Condition Monitoring Unit
CMU 1000

Programmable | **8 analogue inputs**

Ethernet interface

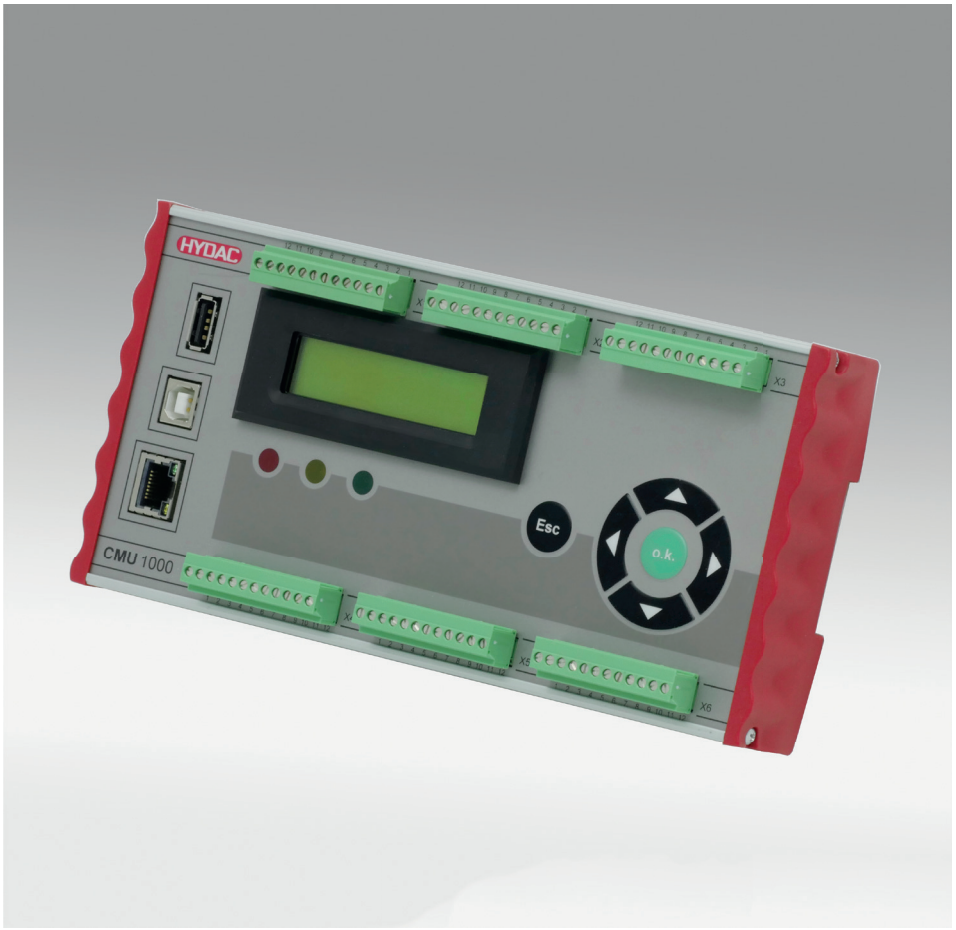
Description:

The CMU 1000 is an electronic evaluation unit designed for permanent online condition monitoring of machines and systems. In order to achieve this, the device must be supplied with relevant data which is recorded by the sensors connected to it.

This recorded data (processed or unprocessed) can be transferred by the CMU 1000 via different interfaces or as an analogue value to other devices and/or monitoring levels.

The CMU 1000 processes the application program stored in it continuously and cyclically like a PLC. The user creates this program simply and conveniently on a PC using the **CM Editor** developed for this purpose and then uploads it to the CMU 1000.

The **CM Editor** is part of the HYDAC PC software **CMWIN Version V03 or higher** (supplied) and it provides the various tools and functions in accordance with IEC 61131 for designing, integrating and testing the user program using “drag and drop” operations. The device is equipped with a background-lit LCD display as well as three different-coloured LEDs for the status display and presentation of messages and values. The CMU 1000 is operated and data is input on site using a built-in key pad within the menu structure of the device. The CMU 1000 is designed for use in machines in both the stationary and mobile sectors. It is possible to connect easily to higher-level control, monitoring and bus systems using the built-in interfaces or in combination with an additional coupling module.



Special features:

- 8 input channels for HSI or SMART sensors
- 8 input channels for analogue sensors
- 4 input channels for digital signals
- 2 output channels for analogue signals
- 4 relay switching outputs with changeover contacts
- USB slave interface for PC connection
- USB Master interface for storing the measured data on a commercially available USB memory stick.
- Ethernet interface
- RS 232 interface
- 2-line LCD display (2 x 16 characters) for display of measured data and status and/or error messages
- 3 freely programmable, different-coloured LEDs for status display (red, yellow, green)
- Simple operation via navigation cross
- Creation of customised application programs using the PC software CMWIN supplied

Technical data:

Supply		
Input voltage	18.0 .. 35.0 V DC	
Current consumption	max. 1.5 A	
Reverse polarity protection	-30 V	
Insulation voltage	+40 V	
Connection of sensors	Up to 8 sensors with HSI functionality or up to 8 SMART sensors [1] and in addition up to 8 analogue sensors and up to 4 digital sensors 4 x digital / 2 x digital + 2 x frequency / 3 x digital + 1 x frequency	
Analogue inputs		
Channels I and J (accuracy)	4 .. 20 mA 0 .. 20 mA 0.5 .. 4.5 V 0 .. 10 V	(≤ ± 0.1 % FS max.) (≤ ± 0.1 % FS max.) (≤ ± 0.1 % FS max.) (≤ ± 0.1 % FS max.)
Channels K and L (accuracy)	4 .. 20 mA 0 .. 20 mA 0.5 .. 4.5 V 0 .. 50 V -10 .. +10 V	(≤ ± 0.1 % FS max.) (≤ ± 0.1 % FS max.) (≤ ± 0.1 % FS max.) (≤ ± 0.1 % FS max.) (≤ ± 0.2 % FS max.) L only!
Channels M and N (accuracy)	4 .. 20 mA 0 .. 20 mA 0.5 .. 4.5 V	(≤ ± 0.1 % FS max.) (≤ ± 0.1 % FS max.) (≤ ± 0.1 % FS max.)
Channels O and P (accuracy)	4 .. 20 mA 0 .. 20 mA 0.5 .. 4.5 V -10 .. +10 V	(≤ ± 0.1 % FS max.) (≤ ± 0.1 % FS max.) (≤ ± 0.1 % FS max.) (≤ ± 0.2 % FS max.) P only!
Digital inputs		
Quantity	4, of which 2 are for frequency measurements (channels Q and R)	
Trigger threshold	approx. 2 V	
Dynamics	30 kHz	
Measurement channels		
Quantity	32 – one measurement channel can be a value of a connected sensor (also a subchannel of a SMART sensor) or a value derived (calculated) from sensor data.	
Analogue outputs		
Quantity	2	
Type	Individually selectable, current (4 .. 20 mA) or voltage (0 .. 10 V)	
Digital outputs		
Quantity	4	
Type	Relay output, change-over contact	
Switching capacity	30 V DC / 1 A	
Calculation unit		
Analogue value recording	12 bit A/D converter	

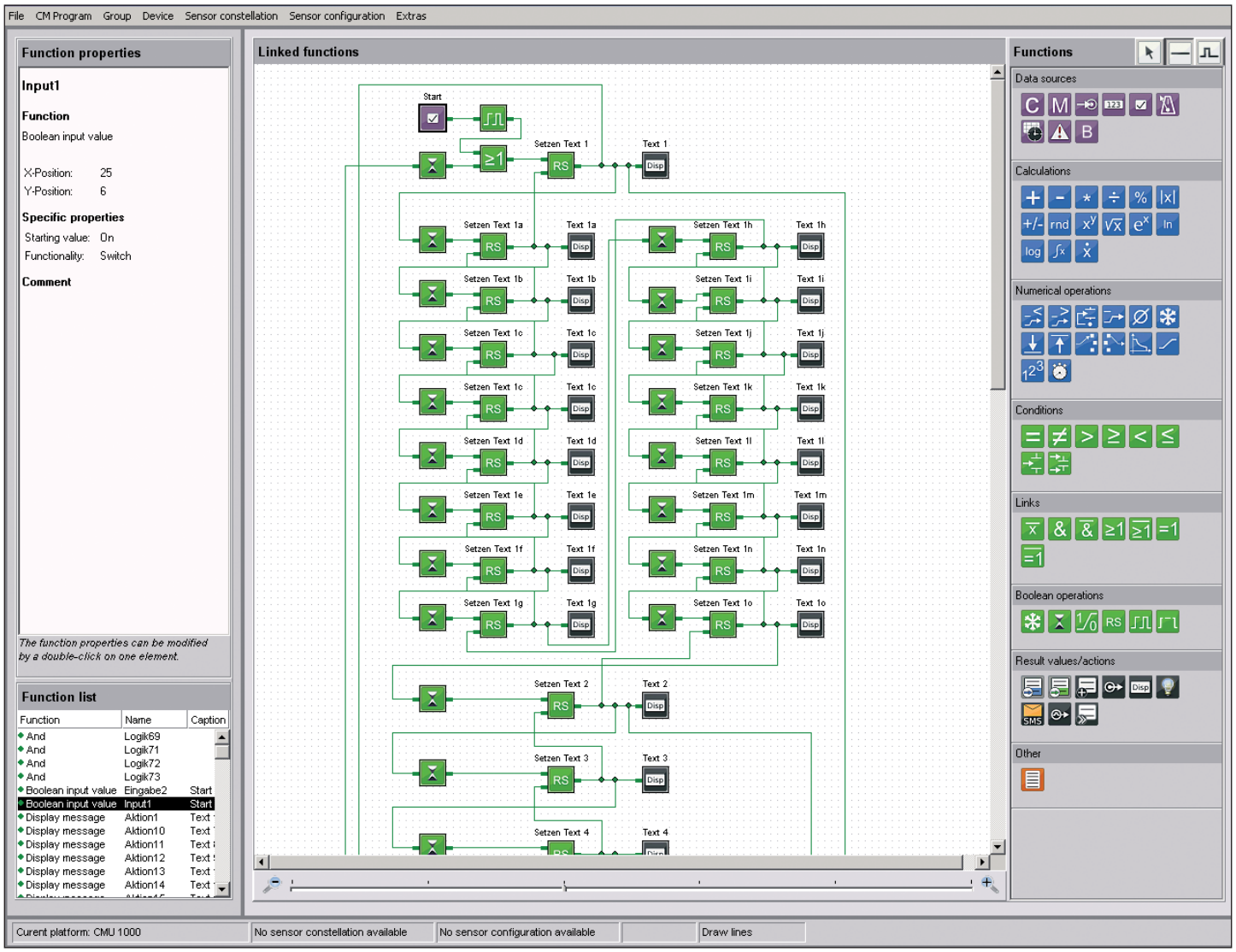
Note: [1] SMART sensors (Condition Monitoring Sensors) are a generation of sensors from HYDAC which can provide a variety of different measured values.

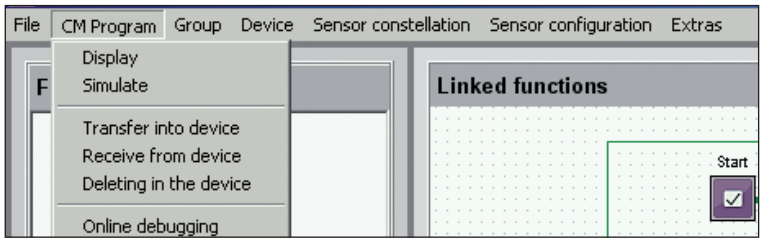
Interfaces	
Keypad	● 4 arrow keys (up, down, right, left) ● OK key ● ESC key
Display (with LED backlight)	● Two-line LCD display (2 x 16 characters) ● Additional display of status information via 3 different-coloured LEDs possible
USB mass storage device [2]	● USB 1.1 / USB 2.0 full speed interface for connection of a mass storage device (memory stick) ● Female connection type “A”.
Ethernet, supported protocols	● RJ 45 8/8 Ethernet interface ● HTTP Server ● TCP/IP
Serial Interface 0 (UART 0)	● Implementing an RS 232 or an HSI master interface ● Change-over user-programmable ● Connection via plug-in terminals ● No handshake lines
HSI Master	Cascading the CMU
USB device	● USB 1.1 / USB 2.0 full speed interface for connecting a PC/laptop for configuration of the CMU ● Female connection type “B”.
Cycle time	
Determined independantly at program start Current cycle time can be displayed in CM Editor	
Operating and environmental conditions	
Operating temperature	-20 .. +70 °C
Storage temperature	-30 .. +80 °C
Relative humidity	0 .. 70 %, non-condensing
Dimensions and weight	
Dimensions	approx. 212 x 106 x 36 mm
Weight	approx. 600 g
Technical standards	
EMC	EN 61000-6-1 / 2 / 3 / 4
Safety	EN 61010
Protection class	IP 40

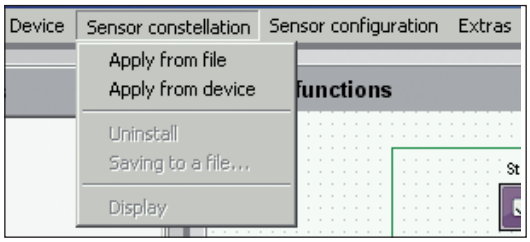
Note.: [2] Recorded data from the CMU can be transferred to a memory stick via this interface. The USB host supports exclusively mass storage devices.

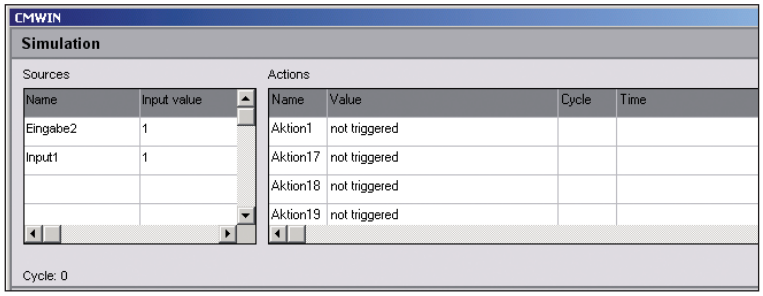
CM Editor:

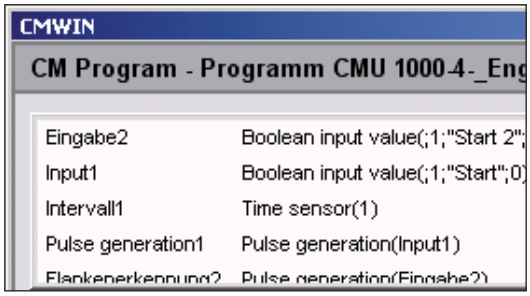
The CM Editor is part of the HYDAC PC software **CMWIN**, Version 03 or higher, and provides a wide variety of tools and functions for designing, integrating and testing the application program. An application program consists of many individual functions which can be linked together. During subsequent operation, this user program is processed as for a PLC, cyclically. The program is created according to the IEC 61131 (the standard for PLC programming).



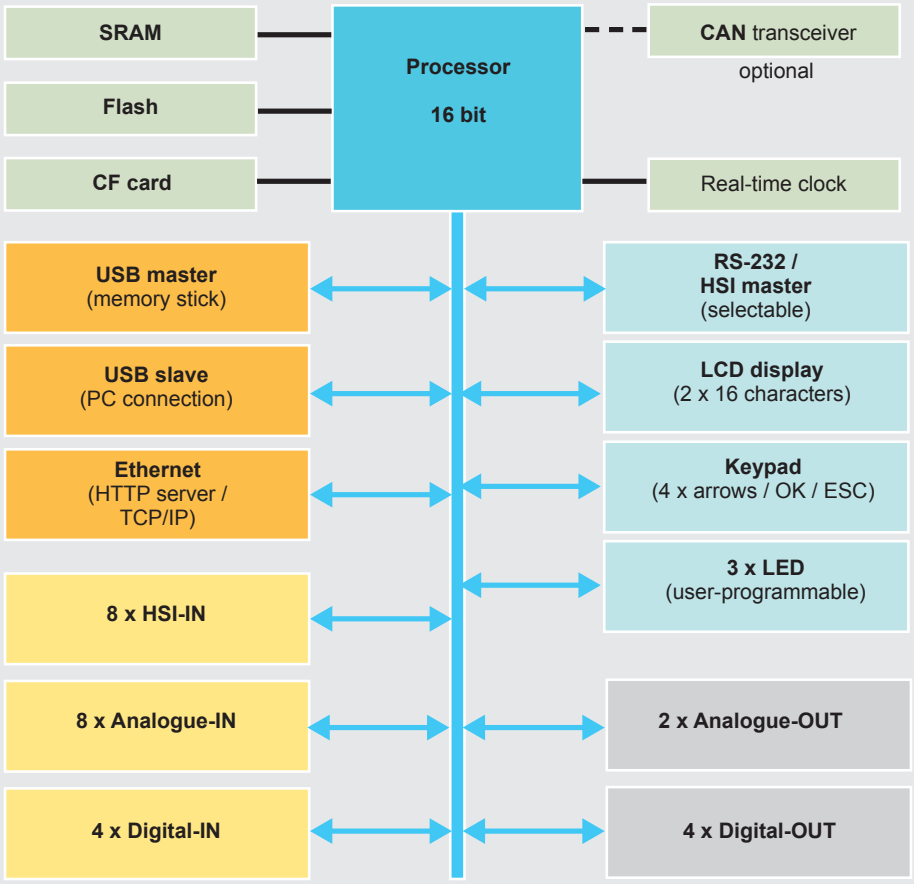




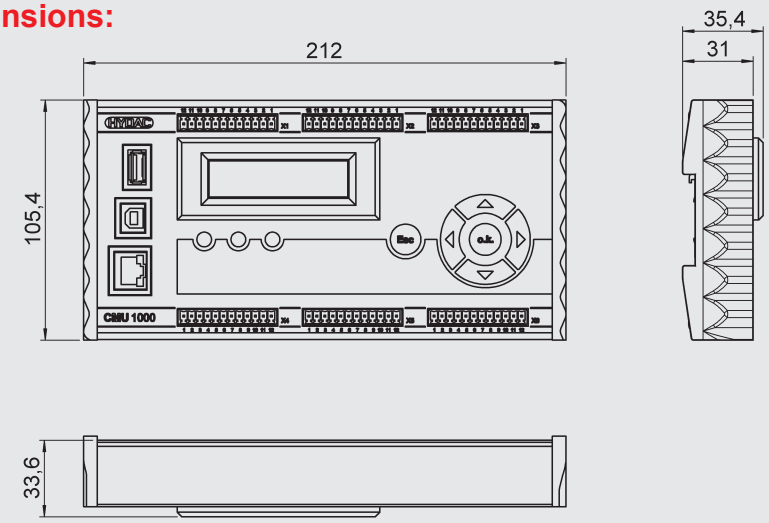




Block circuit diagram:



Dimensions:



Model code:

CMU 1000 – 000 – X

Modification number
000 = standard

User interface and documentation
D = German
E = English
F = French

Accessories:
Appropriate accessories, such as sensor lines for the electrical connection, can be found in the Accessories brochure.

Note:

The information in this brochure relates to the operating conditions and applications described.

For applications or operating conditions not described, please contact the relevant technical department.

Subject to technical modifications.

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