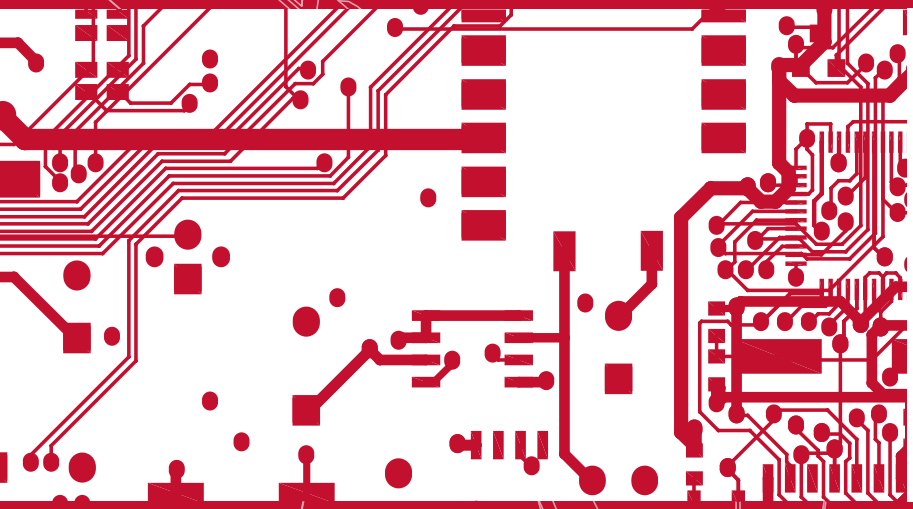
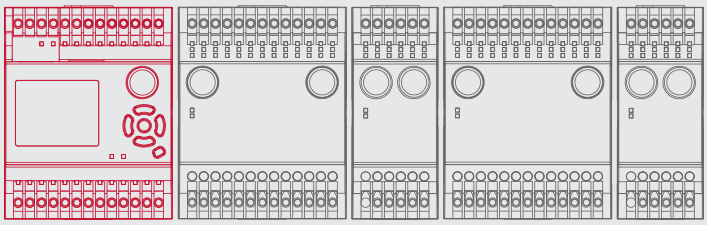


PLC

PROGRAMMABLE CONTROLLERS

orbit merret

MAIN MODUL



INPUTS

- LED SIGNALISATION OF INPUT STATE

No. of inputs	Measuring range
3	12...30 V AC/DC | 100...250 VAC | (the range is identical with the instrument's power supply)

No. of inputs	Measuring range	Accuracy (of range)	Rate (meas./s)
6	0/4...20 mA | 0...60/450 mV | 0...2.8/10/30 V | 0...390/3900 Ω | Pt 50/100 | Ni 1 000 | T/C - J/K/T/E/B/S/R/N/L | KTY 81-2xx | PNP/NPN/contact (50 kHz) | 2x IRC (500 kHz) | Frequency (2 kHz)	0.2 %	1 000

OUTPUTS

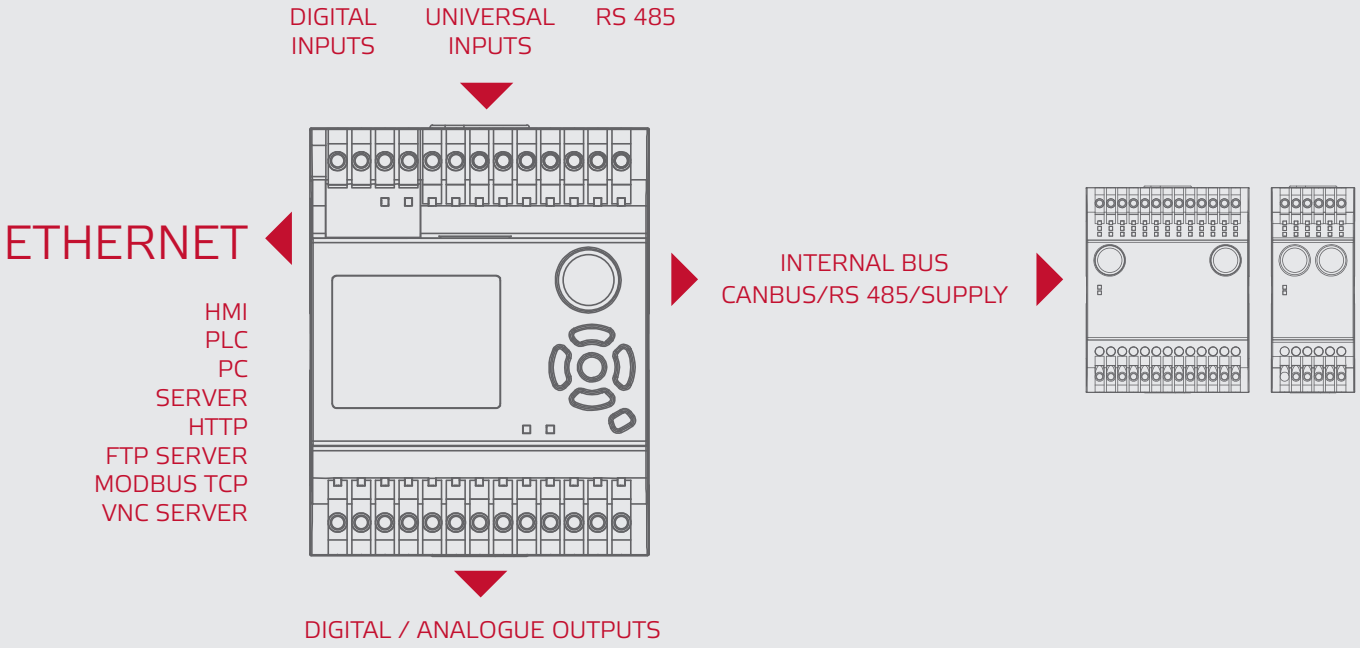
- LED SIGNALISATION OF OUTPUT STATE

No. of outputs	Type of output
5	relays | function ON - OFF | 10 A/250 VAC/24 VDC open collectors - NPN | function ON - OFF; PWM (10 kHz) | 300 mA/30 VDC
1	0...5 mA, 0/4...20 mA | 0...2/5/10 V/±10 V | if analogue out. is fitted, then the number of digital outputs is decreased from 5 to 3
1	data output RS 485 | ASCII, MODBUS | If data output is fitted, then the number of analogue inputs is decreased from 6 to 4
1	Ethernet 100Base

SPECIFICATIONS

Projection	color TFT display, 160 x 128 points
Internal comunication	via CANbus at 1 Mbit/s over 40 ms
RTC	Real Time Clock (time backed up for min. 3 weeks)
microSD card	max 32 GB
Memory	for code - 2 MB for data - 1 MB shared - 8 kB backup - 2 kB
Module width	72 mm
Power supply	24 V AC/DC | 100...250 V AC/DC
Maximum consumption	5.5 VA
Working temperature	-20°...60°C
Connection	terminal block, section < 2,5 mm^2
Cover	IP20
Dimensions	72 x 91 x 57 mm (w x h x d)
Dielectric strength	4 kVAC for the duration of 1 min. between supply and output
Insulation resistance	for pollution degree II, measur. cat. III., 300 V (PI), 150 (DI)
Electric safety	EN 61010-1, A2
EMC	EN 61326-1
Seismic capacity	IEC 980: 1993, par. 6
Programming	EN 61 131-3

PI - Primary insulation, DI - Double insulation



DESCRIPTION

For our PLC OMC 8000 range we selected module architecture. At the heart of the system there is the main module which can be accompanied by up to 31 expansion modules. These can be both nearby, or at a distance. The maximum distance between two end modules is up to 40 m while the maximum data flow is still maintained. If the distance needs to be longer or computing/communication power is to be greater, (program is split amongst several PLCs) then main modules can be conected over any distance by UDP via ETHERNET.

Communication between modules is realised by CAN bus. It needs to be remembered that the higher the number of expansion modules, the higher the demands on the communication line there will be.

The main module can be powered by 230 V or 24 V.
It contains 3 digital inputs, which react to the power supply voltage. It also comes with 6 versatile inputs, all of which are electrically isolated (sharing a common ground terminal
amongst them), from outputs and power supply.

Analogue inputs can process the following signals:

- analogue, voltage up to 30 V
- analogue, voltage up to 20 mA
- analogue, voltage up to 3.9 kΩ
- analogue, Pt 100, Pt 1000, Ni 1000
- analogue, T/C - B, E, J, K, L, N, R, S, T, XK
- analogue, KTY81-2xx
- pulse up to 30 V
- pulse - contanct, NPN open collectors
- pulse - 2x incremental sensors

Versatile inputs can also be used as two full quadrature inputs for the use with quadrature encoders where two input signals come with a 90º phase shift + zeroing pulse.

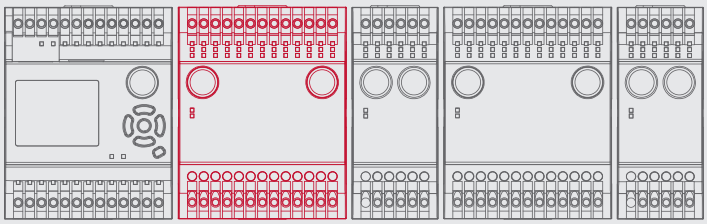
One pair of analogue inputs can be used as an RS 485 data output for communication with other devices, such as numeric or data dispaly, simple HMI , panel display etc.

ADVANTAGES OF OMC 8000

- module architecture with the possibility of connecting up to 31 modules
- colour TFT display privides inforamtion about the state of the entire system
- ETHERNET 100Base, MODBUS TCP/IP
- WEB Server
- data recording onto a microSD card with a selectable time stamp for a later analysis (to monitor trends, states of I/O, alarms, etc ...)
- versatility of inputs (digital, analogue, frequency, data)
- two inputs for IRC encoders (500 kHz) or six inputs PNP/NPN/contact (50 kHz)
- five relay or OC outputs
- universal analogue output
- a slot pro micro SD card for transfer of programs and recoding of measured data
- online editing which enables debugging
- programming according to EN 61131-3

INPUTS

DIGITAL
ANALOGUE
ANALOGUE - AC



DIGITAL

- 15x/36x DIGITAL INPUTS
- LED SIGNALISATION OF INPUT STATE
- POWER SUPPLY VIA BUS

EXPANSION MODULES

OMC 8101 - 15DI
is a 15-channel digital input

OMC 8001 - 36DI
is a 36-channel digital input

ANALOGUE

- LED SIGNALISATION OF INPUT STATE
- POWER SUPPLY VIA BUS

EXPANSION MODULES

OMC 8111 - 8UNI
is a fast 8-channel universal analogue input

OMC 8111 - 4DU
is a fast 4-channel analogue input for linear potentiometers

OMC 8121 - 2UNI
is a precise 2-channel universal analogue input

OMC 8131 - 2DC
is an ultra precise 2-channel analogue input for DC voltage and current

OMC 8131 - 2PM
is an ultra precise 2-channel analogue input for process-monitor signals to 20 mA and ±10 V

OMC 8131 - 2DU
is an ultra precise 4-channel analogue input for linear potentiometers

ANALOGUE - AC

- VOLTAGE (V_{RMS})
  CURRENT (A_{RMS})
  ACTIVE POWER (P)
  FREQUENCY (Hz)
  REACTIVE POWER (Q)
  APPARENT POWER (S)
  PF (Cos Fi)

EXPANSION MODULES

OMC 8101 - PWR
is a module for the measurement of alternating current, voltage, power, frequency and PF

OMC 8000 - 3PWR
is a module for 3-phase measurement of alternating current, voltage, power, frequency and PF

A wide selection of precise analogue inputs

DESCRIPTION

Module	No. of inputs	Measuring range
OMC 8101 - 15DI	15	12…250 V AC/DC
OMC 8001 - 36DI	36	12…250 V AC/DC

DESCRIPTION

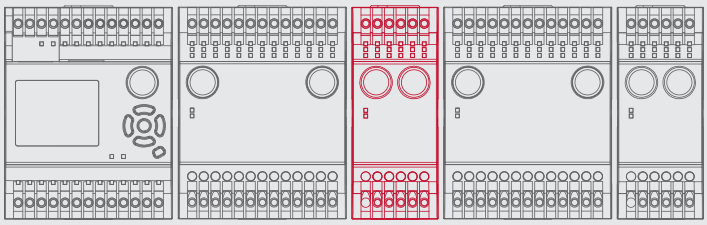
Module	No. of inputs	Isolated inputs	Measuring range	Resolution (bits)	Accuracy (of range)	Rate (meas./s)
OMC 8111 - 8UNI	8	no	0/4…20 mA | 0…60/450 mV, 0…2.8/10/30 V | 0…390/3 900 Ω | Pt 100/1 000; Ni 1 000 | T/C - J/K/T/E/B/S/R/N/L | PNP/NPN/contact (0,5/500 kHz) | IRC (500 kHz), (2x)	12	0.2 %	1 000
OMC 8111 - 4DU	4	no	Linear potentiometers > 500 Ω	12	0.2 %	1 000
OMC 8121 - 2UNI	2	yes	0…5 mA/0/4…20 mA | ±60/±150/±300 /1200 mV | 0…0.1/1/10/100 kΩ | Pt 50/100/500/1 000 | Cu 50/100 | Ni 1 000/10 000 | T/C - J/K/T/E/B/S/R/N/L | Linear potentiometers (> 500 Ω)	24	0.1%	40
OMC 8131 - 2DC	2	yes	±1/±10/±100 mA/±1/±5 A | ±1/±10/±100/±300 V	24	0.02 %	1 000
OMC 8131 - 2PM	2	yes	0…5 mA; 0/4…20 mA | ±2/±5/± 10 V	24	0.02 %	1 000
OMC 8131 - 2DU	2	yes	Potentiometers > 500 Ω	24	0.02 %	1 000

DESCRIPTION

Module	Measuring range	Accuracy (of range)	Rate (meas./s)
OMC 8101 - PWR	0…1/5 A | 0…60/300 mV | 0…10/120/250/450 V |	0.3 %	10
OMC 8000 - 3PWR	3x 0…1/5 A | 0…60/300 mV | 0…10/120/250/450 V |	0.3 %	10

OUTPUTS

DIGITAL
ANALOGUE
DATA



DIGITAL

- 4x/6x/8x DIGITAL OUTPUT
- LED SIGNALISATION OF OUTPUT STATE
- POWER SUPPLY VIA BUS

EXPANSION MODULES

OMC 8101 - 4DOR
is a 4-channel digital output with relays

OMC 8101 - 6DOC
is a fast 6-channel digital output with NPN open collectors

OMC 8181 - 8DOC
is a fast 8-channel digital output with PNP open collectors

ANALOGUE

- LED SIGNALISATION OF OUTPUT STATE

EXPANSION MODULES

OMC 8101 - 5DI.AO
is a universal analogue output plus 5 universal digital inputs

OMC 8000 - 8DI.2AO
is a universal 2-channel analogue output plus 8 universal digital inputs

OMC 8000 - 8DI.4AO
is a universal 4-channel analogue output plus 8 universal digital inputs

DATA

- EXPANSION MODULES FOR DATA COMMUNICATION OF THE OMC 8000 SYSTEM

EXPANSION MODULES

OMC 8101 - 5DI.RS
is a communicaton module RS 232/485 plus 5 universal digital inputs

OMC 8101 - 5DI.CAN
is a communicaton module CANbus plus 5 universal digital inputs with RS 485

OMC 8101 - 5DI.PB
is a communicaton module PROFIBUS DP plus 5 universal digital inputs

OMC 8101 - 5DI.PN
is a communicaton module PROFINET plus 5 universal digital inputs

OMC 8000 - GSM
is a communicaton module which uses the GSM network to transfer data

DESCRIPTION

Module	No. of outputs	Type of output
OMC 8101 - 4DOR	4	relays | function ON - OFF | 10 A/250 VAC/24 VDC
OMC 8101 - 6DOC	6	open collectors - NPN | function ON - OFF; PWM (10/1000 kHz) | 300 mA/30 VDC
OMC 8181 - 8DOC	8	open collectors - PNP | function ON - OFF; PWM (10/1000 kHz) | 700 mA/30 VDC

DESCRIPTION

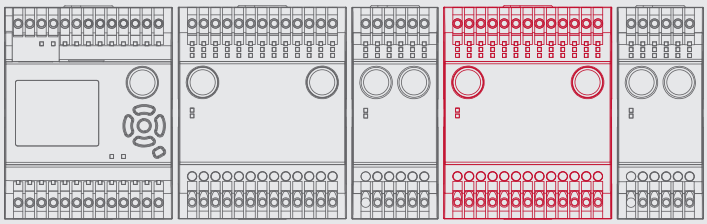
Module	No. of outputs	Isolated outputs	Measuring range	Accuracy (of range)	Resolution (bits)	No. of DI inputs	Measuring range
OMC 8101 - 5DI.AO	1	yes	0...5 mA, 0/4...20 mA | 0...2/5/10 V/±10 V |	0.1%	16	5	12...250 V AC/DC
OMC 8000 - 8DI.2AO	2	yes	0...5 mA, 0/4...20 mA | 0...2/5/10 V/±10 V |	0.1%	16	8	12...250 V AC/DC
OMC 8000 - 8DI.4AO	4	yes	0...5 mA, 0/4...20 mA | 0...2/5/10 V/±10 V |	0.1%	16	8	12...250 V AC/DC

DESCRIPTION

Module	No. of outputs	Description	Protocol	No. of DI inputs	Measuring range
OMC 8101 - 5DI.RS	4	1x RS 232 | 3x RS 485 |	ASCII/MESBUS/MODBUS RTU	5	12...250 V AC/DC
OMC 8101 - 5DI.CAN	3	CAN | 2x RS 485 |	CANopen | ASCII/MESBUS/ MODBUS RTU	5	12...250 V AC/DC
OMC 8101 - 5DI.PB	1	PROFIBUS DP	PROFIBUS	5	12...250 V AC/DC
OMC 8101 - 5DI.PN	1	PROFINET	PROFINET	5	12...250 V AC/DC
OMC 8000 - GSM	1	GSM Quad-Band: 850/900/1800/1900 MHz | remote control of the system, SMS, data transfer			

COMBINED

DIGITAL
ANALOGUE



DIGITAL

- 8x/12x DIGITAL INPUTS
- 10x/12x/24x DIGITAL OUTPUTS
- LED SIGNALISATION OF INPUT/ OUTPUTS STATE
- POWER SUPPLY VIA BUS

EXPANSION MODULES

OMC 8000 - 8DI.10DOC
is a 10-channel digital output with 10x OC - NPN plus 8 digital inputs

OMC 8000 - 8DI.10DOCR
is a 10-channel digital output with 5x OC - PNP and 5x relays plus 8 digital inputs

OMC 8000 - 8DI.10DOR
is a 10-channel digital output with 10x relays plus 8 digital inputs

OMC 8001 - 12DI.12DOC
is a 12-channel digital output with 12x OC - NPN plus 12 digital inputs

OMC 8001 - 12DI.24DOC
is a 24-channel digital output with 24x OC - NPN plus 12 digital inputs

OMC 8081 - 12DI.24DOC
is a 24-channel digital output with 24x OC - PNP plus 12 digital inputs

ANALOGUE

- LED SIGNALISATION OF INPUT STATE

EXPANSION MODULES

OMC 8020 - 8DI.2UNIC
is a precise 2-channel universal analogue input plus 8 digital inputs

OMC 8020 - 8DI.2UNIC.5DOC
is a precise 2-channel universal analogue input plus 8 digital inputs and 5x OC - NPN

OMC 8020 - 8DI.2UNIC.5DOR
is a precise 2-channel universal analogue input plus 8 digital inputs and 5x relays

OMC 8020 - 8DI.2UNIC.2AO
is a precise 2-channel universal analogue input plus 8 digital inputs and 2x analog outputs

OMC 8030 - 8DI.2T
is an ultra precise 2-channel module for load cell plus 8 digital inputs

OMC 8030 - 8DI.2T.5DOC
is an ultra precise 2-channel module for load cell plus 8 digital inputs and 5x OC - NPN

OMC 8030 - 8DI.2T.5DOR
is an ultra precise 2-channel module for load cell plus 8 digital inputs and 5x relays

OMC 8030 - 8DI.2T.2AO
is an ultra precise 2-channel module for load cell plus 8 digital inputs and 2x analog outputs

For our PLC OMC 8000 range we selected module architecture

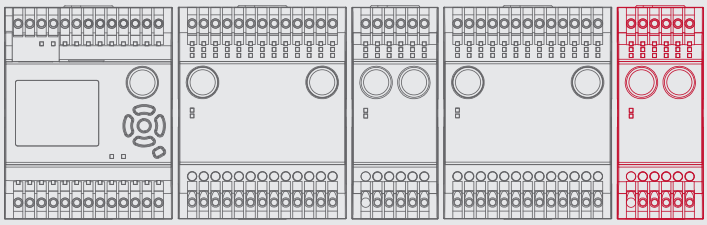
DESCRIPTION

Module	No. of outputs	Type of outputs	No. of DI inputs	Measuring range
OMC 8000 - 8DI.10DOC	10	open collectors - NPN | function ON - OFF; PWM (10/1 000 kHz) | 300 mA/30 VDC	8	12…250 V AC/DC
OMC 8000 - 8DI.10DOCR	5 + 5	open collectors - NPN | function ON - OFF; PWM (10/1 000 kHz) | 300 mA/30 VDC relays | function ON - OFF | 10 A/250 VAC/24 VDC	8	12…250 V AC/DC
OMC 8000 - 8DI.10DOR	10	relays | function ON - OFF | 10 A/250 VAC/24 VDC	8	12…250 V AC/DC
OMC 8001 - 12DI.10DOC	12	open collectors - NPN | function ON - OFF; PWM (10 kHz) | 300 mA/30 VDC	12	12…250 V AC/DC
OMC 8001 - 12DI.24DOC	24	open collectors - NPN | function ON - OFF; PWM (10 kHz) | 300 mA/30 VDC	12	12…250 V AC/DC
OMC 8081 - 12DI.24DOC	24	open collectors - PNP | function ON - OFF; PWM (10 kHz) | 700 mA/30 VDC	12	12…250 V AC/DC

DESCRIPTION

Module	No. of inputs	Measuring range (analogue inputs)	Measuring range (digital inputs)	Outputs
OMC 8020 - 8DI.2UNIC	2	0…5 mA/0/4…20 mA | ±60/±150/±300/1200 mV | 0…0.1/1/10/100 kΩ Pt 50/100/500/1 000 | Cu 50/100 | Ni 1 000/10 000 | T/C - J/K/T/E/B/S/R/N/L | Potentiometers (> 500 Ω)	8x | 12…250 V AC/DC	
OMC 8000 - 8DI.2UNIC.5DOC	2	0…5 mA/0/4…20 mA | ±60/±150/±300 /1200 mV | 0…0.1/1/10/100 kΩ Pt 50/100/500/1 000 | Cu 50/100 | Ni 1 000/10 000 | T/C - J/K/T/E/B/S/R/N/L | Potentiometers (> 500 Ω)	8x | 12…250 V AC/DC	5x open collectors - NPN | function ON - OFF; PWR (10 kHz) | 300 mA/30 VDC
OMC 8000 - 8DI.2UNIC.5DOR	2	0…5 mA/0/4…20 mA | ±60/±150/±300 /1200 mV | 0…0.1/1/10/100 kΩ Pt 50/100/500/1 000 | Cu 50/100 | Ni 1 000/10 000 | T/C - J/K/T/E/B/S/R/N/L | Potentiometers (> 500 Ω)	8x | 12…250 V AC/DC	5x relays | function ON - OFF | 10 A/250 VAC/24 VDC
OMC 8000 - 8DI.2UNIC.2AO	2	0…5 mA/0/4…20 mA | ±60/±150/±300 /1200 mV | 0…0.1/1/10/100 kΩ Pt 50/100/500/1 000 | Cu 50/100 | Ni 1 000/10 000 | T/C - J/K/T/E/B/S/R/N/L | Potentiometers (> 500 Ω)	8x | 12…250 V AC/DC	2x universal analogue outputs | 0…5 mA, 0/4…20 mA | 0…2/5/10 V/±10 V
OMC 8000 - 8DI.2T	2	1…4 mV/V | 2…8 mV/V | 4…16 mV/V | 6-wire connection | supply of the load cell bridge	8x | 12…250 V AC/DC	
OMC 8000 - 8DI.2T.5DOC	2	1…4 mV/V | 2…8 mV/V | 4…16 mV/V | 6-wire connection | supply of the load cell bridge	8x | 12…250 V AC/DC	5x open collectors - NPN | function ON - OFF; PWR (10 kHz) | 300 mA/30 VDC
OMC 8000 - 8DI.2T.5DOR	2	1…4 mV/V | 2…8 mV/V | 4…16 mV/V | 6-wire connection | supply of the load cell bridge	8x | 12…250 V AC/DC	5x relays | function ON - OFF | 10 A/250 VAC/24 VDC
OMC 8000 - 8DI.2T.2AO	2	1…4 mV/V | 2…8 mV/V | 4…16 mV/V | 6-wire connection | supply of the load cell bridge	8x | 12…250 V AC/DC	2x universal analogue outputs | 0…5 mA, 0/4…20 mA | 0…2/5/10 V/±10 V

POWER SUPPLY MODULES



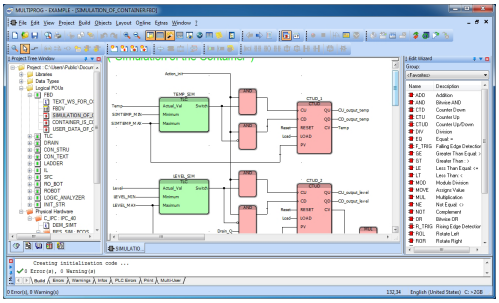
SUPPLY MODULES

EXPANSION MODULES

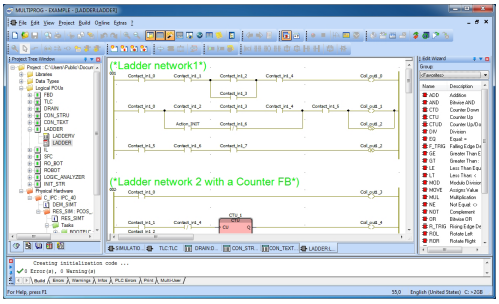
OMC 8100 - PS
is a module designed to supply the bus (5 V/1A)

OMC 8000 - PS30
is a module designed to supply the bus (5 V/1 A), combined with a DC power supply 24 V/1 A

MULTIPROG PRO®



Picture 1: Function block diagram (FBD)



Picture 2: Ladder diagram

COMPLEX DEVELOPMENT ENVIRONMENT IN ACCORDANCE WITH IEC 61131 FOR HIGHLY DEMANDING APPLICATIONS

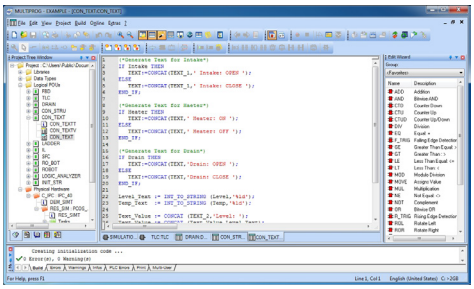
MULTIPROG PRO is a sophisticated programming tool used to develop highly demanding PLC applications. It provides professional support during all phases of project development. It offers a wide scale of functions and options. Controlling MULTIPROG PRO is easy and intuitive.

MULTIPROG PRO: Intelligent development environment
MULTIPROG PRO offers an advanced graphic editor with a function for automatic connection of objects (Auto-router), sophisticated text editor with language syntax highlighting and IntelliSense feature. It also provides the ability to enter/modify variables in an easy to read table.

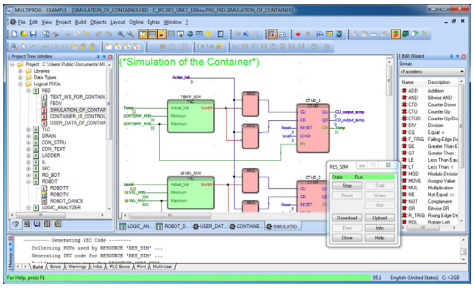
For an easy and unproblematic start of a new project in the MULTIPROG PRO environment the user can use the new project wizard (Wizard function) or Templates (Template function).

MULTIPROG PRO supports all five IEC 61131 languages

- Strucured text (ST)
- Instruction list (IL)
- Ladder diagram (LD)
- Function block diagram (FBD)
- Sequential function chart (SFC)



Picture 3: Structured text



Picture 4: Debuging of aplication in the On-line mode

MULTIPROG PRO: Comfortable programming and bringing PLC applications into life

MULTIPROG PRO provides powerful functions for troubleshooting or for bringing PLC applications to life. Development environment provides simulation of PLC application on your computer or signal monitoring using a logic analyzer.

The programmer of PLC applications will certainly appreciate the opportunity to use breakpoints in the code or setting the tuning address.

In the debug mode MULTIPROG PRO allows you to step through the program in the PLC or to set or override the value of the variable (function Force/Overwrite).

Communication possibilities of the MULTIPROG PRO environment are also up to standard. MULTIPROG uses all the benefits of a robust Ethernet interface.

The use of TCP/IP:

- recording of application into the PLC
- remote reading/writing variables via OPC Server

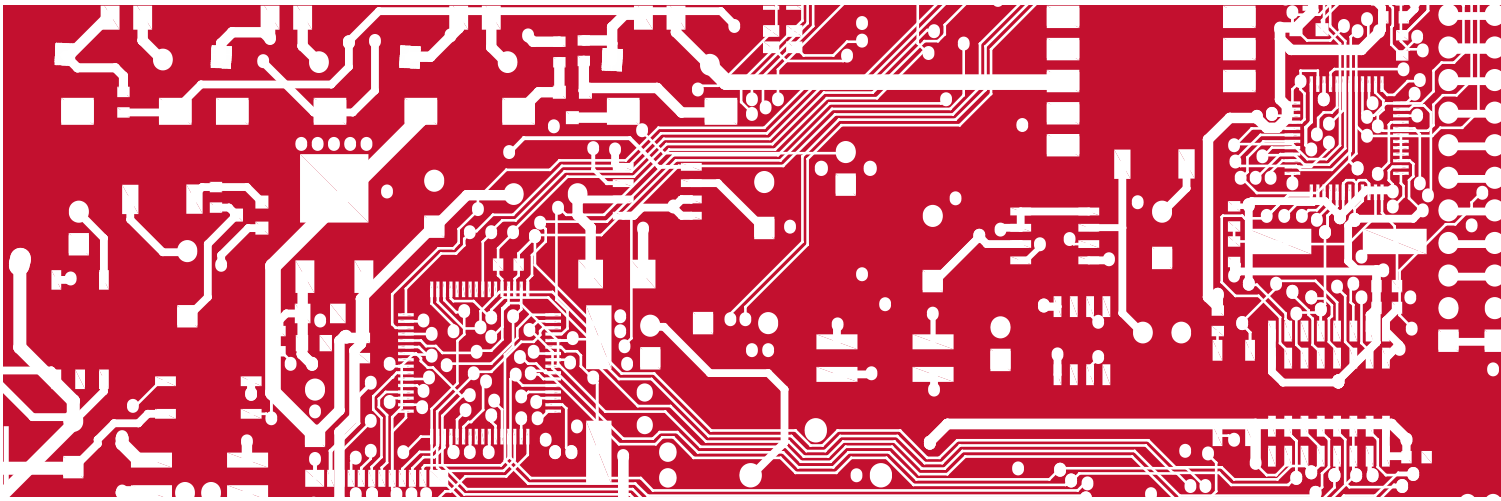
The use of UDP/IP:

- remote access to PLC while reading/writing variables

Yet another advantage of the MULTIPROG PRO environment consists of an elaborate system of context help, where help for the current item does not require a complicated search, it is immediately ready to be displayed.

User interface MULTIPROG PRO is available in Czech, English, German, French, Spanish, Chinese and Japanese.

MULTIPROG PRO is compatible OS Microsoft Windows® XP, Windows® Vista, Windows® 7 a Windows® 8



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