).

8.3.2 LIABILITY

CMS-Schreder cannot be held responsible for any technical or typographical errors and reserves the right to make changes to the product and manuals without prior notice. CMS-Schreder makes no warranty of any kind with regard to the material contained within this document, including, but not limited to, the implied warranties of merchantability and fitness for any particular purpose.

8.3.3 CONFIDENTIALITY















The information disclosed with this document may contain technical and business secrets, and therefore has to be kept CONFIDENTIAL between CMS-Schreder and the receiving party. The information herein must not be released to any third party, for whatever reason, without the prior written approval of CMS-Schreder. - Necessary internal circulation and communication of this document and its material content must be limited to such persons and parties which have a reasonable demand of receiving this information for the business cooperation between CMS-Schreder and the receiving party. Circulation also has to be limited to such persons and/or parties who understand and will respect the confidentiality of the information provided herein.

8.3.4 COPYRIGHTS

The information disclosed with this document may include information and material being protected by copyrights of CMS-Schreder and by intellectual rights of third parties, and therefore must not be used in any other way as agreed and confirmed by CMS-Schreder.

9 Appendix

9.1 Spare Parts - Part Order Numbers

	<u>PARTS DESCRIPTION</u>	<u>ORDER NUMBER</u>
	ASI-16/50 ADVANCED	1035.10.01
	Outer Hood (Outer Cover)	1035.110.90 
	Hood mounting screw	1035.130.34 
	Cat5 A-coded cable, 20m	1035.210.15 
	CMS HPoE Injector	1035.160.00 
	Power Supply 48V, 90W	1035.210.11 
		Imager Head (complete)
Dome and Cover Assembly		1035.110.20 
Heater Star Assembly		1035.120.20 
Ventilation Unit (Fan)		1035.130.50 
Peripheral Controller		1035.150.00 
Multipole Cable (Heat/ Vent)		1035.150.70 
DC Power Cable 48V, 20m		1035.210.18 
Rod Mounting Shaft (/50)		1035.140.50 

9.2 Declaration of Conformity:

EG-Konformitätserklärung Declaration of EC-conformity

Für das folgend beschriebene Gerät
The following described item

ASI-16/50

wird hiermit bestätigt, dass es mit den Schutzanforderungen der folgenden Richtlinien übereinstimmt.
herewith is declared to be conform with the safety requirements stated in the EEC-regulation.

Elektromagnetische Verträglichkeit (2014/35/EU)

Niederspannungsrichtlinie 2014/30/EU

Diese Erklärung gilt für alle Exemplare und verliert ihre Gültigkeit bei mit uns nicht abgestimmten Änderungen.
This specification applies to all specimens and is voided by not with us coordinated changes made.

Zur Beurteilung des Erzeugnisses hinsichtlich der elektromagnetischen Verträglichkeit wurde folgende Normen herangezogen:
For judging the products conformity the following standards have been applied:

EN 61000-6-1:2007
EN 61000-6-3:2007
EN 55022:2010

Die Konformität dieses Produktes ist sichergestellt. Der Hersteller erklärt damit die alleinige Verantwortung für von ihm vertriebene Geräte des oben angegebenen Typs.
The conformity of this product is secured. The manufacturer declares hereby the sole responsibility for appliances mentioned above and produced by the manufacturer himself.

Hersteller/Importeur:
Producer / Importer

CMS - Ing. Dr. Schreder GmbH

Anschrift:
Address

Lofererstrasse 32 • 6322 Kirchbichl • Austria

Telefon / Telefax:
Telephone / Telefax

+43 (0)5332 77056-00 / +43 (0)5332 77056-14

E-Mail / Web:
E-Mail / Web

info@schreder-cms.com / http://www.schreder-cms.com

Name des Unterzeichners:
Name of signer

Edzard Egberts, Dipl.-Ing.(FH)

Stellung im Unternehmen:
Position in Company

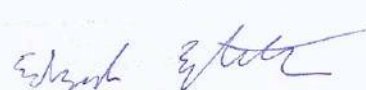
Application Engineer

Kirchbichl

06.12.2016

Ort
place

Datum
date


rechtsverbindliche Unterschrift
legal signature



EKO Asia, Oceania

1-21-8 Hatagaya,
Shibuya-ku
151-0072, Tokyo.
Japan

P. +81 3 3469 6711
F. +81 3 3469 6719
www.eko.co.jp

EKO North America

95 South Market Street
Suite 300
San José, CA 95113
USA

P. +1 408 977 7751
F. +1 408 977 7741
www.eko-eu.com

**EKO Europe,
Middle East, Africa,
South America**

Lulofsstraat 55, Unit 32
2521 Al, Den Haag
The Netherlands

P. +31 (0) 70 305 0117
F. +31 (0) 70 384 0607
www.eko-eu.com