elster
Instromet

Ultrasonic Flow Meter

Series 6

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Manual

External VDSL Range Extender

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Contents

1   General Information

1.1   About these Instructions

The **External VDSL Range Extender** type **VDD** is specially designed to communicate with an Ultrasonic Flow Meter (UFM) Series 6 from Elster. The UFM must be equipped with an optional VDSL Range Extender at its rear compartment (⇨ see UFM Series 6 Wiring Instructions, in Appendix II – References listed in at the back of this manual). The VDD External VDSL Range Extender is intended for indoor use in a non-hazardous industrial environment, such as a control room where it can act as a link between the UFM and the flow computer or laptop. The device can work in a non-condensing environment with a temperature range of -10°C to 60°C (-14 to 140 °F).

> ⚠️ **WARNING!**
>
> This is a class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.
>
> This product is not intended to be connected to the public network.

The VDD External VDSL Range Extender is a bridge mode range extender accommodating well proven Ethernet and VDSL technologies to extend Ethernet over single-pair copper wires by using a VDSL signal. Up to 100/60 Mbps transition bandwidth within 300m and 40/10 Mbps for 3km long range connections provide an ultra-high performance network. With different band plans supported, it is possible to have a symmetric upstream and downstream flow. The VDD External VDSL Range Extender has the advantage of a quick installation time (simply plug-n-play).

1.2   Limitation of Liability

This manual is based on the latest information. It is provided subject to alterations. We reserve the right to change the construction and/or configuration of our products at any time without obligation to update previously shipped equipment.

The warranty provisions stipulated in the manufacturer's Terms of Delivery are applicable to the product. The manufacturer shall have no obligation in the event that:

- Repair or replacement of equipment or parts has been required through normal wear and tear, or by necessity in whole or part by catastrophe, or the fault or negligence of the purchaser;

- The equipment, or parts, have been maintained or repaired by other than an authorized representative of the manufacturer, or have been modified in any manner without prior express written permission of the manufacturer;

- Non-original parts are used;

- Equipment is used improperly, incorrectly, carelessly or not in line with its nature and/or purpose;

- Use of this product with unauthorized equipment or peripherals, including, but not necessarily limited to, cables, testing equipment, computers, voltage, etc.

- There are no serviceable parts in the VDSL range extender, so the device should never be opened. If the functionality of the device is questioned, Elster or its local representative should be contacted.

The manufacturer is not responsible for the incidental or consequential damages resulting from the breach of any express or implied warranties, including damage to property, and to the extent permitted by law, damage for personal injury.

> ❗ Read through this manual carefully before beginning any work.
>
> The manufacturer assumes no liability for loss and malfunctions that result from non-compliance with these instructions.

We reserve the right to make technical changes within the scope of improving performance characteristics and continuous development of the device.

Current warranty conditions in the General Terms and Conditions are available on our website:

http://www.elster-instromet.com/en/general-terms-of-business

1.3   Text Labelling

This manual employs consistent visual cues and standard text formats to help you easily locate and interpret information. This information will help you quickly identify relevant content.

1.3.1   Presentation of Safety and Risk Instructions

Hazard Warnings

Hazard warnings indicate hazardous situations which may result in material damage and bodily harm or even death if disregarded. Hazard warnings are described below:

> ⚠️ **DANGER WORD!**
>
> **Type of danger**
>
> **Consequences in case of non-compliance**
>
> Avoiding danger

Safety Instructions

Safety instructions include notes and information which if disregarded may lead to functions not working correctly or not working at all. Safety instructions are described below:

> 🛈 **Safety instruction (optional)**
>
> Safety instruction text

Tips and Recommendations

Tips include notes and information that make it easier for the user. Tips are described below:

Heading (optional)

Hint text

1.3.2   Paragraph Formats

► This triangle prompts you for an action.
✓ This character will show you the immediate result of your action.

Example
Multi-row examples are marked by two continuous blue lines and the keyword "Example".

1.3.3   Character Formats

Example	Use
⇨ See Chapter 6 Switches (p.11)	References to additional information are marked with an arrow. If the arrow refers to information within the document, these references are formatted as hyperlinks in blue font. You can go directly to the corresponding section by clicking on the blue text.
www.docuthek.com	links (Hyperlink)

Table 1: Character formats

2   FCC (Federal Communication Commission)

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

> ⚠️ **CAUTION!**
>
> Changes or modifications not expressly approved by the manufacturer for compliance could void the user's authority to operate the equipment under FCC rules.

3   Labelling

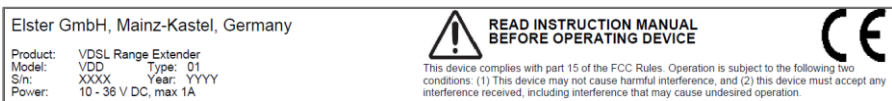An example of the label on the VDSL Range Extender:

Figure 3-1: Example of VDSL Range Extender Labelling

4   Connections on the VDD External VDSL Range Extender

By using the power button at the back of the device it is possible to turn the Range Extender on and off. Range Extender connections are depicted in Figure 4-1, and described below:

- **Power Source**: Use only one (!) out of these two options to connect your suitable power supply. Power range is between 10 to 36 VDC (consumption: 4Watt maximum) for DC jack and 3 way phoenix connectors.
- **USB Ports**: may only be used for service purposes. Use a double standard USB cable, with maximum cable length of 3 meters.
- **LAN Connection**: Ethernet connection using either RJ45 or the 4 way Phoenix connector. Wiring should be straight (not cross-linked).
- **VDSL Connection**: VDSL connection using either the RJ11 connector or the two way Phoenix connector (where pin 3 is negative and pin 4 is positive).

Wiring of the VDSL communication connector at the UFM should be done as described in the UFM Series 6 Wiring Instructions document. ⇨ Please see Appendix II – References for more information.
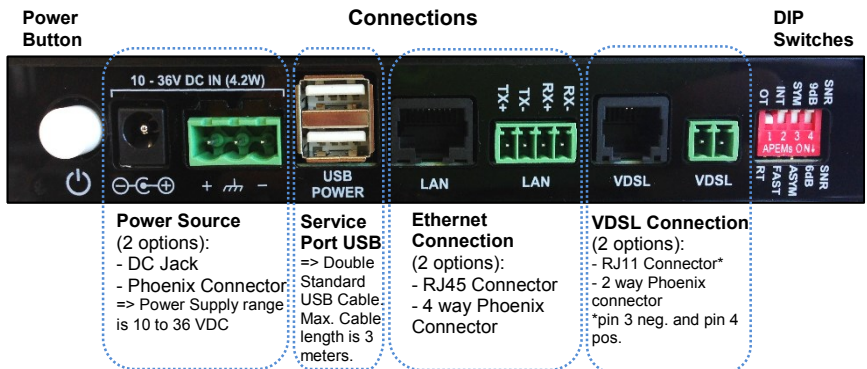

Figure 4-1: Connections at VDD VDSL Range Extender

5   Installation

The VDSL range extender has 2 clamps on the bottom side of the device to fit on a standard 35 mm Ω–profile DIN rail.

The dimensions of the VDSL range extender are described below (also see Figure 5-1)

- Length: 185 mm (7.3 Inch)
- Width: 125 mm (5 inch)
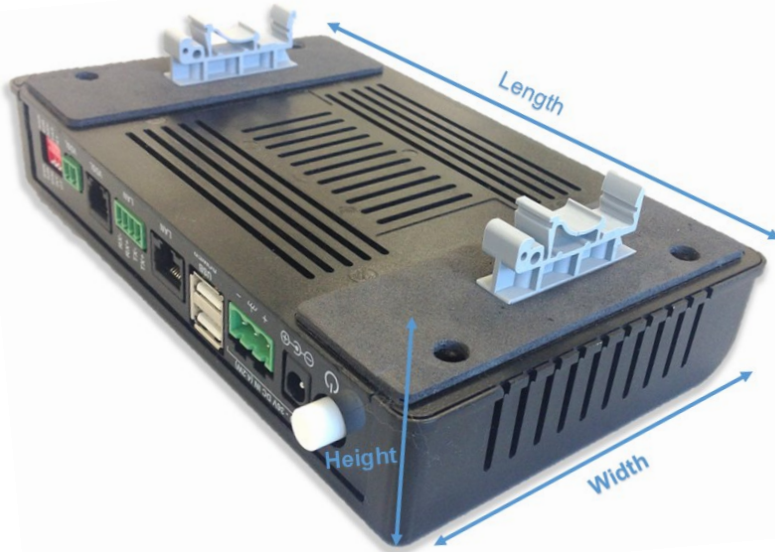- Height: 40 mm without clamps / 59 mm with clamps (1.6 / 2.3 inch)

Figure 5-1: Dimensions of a VDSL Range Extender

6   Switches

The VDSL Range Extender contains 4 DIP switches (see Figure 6-1), whereby the VDSL communication can be fine-tuned and aligned. These DIP switches should be aligned according to the DIP switches on the DSL Modem Board in the rear compartment of the UFM (⇨ see document: UFM Series 6 Wiring Instructions, listed in Appendix II – References at the back of this manual.)
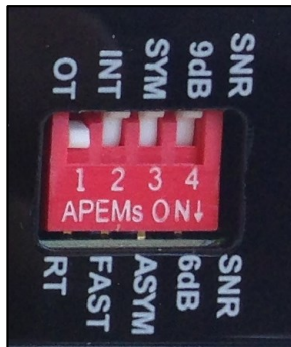

Figure 6-1: DIP Switches on VDSL Range Extender

Switches 1 through 4 are explained in detail below:

6.1   DIP Switch 1

This switch is to set the Range Extender configuration:

- **ON, RT/CPE**: VDSL Range Extender acts as Remote Type (**RT**) / Customer premise equipment side (slave).
- **OFF, OT/CO**: VDSL Range Extender acts as Office Type (**OT**) / Central office side (master).

> **❗ Important!**
>
> The setting of this switch must be the <u>opposite</u> as on the DSL Modem Board on the other side of the communication line.

6.2   DIP Switch 2

This switch is to set the data transmission mode:

- **ON, Fast mode:** Direct data transmitting with latency less than 1 ms.
- **OFF, Interleave mode:** Provides communication protection for up to 250 ms impulse noise with latency less than 6 ms.

Important!

Switch is only relevant if this Range Extender is the master Range Extender (⇨ see section 6.1 DIP Switch 1)

6.3   DIP Switch 3

This switch is to set the Band plan:

- **ON, 998 ISDN:** VDSL Range Extender acts as per 998 ISDN band plan.
- **OFF, 997 symmetric ISDN:** VDSL Range Extender acts as per 997 symmetric band plan.

Important!

Switch is only relevant if this Range Extender is the master Range Extender (⇨ see section 6.1 DIP Switch 1)

6.4   DIP Switch 4

This switch is to set the noise reduction level:

- **ON, 6dB SNR:** Standard noise reduction level (6 dB).
- **OFF, 9dB SNR:** Higher noise reduction level (9 dB).

Important!

Switch is only relevant if this Range Extender is the master Range Extender (⇨ see section 6.1 DIP Switch 1)

7   LED Indication

The VDD External VDSL Range Extender contains LED indicators, whereby the communication line can be checked. Figure 7-1 shows the position of the LED's on the Range Extender and the corresponding Table 2 (below) describes their functionality.
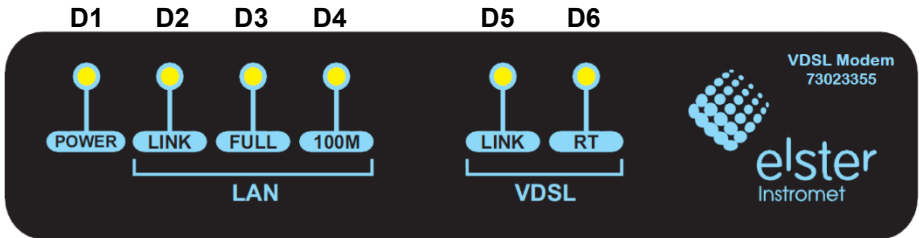

Figure 7-1: LED Indication on the VDSL Range Extender

LED	ON	OFF	Flashing
D1	Power ON	Power OFF	(Not applicable)
D2	LAN Link ok	LAN Link fail	TX/RX activity
D3	LAN connection: Full duplex (4-wire connection)	LAN connection: Full duplex (4-wire connection)	LAN connection: Collision (communication fail)
D4	100M speed	10M speed	(Not applicable)
D5	VDSL connection established and OK (it can blink occasionally when data is transferred)	VDSL link fail	- Slow flashing: VDSL connection is IDLE, system start-up - Fast flashing: establishing VDSL connection
D6	Slave (⇨ see Chapter 6.1)	Master (⇨ see Chapter 6.1)	(Not applicable)

Table 2: LED Indication on the VDSL Range Extender

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Appendix I – Declaration of Conformity

EC DECLARATION OF CONFORMITY

Elster NV/SA
Rijkmakerlaan 9
2910 Essen
Belgium

elster
Instromet

manufacturer of the product described as:

- Product: **VDSL Range Extender**
- Model: **VDD**
- Type: **01**

CE

hereby declares the above product complies with the essential requirements, which are specified in the directive 2004/108/EC on the approximation of the laws of the Member States relating to electromagnetic compatibility.

The product of the declaration described above is in conformity with the requirements of the following specifications insofar applied:

Document ref.	Title	Remarks
EN 55024:2010	Information technology equipment - Immunity characteristics - Limits and methods of measurement CISPR 24:2010	
EN 55022:2010	Information technology equipment - Radio disturbance characteristics - Limits and methods of measurement CISPR 22:2008 (Modified)	Class A product.

Additional information:

- Warning:
  This is a class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

- This product is only intended for point to point connection with Elster-Instromet Ultrasonic Flow meters Series 6 with internal VDSL Range Extender. It is not intended to be connected to the public network.

Signed for Elster NV/SA, Essen, Belgium on June 24, 2013 by

Representative: J.B. Elmensdorp
Function: QA manager
Signature

Appendix II – References

All references listed below can be obtained from Elster. Additionally, most references are available online at: **http://www.docuthek.com/**.

[1] UFM Series 6 Q.Sonic^{plus} Operation and Maintenance Manual
SAP Ref.:   73023467
Doc. No.:   10000050188 (last valid revision)

[2] UFM Series 6 CheckSonic Operation and Maintenance Manual
SAP Ref.:   73023471
Doc. No.:   10000050192 (last valid revision)

[3] UFM Series 6 Q.Sonic^{max} Operation and Maintenance Manual
SAP Ref.:   73023477
Doc. No.:   10000051506 (last valid revision)

[4] UFM Series 6 Wiring Instructions
SAP Ref.:   73023470
Doc. No.:   10000050191 (last valid revision)

[5] UFM Series 6 Shipping and Storage Manual
SAP Ref.:   73023469
Doc. No.:   10000050190 (last valid revision)

[6] UFM Series 6 Safety Instructions
SAP Ref.:   73023465
Doc. No.:   10000050186 (last valid revision)

[7] UFM Series 6 Modbus Protocol
SAP Ref.:   73023466
Doc. No.:   10000050187 (last valid revision)

[8]   UFM Series 6 Transducer Exchange at Atmospheric Conditions
SAP Ref.:   73023472
Doc. No.:   03.200.001.001/02/2 (last valid revision)

[9]   Retraction Tool NG Transducers
SAP Ref.:   73023473
Doc. No.:   03.203.101.001.02/2 (last valid revision)

[10]   UFM Series 6 Exchanging PCB boards in TIP
SAP Ref.:   73023474
Doc. No.:   03.303.101.000.02/2 (last valid revision)

[11]   UFM Series 6 Exchanging Boards at the Rear Compartment of
the SPU
SAP Ref.:   73023475
Doc. No.:   03.302.101.000.02/2 (last valid revision)

[12]   External VDSL Range Extender User Manual
SAP Ref.:   73023483
Doc. No.:   10000050357 (last valid revision)

[13]   UFM Series 6 SonicExplorer Software Application Manual
SAP Ref.:   73023308
Doc. No.:   10000050563 (last valid revision)