VINGTOR STENTOFON
by ZENITEL GROUP

Configuration Manual
Flowire Converter
FCDC1 / FCDC2

About this Document

Document Scope

This document provides a detailed guide to the system setup and configuration of the FCDC1 and FCDC2 Flowire Converter in creating IP networks using conventional telecom star-wired infrastructure (2-wire).

Relevant Products

Product Description	Item Name	Item No.
Flowire Converter, 24-48V DC	FCDC1	1008080110
Flowire Converter for Ex, 24-48V DC	FCDC2	1008080210
XP PSU, 48V DC, 120W	Flowire XP 120	2990101120
XP PSU, 48V DC, 240W	Flowire XP 240	2990101240
Powerbox PSU, 24V DC, 120W	Flowire EX 120	2990102120
Powerbox PSU, 24V DC, 250W	Flowire EX 250	2990102240
Turbine Extended Ex IP Intercom	TFIX-1	1008123010
Turbine Extended Ex IP Intercom	TFIX-2	1008123020
Turbine Extended Ex IP Intercom	TFIX-3	1008123030
Turbine Extended Ex IP Intercom	TFIX-4	1008123040
Exigo Access Panel Ex	EAPFX-1	1023221511
Exigo Access Panel Ex	EAPFX-6	1023221516

Publication Log

Ver.	Date	Author	Status	Comments
1	5.7.2013	HL/HKL	Published	
2.1	13.4.2016	HKL	Published	FCDC1 restrictions
3	2.5.2017	HKL	Published	New GUI, IGMP, CCo
3.2	9.5.2018	HKL	Published	Ex & industrial connection
3.3	17.10.2018	HKL	Published	Ex cabling

Related Documentation

For further information, refer to the following documentation:

Doc. number	Documentation
A100K11706	Flowire Guidelines for Exigo
A100K11285	Flowire Getting Started
A100K11611	Replacing Flowire Converter
A100K11379	Autocad Dimension Drawing
A100K11499	Exigo & Turbine Ex Installation & Maintenance

Acronyms

Acronym	Meaning
FCDC	Flowire Converter Direct Current
Flowire Star Configuration	A star configuration consisting of two or more Flowire devices, with a link to each other, and one PSU.
NMK	Network Management Key
PLC	Power Line Communication. This is the basis of the Flowire technology for transporting both power and signal on power cables or any other cable with at least two conductors.
PSU	Power Supply Unit

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1   Product Description

1.1   General Description

The Flowire Converter enables Ethernet to run on the same two wires as power, providing simpler cabling and opening up for longer cable hauls. The Flowire converter is also capable of powering the Ethernet devices (Vingtor-Stentofon IP intercom stations) attached to it via spare pairs.

1	Status Indicators
2	Ground Connection
3	Flowire/Power Ports
4	Password Reset Button
5	Ethernet Port
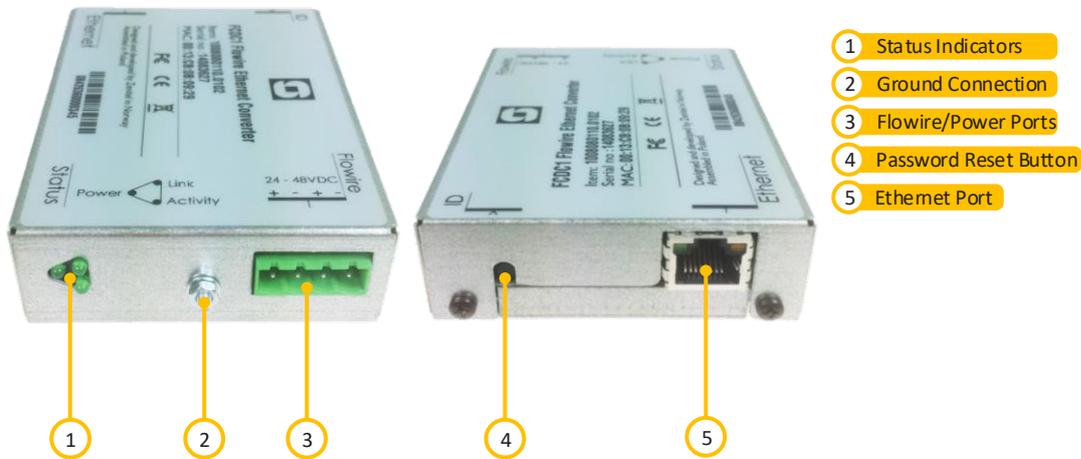
Figure 1   FCDC1 Flowire Converter

There are two models of the Flowire Converter:

Model	Description
FCDC1	24-48 VDC Flowire Converter with power-forwarding (PoE, type 2). Forwards 48V from the power supply to the spare pairs of the Ethernet port (not true PoE).
FCDC2	Non-PoE 24-48 VDC Flowire Converter for use with central equipment rack and Ex devices. Does not forward 48V to the spare pairs of the Ethernet port.
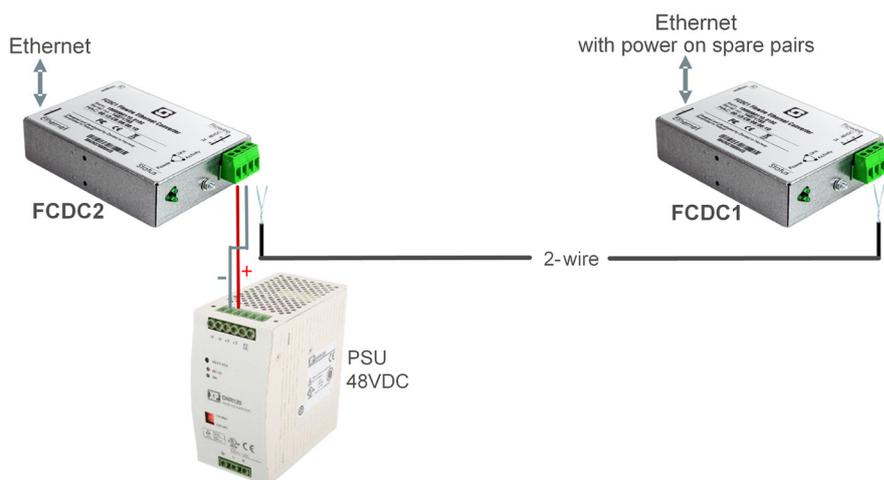
Figure 2   FCDC1 and FCDC2

ⓘ *It is recommended to use FCDC1 only when you need to power the connected device via the spare pairs of the Ethernet port. In all other situations, use the FCDC2.*

1.2 Areas of Application

The main areas of application for the Flowire Converter are:

- Retrofitting older communication systems
- Providing Ethernet connectivity to remote locations in buildings

1.2.1 Retrofitting Older Intercom & Telephone Systems

- Analog and digital intercom systems
- Analog and digital telephone systems

The above solutions typically use a conventional star-wired telecom infrastructure with 0.5 mm^2 (20 AWG) single-pair twisted cables.

1.2.2 Remote IP Intercom Locations In New Buildings

In some new building projects, it is a challenge to provide Ethernet connectivity to remote locations (beyond 100 meters from the main equipment room) for critical communication.

By implementing Flowire Converters, it is possible to upgrade these systems with IP products without costly and time consuming re-cabling of CAT or fiber cables.

2 Upgrading Conventional Star-Wired Infrastructure

2.1 The Conventional System

A conventional star-wired infrastructure supports analog and digital intercom and telephone systems. These star-wired telecom infrastructures are typically used in both marine and onshore intercom applications.
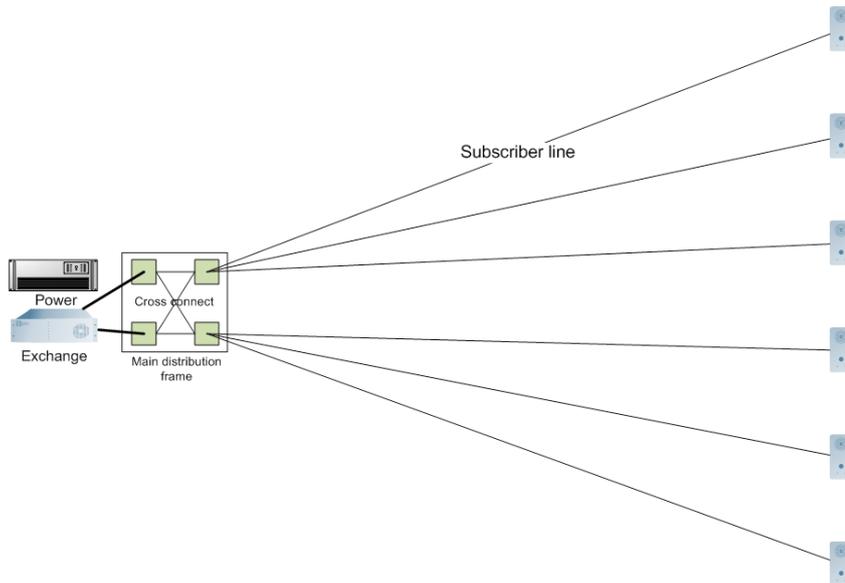
Figure 3   Conventional star-wired infrastructure

In this solution, you will have a centralized equipment rack with the following equipment:

- Telecom / Intercom Exchange
- Power Supply Unit
- Main Distribution Frame

The Main Distribution Frame connects the exchange to subscriber lines connected in a star structure.
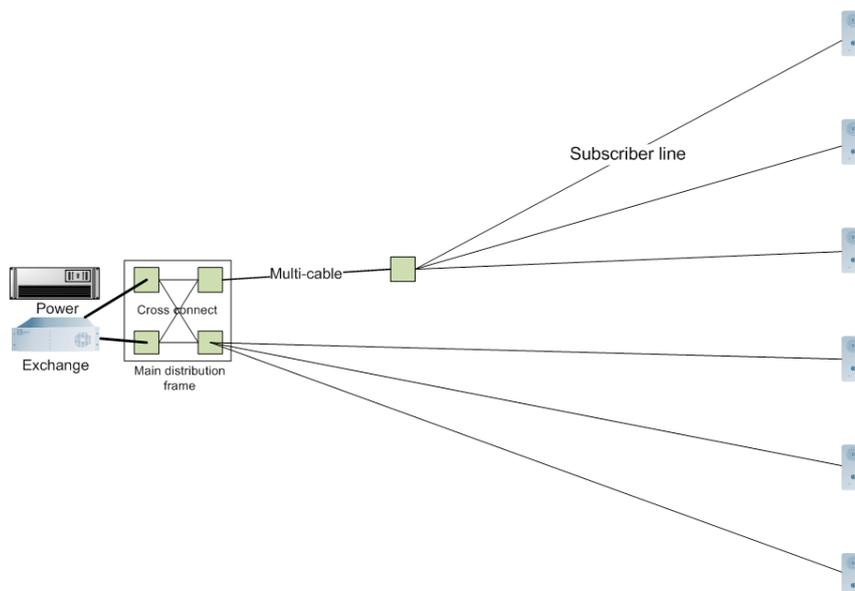
Figure 4   Conventional star infrastructure with multi-pair cables and junction boxes

In order to simplify maintenance and reduce cabling costs, it is common to use multi-pair cables and junction boxes in order to branch out to different locations.

Conventional star-wired telecom infrastructures commonly use one twisted wire pair to each telecom device. However, many systems, like AlphaCom, use two twisted pairs for each telecom device

2.2 Power on Conventional Infrastructure

In an analog and digital telecom/intercom system, it is usually a requirement to power the telephones/ intercoms from the central equipment rack, thus supplying the power over the subscriber line.

Typical maximum subscriber line distances for intercom systems are:

Wire cross section	Distance
0.6 mm² (19 AWG)	2.0 km
0.5 mm² (20 AWG)	1.4 km

Table 1   AlphaCom Subscriber Line Distance

Wire cross section	Distance
0.5 mm² (20 AWG)	0.8 km

Table 2   AsaCom Subscriber Line Distance

2.3 Precaution & Limitations

- The cable shields must be interconnected in junction boxes and grounded in the central device only.
- Never use a cable run where the voltage drops below half of the PSU voltage.
- Do not connect more than 10 Flowire Converters on one Flowire star configuration.
- Powering of remote IP intercom stations through their Ethernet ports requires at least 40 VDC at the remote site.

2.4 Recommendations

- Use twisted-pair shielded cables
- The cable between the PSU and the Flowire Converter should not be shorter than 50 cm.
- Unless the cables are shielded, you should avoid running wires from different Flowire star configurations in the same cable ducts.
- Avoid multi-pair cables with connections to other systems.
- If you are using a multi-pair cable, but not all its pairs, connect more pairs between two Flowire Converters to reduce voltage drop and increase bandwidth.
- In a central rack with two or more Flowire Converters in close proximity, use heat shrink with grounding on unshielded areas of the cable to isolate the different Flowire star configurations and avoid cross-talk.

2.5 System Configuration with Central Powering of Remote Intercoms
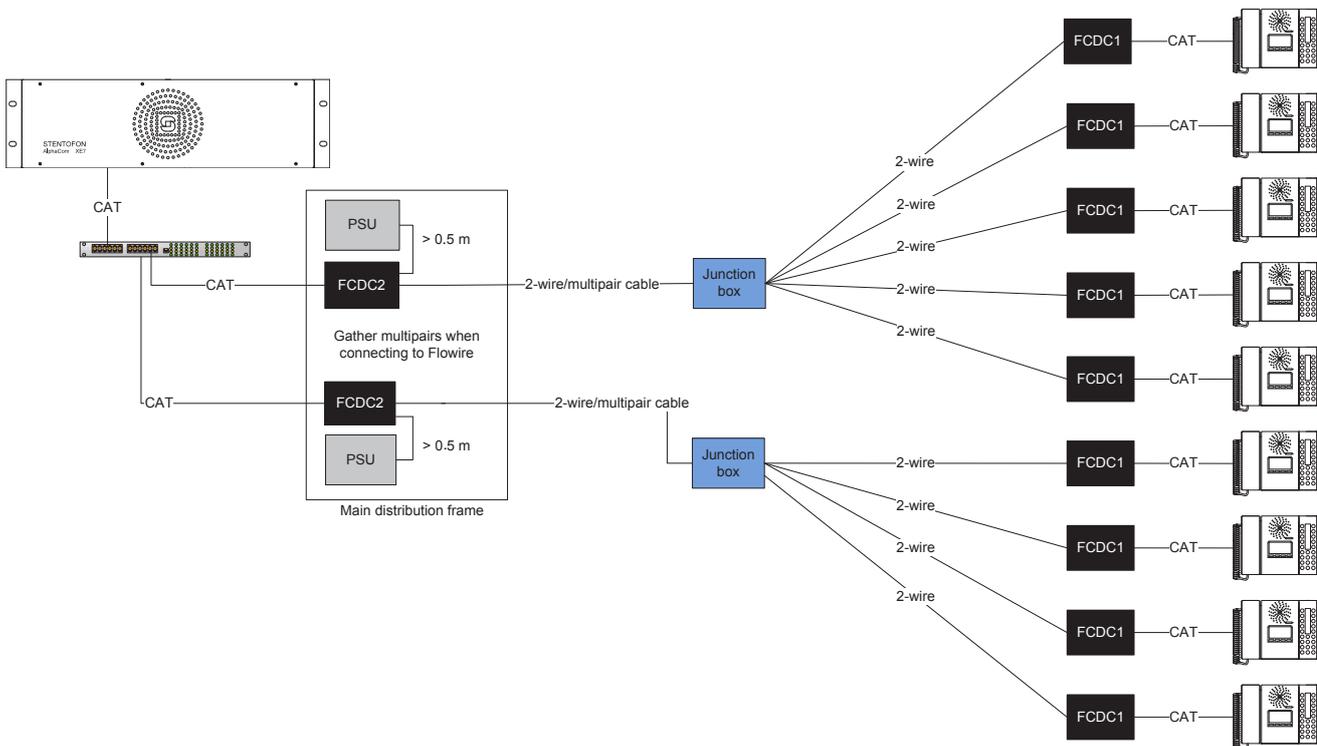
Figure 5   Flowire Upgraded configuration with central power distribution.

In the figure above, there are two Flowire star configurations, each with one central FCDC2 Flowire Converter and one central PSU (Power Supply Unit). FCDC1 is used to power the connected device via the spare pairs of its Ethernet port There can be no cross connection between these star configurations inside the main distribution frame.

The figure above shows how the Flowire upgraded system configuration will look when all remote IP products are powered by centrally located PSUs.

ⓘ **Only use FCDC2 together with the central PSU in the main distribution frame.**

ⓘ **All multi-pair cables for one Flowire star configuration has to be gathered in the central FCDC2. This can be done directly in the FCDC2 if the plug has room for it, on connector rails or by some other means.**

ⓘ **You must never cross connect two Flowire star configurations.**

ⓘ **You must never have wires from different Flowire star configurations share the same multi-pair cable as this will lead to a very detrimental form of crosstalk.**

ⓘ **You must never ground any of the devices at the remote sites as this may draw additional current from the central PSU to the remote sites, thus reducing the power distribution performance.**

2.6 System Configuration with Local Powering of Remote Intercoms
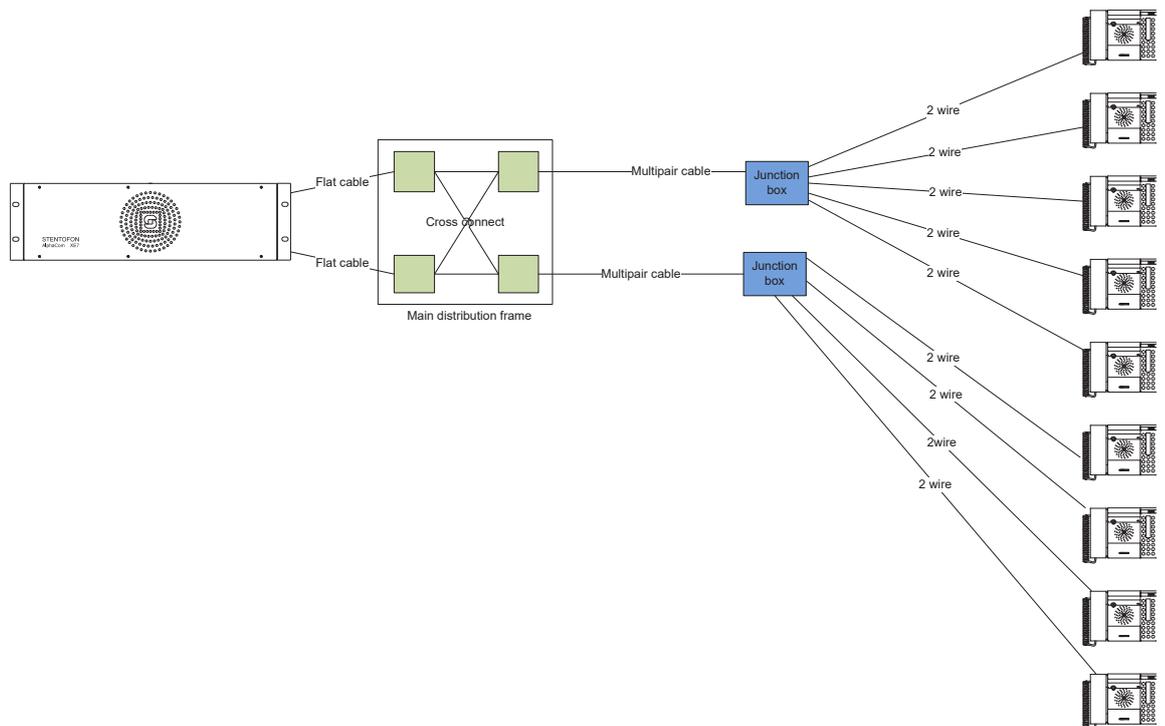
Figure 6   Conventional analog/digital system configuration
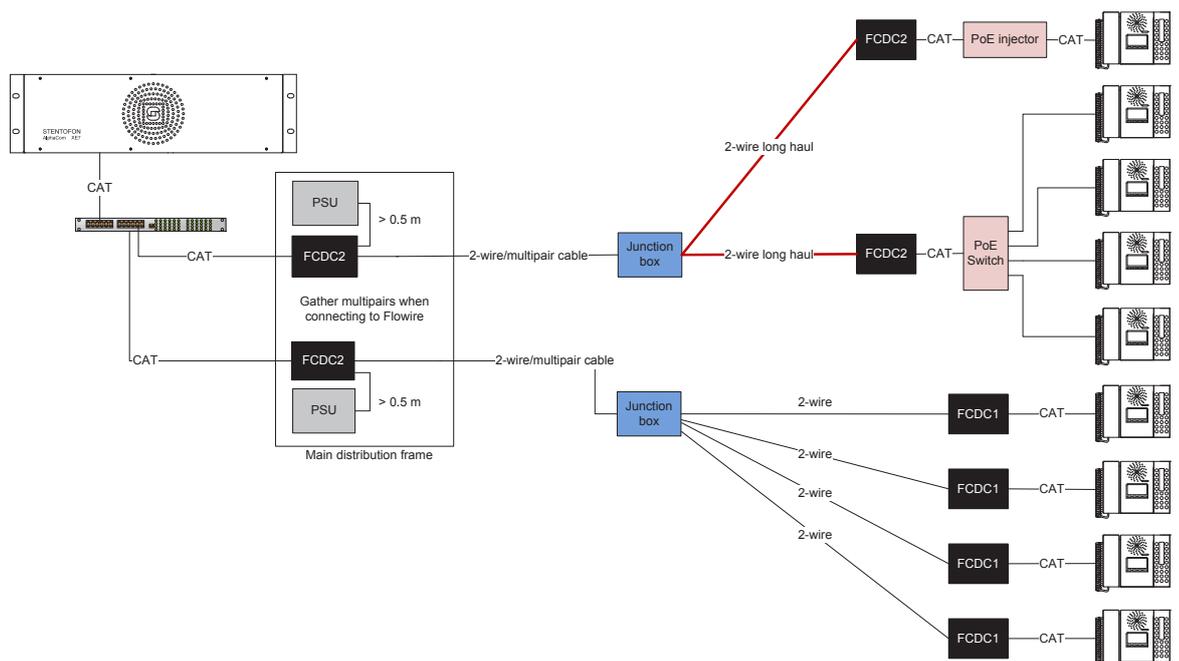
Figure 7   Flowire Upgraded configuration with local power at remote locations.

Red cables indicate long hauls where local power will be necessary to maintain a stable connection to the intercoms. FCDC2 is used to connect to local power for intercoms at remote locations. For single stations a PoE injector will be ideal. For groups of intercom stations, it may be better to use a PoE switch.

ⓘ *DO NOT use FCDC1 to connect to local power for intercoms at remote locations.*

ⓘ *Maximum number of Flowire devices per star configuration = 10*

ⓘ *DO NOT use Gigabit switch with FCDC1 as this will damage the switch.*

ⓘ *ONLY use twisted-pair cables.*

2.7 System Configuration with Industrial & Ex Devices

The Ex device (TFIX station, EAPFX access panel) located in a hazardous zone is connected to the central equipment rack located in the safe zone using an Ex certified 2-wire shielded cable. FCDC2 is used to extend the Ethernet connection and support power distribution on the 2-wire cabling infrastructure.

Each industrial device (TFIE station, EAPII access panel) located in an outdoor area will require its own FCDC1 Flowire Converter.

To support the Flowire interface, the central equipment rack must be equipped with an FCDC2 Flowire Converter.
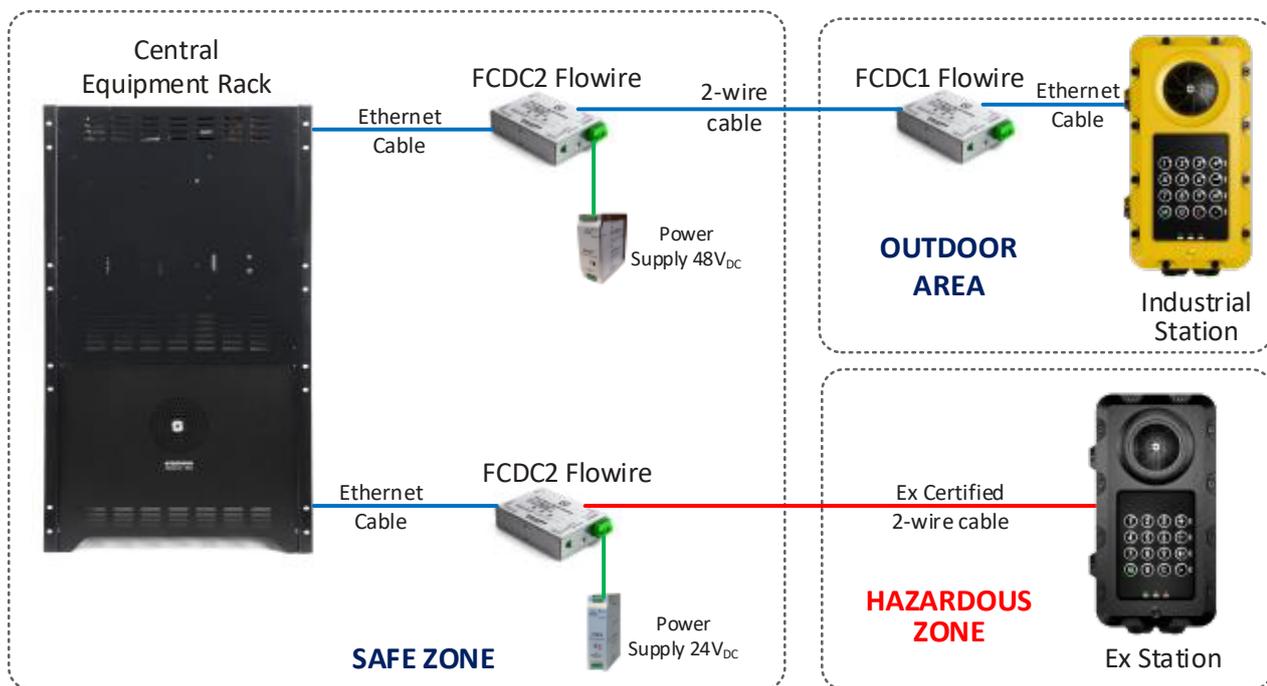
Figure 8   Cabling in Ex & Industrial Zones

ⓘ *Ex devices such as the TFIX station and EAPFX access panel MUST use 24VDC power supply for the FCDC2. The devices will be damaged if 48VDC power supply is used.*

ⓘ *Do NOT use FCDC1 in the central equipment rack as this may damage the Ex devices.*

3 Connections & Indications

3.1 Flowire Connection

The Flowire Converter must be connected to the Flowire star configuration using twisted cabling as shown. The red wire is the positive supply voltage while the black wire is the negative supply voltage. The power supply voltage used depends on the type of devices in the star configuration.

- **48 VDC PSU** : When using Flowire with Vingtor-Stentofon IP intercoms and access panels.
- **24 VDC PSU** : When using Flowire with Vingtor-Stentofon Ex intercoms and access panels. (FCDC2 is particularly suited to this.)

For the sake of convenience, the Flowire Converter is equipped with two connections to the star configuration.

ⓘ *Please note that these two connections are equivalent.*

3.2 Ethernet Connection

Ethernet is connected via the RJ45 port. This supplies 10/100 Mbps Ethernet (in and out) and power out over spare pairs (**FCDC1 only**). The power on the spare pairs is the same voltage as the one supplied to the converter. Hence, at least 40 volts must be applied to the converter in order to ensure stable operation when powering IP intercom stations directly through their Ethernet ports. If the station has a 24V input, the current can be reduced to 24 volts by separating the spare pairs from the CAT cable and connecting it to this input.

ⓘ *DO NOT power the Flowire Converter through the RJ45 port. Trying to do so with a PoE injector will damage the converter.*

ⓘ *DO NOT use Gigabit switch with FCDC1 as this will damage the switch*

ⓘ *The RJ45 port on FCDC1 is NOT a PoE-compatible output but DC voltage on spare pairs which is present at all times. It MUST NOT be connected to any equipment that can be damaged by this voltage.*

3.3 Indicator LEDs

The Flowire Converter is equipped with three green LEDs. These indicate the status of the power, the connection/link to Flowire, and whether data is transmitted on Flowire or not.

LED1 - Power: This LED is lit when the converter is receiving enough power for powering up.

LED2 - Link: This LED is lit when the converter recognizes one or more converters on the Flowire star configuration.

LED3 - Activity: This LED is lit when data is transmitted to or from the converter.

3.4 Password Reset Button

Pressing and holding this button for more than 15 seconds will reset the NMK password to the default: **HomePlugAV0123**

In addition to reseting the NMK password to its default, the procedure will also set the following factory defaults:

- DHCP will be turned on
- IGMP snooping querier will be turned on

4 Mounting & Recommendations

4.1 Mounting the Flowire Converter

The Flowire Converter should be mounted on-wall by using 2 x 4 mm screws or on NS35 DIN rail by using the mounting clips provided in a normal and ventilated indoor environment with a temperature of maximum 55ºC. Make sure that there is sufficient space for cables and maintenance. When using more than one Flowire Converter, try to mount them as far apart as possible.
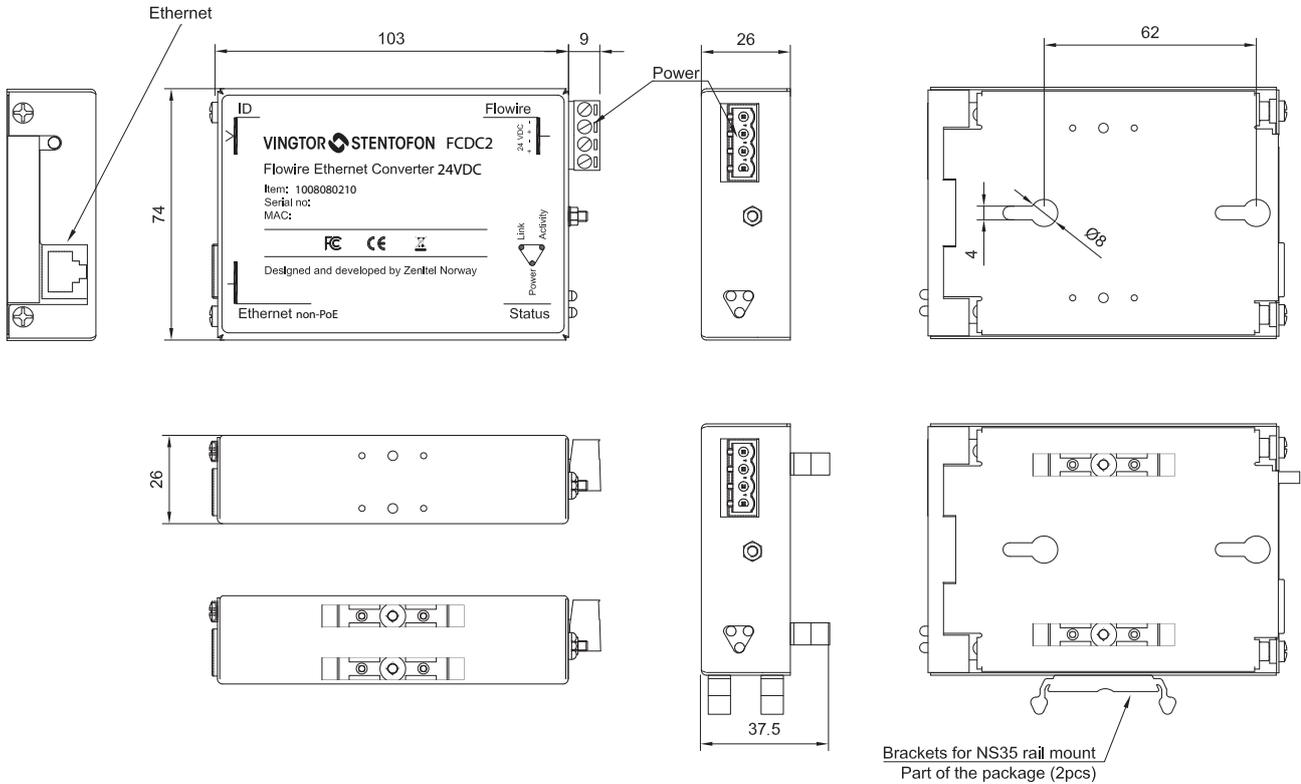
Figure 9   Flowire Converter Dimensions
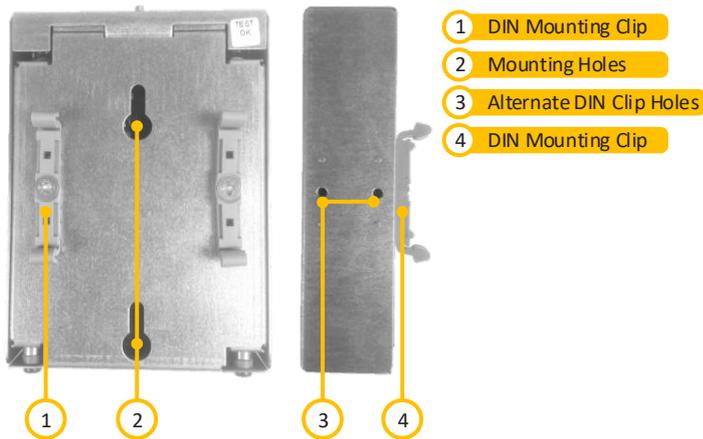
Figure 10 DIN Mounting Clips

To mount the Flowire Converter:

- Press the Flowire Converter against the DIN rail of the rack until the mounting clips snap into place.

4.2 Power Requirements

A Flowire Converter needs at least 18V to operate, nominal voltage is 24V to 48V, and maximum voltage is 56V. The voltage at the remote Flowire Converter should never drop below half of the PSU's output voltage.

To power a Vingtor-Stentofon IP Intercom Station through its Ethernet port, we recommend at least 40V at the remote site.

For land-based installations, use XP power PSU for FCDC1:

- Flowire XP 120 XP Power Supply Unit, 48V DC, 120W
  Item no. 2990101120
- Flowire XP 240 XP Power Supply Unit, 48V DC, 240W
  Item no. 2990101240

For installations with Ex equipment, use Powerbox PSU for FCDC2:

- Flowire EX 120 Powerbox PSU, 24V DC, 120W
  Item no. 2990102120
- Flowire EX 250 Powerbox PSU, 24V DC, 250W
  Item no. 2990102240

5   Troubleshooting

5.1 Power for Stable Connection at Remote Site

The minimum voltage at the remote end for PoE is 40VDC. The minimum voltage for the TFIX Ex intercoms and EAPFX Ex access panels is 18VDC.

If you are not getting sufficient voltage for a stable connection at the remote site, you can:

- Adjust the output voltage on the PSU
- Use local power supply for the connected equipment
- Route the spare pairs in the Ethernet cable to the intercom station's 24V input (available on most Vingtor-Stentofon IP intercom stations and kits except for Desktop Master Stations)

5.2 Cables & Bandwidth

- To get the best bandwidth you should use twisted-pair shielded cables.
- When using multi-pair cables, there should ideally not be any traffic on the pairs not being used for the Flowire Converter. A point-to-point connection between two Flowire Converters, however, will get better bandwidth when more wires are connected between them.
- Avoid unnecessary splicing. A continuous cable will carry the signal further.
- Regarding EMI, twisted/shielded cabling is highly recommended. When using unshielded parallel cables, try to avoid running them close to devices emitting strong fields in the 2 to 28 MHz bandwidth.
- Regarding cross-talk, there will always be some cross-talk when running unshielded cables close to each other or when using several pairs in a multi-pair cable for different devices. However, the most detrimental cross-talk can occur between different Flowire star configurations.

5.3 Collecting Trace Logs

This feature is supported in Flowire software versions 4.1.3.3 and later.

In case of issues with the Flowire device, the **Trace Log Folder** will be populated.

This will be reflected on the **Flowire device information** page.

- The contents of the folder can be downloaded by clicking the the **Download logs** button on the information page.
- The logs can be deleted by clicking the **Clear trace folder** button on the information page.

Upgrade form	Toggle DHCP	Clear trace folder	Download logs

Flowire device information

IP Address:	0.0.0.0
Subnet Mask:	0.0.0.0
IP Address Static:	10.5.202.80
MAC Address:	00:13:CB:0B:17:41
Hardware Type:	8029
Hardware Version:	1
Software Version:	4.1.3.10
Station Mode:	Flowire
NMK Password:	HomePlugAV0002
Querier enabled:	false
DHCP enabled:	false

Diagnostics

Date:	1970-01-01 00:10:38 +0000
Uptime (seconds):	638.53
Total Memory (kB):	26256
Free Memory (kB):	11584

Trace Log Folder

/usr/local/trace/: Folder doesn't exist

HPAV info

STATUS = authenticated

CCO = station

BACKUP_CCO = no

SC = no

SC_BUTTON = no

HPAV Configuration

CCO_PREFERRED = no

WAS_CCO = no

NMK = a620b59ae6fdaf340cec964078e90398

NID = none

SL = sc

USER_HFID = flow04

AVLN_HFID = SPIDCOM_NETWORK

A: Power Consumption & Distances for Typical Cables

The table below shows theoretical point-to-point distances for different cable types at different levels of power consumption at the remote location. All distances are calculated for 48V output from the PSU.

Cable Type	Resistance	Intercom	Intercom	Power Consumption	40V
0.5 mm (24 AWG)	87.5 Ohm/km	Turbine Compact	Normal	10W	180m
0.5 mm (24 AWG)	87.5 Ohm/km	Turbine Compact	Max power consumption	18W	100m
0.5 mm (24 AWG)	87.5 Ohm/km	INCA	Normal	8W	220m
0.5 mm (24 AWG)	87.5 Ohm/km	INCA	Max power consumption	14W	130m
0.6 mm (22 AWG)	60.7 Ohm/km	Turbine Compact	Normal	10W	260m
0.6 mm (22 AWG)	60.7 Ohm/km	Turbine Compact	Max power consumption	18W	140m
0.6 mm (22 AWG)	60.7 Ohm/km	INCA	Normal	8W	320m
0.6 mm (22 AWG)	60.7 Ohm/km	INCA	Max power consumption	14W	180m
0.9 mm (19 AWG)	26.9 Ohm/km	Turbine Compact	Normal	10W	590m
0.9 mm (19 AWG)	26.9 Ohm/km	Turbine Compact	Max power consumption	18W	330m
0.9 mm (19 AWG)	26.9 Ohm/km	INCA	Normal	8W	740m
0.9 mm (19 AWG)	26.9 Ohm/km	INCA	Max power consumption	14W	420m

Table 3 Theoretical point-to-point distances when using a centrally located PSU to power intercom stations. Wire/conductor thickness described as diameter and AWG.

Cable Type	Resistance	Intercom	Intercom	Power Consumption	40V
0.5 mm^2 (20 AWG)	37.8 Ohm/km	Turbine Compact	Normal	10W	420m
0.5 mm^2 (20 AWG)	37.8 Ohm/km	Turbine Compact	Max power consumption	18W	230m
0.5 mm^2 (20 AWG)	37.8 Ohm/km	INCA	Normal	8W	520m
0.5 mm^2 (20 AWG)	37.8 Ohm/km	INCA	Max power consumption	14W	300m
0.75 mm^2 (18 AWG)	25.3 Ohm/km	Turbine Compact	Normal	10W	630m
0.75 mm^2 (18 AWG)	25.3 Ohm/km	Turbine Compact	Max power consumption	18W	350m
0.75 mm^2 (18 AWG)	25.3 Ohm/km	INCA	Normal	8W	790m
0.75 mm^2 (18 AWG)	25.3 Ohm/km	INCA	Max power consumption	14W	450m
1.0 mm^2 (17 AWG)	18.9 Ohm/km	Turbine Compact	Normal	10W	840m
1.0 mm^2 (17 AWG)	18.9 Ohm/km	Turbine Compact	Max power consumption	18W	470m
1.0 mm^2 (17 AWG)	18.9 Ohm/km	INCA	Normal	8W	1000m
1.0 mm^2 (17 AWG)	18.9 Ohm/km	INCA	Max power consumption	14W	420m
1.5 mm^2 (15 AWG)	12.6 Ohm/km	Turbine Compact	Normal	10W	1200m
1.5 mm^2 (15 AWG)	12.6 Ohm/km	Turbine Compact	Max power consumption	18W	700m
1.5 mm^2 (15 AWG)	12.6 Ohm/km	INCA	Normal	8W	1500m
1.5 mm^2 (15 AWG)	12.6 Ohm/km	INCA	Max power consumption	14W	900m

Table 4 Theoretical point-to-point distances when using a centrally located PSU to power intercom stations. Wire/conductor thickness described as cross section and AWG

ⓘ ***Note that being able to power a remote station does not guarantee sufficient bandwidth. For more about bandwidth see section "5.2 Cables & Bandwidth".***

B: Advanced Configuration

IP addresses on a Flowire device can be set either by setting a static IP address or having one assigned from a temporary DHCP server. The Flowire device has, by default, DHCP enabled on one of their networking interfaces. The DHCP can be disabled as described in section "B.2 Disabling DHCP".

B.1 Setting a Static IP Address

By default, all Flowire devices have **169.254.1.10** as a static IP address.

In order to set a new static IP address:

1. Isolate the Flowire device by disconnecting the line to other devices.

```
Information form   EXIGO form

Flowire device configuration and upgrade
TFTP server IP address:
[                    ]
[  Upgrade  ]  [  Full upgrade  ]

Flowire NMK:
[HomePlugAV0002]  [  Change NMK  ]

Flowire static IP (CIDR notation):
[10.5.202.80/24]  [  Set static IP  ]

Default gateway:
[10.5.202.1]  [  Set gateway  ]

IGMP querier:
[Disabled ∨]  [  Change  ]

IGMPv2 compatibility:
[Enabled ∨]  [  Change  ]
```

2. Access the web interface of the Flowire device via the default address 169.254.1.10.
3. Enter the new IP address in CIDR notation, e.g. 10.5.202.80/24 in the **Flowire static IP** field
4. Click **Set static IP**

The device will now reboot with the new static IP address.

B.2 Disabling DHCP

This feature is supported in Flowire software versions 4.1.3.3 and later.

In case there is an explicit need to turn off the DHCP client on the device, this can be done via the device web interface.

To disable DHCP:

- Click **Toggle DHCP**

DHCP will be disabled or enabled, depending on the previous state. The **DHCP enabled** field displaying **true** or **false** on the information page will reflect the change.

When the DHCP client is disabled, **IP Address** will display **0.0.0.0** indicating that DHCP is not configured.

Upgrade form	Toggle DHCP	Clear trace folder	Download logs

Flowire device information

IP Address:	0.0.0.0
Subnet Mask:	0.0.0.0
IP Address Static:	10.5.202.80
MAC Address:	00:13:CB:0B:17:41
Hardware Type:	8029
Hardware Version:	1
Software Version:	4.1.3.10
Station Mode:	Flowire
NMK Password:	HomePlugAV0002
Querier enabled:	false
DHCP enabled:	false

Diagnostics

Date:	1970-01-01 00:10:38 +0000
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Trace Log Folder

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HPAV Configuration

CCO_PREFERRED = no

WAS_CCO = no

NMK = a620b59ae6fdaf340cec964078e90398

NID = none

SL = sc

USER_HFID = flow04

AVLN_HFID = SPIDCOM_NETWORK

B.3 Network Management Key (NMK) Configuration

To set a new NMK password:

1. Log into the Flowire device by entering its IP address (e.g. 10.5.202.80) in a web browser.

2. Click the **Upgrade form** button

3. Enter a new password in the **Flowire NMK** field
4. Click **Change NMK**

The NMK Password must be between 8 and 64 characters long, and is case sensitive.

It is good practice to label the Flowire device with the new NMK.

Default NMK: **HomePlugAV0123**

2.1 IGMP Settings

It is possible to configure IGMP settings in the Flowire web interface.

Figure 11 IGMP Settings

2.1.1 IGMP Querier

In order to secure the reliability of multicast handling, the network should have an active **IGMP querier**.

If the core network is an unmanaged switch with no IGMP querier, it is possible to enable an **IGMP querier** in Flowire. The setting is in the Flowire web interface, and activates an IGMPv3 querier. It is recommended to enable **IGMP querier** on the Flowire unit closest to the switch.

If the core network has an IGMP querier, do not enable **IGMP querier** in any of the Flowire units.

2.1.2 IGMPv2 Compatability

Current versions of Cisco industrial switches only handle IGMPv2. Therefore, the Cisco switch should be the IGMP querier, forcing the system to do IGMPv2 reporting.

In systems where the network has an IGMPv2 querier, and there are several devices in a star configuration, **IGMPv2 compatibility** must be enabled in the device-side/endpoint Flowire units. This setting is available in Flowire SW version 4.1.3.10 and later.

- **IGMPv2 compatibility** must <u>never</u> be enabled on the Flowire unit closest to the switch.
- For star configuration (one-to-many), **IGMPv2 compatibility** must be enabled on the device-side/endpoint Flowire units.
- For one-to-one connections, this setting is irrelevant for the device side Flowire unit, and can be left as **Disabled**.

For more information, go to our wiki page on this subject.

2.2 CCo Settings

Figure 12 Configured PLC Role - CCo, Not CCo, Auto

In the Flowire web interface, each Flowire unit has a setting for CCo (Central Coordinator). In every Flowire network, there is always one CCo, but this is, by default, automatically selected. If the CCo should fail, another Flowire unit on the network is automatically selected to be CCo. In a star configuration, in order to optimize availability, it is recommended to always configure the FCDC2 in the rack to be CCo. Due to its location, it is least likely to suffer damage. If this Flowire unit fails, the star configuration will not function in any case, whether or not it is the CCo, as all other Flowire units are routed through it. In order for the FCDC2 in the rack to be configured as a CCo, it is necessary to configure the device-side Flowire units to **not CCo**.

- For one-to-one connections, this setting can be left as **Auto**.

ⓘ **Note: After changing CCo settings, the Flowire unit needs to be rebooted.**

For more information, go to our wiki page on this subject.

C: Software Upgrade

Depending on how old the current software on the Flowire device is, upgrade procedures are carried out differently.

If the current **software version is 4.x**, upgrades can be done in one of two ways:

- Intercom Management Tool (VS-IMT) on the PC (see "C.1 Upgrading via VS-IMT on PC")
- Web interface on the Flowire device (see "C.2 Upgrade via Web Interface on Flowire Device"")

If the current **software version is 1.x or 2.x**, upgrades must be done via:

- Serial Interface of the Flowire device (see wiki page *Flowire Software Upgrade Procedure*)

To determine the current software version, check the hardware version on the device:

- **Hardware version 0105 (Item no. 1008080110.0105)** and newer has version 4.x installed from factory, and can be upgraded via the web interface or via the VS-IMT tool.
- **Hardware version 0104 (Item no. 1008080110.0104)** and older has version 1.x or 2.x installed from factory, and must be updated via the serial interface.

ⓘ *You can also check the Flowire device from your PC: If you can ping the device, but cannot access it via the web browser, it is an old software version and must be upgraded via the serial interface.*

C.1 Upgrading via VS-IMT on PC

ⓘ *For software version 4.x*

ⓘ *Upgrading through IMT requires that each Flowire device on the network has a unique IP address, either assigned from a DHCP server or set manually. See "B.1 Setting a Static IP Address"*

- Start the VS-IMT program on the PC
- Select **Project** > **Create project** / **Load project**
- Select **File** > **Launch Station Wizard**
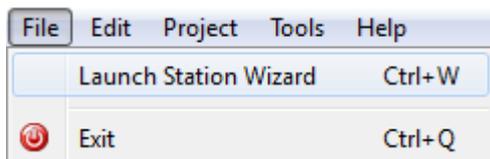
To start the discovery of the Flowire devices:

- Set the range of IP addresses to scan in the **From** and **To** fields
- Click the **Start** button

After the Flowire devices have been discovered:

- Select all Flowire devices
- Click **NEXT** twice, skipping **STEP 2 Identify stations**
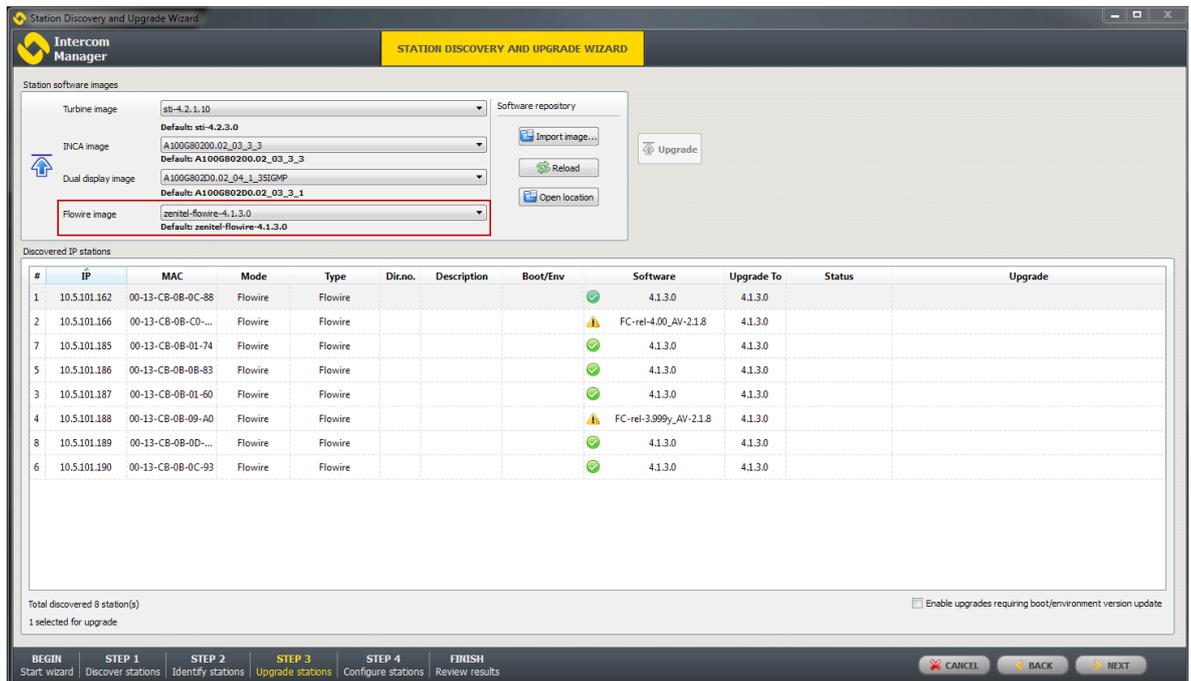
- Make sure the correct Flowire software is selected.
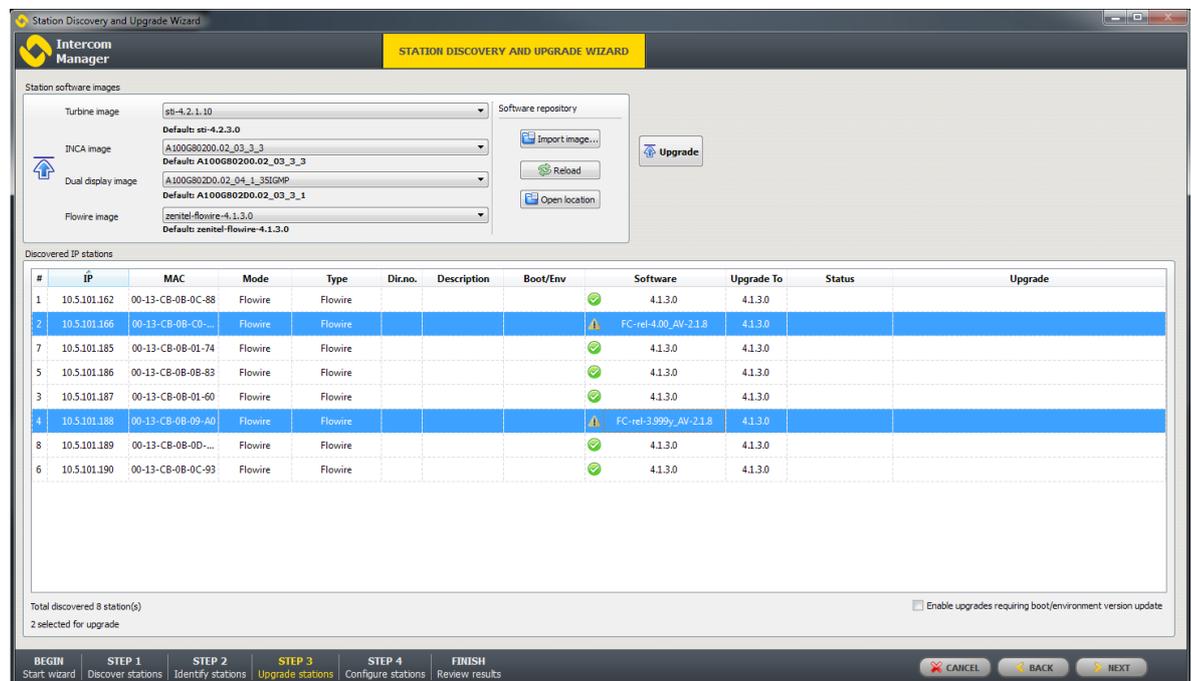
- **CTRL+Click** to select multiple devices for upgrade
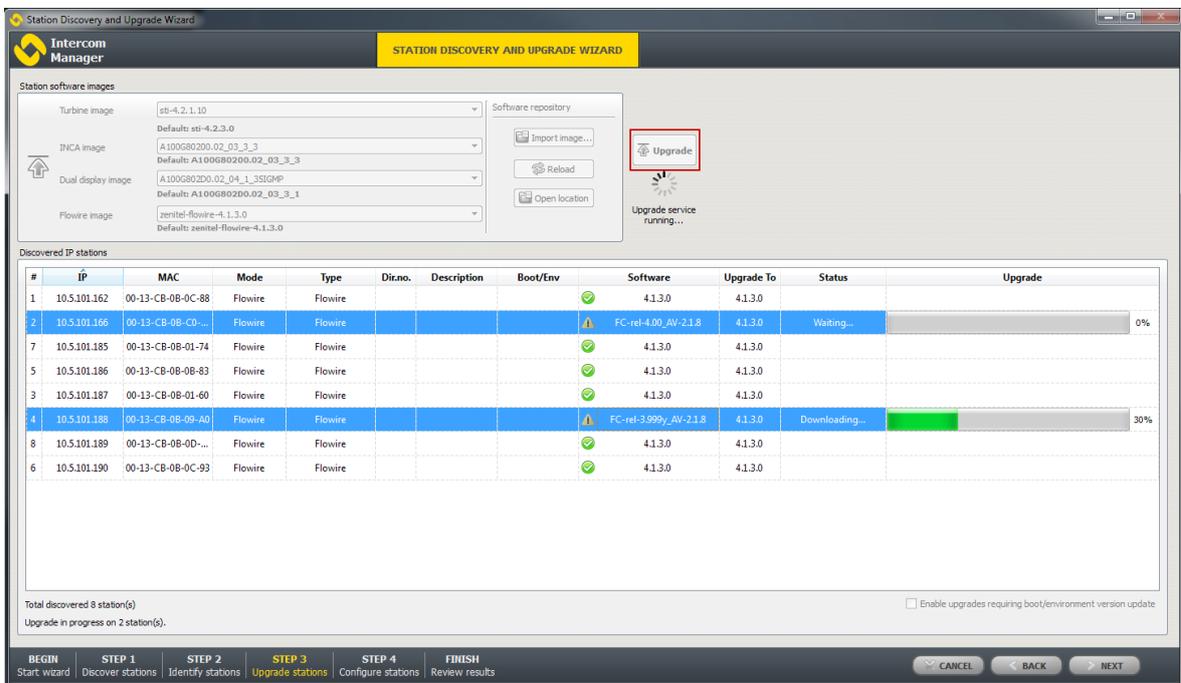
- **Click** the **Upgrade** button to start the process.

The upgrade process should take about 1 minute per Flowire device.
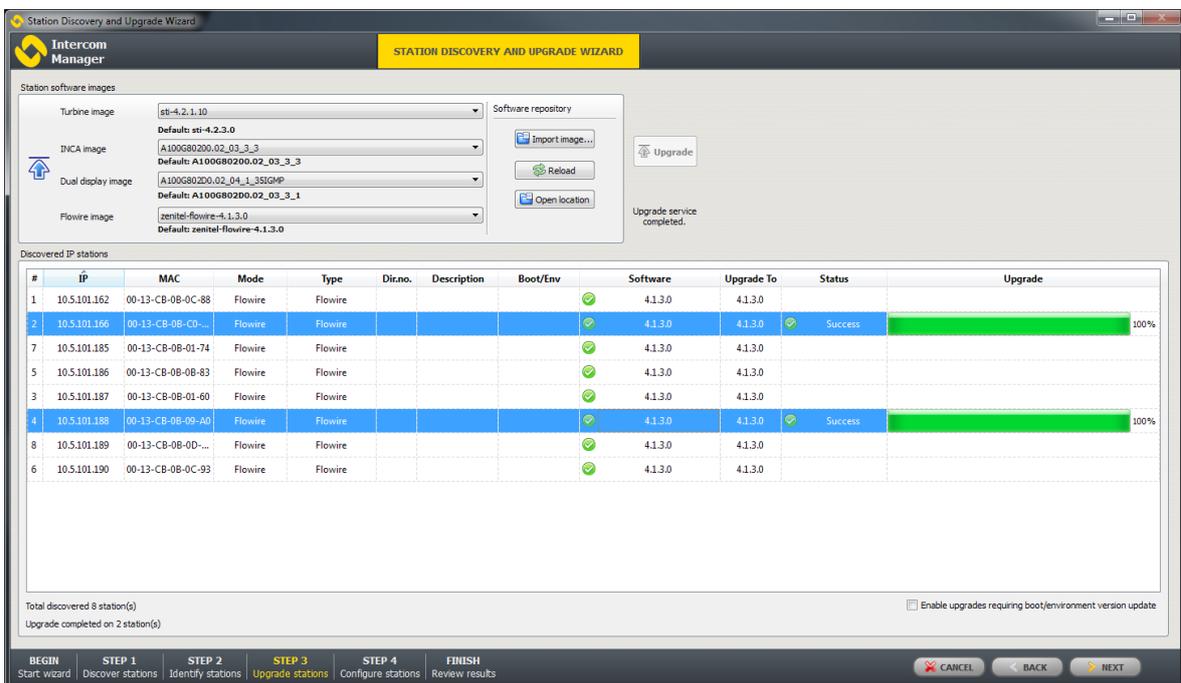
When the upgrade progress bar is at 100%:

- Click **NEXT** twice
- Click **FINISH** to complete the upgrade procedure

C.2 Upgrade via Web Interface on Flowire Device

ⓘ *For software version 4.x*

C.2.1 TFTP Server Setup

- Start the Tftpd program on the PC
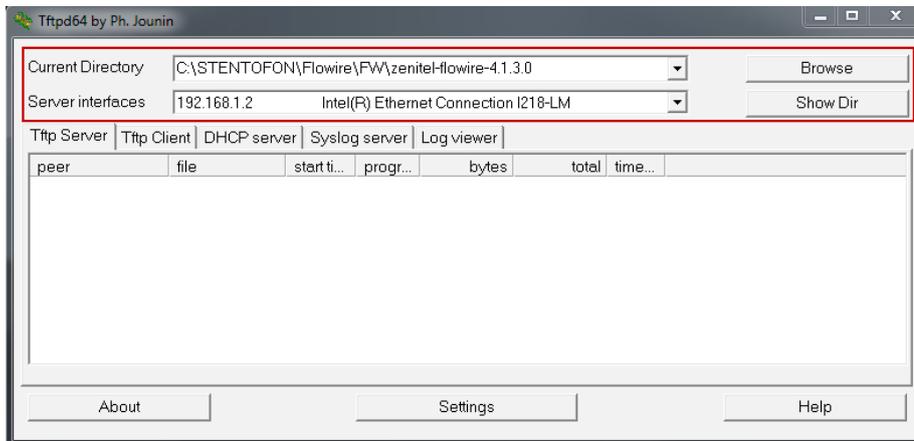
In the TFTP server:

- **Browse** to the directory where the Flowire software is stored
- Make sure that the correct **Server interface** is selected

C.2.2 Flowire Device Web Interface

- Open a web browser on your PC
- Enter the IP address of the Flowire device in the address field and press **Enter**
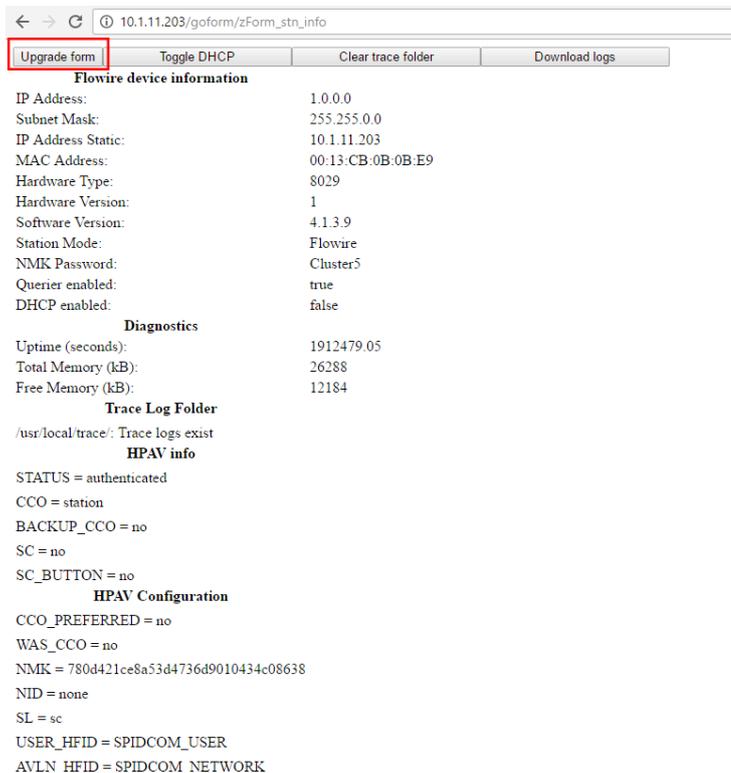
- Click the **Upgrade form** button

- Enter the **TFTP Server IP address** and select either:
  - **Upgrade** – Upgrades the firmware and does nothing else
  - **Full upgrade** – Upgrades the firmware and resets to factory setting

ⓘ *For Full upgrade, resetting the device to factory default setting also implies changing the NMK password to its factory default. By doing so, all communication with the connected Flowire devices that use a different password will be lost.*

The Flowire device will now fetch the new firmware from the TFTP server and install it. The whole process shouldn't take more than 1 minute.

⚠️ **The WEEE Directive does not legislate that Zenitel, as a 'producer', shall collect 'end of life' WEEE.**

This 'end of life' WEEE should be recycled appropriately by the owner who should use proper treatment and recycling measures. It should not be disposed to landfill.

Many electrical items that we throw away can be repaired or recycled. Recycling items helps to save our natural finite resources and also reduces the environmental and health risks associated with sending electrical goods to landfill.

Under the WEEE Regulations, all new electrical goods should now be marked with the crossed-out wheeled bin symbol shown.

Goods are marked with this symbol to show that they were produced after 13th August 2005, and should be disposed of separately from normal household waste so that they can be recycled.