

DIRIS Digiware
communication architectures



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Introduction

The purpose of this technical note is to describe the **communication architectures** that can be implemented, when multiple DIRIS Digiware systems, Power Monitoring Devices and Energy meters from Socomec or other brands are used altogether.

These architectures offer different approaches in the exchange of data (settings, measurements, alarms, etc.) between measuring points located in one or more electrical cabinets, **depending on the electrical installation design and communication bus** used:

- Digiware Bus,
- RS485 Modbus RTU,
- Ethernet: Modbus TCP, BACnet IP and SNMP v1, v2, v3 (secure).

Thanks to displays and communication gateways, many services are also offered:

- FTP(S) (File Transfer Protocol): allows a cyclical export of historical measurement in a .csv format (Trends, energy indexes, Load curves),
- SNTP (Simple Network Time Protocol): allows to synchronise date and time of equipment to an external server,
- SMTP(S) (Simple Mail Transfer Protocol): allows to send email notifications in case of alarms,
- HTTP(S) (HyperText Transfer Protocol): used by the web servers for navigation on a web browser.

This list of architectures is not exhaustive and can easily be adapted to other applications.

Glossary

Modbus RTU protocol

- Physical layer: 2 to 3-wire RS485 link.
- Master / Slave mode.
- Consists of frames with the slave address, the relevant function (writing, reading), the data and the error checking code.

Modbus TCP

- Physical layer: Ethernet.
- Client / Server mode.
- The address of the server is its IP address.
- Consisting of frames with the relevant function (writing, reading) and the data.

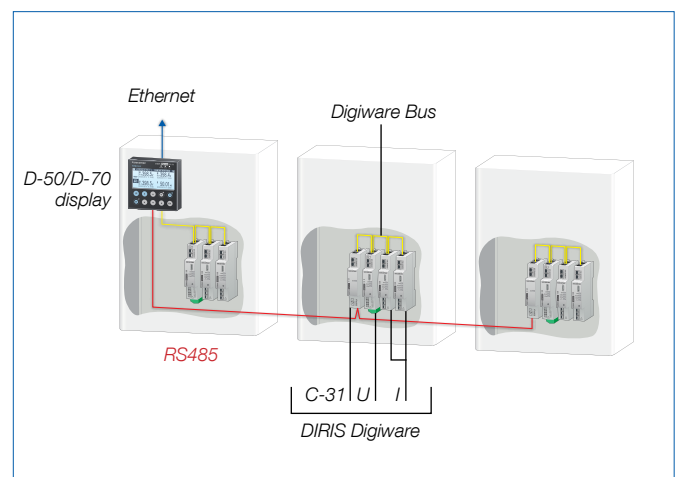
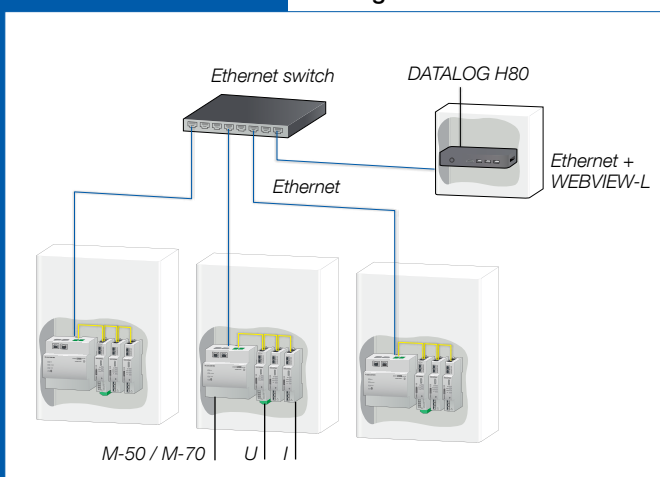
DIRIS Digiware system

- Power monitoring system consisting of system interface, 1 voltage measurement module, 1 or multiple current measurement module, 1 or multiple input/output modules and 1 or multiple Bluetooth environmental sensors.
- Maximum 32 modules and 16 Bluetooth environmental sensors per system interface.
- Data communication and exchange between modules via the Digiware bus with a specific RJ45 cable.
- Data communication and exchange with external software via the gateway or display with RS485 Modbus RTU or Ethernet Modbus TCP, BACnet IP or SNMP.

Legend:
The following diagram shows the symbols typically used in all the communication architectures presented here.



Legend



Note: To keep the diagrams simple, current sensors or power supplies are not shown. For more details on the configuration of the products, please refer to their user manuals. The Meter Selector can also assist you to find the best DIRIS Digiware architecture for your power monitoring projects. Access the Meter Selector from the following link: <https://meter-selector.com>

Power Monitoring in a single cabinet

Modbus RS485 communication to supervisor

In the cabinet, the DIRIS Digiware system exchanges configuration data, measurements and alarms with a supervisor via the RS485 bus using the Modbus RTU protocol.

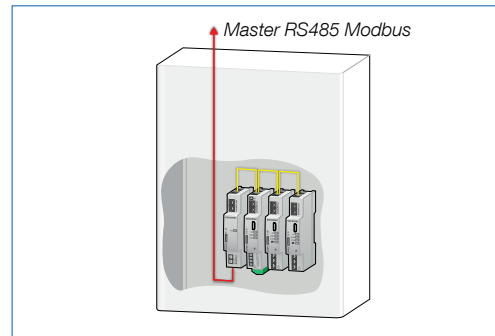


Fig. 1: RS485 Modbus supervisor.

Cabinet
<ul style="list-style-type: none"> • 1 x DIRIS Digiware C-31 RS485 system interface module • 1 x DIRIS Digiware U voltage measurement module • Multiple DIRIS Digiware I or S current measurement modules • Optional DIRIS Digiware IO modules



The DIRIS DigiwareC-31 system interface collects data from the DIRIS Digiware system via the Digiware bus and communicates with a supervisor via the RS485 bus using the Modbus RTU protocol.

Centralising on display: Modbus RS485 or Ethernet communication

In this cabinet, the display enables to configure the system and to locally visualise measurements and alarms from modules on the Digiware bus and from Bluetooth environmental sensors. It also communicates measurements over RS485 or Ethernet (depending on how the display is configured) to an external supervisor (PC or PLC).

Cabinet
<ul style="list-style-type: none"> • 1 x DIRIS Digiware C-31 RS485 system interface module • 1 x DIRIS Digiware U voltage measurement module • Multiple DIRIS Digiware I current measurement modules • Bluetooth environmental sensors (temperature/humidity, door opening)

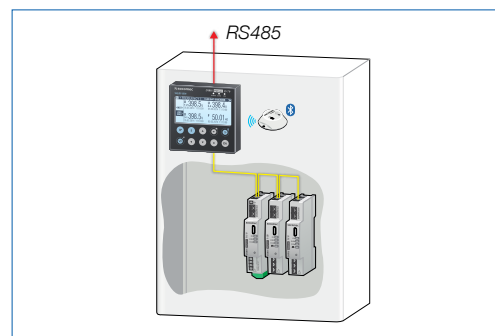


Fig. 2: Centralising on D-50/D-70 display when configured as RS485 slave.

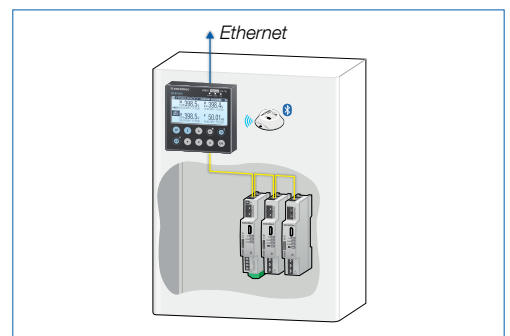


Fig. 3: Centralising on D-50/D-70 display with Ethernet communication.

- The DIRIS Digiware D-50/D-70 display exchanges data from the DIRIS Digiware system via the Digiware bus and over Bluetooth with environmental Bluetooth sensors.
- The DIRIS Digiware D-50/D-70 display communicates measurements to a supervisor via RS485 and/or Ethernet.
- The DIRIS Digiware D-70 display also embeds a web-based software (WEBVIEW-M) for remote data visualisation and analysis via a web browser.

Centralising on WEBVIEW-M

In the cabinet, the DIRIS Digiware system exchanges configuration data, measurements and alarms with a supervisor via the Ethernet bus.

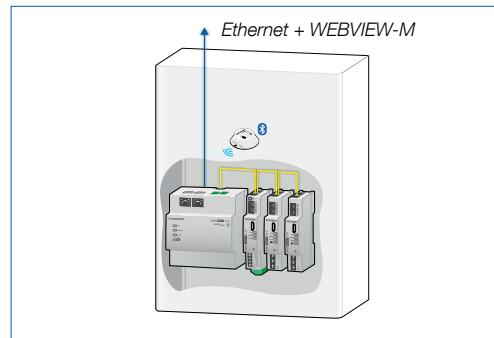


Fig. 4: Centralising on WEBVIEW-M.

Cabinet

- 1 x DIRIS Digiware M-70 gateway with WEBVIEW-M embedded
- 1 x DIRIS Digiware U voltage measurement module
- Multiple DIRIS Digiware I or S current measurement modules
- Optional DIRIS Digiware IO modules
- Optional Bluetooth environmental sensors



The DIRIS Digiware M-70 gateway communicates data via multiple communication protocols (Modbus TCP, BACnet IP, SNMP v1, v2, v3) and also embeds WEBVIEW-M for the remote visualisation of measurements via a web browser.



If a display for local data visualisation is needed

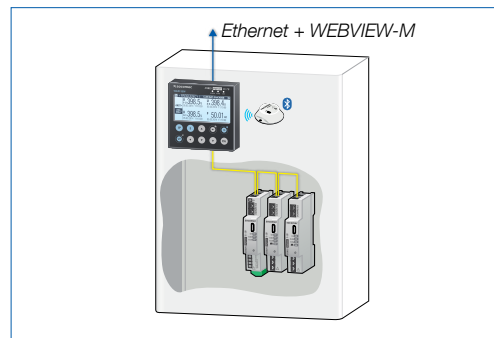


Fig. 5: Centralising on D-70 display and WEBVIEW-M.

Cabinet

- 1 x DIRIS Digiware D-70 display with WEBVIEW-M embedded
- 1 x DIRIS Digiware U voltage measurement module
- Multiple DIRIS Digiware I or S current measurement modules
- Optional DIRIS Digiware IO modules
- Optional Bluetooth environmental sensors

Centralising on WEBVIEW-M and PLC

In the cabinet, the DIRIS Digiware system exchanges configuration data, measurements and alarms with a supervisor via the Ethernet bus and with another PLC via the RS485 bus.

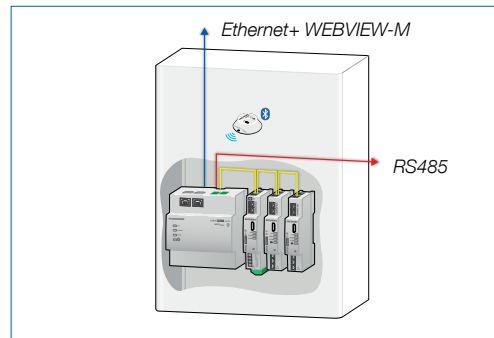


Fig. 6: Centralising on WEBVIEW-M and a PLC.

Cabinet
<ul style="list-style-type: none"> • 1 x DIRIS Digiware M-70 gateway with WEBVIEW-M embedded • 1 x DIRIS Digiware U voltage measurement module • Multiple DIRIS Digiware I or S current measurement modules • Optional DIRIS Digiware IO modules • Optional Bluetooth environmental sensors



- The DIRIS Digiware M-70 gateway communicates data via multiple protocols (Modbus TCP, BACnet IP, SNMP v1, v2, v3) and also embeds WEBVIEW-M for the remote visualisation of measurements via a web browser.
- When configured as an RS485 slave, the M-70 gateway can also communicate to a second PLC over RS485.

Centralising on display + WEBVIEW-M and PLC



If a display is also needed for local data visualisation

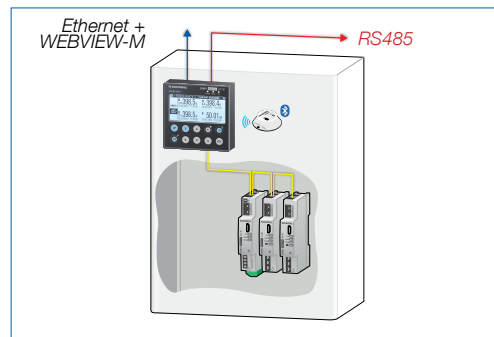


Fig. 7: Centralising on display, WEBVIEW-M and PLC.

Cabinet
<ul style="list-style-type: none"> • 1 x DIRIS Digiware D-70 display with WEBVIEW-M embedded • 1 x DIRIS Digiware U voltage measurement module • Multiple DIRIS Digiware I or S current measurement modules • Optional DIRIS Digiware IO modules • Optional Bluetooth environmental sensors

Power Monitoring across multiple cabinets

RS485 Modbus communication to supervisor

The DIRIS Digiware system, installed across multiple cabinets, exchanges configuration data, measurements and alarms with a supervisor via the RS485 bus using the Modbus RTU protocol.

- The DIRIS Digiware C-31 system interface, located in the first cabinet, collects data from the DIRIS Digiware systems of all cabinets via the Digiware bus.
- The DIRIS Digiware U voltage measurement module is installed in the first cabinet.
- This configuration requires cabinets to be in close proximity (total distance < 100 m). For a distance > 100 m, a C-32 repeater is required.
- The C-31 communicates with a supervisor over Modbus RS485.

First cabinet	Subsequent cabinets
<ul style="list-style-type: none"> • 1 x DIRIS Digiware C-31 RS485 system interface • 1 x DIRIS Digiware U voltage measurement module • Multiple DIRIS Digiware I or S current measurement modules • Optional DIRIS Digiware IO modules 	<ul style="list-style-type: none"> • Multiple DIRIS Digiware I or S modules • Optional DIRIS Digiware IO modules

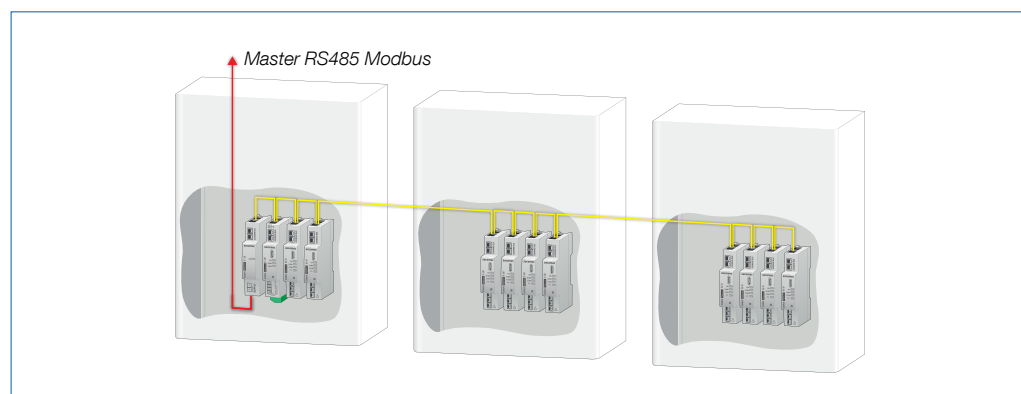


Fig. 8: RS485 Modbus communication to supervisor - cabinets in close proximity.



If the cabinets are remote from one another, they are serially connected via the RS485 bus. This means a C-31 system interface must be installed in each cabinet. For each Digiware system, a voltage module must be used.

Cabinet
<ul style="list-style-type: none"> • 1 x DIRIS Digiware C-31 RS485 system interface • 1 x DIRIS Digiware U voltage measurement module • Multiple DIRIS Digiware I or S current measurement modules • Optional DIRIS Digiware IO modules

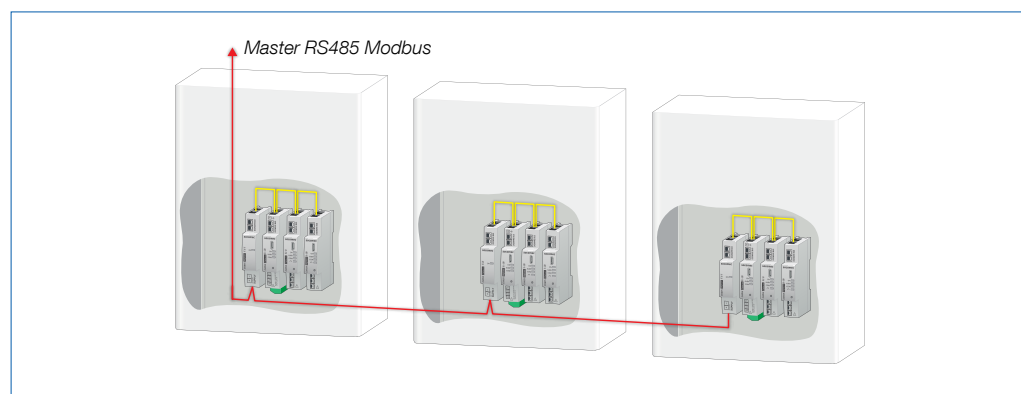


Fig. 9: RS485 Modbus communication to supervisor - remote cabinets.

Ethernet communication to supervisor

The DIRIS Digiware system, installed across multiple cabinets, exchanges configuration data, measurements and alarms with a supervisor via the Ethernet bus using multiple communication protocols.

- The DIRIS DigiwareM-50/M-70 gateway located in the first cabinet centralises measurements from all DIRIS Digiware systems and communicates data over Ethernet.
- The DIRIS Digiware U voltage measurement module is installed in the first cabinet.
- This configuration requires cabinets to be in close proximity (total distance < 100 m. For a distance > 100 m, a C-32 repeater is required).



If the cabinets are close from one another, they are connected via the Digiware bus.

First cabinet	Subsequent cabinets
<ul style="list-style-type: none"> • 1 x DIRIS Digiware M-50/M-70 gateway • 1 x DIRIS Digiware U voltage measurement module • Multiple DIRIS Digiware I or S current measurement modules • Optional DIRIS Digiware IO modules 	<ul style="list-style-type: none"> • Multiple DIRIS Digiware I or S modules • Optional DIRIS Digiware IO modules

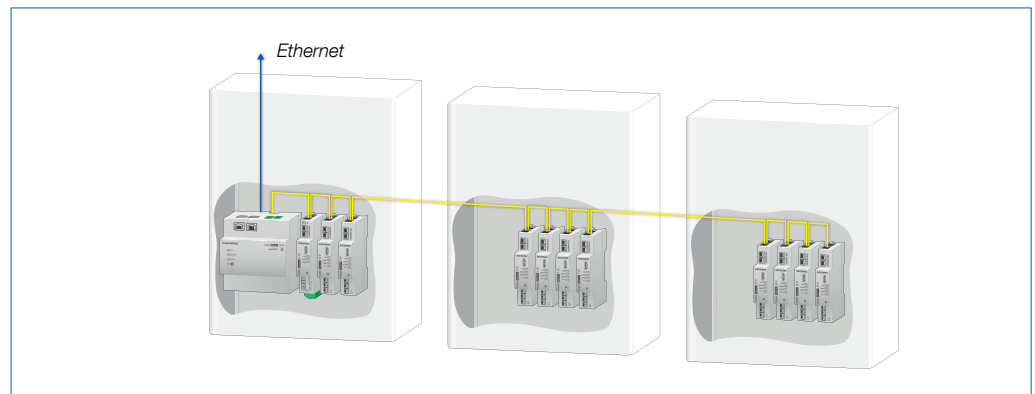


Fig. 10: centralising on Ethernet gateway and Ethernet communication to supervisor – close cabinets.



If the maximum power consumption is exceeded for the DIRIS Digiware system (15W with P15 power supply), a DIRIS Digiware C-32 repeater is required.



A DIRIS Digiware C-32 repeater is also required if the total length of the RJ45 Digiware bus exceeds 100 meters.

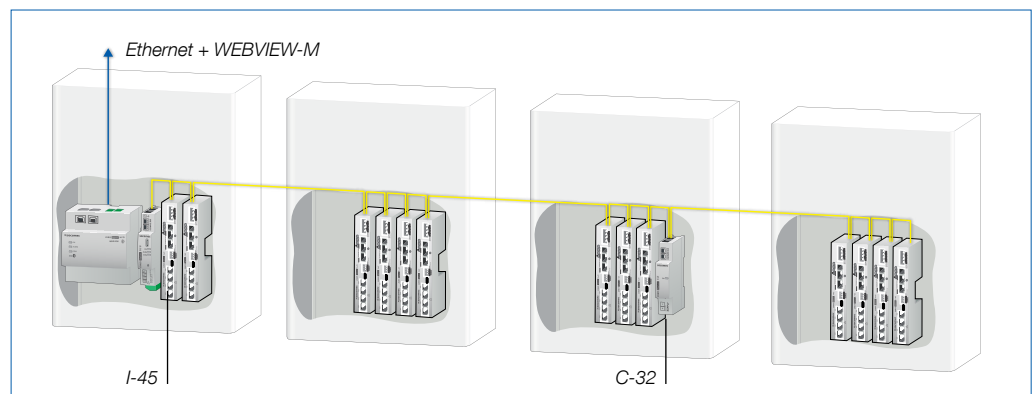


Fig. 11: centralising on Ethernet gateway when maximum power consumption is exceeded - close cabinets.



If the cabinets are remote from one another, they are serially connected via the RS485 bus.. This means a DIRIS Digiware C-31 system interface must be installed in each cabinet. For each DIRIS Digiware system, a voltage module must be used.

- In each cabinet, a DIRIS Digiware C-31 system interface collects data from the DIRIS Digiware system via the Digiware bus and communicates data over RS485.
- In each cabinet, a voltage measurement module is added
- The data collected via RS485 from the different cabinets is centralised on the DIRIS Digiware M-50/M-70 gateway located in the first cabinet and communicated over Ethernet to the supervisor.
- The M-70 gateway enables a remote visualisation of measurements from WEBVIEW-M, the embedded web-based software.

First cabinet	Subsequent cabinets
<ul style="list-style-type: none"> • 1 x DIRIS Digiware M-50/M-70 gateway • 1 x DIRIS Digiware U voltage measurement module • Multiple DIRIS Digiware I or S current measurement modules • Optional DIRIS Digiware IO modules 	<ul style="list-style-type: none"> • 1 x DIRIS Digiware C-31 RS485 system interface • 1 x DIRIS Digiware U voltage measurement module • Multiple DIRIS Digiware I or S current measurement modules • Optional DIRIS Digiware IO modules

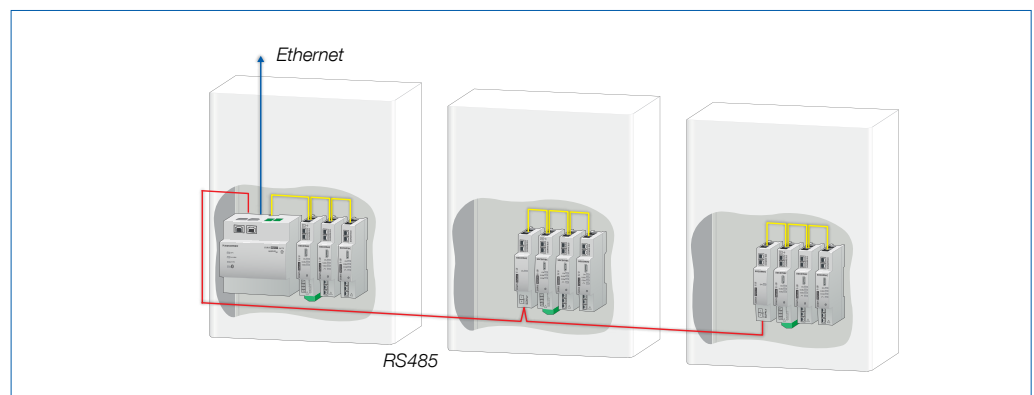


Fig. 12: Centralising on Ethernet gateway and Ethernet communication to supervisor - remote cabinets.



If the cabinets are even farther away from one another, the Ethernet network can be used. This means a DIRIS Digiware M-50/M-70 gateway must be installed in each cabinet.

Cabinet
<ul style="list-style-type: none"> • 1 x DIRIS Digiware M-50/M-70 Ethernet gateway • 1 x DIRIS Digiware U voltage measurement module • Multiple DIRIS Digiware I or S current measurement modules • Optional DIRIS Digiware IO modules

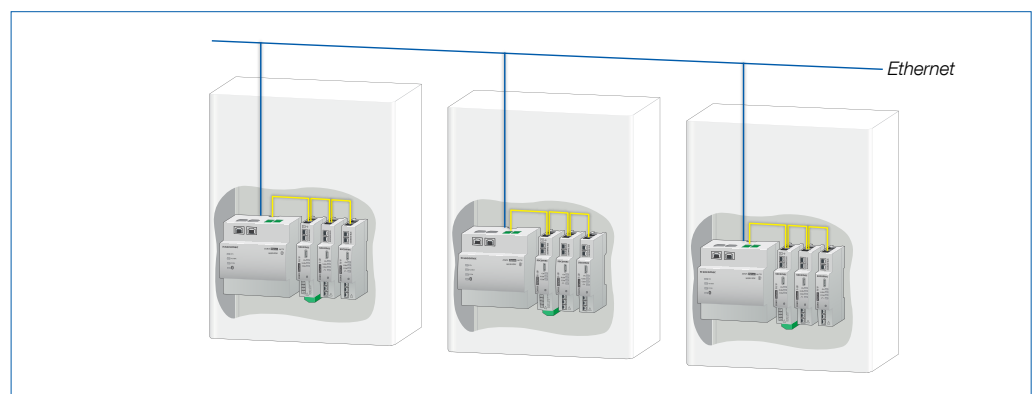


Fig. 13: Centralising on Ethernet gateway and Ethernet communication to supervisor - very remote cabinets.

Power Monitoring across multiple cabinets with display

RS485 Modbus supervisor and 1 global display

The DIRIS Digiware system, installed across multiple cabinets, exchanges configuration data, measurements and alarms with a global display and a supervisor via RS485.

- The DIRIS Digiware D-50/D-70 display, located in the first cabinet, collects data from the DIRIS Digiware systems across multiple cabinets via the Digiware bus.
- The DIRIS Digiware U voltage measurement module is installed in the first cabinet.
- This configuration requires the cabinets to be in close proximity (distance of < 100 m. If > 100 m a C-32 repeater is required) and to share a single voltage source.
- The DIRIS Digiware D-50 display (when configured as RS485 slave) shows all the measurement data and communicates to a supervisor via RS485.



This configuration requires the cabinets to be in close proximity.

First cabinet	Subsequent cabinets
<ul style="list-style-type: none">• 1 x DIRIS Digiware D-50/D-70 display• 1 x DIRIS Digiware U voltage measurement module• Multiple DIRIS Digiware I or S current measurement modules• Optional DIRIS Digiware IO modules	<ul style="list-style-type: none">• Multiple DIRIS Digiware I or S current measurement modules• Optional DIRIS Digiware IO modules

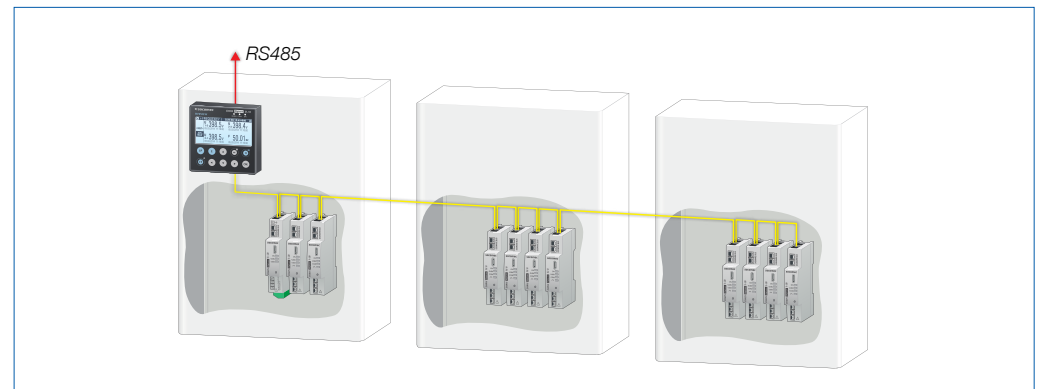


Fig. 14: RS485 Modbus supervisor and 1 global display - cabinets in close proximity.

Ethernet supervisor and 1 global display

The DIRIS Digiware systems, installed in multiple cabinets, exchange configuration data, measurements and alarms with a global display and an Ethernet supervisor.

- The DIRIS Digiware D-50/D-70 display, located in the first cabinet, exchanges data from the DIRIS Digiware systems via the Digiware bus (close cabinets), or via RS485 (remote cabinets).
- The DIRIS Digiware D-50/D-70 display shows all the measurements and communicates data to a supervisor over Ethernet.

First cabinet	Subsequent cabinets (close)	Subsequent cabinets (remote)
<ul style="list-style-type: none"> • 1 x DIRIS Digiware D-50/D-70 display • 1 x DIRIS Digiware U voltage measurement module • Multiple DIRIS Digiware I or S current measurement modules • Optional DIRIS Digiware IO modules 	<ul style="list-style-type: none"> • Multiple DIRIS Digiware I or S current measurement modules • Optional DIRIS Digiware IO modules 	<ul style="list-style-type: none"> • 1 x DIRIS Digiware C-31 RS485 system interface • 1 x DIRIS Digiware U voltage measurement module • Multiple DIRIS Digiware I or S current measurement modules • Optional DIRIS Digiware IO modules

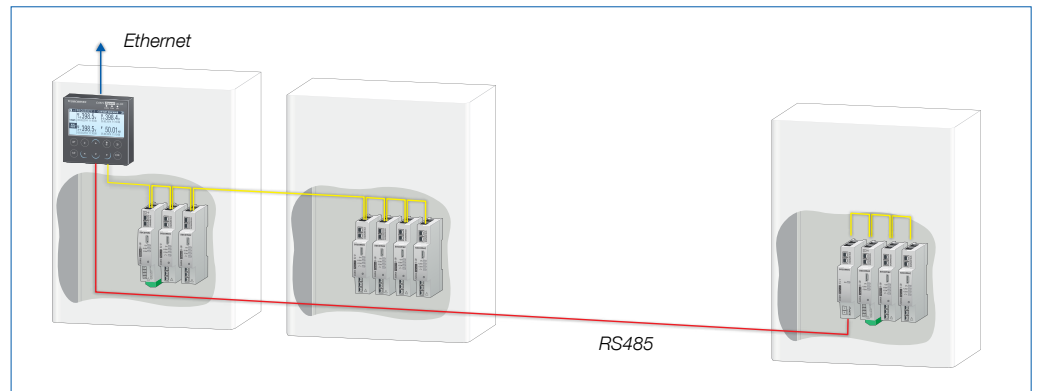


Fig. 15: Ethernet supervisor and 1 global display – both close and remote cabinets.

RS485 supervisor and multiple separate displays

The DIRIS Digiware systems, installed in multiple cabinets, exchange configuration data, measurements and alarms with a display installed in each cabinet and an RS485 supervisor.

- The DIRIS Digiware D-50/D-70 display, located in each cabinet, shows data from each DIRIS Digiware system via the Digiware bus.
- Each D-50/D-70 display (when configured as an RS485 slave) can exchange data via the RS485 bus.
- The data is sent to a single RS485 supervisor.

Cabinets
<ul style="list-style-type: none"> • 1 x DIRIS Digiware D-50/D-70 display • 1 x DIRIS Digiware U voltage measurement module • Multiple DIRIS Digiware I or S current measurement modules • Optional DIRIS Digiware IO modules

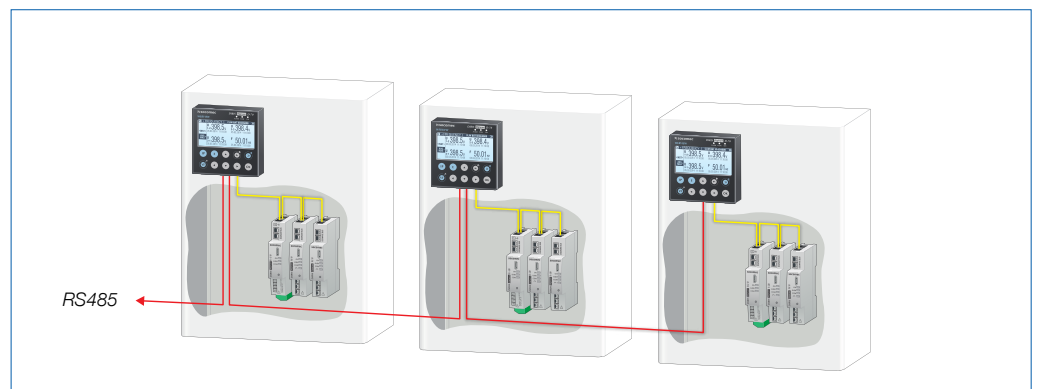


Fig. 16: RS485 Modbus supervisor and 3 separate displays – remote cabinets.



The voltage sources can be identical or can vary from one cabinet to the other. If a cabinet uses a different voltage source from the first cabinet, an additional U module and C-31 interface are needed.



The voltage sources can be identical or can vary from one cabinet to the other.



The voltage sources can be identical or can vary from one cabinet to the other.

Ethernet supervisor and multiple separate displays

The DIRIS Digiware systems, installed in multiple cabinets, exchange configuration data, measurements and alarms with a display installed in each cabinet and an Ethernet supervisor.

- The DIRIS Digiware D-50/D-70 display, located in each cabinet, collects data from each DIRIS Digiware system via the Digiware bus.
- Each D-50/D-70 display can exchange data via RS485.
- The D-50/D-70 display in the first cabinet is the master and the D-50/D-70 displays in subsequent cabinets are slaves.
- Data is sent to a single Ethernet supervisor.

First cabinet	Subsequent cabinets
<ul style="list-style-type: none"> • 1 x DIRIS Digiware D-50/D-70 display (configured as RS485 master) • 1 x DIRIS Digiware U voltage measurement module • Multiple DIRIS Digiware I or S current measurement modules • Optional DIRIS Digiware IO modules 	<ul style="list-style-type: none"> • 1 x DIRIS Digiware D-50/D-70 display (configured as RS485 slave) • Multiple DIRIS Digiware I or S current measurement modules • Optional DIRIS Digiware IO modules

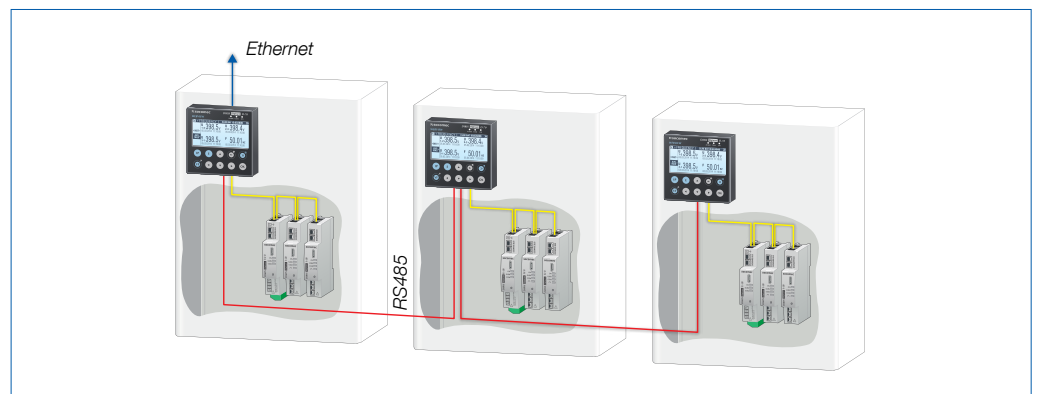


Fig. 17: Ethernet supervisor and 3 separate displays - remote cabinets.



The voltage sources can be identical or can vary from one cabinet to the other.

Multiple Ethernet supervisors and multiple separate displays

The DIRIS Digiware systems, installed across multiple cabinets, exchange configuration data, measurements and alarms with a display installed in each cabinet and one Ethernet supervisor per cabinet.

- The DIRIS Digiware D-50/D-70 display, located in each cabinet, shows data from each DIRIS Digiware system connected via the Digiware bus.
- Each D-50/D-70 display communicates data to a supervisor via the Ethernet bus.

Cabinets
<ul style="list-style-type: none"> • 1 x DIRIS Digiware D-50/D-70 display • 1 x DIRIS Digiware U voltage measurement module • Multiple DIRIS Digiware I or S current measurement modules • Optional DIRIS Digiware IO modules

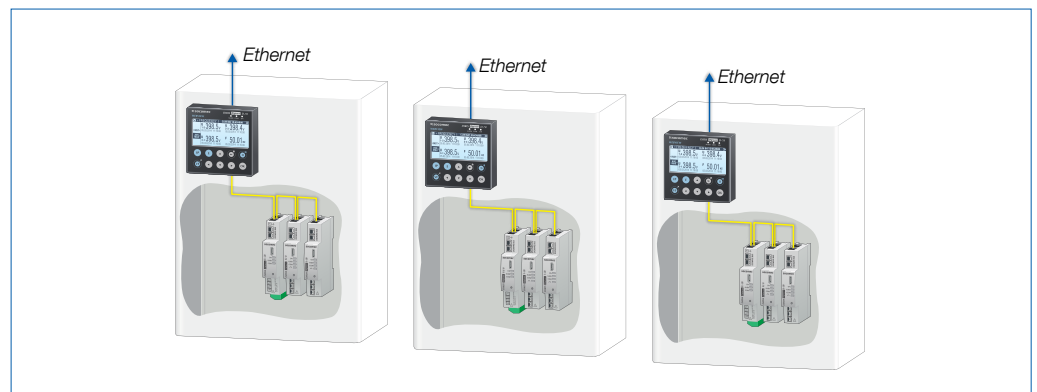


Fig. 18: Ethernet supervisors and 3 separate displays - very remote cabinets.

Measurements across multiple cabinets with WEBVIEW

Centralising on 1 global WEBVIEW-M (below 32 measurement points)

The DIRIS Digiware system, installed across multiple cabinets, exchanges configuration data, measurements and alarms with a global WEBVIEW-M.

- This configuration requires the cabinets to be in close proximity (distance of < 100 m. If > 100 m a C-32 repeater is required).
- The DIRIS Digiware M-70 gateway collects all the measurements, communicates over Ethernet and embeds WEBVIEW-M for remote data visualisation via a web browser.

First cabinet	Subsequent cabinets
<ul style="list-style-type: none"> • 1 x DIRIS Digiware M-70 gateway with WEBVIEW-M embedded • 1 x DIRIS Digiware U voltage measurement module • Multiple DIRIS Digiware I or S current measurement modules • Optional DIRIS Digiware IO modules 	<ul style="list-style-type: none"> • Multiple DIRIS Digiware I or S current measurement modules • Optional DIRIS Digiware IO modules

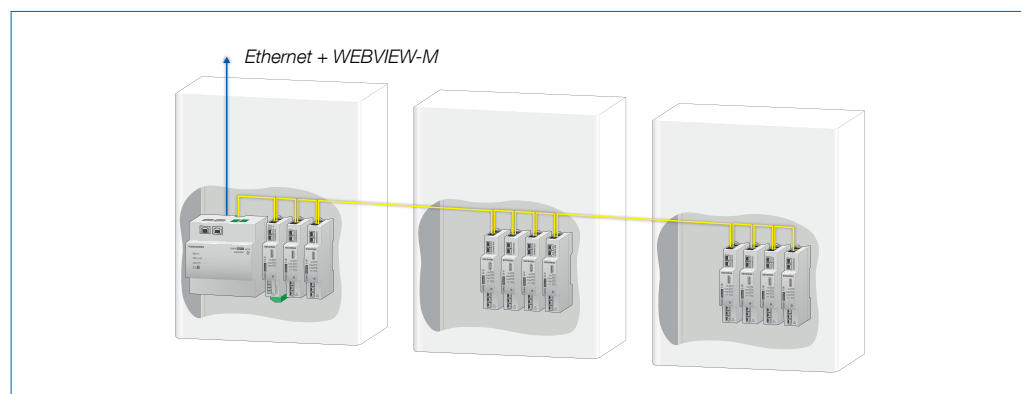


Fig. 19: Centralising with 1 global WEBVIEW-M - cabinets in close proximity.

First cabinet	Subsequent cabinets
<ul style="list-style-type: none"> • 1 x DIRIS Digiware M-70 gateway with WEBVIEW-M embedded • 1 x DIRIS Digiware U voltage measurement module • Multiple DIRIS Digiware I or S current measurement modules • Optional DIRIS Digiware IO modules 	<ul style="list-style-type: none"> • 1 x DIRIS Digiware C-31 system interface • Multiple DIRIS Digiware I or S current measurement modules • Optional DIRIS Digiware IO modules

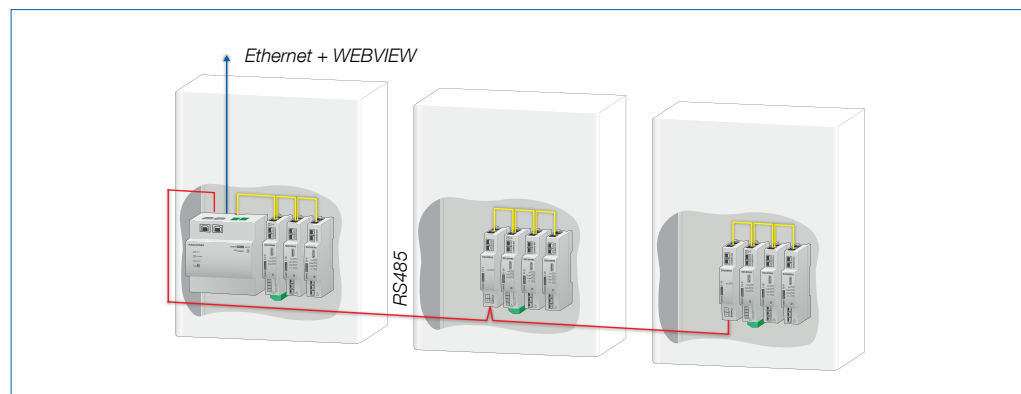


Fig. 20: Centralising with 1 global WEBVIEW-M - remote cabinets.



If the cabinets are remote from one another, a DIRIS Digiware C-31 system interface is installed in each cabinet to communicate between them via RS485.



The voltage sources can be identical or can vary from one cabinet to the other

If the cabinets are even farther away from one another, a DIRIS Digiware M-50 gateway is installed in each cabinet to communicate data to the first cabinet via the Ethernet network.

- The voltage sources can be identical or can vary from one cabinet to the other.
- The DIRIS Digiware M-70 gateway in the first cabinet is the master and the DIRIS Digiware M-50 gateways in subsequent cabinets are Ethernet slaves.
- WEBVIEW-M, embedded in the M-70 gateway of the first cabinet, shows all the measurements from all the cabinets.

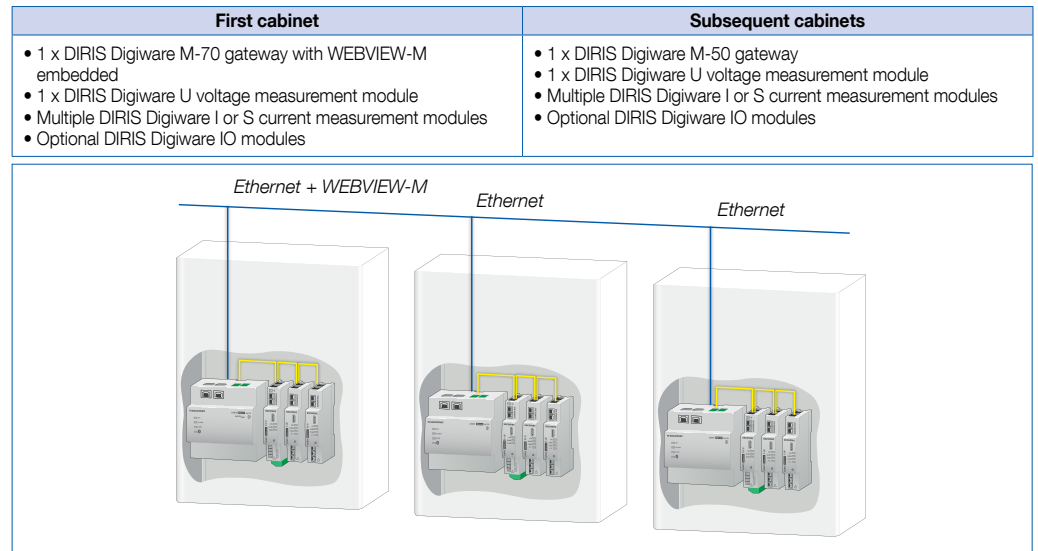


Fig. 21: Centralising with 1 global WEBVIEW-M - very remote cabinets.

Decentralising on multiple separate WEBVIEW-M

The DIRIS Digiware system installed in each cabinet exchanges configuration data, measurements and alarms with one separate WEBVIEW-M.

- The voltage sources can be identical or can vary from one cabinet to the other.
- Each gateway collects all the measurements from each cabinet so they can be visualised on one separate WEBVIEW-M per cabinet.

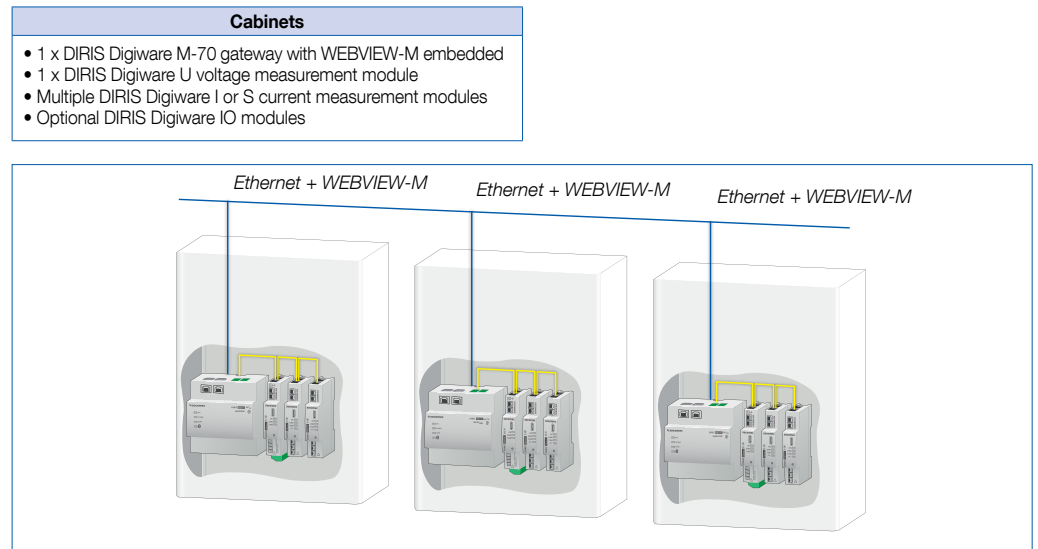


Fig. 22: Decentralising with multiple separate WEBVIEW-M - very remote cabinets.



The voltage sources can be identical or can vary from one cabinet to the other

Centralising on one global WEBVIEW-L (above 32 measurement points)

The DIRIS Digiware M-50 gateway installed in each cabinet centralises measurements from the DIRIS Digiware system of each cabinet and communicates data over Ethernet.

One DATALOG H80 is connected to the same Ethernet network and centralises data on one global WEBVIEW-L. Up to 200 devices can be centralised on the same DATALOG H80.

Digiware cabinets	H80 cabinet
<ul style="list-style-type: none"> • 1 x DIRIS Digiware M-50 gateway • 1 x DIRIS Digiware U voltage measurement module • Multiple DIRIS Digiware I or S current measurement modules • Optional DIRIS Digiware IO modules 	<ul style="list-style-type: none"> • 1 x DATALOG H80 with embedded WEBVIEW L-200

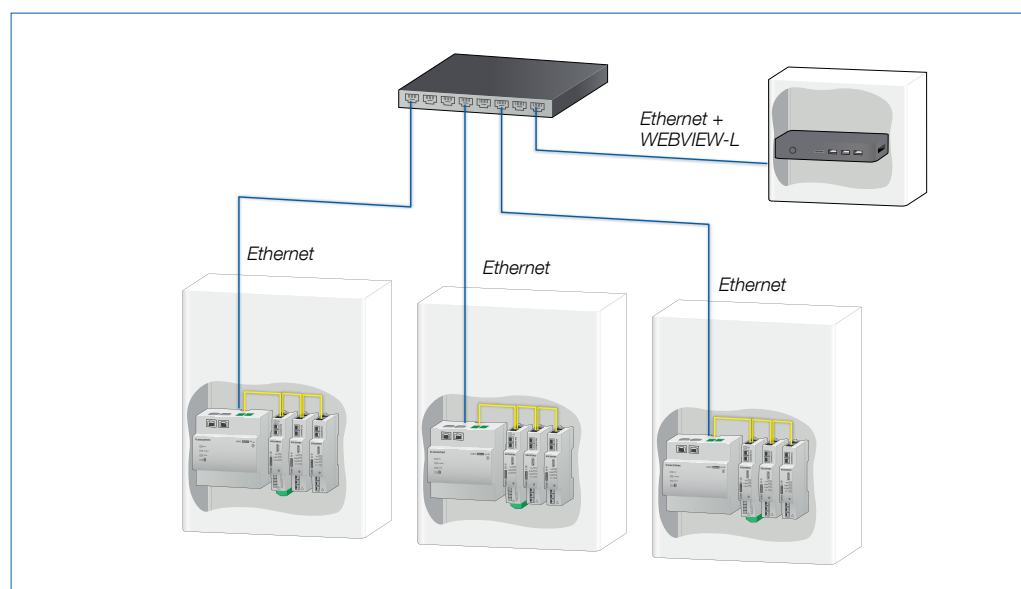


Fig. 23: Centralising on one global WEBVIEW-L - very remote cabinets connected over Ethernet via M-50 communication gateways.



If a display is needed, the DIRIS Digiware M-50 gateways can be replaced by DIRIS Digiware D-50 displays.

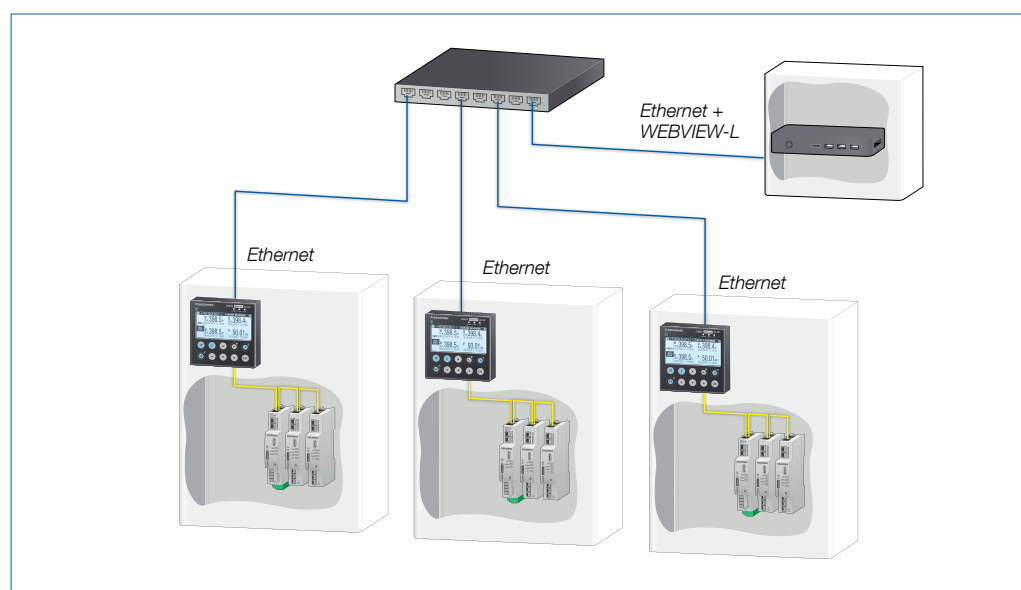


Fig. 24: Centralising on one global WEBVIEW-L - very remote cabinets connected over Ethernet via D-50 displays.



If a webservice is needed for each cabinet, DIRIS Digiware M-50 gateways may be replaced by M-70 gateways.

Measurements in multiple cabinets with WEBVIEW-M and display

Centralising on 1 global display and WEBVIEW-M

The DIRIS Digiware system, installed across multiple cabinets, exchanges configuration data, measurements and alarms via with a global display and a global WEBVIEW-M and communicates via Ethernet.

- The DIRIS Digiware D-70 display, located in the first cabinet, collects data from the DIRIS Digiware system (installed across multiple cabinets) via the Digiware bus and displays measurements on the D-70 and on WEBVIEW-M, embedded in the D-70 display.
- This configuration requires the cabinets to be in close proximity (distance of < 100m. If > 100m, a C-32 repeater is required).

First cabinet	Subsequent cabinets
<ul style="list-style-type: none">• 1 x DIRIS Digiware D-70 display with WEBVIEW-M embedded• 1 x DIRIS Digiware U voltage measurement module• Multiple DIRIS Digiware I or S current measurement modules• Optional DIRIS Digiware IO modules	<ul style="list-style-type: none">• Multiple DIRIS Digiware I or S current measurement modules• Optional DIRIS Digiware IO modules

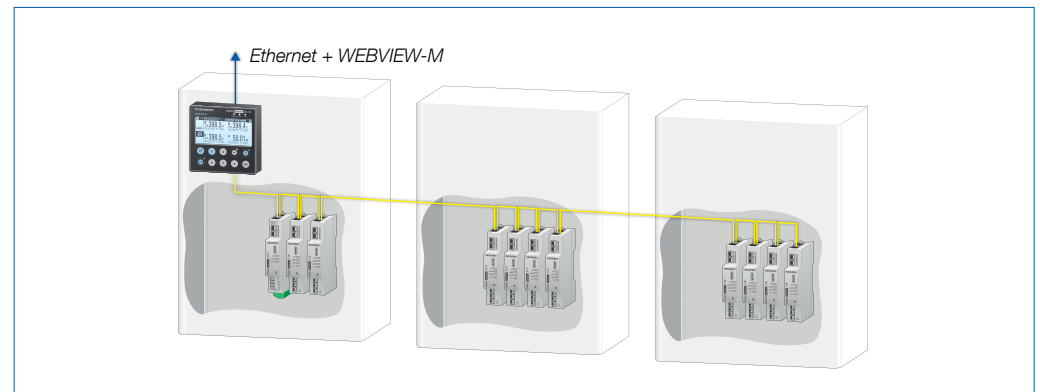


Fig. 25: Centralising on 1 global display with WEBVIEW-M - cabinets in close proximity.



If the cabinets are remote from one another, they are serially connected via the RS485 bus. This means a DIRIS Digiware C-31 system interface must be installed in each cabinet.

First cabinet	Subsequent cabinets
<ul style="list-style-type: none"> • 1 x DIRIS Digiware D-70 display with WEBVIEW-M embedded • 1 x DIRIS Digiware U voltage measurement module • Multiple DIRIS Digiware I or S current measurement modules • Optional DIRIS Digiware IO modules 	<ul style="list-style-type: none"> • 1 x DIRIS Digiware C-31 RS485 system interface • Multiple DIRIS Digiware I or S current measurement modules • Optional DIRIS Digiware IO modules

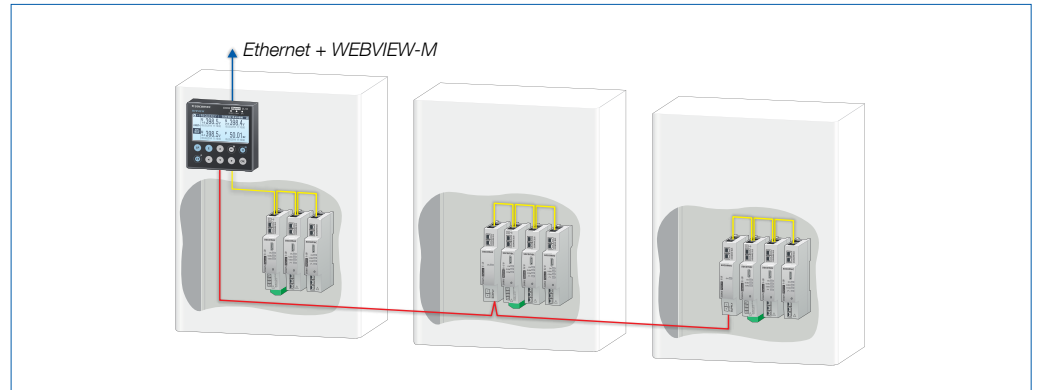


Fig. 26: Centralising on 1 global display with WEBVIEW-M - remote cabinets.



If the cabinets are even farther away from one another, the Ethernet network can be used. This means a DIRIS Digiware M-50 gateway must be installed in each cabinet

First cabinet	Subsequent cabinets
<ul style="list-style-type: none"> • 1 x DIRIS Digiware D-70 display with WEBVIEW-M embedded • 1 x DIRIS Digiware U voltage measurement module • Multiple DIRIS Digiware I or S current measurement modules • Optional DIRIS Digiware IO modules 	<ul style="list-style-type: none"> • 1 x DIRIS Digiware M-50 gateway • Multiple DIRIS Digiware I or S current measurement modules • Optional DIRIS Digiware IO modules

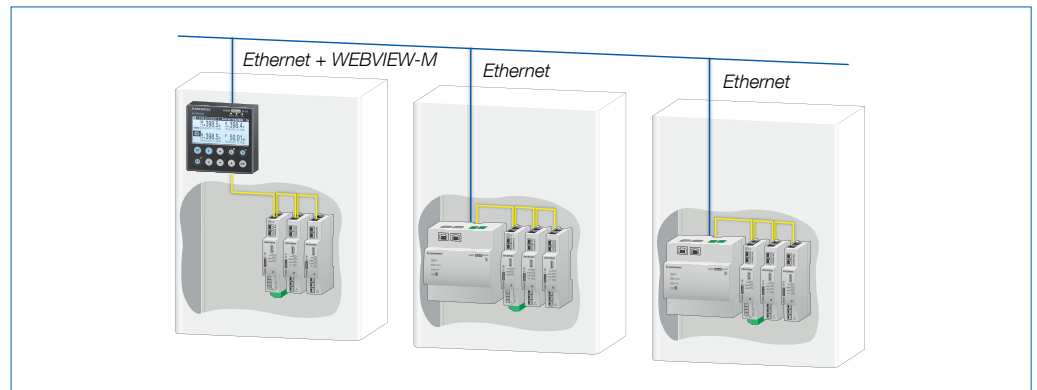


Fig. 27: Centralising on 1 global display and 1 global WEBVIEW-M - very remote cabinets.

Centralising on 1 WEBVIEW-M and multiple displays

The DIRIS Digiware systems, installed in multiple cabinets, exchange configuration data, measurements and alarms with 1 global WEBVIEW-M and 1 separate display for each cabinet.

- The DIRIS Digiware D-50 display, located in each cabinet, shows data from each DIRIS Digiware system connected via the Digiware bus.
- Each D-50 display can exchange data via RS485 (when configured as RS485 slave).
- The voltage sources can be identical or can vary from one cabinet to the other.
- Measurements from all systems can be visualised on the D-70 display and on WEBVIEW-M.



The voltage sources can be identical or can vary from one cabinet to the other.

First cabinet	Subsequent cabinets
<ul style="list-style-type: none"> • 1 x DIRIS Digiware D-70 display with WEBVIEW-M embedded • 1 x DIRIS Digiware U voltage measurement module • Multiple DIRIS Digiware I or S current measurement modules • Optional DIRIS Digiware IO modules 	<ul style="list-style-type: none"> • 1 x DIRIS Digiware D-50 display • Multiple DIRIS Digiware I or S current measurement modules • Optional DIRIS Digiware IO modules



The D-70 display, located in the first cabinet is configured as RS485 master. It centralises measurements from Digiware systems of all cabinets connected either via the Digiware bus or RS485 (remote cabinets).

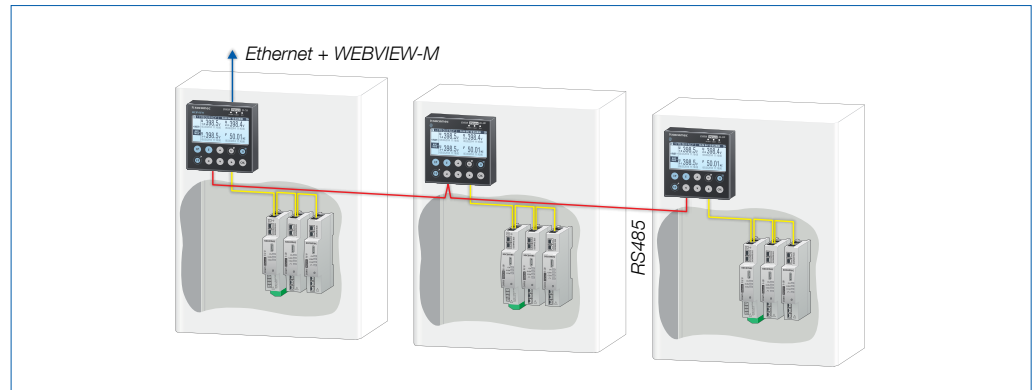


Fig. 28: Centralising on 1 WEBVIEW-M and multiple separate displays - remote cabinets.

If the cabinets even farther away from one another, the Ethernet network can be used. The cabinets communicate via the Ethernet bus of each display.

- The DIRIS Digiware D-70 display collects all the measurements so they can be shown on a global display and WEBVIEW-M.
- The DIRIS Digiware D-50 display, located in each cabinet, shows data from each DIRIS Digiware system connected via the Digiware bus.
- Each display can communicate over Ethernet.
- The voltage sources can be identical or can vary from one cabinet to the other.



Each display can exchange data over Ethernet.

First cabinet	Subsequent cabinets
<ul style="list-style-type: none"> • 1 x DIRIS Digiware D-70 display with WEBVIEW-M embedded • 1 x DIRIS Digiware U voltage measurement module • Multiple DIRIS Digiware I or S current measurement modules • Optional DIRIS Digiware IO modules 	<ul style="list-style-type: none"> • 1 x DIRIS Digiware D-50 display • Multiple DIRIS Digiware I or S current measurement modules • Optional DIRIS Digiware IO modules

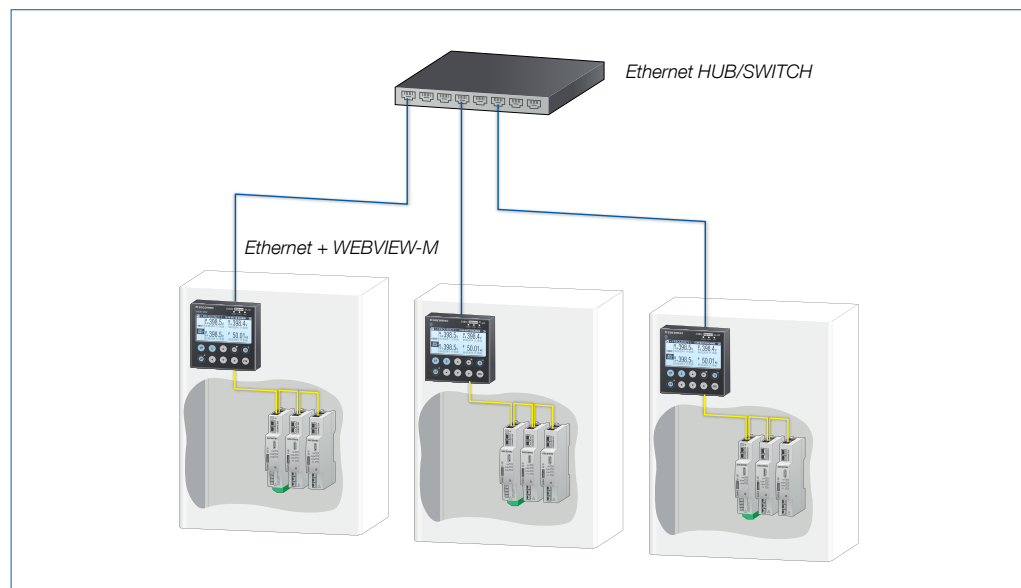


Fig. 29: Centralising with 1 WEBVIEW and multiple separate displays - very remote cabinets.

Power monitoring with double source coupling

Centralising on 1 global display

The DIRIS Digiware systems, installed in two cabinets, exchange configuration data, measurements and alarms for source 1 and source 2. A global display installed in one cabinet shows the data.

- The DIRIS Digiware C-31 system interface, located in the source 2 cabinet, collects data from the DIRIS Digiware system of the source 2 cabinet via the Digiware bus.
- The DIRIS Digiware D-50 display, located in the Source 1 cabinet, exchanges data from the two DIRIS Digiware systems via the Digiware bus for source 1 and RS485 bus for source 2.
- The DIRIS Digiware D-50 display shows all the measurement data and communicates over Ethernet.

Source 1 cabinet	Source 2 cabinet
<ul style="list-style-type: none"> • 1 x DIRIS Digiware D-50 display • 1 x DIRIS Digiware U voltage measurement module • Multiple DIRIS Digiware I or S current measurement modules • Optional DIRIS Digiware IO modules 	<ul style="list-style-type: none"> • 1 x DIRIS Digiware C-31 RS485 system interface • Multiple DIRIS Digiware I or S current measurement modules • Optional DIRIS Digiware IO modules

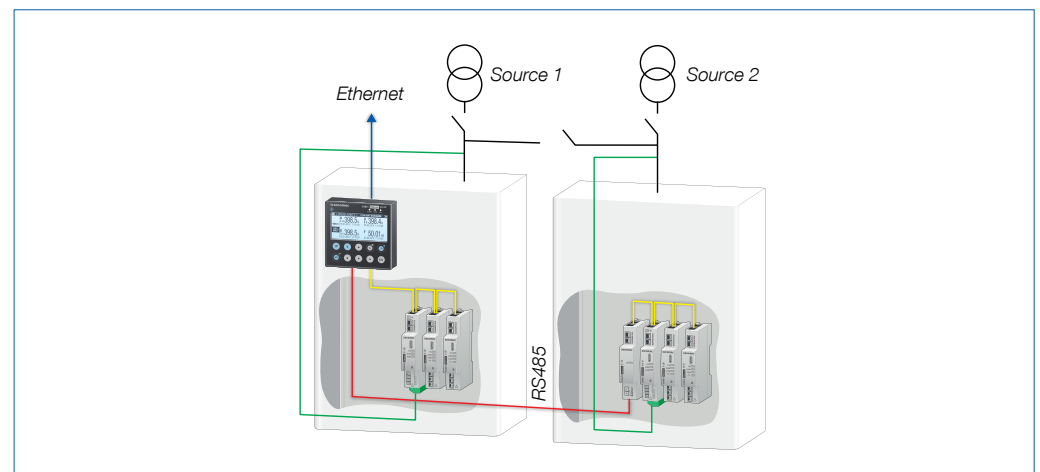


Fig. 30: Double source centralisation with 1 global display - remote cabinets.



If one global WEBVIEW-M is also needed for remote data visualisation, replace DIRIS Digiware D-50 display by a DIRIS Digiware D-70 display.

Centralising on 1 global WEBVIEW-M

The DIRIS Digiware systems, installed in two cabinets, exchange configuration data, measurements and alarms for Source 1 and Source 2. Data can be visualised on one global WEBVIEW-M.

- The DIRIS Digiware C-31 system interface, located in the source 2 cabinet, collects data from the DIRIS Digiware system via the Digiware bus.
- The DIRIS Digiware M-70 gateway, located in the Source 1 cabinet, exchanges data from the 2 DIRIS Digiware systems via the Digiware bus for source 1 and RS485 for source 2.
- The gateway centralises all the measurements so they can be visualised on a global WEBVIEW-M and communicated over Ethernet.



If one global display with one global WEBVIEW-M is needed, the DIRIS Digiware M-70 gateway may be replaced by a DIRIS Digiware D-70 display.

Source 1 cabinet	Source 2 cabinet
<ul style="list-style-type: none"> • 1 x DIRIS Digiware M-70 gateway with WEBVIEW-M embedded • 1 x DIRIS Digiware U voltage measurement module • Multiple DIRIS Digiware I or S current measurement modules • Optional DIRIS Digiware IO modules 	<ul style="list-style-type: none"> • 1 x DIRIS Digiware C-31 system interface • Multiple DIRIS Digiware I or S current measurement modules • Optional DIRIS Digiware IO modules

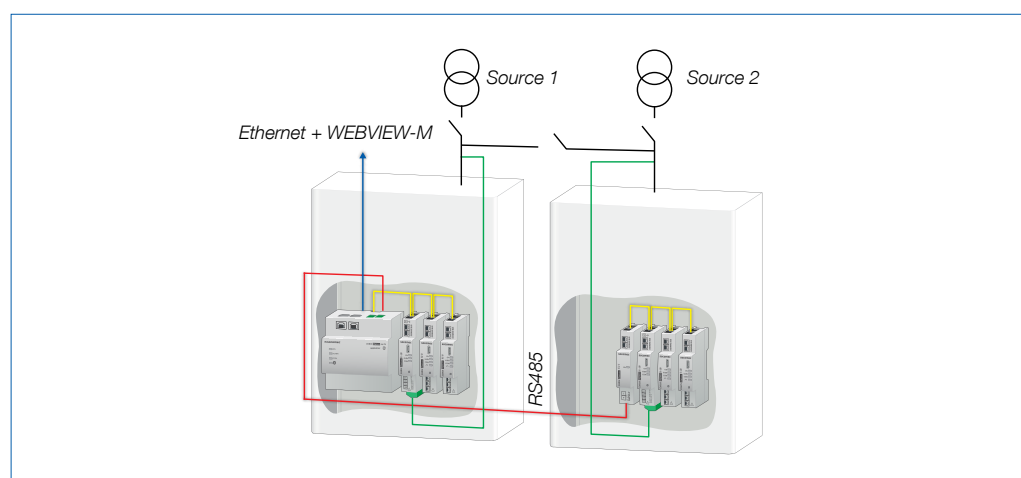


Fig. 31: Double source centralisation with 1 WEBVIEW-M - remote cabinets.

Power Monitoring of AC and DC circuits



The rules defined in the previous paragraphs for architectures involving multiple voltage sources also apply for the DIRIS Digiware DC system.

Centralising AC and DC loads located in different panels on 1 WEBVIEW-M and 1 global display

The DIRIS Digiware AC and DC systems, installed in multiple cabinets, exchange configuration data, measurements and alarms with 1 global display and 1 global WEBVIEW.

- The display communicates data via Ethernet.



If there is a mix of DIRIS Digiware AC and DC systems, they should be considered as two separate systems, each having their own voltage source.

Source 1 cabinet	Source 2 cabinet
<ul style="list-style-type: none"> • 1 x DIRIS Digiware D-70 display with WEBVIEW-M embedded • 1 x DIRIS Digiware U voltage measurement module • Multiple DIRIS Digiware I or S current measurement modules • Optional DIRIS Digiware IO modules 	<ul style="list-style-type: none"> • 1 x DIRIS Digiware C-31 RS485 system interface • 1 x DIRIS Digiware Udc DC voltage measurement module • Multiple DIRIS Digiware ldc DC current measurement modules • Optional DIRIS Digiware IO modules

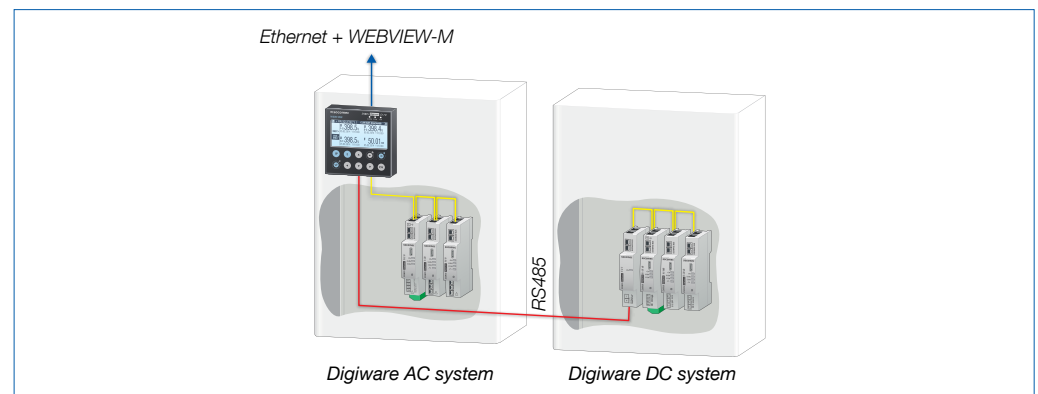


Fig. 32: DIRIS Digiware AC and DC systems located in different panels.

Centralising AC and DC loads located in the same panel on 1 WEBVIEW-M and 1 global display

The DIRIS Digiware AC and DC systems, installed in the same cabinet, exchange configuration data, measurements and alarms with 1 global display and 1 global WEBVIEW-M.

- The display communicates data via Ethernet.

Cabinet
<ul style="list-style-type: none">• 1 x DIRIS Digiware D-70 display with WEBVIEW-M embedded• 1 x DIRIS Digiware U voltage measurement module• Multiple DIRIS Digiware I or S current measurement modules• 1 x DIRIS Digiware Udc DC voltage measurement module• Multiple DIRIS Digiware Idc DC current measurement modules• Optional DIRIS Digiware IO modules



A DIRIS Digiware M-70 gateway may be used if a local display is not needed.

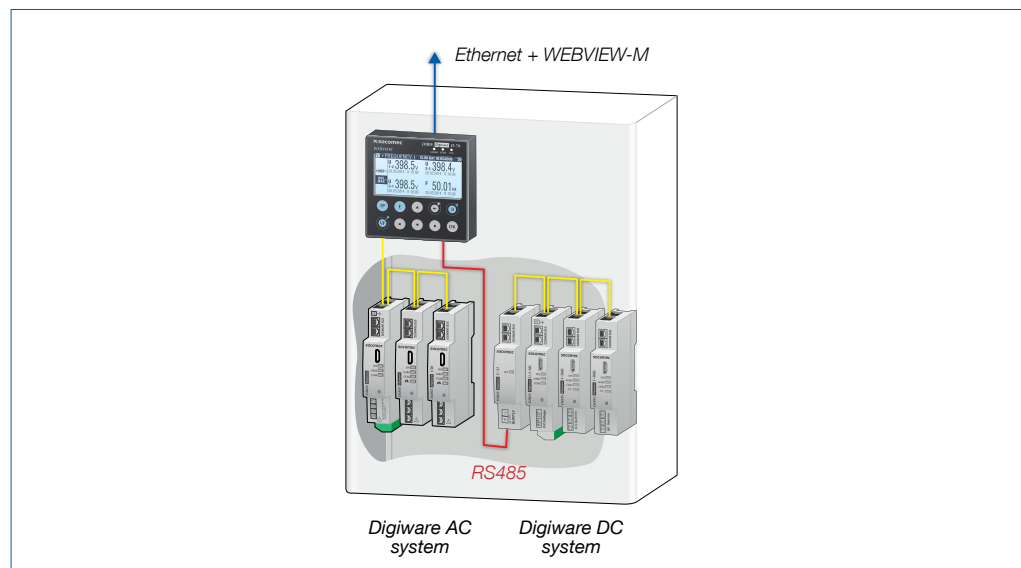


Fig. 33: DIRIS Digiware AC and DC systems located in one panel.

Going further

Site with DIRIS Digiware, DIRIS A, COUNTIS E, and 3rd party devices



It is very frequent for companies to use different types and brands of PMDs and Energy meters.

Thanks to the DATALOG H80 with WEBVIEW-L, all devices (up to 200) including 3rd party devices using generic Modbus communication can be integrated to the same WEBVIEW-L.

- The DIRIS Digiware M-50 gateways located in the first 2 cabinets, collect data from the DIRIS Digiware system of the first 2 cabinets via the Digiware bus.
- The M-50 gateway, located in the 3rd panel collects data from the DIRIS A-40 PMD and COUNTIS E meters via the RS485 bus and communicates data over Ethernet.
- The 3rd party device, located in the last panel communicates data over Ethernet.
- The DATALOG H80 collects information from all panels connected to the Ethernet network and displays all measurements on one WEBVIEW-L.

First 2 cabinets	3rd cabinet	4th cabinet
<ul style="list-style-type: none"> • 1 x DIRIS Digiware M-50 gateway • 1 x DIRIS Digiware U voltage measurement module • Multiple DIRIS Digiware I or S current measurement modules • Optional DIRIS Digiware IO modules 	<ul style="list-style-type: none"> • 1 x DIRIS Digiware M-50 • 1 x DIRIS A-40 RS485 Power Monitoring Devices • COUNTIS E13 and E23 energy meters 	<ul style="list-style-type: none"> • 3rd party device with Modbus communication

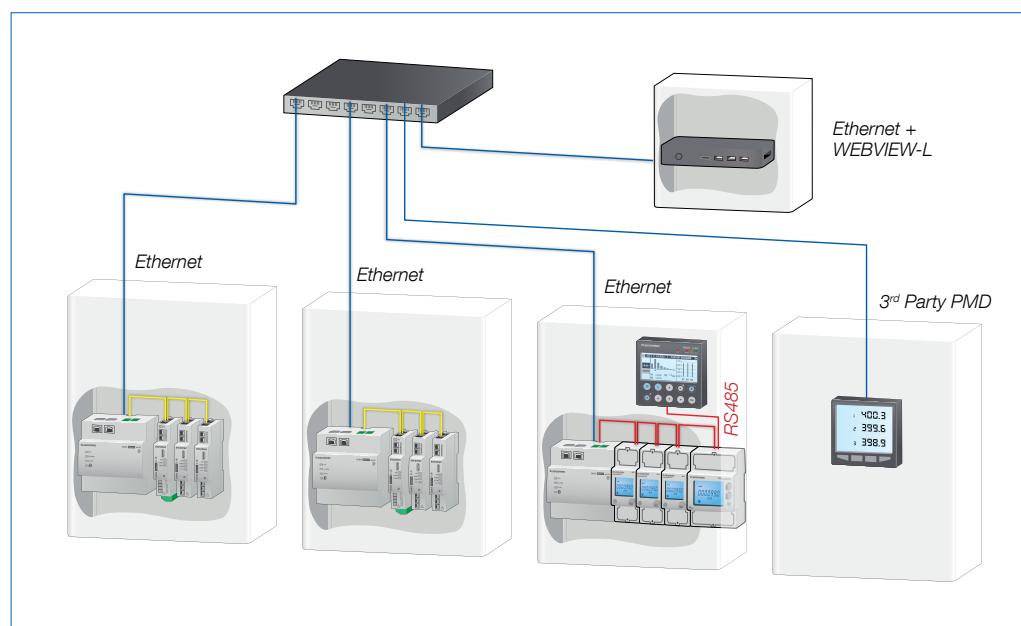


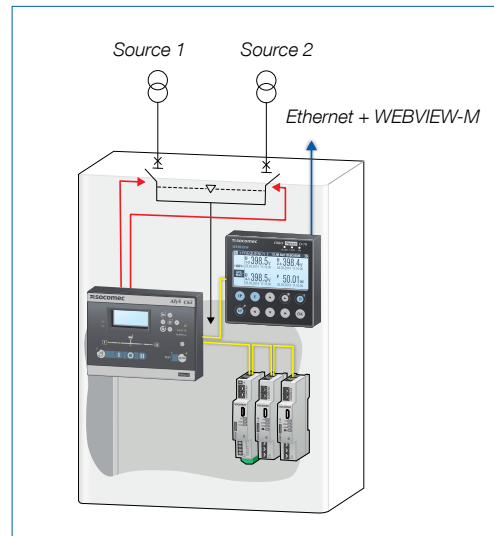
Fig. 34: Centralising on 1 global WEBVIEW-L - devices of different types from several panels over Ethernet.

Main switchboard equipped with a DIRIS Digiware system and an ATyS C65 controller

The DIRIS Digiware D-70 display exchanges data from the DIRIS Digiware system and the ATyS C65 controller via the Digiware bus. The ATyS C65 controls the source 1 and source 2 circuit breakers to ensure the source transition.

Thanks to its Digiware connectivity, the C65 controller can be directly connected on the Digiware bus to send data to the D-70 display.

- The D-70 display can communicate data to a supervisor via Ethernet over multiple communication protocols (Modbus TCP, BACnet IP, SNMP).
- The DIRIS Digiware D-70 display also embeds a web-based software (WEBVIEW-M) for remote data visualisation and analysis via a web browser.

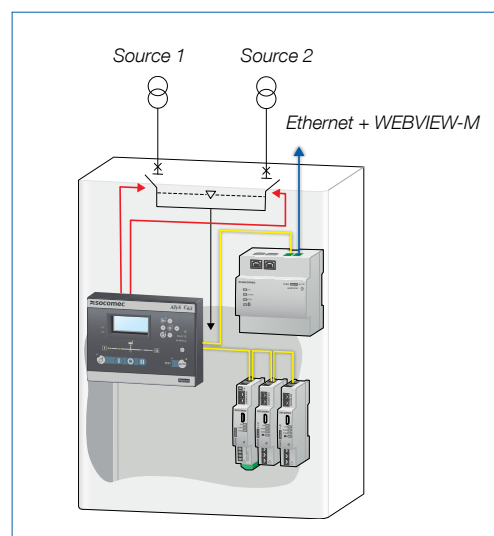


Main switchboard
• 1 x DIRIS Digiware D-70 display with WEBVIEW-M embedded
• 1 x ATyS C65 controller
• 1 x DIRIS Digiware U voltage measurement module
• Multiple DIRIS Digiware I or S current measurement modules

Fig. 35: Centralising a DIRIS Digiware system and ATyS C65 on a D-70 display with WEBVIEW-M



- If no local display is needed, the D-70 display may be replaced by an M-70 gateway.
- If no remote visualisation of data is needed, the D-70 display or M-70 gateway may be replaced by a D-50 display/M-50 gateway.



Main switchboard
• 1 x DIRIS Digiware M-70 gateway with WEBVIEW-M embedded
• 1 x ATyS C65 controller
• 1 x DIRIS Digiware U voltage measurement module
• Multiple DIRIS Digiware I or S current measurement modules

Fig. 36: Centralising a DIRIS Digiware system and ATyS C65 on a M-70 gateway with WEBVIEW-M

In summary

The flexibility of DIRIS Digiware means you can opt from several different **communication architectures, adjusting them to your electrical system setup** and the communication buses available.

These architectures can be **completely centralised, partially centralised or decentralised** according to use and application.



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