Condition Monitoring Unit
CMU 1000

Description:

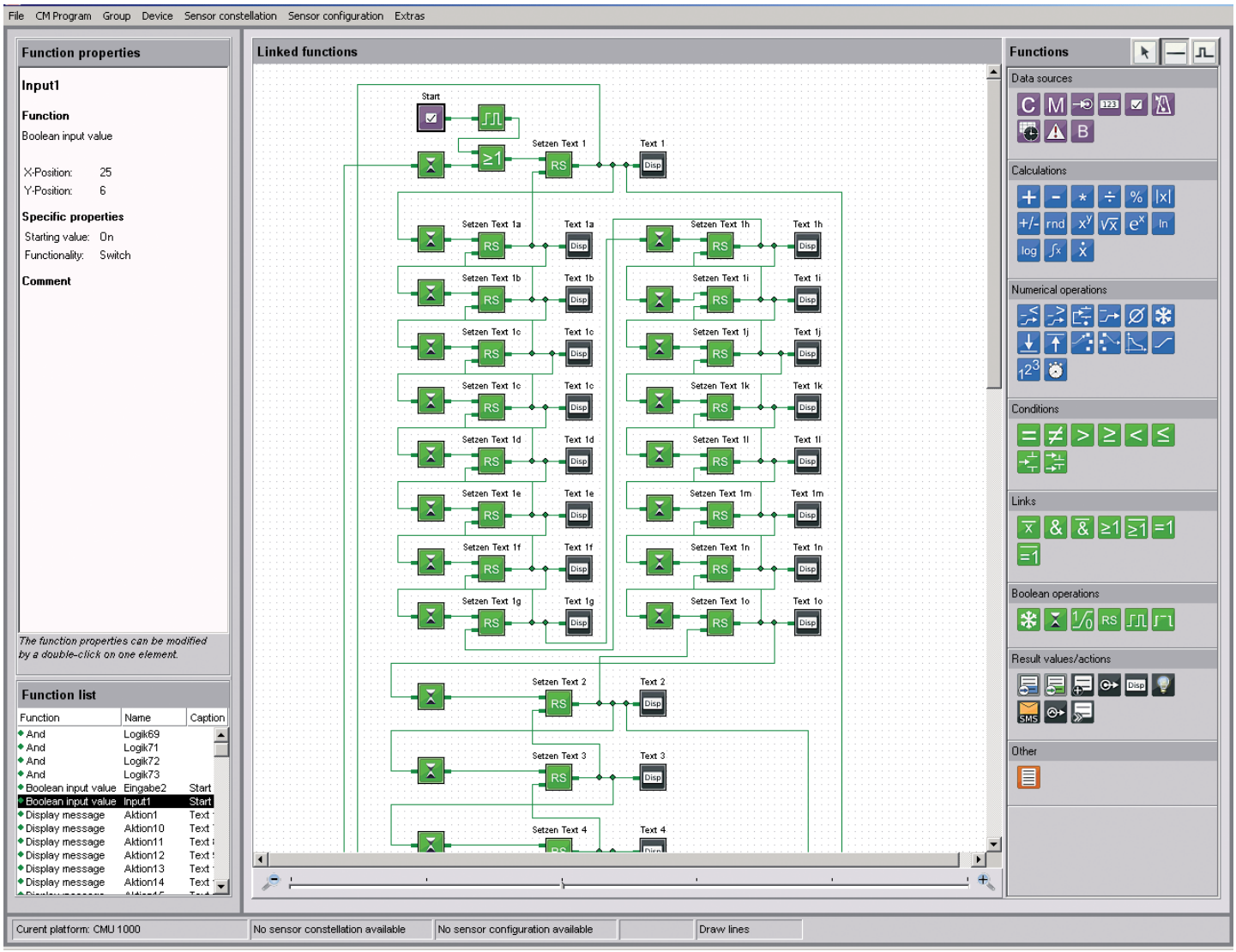
The CMU1000 is an electronic evaluation unit designed for permanent online condition monitoring of machines and systems.
In order to achieve this, the device must be supplied with relevant data which is recorded by the sensors connected to it. This recorded data (processed or unprocessed) can be transferred by the CMU 1000 via different ports 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.
For status indication and for displaying messages and values on the device itself, there is a back-lit LCD display and three different coloured LEDs.
The CMU 1000 is operated and data is input on site using a built-in keypad 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.

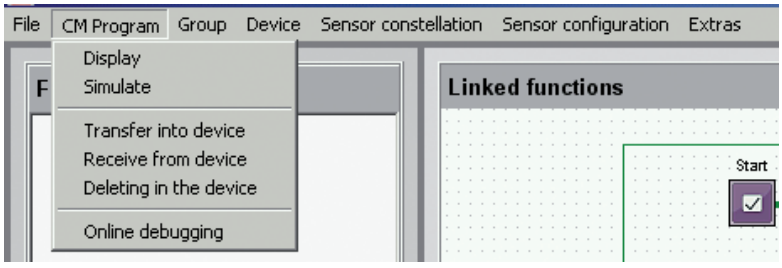
Special features:

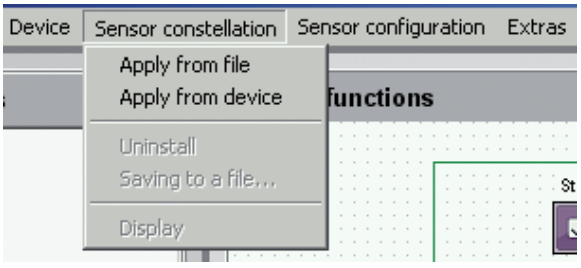
- 8 input channels for HSI or SMART sensors
- 8 input channels for analogue sensors
- 4 input channels for digital signals
- 2 output channels for analogue signals
- 4 relay switching outputs with change-over contacts
- USB slave port for PC connection
- USB master port for storing measured data on a standard USB memory stick
- Ethernet interface
- RS 232 interface
- 2-line LCD display (2 x 16 characters) to display measured data and status and/or error messages
- 3 user-programmable LEDs in different colours, for status indication (red, yellow, green)
- Simple operation using navigation pad
- Creation of customised application program using the PC software **CMWIN** supplied

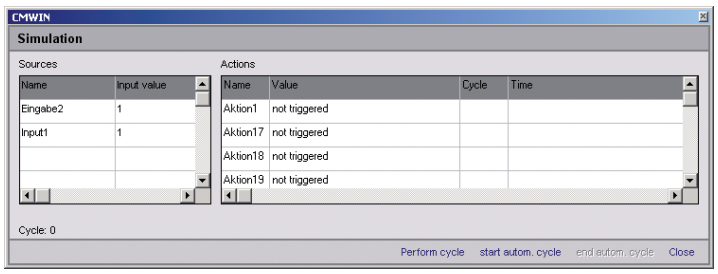
CM Editor:

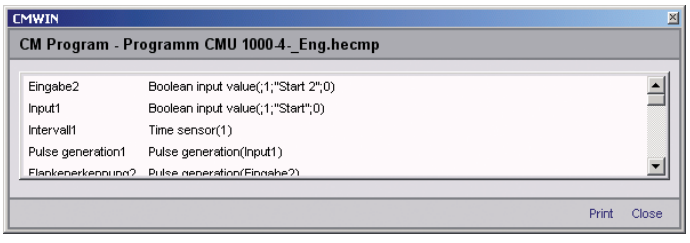
The CM Editor is part of the HYDAC PC software **CMWIN**, Version 03 or higher, and provides a wide variety of tools and functions for designing, integrating and testing the application program.
An application program consists of many individual functions which can be linked together. During subsequent 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).











Technical data:

Supply	
Input voltage	18.0 .. 35.0 V DC
Current consumption	max. 1.5 A (3.5 A when CSI-F-10 connected)
Reverse pol. protect.:	-30 V
Isolation 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	
Channel I and J (Accuracy)	4 .. 20 mA (≤ ± 0.1 % FS max.) 0 .. 20 mA (≤ ± 0.1 % FS max.) 0.5 .. 4.5 V (≤ ± 0.1 % FS max.) 0 .. 10 V (≤ ± 0.1 % FS max.)
Channel K and L (Accuracy)	4 .. 20 mA (≤ ± 0.1 % FS max.) 0 .. 20 mA (≤ ± 0.1 % FS max.) 0.5 .. 4.5 V (≤ ± 0.1 % FS max.) 0 .. 50 V (≤ ± 0.1 % FS max.) -10 .. +10 V(≤ ± 0.2 % FS max.) L only!
Channel M and N (Accuracy)	4 .. 20 mA (≤ ± 0.1 % FS max.) 0 .. 20 mA (≤ ± 0.1 % FS max.) 0.5 .. 4.5 V (≤ ± 0.1 % FS max.)
Channel O and P (Accuracy)	4 .. 20 mA (≤ ± 0.1 % FS max.) 0 .. 20 mA (≤ ± 0.1 % FS max.) 0.5 .. 4.5 V (≤ ± 0.1 % FS max.) -10 .. +10 V(≤ ± 0.2 % FS max.) P only!

Digital inputs	
Quantity	4, of which 2 are for frequency measurement (Channel Q and R)
Trigger threshold	approx. 2 V
Dynamics	30 kHz

Measurement channels	
Quantity	32 - A 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	30V DC / 1 A

Calculation unit	
Analogue value recording	12 bit A/D converter

Interfaces	
Keypad	- 4 arrow keys (up, down, right, left) - OK key - ESC key
Display (back-lit)	- Two-line LCD display (2 x 16 characters) - Additional indication of status information via 3 different coloured LEDs is possible
USB Mass Storage Device[2]	- USB 1.1 / USB 2.0 full speed port for connecting 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 port for connecting a PC / Notebook to configure the CMU - Female connection type "B".
CAN Bus Interface	Can be integrated as an option

Cycle time
Independently determined at start of program Display of actual cycle time is possible in the 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

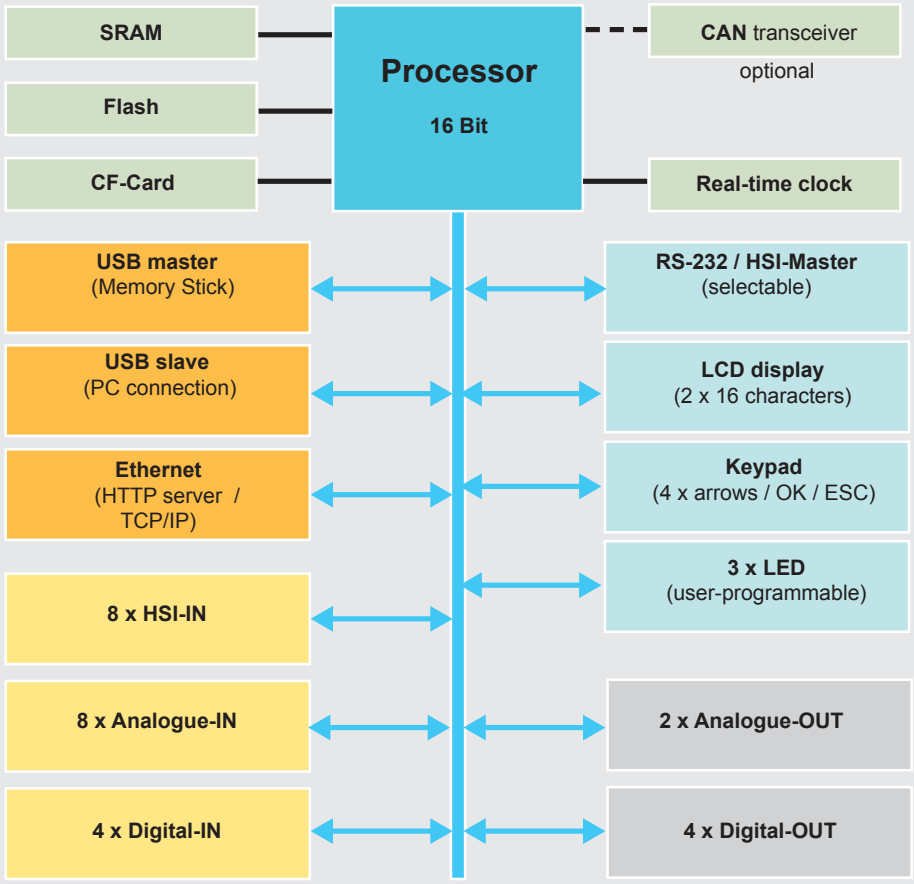
Technical standards	
EMC	EN 61000-6-1 / 2 / 3 / 4
Safety	EN 61010
Protection class	IP 40

Note:

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

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

Block circuit diagram:



Model code:

CMU 1000 – 000 – X

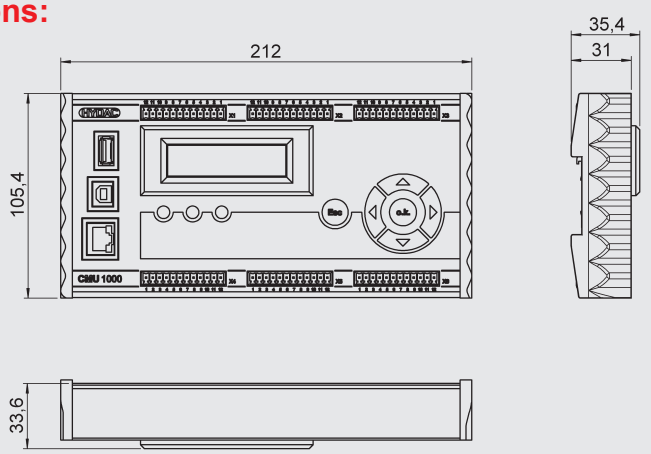
Modification number
000 = Standard

Operating manual and documentation
D = German
E = English
F = French

Note:
On instruments with a different modification number, please read the label or the technical amendment details supplied with the instrument.

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

Dimensions:



Note:

The information in this brochure relates to the operating conditions and applications described. For applications and operating conditions not described, please contact the relevant technical department.
Subject to technical modifications.

HYDAC ELECTRONIC GMBH
Hauptstraße 27, D-66128 Saarbrücken
Telephone +49 (0)6897 509-01,
Fax +49 (0)6897 509-1726
E-mail: electronic@hydac.com
Internet: www.hydac.com