Installation and commissioning guide SmartLink PSD Power Supply Module (DC)

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1 Preface

This manual describes the installation and commissioning procedure of the SmartLink PSD power supply module. It contains all the necessary information for installation, commissioning and maintenance of this product.

Safety and prevention of damage

Always adhere to the instructions in this manual. In case of doubt, or problems, always consult your Enraf representative. Refer to the front cover for contact information.

Additional information

Please do not hesitate to contact Enraf or its representative if you require additional information.

Declaration of conformity

This device fulfills the requirements of the following directives low voltage directive 73/23EEC EMC directive 89/336EEC CSA approval conform CAN/CSA 60950-1-03 and UL 60950-1

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2 Introduction

2.1 The SmartLink modular concept

The 780 SmartLink provides a gateway to terminal automation related field instrumentation. With the modular design of the SmartLink this bridge concept is scalable from small to medium tank terminal installations.

The SmartLink modular concepts consist of separate modules on a DIN-rail. Available modules include:

- **PSD** (Power Supply DC),
- HCM (Host Communication Module) for communication with the PC, and
- **FCM** (Field Communication module) for communication with the field instruments.

2.2 Preparation before installation

- Visually check the product for damage. Contact your Enraf representative in case of damage.
- Check the delivery for completeness. The package should contain:
 - the SmartLink power module
 - 1 DIN-rail connector
 - 1 termination clip

Immediately contact your Enraf representative if the delivery is incomplete.

2.3 Identification

The SmartLink module is equipped with a label on the right side (front of the unit toward viewer) of the casing. The label is shown below.

The following label is attached to the DC Power Supply SmartLink module:



Figure 1 SmartLink PSD label

The following label is attached to the connector:



Figure 2 PSD connector layout

2.4 Functional description

The SmartLink PSD is a plug-and-play DC power supply module that converts the DC-power into a 15 VDC power for the other SmartLink modules that are installed on the DIN-rail.

3 Safety

The module, when integrated in a system, complies with the safety specifications as denoted in the table below:

Item	Specification
Low voltage directive	EN-IEC60950-1:2000 + A11 : 2004 CAN/CSA 60950-1-03 UL 60950-1
Definitions	Pollution degree = 2 Installation Category = I Permanent equipment type A Secondary side is SELV Restricted access area Class I equipment Over voltage category = II (2500V transient)

Applied (safety, approval) standards

This module must only be installed by sufficiently trained and experienced personnel, taking into account the relevant national, local and company regulations.

3.1 EMC

The PSD power supply module complies with the EMC specifications according to the following standards:

Туре	ltem	Standard	Specific level/criteria
Emission	General emission	EN-IEC61000-6-4:	
Immunity	General immunity	EN-IEC61000-6-2	

Ensure that the module is installed by sufficiently trained personnel, aware of the EMC aspects.

3.2 Special conditions for use

When using the power supplies in a system, the following integration requirements must be met:

- The modules must be mounted on the DIN-rail, which must comply with EN-50022 and should have the following dimensions: Height = 7.5 mm; width = 35 mm
- 2. All modules may only be used in a restricted access area as defined by EN60950 and that requires a warning label in this area and a cover or door as specified by IEC60950. The modules should be installed in a fire enclosure with a minimal protection class 5VB.
- 3. The safety is only prolonged and guaranteed by connecting the earth terminal to earth with proper wire and bonding as specified by EN60950.
- 4. The unit may not supply an Ex i circuit in the context of EN50020/EN60079-11 because GND is connected to earth and cannot provide for isolation of the output V_{dc} and GND to earth.
- 5. The SmartLink Power Supply module has bus termination and thus must be placed at the beginning of the bus DIN rail (on the left).
- 6. If connected to an IT power system, a double pole disconnect and protective device must be placed between the building installation and the PSD unit.
- 7. The DIN rail must also be connected to the system earth.
- 8. The terminal/connector screws must be fastened properly (due to the protection class).
- 9. Wire diameter should be 1.5mm² minimum or 2.5mm² maximum.

4 Mechanical specifications

4.1 Dimensions



Figure 3 Dimensions SmartLink module

A = 114 mm (4.49") B = 117 mm (4.61") The width is 45 mm (1.77")

Note: Take into account that an additional space of appr. 35 mm is required above a SmartLink module for mounting / dismounting purposes. (Refer to section 5.3).

4.2 Weight

The PSD module weighs 242 grams.

4.3 Climatic Conditions

The SmartLink Power Supplies comply with the environmental conditions as defined in the table below.

Operating temperature	-20 °C to +60 °C (-4 °F to +140 °F)	
Storage temperature	-40 °C to +85 °C (-40 °F to +185 °F)	
Protection class (SmartLink)	IP 20 (EN 60529:2000, NEMA)	
Relative humidity	20-95%, non condensing	

5 Mechanical installation

5.1 Installation of the DIN-rail

5.1.1 Using the DIN-rail connectors

The SmartLink PSD module can only be installed onto the connector supplied with the delivery. Do not use any other connectors.

5.1.2 Clicking the connector onto the rail

Click the connector onto the rail. Take into account that any additional modules should be added to the right hand side of this module, so click the connector onto the DIN-rail as far left as possible and convenient.

To ensure adequate heat dissipation, a space of 5 cm (2") left of the power supply module should be kept clear.

Also click the connectors of any additional SmartLink modules that are also to be installed onto the DIN-rail and make sure they are properly linked together.



Figure 4 Connectors on DIN-rail

5.1.3 Compiling a SmartLink system

As mentioned in section 2.1, the SmartLink system consists of a power supply module, a HCM and 1-3 FCM's. The modules are added from left to right in the sequence as indicated in the figure below.

Always place a termination clip at the far right hand side, i.e. to the right hand side of the rightmost FCM. Without this termination the SmartLink system will not work properly.

Also refer to the relevant manuals.



Figure 5 SmartLink modules on DIN-rail

From left to right:

- 1 The power supply unit
- 2 The host module (HCM)
- 3 Field communication module(s) (FCM)
- 4 Termination clip (also shown in picture below)



Figure 6 Termination

NOTE! Always adhere to this sequence. Ensure the Termination clip is in place, otherwise the system will not operate.

5.2 Mounting the SmartLink module

The PSD module is fitted with a fixed bus termination and must therefore always be placed as the first module on the rail, on the left hand side. Ensure that it is placed onto the connector in such a way, that the connector is no longer visible from the left hand side.

Hold the module upright, place the base on the connector that is fitted onto the DIN-rail. Ensure that the notch marked 1 is engaged first and click the module onto the DIN-rail with the tilting movement as indicated by arrow 2 (refer to figures 7 ad 8).



Figure 7 Side view of module

Figure 8 Clicking the module onto the connector on the DIN-rail

5.3 Dismounting the SmartLink module



Figure 9 Removing the module from the DIN-rail

A module that is mounted on the DIN-rail can be removed by placing a blade screwdriver under the notch (refer to the figure) and making a slight upward leveraging movement, lifting the module of the rail at the same time. Do NOT use excessive force.

6 Electrical specifications

6.1 Supply parameters

Parameter	Specification	
V _{dc} , Output Voltage	15.0V DC ± 4%	
Continuous Output current	1 A.	
Input Voltage	24 - 65 VDC (±10%)	
F, Input Fuse Value	1 AT (internal fuse on PCB may only be replaced by Enraf!)	
Ripple and noise	< 1.5 % of V _{dc}	
Load Regulation	< 1% of V _{dc}	
Minimum Load	50 mA.	
Max. C Load	2000 µF	
Short circuit current	1.2A peak 'hick-up' mode, restart time 1.5[s]	
Start up time	<1s	
Isolation Voltage	> 500 VDC	
Operation Temperature Range	-20 °C - +60 °C (-4 °F - +140 °F)	

7 Electrical installation

- Do not connect anything else to the DIN-rail connectors but the SmartLink modules.
- Ensure the power supply is switched **off** or disconnected, and secured against switching on again, before commencing the installation.
- Ensure that the local power supply voltage matches the voltage stated on the module. In order to ensure a safe operation of the module, it should only be connected to a mains supply that is fused with a maximum value of 35A.
- Safety depends on the correct earthing of the instrument. Therefore check the resistance of the earth connection immediately after installation; the maximum resistance should correspond with the local earth resistance requirements.
- The module is equipped with an internal fuse, which may only be replaced by the manufacturer.

7.1 Connecting the PSD module

First ensure that the module has been properly mounted onto the rail as defined in section 5.2. The PSD module is connected via the four pin external connector CN2, which can be accessed by opening the green hinged cover.

Although not necessary for the electrical installation, the connector can be removed if required by using a small blade screwdriver, see figure 10:



Figure 10 Removing the connector block

First connect the safety earth on the connector terminal marked: \downarrow to prevent leakage currents.

Next connect the correct power supply to the terminals marked: + (positive) and - (negative) as indicated in Figure 2.

The connector is placed again by inserting it and pushing upwards. Close the cover.

It is not allowed to place or remove the connector when power is supplied to the module.

In the direct vicinity of the power supply, a clearly recognisable on/off switch must be installed to control the power supply for the module.

Use the correct wire (insulation thickness and core diameter) for the power supply voltage used. Take into account the local regulations.

After the power supply is activated, the blue LED should be on, indicating the power supply module is working correctly.

The underside of the module is designed in such a way that it can act as an open cable duct for the power supply cable, providing the core is $\leq 1.5 - 2.5$ mm².



Figure 11 Underside of the module

7.2 Removing the connection

Use the reverse of the above described procedure in order to disconnect the module.

7.3 Configuration

The power supply module PSD does not require any configuration.

7.4 LED

The power supply module is equipped with a blue LED on the front. The LED indicates the following:

LED	Meaning	Required action
OFF	No power is supplied to the module or	Ensure proper power supply to the module.
	Module is not working properly	Replace module.
ON	Power is supplied to the module and it is working properly	None

8 Disposal

The SmartLink module contains electronic components and should therefore, when defect or no longer used, be disposed of as electronic equipment according to the local regulations for this type of waste.



9 Maintenance

The SmartLink module does not require any specific maintenance. Simply keep the module clean and remove dust when it accumulates.

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