

DIRIS Digiware *D-50 & D-70 v2*

Display and power supply interface



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1. DOCUMENTATION

All documentation on DIRIS Digiware D-50 and D-70 is available on the SOCOMEC website:

www.socomec.com/en/diris-d



2. HAZARDS AND WARNINGS

The term "device" used in this document covers both DIRIS Digiware D-50 and D-70.

The assembly, use, servicing and maintenance of this equipment must only be carried out by trained, qualified professionals. SOCOMEC shall not be held responsible for failure to comply with the instructions in this manual.

2.1. Risk of electrocution, burns or explosion

- This device must only be installed and serviced by qualified personnel who have in-depth knowledge of installing, commissioning and operating the device and who have had appropriate training. He or she should have read and understood the various safety measures and warnings stated in the instructions.
- Before carrying out any work on the device, switch off the power supply to the device.
- Always use an appropriate voltage detection device to confirm the absence of voltage.
- Replace all devices, doors and covers before turning on power to this equipment.
- Always power the device with the correct rated voltage.
- Install the device following the recommended installation instructions and in a suitable electrical cabinet.

Failure to take these precautions could cause death or serious injuries.

2.2. Risk of damaging the device

To ensure that the device operates correctly, make sure that:

- The device is correctly installed.
- The auxiliary power supply voltage indicated on the product is observed: 24 VDC \pm 15%.
- Use 230 VAC / 24 VDC SOCOMEC power supply (P15 15W 4829 0120) or use a 1 A 24 VDC safety fuse.

Failure to respect these precautions could cause damage to the device.

2.3. Liability

- Assembly, connection and use must be carried out in accordance with the installation standards currently in force.
- The device must be installed in accordance with the rules given in this manual.
- Failure to observe the rules for installing this device may compromise the device's intrinsic protection.
- The device must be positioned within an installation which complies with the standards currently in force.
- Any cable which needs to be replaced may only be replaced with a cable having the correct rating.

3. PRELIMINARY OPERATIONS

To ensure the safety of personnel and the product, please carefully read the contents of these instructions before installation.

Check the following points as soon as you receive the package containing the device:

- The packaging is in good condition
- The device has not been damaged during transportation
- The device reference number conforms to your order
- The packaging includes the device fitted with removable terminal blocks and a Quick start guide.

4. CYBER SECURITY RECOMMENDATIONS & BEST PRACTICES*

The DIRIS Digiware D-50/D-70, as any device connected to a user's Ethernet network, must be protected against any risk of cyber-attack or data loss/destruction.

(*) Our D-50/D-70 displays provide certain cyber security features to prevent these attacks and to help users in their responsibility to implement and guarantee adequate IT protection. Some recommendations are listed in the following paragraphs. Make sure they are in line with your IT security policy:

- **Awareness of the security policy:** Users and administrators of DIRIS Digiware D-50/D-70 displays and WEBVIEW-M must be aware of and trained in proper IT security practice (information and compliance with corporate security policy, authentication procedure management and password safety, online session management, risks of fishing...).
- **Network security:** The IT system architecture must be able to safeguard resources, by segmenting the network according to their degree of sensitivity and using a variety of protective devices (firewall, demilitarised zone, VLAN, network anti-virus etc.).

How DIRIS Digiware D-50/D-70 displays can help:

By forcing the user to use secure versions of standard communication protocols:

- FTPS: secure export of data
- SMTPS: secure email notification in case of alarms
- SNMPv3: secure version of the SNMP communication protocol
- HTTPS: secure webserver navigation (WEBVIEW-M) by uploading TLS/SSL certificates

> Refer to paragraph 10.3.2 & 10.3.3 for more information on how to upload digital certificates.

With their firewall, to monitor and control incoming/outgoing traffic: this protects the DIRIS Digiware D-50/D-70 displays in case of denial-of-service (flooding) attacks, in order to guarantee service continuity of the display.

> Refer to paragraph 10.3.4 for more information on how to configure the firewall protection.

- **Device security:** Device security depends on its network environment, but also user behaviour. In terms of the environment, elementary protective measures (filtering authorised stations by MAC address, opening service ports, selecting authorised applications etc.) are highly recommended. Greater precaution is required on managing removable media (external hard drive, USB flash drive, wireless communication provision etc.). Finally, in terms of a server like the DIRIS Digiware D-50/D-70, it should be protected by controlling and limiting physical access to the rooms and cabinets hosting the device.

How DIRIS Digiware D-50/D-70 displays can help:

DIRIS Digiware D-50/D-70 displays reduce the attack exposure by blocking or restraining the access to certain peripherals and services that are not essential to the customer use case.

> Refer to paragraph 10.3.1 for more information on how to configure your display's security policy.

Moreover, the firmware and webserver applications are signed with an asymmetrical key to make sure any firmware upgrade uses the correct matching signature to allow the device to be upgraded. This prevents the diversion of the device from its intended use by Socomec (by uploading a dummy firmware for instance) and guarantees that the firmware stays without virus over time.

- **Data security:** Data security covers several aspects, in particular the confidentiality, integrity, authenticity and availability of data. Special care is required with data security and archiving procedures on backup devices both inside and outside the company.

How DIRIS Digiware D-50/D-70 displays can help:

It is possible to export data such as energy indexes, load curves and historical measurement (Trends), both manually or automatically for back-up.

It is also possible to save the topology (mapping of slaves connected to the D-50/D-70 display) from the embedded webserver and configuration file from Easy Config software.

Confidentiality is addressed by providing 256-bit AES encryption (AES 256) for personal data such as passwords along with product. This means it would take 2256 combinations to break the encryption key.

- **Access and authentication management:** Managing access to resources and data is a crucial element of the IT system's security policy. Each user requires an account and access rights corresponding to their profile. Access to the IT system's resources is controlled by a user authentication process, based on a minimum of a high-security username and password. The password management procedure, specifying the systematic modification of default passwords and their validity period, is included in the IT security policy.

How DIRIS Digiware D-50/D-70 displays can help:

Multiple profiles are available to access the web application. The highest profile is "Cybersecurity", which allows you to manage users' access to the web application based on what is relevant for them.

Profiles are password protected. Certain measures are taken into account in Socomec D-50/D-70 displays to reduce the risk of password theft:

- Encryption of credentials
- Password must meet minimum security requirements (minimum 10 characters, including at least one upper case, one lower case, one number and a special character).
- Password must be changed at least once a year.
- After 3 failed log-in attempts, account is locked for 1 hour.
- Passphrase for password recovery in case password is lost.

> Refer to paragraph 10.1 for more information regarding the different profiles and their password protection.

5. INTRODUCTION

5.1. Range

| | |
|--|--|
|  <p>DIRIS Digiware D-50 Multipoint display</p> <p>Ref. 4829 0204</p> |  <p>DIRIS Digiware D-70 Multipoint display</p> <p>Ref. 4829 0203</p> |
| <p>Ethernet output Modbus TCP BACnet IP SNMP v1, v2 & v3</p> | <p>Ethernet output Modbus TCP BACnet IP SNMP v1, v2 & v3</p> |
| <p>-</p> | <p>WEBVIEW-M embedded web server Power & Energy Monitoring</p> |

5.2. Introduction to DIRIS Digiware D

DIRIS Digiware D-50 and D-70 are system displays and act as the unique point of access to measurements from DIRIS Digiware modules.

They can also display measurements from other SOCOMEC meters and measuring devices: COUNTIS, DIRIS A, DIRIS B. They centralise data from up to 32 devices (a maximum of 192 circuits). These products may be connected by a Digiware bus and/or an RS485 bus.

Centralised products can be shown as well as configured by DIRIS Digiware D displays.

5.2.1. Introduction to DIRIS Digiware D-50

The DIRIS Digiware D-50 display is a master on the Digiware bus and acts as a gateway interface to communicate measurements over RS485 and Ethernet.

The RS485 port can be configured as a Master or Slave.

The Ethernet port is used to:

- Communicate via Modbus TCP (max. 16 simultaneous connections), measurements from meters and measuring devices connected to the Digiware and RS485 buses.
- Communicate via BACnet IP and SNMP, measurements from meters and measuring devices connected to the Digiware and RS485 buses.
- Automatically send alarm notifications via emails (SMTPS).
- Synchronize the date/time to an SNTP server.
- Automatically and cyclically export historical measurements via FTPS.

5.2.2. Introduction to DIRIS Digiware D-70

The DIRIS Digiware D-70 display embeds a web-based software (WEBVIEW-M) which allows a remote visualisation of real-time and historical measurements.

The DIRIS Digiware D-70 display is a master on the Digiware bus and acts as a gateway interface to communicate measurements over RS485 and Ethernet.

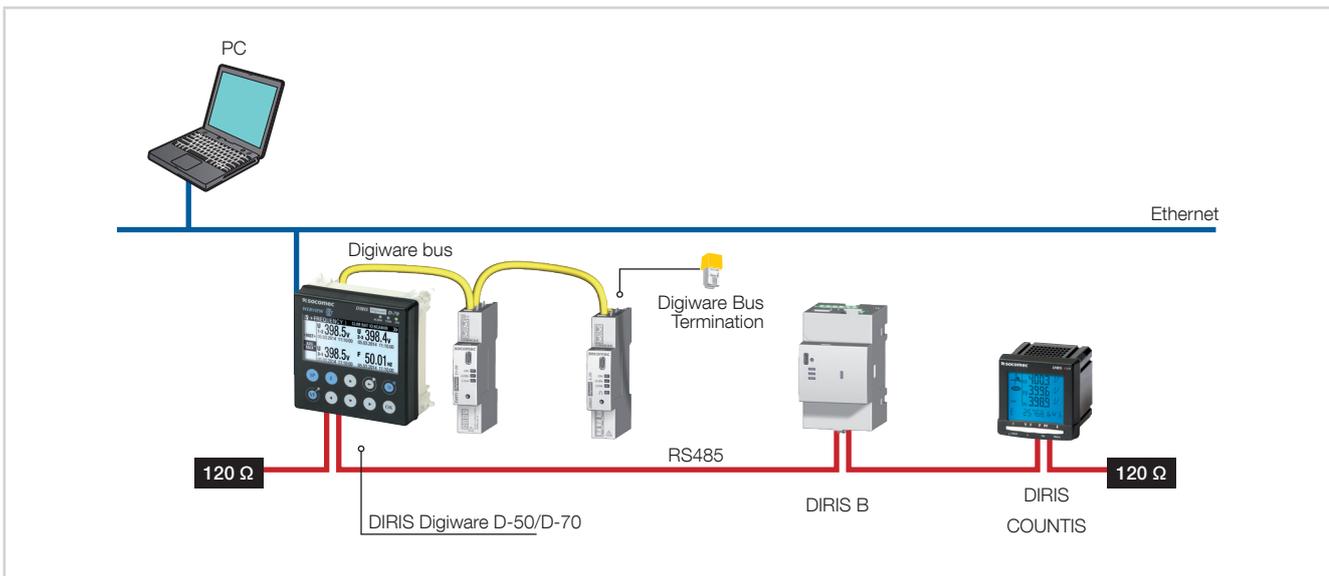
The RS485 port can be configured as a Master or Slave.

The Ethernet port is used to:

- Communicate via Modbus TCP (max. 16 simultaneous connections), measurements from meters and measuring devices connected to the Digiware and RS485 buses.
- Communicate via BACnet IP and SNMP, measurements from meters and measuring devices connected to the Digiware and RS485 buses.
- Automatically send alarm notifications via emails (SMTPS).
- Synchronize the date/time to an SNTP server.
- Automatically and cyclically export historical measurements via FTPS.

Data logging capabilities of the DIRIS Digiware D-70 are explained in the table below:

| | CONSUMPTION CURVES | LOAD CURVES | TRENDS |
|---|--|--|--|
| Logged data | Energy: kWh, kvarh, kVAh | Power: kW, kvar, kVA | Average measurements: U, V, I, P, Q, S, PF, Temperature... |
| Compatible products | COUNTIS Exx (all) DIRIS Axx (all) DIRIS Bxx (all) DIRIS Digiware XXX (all) | Countis Eci, Countis E3x DIRIS A-30 + MEM / A60 DIRIS B-30 DIRIS Digiware I-31 / I-61 / I-35 / I-45 / I-35dc / S-135 / S-Datacenter DIRIS A-40 | DIRIS B-30 DIRIS Digiware I-35 / I-45 / U-30 / U-31dc / U-32dc / S-135 / S-Datacenter DIRIS A-40 |
| Integration period | configurable from Easy Config System, 10 min to 60 min | configurable from Easy Config System, 1 min to 60 min | |
| Data logging duration | 1 year with a 60-min integration period. Proportional for different values: For example: 3 months with a 15-min integration period. This applies no matter how many devices (1 to 32) are connected to the D-70. The level of detail of the log is not linked to the number of devices connected: | | |
| Operation | Readings taken every 10 min / 60 min in the meter/PMD. | The data is recorded in a cache memory on the meter and then downloaded by the D-70. If communication is interrupted, the missing data is recovered by the D-70 once the connection is restored so that recording continues. | |
| Data backup (in the event of a loss of communication between the D-70 and the meter) | NO | YES (in the meter's cache memory) | |
| Export to FTP server | YES | YES | YES |
| Webview link |  |  |  |
| Specific configuration | Nothing to configure (data is recorded automatically). | Load curves must be activated on the meters (via Easy Config System). Load curves are then automatically downloaded from the meter's cache memory to the D-70. | Trends must be activated on the meters (via Easy Config System). The logs are then automatically downloaded from the meter's cache memory to the D-70. |



5.3. Touchscreens

The display consists of a screen and 10 shortcut keys:

| | |
|--|---|
| | Shortcut keys for load measurements: current, active power, reactive power, apparent power, power factor, cos phi |
| | Shortcut keys for electrical network measurements: line to neutral voltages, to line-line voltages, frequency |
| | Shortcut keys for active, reactive, apparent energy meters (total and partial readings) |
| | Arrow keys for navigation |
| | Use this to go back to a previous navigation menu |
| | Use this to go to the previous/next product (to scroll through all your meters and centralised measuring devices) |
| | Use this to confirm your navigation or entry selection |

5.4. LED display

ALARM* (red)

- Off: no active alarm
- Stable: at least one alarm (measurement, logical, protection) is active on the display or a connected device
- Flashing: at least one system alarm is active on the display or a connected device



*Go to the *EVENTS* menu for details on active alarms

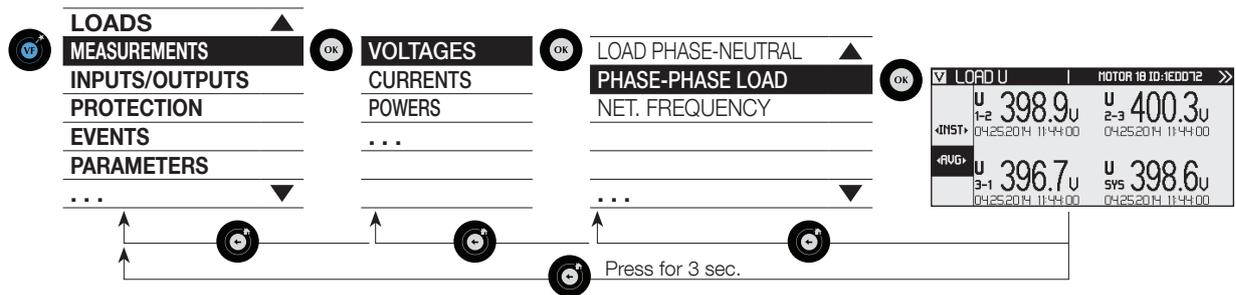
COM (orange)

- Off: display is not communicating with downstream devices
- Stable: address conflicts during auto-discovery process
- Flashing: communication in progress with a downstream device (RS485 or Digiware)

ON (green)

- Off: display is not powered
- Stable: device is powered

5.5. Navigation



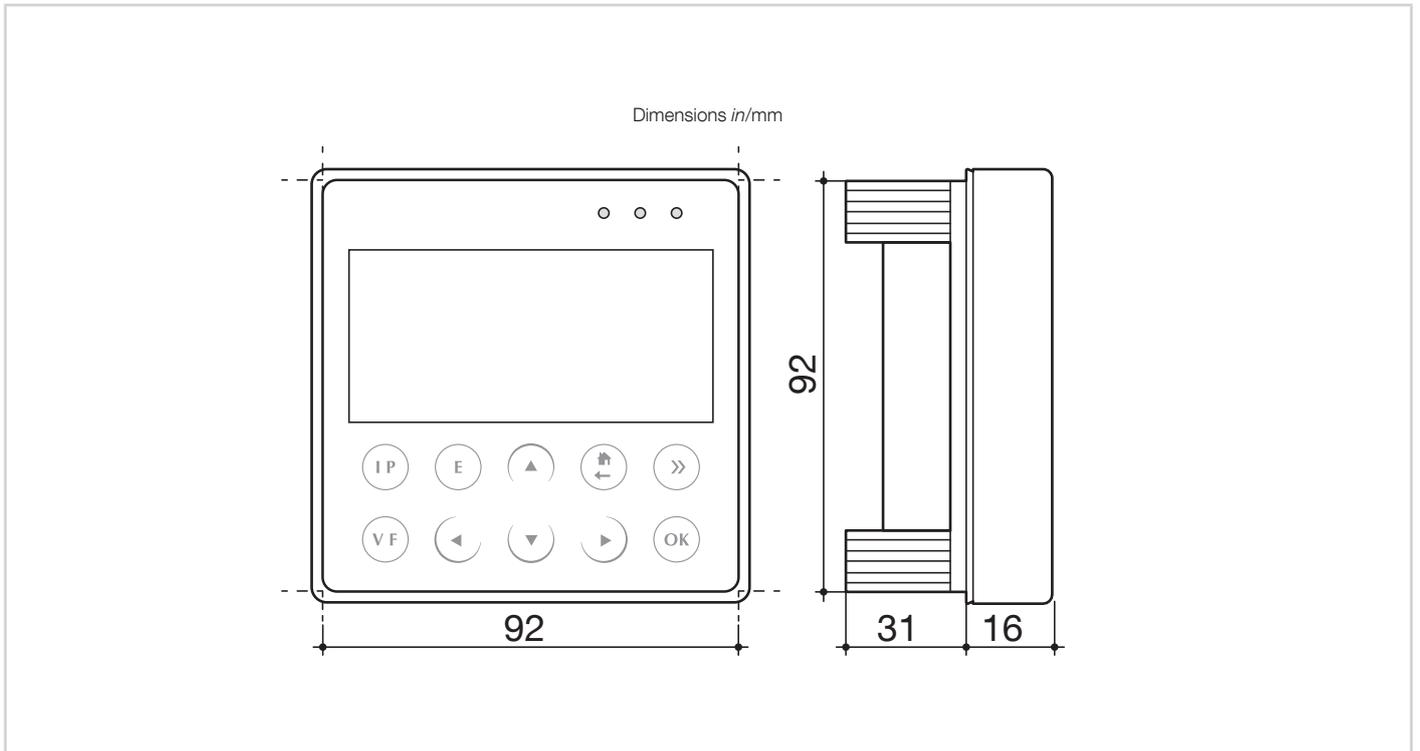
5.6. Menu structure

| LOADS | | | |
|--|---------------------------------------|--|--------------------|
| MEASURES | VOLTAGES | Load Line-Neutral | |
| | | Load Line-Line | |
| | | Net. Frequency | |
| | | Net. Line-Neutral | |
| | | Net. Line-Neutral Unbalance | |
| | | Net. Line-Neutral Harmonics | |
| | | Net. Line-Neutral Crest Factor | |
| | | Net. Line-Line | |
| | | Net. Line-Line Unbalance | |
| | | Net. Line-Line Harmonics | |
| | | Net. Line-Line Crest Factor | |
| | | CURRENTS | Currents |
| | | | Current System |
| | | | Currents Unbalance |
| | Currents THD | | |
| | Currents K Factor | | |
| | Currents Harmonics | | |
| | Currents Crest Factor | | |
| | POWERS | | Active Powers |
| | | Reactive Powers | |
| | | Apparent Powers | |
| | | Predictive Powers | |
| | | Power Factors | |
| | | Cos Phi | |
| | ENERGIES | Tan Phi | |
| | | Positive Active Energies | |
| | | Negative Active Energies | |
| Positive Reactive Energies | | | |
| Negative Reactive Energies | | | |
| Positive/Negative Reactive Lead/Lag Energies | | | |
| Apparent Energies | | | |
| PULSE METERS | | | |
| RESET ALL MIN/MAX VALUES | | | |
| INPUT/OUTPUT | DIGITAL INPUT | | |
| | DIGITAL OUTPUT | | |
| | ANALOGUE INPUT | | |
| PROTECTION | | | |
| EVENTS | IN PROGRESS | | |
| | HISTORY | Alarms Quality | |
| PARAMETERS | DISPLAY | Language | |
| | | Date format | |
| | | RS485 communication: Mode (master/slave), Baudrate, Stop, Parity, Address | |
| | | Ethernet communication: DHCP, IP Address, Mask, Gateway | |
| | | Set remote Device Date/Time: Date format, Date separator | |
| | | Change Password | |
| | CONFIGURE A DEVICE | Status | |
| | AUTODETECT SERIAL DEVICES | Found/Conflict | |
| | | Digiware addressing range: Start address, End address, Addr. Set Method (Autoset or Push button) Method: Fast or Full | |
| | LIST PRODUCTS | | |
| ADD NEW DEVICE | Type: RS485 / Digiware, IP Address | | |
| REMOVE DEVICE | | | |
| RESTORE A PRODUCT FACTORY SETTINGS | | | |
| PRODUCTS SOFT VERSION | | | |
| DIAGNOSIS | ETHERNET | IP address | |
| | | Host name | |
| | | RS485 comm status | |
| | SERIAL COM | Digiware comm status | |
| | | Devices comm OK | |
| | | Devices comm NOK | |
| | | Restart serial comm analysis | |
| | NETWORK TIME | SNTP | |
| | | Current Date/Time Last activity | |
| | EMAIL | SMTP Last activity | |
| | FTP CLIENT | FTP Last activity | |
| | DATALOGGER | Consumptions | |
| Trends Alarms | | | |
| ABOUT | IP ADDRESS | | |
| | MAC ADDRESS | | |
| | SERIAL NUMBER | | |
| | SOFTWARE VERSION | | |
| | REBOOT | | |



Note: the menus available depend on the slave device connected.

5.7. Dimensions



Door cut-out must be 92x92mm.

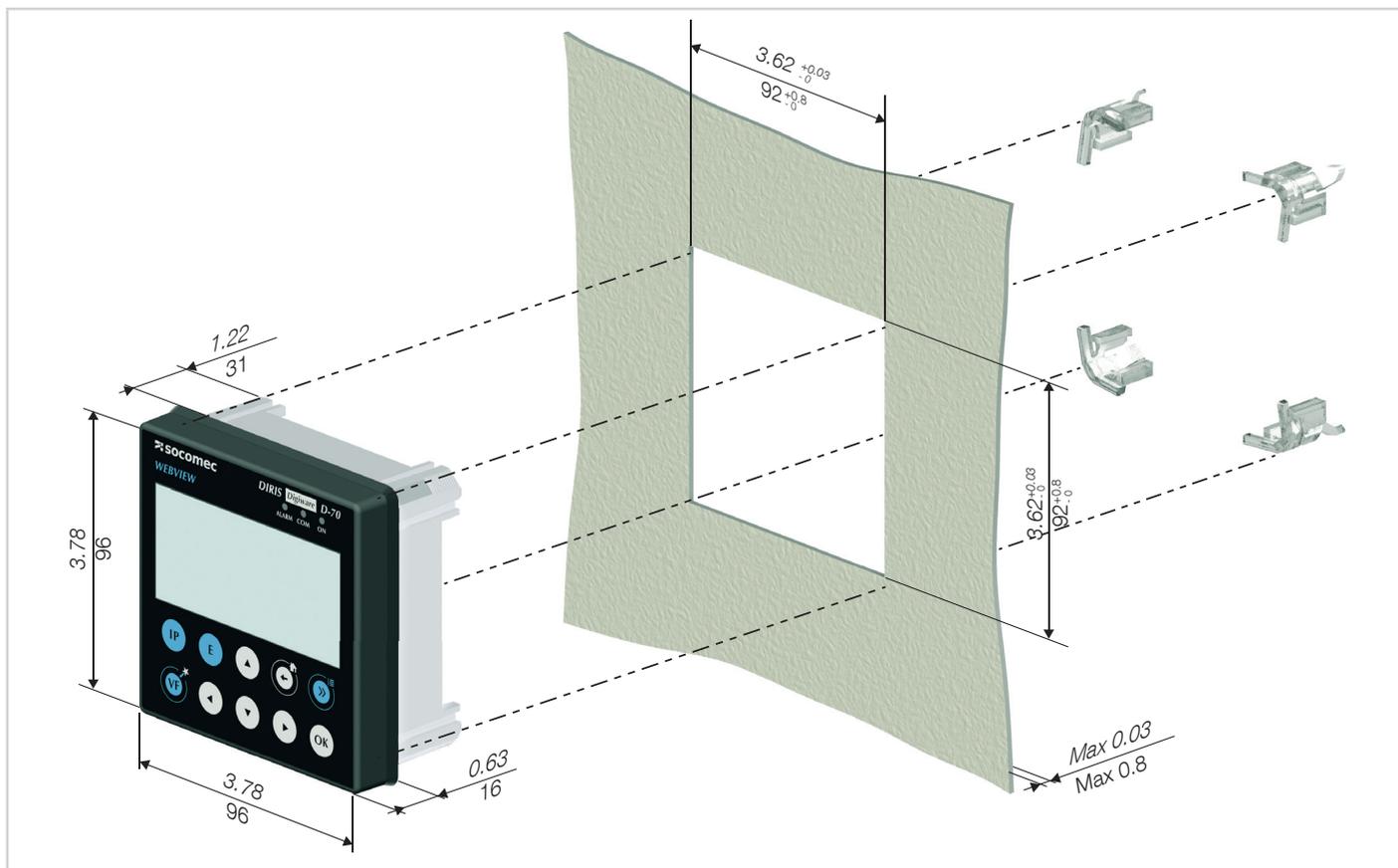
6. MOUNTING

6.1. Recommendations and safety

Refer to the safety instructions (section “2. Hazards and warnings”, page 5)

6.2. Door mounting

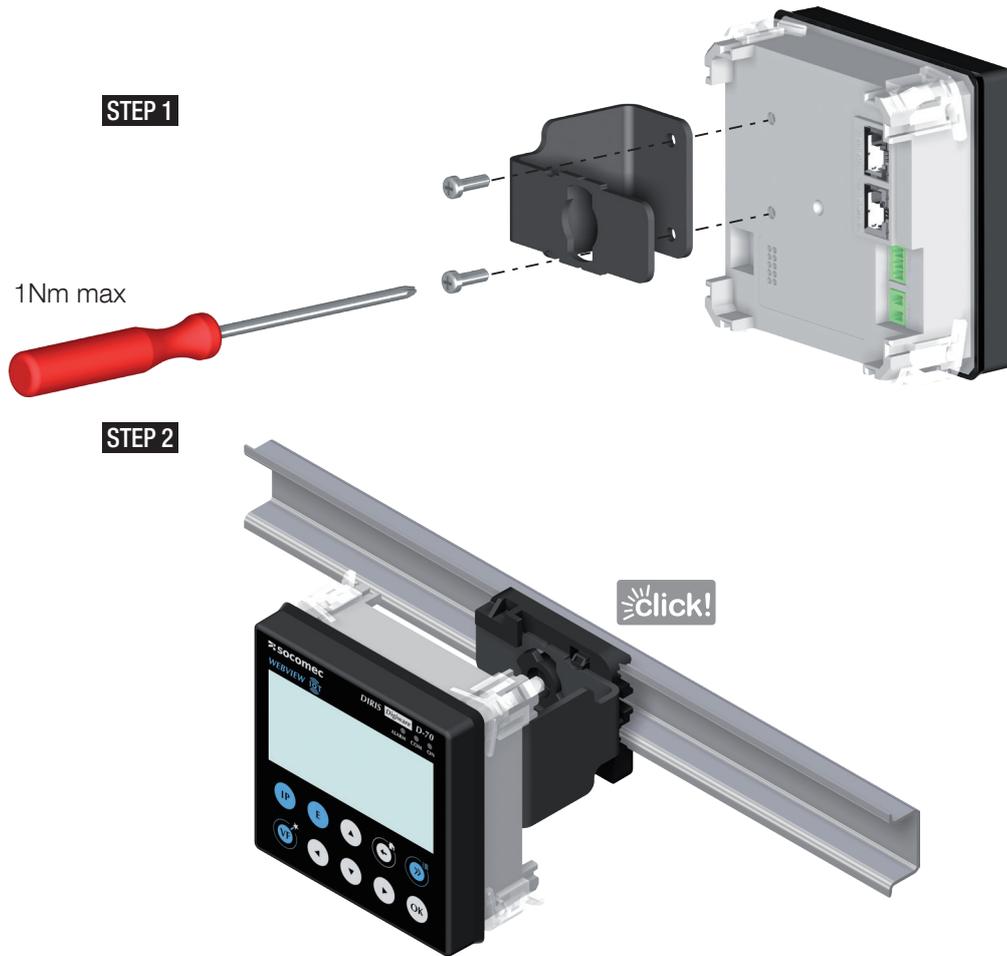
DIRIS Digiware D-50 and D-70 are panel-mounted (cut-out: 92x92mm). The display is secured with clips.



6.3. DIN rail mounting

DIRIS Digiware D-50 and D-70 can also be mounted on a DIN rail using a dedicated accessory (4829 0230) sold separately.

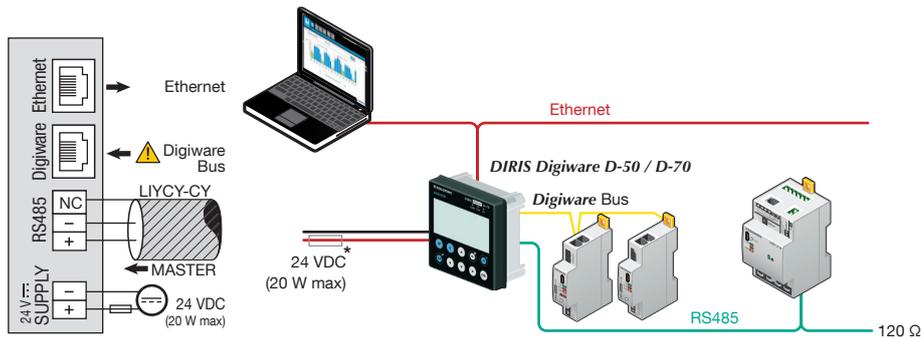
DIN rail mounting kit (separate part number: 4829 0230)



7. COMMUNICATION ARCHITECTURES

The DIRIS Digiware D-50 and D-70 display can be configured as a Slave or a Master for the RS485 bus.

7.1. RS485 Master

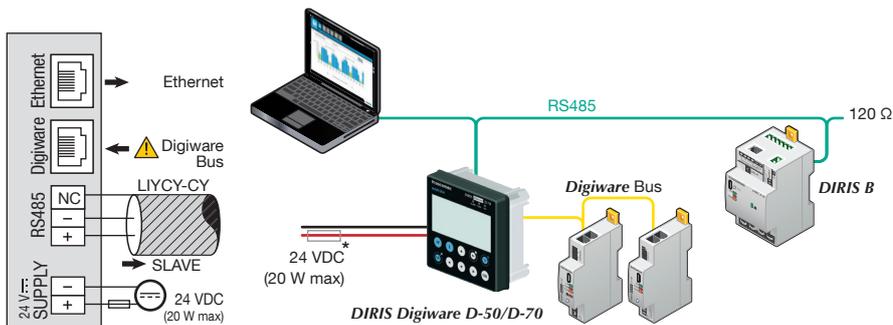


(*) The use of a 1A / 24 VDC fuse protection is recommended if the 24 VDC power supply is not provided by Socomec. For North America, the use of recognized fuses is mandatory.

All inputs/outputs are considered as SELV (Safety Extra-Low Voltage).

When configured as RS485 Master, the D-50/D-70 acts as a gateway (Digiware to Ethernet and RS485 to Ethernet).

7.2. RS485 Slave



(*) The use of a 1A / 24 VDC fuse protection is recommended if the 24 VDC power supply is not provided by Socomec. For North America, the use of recognized fuses is mandatory.

All inputs/outputs are considered as SELV (Safety Extra-Low Voltage).

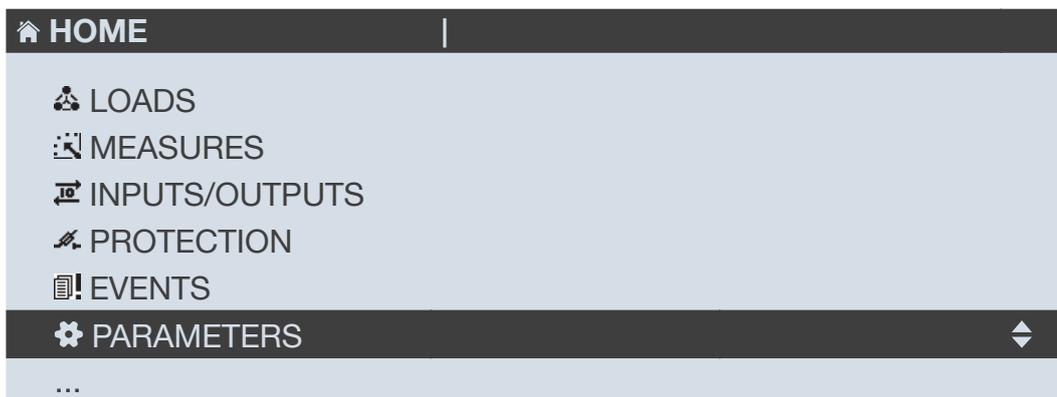
When configured as RS485 Slave, the D-50/D-70 communicates measurements from DIRIS Digiware modules over RS485.

8. CONFIGURATION

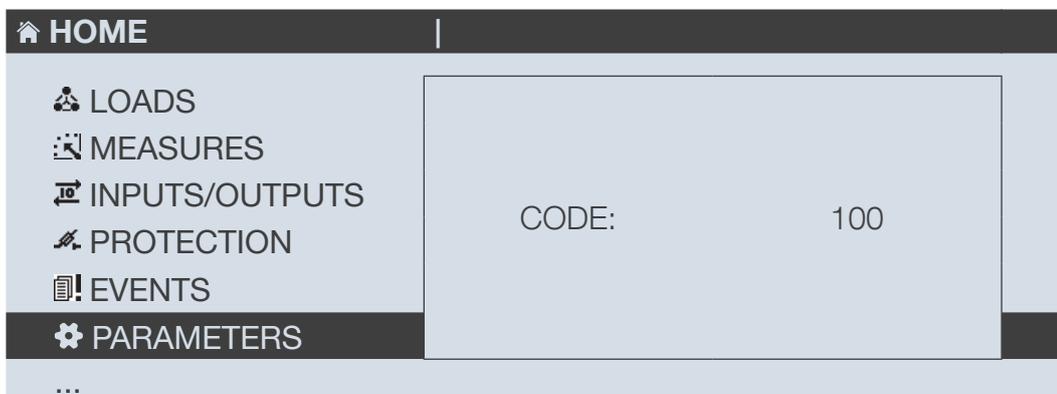
From the Socomec start-up screen, press "OK" to enter the navigation menu:



Select the "PARAMETERS" menu by using the navigation key "DOWN ARROW" 3x and confirm with "OK":

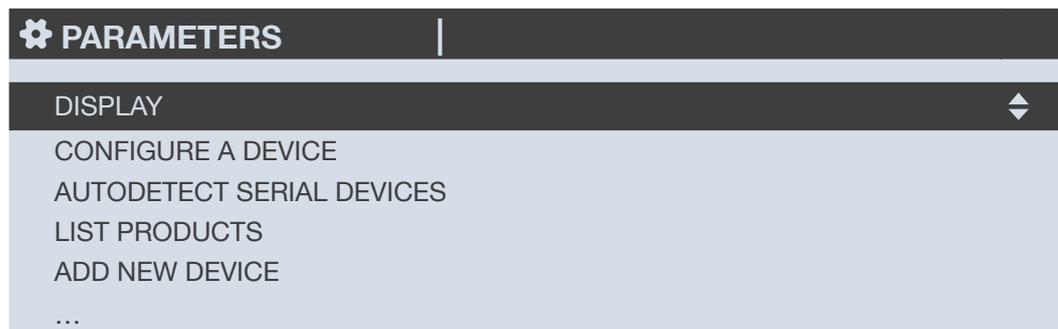


Enter the password "100" using the arrow pad (4 arrow keys) and confirm with "OK":



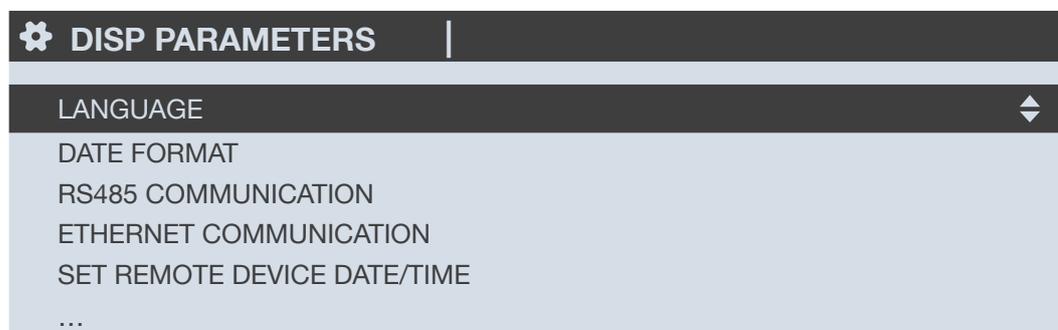
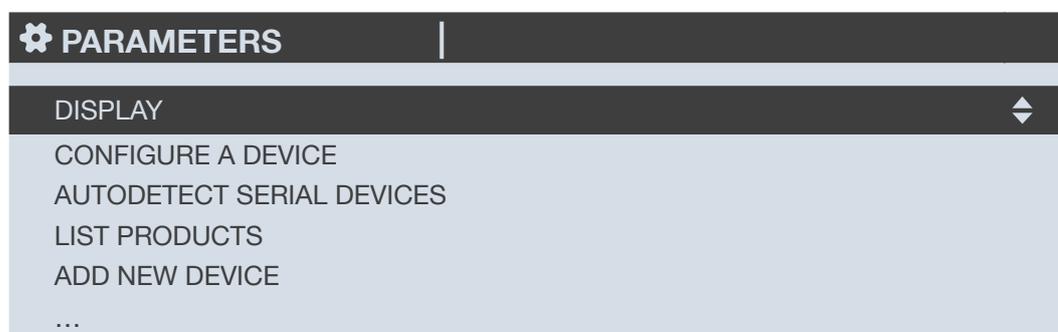
Do not power off the display before saving the configuration or changes will be lost

The 3 following menus will be detailed in the paragraphs below:



- DISPLAY: to access settings that are specific to the display.
- AUTODETECT SERIAL DEVICES: to launch an automatic detection and addressing of meters and power monitoring devices connected to the D-50/D-70 display.
- CONFIGURE A DEVICE: to configure the meters and other power monitoring devices connected to the D-50/D-70 display.

8.1. Display-specific settings



- LANGUAGE: to set the display's navigation language (english by default)
- DATE FORMAT: to set the date/time format
- RS485 COMMUNICATION: to configure the RS485 communication settings
- ETHERNET COMMUNICATION: to set the display's IP address
- SET REMOTE DEVICE DATE/TIME: to set the date and time
- CHANGE PASSWORD: to change the password to access the settings menu (default: "100")

8.1.1. Language

You can change the display's navigation language here.

Choose from: English, French, German, Italian, Spanish, Flemish, Polish, Turkish, Russian, Slovenian and Chinese.

Select your language with the arrow pad and confirm with "OK".

| PARAMETERS | |
|------------|---|
| ENGLISH | ↕ |
| FRANCAIS | |
| DEUTSCH | |
| ITALIANO | |
| POLSKI | |
| ... | |

8.1.2. Date format

You can select the display's date format, including the separator between the day, month and year:

| DATE FORMAT | |
|-----------------|------------|
| DATE FORMAT: | MM/DD/YYYY |
| DATE SEPARATOR: | ◀/▶ ↕ |

8.1.3. RS485 communication

Configure the display's Modbus address.

Configure the baudrate, stop bits, parity of the RS485 and Digiware bus.



DIRIS Digiware D-50 / D-70 are master devices on Digiware and RS485 buses (baudrate, parity, stop bits).

| PARAMETERS | |
|------------|-------------|
| BAUDRATE: | ◀ 38400 ▶ ↕ |
| STOP: | 1BIT |
| PARITY: | NONE |
| ADDRESS: | 001 |

8.1.4. Ethernet communication

You can configure the Ethernet settings of DIRIS Digiware D-50 / D-70 displays:

- DHCP (IP address dynamically assigned by the Ethernet network) ENABLED/DISABLED
- IP address
- Subnet mask
- LAN gateway

| PARAMETERS | |
|------------|-----------------|
| DHCP | ◀ DISABLED ▶ |
| IP ADDRESS | 192.168.000.003 |
| MASK | 255.255.255.000 |
| GATEWAY | 000.000.000.000 |

8.1.5. Setting the date/time on the remote product

You can configure the date and time on the DIRIS Digiware D-50/D-70 display:

- Manually by entering the year, month, day, hour, minute, second
- Automatically (like a computer) by SNTP server

If the DIRIS Digiware D-50/D-70 is synchronised by SNTP, it will broadcast and synchronise the date and time of all downstream devices.

| CONF. DATE/TIME | |
|----------------------------|------------|
| AUTO. REMOTE DATE/TIME SET | ◀ MANUAL ▶ |
| YEAR | 00 |
| MONTH | 01 |
| DAY | 01 |
| TIME | 00 |
| ... | |

To configure the SNTP server, you will need to enter the following fields:

- SNTP server IP address
- SNTP server port

| CONF. DATE/TIME | |
|----------------------------|-----------------|
| AUTO. REMOTE DATE/TIME SET | ◀ SNTP ▶ |
| SERVER IP ADDRESS: | 000.000.000.000 |
| SERVER PORT: | 00123 |
| TIME ZONE: | GMT +9:00 |
| OK | |

8.2. Automatic detection of slave devices

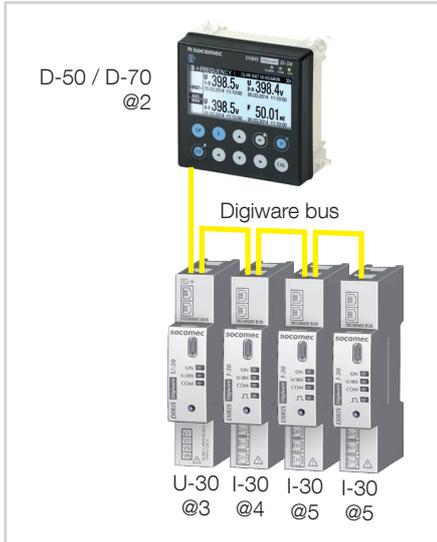
The auto-discovery function scans and discovers slave devices connected to the Digiware and RS485 buses and automatically assigns a unique Modbus address to each device.

The auto-discovery function is compatible with DIRIS Digiware modules, DIRIS B and DIRIS A-40 power meters.

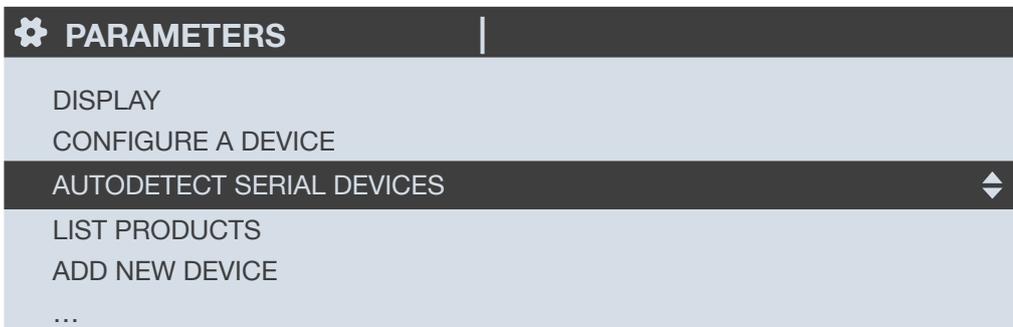
For other devices such as COUNTIS energy meters and DIRIS A-10/A-20/A-30/A-60 power meters, you must change their Modbus address manually.

Example of auto-discovery on a D-50/D-70 display.

Four products are connected to the D-50 / D-70. Two are addressed correctly, the other two have an identical address.



Go to “PARAMETERS” / “AUTODETECT SERIAL DEVICES”:



Click on “DIGIWARE ADDRESSING RANGE”:



This allows you to allocate Modbus addresses to the connected devices within a specific range:

| AUTODETECT. | |
|-------------------|----------|
| START ADDRESS | 001 |
| END ADDRESS | 247 |
| NB ADDR. POSSIBLE | 032 |
| ADDR. SET METHOD | AUTO SET |
| APPLY SETTINGS | |

Choose the conflict resolution method ("ADDR. SET METHOD"):

- "PUSH BUTTON": you must press the push button on each module to resolve address conflicts. The order you will use to press the push buttons on the modules will also determine the order for the Modbus addressing of those modules.
- "AUTOSET": connected devices are automatically allocated individual Modbus addresses within the specified range.

Click on "APPLY SETTINGS" to apply your modifications.

Choose the auto-discovery "METHOD":

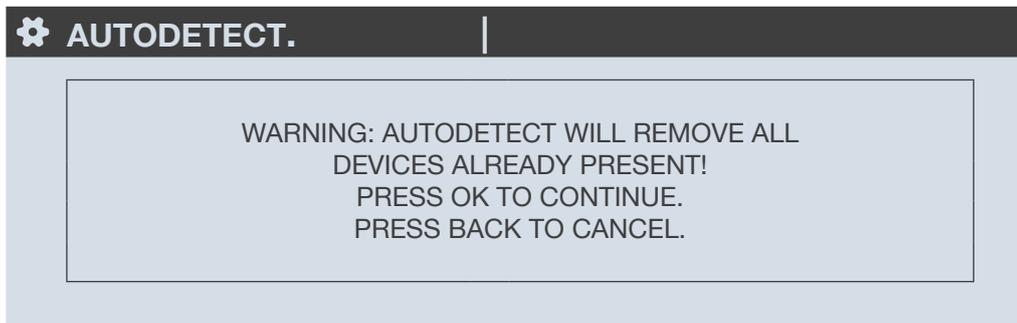
| AUTODETECT. | |
|---------------------------|-----------|
| STATUS | STOPPED |
| FOUND / CONFLICT | 000 / 000 |
| DIGIWARE ADDRESSING RANGE | 001:247 |
| METHOD | ◀ FAST ▶ |
| START | |

- FAST (default mode): this mode will only detect DIRIS Digiware modules on the Digiware bus and RS485 bus, DIRIS B and DIRIS A-40 on the RS485 bus.
- FULL: this mode will also detect other Socomec PMDs (DIRIS A) and meters (COUNTIS E) connected on the RS485 bus.

Click on "START" then "OK" to start the auto-discovery process (this can take up to 5 minutes).

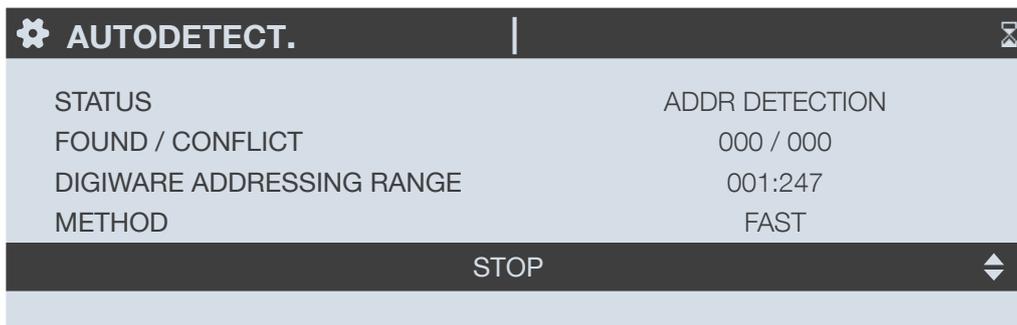
| AUTODETECT. | |
|---------------------------|-----------|
| STATUS | STOPPED |
| FOUND / CONFLICT | 000 / 000 |
| DIGIWARE ADDRESSING RANGE | 001:247 |
| METHOD | FAST |
| START | |

Please be aware that this removes all previously found devices (if they are still there they will be found again).



After pressing "OK", the steps below will automatically follow:

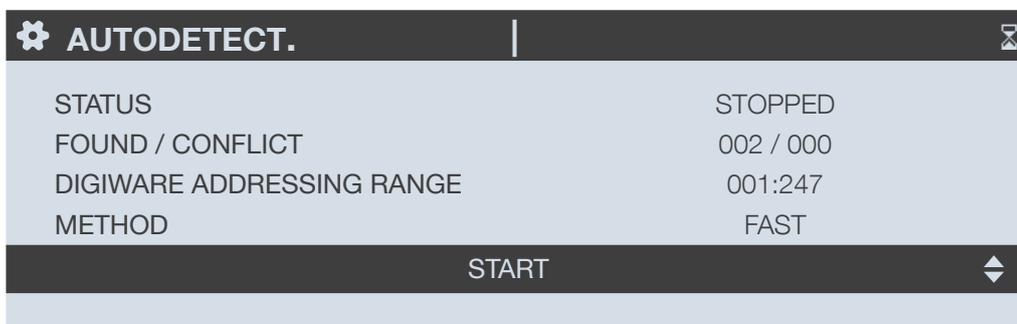
- ADDRESS DETECTION



- ADDRESS SCANNING

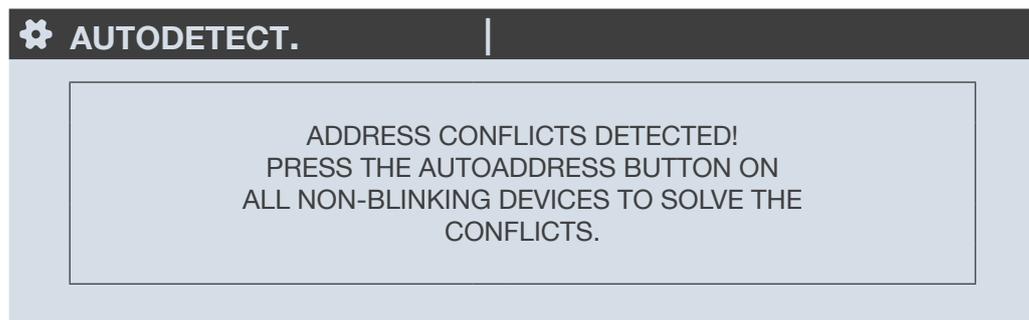


If you have chosen an automatic address conflict resolution ("AUTOSET"), the STATUS automatically goes to "STOPPED" once the auto-discovery process is finished.

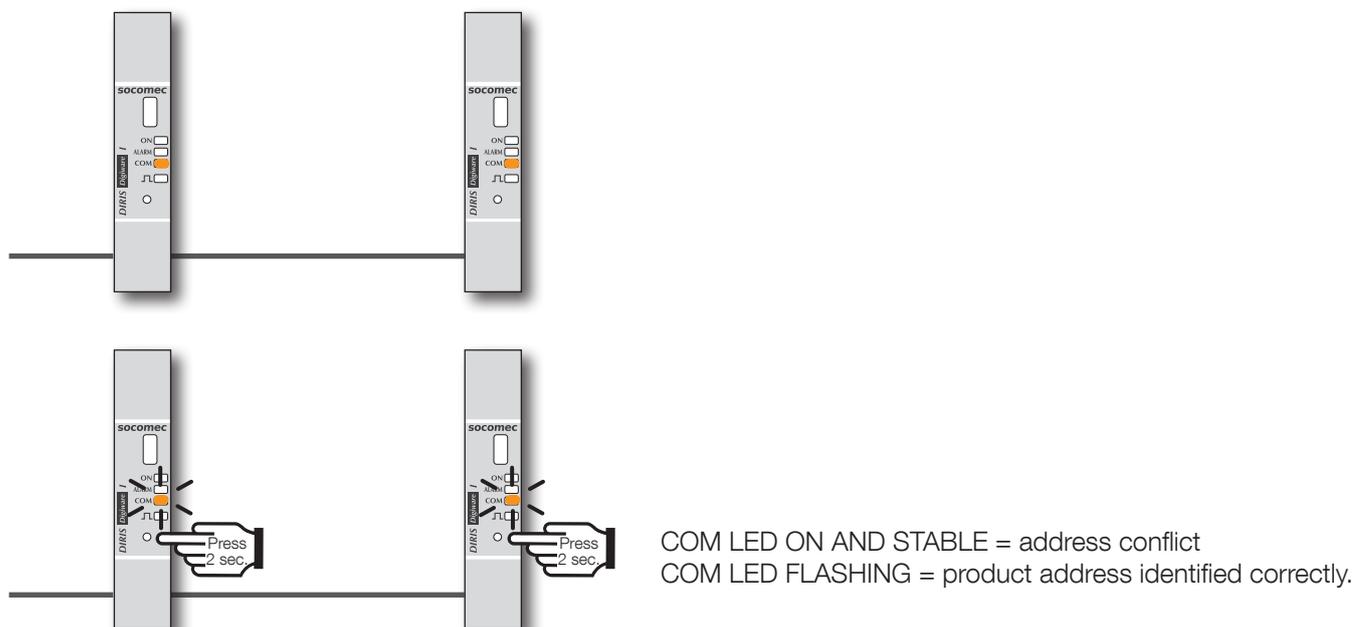


If you have chosen a manual address conflict resolution ("PUSH BUTTON"), there will be one or several conflicts if multiple devices have the same Modbus address.

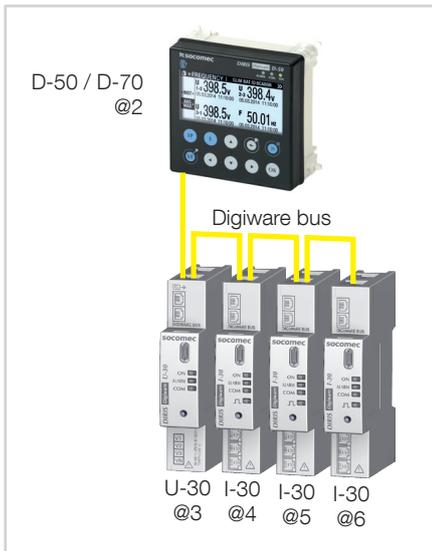
A pop-up message will be displayed on the HMI:



To manually resolve address conflicts, locate the devices which have a lit and stable "COM" LED. Press and hold down the addr. button on the front face of the module for about 2 seconds until the LED flashes:



The number of detected products increases and the number of conflicts decreases to reach zero once all products have a unique address.



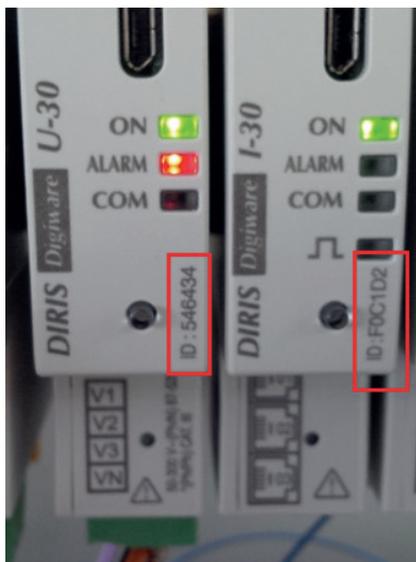
You can then check the list of detected products along with their Modbus addresses in the “LIST PRODUCTS” menu:

| PARAMETERS | LOAD1 |
|---------------------------|-------|
| DISPLAY | |
| CONFIGURE A DEVICE | |
| AUTODETECT SERIAL DEVICES | |
| LIST PRODUCTS | ◀▶ |
| ADD NEW DEVICE | |
| ... | |

Example:

| LIST PROD. | LOAD1 |
|------------------|--------|
| U-30@3 ID:545434 | @003 ▶ |
| I-30@4 ID:F0C1D2 | @004 |
| I-30@5 ID:F0C1D3 | @005 |
| I-30@6 ID:F0C1D4 | @006 |

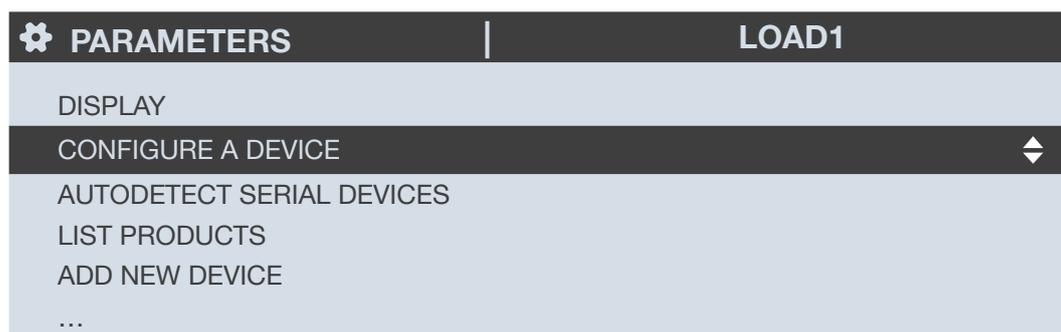
You can find the IDs on the marking on the products (546434 on the U-30 and F0C1D2 on one of the I-30s) as shown in the picture below:



You can now perform the configuration of the system. Each product must be configured individually.

8.3. Configuring the DIRIS Digiware system from the D-50/D-70 display

Go to "Parameters" > "Configure a device".



There are 2 steps to configure the DIRIS Digiware system:

- **Network:** setting the type of voltage network: single-phase (1P+N), two-phase (2P), three-phase without neutral (3P), three-phase with neutral (3P+N).
- **Load:** configuring the loads/circuits measured. You can, for example, measure three-phase and single-phase loads connected to a three-phase electrical network.

Electrical network settings are configured from the DIRIS Digiware U-xx module.

| LIST PROD. | |
|------------------|------|
| I-30@4 ID:FOC1D2 | @004 |
| U-30@6 ID:546434 | @006 |



| SELECT PROD. | | U-30@6 ID:546434 |
|--------------|--|------------------|
| NETWORK | | |

Load settings are configured from DIRIS Digiware I-xx modules

| SELECT PROD.. | |
|------------------|------|
| I-30@4 ID:FOC1D2 | @004 |
| U-30@6 ID:546434 | @006 |



| SELECT PROD. | | I-30@4 ID:FOC1D2 |
|--------------|--|------------------|
| LOADS | | |

With DIRIS B power monitoring devices, network and loads settings are accessible from the DIRIS B altogether.

8.3.1. Network configuration

You can configure the various network voltage parameters:

- Network type: single-phase (1P+N), two-phase (2P), three-phase without neutral (3P), three-phase+neutral (3P+N)
- Nominal voltage:
This is the phase-phase voltage (usually 400 V) for three-phase networks
This is the phase-neutral voltage (usually 230 V) for single-phase networks
- Nominal frequency: 50 or 60 Hz depending on the country
- Phase rotation: V1-V2-V3 (Direct) or V1-V3-V2 (reverse).

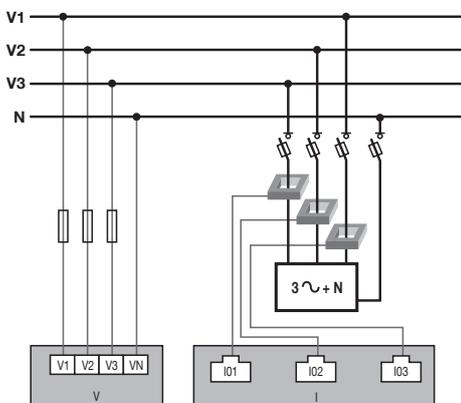
| PARAMETERS | | U-30@6 ID:546434 |
|---------------------|--|------------------|
| NETWORK TYPE | | 00400 |
| NOMINAL FREQUENCY | | 3P + N |
| NOMINAL VOLTAGE (V) | | 50HZ |
| PHASE ROTATION | | V1-V2-V3 |
| PRESS OK TO CONFIRM | | ↕ |

8.3.2. Configuring loads

Multiple loads (single-phase, two-phase or three-phase) can be measured on a DIRIS B or DIRIS Digiware I module.

8.3.2.1. Example of a load configuration

This example shows a DIRIS Digiware I-30 module measuring a three-phase + neutral load using 3 current sensors.



| LOAD | | I-30@4 ID:FOC1D2 | | | |
|----------------------------|--|------------------|------------|------------|--|
| INPUT | | I01 | I02 | I03 | |
| CT | | 250 A | 250 A | 250 A | |
| WAY | | +/DIRECT | +/DIRECT | +/DIRECT | |
| V LINE | | V3 | V2 | V1 | |
| LOAD | | L1 | L1 | L1 | |
| TYPE | | 3P+N_3CT | 3P+N_3CT | 3P+N_3CT | |
| PRESS OK TO ENTER SETTINGS | | | | | |



The current sensor connected to the current 1 input measures the current of phase 3 (V3)

The current sensor connected to the current 2 input measures the current of phase 2 (V2)

The current sensor connected to the current 3 input measures the current of phase 1 (V1)

| ⚙️ LOAD | | I-30@4 ID:FOC1D2 | | |
|----------------------------|--|------------------|----------|----------|
| INPUT | | I01 | I02 | I03 |
| CT | | 250 A | 250 A | 250 A |
| WAY | | +/DIRECT | +/DIRECT | +/DIRECT |
| LINE V | | V3 | V2 | V1 |
| LOAD | | L1 | L1 | L1 |
| TYPE | | 3P+N_3CT | 3P+N_3CT | 3P+N_3CT |
| PRESS OK TO ENTER SETTINGS | | | | |

The 3 current inputs I01, I02, I03 are assigned to the same three-phase load no. 1 (L1).

| ⚙️ LOAD | | I-30@4 ID:FOC1D2 | | |
|----------------------------|--|------------------|----------|----------|
| INPUT | | I01 | I02 | I03 |
| CT | | 250 A | 250 A | 250 A |
| WAY | | +/DIRECT | +/DIRECT | +/DIRECT |
| LINE V | | V3 | V2 | V1 |
| LOAD | | L1 | L1 | L1 |
| TYPE | | 3P+N_3CT | 3P+N_3CT | 3P+N_3CT |
| PRESS OK TO ENTER SETTINGS | | | | |

The “CT” field indicates the current rating of the sensor connected and the “WAY” field shows if it was mounted in the correct orientation (+/DIRECT = P1 --> P2) or backwards (-/INV = P2 --> P1)

| ⚙️ LOAD | | I-30@4 ID:FOC1D2 | | |
|----------------------------|--|------------------|----------|----------|
| INPUT | | I01 | I02 | I03 |
| CT | | 250 A | 250 A | 250 A |
| WAY | | +/DIRECT | +/DIRECT | +/DIRECT |
| LINE V | | V3 | V2 | V1 |
| LOAD | | L1 | L1 | L1 |
| TYPE | | 3P+N_3CT | 3P+N_3CT | 3P+N_3CT |
| PRESS OK TO ENTER SETTINGS | | | | |

8.3.2.2. Changing the load settings

Following the example above, to change the settings, press "OK".

| LOAD | | I-30@4 ID:FOC1D2 | | |
|--------|------------|------------------|------------|--|
| INPUT | I01 | I02 | I03 | |
| CT | 250 A | 250 A | 250 A | |
| WAY | +/DIRECT | +/DIRECT | +/DIRECT | |
| LINE V | V3 | V2 | V1 | |
| LOAD | L1 | L1 | L1 | |
| TYPE | 3P+N_3CT | 3P+N_3CT | 3P+N_3CT | |

PRESS OK TO ENTER SETTINGS

You can change each parameter to configure each of the loads (the values in bold are shown on the screen in the example below)

- LOAD -> configure load 1: **L1** - load 2: L2 - load 3: L3
- NAME -> name of the load: **LOAD 1** (edit with max. 16 characters)
- TYPE -> type of load: single-phase (1P+N), two-phase (2P), three-phase (3P), **three-phase+neutral (3P+N)**
- NOMINAL I (A) -> set the nominal current of the load: **20A** (caution: the nominal current of the load may differ from the rating of the current sensor (CT1) used: a 63A current sensor can be used to monitor a 20A circuit breaker.
- CT1 -> current measured by the current sensor connected to input: **I01**, I02, I03.

| LOAD | | I-30@4 ID:FOC1D2 | |
|---------------|----------|------------------|--|
| LOAD | ◀ L1 ▶ | ⬆ | |
| NAME | LOAD 1 | | |
| TYPE | 3P+N_3CT | | |
| NOMINAL I (A) | 00020 | | |
| CT1 | I01 | | |
| ... | | | |

Go to "CT settings" to perform the configuration of current sensors.

| LOAD | | I-30@4 ID:FOC1D2 | |
|---------------|----------|------------------|--|
| ... | | | |
| NAME | LOAD 1 | | |
| TYPE | 3P+N_3CT | | |
| NOMINAL I (A) | 00020 | | |
| CT1 | I01 | | |
| CT settings | | ⬆ | |
| ... | | | |

Configure:

- WAY -> Direction of the current sensor **+/DIRECT**, -/INV.
- V Line -> V1, V2, **V3** (position of the current sensor on phase 1, phase 2 or phase 3).
- CT -> Indicates the rating of the current sensor used. Click on "DETECT" to automatically detect the rating. After 2 seconds, the rating is displayed.

Complete the process by selecting "OK" then "OK" again

| ⚙️ LINE SETTINGS | | I-30@4 ID:FOC1D2 |
|------------------|--|------------------|
| WAY | | + / DIRECT |
| V LINE | | V3 |
| CT | | 0600 |
| DETECT | | ↕ |
| OK | | |

If a load is configured as three-phase or three-phase+neutral, for example, you would have to configure multiple current sensors (e.g. 3 current sensors for one three-phase load):

| ⚙️ LOAD | | I-30@4 ID:FOC1D2 |
|-------------|-------------|------------------|
| ... | | |
| | CT SETTINGS | |
| CT2 | | I02 |
| | CT SETTINGS | |
| CT3 | | I03 |
| CT SETTINGS | | ↕ |
| ... | | |

When you have finished configuring the entire load (L1) (type of load, name, nominal current, current sensors), scroll right from the "LOAD" line to configure loads 2 and 3 (L2, L3):

| ⚙️ LOAD | | I-30@4 ID:FOC1D2 |
|---------------|--------|------------------|
| LOAD | ◀ L1 ▶ | ↕ |
| NAME | | LOAD 1 |
| TYPE | | 3P+N_3CT |
| NOMINAL I (A) | | 00020 |
| CT1 | | I01 |
| ... | | |

For example, a DIRIS Digiware I-30 with 3 current inputs is best for measuring:

- 1 three-phase load (1 three-phase load L1 using the current inputs I01, I02, I03)
- 3 single-phase loads (1 L1 single-phase load with a current sensor connected to the I01 current input, 1 L2 single-phase load with a current sensor connected to the I02 current input, 1 L3 single-phase load with a current sensor connected to the I03 current input).

Numerous other load combinations are possible.

When all the circuits/loads are configured (maximum 3 on one DIRIS Digiware I-30), apply your settings by selecting "SEND SETTINGS" and click "OK".

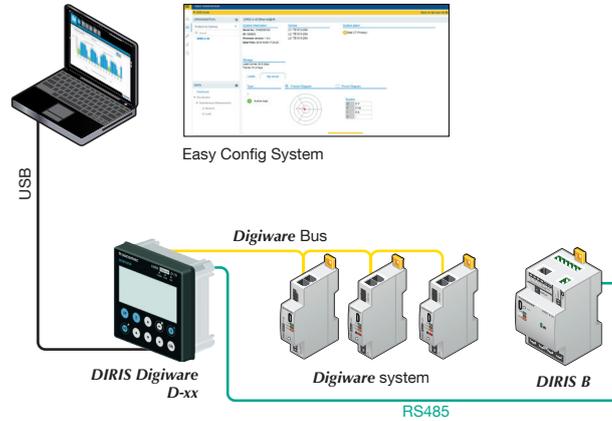
| ⚙️ LOAD | | I-30@4 ID:FOC1D2 |
|---------------|-------------|------------------|
| ... | | |
| CT3 | | I03 |
| | CT SETTINGS | |
| CT4 | | I01 |
| | CT SETTINGS | |
| SEND SETTINGS | | ↕ |

9. CONFIGURATION VIA EASY CONFIG SYSTEM

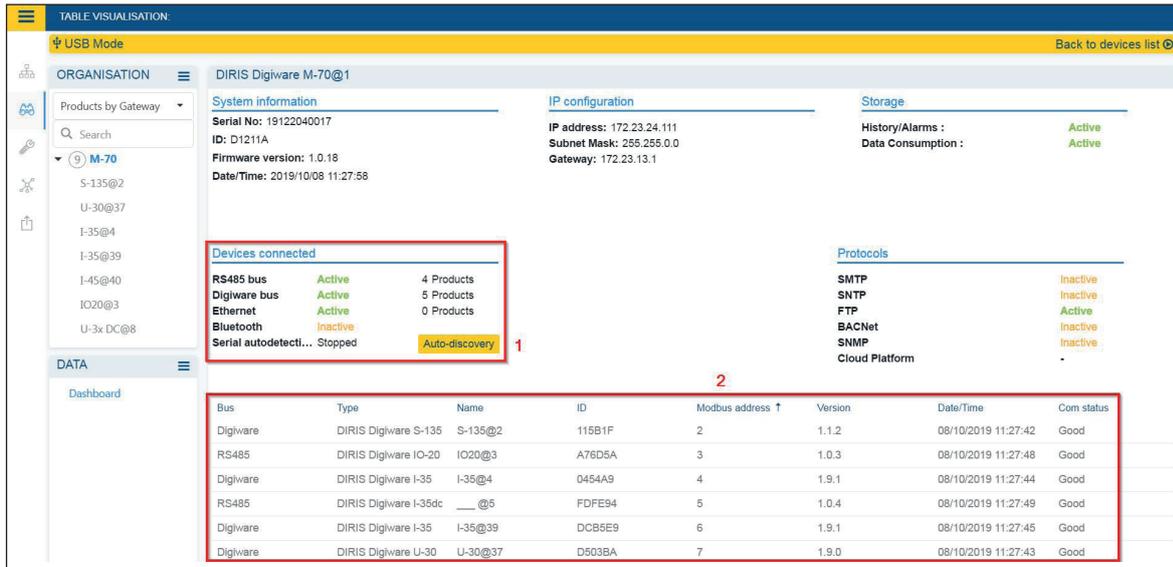
The Easy Config System software can be downloaded from the Socomec website at the following link:
www.socomec.com/easy-config-system_en.html

The Configuration of the DIRIS Digiware D-50/D-70 display and downstream Socomec devices can be done from the Easy Config System software, by connecting a computer to the D-50/D-70 display either via USB or via Ethernet.

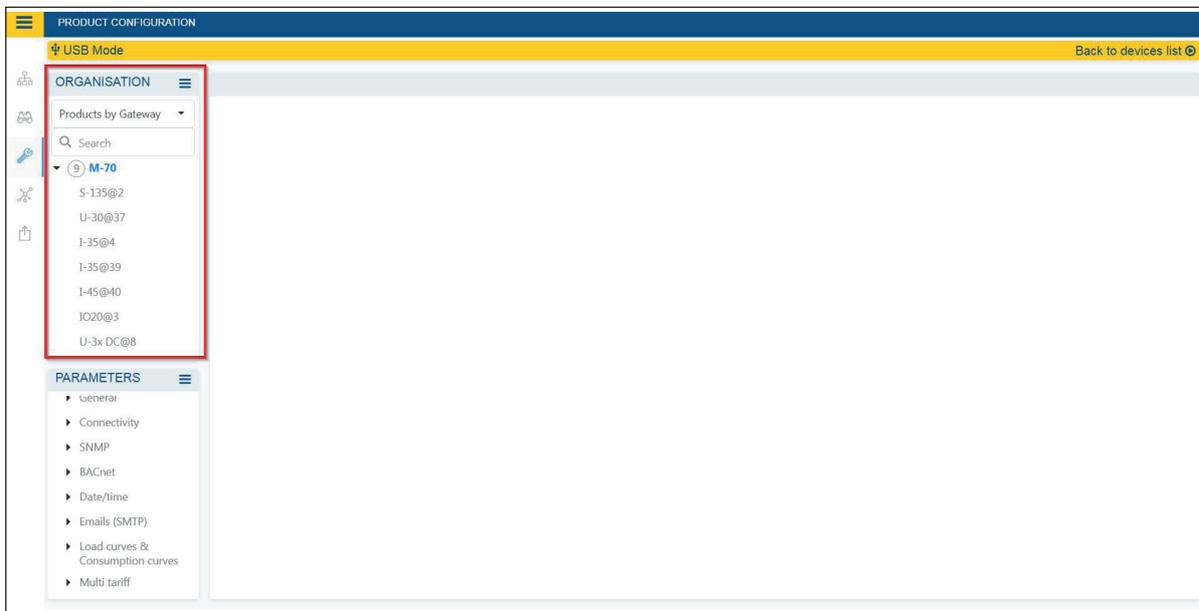
9.1. USB connection mode



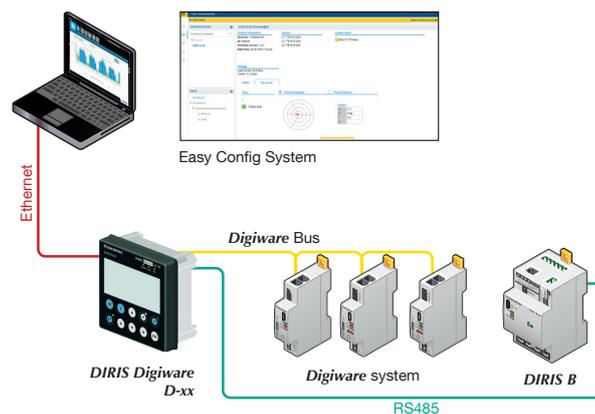
- Open Easy Config System.
- Connect a USB cable between the DIRIS Digiware D-50/D-70 display and a computer.
- Log in as User or Admin. Admin default password is “Admin”.
- Click on “New Configuration”, enter a name and icon.
- Click on the newly created configuration.
- Click on “USB mode” on the right top corner to connect to the D-50/D-70 display and access configuration menus.
- Click on the “Binocular” icon on the left side bar.
- Under the “Organisation” part, select the D-70/D-50 display.
- Click on “Dashboard” to visualise general information about the display.
- Click on “Auto-discovery” (1):



- Once the slave auto-discovery process is finished, slave devices will be displayed in the lower part of the dashboard (2). The number of devices accessible downstream the D-50/D-70 display is also displayed in the “Organisation” part, next to the D-50/D-70 display.
- Configuration of slave devices can be done directly without unplugging the USB cable, by clicking on the Wrench icon on the left side bar:



9.2. Ethernet connection mode



- Open Easy Config System.
- Log in as User or Admin. Admin default password is "Admin".
- Click on "New configuration", enter a name and icon.
- Click on the newly created configuration.
- Click on the "+" icon to manually add the D-50/D-70 display to the topology, by selecting the product, entering the IP address, Modbus address. To be able to communicate with the D-50/D-70 display, your computer must be in the same network as the D-50/D-70
- Click on the "Binocular" icon on the left side bar.
- In the "Organisation" part, select the D-70/D-50 display.
- In the "Data" part, click on "Dashboard" to visualise general information about the display.
- Click on "Auto-discovery" (1).

ORGANISATION

Products by Gateway

Search

M-70 Site A

- S-135@2
- U-30@37
- I-35@39
- I-45@40
- IO20@3
- U-3x DC@8
- IO-10@10

DATA

Dashboard

DIRIS Digiware M-70@1

System information

Serial No: 19122040017
 ID: D1211A
 Firmware version: 1.0.18
 Date/Time: 2019/10/15 14:45:50

IP configuration

IP address: 172.23.24.111
 Subnet Mask: 255.255.0.0
 Gateway: 172.23.13.1

Storage

History/Alarms : Active
 Data Consumption : Active

Devices connected

RS485 bus Active 3 Products
 Digiware bus Active 4 Products
 Ethernet Active 0 Products
 Bluetooth Inactive
 Serial autodetec... Stopped **Auto-discovery**

Protocols

SMTP Inactive
 SNTP Inactive
 FTP Active
 BACNet Inactive
 SNMP Inactive
 Cloud Platform -

| Bus | Type | Name | ID | Modbus address ↑ | Version | Date/Time | Com status |
|----------|---------------------|-----------|--------|------------------|---------|---------------------|------------|
| RS485 | DIRIS Digiware IO- | IO20@3 | A76D5A | 3 | 1.0.3 | 15/10/2019 14:45:51 | Good |
| Digiware | DIRIS Digiware I-35 | I-35@39 | DCB5E9 | 6 | 1.9.1 | 15/10/2019 14:45:47 | Good |
| Digiware | DIRIS Digiware U-30 | U-30@37 | D503BA | 7 | 1.9.0 | 15/10/2019 14:45:46 | Good |
| RS485 | DIRIS Digiware U- | U-3x DC@8 | 3BA0F0 | 8 | 1.0.3 | 15/10/2019 14:45:51 | Good |
| Digiware | DIRIS Digiware I-45 | I-45@40 | AABA01 | 9 | 1.5.0 | 15/10/2019 14:45:48 | Good |
| RS485 | DIRIS Digiware IO- | IO-10@10 | COE45D | 10 | 1.1.5 | 15/10/2019 14:45:52 | Good |

- Once the slave auto-discovery process is finished, slave devices will be displayed in the lower part of the dashboard menu (2). The number of devices accessible downstream the D-50/D-70 display is also displayed in the “Organisation” part, next to the D-50/D-70 display.
- Configuration of slave devices can be done directly by clicking on the Wrench icon on the left side bar and selecting the right device:

PRODUCT CONFIGURATION

ORGANISATION

Products by Gateway

Search

M-70 Site A

- S-135@2
- U-30@37
- I-35@39
- I-45@40
- IO20@3
- U-3x DC@8
- IO-10@10

PARAMETERS

- Settings
 - General
 - Connectivity
 - SNMP
 - BACnet
 - Date/time
 - Emails (SMTP)
 - Alarms
 - Load curves & Consumption curves
 - Multi tariff

10. WEBSERVER EMBEDDED IN THE D-50/D-70 DISPLAYS

A webservice is embedded for the configuration of network parameters (WEB-CONFIG, D-50/D-70) and the remote visualisation of measurement data (WEBVIEW-M, D-70 only).

To connect to the gateway's webservice, enter its IP address in the address bar of your web browser.

Default Ethernet parameters of the DIRIS Digiware D-50/D-70 displays are as follows:



- IP address: 192.168.0.4
- Mask: 255.255.255.0
- Gateway: 192.168.0.1

10.1. User profiles

Several profiles are available:

- User (default)
- Advanced User
- Administrator
- Cyber security

The Advanced User, Administrator and Cyber security profiles are authorised to modify settings.

| PROFILE | ACCESS | DEFAULT PASSWORD |
|----------------|---|------------------|
| User | - Visualisation of measurement data - Access to diagnostics | None |
| Advanced User | - Visualisation of measurement data - Access to diagnostics + Password management of the Advanced User profile + Reset of counters | Advanced |
| Admin | - Visualisation of measurement data - Access to diagnostics + Password management of the Admin profile + Access to configuration menu | Admin |
| Cyber security | - Visualisation of measurement data - Access to diagnostics - Password management of all profiles - Access to configuration menu + Cyber Security configuration menu + Firmware upgrade via web server | Cyber |

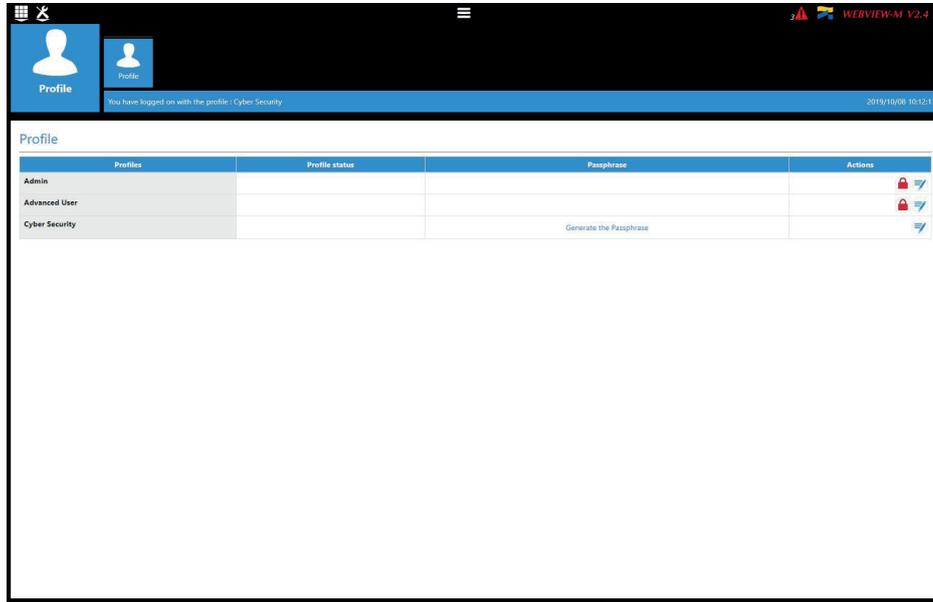




When connecting to the Admin, Advanced User or Cyber security profiles for the first time, it is mandatory to change default passwords. If these passwords are not changed, the "Password alert" alarm will remain active.

It is highly recommended to change all default passwords right away, especially the password of the Cyber security profile which has the highest privileges including changing passwords for other accounts.

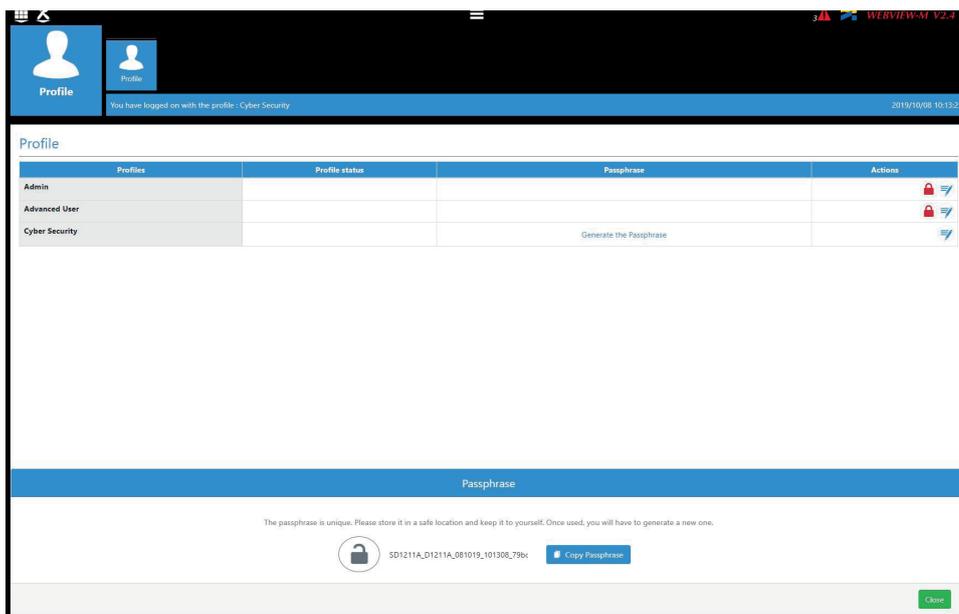
Once passwords have been changed, connect to the Cyber security profile, go to the "Profile" menu and click on "Generate the passphrase":



Copy the passphrase using the "Copy passphrase" button on the right side of the key, paste it somewhere and keep it safe. This will allow you to recover your password for the Cyber security account, should you lose it.



Account lockout policy: 3 unsuccessful login attempts to the Admin, Advanced User or Cyber security account will lock it for 1 hour. If you do not wish to wait 1 hour, you can reboot the D-50/D-70 display.



If you have forgotten to save the passphrase, the only option left is to reset the D-50/D-70 to factory default settings

10.2. Admin profile

When connected as Admin, you can access the configuration page by clicking on the “wrench/screwdriver” icon on the top left corner:

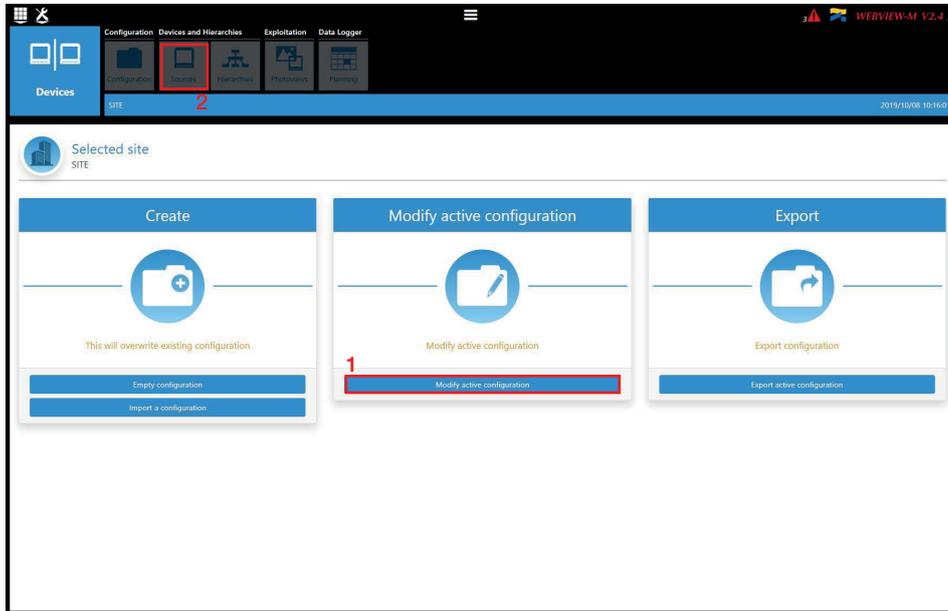


10.2.1. “Devices” tab

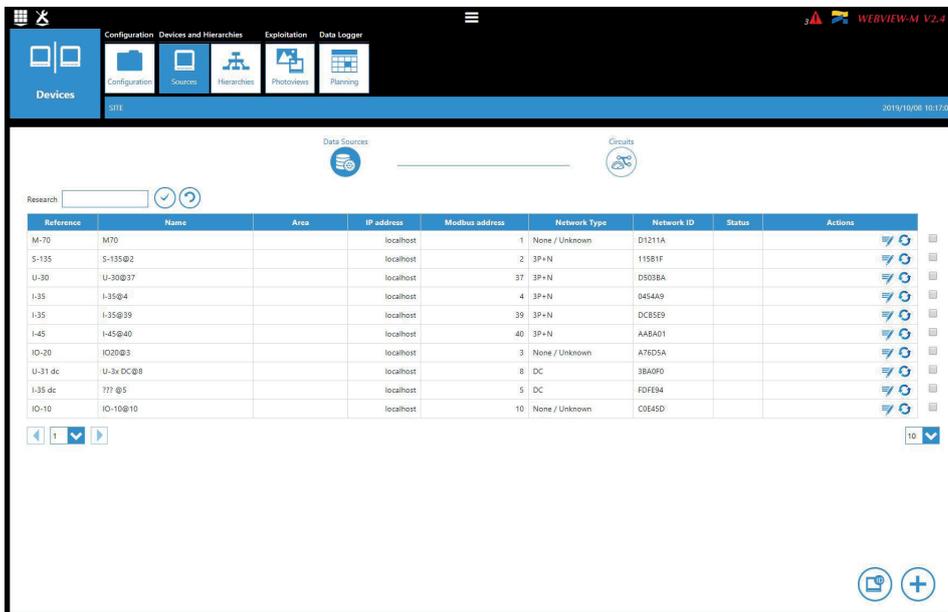
- Go to the “Devices” tab:



- Click on “Modify active configuration” (1), and then click on “Sources” (2):



- Click on the “AutoDetect” icon on the right bottom corner to detect and add SOCOMEC devices already present in the D-50/D-70 display’s topology.



- Click on the “+” icon at the right bottom corner for manually adding products one at a time. Adding an M-50/M-70 gateway or D-50/D-70 display will add the entire topology under that gateway or display.

Add a device

| | | | | |
|-----------|------|------|------------|----------------|
| Reference | Name | Area | IP address | Modbus address |
| D-50 | | | localhost | |

- The various SOCOMEC devices that are supported by WEBVIEW-M are given in the following list:

| Gateways | DIRIS Digiware | COUNTIS | DIRIS A | Switches |
|----------------|----------------|---------|---------------|--------------------|
| D-50 | D-40 | Ci | A-10 | ATyS p M |
| D-50v2 | I-30 | E03 | A-20 | C55 |
| D-70 | I-30 dc | E04 | A-30 | C65 |
| G-30/G-40 | I-31 | E13 | A-40 | C66 |
| G-50/G-60 | I-33 | E14 | A-40 Ethernet | |
| M-50 | I-35 | E17 | A-40 Profibus | Old DIRIS A |
| M-70 | I-35 dc | E18 | A14 | A10 |
| | I-43 | E23 | A17 | A20 |
| DIRIS B | I-45 | E24 | A17 2In | A20v2 |
| B-10 | I-60 | E27 | A17 THD | A40v2 |
| B-30 RF | I-61 | E28 | A17 THD In | A40v3 |
| B-30 RS485 | IO-10 | E33 | A60 | |
| | IO-20 | E34 | A80 | |
| | S-130 | E43 | | |
| | S-135 | E44 | | |
| | S-Datacenter | E44R | | |
| | U-10 | E47 | | |
| | U-20 | E48 | | |
| | U-30 | E53 | | |
| | U-31 dc | ECI32 | | |
| | U-32 dc | ECI3 | | |



Note: other tabs such as “Hierarchy” and “Photoview” can be configured as well. They offer additional modes for the visualisation and analysis of measurements and consumption.

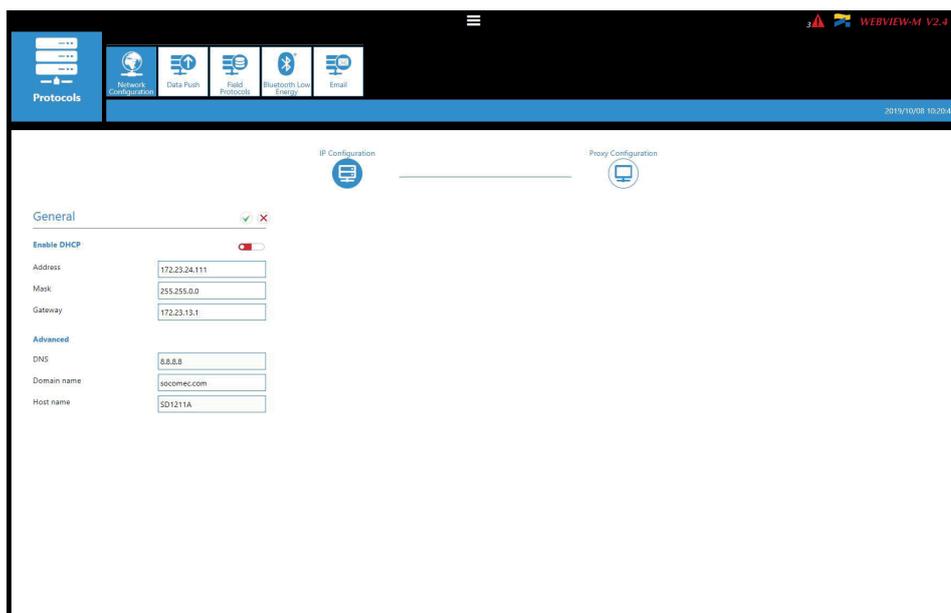
10.2.2. “Protocols” tab

Once the system is fully configured to visualise measurements and consumption on WEBVIEW-M, the communication protocols which will be used by the D-50/D-70 display to exchange data with an external supervisor (SCADA, Energy Management System, etc.) can be configured from the “Protocols” tab.



- Network Configuration

This tab allows you to modify the gateway's IP configuration:

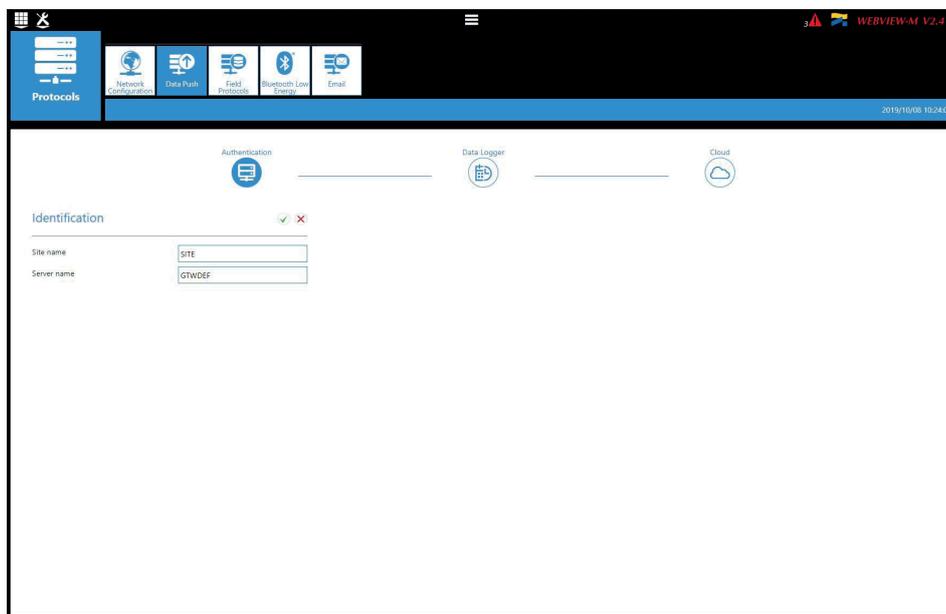


After modifying those parameters, a reboot of the D-50/D-70 display is necessary.

• Data Push

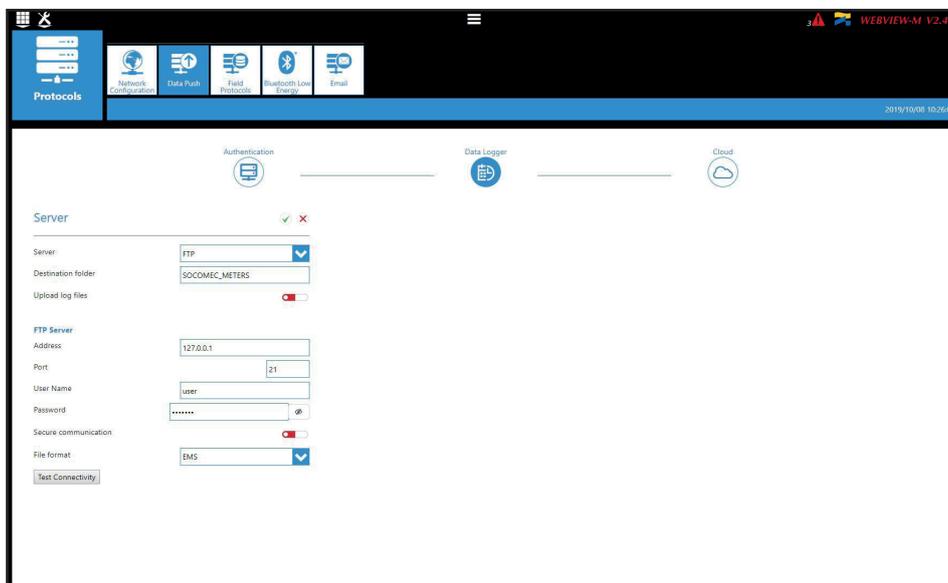
- Authentication

- Site name: This setting is essential to connect the D-50/D-70 display to a physical location within the project structure. Default Site name is "SITE" and must be changed (in EMS export mode only) or a system alarm will be triggered.
- Server name: Unique identifier of the display. The default server name is the NET ID, displayed on the home screen of the D-50/D-70 display.



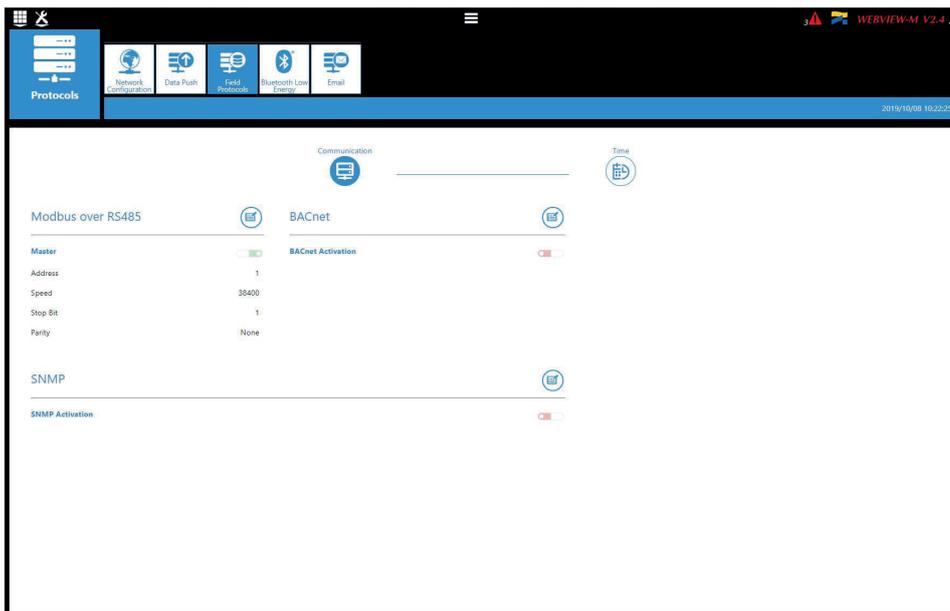
- Data Logger

- Server: To send data files to a remote server, the Administrator selects the FTP(S) server
- Destination folder: Enter the remote server directory for receiving the files
- Upload log files: Select if you want the display to also send the log file to the remote server
- Address: Enter the IP address of the remote server
- Port: Enter the software port (usually 20 or 21 for FTP and 990 for FTPS)
- User name: enter the user name the access the remote server. It must be consistent with the User name configured on the FTP server.
- Password: enter the password to access the remote server. It must be consistent with the password configured on the FTP server.
- Secure communication: open a secure session between the display and the remote server
- File format: data can be exported in different file formats (CSV and EMS – see appendices 1 and 2). The CSV format is easier to use while EMS is better for importing data into an external energy management software.
- Test connectivity: Test the FTP export function



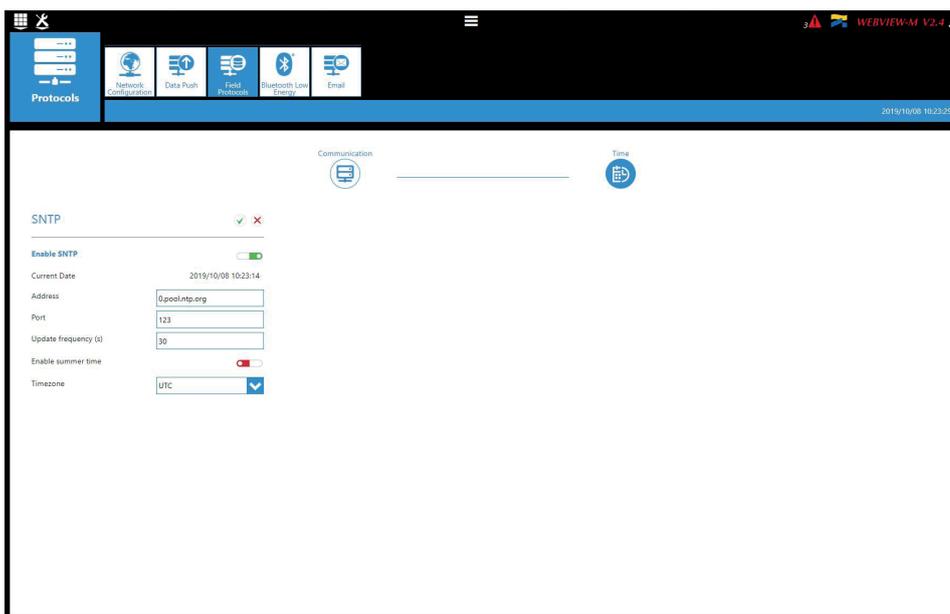
• **Field protocols**

- Communication: allows you to configure the different protocols that the D-50/D-70 display can use to communicate to external energy management systems.



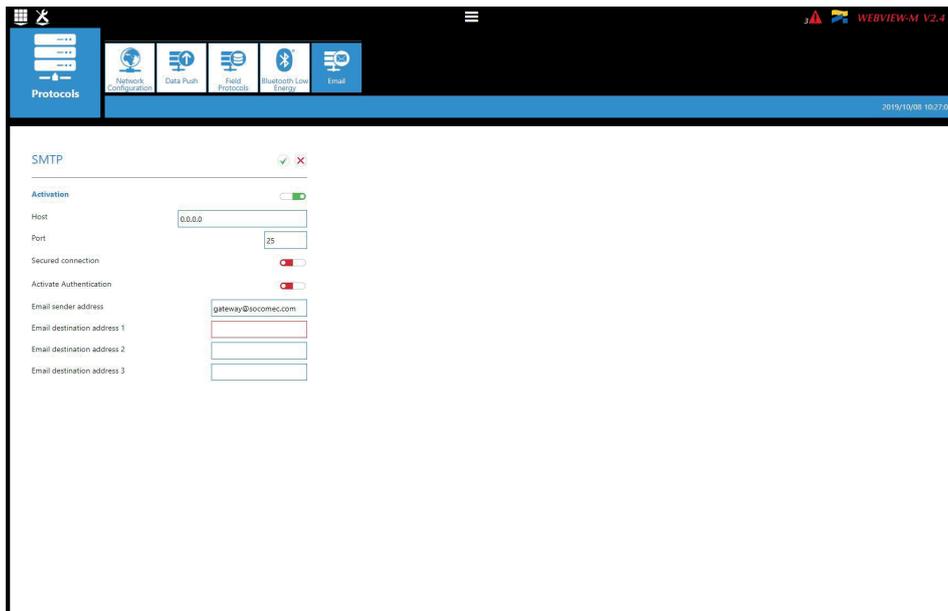
Refer to ANNEX. A and B for more information on BACnet and SNMP communication protocols with the D-50/D-70 display.

- Time: allows you to configure an SNTP server to automatically synchronise the clock of the D-50/D-70 display to an external computer.



• Email

This tab allows you to activate and configure email notifications in case of alarms:



- Activation: enable/disable the SMTP email export function
- Host: enter the IP address or name of the SMTP server
- Port: enter the SMTP port
- Secured connection: enable or disable the secured connection (SMTPS)
- Activate Authentication: enable or disable the SMTP authentication. It is possible to activate the authentication, even if the secured connection is disabled.
- User: enter the user name for the authentication
- Password: enter the password for the authentication
- Email sender address: email address used by the D-50/D-70 display to send emails
- Email destination address 1: email address #1 to which email notifications will be sent
- Email destination address 2: email address #2 to which email notifications will be sent
- Email destination address 3: email address #2 to which email notifications will be sent
- Language: language in which emails are sent
- Criticality of alarms to send: choose to send “information” or “Non critical” or “Critical” alarms
- Maximum waiting time: Time to wait to receive the email notification after the alarm is triggered on a device. This allows to limit the number of emails sent by the D-50/D-70 display, especially when the alarm repeatedly changes state.

10.3. Cyber security profile

In addition to the rights of the Admin profile, the Cyber security profile allows you to:

- Manage all profiles and change their passwords. The Cyber security profile it also allows to generate the passphrase for password recovery.
- Implement a Cyber Security policy from a dedicated menu:



10.3.1. Cyber security menu

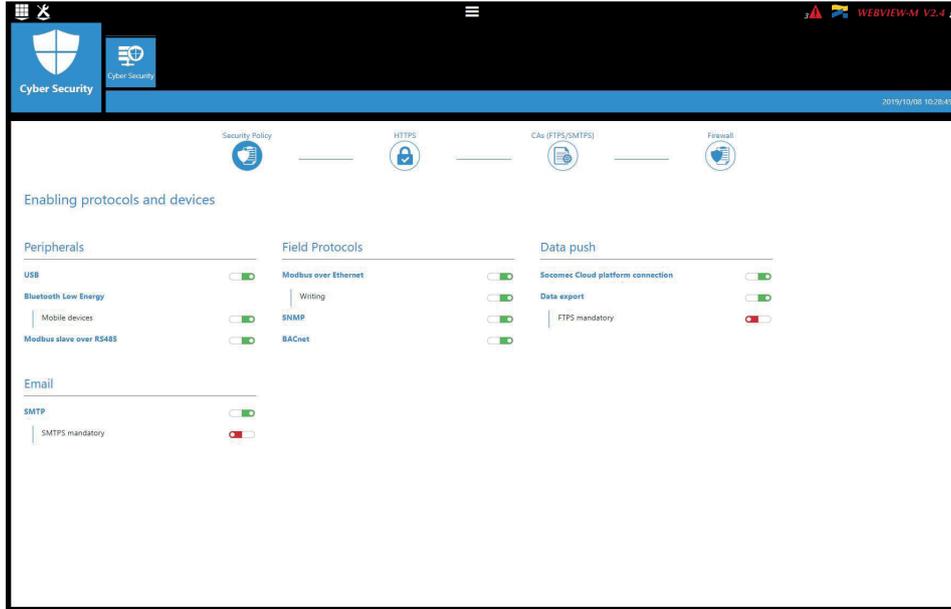
The Cyber Security menu allows you to:

- Define a custom security policy.
- Secure the client-server communication (HTTPS, FTPS, SMTPS).
- Prevent denial-of-service attacks by implementing a firewall in the D-50/D-70 display.

The configuration of Cyber security functions is explained in paragraphs 10.3.1 through 10.3.4.

10.3.2. “Security Policy” tab

DIRIS Digiware D-50/D-70 displays can reduce the attack exposure by disabling certain peripherals or services that are not essential to the customer’s use case.



Peripherals

- USB: disable the USB port of the D-50/D-70 display.
- Bluetooth Low Energy: disable the Bluetooth Low Energy of the D-50/D-70 display.
- Modbus slave over RS485: authorise or disable Modbus communication on the RS485 port of the D-50/D-70 display.

Email

- Make the secure version of SMTP mandatory for email notifications in case of alarm on a connected device.

Field protocols

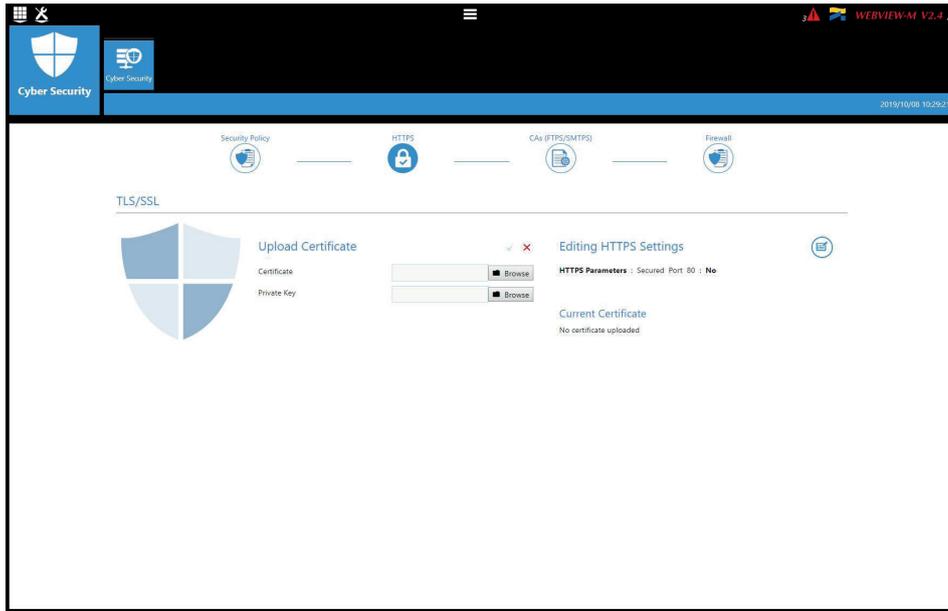
- Modbus Write function: authorise or disable to prevent people from changing settings over Modbus.
- SNMP: allow or disable the use of the SNMP protocol.
- BACnet: allow or disable the use of the BACnet protocol.

Data push

- Socomec cloud platform: authorise or block the export of data to the Socomec platform.
- Data export, FTPS mandatory: force the data export to an FTP server with a secure connection.

10.3.3. “HTTPS” tab

The HTTPS tab allows you to upload a digital certificate to secure the web navigation:



The D-50/D-70 displays will accept a digital certificate under the .pem format. Once a digital certificate and private key has been uploaded, you can edit HTTPS settings to secure the web navigation.

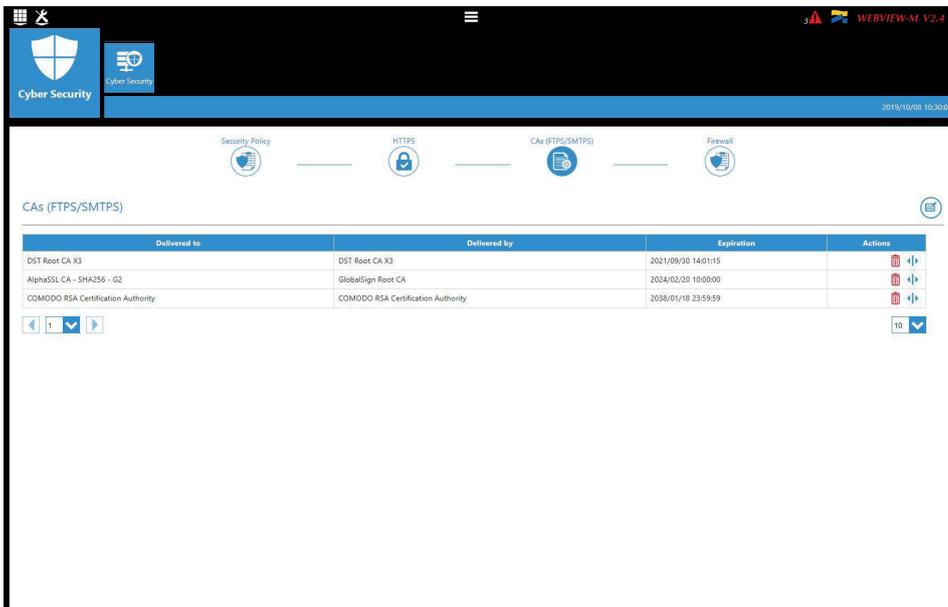


- The D-50/D-70 displays are compatible with RSA and ECDSA (Elliptic Curve Digital Signature Algorithm) digital certificates. The use of ECDSA digital certificates is recommended to optimise the speed of the web navigation.
- The private key size must not exceed 2048 Bits.

10.3.4. CAs (FTPS/SMTSPS) tab

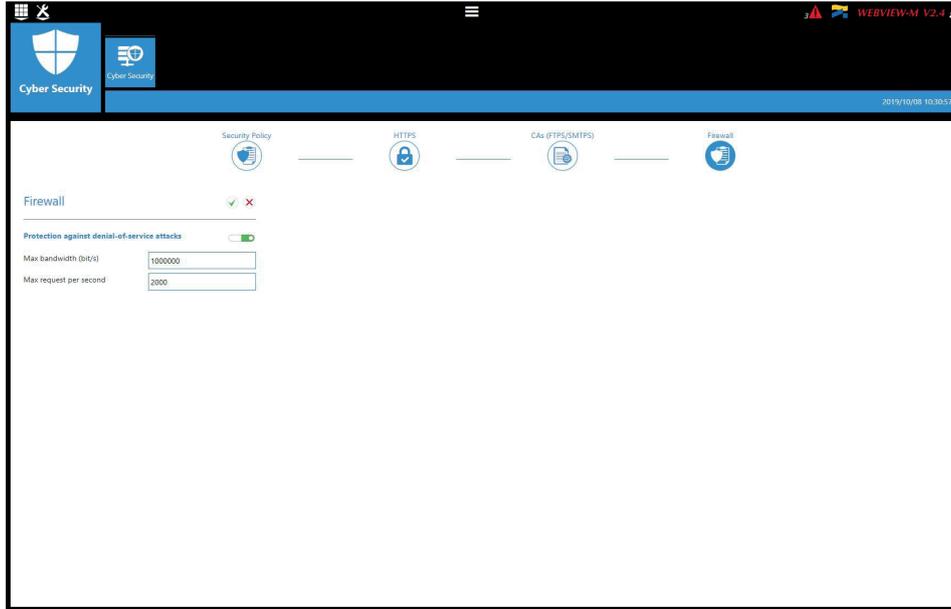
This tab allows you to secure the client (D-50/D-70) to server (FTPS, SMTSPS) communication by adding the relevant Certificate Authorities (CA) on the Client side.

Several common Certificate Authorities are already included to the D-50/D-70 display, but the user can add others if necessary.



10.3.5. “Firewall” tab

This tab allows you to implement a firewall to protect against Denial-Of-Service attacks also called Flooding attacks by entering a max bandwidth in kbit/s and a max number of requests per second:



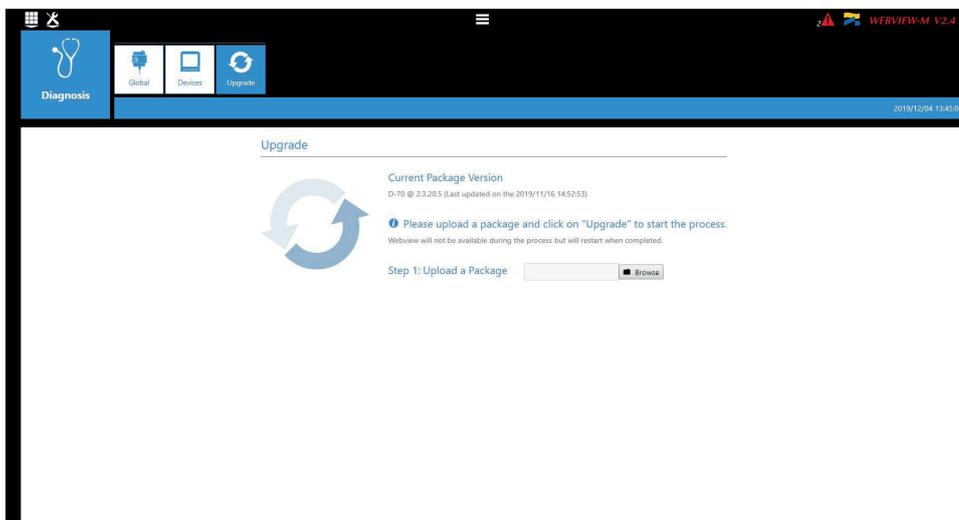
A client exceeding one of the above parameters while communicating to the DIRIS Digiware D-50/D-70 display will be blocked for 30 seconds.

10.3.6. Upgrading the firmware of the D-50/D-70 display

To upgrade the firmware of the DIRIS Digiware D-50/D-70 display, go to the “Diagnosis” menu:

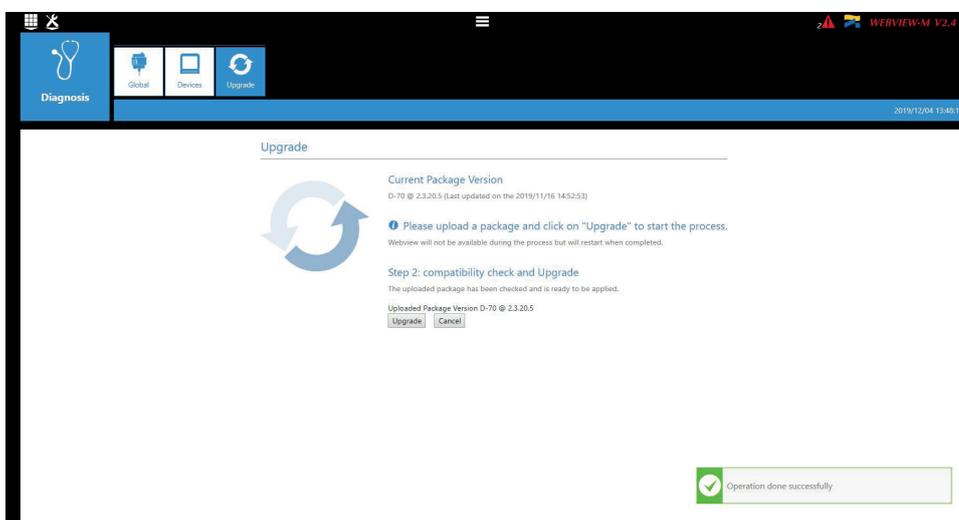


Go to the “Upgrade” tab:

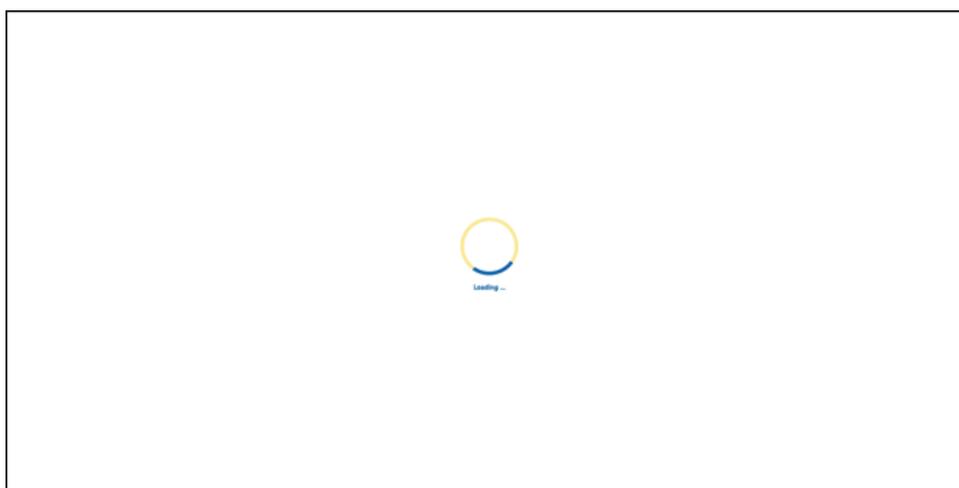


Upload the desired firmware package (.dfu file) by clicking on the “Browse” button.

Wait until the package is loaded, and once package consistency check is finished, click on “Upgrade”:



Once the upgrade is finished, the web page will reload automatically:



10.4. WEBVIEW-M

For more information on the visualisation of measurement data, please refer to the WEBVIEW-M instruction manual, available on the Socomec website at the following link:

https://www.socomec.com/range-software-solutions_en.html?product=/webview_en.html

11. ALARMS

DIRIS Digiware D-50 and D-70 displays collect alarms from downstream devices connected on the Digiware or RS485 bus.

DIRIS Digiware D-50 and D-70 displays also support 8 System alarms. The types of system alarms and the possible causes are listed in the table below:

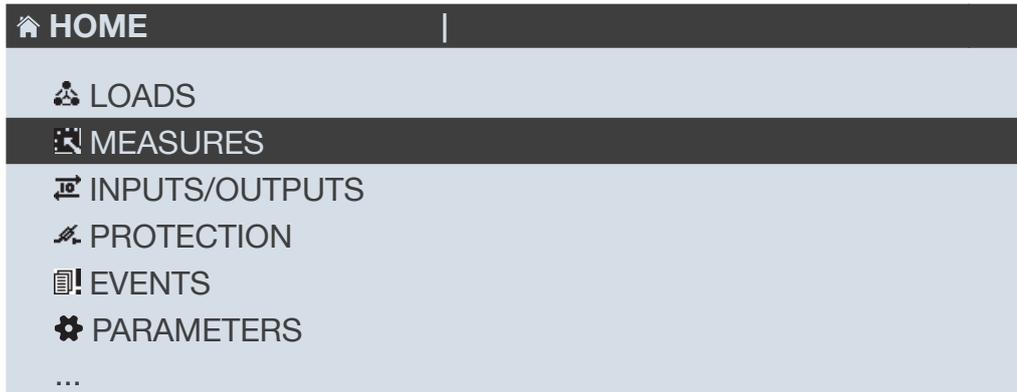
| System alarm # | Alarm type | Description | Possible causes |
|----------------|----------------------------|--|--|
| System alarm 1 | Email transmission error | Triggered if the D-50/D-70 display could not send the notification email in case of an alarm. | <ul style="list-style-type: none"> - Inconsistent password or user name between server and client - Incorrect server information - Server is not available |
| System alarm 2 | SNTP Synchronisation error | Triggered if the D-50/D-70 display could not synchronise its internal clock to the SNTP server. | <ul style="list-style-type: none"> - Incorrect server information (address, port etc.) - Server is not available |
| System alarm 3 | Modbus slave timeout error | Triggered if the D-50/D-70 display could not communicate with a Modbus slave on the Digiware or RS485 bus. | <ul style="list-style-type: none"> - Bad RS485 or Digiware connection. - Communication speed on the Digiware bus is too low (38400 by default) - Product is incorrectly requested (wrong Modbus register, ...) |
| System alarm 4 | Modbus address conflict | Triggered if the D-50/D-70 display has detected an address conflict among slaves. | A slave's Modbus address must be unique within Digiware and RS485 buses altogether; this alarm will be triggered if 2 slaves have the same Modbus address. |
| System alarm 5 | Product damaged | Triggered if the product is flagged as damaged. Please return the device to Socomec. | <ul style="list-style-type: none"> - Product has a wrong Network ID, Serial Number or MAC Address - A newer version is available for a slave product |
| System alarm 6 | FTP export error | Triggered if the D-50/D-70 display could not export data to the remote FTP server. | <ul style="list-style-type: none"> - Inconsistent password or user name between server and client - Gateway does not have permission to write files on FTP server - FTP server unavailable - Site Name is not configured |
| System alarm 7 | Cyber Security alert | Triggered if the D-50/D-70 display detects a cyber security threat. | <ul style="list-style-type: none"> - Denial-of-service attack caught (client banned) - Expiration of a digital certificate |
| System alarm 8 | Password alert | Triggered if there is an issue with the password of the Admin, Advanced User or Cyber security profile. | <ul style="list-style-type: none"> - Alarm is active by default until passwords are changed - Alarm is triggered once a year, 15 days before the expiration of one of the passwords and will remain active until they are changed |

When one or more System alarms are active, the ALARM LED on the front face of the D-50/D-70 display starts blinking.

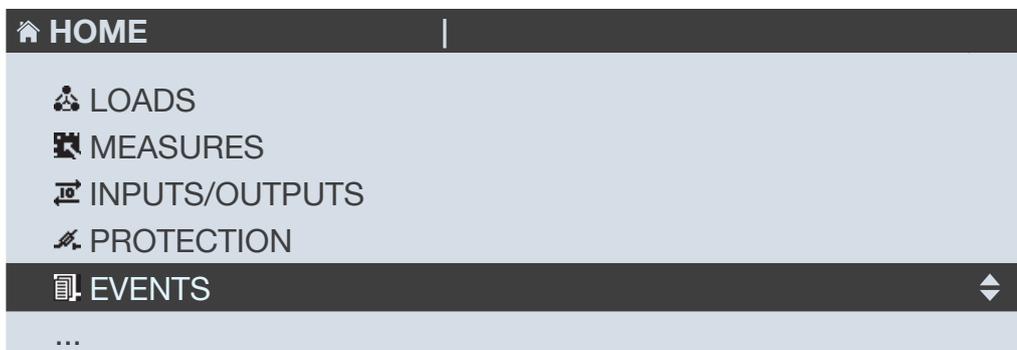
Alarms are displayed on WEBVIEW-M (for D-70 display only) and a notification will be sent by email if the SMTP(S) feature is enabled.

12. USE

Once the loads are configured, you can visualise the measurements of each load from the "MEASURES" menu. You can view active and finished alarms from the "EVENTS" menu.



If the "ALARM" LED of the D-50/D-70 display is lit, stable or flashing, it means there is at least one active alarm. Go to the "EVENTS" menu to see which alarms are active.



Note: the "Password Alert" alarm remains active (and the ALARM LED of the D-50/D-70 display blinks) until you change the default passwords of the Admin, Advanced and Cybersecurity profiles on the webserver.

The "Password alert" alarm can also be disabled from the Easy Config System software in the "Alarms" menu of the D-50/D-70.

13. DIRIS DIGIWARE D-50/D-70 TECHNICAL CHARACTERISTICS

13.1. Mechanical characteristics

| | |
|-----------------------------------|---|
| Type of screen | Capacitive touch-screen technology, 10 keys |
| Screen resolution | 350 x 160 pixels |
| Front panel protection index | IP65* (IEC 60529) |
| Weight DIRIS Digiware D-50 / D-70 | 210 g |

* Front face only. The use of a silicone seal may be required to ensure sufficient sealing of the junction between D-50/D-70 display and panel door.

13.2. Communication characteristics

| | |
|---|--|
| Type of screen | Multipoint remote screen |
| Ethernet RJ45 10/100 Mbs | Gateway function: - Modbus TCP (max. 16 simultaneous connections) - WEBVIEW-M embedded web server (D-70 only) - BACnet IP - SNMP v1, v2 & v3 |
| SNTP protocol | Updates the screen from an SNTP server. The display updates the connected devices. |
| SMTP(S) protocol | Sends email notifications from the display. |
| FTP(S) protocol <i>Only available with DIRIS Digiware D-70</i> | Automatically exports data via FTP standard or secure server (consumption curves, load curves, measurement logs) |
| RJ45 Digiware | Control and power supply interface function |
| RS485 2-3 wires | Modbus RTU master communication function |
| USB | Upgrade and configuration via type B micro USB connector |

13.3. Electrical characteristics

| | |
|-------------------|---|
| Power supply | 24 VDC +/- 15%, Class 2 - 20 W max |
| Power consumption | 2.5 VA |
| Battery life | 10 years with the following typical battery profile over its lifetime: - Product storage: 1 year of full time battery back-up (based on an average storage temperature of 25°C). - Product life: 10 days / year of battery back-up over 9 years |
| Battery type | 3V Lithium cell battery, 48mAh rated capacity |

13.4. Environmental characteristics

| | |
|-----------------------|--|
| Use | Indoor |
| Storage temperature | -40°C ... +70°C (IEC 60068-2-1 / IEC 60068-2-2) |
| Operating temperature | -10°C ... +55°C (IEC 60068-2-1 / EN/IEC 60068-2-2) |
| Humidity | 40°C / 95% RH (IEC 60068-2-30) |
| Pollution degree | 2 |

13.5. EMC characteristics

| CHARACTERISTIC | TEST STANDARD | PERFORMANCE CRITERIA | LEVEL |
|---|----------------|----------------------|----------------|
| Electrostatic discharges (Contact) | IEC 61000-4-2 | B | III |
| Electrostatic discharges (Air) | IEC 61000-4-2 | B | III |
| Radiated radio-frequency field immunity | IEC 61000-4-3 | A | III |
| Burst immunity | IEC 61000-4-4 | B | III |
| Surge immunity (Common mode) | IEC 61000-4-5 | B | III |
| Surge immunity (Differential mode) | IEC 61000-4-5 | NA | NA |
| Conducted RF immunity | IEC 61000-4-6 | A | III |
| Power magnetic field immunity | IEC 61000-4-8 | A | IV / 400 A/m |
| Dips immunity | IEC 61000-4-11 | NA | NA |
| Conducted emissions | CISPR11 | NA | NA |
| Radiated emissions | CISPR11 | Passed | Gr:1 – Class B |

ANNEX I. SNMP COMMUNICATION WITH THE DIRIS DIGIWARE D-50 / D-70

Annex I - 1. SNMP generalities

SNMP stands for Simple Network Management Protocol and is widely used by administrators for an easy network monitoring of devices on IP networks. It works in a client-server communication mode on an Ethernet physical layer.

Once enabled from the Easy Config configuration software, the DIRIS Digiware D-70 display supports SNMP v1, v2 and v3. The D-50 / D-70 is an agent SNMP v1, v2, v3 which responds to queries from managers (also called management stations or supervisors).

The D-50 / D-70 allows access through SNMP of measurement data from SOCOMEC slaves connected via the RS485 bus or the Digiware bus.

Data from the slaves can be reached through a file called "MIB" ("Management Information Base") under a hierarchical and pre-defined structure. The MIB file of the D-50 / D-70 is named "socomec-diris-products-mib" and is available from www.socomec.com

The file must be uploaded in the Management station managing your metering system.

The Tree structure of the MIB contains multiple OIDs (Object Identifiers). An OID uniquely identifies and labels a managed object (=parameter from metering devices) in the MIB.

For example, the electrical parameter "Current Inst I1" is identified by one OID. "Current Inst I2" is identified by another one.

| COMMON SNMP TERMS | CONSUMPTION CURVES |
|-------------------|--|
| AGENT | Corresponds to the DIRIS Digiware D-50 / D-70: Interface between the PMDs and the manager |
| MANAGED DEVICE | The PMDs connected downstream the D-50 / D-70 (ex: I-35, DIRIS B, DIRIS A...) |
| MIB | Management information base where the OIDs are organized in a hierarchical tree |
| OID | An object identifier that uniquely identifies and labels a managed object in the MIB hierarchy |
| COMMUNITY STRINGS | A text that enables the authentication between an agent and the manager |
| TRAPS | Notifications sent by the agent and received by the manager |

Annex I - 2. SNMP functions supported

There are 4 types of SNMP requests supported by the DIRIS Digiware D-50 / D-70:

- **GetRequest:** to retrieve the variable of an OID (I1 Inst for example)
- **GetNextRequest:** to retrieve the variable of the next OID (I2 Inst in this case)
- **GetBulk:** to retrieve multiple variables gathered together
- **SetRequest:** to change the value of one variable such as the state of a Digital output.
- **Traps:** Unlike the above commands which are initiated by the SNMP manager, Traps are initiated by the Agents with no solicitation from the Manager. Traps are notifications to the Manager by the Agent of the occurrence of an event and/or alarm..

Traps are sent by the agent in case one of the following alarms occurs:

- Alarm on a measurement
- Logical alarm (change of status of a Digital input)
- Combination alarms
- PQ events (inrush, voltage swells, voltage sags/dips, voltage interruptions)
- System alarms (Phase Rotation, CT disconnect, VI association)

Traps are sent automatically when the alarm occurs. They will be sent again once the “Trap report frequency” time (entered in Easy Config) is elapsed.

The alarm must be activated in the product (using the configuration software Easy Config) in order for the Traps to be sent. Traps can either be configured for specific hosts or “broadcast” to the whole network. Up to two server IP addresses can be entered in Easy Config for SNMP trap notification of specific hosts.

Annex I - 3. SNMP versions supported

The DIRIS Digiware D-50 / D-70 can use all three versions of SNMP: SNMPv1, v2 and v3.

- **SNMPv1 and v2:**

The identification is based on Read-only and Read-Write Community passwords. They are non-encrypted and are passed over the network in plaintext.

Both passwords have to be entered in the Agent (DIRIS Digiware D-50 / D-70) and the Manager and must be identical.

A matching Read Community allows the Get functions to be executed on the agent.

A matching Read-Write Community also allows the Set function to be executed on the agent.

- The default Read Community V1 password is “public” and the default Read-Write Community V1 password is “Private”.
- The default Read Community V2 password is “publicv2” and the Read-Write Community V2 is “privatev2”.

- **SNMPv3:**

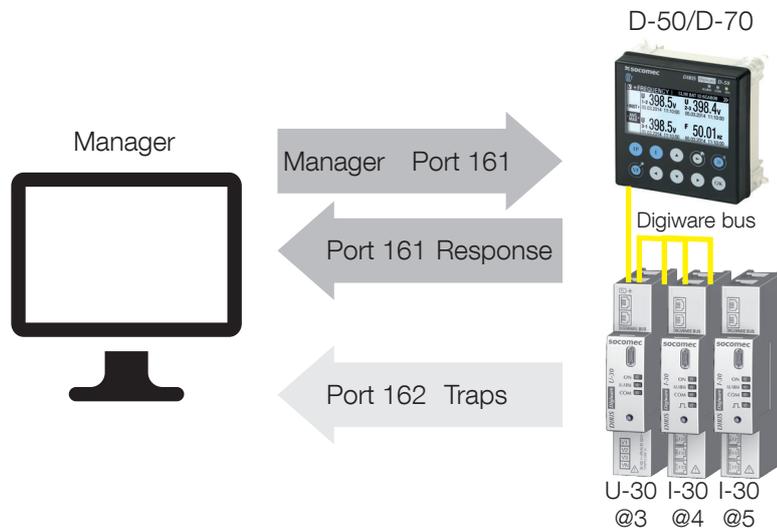
SNMPv3 uses the USM (User-based Security Module) for controlling access to information available via SNMP. This version offers more security using three important features to prevent the interception and deciphering of data:

- A username (called security username)
- MD5 and SHA1 authentication protocols to hash the passwords
- DES and AES Privacy protocols to encrypt the data

Annex I - 4. SNMP ports

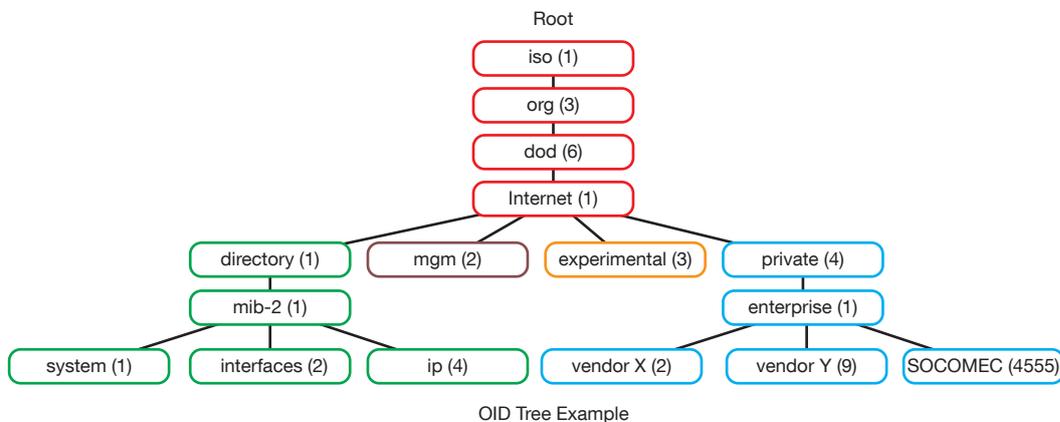
The DIRIS Digiware D-50 / D-70 is configured with standard SNMP ports to receive requests and send notifications:

| PORT | DESCRIPTION |
|------|---|
| 161 | Used to send and receive requests from the manager. |
| 162 | Used by the manager to receive notifications from the agent |



Annex I - 5. Retrieving data using the DIRIS Digiware D-50 / D-70 MIB file

The DIRIS Digiware D-50 / D-70 is compliant with MIB-II defined by the MIB standard RFC 1213 which defines the following structure:



The standard branches are under the same parent branch structure: 1.3.6.1.4.1

The “Private (4)” group enables vendors to define private branches including the MIB OIDs of their own products. Data related to SOCOMECS metering devices is located under the SOCOMECS enterprise category identified by OID 1.3.6.1.4.1.4555. This implies that all queries from a manager to SOCOMECS agents will start by the base path 1.3.6.1.4.1.4555.

Because the DIRIS Digiware is a multi-circuit system, the DIRIS Digiware D-50 / D-70 creates a dynamic table which depends on the products connected downstream compatible with the DIRIS Digiware D-50 / D-70 and the loads configured on each product.

After adding/deleting a downstream device or a load, make sure to update the topology of the D-70 display. This can be done either directly from the display or from Webview:

- Add or delete a device
- Refresh the loads

Example: The OID for “Current Inst I1” will return a value for all I-xx, B-xx, DIRIS A etc.. On the contrary, the OID for “THD Inst I1” will return “0” for an I-30 or an I-31 module.

This implies that each OID can be associated with several products and several loads.

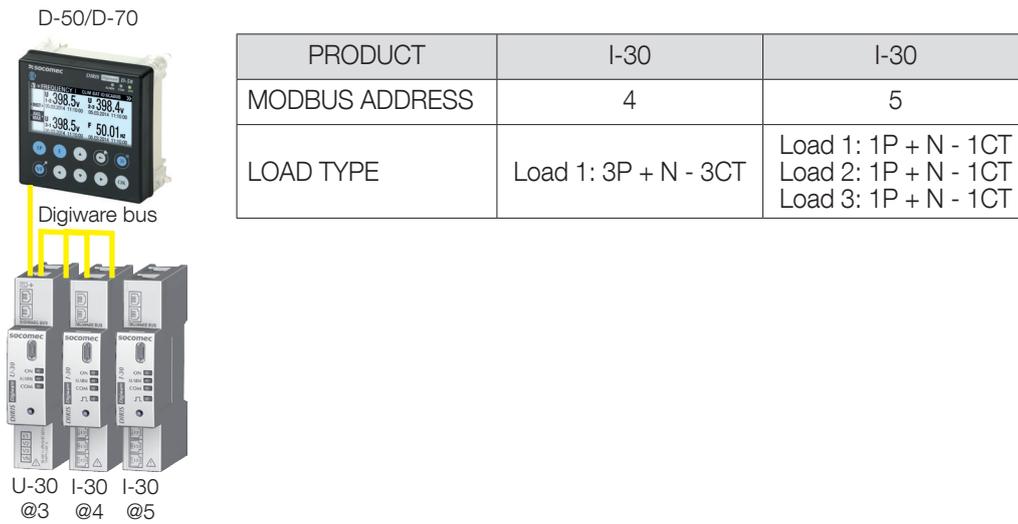
For example the OID for instCurrentI1 is represented by the sequence 1.3.6.1.4.1.4555.10.20.20.1.10000.

| OID SEQUENCE | DESCRIPTION |
|--------------|-------------------------------|
| 4555 | “SOCOMECEC” enterprise branch |
| 10 | “SocomecProducts” table |
| 20 | “ProductMetrology” table |
| 20 | “InstantaneousTable” |
| 1 | Entry (always = 1) |
| 10000 | Service ID |

This OID is associated with the multiple devices connected downstream the DIRIS Digiware D-50 / D-70.

To identify those multiple devices, the Modbus address and the load number are added to the end of the OID.

Example: Let us consider the following architecture:



The final OID to get the instantaneous current I1 for the I-30 module @ Modbus address 4 for load 1 is:
1.3.6.1.4.1.4555.10.20.20.1.10000.4.1

For the I-30 module @ address 5, there are multiple loads configured. This implies that the Modbus address must be followed by the Load number in the OID.

Therefore, the final OID used to request I1 Inst for load 1 of the I-30 @ address 5 is:
1.3.6.1.4.1.4555.10.20.20.1.10000.5.1

The final OID to request I1 Inst for load 2 of the I-30 @ address 5 is **1.3.6.1.4.1.4555.10.20.20.1.10000.5.2**

The final OID to request I1 Inst for load 3 of the I-30 @ address 5 is **1.3.6.1.4.1.4555.10.20.20.1.10000.5.3**

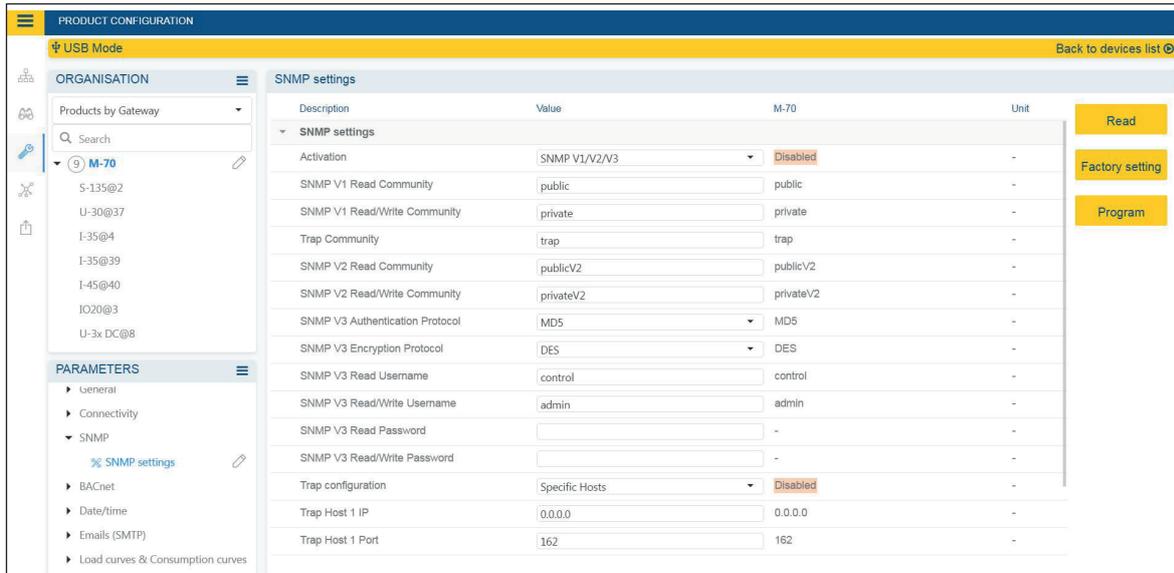
| OID SEQUENCE | DESCRIPTION |
|--------------|-------------------------------|
| 4555 | “SOCOMECEC” enterprise branch |
| 10 | “SocomecProducts” table |
| 20 | “ProductMetrology” table |
| 20 | “InstantaneousTable” |
| 1 | Entry (always = 1) |
| 10000 | Service ID |
| 5 | Modbus Address |
| 3 | Load number |



Note: a request to OID 1.3.6.1.4.1.4555.10.20. 20.1.10001.5 will return “0” because the service ID 10001 corresponds to I2 inst whereas only single-phase loads are configured in the I-30 module @ address 5, which means currents I2 and I3 parameters aren’t used.

Annex I - 6. SNMP configuration via Easy Config System

After logging in to Easy Config System on the DIRIS Digiware D-50 / D-70, you can find the SNMP settings in the SNMP menu, under SNMP settings:



• Community configuration SNMP V1 & V2:

- **SNMP V1 Read Community:** Read-only community string for SNMP v1. Default community string is “public”. It allows a manager to retrieve read-only data from a device connected to the DIRIS Digiware D-50 / D-70.
- **SNMP V1 Read/Write Community:** Read-Write community string for SNMP v1. Default Read/Write community string is “private”. It allows a manager to write (ex: position of a Digital output) to a device connected to the DIRIS Digiware D-50 / D-70.
- **Trap Community:** The Trap community string allows the manager to receive notifications in case of an event and/or alarm.
- **SNMP V2 Read Community:** Read-only community string for SNMP v2. Default community string is “publicV2”. It allows a manager to retrieve read-only data from a device connected to the DIRIS Digiware D-50 / D-70.
- **SNMP V2 Read/Write Community:** Read-Write community string for SNMP v2. Default Read/Write community string is “privateV2”. It allows a manager to change a setting (ex: position of a Digital output) in a device connected to the DIRIS Digiware D-50 / D-70.

• SNMP V3 configuration:

- **SNMP V3 Authentication Protocol:** If SNMP v3 is activated, you can choose an authentication protocol (MD5 or SHA) to hash your password. For no authentication, select “None”.
- **SNMP V3 Encryption Protocol:** Choose between DES or AES privacy protocols for the encryption of data messages. For no encryption, select “None”.
- **SNMP V3 Read Username:** Username enabling authentication for read-only functions.
- **SNMP V3 Read/Write Username:** Username enabling authentication for read and write functions.
- **SNMP V3 Read Password:** Password (also passphrase) accompanying the authentication and privacy protocols, and allowing read-only functions. The length of the Read-only authentication & privacy password must be between 8 and 16 characters.
- **SNMP V3 Read/Write password:** Password (also called passphrase) accompanying the authentication and privacy protocols and allowing read and write functions. The length of the Read-Write authentication & privacy password must be between 8 and 16 characters.
- **Trap configuration:** Choose to deactivate or activate the traps. If activated, you can choose to broadcast trap notifications to all supervisors on the network or to notify only specific host stations (up to 2).
- **Trap Host 1 IP:** Enter the IP address of the 1st host station which will receive trap notifications.
- **Trap Host 1 port:** Enter the port used to send traps for the 1st host station.
- **Trap Host 2 IP:** Address: enter the IP address of the 2nd host station which will receive trap notifications.
- **Trap Host 2 port:** Enter the port used to send traps for the 2nd host station.
- **Trap notification cycle:** Enter the time after which a trap reminder will be sent for active alarms. By default, it is set to 60min.

ANNEX II. BACNET COMMUNICATION WITH THE DIRIS DIGIWARE D-50 / D-70

The DIRIS Digiware D-50 / D-70 supports the BACnet IP protocol.

It acts as a BACnet IP gateway to all devices compatible and connected downstream via RS485 or the Digiware Bus.

The PICS (Protocol Implementation Conformance Statement) of the DIRIS Digiware D-50 / D-70 is available on the Socomec website at www.socomec.com.

Annex II - 1. BACnet Generalities

BACnet provides a method for computer-based control equipment from different manufacturers to be interoperable. BACnet is designed to handle many types of building controls, including HVAC, lighting, security, fire, access control, maintenance, waste management and so forth.

Common terms used in BACnet communication:

Object: Represents a device and its data. Multiple objects type can be available for each device (*analog input, binary input...). Each object has a number of properties which fully describe the BACnet object to the network.

Object identifier: Uniquely identifies an object within a BACnet device.

Property: A property describes a BACnet object to the network.

Present value: It is one of the properties of the Analog_Input Object. It represents the current value of an analog input object.

Service: Message type between one BACnet device to another.

BACnet uses a client/server communication mode between devices. Devices communicate between each other using services describing the type of exchange.

A BACnet client is a device that requests a service, and a BACnet server is a device that executes a service.

Data inside a BACnet device is organized as a series of objects, each composed of multiple properties.

Ex: the analog_input object defines a property for present_value, a property for average_value etc...

A BACnet client initiates a request to a BACnet server using a service (ex: read_property) to a specific property (ex: present_value) contained in a BACnet object (ex: analog_input).

Annex II - 2. BACnet Objects

BACnet defines a standard set of "Objects", each of which has a standard set of "Properties" describing the object and its current status to other devices on the BACnet internetwork. The properties allow for the object to be controlled by other BACnet devices.

BACnet defines 54 objects. Each element of the building control system is represented by one or more objects.

The DIRIS Digiware M-50 / M-70 supports the below Objects:

| OBJECT TYPE | EXEMPLE OF USE |
|---------------|--|
| Device | To describe the device to the BACnet network. |
| Analog input | Instantaneous current for phase 1 (I1) measured by a DIRIS Digiware I-xx current module with associated current sensor |
| Binary input | Status (ON/OFF) of an auxiliary contact |
| Binary output | Change of status of the output of a DIRIS Digiware IO-10 |

A list of properties defines each BACnet Object. Properties can be:

- Required by the BACnet specification.
- Optional. In this case, vendors can choose whether to implement them for their devices.
- Proprietary. Vendors can add their own created properties.

Device Object:

Every BACnet device compatible with the DIRIS Digiware D-50 / D-70 must have the Device Object and its associated required properties that fully describe the BACnet device to the network.

Example for the Device Object of the DIRIS Digiware D-50 / D-70:

| PROPERTY | BACnet |
|---------------------------------|-------------|
| Object_Identifier (OID) | Required |
| Object_Name | Required |
| Object_Type | Required |
| System_Status | Required |
| Vendor_Name | Required |
| Vendor_Identifier | Required |
| Model_Name | Required |
| Firmware_Revision | Required |
| Application_Software_Version | Required |
| Protocol_Version | Required |
| Protocol_Conformance_Class | Required |
| Protocol_Services_Supported | Required |
| Protocol_Object_Types_Supported | Required |
| Object_List | Required |
| Max_APDU_Length_Supported | Required |
| Segmentation_Supported | Required |
| APDU_Timeout | Required |
| Location | Optional |
| Description | Optional |
| Local_Time | Optional |
| Utc_Offset | Optional |
| Local_Date | Optional |
| Daylight_Saving_Status | Optional |
| Active_COV_Subscriptions | Optional |
| Serial_Number | Optional |
| Property_List | Optional |
| Version_Build_Date | Proprietary |
| Operating_Hour_Counter | Proprietary |

The way the OID is assigned to a device (instance number) is the following:

OID = Main OID (= default 100) + ModbusAddress:

- Device with Main OID (100) is the DIRIS Digiware D-50 / D-70 display itself.
- The device with OID (1xx) is the device with the Modbus address xx.

Analog Input Object:

The DIRIS Digiware D-50 / D-70 acts as a BACnet gateway. It provides a number of Analog Input objects which may be available from the devices compatible and connected to the DIRIS Digiware D-50 / D-70. Whether a device supports an AI object depends on its measurement functionalities.

Ex: The OID for THD_I1 will return 0 for a DIRIS Digiware I-30 module because this parameter is not handled.

The AI object defines 25 properties. The devices compatible and connected downstream the DIRIS Digiware D-50 / D-70 support the following properties:

| PROPERTY | BACnet | PROPERTY | BACnet |
|-------------------------|-------------|-------------------------------|-------------|
| Object_Identifier | Required | Harmonics_Row_05 | Proprietary |
| Object_Name | Required | Harmonics_Row_06 | Proprietary |
| Object_Type | Required | Harmonics_Row_07 | Proprietary |
| Present_Value | Required | Harmonics_Row_08 | Proprietary |
| Status_Flags | Required | Harmonics_Row_09 | Proprietary |
| Event_State | Required | Harmonics_Row_10 | Proprietary |
| Out_Of_Service | Required | Energy_Total_Residual | Proprietary |
| Units | Required | Energy_Total_Hourmeter | Proprietary |
| Description | Optional | Energy_Partial | Proprietary |
| Reliability | Optional | Energy_Partial_Residual | Proprietary |
| Min_Pres_Value | Optional | Energy_Partial_Hourmeter | Proprietary |
| Minimum_Value_Timestamp | Optional | Energy_Total_Lagging | Proprietary |
| Max_Pres_Value | Optional | Energy_Total_Lagging_Res | Proprietary |
| Maximum_Value_Timestamp | Optional | Energy_Total_Leading | Proprietary |
| Average_Value | Optional | Energy_Total_Leading_Res | Proprietary |
| Instantaneous_Timestamp | Proprietary | Energy_Last_Partial | Proprietary |
| Average_Timestamp | Proprietary | Energy_Last_Partial_Res | Proprietary |
| Max_Average_Value | Proprietary | Energy_Last_Partial_Timestamp | Proprietary |
| Max_Average_Timestamp | Proprietary | Multifluid_Partial | Proprietary |
| Min_Average_Value | Proprietary | Multifluid_Weight | Proprietary |
| Min_Average_Timestamp | Proprietary | Instant_Min_Max_Reset | Proprietary |
| Harmonics_Row_02 | Proprietary | Average_Min_Max_Reset | Proprietary |
| Harmonics_Row_03 | Proprietary | | |
| Harmonics_Row_04 | Proprietary | | |

The way the OID is assigned to an Analog Input Object (instance number) is the following:

OID = LLMM

- with LL = Load # of the device (starting at 1).
- with MM = Index of the measurement type (see Analog Input Measurement List).

For example, Analog Input with OID 204 reflects Phasis/Neutral Voltage V1 of Load 2 of corresponding device.

The table with indexes of the analog input measurement list is given below:

| Index | Object Name | Object Description | Unit | Type | Present + Timestamp | Present Min/Max + Timestamp | Average + Timestamp | Average Min/Max + Timestamp | Harmonics 2 -> 10 | Energies Total + Partial + LastPartial | Energies Total Lagging/Leading | Multifluid | Reset Min/Max |
|-------|----------------------|-------------------------|------|----------|---------------------|-----------------------------|---------------------|-----------------------------|-------------------|--|--------------------------------|------------|---------------|
| 0 | VystPhN | System Ph-N Voltage | V | Unsigned | • | | | | | | | | • |
| 1 | VystPhPh | System Ph-Ph Voltage | V | Unsigned | • | | | | | | | | • |
| 2 | CurrentSyst | System Current | A | Unsigned | • | | | | | | | | • |
| 3 | Frequency | System Frequency | Hz | Unsigned | • | • | • | • | | | | | • |
| 4 | VoltPhNV1 | Ph-N Voltage V1 | V | Unsigned | • | • | • | • | | | | | • |
| 5 | VoltPhNV2 | Ph-N Voltage V2 | V | Unsigned | • | • | • | • | | | | | • |
| 6 | VoltPhNV3 | Ph-N Voltage V3 | V | Unsigned | • | • | • | • | | | | | • |
| 7 | VoltPhNVn | Ph-N Voltage Vn | V | Unsigned | • | • | • | • | | | | | • |
| 8 | VoltPhPhU12 | Ph-Ph Voltage U12 | V | Unsigned | • | • | • | • | | | | | • |
| 9 | VoltPhPhU23 | Ph-Ph Voltage U23 | V | Unsigned | • | • | • | • | | | | | • |
| 10 | VoltPhPhU31 | Ph-Ph Voltage U31 | V | Unsigned | • | • | • | • | | | | | • |
| 11 | CurrentI1 | Current I1 | A | Unsigned | • | • | • | • | | | | | • |
| 12 | CurrentI2 | Current I2 | A | Unsigned | • | • | • | • | | | | | • |
| 13 | CurrentI3 | Current I3 | A | Unsigned | • | • | • | • | | | | | • |
| 14 | CurrentIn | Current In | A | Unsigned | • | • | • | • | | | | | • |
| 15 | CurrentInba | Current Inba | % | Unsigned | • | | | | | | | | • |
| 16 | CurrentIdir | Current Idir | A | Unsigned | • | | | | | | | | • |
| 17 | Currentlinv | Current linv | A | Unsigned | • | | | | | | | | • |
| 18 | CurrentIhom | Current Ihom | A | Unsigned | • | | | | | | | | • |
| 19 | CurrentInb | Current Inb | % | Unsigned | • | | | | | | | | • |
| 20 | PowerApparentNom | Nominal Apparent Power | VA | Unsigned | • | | | | | | | | • |
| 21 | TotalPowerActive | Total Active Power | W | Signed | • | • | • | • | | | | | • |
| 22 | TotalPowerRActive | Total Reactive Power | VAr | Signed | • | • | • | • | | | | | • |
| 23 | TotalPowerApparent | Total Apparent Power | VA | Unsigned | • | • | • | • | | | | | • |
| 24 | TotalPowerFactor | Total Power Factor | - | Signed | • | • | • | • | | | | | • |
| 25 | TotalPowerFactorType | Total Power Factor Type | - | Unsigned | • | • | • | • | | | | | • |
| 26 | PowerActiveP1 | P1 Active Power | W | Signed | • | • | • | • | | | | | • |
| 27 | PowerActiveP2 | P2 Active Power | W | Signed | • | • | • | • | | | | | • |
| 28 | PowerActiveP3 | P3 Active Power | W | Signed | • | • | • | • | | | | | • |
| 29 | PowerRActiveQ1 | Q1 Reactive Power | VAr | Signed | • | • | • | • | | | | | • |
| 30 | PowerRActiveQ2 | Q2 Reactive Power | VAr | Signed | • | • | • | • | | | | | • |
| 31 | PowerRActiveQ3 | Q3 Reactive Power | VAr | Signed | • | • | • | • | | | | | • |
| 32 | PowerApparentS1 | S1 Apparent Power | VA | Unsigned | • | • | • | • | | | | | • |
| 33 | PowerApparentS2 | S2 Apparent Power | VA | Unsigned | • | • | • | • | | | | | • |
| 34 | PowerApparentS3 | S3 Apparent Power | VA | Unsigned | • | • | • | • | | | | | • |
| 35 | PowerFactorPF1 | PF1 Power Factor | - | Signed | • | • | • | • | | | | | • |

| Index | Object Name | Object Description | Unit | Type | Present + Timestamp | Present Min/Max + Timestamp | Average + Timestamp | Average Min/Max + Timestamp | Harmonics 2 -> 10 | Energies Total + Partial + LastPartial | Energies Total Lagging/Leading | Multifluid | Reset Min/Max |
|-------|---------------------|------------------------------------|------|----------|---------------------|-----------------------------|---------------------|-----------------------------|-------------------|--|--------------------------------|------------|---------------|
| 36 | PowerFactorTypeSPF1 | sPF1 Power Factor Type | - | Unsigned | • | • | • | • | | | | | • |
| 37 | PowerFactorPF2 | PF2 Power Factor | - | Signed | • | • | • | • | | | | | • |
| 38 | PowerFactorTypeSPF2 | sPF1 Power Factor Type | - | Unsigned | • | • | • | • | | | | | • |
| 39 | PowerFactorPF3 | PF3 Power Factor | - | Signed | • | • | • | • | | | | | • |
| 40 | PowerFactorTypeSPF3 | sPF1 Power Factor Type | - | Unsigned | • | • | • | • | | | | | • |
| 41 | LoadCurve_P+ | Load Curve Positive Active Power | W | Unsigned | • | | | | | | | | • |
| 42 | LoadCurve_P- | Load Curve Negative Active Power | W | Unsigned | • | | | | | | | | • |
| 43 | LoadCurve_Q+ | Load Curve Positive Reactive Power | VAR | Unsigned | • | | | | | | | | • |
| 44 | LoadCurve_Q- | Load Curve Negative Reactive Power | VAR | Unsigned | • | | | | | | | | • |
| 45 | LoadCurve_S | Load Curve Apparent Power | VA | Unsigned | • | | | | | | | | • |
| 46 | THD_I1 | THD I1 | % | Unsigned | • | • | | | • | | | | • |
| 47 | THD_I2 | THD I2 | % | Unsigned | • | • | | | • | | | | • |
| 48 | THD_I3 | THD I3 | % | Unsigned | • | • | | | • | | | | • |
| 49 | THD_In | THD In | % | Unsigned | • | • | | | • | | | | • |
| 50 | THD_V1 | THD V1 | % | Unsigned | • | • | | | • | | | | • |
| 51 | THD_V2 | THD V2 | % | Unsigned | • | • | | | • | | | | • |
| 52 | THD_V3 | THD V3 | % | Unsigned | • | • | | | • | | | | • |
| 53 | THD_U12 | THD U12 | % | Unsigned | • | • | | | • | | | | • |
| 54 | THD_U23 | THD U23 | % | Unsigned | • | • | | | • | | | | • |
| 55 | THD_U31 | THD U31 | % | Unsigned | • | • | | | • | | | | • |
| 56 | A+ | Positive Active Energy | Wh | Unsigned | • | | | | | • | | | • |
| 57 | A- | Negative Active Energy | Wh | Unsigned | • | | | | | • | | | • |
| 58 | ER+ | Positive Reactive Energy | VARh | Unsigned | • | | | | | • | • | | • |
| 59 | ER- | Negative Reactive Energy | VARh | Unsigned | • | | | | | • | • | | • |
| 60 | ES | Apparent Energy | VAh | Unsigned | • | | | | | • | | | • |
| 61 | Mff | Multifluid feeder | - | Signed | • | | | | | | | • | • |

Annex II - 3. BACnet Services

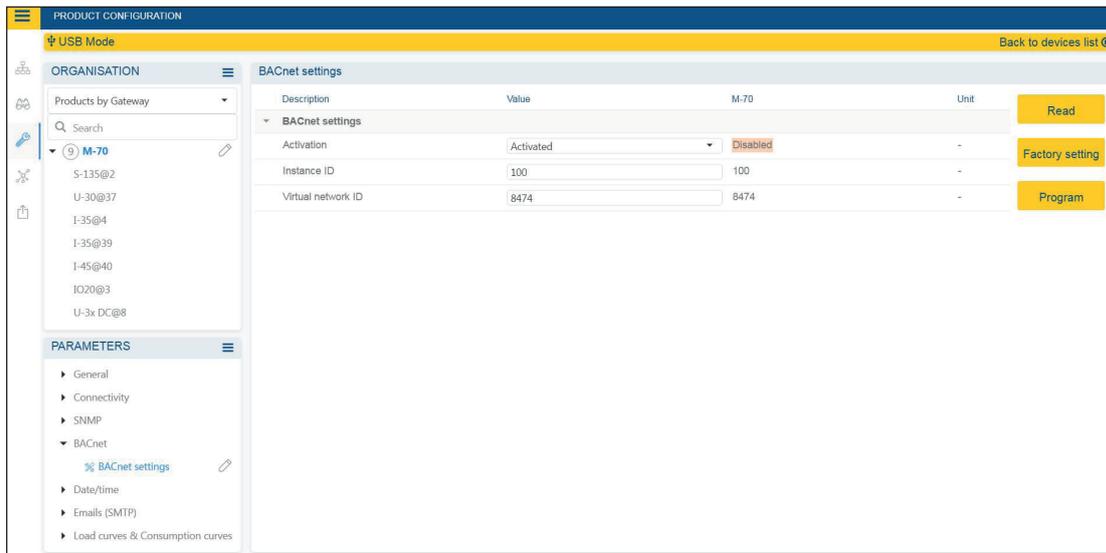
The services define methods for BACnet devices to communicate and exchange data with one another. The D-50 / D-70 supports the following services:

| SERVICE LIST | DESCRIPTION |
|----------------------|---|
| readProperty | Used by a BACnet device (the client) to ask another BACnet device (the server) to provide the value of one of its object properties |
| readPropertyMultiple | Used by a BACnet device (the client) to ask another BACnet device (the server) to provide the values of multiple object properties |
| writeProperty | Used by a BACnet device (the client) to ask another BACnet device (the server) to change the value of one of its object properties |
| timeSynchronization | Used to broadcast the current time to one or more BACnet servers |
| who_Has | Asks which BACnet devices contain a particular Object |
| who_Is | Used by a BACnet client to ask the presence of BACnet servers |

Annex II - 4. BACnet IP configuration via Easy Config System

The PICS file (Protocol Implementation Conformance Statement) is available at www.socomec.com

After logging in to Easy Config System on the DIRIS Digiware D-50 / D-70, you can find the BACnet IP settings in the BACnet menu under BACnet settings:



Activation: Enable or disable the BACnet IP function

Main instance ID: 100 by default. It must be unique within the BACnet network.

Virtual network ID: Set the virtual network ID. It must be unique within the BACnet network.

The port used by the DIRIS Digiware D-50 / D-70 for BACnet IP communication is set to 47808 (BAC0 in hexadecimal) and cannot be changed.

Annex II - 5. BACnet configuration from the embedded webserver

Click on the “Wrench” icon on the top left corner and click on “Protocols”:

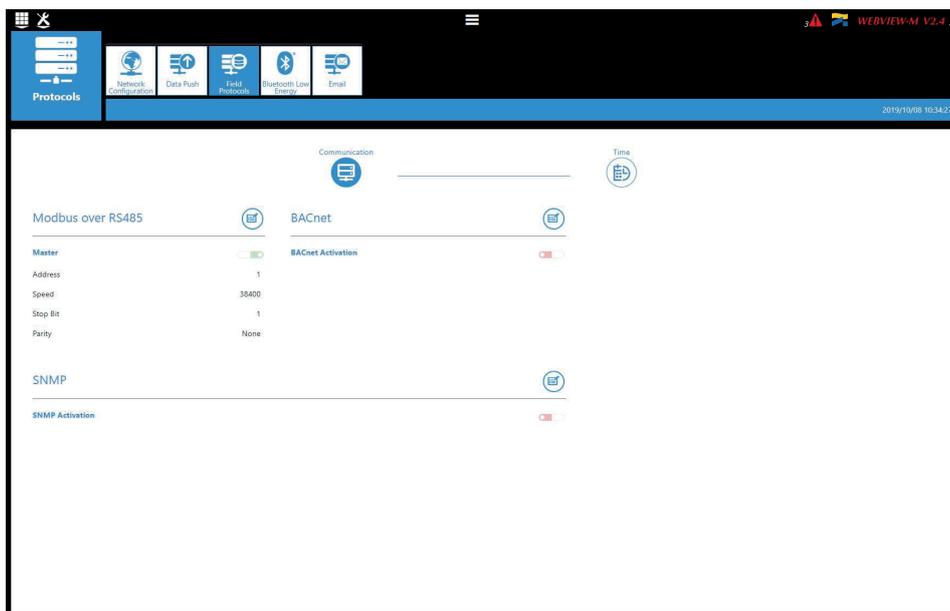


Click on the “Field protocols” tab, and under “Communication”, then BACnet, enter BACnet settings:

BACnet activation: activate or disable BACnet IP communication from the D-50/D-70 display.

Virtual Network ID: set the virtual Network ID of the D-50/D-70 display. It must be unique within the BACnet network.

Main instance ID: set the main Instance ID (100 by default) for the D-50/D-70 display. It must be unique within the BACnet network.



ANNEX III. FTP CONFIGURATION

Annex III - 1. FTP file export protocol (only available with DIRIS Digiware D-70)

Measurement logs (see “4.2.2. Introduction to DIRIS Digiware D-70”, page 9) can be automatically exported via FTP(S).

Annex III - 1.1. FTP server activation:

Connect to the web server and go to the “Protocols” menu:

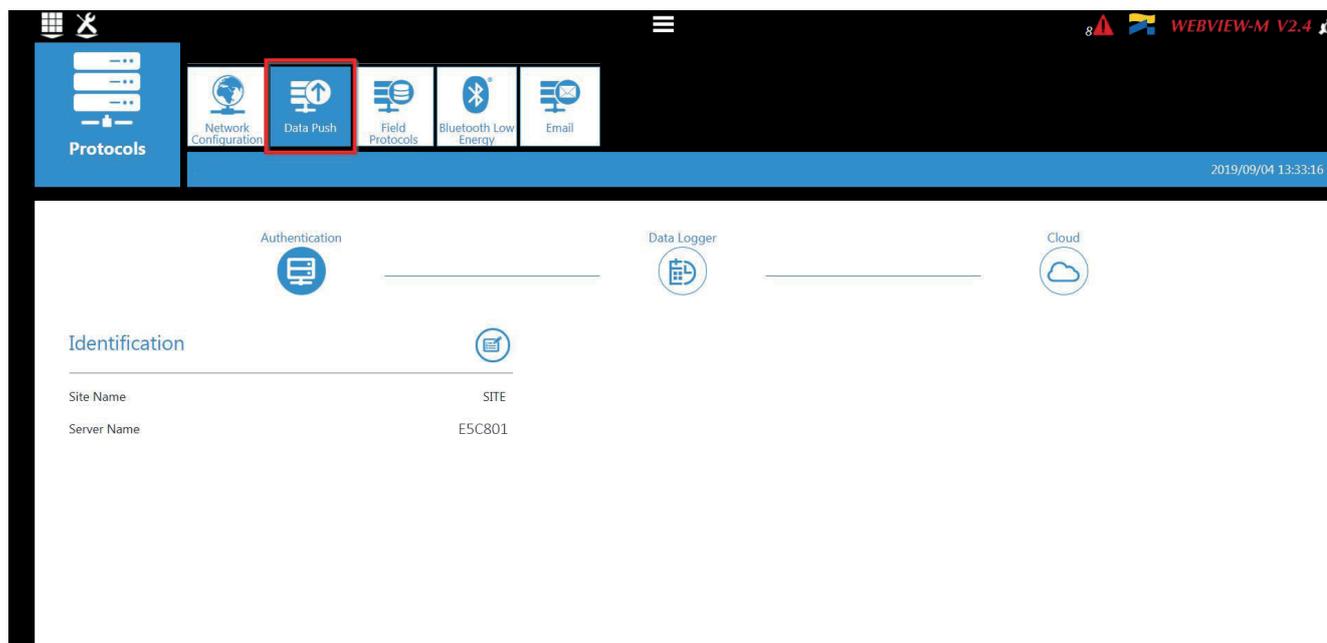


Click on “Data Push”.

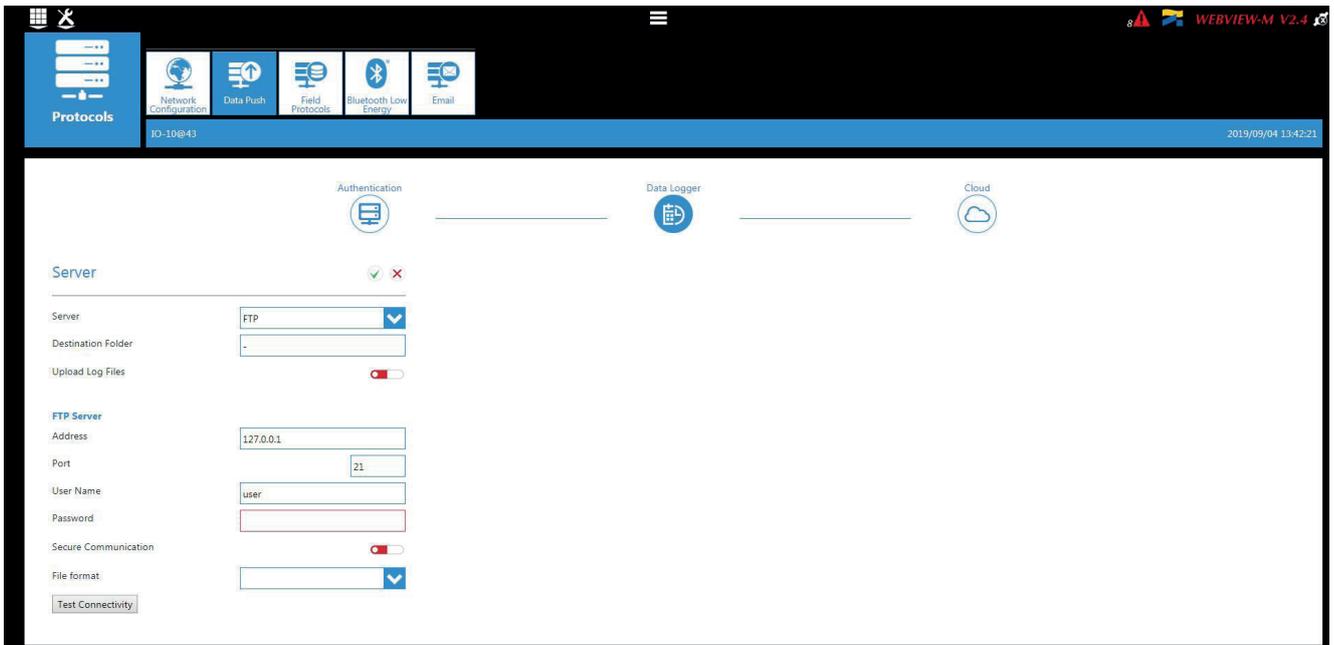
Authentication part:

Site Name & Server Name: used to identify from which DIRIS Digiware D-50/D-70 the files are being exported.

The default site name is “SITE” (must be modified if the export mode is set to EMS) and the default server name corresponds to the NET ID marked on the front face of the D-50/D-70 gateway.



Data logger part:



Server: activate the FTP server to enable the automatic export of data to a remote FTP server.

Destination folder: tree view of the FTP server folder in which you want to export the files.

Upload Log files: activate this to have additional information for troubleshooting in case of an export issue.

FTP Server: This contains the login details of the FTP server (standard or secure).

Address: enter the IP address of your FTP server

Port: enter the secured or non-secured port to use for the FTP export

User Name: enter the user name the access the remote server. It must be consistent with the User name configured on the FTP server.

Password: enter the password to access the remote server. It must be consistent with the password configured on the FTP server.

Secure Communication: activate or deactivate the secured export (FTPS)

File format: there are two different types of data file

- **CSV:** file in a .csv format in which data is in a user-friendly layout
- **EMS:** file in .csv format whose layout is more practical to integrate into an energy management software.

In EMS mode, the exported files are named according to the following:

Site name_Server name_Device name_Data type_date_time.csv

Example: if an export file is named "**socomec_E5C801_I35_LoadCurve_2017-08-15_20-00-00.csv**", then the file was exported on August 15th, 2017 at 20:00 (8:00pm), it contains Load curves (Demand Power) from a device named I35 from a gateway whose Server name is E5C801 and Site name is socomec.



In EMS mode, the Site Name must be different from default name ("SITE"), or the "FTP error" system alarm will be triggered.

Test Connectivity: once the configuration is done, you can test the connectivity by manually exporting a test file

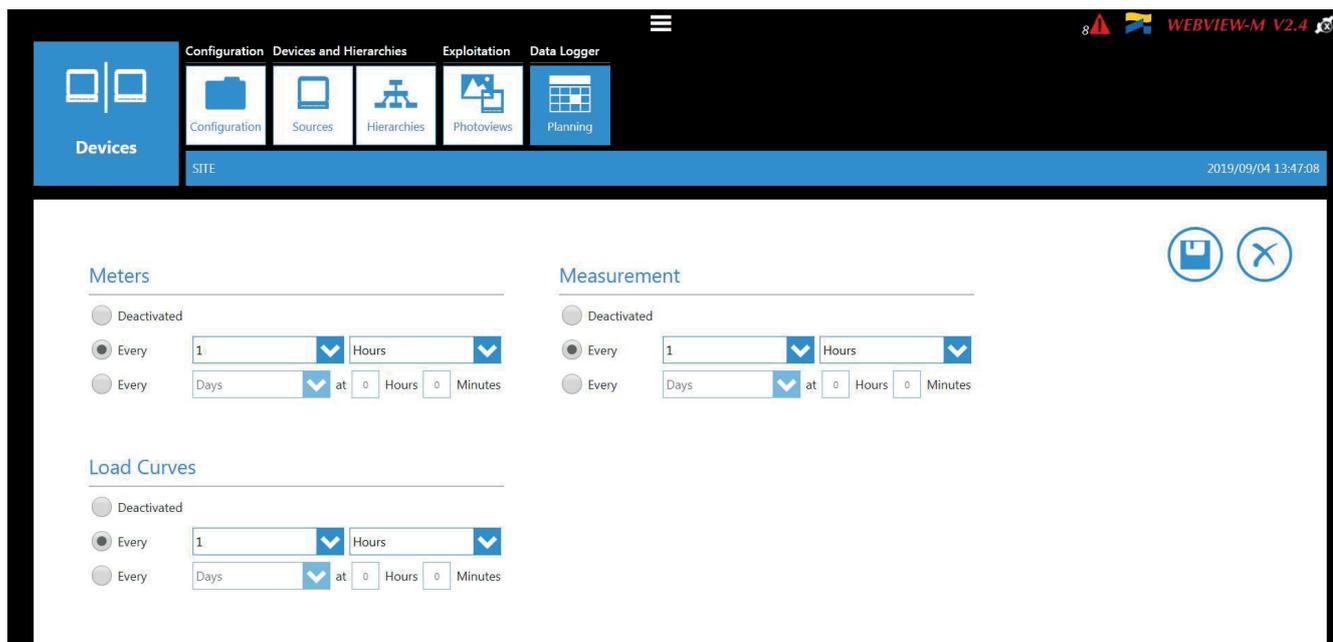
Annex III - 2. FTP planning configuration

Click on “Devices”:



Click on “Modify active configuration” (1)

Click on “Planning” (2)



Activate the type of data you want to export automatically. The DIRIS Digiware D-70 can log and export 3 types of data:

Energies Index: Ea, Er, Es etc. (Meters)

Measurement logs/trends: archived parameters U, I, F, PF etc. (Measurements)

Load curves / demand: P, Q, S etc. (Load curves)

For each data type, specify the rate at which data will be exported (once an hour, once a day etc.) and at which time.

Annex III - 3. Understanding the exported .csv file in EMS mode

| socomec_E5C801_I-35@4_Avg_2019-01-18_15-15-10.csv | | | | | | | | | | | | | | | |
|---|-----------|--------------------------------|-------|---------|---|----------|------------------------------|------------|---------|-----------------------|--------|------|-----------|--------|---------|
| A | B | | | | C | D | E | F | G | H | I | J | K | L | |
| 1 | Data Type | TimeZone | | | | Datation | Transfer Cycle (sec) | Pooling TI | Version | Site name Server name | | | | | |
| 2 | Avg | UTC | | | | Local | 600 | N/A | 1 | socomec | E5C801 | | | | |
| 3 | | | | | | | | | | | | | | | |
| 4 | Index Key | Key | | | | Type | Name | Fluid | Use | Coef | Unit | Path | Device Id | Index | Data Id |
| 5 | 0 | socomec E5C801 14 1 ANA 100006 | ANA | | | | THD I1 of PC 1-2-3 of I-35@4 | ELEC | Use2 | 100 % | / | 14 | 1 | 100006 | |
| 6 | 1 | socomec E5C801 14 1 ANA 100007 | ANA | | | | THD I2 of PC 1-2-3 of I-35@4 | ELEC | Use2 | 100 % | / | 14 | 1 | 100007 | |
| 7 | 2 | socomec E5C801 14 1 ANA 100008 | ANA | | | | THD I3 of PC 1-2-3 of I-35@4 | ELEC | Use2 | 100 % | / | 14 | 1 | 100008 | |
| 8 | 3 | socomec E5C801 14 1 ANA 10023 | ANA | | | | I1 AVG of PC 1-2-3 of I-35@4 | ELEC | Use2 | 1000 A | / | 14 | 1 | 10023 | |
| 9 | 4 | socomec E5C801 14 1 ANA 10024 | ANA | | | | I2 AVG of PC 1-2-3 of I-35@4 | ELEC | Use2 | 1000 A | / | 14 | 1 | 10024 | |
| 10 | 5 | socomec E5C801 14 1 ANA 10025 | ANA | | | | I3 AVG of PC 1-2-3 of I-35@4 | ELEC | Use2 | 1000 A | / | 14 | 1 | 10025 | |
| 11 | | | | | | | | | | | | | | | |
| 12 | Index Key | Date | Value | Quality | | | | | | | | | | | |
| 13 | 0 | 2019-01-18T15:14:00 | 234 | 192 | | | | | | | | | | | |
| 14 | 0 | 2019-01-18T15:13:00 | 237 | 192 | | | | | | | | | | | |
| 15 | 0 | 2019-01-18T15:12:00 | 190 | 192 | | | | | | | | | | | |
| 16 | 0 | 2019-01-18T15:11:00 | 201 | 192 | | | | | | | | | | | |
| 17 | 0 | 2019-01-18T15:10:00 | 200 | 192 | | | | | | | | | | | |
| 18 | 0 | 2019-01-18T15:09:00 | 198 | 192 | | | | | | | | | | | |
| 19 | 0 | 2019-01-18T15:08:00 | 210 | 192 | | | | | | | | | | | |
| 20 | 0 | 2019-01-18T15:07:00 | 231 | 192 | | | | | | | | | | | |
| 21 | 0 | 2019-01-18T15:06:00 | 211 | 192 | | | | | | | | | | | |
| 22 | 0 | 2019-01-18T15:05:00 | 199 | 192 | | | | | | | | | | | |
| 23 | 1 | 2019-01-18T15:14:00 | 20001 | 192 | | | | | | | | | | | |
| 24 | 1 | 2019-01-18T15:13:00 | 21605 | 192 | | | | | | | | | | | |
| 25 | 1 | 2019-01-18T15:12:00 | 19804 | 192 | | | | | | | | | | | |
| 26 | 1 | 2019-01-18T15:11:00 | 20901 | 192 | | | | | | | | | | | |
| 27 | | | | | | | | | | | | | | | |

The csv file is split into two parts:

- The part (1) in red corresponds to the header. It contains a unique key, created out of multiple parameters such as the the site and server name, the data type, the data ID, the device ID to uniquely identify each parameter that is exported.
- The part (2) in green contains the logged and time stamped measurements. Each line is identified via the simplified index key, which refers to a unique key in cells B5 through B10.

The final value for cells C13 through C26 is obtained considering the right coefficient in cells G5 through G10 along with the right unit in cells H5 through H10.

Example for line 13:

The final value for THD I1 of circuit PC1-2-3 on module I-35@4 is equal to 2.34 % on January 18th, 2019 at 15:14:00.



When integrating data into a third-party energy management or monitoring software, always refer to the unique Key in column "B", part (1) as a unique import code and do not only use the simplified index key in column "A", part (2).

If multiple DIRIS Digiware D-70 displays are exporting to the same folder, the simplified index key cannot differentiate them.

CORPORATE HQ CONTACT:
SOCOMECSAS
1-4 RUE DE WESTHOUSE
67235 BENFELD, FRANCE

www.socomec.com



 **socomec**
Innovative Power Solutions