Installation and commissioning guide SmartLink Host Communication Module (HCM-GPU)

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Enraf B.V.
P.O. Box 812
2600 AV Delft
Netherlands

Tel. : +31 15 2701 100
Fax : +31 15 2701 111
E-mail : enraf-nl@honeywell.com
Website : http://www.honeywell.com

1 Preface

This manual describes the installation and commissioning procedure of the SmartLink Host Communication Module (HCM-GPU). It contains all the necessary information for installation, commissioning and maintenance of this product. Refer to the Instruction manual SmartLink configuration, Part No. 4417554 for a comprehensive description of all settings and details.

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

EMC directive	89/336EEC

Legal aspects

Enraf BV disclaims any responsibility for personal injury or damage to equipment caused by:

- Deviation from any of the prescribed procedures;
- Execution of activities that are not clearly documented.

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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:

- **PSA** (Power Supply AC),
- **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 HCM-GPU is packed in an ESD safe bag. The package should contain:
  - the SmartLink Host Communication Module
  - 2 DIN-rail connectors

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 HCM-GPU SmartLink module:

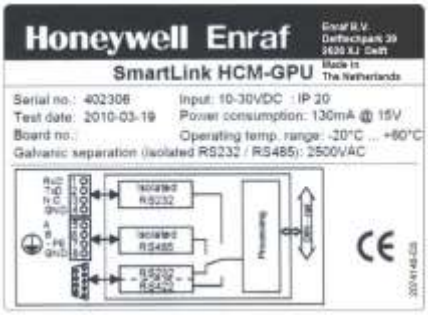

Figure 1 SmartLink HCM-GPU label

The following label is attached to the connector:

Figure 2 HCM-GPU connector layout

2.4 Functional description

The SmartLink HCM-GPU is a plug-and-play communication module for communication beween the PC and the field instruments that are connected to the Field Communication Modules (FCM's).

The power supply is realized through a SmartLink PSA (AC) or PSD (DC) power supply unit.

The interface with the PC is realized via RS232 (isolated or non-isolated), non-isolated RS422 or isolated RS485. The HCM-GPU communicates with the FCM(s) via the bus-system. As a result a host system like e.g. Entis XS, can communicate with level gauges via this HCM-GPU module and the FCM(s).

Default the interface is set to RS232. The default baudrate is 38400 bits/sec. Please consult the separate software configuration manual if another setting is required.

3 Safety

Applied (safety, approval) standards

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

3.1 EMC

The HCM-GPU module complies with the EMC specifications according to the following standards:

Type	Item	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 HCM-GPU in a SmartLink system, the following integration requirements must be met:

The HCM-GPU enables the galvanic isolation between the RS232 or an RS485 line and the bus side, however the isolation is not certified in the context of ATEX. Integration in a system requiring prolongation of Ex barriers requires special attention.

The shield of each field cable is connected to the system enclosure. The circuit GND or GND-ISO is a cable wire, not the cable shield. Special shielding requirements may be valid depending on the system (e.g. junction boxes with C's for connecting shield to earth).

The HCM-GPU may be placed in hazardous zone 1 only within a Ex [d] certified enclosure, operating temperature as specified by section 4.3.

The system in which the HCM-GPU module is integrated must maintain the isolation between the bus and the isolated RS232 and RS485 side of the module.

The clearance to other isolated circuitry must be according to EN61010-1: 3[mm] (Double insulation, measurement category II, mains voltage >150 ≤300V).

The circuit GND of CN1 must be externally connected to earth. To activate the protective earth (CN3) for isolated RS232 and RS485, the resistor R47 (0E) should not be placed.

4 Mechanical specifications

4.1 Dimensions

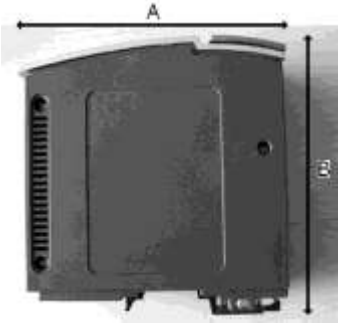

Figure 3 Dimensions SmartLink module

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 HCM-GPU module weighs 194 grams.

4.3 Climatic Conditions

The SmartLink HCM-GPU complies with the environmental conditions as defined in the table below.

Operating temperature	-20 ^{o}C to +60 ^{o}C (-4 ^{o}F to +140 ^{o}F)
Storage temperature	-40 ^{o}C to +85 ^{o}C (-40 ^{o}F to +185 ^{o}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 HCM-GPU 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.
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.

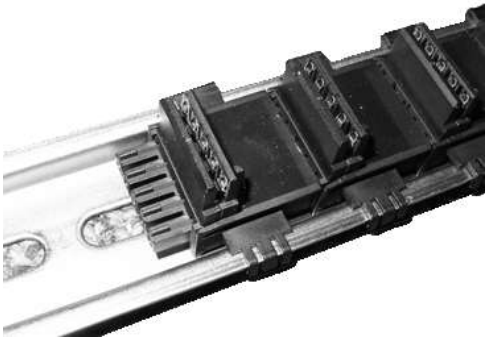

Figure 4 Connectors on DIN-rail

5.1.3 Compiling a SmartLink system

As mentioned in section 2.1, the SmartLink system consists of a power supply module (PSA or PSD), 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.

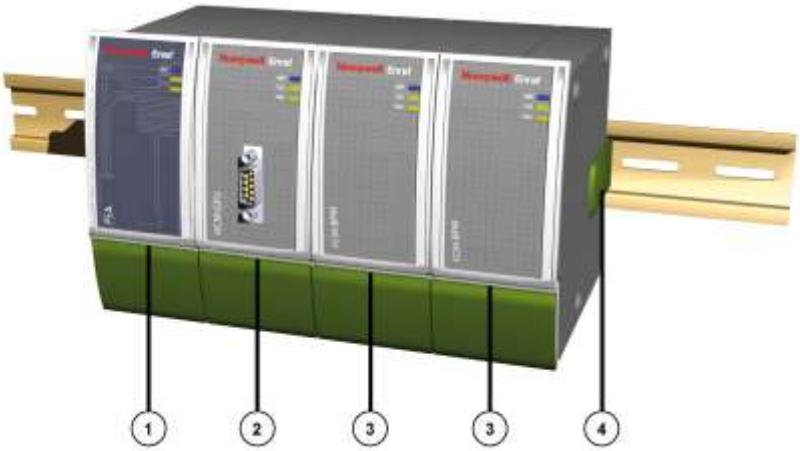

Figure 5 SmartLink modules on DIN-rail

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 HCM is always positioned immediately right of the power supply module. To the right of the HCM one or more FCM's are installed.

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 and 8).

Figure 7 Side view of module

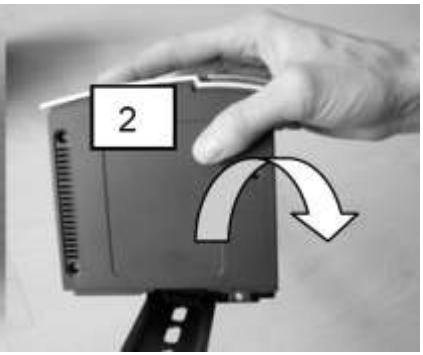

Figure 8 Clicking the module onto the connector on the DIN-rail

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 Electrical characteristics

Item	Conditions	Min	Typ.	Max	Unit
Power Consumption		-	1.8	-	W
+5V – ISO	Isolated 5V supply output on CN2	4.9	5.00	5.1	V
I_{Viso}	Isolated 5V supply max current	-	-	15	mA
Galvanic separation	Between RS232/RS485 isolated and other circuitry	-	2500	-	V
ESD protection isolated RS232	MAX3221E	-	-	±15	kV
ESD protection isolated RS485	SN65HVD3082	-	-	±15	kV
ESD protection Non-isolated RS232 and RS485	LTC1334	-	-	±10	kV

6.1.1 Isolated RS232 cable specifications

Item	
Type	Shielded
Length (max)	15 m (50 ft)
Number of instruments (max)	2; point to point

6.1.2 RS485 cable specifications

Item	
Type	Twisted pair + signal ground
C_{max}	119 pF/m
L_{max}	1.45 mH
R_{max}	0.12 Ω per line
Length (max)	1000 m (3280 ft)
Number of instruments (max)	10

6.1.3 RS232 non-isolated

Item	
Type	Shielded
Length (max)	15 m (50 ft)
Number of instruments (max)	2; point to point

6.1.4 RS422 non-isolated

Item	
Type	Twisted pair + signal ground
C_{max}	119 pF/m
L_{max}	1.45 mH
R_{max}	0.12 Ω per line
Length (max)	1000 m (3280 ft)

6.1.5 Electrical installation

Warning

- 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 16A.

- 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.

6.2 Connecting the HCM-GPU module

First ensure that the module has been properly mounted onto the rail as defined in section 5.2. The HCM-GPU module is supplied with 15 Vdc power via the bus.

Default the communication between the HCM-GPU and the PC, for configuration, and for retrieving and sending data to the connected field instruments when FCM modules are connected, takes place via the RS232 cable which is connected to the SUB-D connector on the front of the HCM module.

Figure 10 HCM with RS232 connector on front

Table 1 Pinning CN2 (Isolated RS232)

Pin No.	Signal
1	232RxD
2	232TxD
3	+5V_CN2
4	GND_ISO

Table 2 Pinning CN3 (Isolated RS485)

Pin No.	Signal
5	485A
6	485B
7	Shield
8	GND_ISO

Table 3 Pinning CN5 (Non-isolated RS232 with flow control or RS422)

Pin No.	RS232 signals	RS422 signals
1	DCD	
2	RxD	RxD
3	TxD	TxD
4	DTR	
5	GND	GND
6	DSR	
7	RTS	TX+
8	CTS	RX+
9	n.c.	
Chassis	Shield	Shield

The pinning chosen is for DTE equipment (data terminal equipment), so that a 1 to 1 cable can be used for a modem connection (DCE). Connection to a PC takes place via a cross cable.

6.3 Removing the connection

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

6.4 Configuration

The HCM-GPU should be configured by Engauge service tool running on a PC. Only a SmartLink delivered before September 2007 should be configured by the SmartLink configuration tool running on a PC. Refer to the separate Instruction Manual SmartLink configuration, Part No. 4417554.

6.5 Default settings

Default the HCM-GPU is set to communicate via the RS-232 port with a baudrate of 38400 bits/sec.
Changing these and other settings is only possible by Engauge (or Smartlink configuration tool) running on a PC.

6.6 LED

Besides the standard led, the module has following optical indicators and corresponding functionality: (Note for pcb silkscreen the LE1 text is repeated from [1].)

Table 4 LED's

LED text	Color	ID	Function
RdY	Blue	LE1	Alive / error indication
TxD	Amber	LE2	Follows Tx on active RS line
RxD	Amber	LE3	Follows Rx on active RS line

7 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.

8 Maintenance

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

Honeywell Enraf

Delftechpark 39
2628 XJ Delft

Tel. :+31 15 2701 100
E-mail : enraf-nl@honeywell.com
Website: http://www.honeywellenraf.com

PO Box 812
2600 AV Delft
The Netherlands

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