



Product sheet

880 CIU Plus

The stand alone unit for bulk storage tank inventory calculations

Features

API & ASTM compliant volume calculations

MODBUS compatible host

Hot standby & redundancy

Galvanic isolated host ports

Weights & Measures approved

The CIU Plus, in combination with the CIU Prime, is the stand alone unit for all your bulk storage tank inventory calculations.

The main task of the CIU Plus is to calculate tank inventory data. Tank inventory for up to 50 tanks can be calculated by a single CIU Plus. Multiple CIU Pluses can be paralleled for larger applications.

Using the appropriate formulas according to the international standards of API and ASTM and the data derived from the CIU Prime, the CIU Plus calculates inventory data including:

- Total Observed Volume (TOV)
- Gross Observed Volume (GOV)
- Gross Standard Volume (GSV)
- Net Standard Volume (NSV)
- Total mass and vapor mass
- Flow rate

The CIU Plus has standard two field communication ports for interfacing with one or more CIU Primes. This modular setup allows the units to be installed at separate locations, which is ideal for connecting to off-site tanks or pump control rooms.

The CIU Plus offers four independent host communication ports for connectivity to Enraf's Entis Pro software and/or PLC and DCS systems. The host communication is standardized on MODBUS to retrieve all collected and calculated inventory data.

The CIU Plus, in combination with the CIU Prime, is fully prepared for hot standby and redundant operation.



Specifications

Database	: Up to 50 tanks
Scan speed	: 50 Tanks in 2 - 4 sec ¹⁾
Scanning strategy	: Complete tank records from CIU Prime
Available data ²⁾	: - Product level & water level - Product temperature, vapor temperature and ambient temperature - Vapor pressure - Volumes (TOV, GOV, GSV, NSV, TGSV, water volume) & Volume Correction Factor (VCF) - Density (observed & reference) - Mass (total & vapor) - Flow - Gauge alarms - All measured data from CIU Prime

Supported dimensions

Level	: m, mm, fis, ft, in, in/16
Temperature	: °C, °F
Density	: °API, kg/m ³ , lbs/ft ³ , dens60/60, lbs/USgal
Pressure	: kg/m ² , kPa, psi, bar
Volume	: l, m ³ , USgal, bbls
Mass	: kg, ton, US ton, lbs, long ton
Flow	: m ³ /min, m ³ /h, l/min, l/h, bbls/min, bbls/h, USgal/min, USgal/h

Volume calculations

Tables	: API/ASTM 5, 6, 23, 24, 53, 54
Product codes	: A, B, C, D, E
Volume corrections	: S&W, Vapor (4 types), DCF, TCF, Asphalt tables 1 & 2
Tank straps	: Up to 2.500 straps per tank, 20.000 straps in total

Gauge commands	: - Lock test	- Water dip
	- Unlock	- Alarm test (SmartRadar)
	- Block	- Calibrate (ATG & XTG servo gauges)
	- Density dip	

Configuration protection	: Via two key switches
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Mechanical

Dimensions	: See dimensional drawings
Weight	: 5.2 kg (11.5 lb)

Environmental

Ambient temperature	: 0 °C to +60 °C (32 °F to +140 °F)
Storage temperature	: -20 °C to +85 °C (-4 °F to +185 °F)
Protection	: Against mechanical impact IP 30 (NEMA 1)
Humidity	: 5% to 90%, non condensing
Pollution degree	: II

Materials

Housing	: Acryl painted steel
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Electrical

Power supply	: 100 V - 240 V, auto select (-15 % to +10 %), (50 Hz - 60 Hz)
Power rating	: 50 VA (25 VA typical)
Over voltage category	: II

¹⁾ 50 Tanks database connected to CIU Prime at 19k2 baud

²⁾ Depending on supported functionality of connected gauges

Technical specifications CIU Plus continued

Transmission / Communication ¹⁾

Field ports	: 2 (standard) for connection to CIU Prime (up to 10)
Baud rate (field)	: 1200 baud to 19k2 baud
Field port type	: RS-232C / RS-485
Modem support	: All Hayes compatible modems
Host ports	: Up to 4 ports
Baud rate (host)	: 1200 baud to 38k4 baud
Parity	: Odd, even or none
Isolation (host ports)	: Galvanically separated
MODBUS register type	: Single, double; scale and offset programmable
Manual overwrite	: Value, kill, resurrect
MODBUS data record	: Tank or entity oriented
Host communication	: Slave RTU MODBUS
Modem support	: All Hayes compatible modems

Device compatibility

Radar gauges	: SmartRadar series 873, 971 and 973, RTG gauges series 872
Servo gauges	: Series 802 and series 811 (GPU protocol), ATG & XTG gauges series 854
Other	: Mechanical Gauges transmitter (MGT) series 813, Microlect series 855, MESC series 865, HIMS, HTG

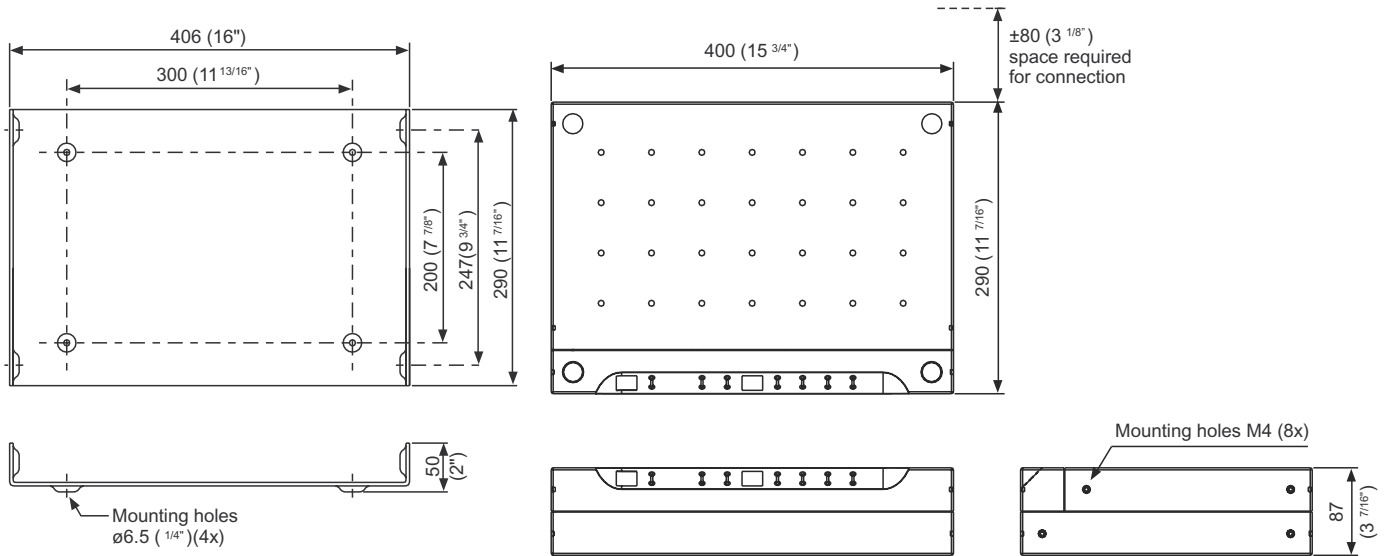
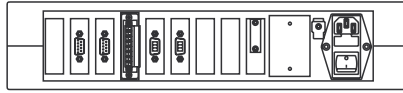
Relay drivers

Output	: Up to 4
Rating	: 12 V, 50 mA _{max}

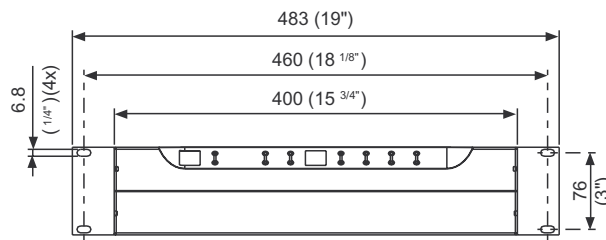
¹⁾ For cables specifications and cable connections see "Installation guide" and "Manual"

Identification code CIU Plus

Pos 1 Application													
U	General purpose												
X	W&M certified												
Pos 2 Option not used													
*													
Pos 3 Option not used													
*													
Pos 4 Configuration													
P	CIU Plus												
Pos 5, 6, 7 Instrument designation													
8	8	0											
Pos 8 Data transmission I/O port A													
R	Output board, IP-RS-232C / RS-485 with MODBUS communication												
Pos 9 Data transmission I/O port B													
R	Output board, IP-RS-232C / RS-485 with MODBUS communication												
Z	None												
Pos 10 Data transmission I/O port C													
R	Output board, IP-RS-232C / RS-485 with MODBUS communication												
Z	None												
Pos 11 Data transmission I/O port D													
R	Output board, IP-RS-232C / RS-485 with MODBUS communication												
Z	None												
Pos 12 Option not used													
Z													
Pos 13 Configuration Key switches													
K	With (2) Key switches (required when Pos 1 = X)												
Z	None												
X	*	*	P	8	8	0	R	R	Z	Z	Z	K	Typical identification code
*	*	P	8	8	0	R				Z			Your identification code



Frame for wall mounting



For 19" rack mounting

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WE THINK TANK

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