

UCI-108 Universal Communication Interface

Connect one or multiple hosts to one or multiple BPM fieldbuses.

Connect remote Modbus, 4..20mA and HART field instruments to the BPM fieldbus

Insert an Ethernet or fiber optics segment in a BPM fieldbus

Extend and improve existing BPM fieldbus with UCI-108 repeater configuration by splitting into multiple BPM segments

Fast message response by integrated cache

BPM fieldbus traffic monitoring and diagnostics

Easy commissioning

Compact dimensions

DIN-rail mounted

Based on Exalon Delft extensive communication know how

Ready to connect

The UCI-108 is a multipurpose Bi-Phase Mark (BPM) communication interface supporting the Honeywell-Enraf GPU/Flexconn protocol, one of the world's standard fieldbuses in tank gauging. Primarily the UCI-108 converts serial RS232/RS485 GPU/Flexconn communication messages to the BPM fieldbus and the other way around. Due to its scalable design advanced functions can be realized by combining multiple UCI-108s. LED indicators on the front show diagnostic information like communication activity and BPM signal quality.

The UCI-108 is the most flexible solution in the tank gauging industry to connect host applications and field instruments to the BPM fieldbus.

Expanding utilization of the BPM fieldbus

The Bi-Phase Mark (BPM) communication infrastructure is an essential part of the system to connect Tank Management Applications to the field. The robust BPM fieldbus can have lengths up to 10 kilometers with a maximum of 15 field instruments per trunk.

An increased BPM fieldbus utilization rate is made possible by use of the UCI-108 enabling Control Applications to share the same BPM fieldbus, extending the number of connected field instruments and support for Modbus message exchange. Also integration of Modbus, 4..20mA or HART field instruments into an existing Tank Management Application can be realized.

Applications

- Tank Management and Control Applications
 - BPM fieldbus communication infrastructure
 - BPM fieldbus diagnostics
 - Integration of remote Modbus RTU slaves

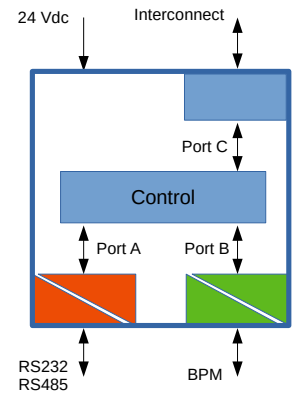


Functionality and configurations

The UCI-108 Universal Communication Interface is a compact DIN-rail mountable module for easy integration with other DIN-rail components in a junction box or cabinet.

The UCI-108 has two galvanic isolated serial ports. Port A with both available RS232 and RS485 electrical interfaces and port B with the BPM fieldbus interface. The galvanic isolations of both ports prevents grounding problems and protects against high voltages induced by e.g. lightning strikes. An additional port C is assigned for interconnection between UCI-108's. The module is powered by 24 Vdc. All interfaces are provided by screw terminals.

Advanced functionality is realized by interconnecting multiple UCI-108's. Port A as well as port B can be assigned as a host port. Both features combined makes the UCI-108 a versatile communication interface. The UCI-108 enables the support the following configurations:



| | |
|--|---|
| | <p>Connect a single host</p> <p>In this configuration the UCI-108 is the interface between the single host in the system and the BPM fieldbus. A host can be e.g. a SCADA/Tank Management Application, a DCS/PLC, PC or Enraf CIU performing GPU request to the field instruments. Also a service laptop could be a temporarily host during the initial commissioning of BPM field instruments in the office.</p> |
| | <p>Insert a fiber optic or ethernet segment</p> <p>Fiber optics could solve BPM fieldbus communication problems in installations with severe crosstalk caused by mains power cables in the same cable tray. The UCI-108 enables the use of standard RS232 to fiber optic converters by converting BPM messages to RS232 and vice versa.</p> |
| | <p>Join multiple hosts, split to multiple BPM fieldbuses</p> <p>With this configuration multiple hosts can be joined to a single or split to multiple BPM fieldbuses. Each UCI-108 provides one host port and one fieldbus port. All hosts and fieldbus ports work in parallel. Host requests and fieldbus responses are shared via an internal bus. This setup also enables a connection of a service laptop for commissioning on an operational BPM fieldbus.</p> |
| | <p>Repeater or split to multiple BPM fieldbuses</p> <p>Fieldbus signals can be improved or the number of field devices can be increased by splitting the BPM fieldbus into segments and connect these by means of a repeater. A repeater is compiled by using at least two UCI-108's and is installed in the field. The fieldbuses work in parallel. The in- and outgoing BPM messages are shared via the internal UCI-108 bus. In this configuration also BPM fieldbus baudrate conversion between host and field port can be accomplished.</p> <p>A fieldbus splitter can be compiled out of three UCI-108's to be installed nearby e.g. an Enraf CUI. This configuration can be of interest in the case no Enraf CUI BPM field slots are available for expansion.</p> |
| | <p>Join to a single BPM fieldbus</p> <p>The UCI-108 can be configured to join multiple BPM fieldbuses to one BPM fieldbus. This configuration can be of interest during Honeywell-Enraf CUI migration projects when tank calculations of the same tank has to be made in both the current CIU and the new CIU888. In this configuration also BPM fieldbus baudrate conversion between host and field port can be accomplished.</p> |
| | <p>Connect Modbus RTU field I/O</p> <p>This configuration supports the transparent communication between a Modbus RTU Master and it's remote Modbus RTU slaves sharing the same BPM fieldbus with other applications. It also enables the integration of Modbus field instruments into the Honeywell-Enraf CIU888.</p> |

Mechanical

| | |
|------------|-------------------------------|
| Dimensions | 110 x 25 x 110 mm (h x w x d) |
| Weight | 150 g |

Environmental

| | |
|-----------------------|-----------------------------------|
| Housing | DIN-rail mountable |
| DIN-rail | EN-IEC60715, mounting rail 35x7,5 |
| Protection class | IP20 |
| Operating temperature | -20 °C ... +60 °C |
| Storage temperature | -40 °C ... +85 °C |
| Relative humidity | 20 to 95% |

Applied safety standards

| | |
|---------------|---------------|
| EMC standards | EU Directives |
|---------------|---------------|

UCI-108 generic

| | |
|------------------------------------|--|
| Power supply | 24 Vdc +/- 5%, max. 80 mA |
| Switches | Dip switches: terminal/operational, miscellaneous, node address Push button: reset |
| Intercommunication bus | RS485 (bus address selected by dip switch) |
| Number of UCI -108 on interconnect | Maximum 4 |
| Memory | Data cache for maximal 50 request/reply messages |
| Commissioning/Service | Via terminal mode by RS232 port (115k2 kbit) Port configuration, select operational mode, statistics, BPM fieldbus analyser, GPU terminal |
| LED indicators | Power on/off Operational status BPM port: communication quality, RX, TX RS port: communication quality, RX, TX |

BPM fieldbus communication

| | |
|---------------------------------|---|
| Serial connection | Galvanic isolated by transformer with ground shield Full galvanic isolation from ground, 1500Vac Lightning protection |
| Physical layer | Serial Bi-Phase Mark modulated, half duplex, on screw terminals |
| Protocols | Enraf fieldbus GPU/Flexconn protocol Modbus RTU protocol |
| Baudrate | 1200 / 2400 / 4800 Baud |
| Fieldbus wiring | Shielded twisted pair, Rmax 200Ω per line, Cmax=1 μF |
| Maximum cable length | 10 km, depending on cable characteristics |
| Maximum number of field devices | 15, depending on cable specifications and length |
| Signal level | max. 7 Vpp |

RS232/RS485 communication

| | |
|-------------------|---|
| Serial connection | Galvanic isolated by opto isolation Full galvanic isolation, 1500 Vac |
| Physical layer | RS232C, 3 wire <15 m, on screw terminals RS485, 3 wire, 1000 m, on screw terminals |
| Protocols | Enraf fieldbus GPU/Flexconn protocol (in operational mode) Modbus RTU protocol (in operational mode) UCI ASCII terminal protocol (in terminal mode) |
| Baudrate | 1200 / 2400 / 4800 / 9600 / 19200 / 38400 / 57600 / 115200 Baud |
| Handshake | None |

Maintenance

Maintenance is not needed throughout the lifetime of the product, except cleaning and inspection of the product

Installation

It is requested to read the installation manual before installation.
This installation manual is available with Exalon Delft.

Information in this document is copyright property of Exalon Delft and shall not be used without written permission of Exalon Delft. The information might be subject to change without prior notice.

Made in the Netherlands



Exalon Delft BV
Radex Innovation Center
Rotterdamseweg 183C
2629 HD Delft
The Netherlands

Tel.: +31 15 2682554
Fax: +31 84 8337893
E-mail: info@exalondelft.nl
Internet: www.exalondelft.com