Technical Information
Ti 007G/03/en

RTU 8130

Intelligent communication interface and host gateway









Applications
The Remote Terminal Unit (RTU 8130) acts as a tank gauge interface for data acquisition and host gateway for tank farm, pipeline or refinery applications.

Each RTU 8130 supports up to four individual expansion modules that can interface to virtually any tank gauge on the market. Each module will scan all the connected gauges for measured data such as:

- Level
- Temperature
- Density
- Water level
- Alarms

The RTU 8130 also connects to most types of sensors or actuators on your site, and to PLCs and DCS computers. All information obtained can be uploaded to the host system for inventory, alarm and control purposes.

Features & Benefits

- Easily expandable through the use of plug-in modules - reduces cost by integrating all analogue, digital and serial data inputs and outputs
- Multiple host ports - adapt to your needs and redundancy requirements
- Support of multiple tank gauge protocols - connect your existing equipment at less cost
- Digital and analogue I/O connectivity - allows simple tank farm alarm integration
- Fully compatible with FuelsManager - tank inventory management made easy
- RTU and gauge configuration data can be exported to other applications, such as Microsoft Excel® or Access® - document all tank gauge equipment
- Remote configuration of your tank gauges - means less on-tank activities, resulting in less personnel risk

Online
www.systems.endress.com

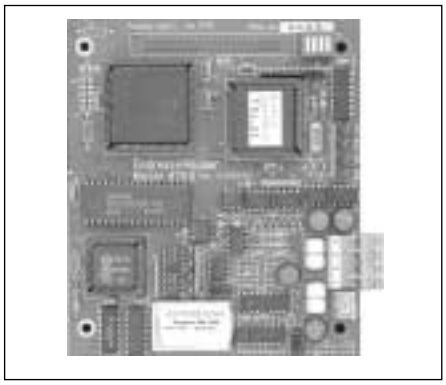
Endress+Hauser
Systems & Gauging

System Configuration

The Remote Terminal Unit (RTU 8130) serves as an effective solution in SCADA or standalone control applications by integrating automatic tank gauge communications. Digital, analogue and serial I/O interface boards further enhance the RTU 8130 into an extremely capable and compact solution for control applications.

Intelligent Module Architecture

The RTU 8130 supports up to four modular intelligent modules. Each module has its own processor for fast and reliable field data scanning. An internal high speed serial data link communicates the data into a central database. The modules make configuration of the internal RTU 8130 database simple and straightforward.



Expansion module

Multiple host communication ports offer windows into all the real-time data for up-linking to one or multiple host computers.

A range of intelligent modules is available for interfacing to nearly any brand of tank gauge equipment or technologies, making it possible to integrate float and tape transmitters, HTG, servo, magnetostrictive and radar gauges. This allows direct gauge communication, making communication protocol converters superfluous and combining all equipment into one tank inventory system.

Field I/O Communication

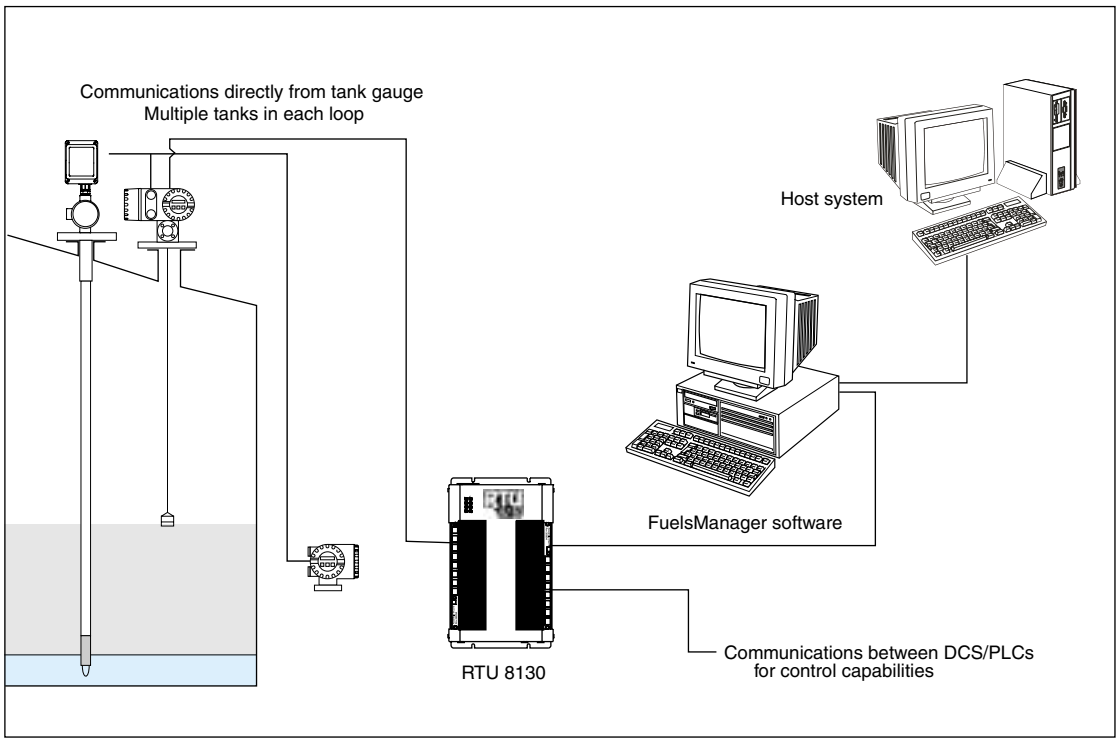
A full range of I/O interfaces is available for the RTU 8130, offering connectivity to virtually every type of signal encountered in industrial environments. The RTU 8130 uses standard transmitter signal levels to interface with:

- Analogue input signals, such as 4-20 mA, 1-5 or 0-10 Volts
- Digital I/O with isolated solid state relays for connection to 5, 24 V_{dc} and 120 or 240 V_{ac}
- High frequency pulse input for totalisation
- 4-20 mA and 0-10 V analogue outputs

Host Communication

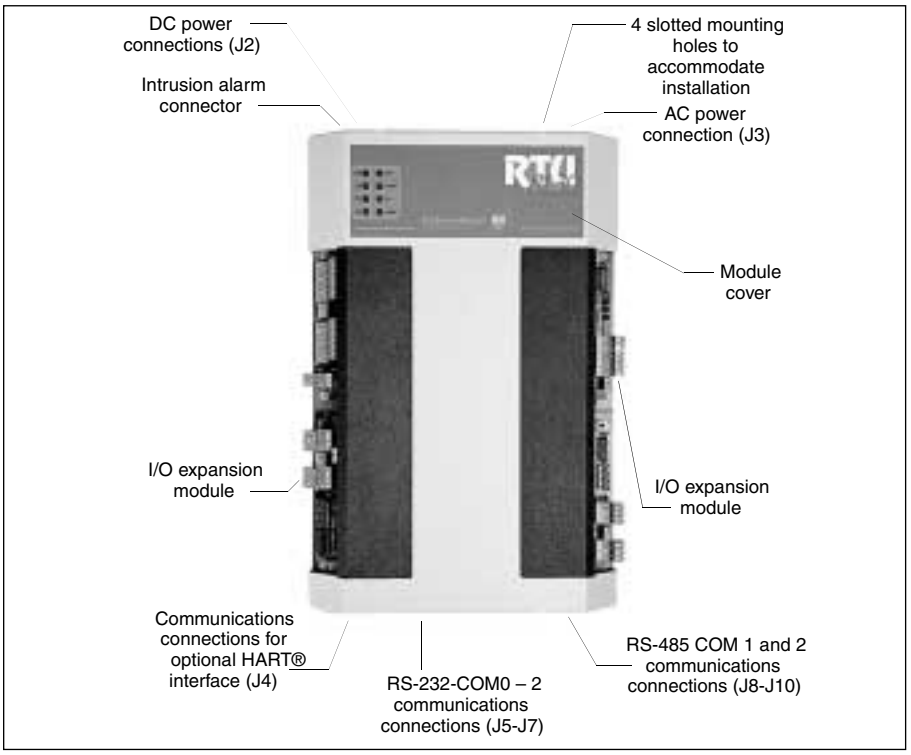
The RTU 8130 combines with the Endress+Hauser Systems & Gauging FuelsManager software to provide an extremely cost efficient and reliable tank inventory system. It also provides fully redundant host ports and is compatible with a variety of other host systems through the industry standard Modbus™ protocol.

Typical system diagram



Installation

The RTU 8130 can be installed in a variety of industrial environments of a non-hazardous nature. The unit incorporates ANSI/IEEE surge protection and is capable of operation within temperature extremes of -40 °C up to +85 °C (-40 °F up to +185 °F). For operation within hazardous areas (FM Class I Div. 2), the RTU 8130 must be installed within a NEMA 4 enclosure (please see the accessories for details of the enclosures available).



The RTU 8130

The RTU 8130 installed in an optional enclosure and connected to a PC with ViewRTU installed

Operation

Configuration and Programming

Remote programming can be accomplished from the host or locally using a PC with the Windows based configuration program ViewRTU. This tool simplifies configuration and diagnostics, allowing uploading of final equipment configurations. Reports can also be generated via a built-in function to assist in documentation.

Software Functionality

Software RTU 8130 blocks are built-in, providing a broad range of complex but commonly needed functions, such as:

- Analogue scaling - maps 4-20 mA values into a digital format for host applications
- Flow measurement and totalisation - simplifies the implementation of flow computations
- Digital alarm handling - offers the possibility of linking alarm inputs to outputs, such as level switch inputs to claxon or siren outputs
- Pump/valve acquisition and control - allows easy implementation of pump/valve status to the host system or remote control for pumps and motor operated valves

Accessories

NEMA 4 Enclosure for Class I Div 2 operation	
Order code	Description
140061213	508 x 610 x 203 mm (20” x 24” x 8”) with $48V_{dc}$ supply
140061562	508 x 610 x 203 mm (24” x 20” x 8”)

The RTU 8130 can accommodate a maximum of four expansion modules in four slots. The right most column indicates how many slots are used per module type.

Expansion modules		
Order code	Description	No. of slots
N8201-	16-Channel Digital In/Out	2
N8202-	8-Channel Analogue Input Module	2
N8203-	Dual RS-485 Communications Interface	
	Option 2 - Modbus™ protocol	1
	Option 3 - MTS DDA protocol	1
	Option 4 - Petrosense Probe protocol	1
	Option 5 - Rackbus protocol	1
N8204-	8-Channel Multi-Function Module	1
N8205-	16-Channel Analogue Input Module	2
N8206-	6-Channel High Speed Pulse Input	1
N8207-	8-Channel Analogue Output	1
N8208-	TIWAY Interface	1
N8209-	Tokyo Kieso Interface	1
N8210-	Whessoe Varec Mark/Space Interface	1
N8211-	Current Loop Interface	1
N8212-	Saab TRL2 Interface	1
N8213-	V1 Interface (Sakura Endress)	1
N8214-	Enraf BPM Interface	1
N8215-	L&J Tankway Interface	1
N8216-	LON Interface (Barton Instruments)	1
N8217-	Dual RS-232 Interface	1

Technical Specifications

Manufacturer	Endress+Hauser Systems & Gauging, Atlanta, USA
Instrument designation	RTU 8130
Function	Tank gauge interface for data acquisition and host gateway for tank farm applications

System Design

Motherboard	16-bit processor with intelligent expansion modules
Expansion modules	Maximum 4 (depending on type)
Module types	Intelligent field device communication Analogue I/O Digital I/O Serial RS-233C or RS-485
Visual indication	8 LEDs on main board indicate power and status

Software Functionality

Tank gauge scanning	Data acquisition of measured values from connected tank gauges and digital and analogue I/O
Analogue scaling	Scales analogue inputs into process units
Flow measurement & totalisation	Integration of dynamic flow measurement
Digital alarm I/O	Handling of digital and analogue alarm setpoints
Pump & valve control	Remote control of pumps and valves via direct digital I/O or PLC communication
Service & diagnostics	Gauge configuration Gauge diagnostics Read direct data from gauge Upload/download configuration Save/load configuration files

Host Communication Interfaces

Host comm. ports	3
Comm. type	Com #0 : RS-232C Com #1,#2 : configurable for RS-232C or RS-485
Baudrate	1200 - 19200 baud
Modem support	RTS/CTS
Protocol	Modbus™ RTU protocol
Mode	RTU mode, master and slave
Media access	Master/Slave

Modbus™ Functionality

Modbus™ commands support	1, 2, 3, 4, 5, 6, 15, 16
Modbus™ mapping	Configurable

Power Supply

Supply Supply voltage	AC or DC 90 - 130 or 200 - 240 V_{ac}, 50/60 Hz 18-36 V_{dc}
Power consumption	50 VA max @ 110/220 V_{ac} (500 mA) 20 VA max @ 24 V_{dc}
Surge protection	Gas Discharge Tubes (GDTs) and clamping diodes on all field inputs, power supply inputs and RS 485 input channels

Field Interface Devices

Functionality	Expansion communication modules Digital inputs Digital outputs Analogue inputs Analogue outputs
Supported communication protocols	Endress+Hauser Rackbus Whessoe Bus Varec Mark/Space Sakura Endress V1 Enraf (servo, radar and STIC), GPU, GPP Saab (TankRadar) TRL/2 L&J Techn (Shand & Jurs) Tankway Gauging Systems, Inc. (GSI) Tokyo Keiso ITT/Barton (nitrogen bubbler) MTS (magnetostrictive) Universal Sensors & Devices (HTG) TIWAY HART® Modbus™ 4-20 mA current loops

Operating Conditions

Operating temperature	-40 °C to +85 °C (-40 °F to +185 °F)
Humidity	5 to 95% (non-condensing)
Storage temperature	-40 °C to +100 °C (-40 °F to +212 °F)

Mechanical Construction

Enclosure type	NEMA 1 (IP10)
Dimensions (HxDxW)	406 mm (16") x 241 mm (9.5") x 64 mm (2.5")
Material	Powder coated steel
Mounting	Wall
Terminals	Plug-in type with screw connections

Certifications and Approvals

CSA, CE
FM - approved for installation in Class I Div. 2 with a NEMA 4/12 enclosure

Product Structure

8130 Remote Terminal Unit

Power supply
- 0 Power supply 90 - 130 V_{ac} 50/60 Hz
- 1 Power supply 200 - 240 V_{ac} 50/60 Hz
- 2 Power supply 18 - 36 V_{dc}

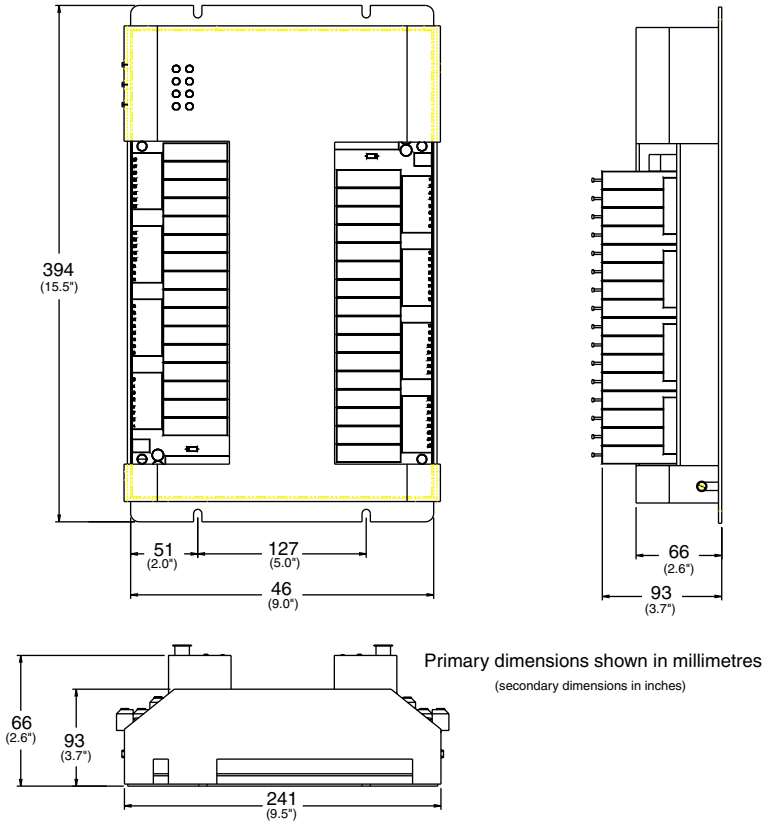
Options
- 0 Additional options not used
- 1 Battery backup version
- 2 HART® communication version*

Approvals
- 0 For use in non-hazardous area
- 1 FM Class I Div. 2, Groups A, B, C and D T3C (with optional NEMA 4 enclosure required) (FMRS 1Z3A8.AX)
- 2 CSA Class I Div. 2, Groups A, B, C and D (LR 66529-16)

N8130				product designation

* For combination of HART® with other field protocols please consult the factory.

Dimensions



Primary dimensions shown in millimetres
(secondary dimensions in inches)

Supplementary Documentation

❑ For specific application notes on the various communication options available, please contact an Endress+Hauser Systems & Gauging Representative.

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