simex

MultiCon

multichannel
CONTROLLERS data recorders

new functions!

www.multicon24.eu

Measure,
Control and Log Data

Introduction

The MultiCon series includes advanced controllers and recorders with great potential closed in small casings. MultiCon CMC has been specifically designed for advanced applications in industrial automatic control engineering. It does not mean, however, that the device cannot be applied in smaller systems. MultiCon CMC can be equipped with three isolated RS-485 interfaces which make it a perfect solution for distributed systems to work as CPU. Thanks to Ethernet interface the device can be monitored via the Internet. A wide range of input and output modules allows to customize CMC precisely as the customer requires it. Thanks to a colour touchscreen working with the user interface becomes a pleasure, while MultiCon operation playing the role of HMI is intuitive and comfortable. Our devices are LINUX-based products to ensure stable operation.

News

www.multicon24.eu

We kindly invite you to visit our first comprehensive MultiCon series website, where you will find all the information on the functionality of the MultiCon CMC and its applying possibilities. Directly from the website you will be able to download the latest software, firmware, and operating manuals. We also invite you to a discussion forum where you can ask questions, share your opinions and possibilities of using the MultiCon instruments in your application.

Time format is an advanced method of data presentation in format of time. User can easily get a desired format, by entering a "formatting string" composed of letters and colons, for example a string: "w:d:hh:mm" lets user to display data as number of weeks, days, hours and minutes, separated by colons.
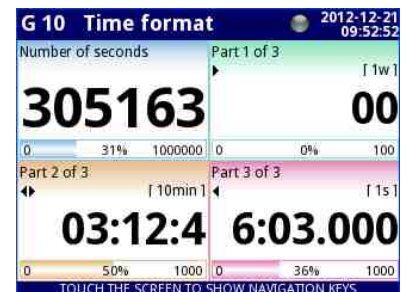
MultiCon Emulator is the software allowing to run a virtual MultiCon on the computer screen and familiarize with its functionality completely free of charge.

A wide range of possibilities

The biggest advantage of all devices from the MultiCon series is a big number of built-in inputs / outputs accessible in one compact device. The most developed version **CMC-99** has up to 48 measurement or digital inputs and 60 virtual channels whereas **CMC-141** has 50% more inputs / outputs and virtual channels.

Thanks to a well-thought-out module design you can choose among a wide range of modules and connect them to slots in the way you wish but you do not have to use all slots. You can also decide on your own how to use virtual channels, if they are going to be used for direct measurement readings, mathematical functions, timers, profile creation, set points or virtual objects.

What if one day you want to change your slots configuration or add new modules?
All you have to do is to send your device to an authorized distributor who will perform the changes you require.

We offer:

the following inputs:
- universal
- voltage
- current
- thermocouple
- RTD
- digital
- counting
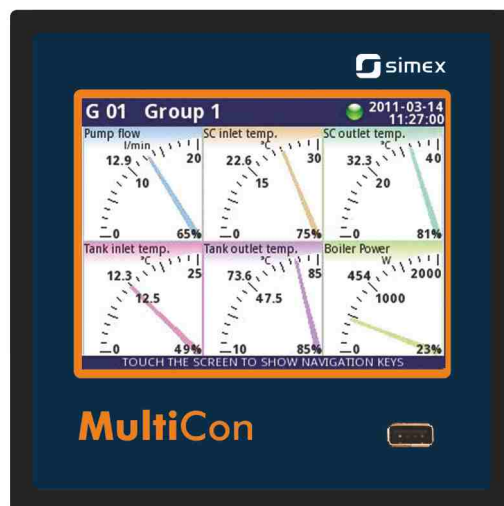- flow measurement
- rate measurement

the following outputs:
- relay
- SSR
- current (4-20 mA) signals

communications:
- ETU
- ACM
- USB

up to 72 analogue / digital inputs

IP 65 front panel protection

Ethernet

2 x USB Host ports

MultiModbus - up to 3 x RS-485 interfaces

HMI

Java applets

a wide range of I/O modules

max. 10 Hz sampling frequency

3.5" / 5.7" LCD touchscreen

PC keyboard and mouse operation

PID control

profiles / timers

mathematical functions

visualization as digits, graphs, bargraphs, needles

1.5 GB for data

free DAQ Manager software

Controller...

One of the most important functions of MultiCon CMC is control. Besides the usual ON/OFF control, MultiCon CMC with the help of relays, MultiCon CMC allows to apply PID control in a current loop, SSR outputs and time control with a determined profile.

PID control

Thanks to PID control you can control your process more accurately. Every channel (out of 60) can be set to work as a controller: PD, PI or PID with an independent set point, input and output. The user has 8 sets of control parameters to choose from and every one of them can be assigned to various controllers. It is a perfect solution for many similar processes to be controlled.

External inputs/outputs

External inputs/outputs (i.e. inputs/outputs for other devices) are particularly useful when there is a need to control a large number of physical execution units or collect data from distant sources. MultiCon CMC equipped with Modbus RTU can read data and control outputs of other devices interconnected within a network.

Profiles/timers

The user can create profiles to generate specific waveform signals. Generation of a signal is released by an event occurrence (e.g. signal edge) or if the task was planned to take place on a specific day and time. Thanks to profiles/timers it is possible to control temperature, lighting and ventilation depending on time of the day. All you have to do is to programme your profile/timer once to assign the object in question with the same operating conditions every day.

...and a recorder in the same package

1.5 GB for data!

Every MultiCon can also work as a data recorder. Its internal memory of 1.5 GB can store over 125,000,000 samples. It means that even if intense sampling mode (every second) is selected, you can record data from 24 channels for 2 months. Recording is available after purchase of a licence key but you can try it out before you buy it. Every CMC gives you one month of free trial to see how the recorder works for yourself and then you can decide whether it is worth it. Contact our sales office to receive a free licence key.

recording mode	intense (every 1 sec.)	medium (every 10 sec.)	economy (every 1 min.)
60 channels	20 days	6 months	3 years
48 channels	30 days	8 months	4 years
24 channels	50 days	15 months	7 years

DAQ Manager

To manage such vast amount of data we have designed the DAQ Manager software to help you. It is free of charge and helps to manage all the data. The software allows to visualize data in the form of graphs and tables, group measurement results, create reports and export data into other files. Its fully functional free version can be downloaded from our website or ordered as a payable CD-ROM version.
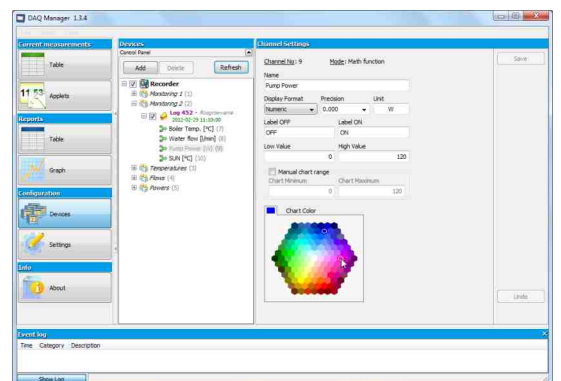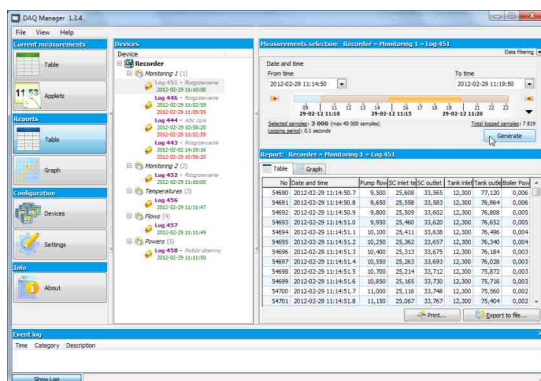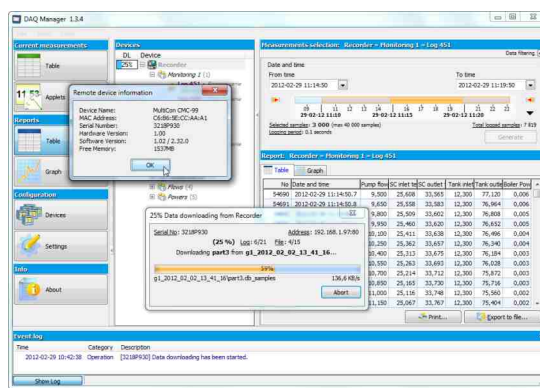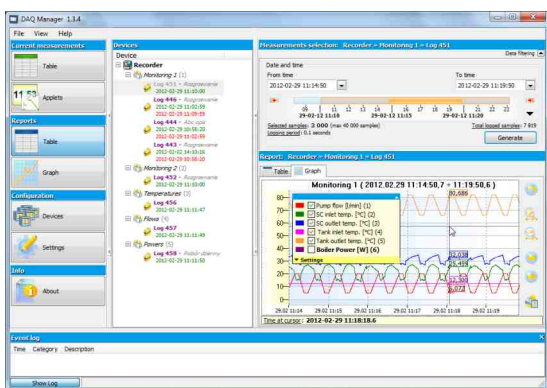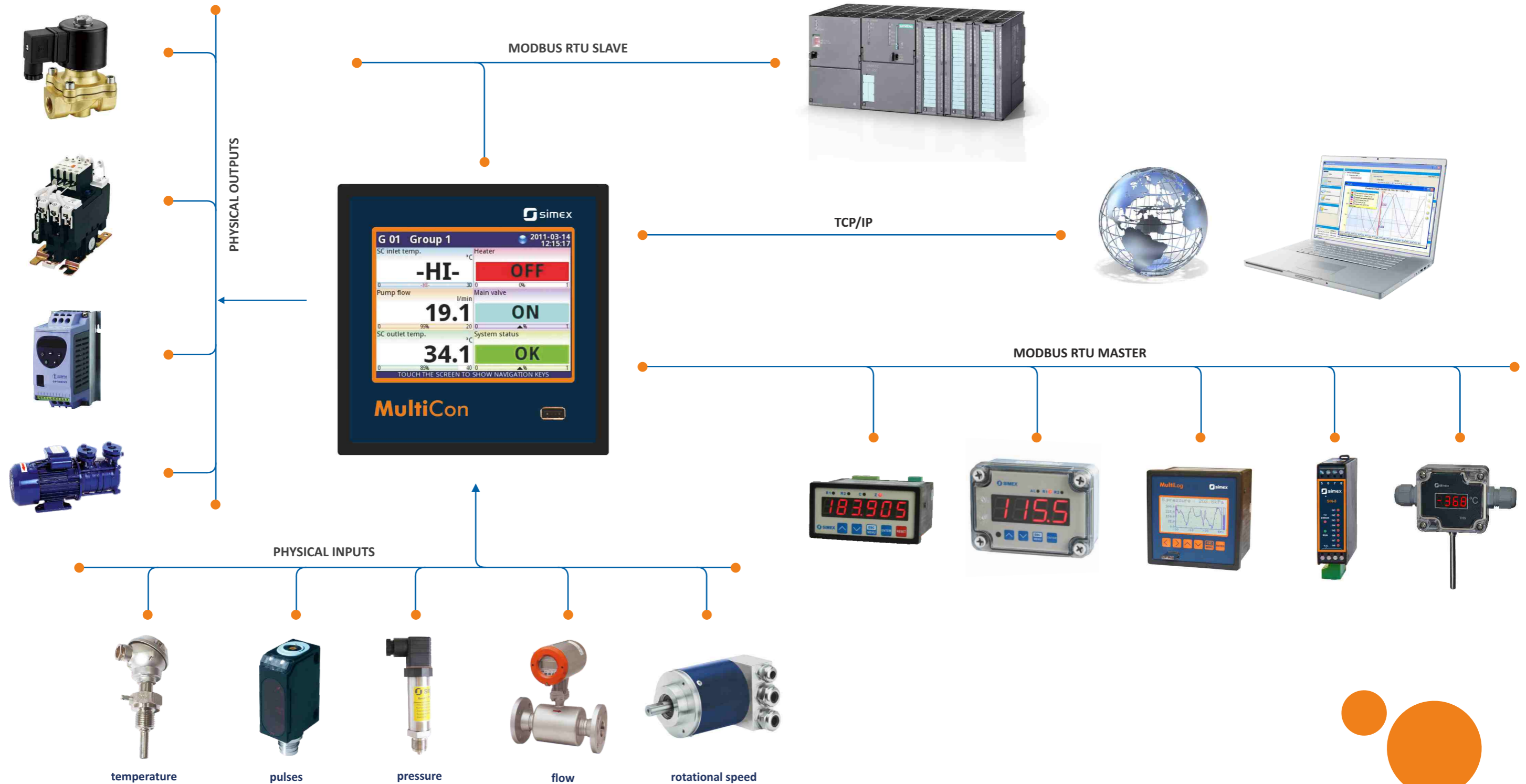
Manage a developed network of devices

MultiCon

For more demanding customers with many needs we have prepared the Advanced Communication Module (ACM). This module includes interfaces such as: Ethernet, USB Host, RS-485 and RS-485 shared with RS-232. This is why MultiCon CMC can offer up to 3 isolated RS-485 interfaces which compose the base for the MultiModbus System. Having such a big number of RS-485 interfaces at your disposal CMC can communicate with other devices in several independent networks. All the Modbus interfaces can work in both master and slave mode. By means of an Ethernet link the user can monitor operation of the entire system via the Internet from every place in the world where an Internet browser is within reach. Another way to monitor given data is to use the RS-485 interface along with PC software.

Some of the applications chosen by our customers:

- central temperature measurement and control system in buildings,
- control of a multi-zone furnace,
- control system for a pump station,
- control of sprinkles and heating system in a greenhouse.

MODBUS RTU SLAVE

PHYSICAL OUTPUTS

TCP/IP

MODBUS RTU MASTER

PHYSICAL INPUTS

G 01   Group 1   2011-03-14 12:15:17

SC inlet temp.   °C   Heater
-HI-   OFF
Pump flow   l/min   Main valve
19.1   ON
SC outlet temp.   °C   System status
34.1   OK
TOUCH THE SCREEN TO SHOW NAVIGATION KEYS

MultiCon

temperature   pulses   pressure   flow   rotational speed

Comfort in your every move

Colour LCD touchscreen

The time when you had to press buttons to move the cursor within a virtual keyboard to enter one character is long gone. Now you have colour touchscreens to use your device more efficiently and with higher level of comfort. The display reacts accurately even to a slight touch. But if you prefer a traditional keyboard and a USB mouse it's not a problem. Simply connect and use them. On the 3.5" TFT LCD (5.7" in CMC-141), 340 x 240 pixels, 65 536 colours - everything is clear and in pleasant colours.

## Download data in a comfortable way

The recorded data can be downloaded from the internal memory in a way which suits you best. Use a USB flashdrive or Ethernet which allows you to perform the task wherever you are. Current data can be downloaded via the Internet or a Modbus RTU link.

Really easy update

Thanks to the cooperation with our customers we can continue to develop the software and provide it with new useful functions. Interesting suggestions and needs of our customers have been contributing to better firmware. MultiCon CMC update means three easy steps: download the update free of charge from the website, send it to a USB flashdrive, start the procedure and it is done.

Use Java applets

An applet is software which can be opened by an Internet browser. It is possible to create your own website or use one of the templates included in MultiCon. This solution helps to visualize your system and display the data downloaded from CMC by means of Ethernet. Tank visualisations with bar graphs which indicate liquid level and pipes connected to the tanks with valves, valve state indicators and flow meters indicating flow speed or total liquid flow. This solution makes monitoring of the entire system much more transparent and pleasant.
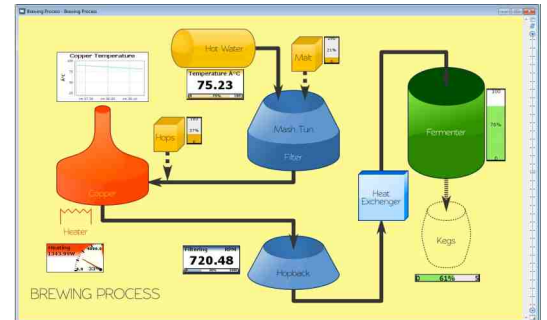
Measure, recalculate, control and display in your way

Recalculate any data according to your own functions. One result can be used as an argument of another function. For instance, current measurement from 8 channels and voltage from another 8 channels compose the result you require - total power from 8 objects. All data can be visualized in a range of ways: as numerical values, quasi-analog indicators, phasor charts, horizontal or vertical charts, horizontal or vertical bars or other meters.

Small is good but bigger is better

MultiCon CMC-141 is CMC-99's bigger brother. It has all features included in CMC-99, but in addition it has a bigger display, more inputs/outputs and even more virtual channels.

CMC-141 is equipped with a 5.7" LCD touchscreen, up to 72 physical measurement or digital inputs and 90 virtual channels. Casing depth is still only 100 mm.

144 mm · 144 mm · 100 mm
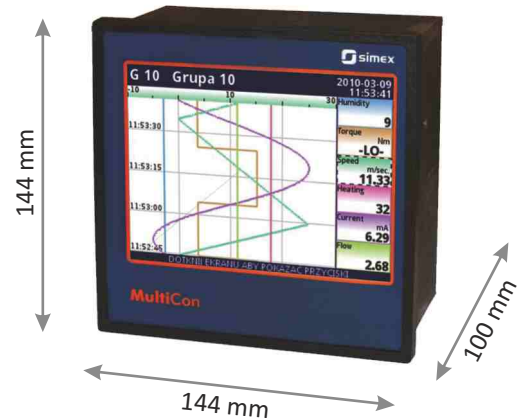
Special designs

Our offer also includes two interesting and special designs: MultiCon CMC built-in a portable case and panel or in-wall mount MultiCon CMC SL series.

MultiCon CMC built-in a P130 portable case is useful when it is not possible to mount a typical controller/recorder in a safe way. The case is durable and is certified with the IP 67 rate - the CMC inside is safe. Multi-pin sockets on side walls for connecting sensors and interfaces are designed according to the customer's requirements.

Panel or in-wall mount MultiCon CMC-99SL is featured by a shallow casing - only 50 mm! All connectors are introduced on side walls of the device as in a typical panel computer. As the number of measurement inputs and outputs is limited, this design in intended mainly for systems with a small number of signals or systems which include other measurement systems with Modbus RTU interface. An Ethernet interface is also available to upgrade every MultiCon control's application easily.

Accessories

STD-99, STD-141

A transparent door with IP54 rate and a key. The door and its frame are manufactured using the injection moulding technology which ensures that they fit perfectly. The material has been selected to eliminate corrosion and ensure maximum durability.

mini USB flashdrive MS

An unusually small and light USB flashdrive has been designed with easy storage and transport in mind. It fits perfectly the CMC-99 controller's casing with closed IP54 rate door.

DAQ Manager

Software for managing the recorded data. Its fully functional and free of charge version can be downloaded from our website or ordered as a payable CD-ROM version.

SRH-99, SRH-141

Assembly brackets for installation of the MultiCon e.g. in control cabinets with typical 35 mm bus bars.

Specification

	CMC-99	CMC-141
Power supply/consum.	19 - 50V DC, 16 - 35V AC or 85 - 260V AC/DC, typ. 15 VA, max. 20 VA	19 - 50V DC, 16 - 35V AC or 85 - 260V AC/DC, typ. 25 VA, max. 35 VA
Display	3.5" graphic TFT, 16-bit colour, 320 x 240 pxs, touchscreen navigation	5.7" graphic TFT, 16-bit colour, 320 x 240 pxs, touchscreen navigation
Measurement inputs	• up to 9 universal, isolated: 0/4÷20 mA, 0/1÷5V, 0/2÷10V; thermocouples: J, K, S, T, N, R, B, E (PN-EN), L (GOST); -10 ÷ 25 mV, -10 ÷ 100 mV, 0 ÷ 600 mV, Pt100, Pt500, Pt1000 (PN-EN), Pt'50, Pt'100, Pt'500 (GOST), Ni100, Ni500, Ni1000 (PN-EN), Cu50, Cu100 (PN-83M-53852), Cu'50, Cu'100 (PN-83M-53852); resistance 0 ÷ 300 Ω, resistance 0 ÷ 3 kΩ • up to 48 analogue: 0/4 ÷ 20 mA, 0/1 ÷ 5V, 0/2 ÷ 10V • up to 48 digital • up to 24 thermocouples: J, K, S, T, N, R, B, E (PN-EN); L (GOST); ± 25 mV, ± 100 mV, -10 ÷ 25 mV, -10 ÷ 100 mV • up to 12 RTD: Pt100, Pt500, Pt1000 (PN-EN); Pt'50, Pt'100, Pt'500 (GOST); Ni100, Ni500, Ni1000 (PN-EN); Cu50, Cu100 (PN-83M-53852); Cu'50, Cu'100 (PN-83M-53852); resistance 0 ÷ 300 Ω, resistance 0 ÷ 3 kΩ • up to 12 counters / flowmeters / ratemeters: 0/4 ÷ 20 (1/sek.), 0/4 ÷ 20 (1/min.), 0/4 ÷ 20 (1/godz.)	• up to 15 universal, isolated: 0/4÷20 mA, 0/1÷5V, 0/2÷10V; thermocouples: J, K, S, T, N, R, B, E (PN-EN), L (GOST); -10 ÷ 25 mV, -10 ÷ 100 mV, 0 ÷ 600 mV, Pt100, Pt500, Pt1000 (PN-EN), Pt'50, Pt'100, Pt'500 (GOST), Ni100, Ni500, Ni1000 (PN-EN), Cu50, Cu100 (PN-83M-53852), Cu'50, Cu'100 (PN-83M-53852); resistance 0 ÷ 300 Ω, resistance 0 ÷ 3 kΩ • up to 72 analogue: 0/4 ÷ 20 mA, 0/1 ÷ 5V, 0/2 ÷ 10V • up to 72 digital • up to 36 thermocouples: J, K, S, T, N, R, B, E (PN-EN); L (GOST); ± 25 mV, ± 100 mV, -10 ÷ 25 mV, -10 ÷ 100 mV • up to 18 RTD: Pt100, Pt500, Pt1000 (PN-EN); Pt'50, Pt'100, Pt'500 (GOST); Ni100, Ni500, Ni1000 (PN-EN); Cu50, Cu100 (PN-83M-53852); Cu'50, Cu'100 (PN-83M-53852); resistance 0 ÷ 300 Ω, resistance 0 ÷ 3 kΩ • up to 12 counters / flowmeters / ratemeters: 0/4 ÷ 20 (1/sek.), 0/4 ÷ 20 (1/min.), 0/4 ÷ 20 (1/godz.)
Digital input	• 1 x 24V DC, optocoupled *	• 1 x 24V DC, optocoupled *
Outputs	- up to 8 analogue (4-20 mA) - up to 16 relay 1A/250V - up to 4 relay 5A/250V - up to 16 SSR	- up to 24 analogue (4-20 mA) - up to 36 relay 1A/250V - up to 18 relay 5A/250V - up to 72 SSR
Sensor supply	1 x 24V DC ±5%, 200 mA max.	1 x 24V DC ±5%, 200 mA max.
Communication interface	**Basic** version: RS-485, 1 x USB Host (front or back), **ETU**: 1 or 2 x USB Host, 1 x Ethernet 10 MB **ACM**: 2 x RS-485, 1 x RS-485/232, 1 or 2 x USB Host, 1 x Eth. 10 MB Protocols: Modbus RTU Master or Slave, Modbus TCP Server, HTTP	**Basic** version: RS-485, 1 x USB Host (front or back), **ETU**: 1 or 2 x USB Host, 1 x Ethernet 10 MB **ACM**: 2 x RS-485, 1 x RS-485/232, 1 or 2 x USB Host, 1 x Eth. 10 MB Protocols: Modbus RTU Master or Slave, Modbus TCP Server, HTTP
IP rate protection	IP 65 or IP 40 (version with front USB), options: IP 65 frame for panel cut-out sealing and transparent door with key (IP 54)	IP 65 or IP 40 (version with front USB), options: IP 65 frame for panel cut-out sealing and transparent door with key (IP 54)
Data memory	internal 1.5 GB	internal 1.5 GB
Operating temperature Storage temperature	0°C ... +50°C (optional -20°C ... +50°C) -10°C ... +70°C (optional -20°C ... +70°C)	0°C ... +50°C (optional -20°C ... +50°C) -10°C ... +70°C (optional -20°C ... +70°C)
Case dimensions - panel cut-out	96 x 96 x 100 mm 90,5 x 90,5 mm	144 x 144 x 100 mm 137 x 137 mm
Installation depth Panel thickness	102 mm min. 5 mm max. (optional 45 mm max. using SPH-45 brackets)	102 mm min. 5 mm max. (optional 45 mm max. using SPH-45 brackets)

available in standard, integrated with PS3/PS32 or PS4/PS42 power supply module

MultiCon

MultiCon CMC-XX-P/D/C/B/A-XX1

version:
99 : 96 x 96 mm case
141 : 144 x 144 mm case

slot P - power supply module
slot D - communication module

options:
00: no options
01: IP 65
0B: front USB Host (IP 40)

slot A - I/O module
slot B - I/O module
slot C - I/O module

} available modules listed below

Module type	Description	MultiCon CMC-99					MultiCon CMC-141				
		slot P	slot D	slot C	slot B	slot A	slot P	slot D	slot C	slot B	slot A
PS3X	power supply 19 ÷ 50V DC, 16 ÷ 35V AC	●					●				
PS42	power supply 85 ÷ 260V AC/DC	●					●				
E	no communication module (available for 0B option only)		●					●			
ETU	communication module (1 x USB Host, 1 x Ethernet 10 MB)		●					●			
ACM	advanced communication module, includes: 1 x RS-485, 1 x RS-485/232, 1 x USB Host, 1 x Ethernet 10 MB)		●					●			
USB	USB port (back)		●					●			
E	empty slot			●	●	●			●	●	●
UN3	3 universal inputs U/I/RTD/TC/mV, isolated			●	●	●			●	●	●
UN5	5 universal inputs U/I/RTD/TC/mV, isolated								●	●	●
I16	16 x current inputs			●	●	●			●	●	●
I24	24 x current inputs								●	●	●
IS6	6 x current (4-20 mA) inputs, isolated			●	●	●			●	●	●
U16	16 x voltage inputs			●	●	●			●	●	●
U24	24 x voltage inputs								●	●	●
UI4	4 x voltage inputs + 4 x current inputs			●	●	●			●	●	●
UI8	8 x voltage inputs + 8 x current inputs			●	●	●			●	●	●
UI12	12 x voltage inputs + 12 x current inputs								●	●	●
RT4	4 x RTD inputs			●	●	●			●	●	●
RT6	6 x RTD inputs								●	●	●
TC4	4 x TC inputs			●	●	●			●	●	●
TC8	8 x TC inputs			●	●	●			●	●	●
TC12	12 x TC inputs								●	●	●
D8	8 x digital inputs, isolated			●	●	●			●	●	●
D16	16 x digital inputs, isolated			●	●	●			●	●	●
D24	24 x digital inputs, isolated								●	●	●
CP2	2 x pulse inputs, universal counters, isolated			●	●	●			●	●	●
CP4	4 x pulse inputs, universal counters, isolated			●	●	●			●	●	●
HM2	2 x hourmeters, isolated			●	●	●			●	●	●
HM4	4 x hourmeters, isolated			●	●	●			●	●	●
FT2	2 x pulse inputs (flowmeter/ratemeter), isolated + 2 x current inputs			●	●	●			●	●	●
FT4	4 x pulse inputs (flowmeter/ratemeter), isolated + 4 x current inputs			●	●	●			●	●	●
FI2	2 x current inputs (flowmeter/ratemeter) + 2 x current inputs			●	●	●			●	●	●
FI4	4 x current inputs (flowmeter/ratemeter) + 4 x current inputs			●	●	●			●	●	●
R81	8 x SPST relay 1A outputs			●	●[A]				●	●	●
R121	12 x SPST relay 1A outputs								●	●	●
R45	4 x SPDT relay 5A outputs			●					●	●	●
R65	6 x SPDT relay 5A outputs								●	●	●
S8	8 x SSR driver outputs			●	●	●[B]			●		●[B]
S16	16 x SSR driver outputs			●	●[B]	●[B]			●	●[B]	●[B]
S24	24 x SSR driver outputs								●	●[B]	●[B]
IO2	2 x 4-20 mA outputs, isolated			●	●				●	●	●
IO4	4 x 4-20 mA outputs, isolated			●	●				●	●	●
IO6	6 x 4-20 mA outputs, isolated								●	●	●
IO8	8 x 4-20 mA outputs, isolated								●	●	●

[A] The installation of the R81 module in slot B only in the case where in the slot C another relay module (R81 or R45) was installed.

[B] Available for PS32 and PS42 power supplies only