



# Product sheet

## Communications Control & Interface Unit 380 C<sup>2</sup>IU



### Features

Rugged hardware for industrial use

Open connectivity for easy device integration

Redundancy capable for increased availability

Real time WWW accessible

Reusable Application Packs for ease of configuration

### Introduction

The Enraf 380 C<sup>2</sup>IU Communications, Control & Interface Unit forms the heart of the new Enraf Network Based Automation Concept for integrated solutions in the area of bulk storage tank terminal automation.

The 380 C<sup>2</sup>IU is built on a compact but rugged industrial hardware platform, without any moving parts or special cooling needs. The modular set up and autonomous control make it suitable for a wide area of tank terminal applications, from standard field data communications via interfacing and networking to full scale integrated automation solutions.

### Connectivity

Industry standard open field communication protocols like FOUNDATION™ Fieldbus H1 are available to interface and integrate the latest generation of process instrumentation. Other field communication drivers like GPU and Modbus RTU are available as standardized application packs (see separate product sheets) for interfacing to bulk storage tank specific instrumentation.

High-Speed Ethernet, which supports the FOUNDATION™ Fieldbus specification, has been adopted as control LAN to set up open peer to peer communications between individual controllers for process critical applications. Redundant control LAN's are possible to even further increase the availability of the control network.

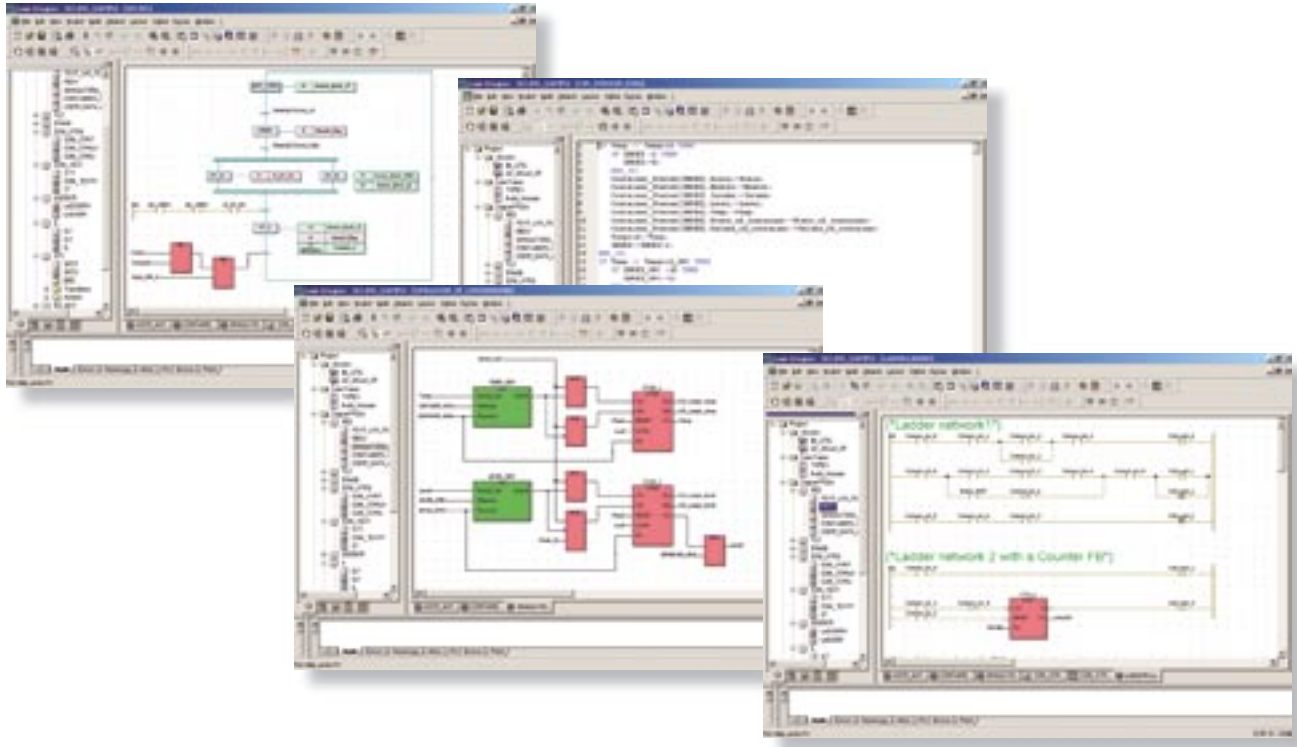
Conventional I/O points are available in a fixed configuration for connection of digital and analogue in and outputs. For larger numbers of I/O's, industry standard remote I/O units can be interfaced using one of the communication ports.



## IEC 61131-3 Compliant Programming

The tools for development of control logic applications and interfacing application packs on the 380 C2IU are compliant with the IEC 61131-3 international standard, which eliminates the need for learning vendor specific programming languages.

The logic designer supports all five 61131-3 automation languages: Ladder Diagram (LD), Function Block Diagram (FBD), Sequential Function Chart (SFC), Structured Text (ST) and Instruction List (IL).



A selection of one of these language is not absolutely necessary for the development of any application. Even a combination of two or more of these languages is possible, enabling the most efficient use of this powerful programming language.

## Data Access and Control – Virtually at Any Place


A versatile OPC Server for Windows (see separate product sheet) is available to make the bulk storage tank within the 380 C<sup>2</sup>IU controller accessible for use in supervisory control and data acquisition packages (SCADA) and on business domains.

This OPC server has to be installed on a generic PC and can access multiple C<sup>2</sup>IU controllers via the High Speed Ethernet control LAN.

The integrated JAVA capabilities provide real time process information for operations, supervision and service and support via web servers, e-mail and FTP network protocol functions.

Programmable Operator Interfaces (POI) for local operations can be connected directly to the controller via standardized interfaces using pre-engineered communications packs.

Tank ID	Level [m]	Temp [°C]	Water [m]
T-101	08.324	12.24	00.24
T-102	14.098	24.38	00.08
T-103	05.427	15.46	00.17
T-104	07.811	17.60	00.30
T-105	20.023	21.92	00.12
T-106	03.945	18.17	00.05
Trends			



## Technical specifications

### Mechanical

Dimensions (W x H x D)	: 214 x 156 x 95 mm
Weight	: 1.8 kg
Mounting	: Panel or DIN rail mounted
Connections	: M2.5 pressure clamp terminals

### Environmental / Installation

Ambient temperature	: 0 to +60 °C (32 to 140 °F) with one control network port used : 0 to +55 °C (32 to 131 °F) with two control network ports used
Storage temperature	: -40 to +85 °C (-40 to 185 °F)
Humidity	: 5 to 95% RH, non condensing
Temperature change	: ± 10 °C / hr or less
Protection	: IP20
Dust	: 0.3 mg/m <sup>3</sup> or less
Corrosive gasses resistance	: ANSI/ISA S71.04, Class G2
Vibration resistance	: 1 G (58 to 150 Hz)
Shock resistance	: 15 G, 11 ms (during power off, for sine half-waves in XYZ directions)
Altitude	: 2000 m or less
Electrical field	: 3 V/m or less (26 MHz to 1 GHz)
Magnetic field	: 30 A/m AC or less
Electrostatic discharge	: 4 kV or less contact discharge, 8 kV or less aerial discharge
Grounding	: Type D (100 Ω or less)
Cooling	: Natural air cooling

### Materials

Housing	: Aluminum with plastic covers
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### Electrical

Power supply	: 24 VDC ± 10%
Current consumption	: 800 mA without FOUNDATION™ Fieldbus communication interface : 1000 mA with Foundation Fieldbus communication interface

### CPU

Processor	: MMX Pentium 166 MHz
Main memory	: 32 Mb with ECC (Error Correction Check)
Static RAM memory	: 512 kb with ECC, backed up by 2700 mAh lithium battery
System card	: 1 slot
Indication	: 3 LED's for CPU status information
Switches	: Reset, shut down

### Serial Transmission / Communication

Port type	: 2 ports RS-232C, D-sub 9 pins, male
Baud rate	: 0.3, 1.2, 2.4, 4.8, 9.6, 14.4, 19.2, 28.8, 38.4, 57.6, 115.2 kbps
Synchronization	: Asynchronous
Communication method	: Full duplex

### Network Transmission / Communication

Port type	: 2 ports Ethernet, RJ 45 modular jacks
Ethernet network	: 100/10 Mbps, 100 BASE-TX or 10 BASE-T
Indication	: 2 LED's for LAN status information

### Foundation Fieldbus communication (optional)

Interface	: 2 ports FOUNDATION™ Fieldbus H1
Number of function blocks	: up to 50 Fieldbus blocks per 380 C <sup>2</sup> IU
I/O points	: 48 points per port
Number of Fieldbus devices	: 16 per port
Transmission speed	: 31.25 kbps
Functions	: Link Active Scheduler
Bus Terminators	: not included, to be provided separately

## Technical specifications

### Analogue inputs

Number of inputs	: 6
Input signals	: 1 to 5 V, non isolated
Maximum input voltage	: 7.5 V
Input resistance	: 1 M $\Omega$ or higher during power on, 340 k $\Omega$ during power off
Maximum source resistance	: 500 $\Omega$
Accuracy	: $\pm$ 0.3% of full scale when all DI/O's are off : $\pm$ 0.4% of full scale when all DI/O's are on
Maximum temperature drift	: $\pm$ 0.01% / $^{\circ}$ C
A/D resolution	: 15 bits / 1 to 5 V
Data refresh cycle	: 10 ms
Input step response time	: 100 ms
Noise rejection ratio	: 37 dB or more with power supply frequency at 50/60 Hz

### Analogue outputs

Number of outputs	: 2
Input signals	: 4 to 20 mA, non isolated
Allowed load resistance	: 0 to 750 $\Omega$
Accuracy	: $\pm$ 0.5% of full scale when all DI/O's are off : $\pm$ 0.6% of full scale when all DI/O's are on
Maximum temperature drift	: $\pm$ 0.01% / $^{\circ}$ C
A/D resolution	: 11 bits / 4 to 20 mA
Data refresh cycle	: 10 ms
Output step response time	: 40 ms
Output fall back	: HOLD or SET PRESET VALUE
Output ripple	: 50 mV p-p at 250 $\Omega$ load

### Digital inputs

Number of inputs	: 16 with shared common terminal for all inputs
Rated input voltage	: 24 VDC
Input "on" voltage	: 18 to 26.4 V
Input "off" voltage	: 5.0 V or less
Maximum input voltage	: 30 VDC instantaneous allowed
Input current	: 4.1 mA per input $\pm$ 20%
Isolation	: Point to point non-isolated, field to circuit isolated
Withstanding voltage	: 2 kV AC input signal to system
Input response time	: 8 ms or less
Minimum "on" time	: 20 ms for detection
Maximum on-off cycle	: 25 Hz
Functions	: On/off status detection, Rise/fall edge counting

### Digital outputs

Number of outputs	: 16 with shared common terminal for all outputs
Rated load voltage	: 24 VDC
Rated external power supply	: 24 VDC, 50 mA
External power supply range	: 20.4 to 26.4 VDC
Output type	: Current sink
Maximum "on" voltage	: 2 VDC
Maximum "off" leak current	: 0.1 mA
Maximum load	: 100 mA per output, 26.4 VDC
Isolation	: Point to point non-isolated, field to circuit isolated
Withstanding voltage	: 2 kV AC input signal to system
Output response time	: 3 ms or less
Functions	: On/off status outputs
Output fall back	: HOLD, OFF or NO

### 380 C<sup>2</sup>IU Control, Communications & Interfacing Unit

<b>Pos 1 ..7 Product designation</b>														
O	S	J	T	1	0	0	Control, Communications and Interface Unit							
<b>Pos 8 Field Network Interface</b>														
S None														
H FOUNDATION™ Fieldbus H1 - 2 Ports														
<b>Pos 9 Conventional I/O's</b>														
1 With AI/O (AI:6, AO:2), DI/O (DI:16, DO:16)														
<b>Pos 10..14</b>														
0	0	0	1	0										
O	S	J	T	1	0	0	S	1	0	0	0	1	0	Typical identification code
O	S	J	T	1	0	0	S	1	0	0	0	1	0	Part number 3882510
O	S	J	T	1	0	0	H	1	0	0	0	1	0	Part number 3882511

### 380 C<sup>2</sup>IU Basic Software License

<b>Pos 1 ..7 Product designation</b>												
N	T	7	1	1	A	J	Basic license for single CPU					
<b>Pos 8 License</b>												
L License												
<b>Pos 9 System Card</b>												
M With Java functionality												
S Without Java functionality												
<b>Pos 10 ..11 Memory</b>												
0	1	32 MB										
<b>Pos 12 Language (ISO)</b>												
E English												
N	T	7	1	1	A	J	L	M	0	1	E	Typical identification code
N	T	7	1	1	A	J	L	M	0	1	E	Part number 3882520
N	T	7	1	1	A	J	L	S	0	1	E	Part number 3882521

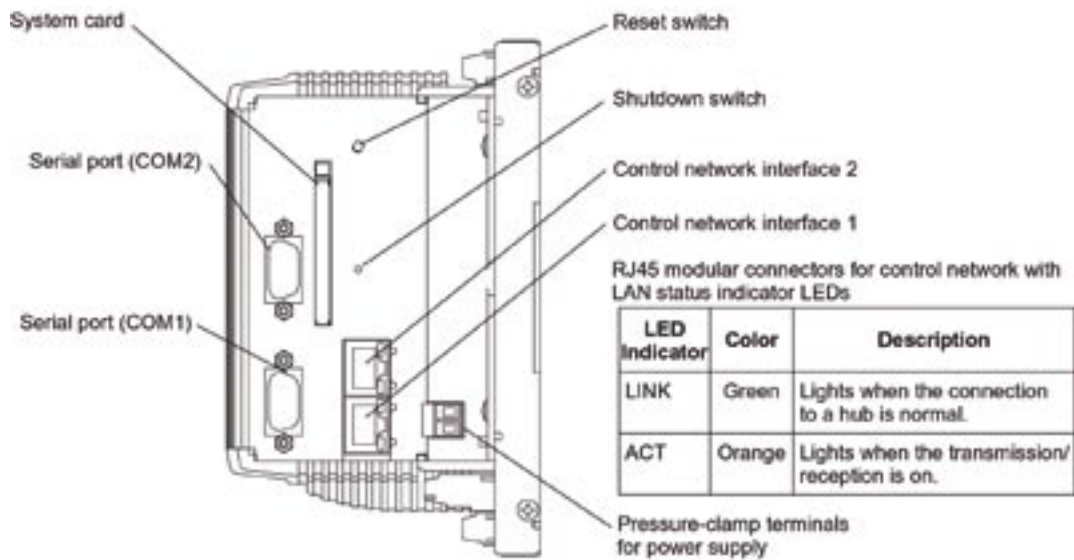
### 380 C<sup>2</sup>IU Additional I/O Credits License

<b>Pos 1 ..7 Product designation</b>												
N	T	7	2	0	A	J	Additional I/O credit license					
<b>Pos 8 ..11 Number of credits</b>												
*	*	*	0	Per 10 credits *)								
N	T	7	2	0	A	J	0	2	5	0	Typical identification code	
N	T	7	2	0	A	J	0	0	5	0	Part number 3882530	
N	T	7	2	0	A	J	0	1	0	0	Part number 3882531	
N	T	7	2	0	A	J	0	2	5	0	Part number 3882532	

**Note:**

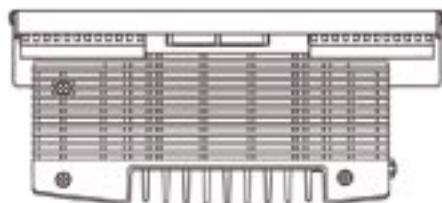
\*) I/O credit calculation formula: #I/O credit = 5\*#AI+10\*#AO+1\*#DI+2\*#DO

Serial communication other than FOUNDATION™ Fieldbus is not counted for as I/O credits

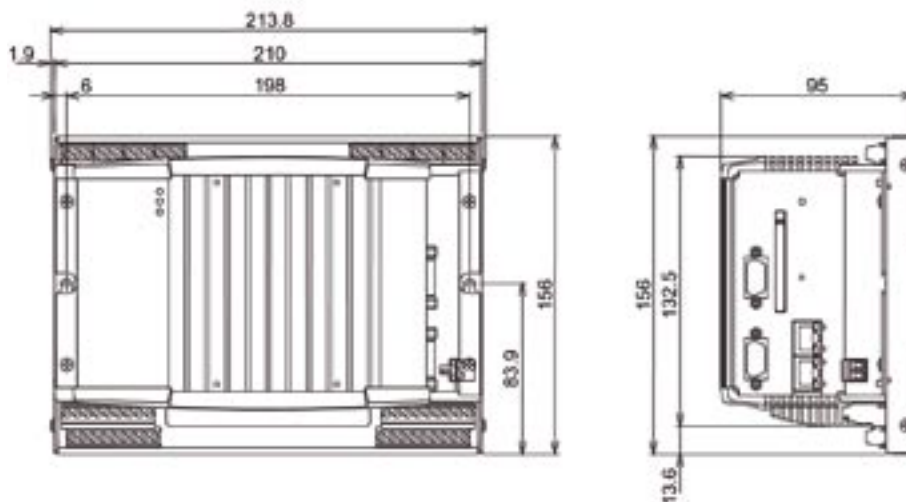


RJ45 modular connectors for control network with LAN status indicator LEDs

LED Indicator	Color	Description
LINK	Green	Lights when the connection to a hub is normal.
ACT	Orange	Lights when the transmission/reception is on.



Unit: mm



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