

## Measure, Control and Log Data

CMC-99



CMC-141

...smaller and BIGGER brother

# 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.



# MultiCon

## 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. The picture below presents one of the configuration sets most often ordered by our customers – it includes all that is needed. 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.

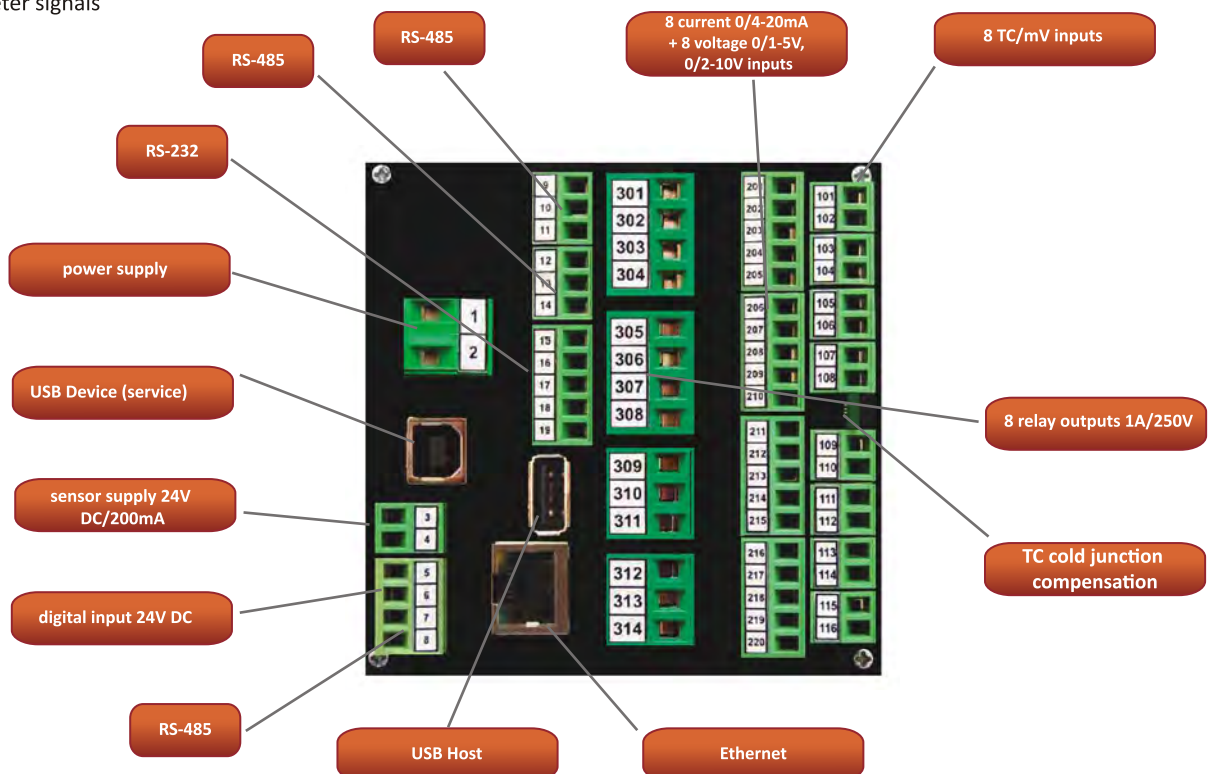
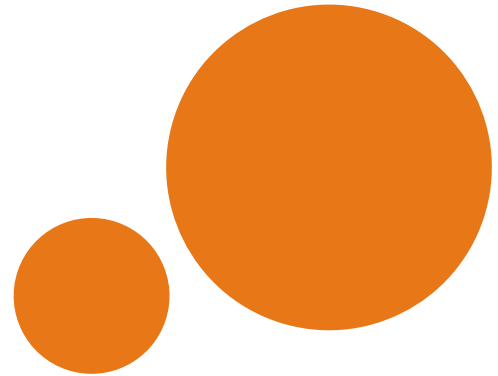
What if one day you want to change your configuration, add new modules or change their slots? That's not a problem! All you have to do is to send your device to an authorized distributor who will perform the changes you require. We offer:

### the following inputs:

- universal
- voltage
- current
- thermocouple
- RTD
- digital
- counting
- flow measurement
- tachometer signals

### the following outputs:

- relay
- SSR
- current (4-20 mA) signals



# Controller...

One of the most important functions of MultiCon CMC is control. Besides the usual ON/OFF control 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.

## 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.

## 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.

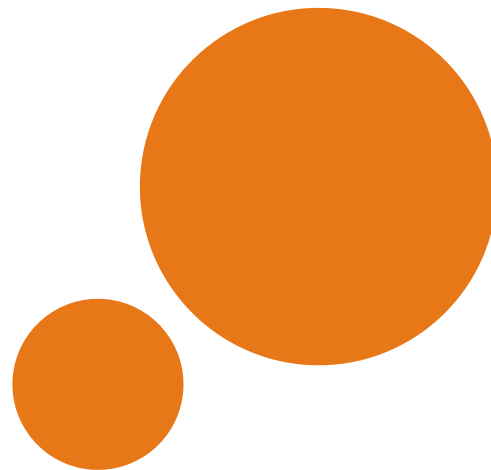


# MultiCon

...and a recorder in the same package

1.5 GB for data!

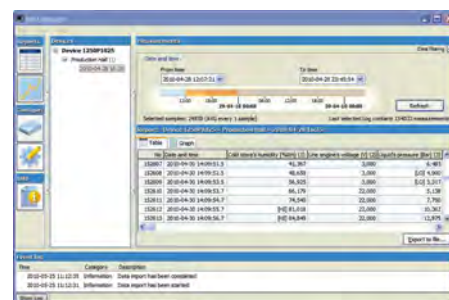
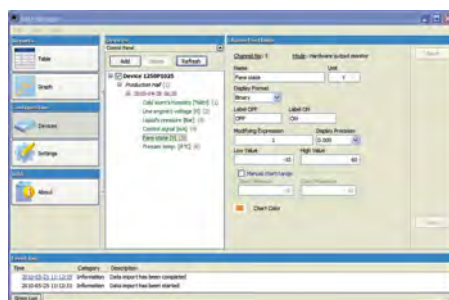
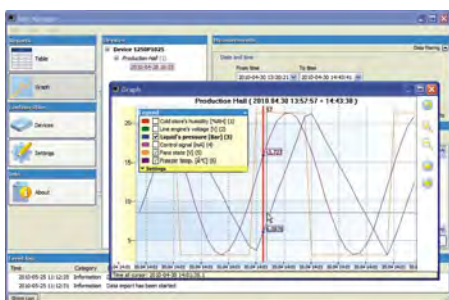
Every MultiCon can also work as a data recorder. Its internal memory of 1.5 GB can store over 125,000,000 samples. It means that even if intense sampling mode (every second) is selected, you can record data from 24 channels for 2 months. Recording is available after purchase of a licence key but you 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.



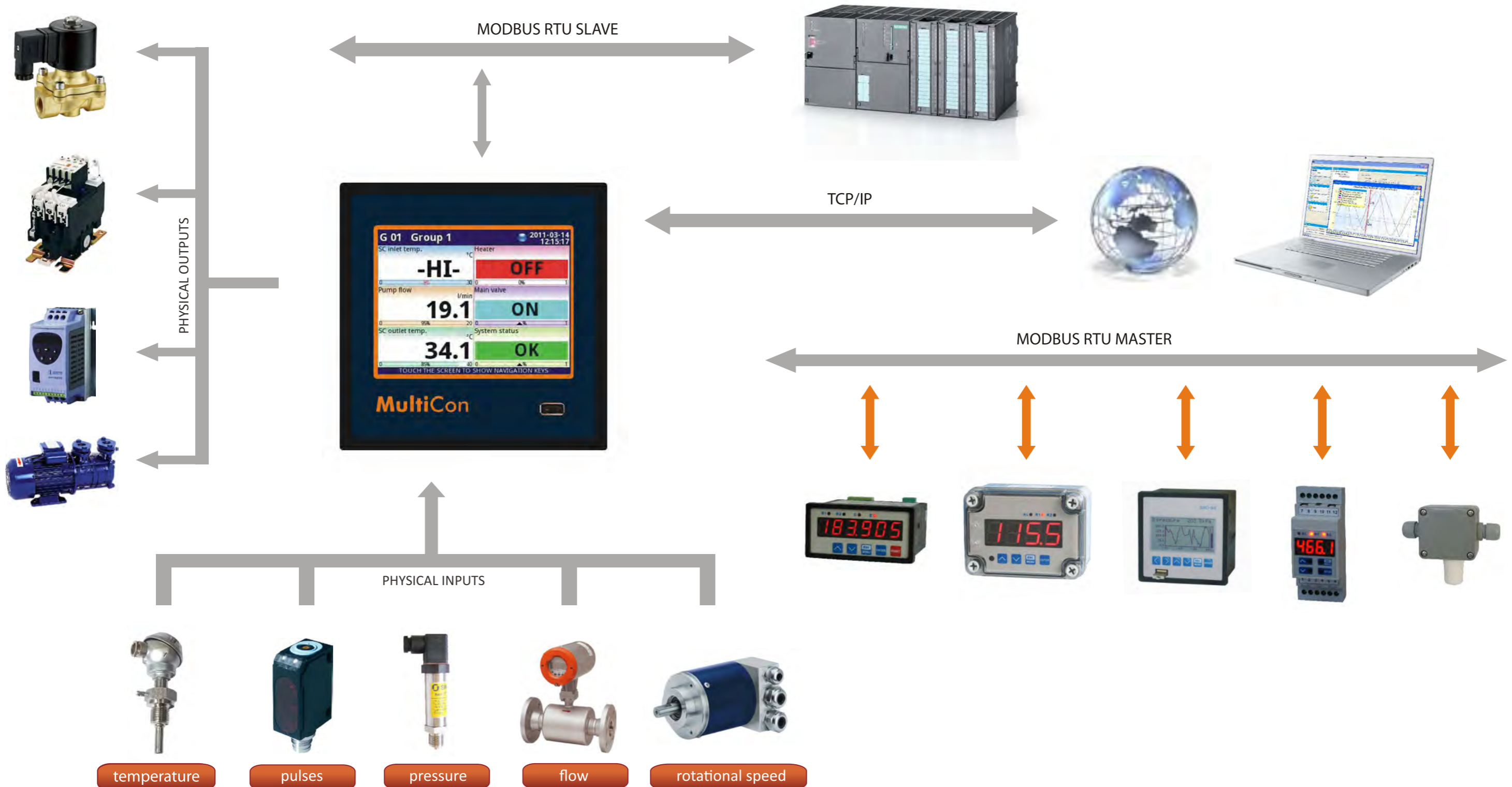
# Manage a developed network of devices

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.

# MultiCon

## 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



# 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.



# Comfort in your every move

# 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 pen drive 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 pen drive, 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

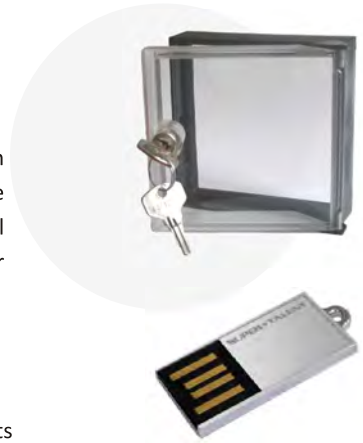
Recalculate any data according to your own functions. One result can be used as an argument of another function. For instance, current measurement from 8 channels and voltage from another 8 channels compose the result you require – total power from 8 objects. All data can be visualized in a range of ways: as digits, needles, bar graphs or other meters.



# 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. The IP54 rate has been obtained by using a soft rubber seal placed around the casing. A special assembly method makes the door stop in a determined position after opening. The door cannot be opened by unauthorized people without force or tools.



## Mini pen drive

An unusually small and light pen drive 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

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

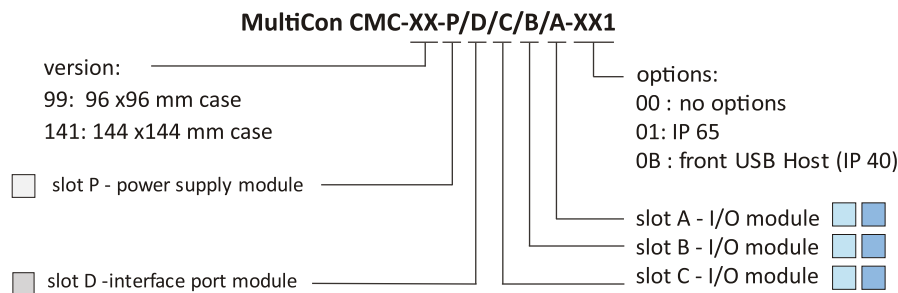
Assembly holders for installation of the MultiCon devices e.g. in control cabinets with typical 35 mm bus bars.

# Specification

	CMC-99	CMC-141
<b>Power supply</b>	19V ÷ 50V DC; 16V ÷ 35V AC or 85 ÷ 260V AC/DC, all separated	19V ÷ 50V DC; 16V ÷ 35V AC or 85 ÷ 260V AC/DC, all separated
<b>Power consumption</b>	15 VA typical; 20 VA max.	15 VA typical; 20 VA max.
<b>Display</b>	3.5" graphic TFT, 16-bit colour, 320 x 240 pixels, touchscreen navigation	5,7" graphic TFT, 16-bit colour, 320 x 240 pixels, touchscreen navigation
<b>Measuring inputs</b>	<ul style="list-style-type: none"> <li>- up to 48 analogue inputs (0/4-20 mA, 0/1-5V or 0/2-10V)</li> <li>- up to 24 TC inputs (J, K, S, T, N, R, B, E)</li> <li>- up to 12 RTD inputs</li> <li>- up to 9 universal inputs (U/I/RTD/TC/mV)</li> <li>- up to 48 digital inputs</li> <li>- up to 12 counter inputs</li> <li>- up to 12 flowmeter/ratemeter inputs</li> </ul>	<ul style="list-style-type: none"> <li>- up to 72 analogue inputs (0/4-20 mA, 0/1-5V or 0/2-10V)</li> <li>- up to 36 TC inputs (J, K, S, T, N, R, B, E)</li> <li>- up to 18 RTD inputs</li> <li>- up to 15 universal inputs (U/I/RTD/TC/mV)</li> <li>- up to 72 digital inputs</li> <li>- up to 18 counter inputs</li> <li>- up to 18 flowmeter/ratemeter inputs</li> </ul>
<b>Digital inputs</b>	1x 24 V DC, optocoupled	1x 24 V DC, optocoupled
<b>Outputs</b>	<ul style="list-style-type: none"> <li>- up to 8 analog outputs (4-20 mA)</li> <li>- up to 16 relay outputs 1 A/250 V</li> <li>- up to 4 relay outputs 5 A/250 V</li> <li>- up to 16 SSR driver</li> </ul>	<ul style="list-style-type: none"> <li>- up to 18 analog outputs (4-20 mA)</li> <li>- up to 36 relay outputs 1 A/250 V</li> <li>- up to 18 relay outputs 5 A/250 V</li> <li>- up to 72 SSR driver</li> </ul>
<b>Sensor supply</b>	24 V DC ± 5% (200 mA max.)	24 V DC ± 5% (200 mA max.)
<b>Communication interface</b>	<ul style="list-style-type: none"> <li>- standard: RS-485, USB Host, USB Device (service)</li> <li>- enhanced version (incl. ACM module): 2x RS-485, 1x RS-485/RS-232, 1 or 2x USB Host, 1x USB Device (service), 1x Ethernet 10 MB</li> </ul>	<ul style="list-style-type: none"> <li>- standard: RS-485, USB Host, USB Device (service)</li> <li>- enhanced version (incl. ACM module): 2x RS-485, 1x RS-485/RS-232, 1 or 2x USB Host, 1x USB Device (service), 1x Ethernet 10 MB</li> </ul>
<b>IP rate protection</b>	<ul style="list-style-type: none"> <li>- IP65 (front), available additional frame IP65 for panel cut-out sealing</li> <li>- version with front USB: IP40, IP54 (when fitted with STD-99 transparent door)</li> </ul>	<ul style="list-style-type: none"> <li>- IP65 (front), available additional frame IP65 for panel cut-out sealing</li> <li>- version with front USB: IP40, IP54 (when fitted with STD-99 transparent door)</li> </ul>
<b>Data memory</b>	internal 1,5 GB	internal 1,5 GB
<b>Working temperature</b>	0°C ÷ +50°C	0°C ÷ +50°C
<b>Storage temperature</b>	-10°C ÷ +70°C	-10°C ÷ +70°C
<b>Case dimensions</b>	96 x 96 x 100 mm	144 x 144 x 100 mm
<b>Panel cut-out dimensions</b>	90,5 x 90,5 mm	138,5 x 138,5 mm
<b>Installation depth</b>	102 mm min.	102 mm min.
<b>Panel thickness</b>	5 mm max. (optional 45 mm max. using SPH-45 holders)	5 mm max. (optional 45 mm max. using SPH-45 holders)



## Ordering



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
PS3	power supply 19÷50V DC, 16÷35V AC	•					•				
PS4	power supply 85÷260V AC/DC	•					•				
E	no communication module (available for 0B option only)		•					•			
USB	port USB (rear)		•					•			
ACM	Advanced Communication Module includes 1 x RS-485, 1 x RS-485/232, 1 x USB Host, 1 x Ethernet 10 MB		•					•			
E	empty slot			•	•	•			•	•	•
UN3	3 universal inputs, isolated (U/I/RTD/TC/mV)			•	•	•			•	•	•
UN5	5 universal inputs, isolated (U/I/RTD/TC/mV)								•	•	•
UI4	4 x voltage input + 4 x current input			•	•	•			•	•	•
UI8	8 x voltage input + 8 x current input			•	•	•			•	•	•
UI12	12 x voltage input + 12 x current input								•	•	•
U16	16 x voltage input			•	•	•			•	•	•
U24	24 x voltage input								•	•	•
I16	16 x current input			•	•	•			•	•	•
I24	24 x current input								•	•	•
RT4	4 x RTD input			•	•	•			•	•	•
RT6	6 x RTD input								•	•	•
TC4	4 x TC/mV input			•	•	•			•	•	•
TC8	8 x TC/mV input			•	•	•			•	•	•
TC12	12 x TC/mV input								•	•	•
D8	8 x digital input			•	•	•			•	•	•
D16	16 x digital input			•	•	•			•	•	•
D24	24 x digital input								•	•	•
CP4	4 x pulse input (universal counters)			•	•	•			•	•	•
FT4	4 x pulse input (flowmeters / ratemeters) + 4 x current input			•	•	•			•	•	•
FI4	4 x current input (flowmeters) + 4 x current input			•	•	•			•	•	•
R81*	8 x SPST relay 1A			•	•				•	•	•
R121	12 x SPST relay 1A								•	•	•
R45*	4 x SPDT relay 5A			•					•	•	•
R65	6 x SPDT relay 5A								•	•	•
S8	8 x SSR driver			•					•	•	•
S16	16 x SSR driver			•					•	•	•
S24	24 x SSR driver								•	•	•
IO2	2 x 4-20 mA output			•	•				•	•	•
IO4	4 x 4-20 mA output			•	•				•	•	•
IO6	6 x 4-20 mA output								•	•	•

\* R81 and R45 output modules for CMC-99 must be installed in slot C only.

If 2 of the relay outputs are needed, than the modules must be installed in slots C and B.

An example: MultiCon CMC-99-PS4/USB/R81/UI8/TC8-0B1