## ENTERING MENU OF OMC8000

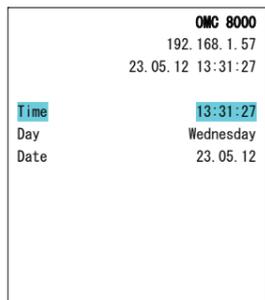It is possible to enter the menu in two different ways:
1. by pressing the **OK** key while the display shows the opening screen of connected modules and holding it down for the duration of this opening screen (approx. 3 seconds). The **OK** key can be pressed already at the point of start-up
2. By pressing simultaneously (for approx. 3 seconds) keys **UP** a **DOWN** (arrows up and down) provided the PLC program is not running (LED **RUN** is not lit). Item Start is allowed only in this start menu

## LANGUAGE OF MENU

The device menu is in 4 languages: English, Czech, German and French

### Setting of LANGUAGE

Setting of language is performed by pressing the **OK** key. Selected language option is displayed inversely – blue text on yellow background. Language can be changed by using the **UP/DOWN** keys. Pressing the **ESC** key ends editing and returns you to the original selection. The OK key confirms the selection

```
                              OMC 8000
                          192.168.1.57
                       23.05.12 13:31:27

Language                           English
RTC
Edit modules
Reread modules
Ethernet
FW update
SW backup
Start                              Disable
About PLC
```

### SUBMENU RTC

Transfer to lower level by pressing the **OK** key, return to higher level by pressing the **LEFT** key. Pressing the **ESC** key terminates browsing through the menu

```
                              OMC 8000
                          192.168.1.57
                       23.05.12 13:31:27

Time                             13:31:27
Day                             Wednesday
Date                            23.05.12
```

### Setting TIME

Pressing the **OK** button opens editing. Projection format is blue text on yellow background. Edited digit is on red background. Change of value is done by **UP/DOWN** keys, keys **LEFT/RIGHT** edit the number scale. **OK** confirms selection, **ESC** returns to higher level without any changes.

### Setting DAY

Same procedure as with LANGUAGE. Selecting the day of the week.

### Setting DATE

Same procedure as with RTC.
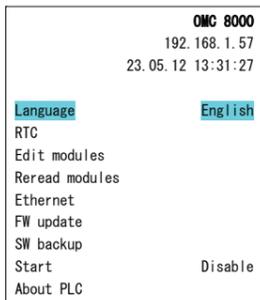
## EDIT MODULES

This menu item allows assigning addresses to the connected modules. If no modules are connected, the screen is empty.

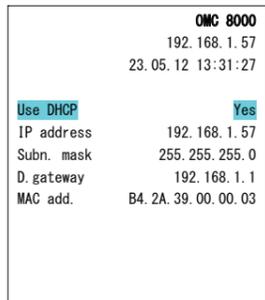Changes made in this menu are irreversible.

The desired module is selected using the **UP/DOWN** keys. LED **RUN** flashes on the selected module. By pressing the **OK** key the selected module is activated to be ranked into the list and it is displayed inversely on the display. By pressing the **UP/DOWN** keys the module is placed in the desired position.

By pressing the **OK** key again the module is deactivated.

**ESC** terminates the process.

```
                              OMC 8000
                          192.168.1.57
                       23.05.12 13:31:27

1  8000.10D0         120120313012
2  8100.SM           120120409024
3  8100.SM           120120409025
4  8100.SM           120120409026
```

## SETTING OF REREAD MODULES

the list of modules and uploads it again. The rest of the procedure is identical as above.

```
                              OMC 8000
                          192.168.1.57
                       23.05.12 13:31:27

Use DHCP                              Yes
IP address                  192.168.1.57
Subn. mask                255.255.255.0
D. gateway                    192.168.1.1
MAC add.               B4.2A.39.00.00.03
```

### SUBMENU ETHERNET

Options for network communication

### Setting USE DHCP

Authorizes the use of DHCP server

### Setting IP ADDRESS

Current IP address is shown. When editing is initialized, IP address which will be used is shown, provided HDCP server is not authorized.

### Setting SUBN. MASK

Current subnet mask is shown. When editing is entered, subnet mask which will be used is shown, provided HDCP server is not authorized.
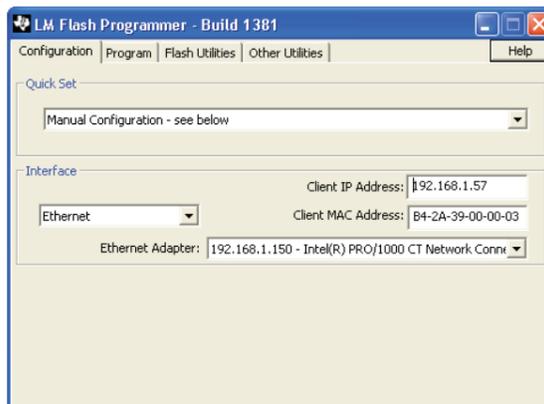
### Setting D. GATEWAY

Current gateway is shown. When editing is entered, gateway mask which will be used is shown, provided HDCP server is not authorized.

### Setting MAC Add.

Current MAC address. This menu item cannot be changed.

### Action FW UPDATE

After pressing the OK key the PLC will enter a mode in which it expects a FW update. It is possible to exit this action only by switching the PLC off. If the SW uploader is not run, the original FW remains unmodified.

```
                              OMC 8000


IP address           192.168.1.57

MAC add.        B4.2A.39.00.00.03

FW update
```

Installation of the uploader FW is located in the installations' folder of Multiprog software in a subfolder Orbit_Merret – LMFlashProgrammer.msi.
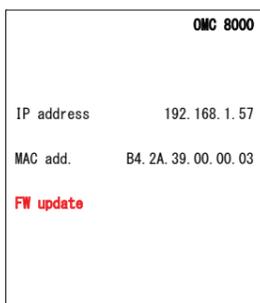


It is necessary to enter the information given on the PLC screen and a path to the file containing the FW.
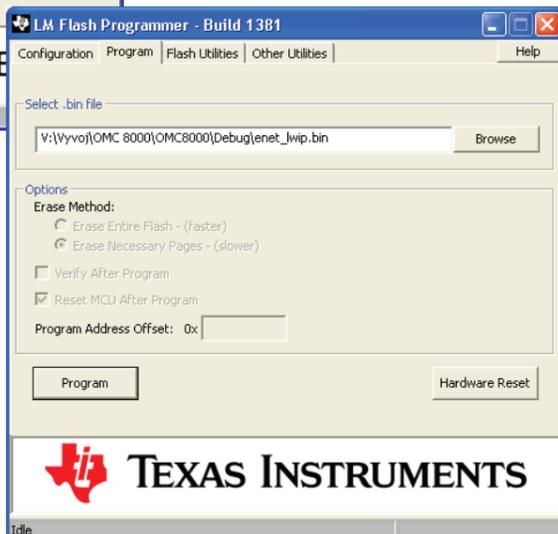


## SUBMENU SW BACKUP

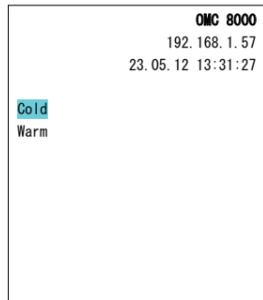Options for backing up of user program on an SD card.

### Action BACKUP

A backup.plc file is created in the root address book of the SD card. It is a binary image of a user application. Its content is identical with the content of a file which can be found in a file located in this path:

[projects folder]\[project name]\C\[configuration]\R\[source] \image.bin

### Action RESTORE

Restores a stored image

```
                              OMC 8000
                          192.168.1.57
                       23.05.12 13:31:27

Backup
Restore
```

## SUBMENU START

It allows running a user program after an error or restoration. Before this action is taken, we recommend checking communication with modules by running EDIT MODULES

### Action COLD

Identically with controlling in MULTIPROG SW it executes the start of the program along with setting all the variables.

### Action WARM

Identically with controlling in MULTIPROG SW it executes the start of the program along with setting of only non-retain variables.

```
                              OMC 8000
                          192.168.1.57
                       23.05.12 13:31:27

Cold
Warm
```
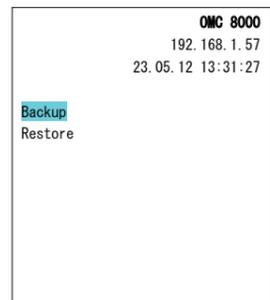
## SUBMENU ABOUT PLC

This submenu does not contain any adjustable items. It contains all information about the device:
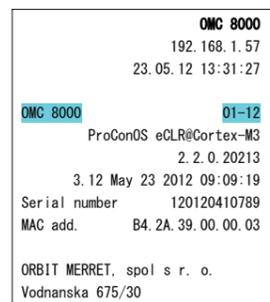
Identification HW
Description of ProConOS core
Version of ProConOS core
Version of FW
Serial number
MAC address
Contact information

```
                              OMC 8000
                          192.168.1.57
                       23.05.12 13:31:27

OMC 8000                          01-12
              ProCon OS eCLR@Cortex-M3
                              2.2.0.20213
              3.12 May 23 2012 09:09:19
Serial number           120120410789
MAC add.             B4.2A.39.00.00.03

ORBIT MERRET, spol s r.o.
Vodnanska 675/30
```

## SUPPORT PROGRAMS FOR OMC 8000

Are located in the install file of the MULTIPROG SW in a subfolder Orbit_Merret

## OM FINDER

Program OM Finder was created for an easier configuration of resources in the MULTIPROG SW. This SW can detect all OMC 8000 devices which are available in the network and it displays basic information. By clicking on the selected PLC using the DRAG & DROP method (CTRL+V and CTRL+V) the IP address can be transferred to setting of the source.



Performing LAN search for Orbit Merret PLC devices.

Prosím čekejte...
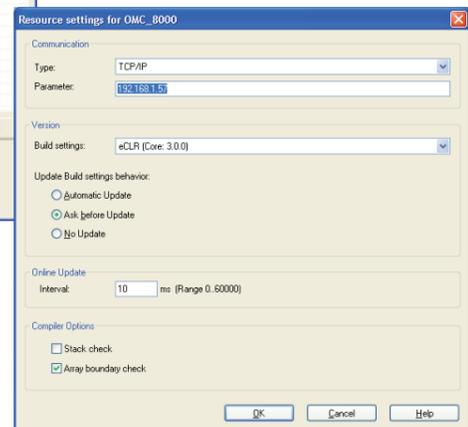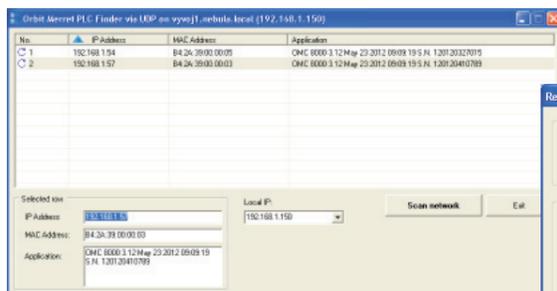




## PLC READ PACKET

Program is designed to monitor UDP communication between PLC as a diagnostic tool
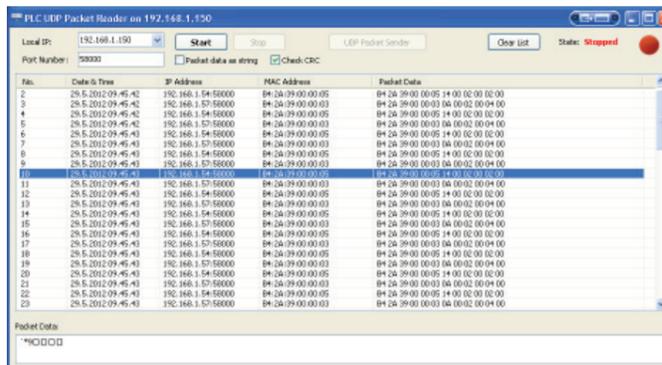
## OM_IO_DRIVER

```
                      OMC 8000
              192. 168. 1. 57
              23. 05. 12 13:31:27

1 8000. 10D0      120120313012
2 8100. SM        120120409024
3 8100. SM        120120409025
4 8100. SM        120120409026
```

IO driver for working with logical inputs and outputs. Values of counters, analogue inputs and other data retrieved by PLC are read by functions and function blocks. Input ports create one continuous range created automatically based on an assigned address and the module's properties.

OMC 8000 main module has 2 Bytes of logical inputs and one output:

Address %IX0.0 to %IX0.5 – universal inputs
Address %IX1.0 to %IX1.2 – inputs react to power supply voltage
Address %QX0.0 to %QX0.4 – outputs

Other Bytes here are not used. Other addresses in the system according to the configuration on the right would be:

Address %IX2.0 to %IX2.7 – inputs OMC 8000.10D0
Address %IX3.0 to %IX3.2 – inputs A, B, C of module OMC8100.SM
Address %IX4.0 to %IX4.2 – inputs A, B, C of module OMC 8000.SM
Address %IX5.0 to %IX5.2 – inputs A, B, C of module OMC 8000.SM
Address %QX1.0 to %QX1.7 – first 8 outputs of OMC 8100.10D0x
Address %QX2.0 to %QX2.1 – remaining 2 outputs of OMC 8100.10D0x

Other addresses are not assigned. Distribution of inputs is described in the user manual, datasheet and the module's label. If some BOOL outputs are not used in the program, they can be configured according to the state of the inputs, for example %QX0.2 := %IX0.2

## INITIALIZATION OF HW

Both the OMC 8000 main module and the expansion modules need to be configured first, required modes of input and output circuits are to be selected. Manufacturer's libraries contain several function blocks, which are described in the help section of libraries.

These configuration blocks are performed only once upon launch. This means it is not possible to dynamically change the HW configuration while the program is running. So as not to keep the main program busy by executing these configuration blocks, a special system task called Start Task was created. This task is launched once during any start of application, whether it is cold, warm, or hot start.

### MEASURING INPUTS

| | | |
|---|---|---|
| ANALOGUE | Number of inputs | 6 |
| | Range | 0...60/450 mV<br>0...2,8/10/20/30 V<br>0/4...20 mA<br>0...390/3900 Ω<br>Pt 100<br>Pt 1 000/Ni 1 000<br>PNP/NPN/contact (0,5/500 kHz)<br>IRC (500 kHz), (2x) |
| | Resolution | 12 bits |
| | Accuracy | ±0,2 % of range<br>±0,5 % of range - for Pt xxx/Ω (only Input 1.4 and 1.5) |
| | Rate | 500 meas/s |
| | Overload capacity | 10x |
| | LED signalisation | yes |
| DIGITAL | Number of inputs | 3 |
| | Range | 12...30 V AC/DC nebo 80...250 V AC/DC<br>(the range is always identical with the device's power supply) |
| | Max. current | 2,5 mA |
| | Response time | 20 ms |
| | LED signalisation | yes |

### DEVICE SPECIFICATION

| | |
|---|---|
| TC | 50 ppm/°C |
| Computing power | 0,1 μs, 12 μs (WORD), 18 μs (floating decimal point) |
| Task | 1 ms |
| Projection | colour TFT display |
| Communication | ETHERNET 100Base, RS 485 |
| Internal comunic. via bus | CANBUS at 1 Mbit/s over 40 m |
| Slot pro microSDcard | max 32 GB |
| Watch-dog | reset after 500 ms |
| Calibration | at 25°C and 40 % of r.h. |

### COMPARATORS

| | |
|---|---|
| Type | digital |
| Function | ON/OFF<br>PWM (10 kHz) only for open collectors |
| Outputs | 5x relays with switch-on contact (Form A),<br>(250 VAC/24 VDC, 10 A)*<br>5x open collectors, (30 VDC/300 mA)* |
| Response time | < 8 ms (relay/0,15 ms (OC) |
| Relay | 1/8 HP 277 VAC, 1/10 HP 125 V, Pilot Duty D300 |
| LED signalisation | yes |

* these values are valid for resistive load

### DATA OUTPUTS

| | |
|---|---|
| Protocols | ASCII |
| Data format | 8 bit + no parity + 1 stop bit |
| Rychlost | 600...230 400 Baud |
| RS 485 | isolated, addressing (max. 31 instruments) |

### ANALOGUE OUTPUTS

| | |
|---|---|
| Type | isolated, programmable with 12 bits D/A convertor |
| Non-linearity | 0,1 % of range |
| TC | 15 ppm/°C |
| Rate | response to change of value < 1 ms |
| Output | 0...2/5/10 V, ±10 V, 0...5 mA, 0/4...20 mA<br>(comp. < 500 Ω/12 V) |
| Ripple | 5 mV residual ripple at output voltage of 10 V |

If analogue output is present, the number of relays/open collectors is reduced down to 3 units.

### POWER SUPPLY

| | |
|---|---|
| | 10...30 VDC/24 VAC, ±10 %, 5 VA, PF ≥ 0,4,<br>80...250 VDC/VAC, ±10 %, 5 VA, PF ≥ 0,4,<br>I_zap< 40 A/1 ms, isolated |

### MECHANIC PROPERTIES

| | |
|---|---|
| Material | PA 66, incombustible UL 94 V-0, blue |
| Dimensions | 72 x 91 x 60 mm |
| Installation | to DIN rail 35 mm wide |

### OPERATING CONDITIONS

| | |
|---|---|
| Connection | connector, conductor cross-section <2,5 mm² |
| Stabilisation period | within 15 minutes after switch-on |
| Working temperature | -20°...60°C |
| Storage temperature | -20°...85°C |
| Cover | IP40 |
| Provedení | safety class I |
| Electric safety | EN 61010-1, A2 |
| Dielectric strength | 4 kVAC after 1 min between supply and input<br>4 kVAC after 1 min between supply and comunic. bus<br>4 kVAC after 1 min between supply and data/anal. output<br>4 kVAC after 1 min between supply and comparators<br>2,5 kVAC after 1 min between input and data/anal. output |
| Insulation resistance | for pollution degree II, measurement cat. III<br>300 V (PI), 150 (DI) |
| EMC | EN 61326-1 (industrial environment) |
| Programming | EN 61131-3 |

* PI - Primary insulation, DI - Double insulation



### ANALOGUE INPUTS

| | RANGE | CONNECTION |
|---|---|---|
| UNI.A | 0...60/450 mV<br>0...2,8/10/30 V<br>0/4...20 mA<br>0...390/3900 Ω<br>Pt 100<br>Pt 1 000/Ni 1 000<br>PNP/NPN/contact (0,5/500 kHz)<br>IRC (500 kHz), (2x) | terminals (GND + No. 7...9/11.13) |

### DIGITAL INPUTS

| | RANGE | CONNECTION |
|---|---|---|
| DI.L(H) | 12...30 V AC/DC or 80...250 V AC/DC | dry contact, terminals (N + No. 3/4/5) |

The instrument supply leads should not be in proximity of the incoming low-potential signals. Contactors, motors with larger input power should not be in proximity of the instrument.
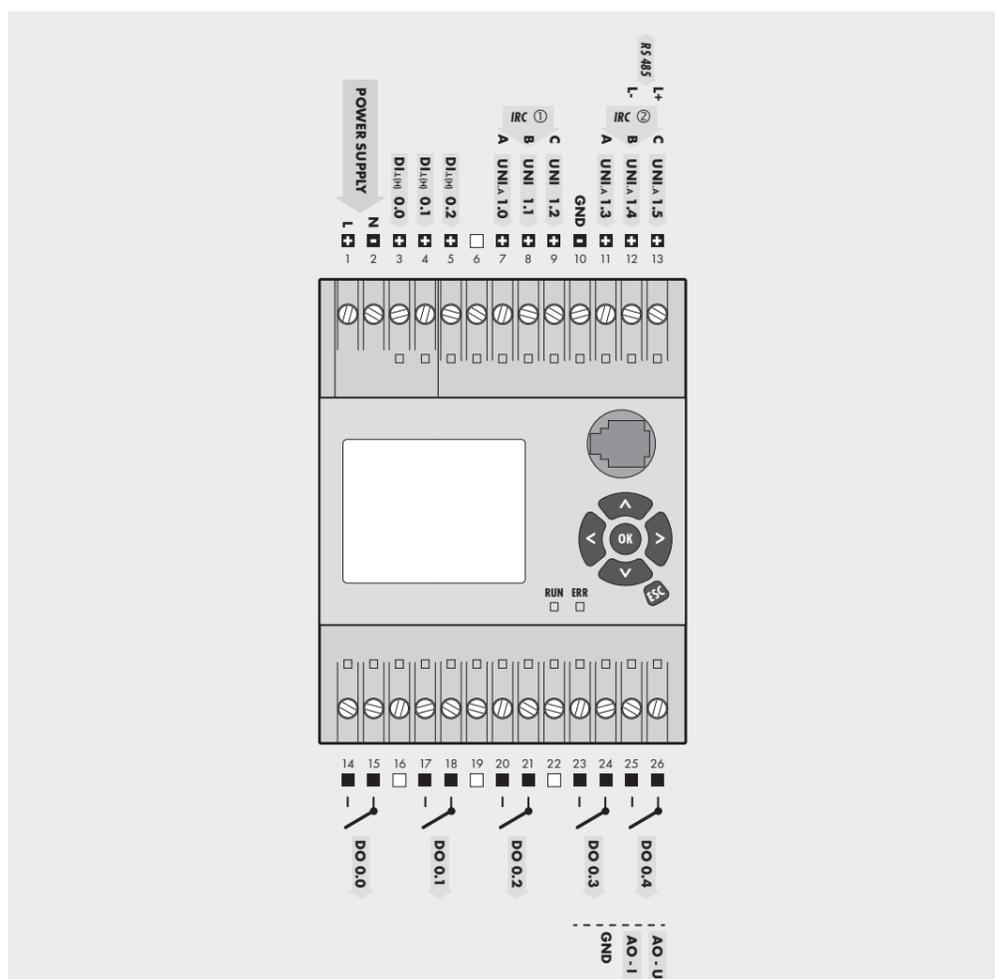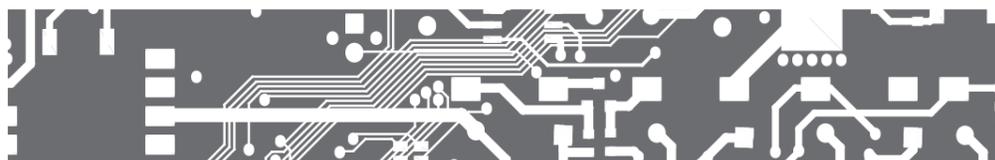The leads into the instrument input (measured quantity) should be in sufficient distance from all power leads and appliances. The instruments are tested in compliance with standards for use in industrial area, yet we recommend to abide by the above mentioned principles.

In order to guaratee the technical parameters of the device it is essential to connect shielding of signal wires to the switch board frame!