

Universal control unit and extended I/O system

XIOS UC

DATA SHEET

Description

The HEINZMANN modular universal controller XIOS UC presents an entirely new generation of controller.

Each XIOS consists of a high-performance main board and additional I/O boards. The main board provides high CPU power, large DRAM and FLASH memory as well as modern communication interfaces. The I/O boards are small in size and are configurable by software. They can be attached in different number and type to the main board.

A FPGA logic chip developed by HEINZMANN takes control of all I/O functions, leaving more computing power to the CPU for PLC functions or processor-intensive control tasks.

XIOS UC enables customers to develop their own control functions on the basis of CoDeSys (IEC 61131-3) or MATLAB[®]/Simulink[®]. This allows to build up extensive and flexible control functions. The proven and reliable real-time operating system (RTOS) guarantees stable performance.

XIOS is also applicable to the field of alarms and successfully used for monitoring. Optional data logging functions allow individual recording of relevant system data.

The basic version of XIOS UC is the carrier module. It comes equipped with 2 speed inputs (Hall-type) or digital input, 11 analogue or digital inputs, 2 digital outputs and 4 sensor supplies. 5 further I/O modules can be attached to it. Each of them is able to serve up to 4 I/O channels. Additionally, two more expander modules offering 8 analogue or digital inputs, 2 digital inputs, 2 digital outputs, 2 inductive speed inputs or digital inputs can be attached. Each provides connection of further I/O modules. One of both is designed especially for generator control and cogeneration functions.

Input channels offer to be configured by software as analogue, digital, temperature or frequency inputs. Output channels can be configured as analogue, pure digital, PWM high-side, low-side, half-bridge or full-bridge outputs. They are available electrically isolated or non-isolated.

For high-bandwidth applications e.g. image processing or intelligent I/O PMC mezzanine I/O boards based on the PCI standard can be designed.



Features

Modular & flexible

PLC functionality (CoDeSys)

32 bit processor

Great variety of input and output types

I/Os individually configurable by software

Scalable number of I/Os

Diagnostic functions for error detection implemented

Alarms, monitoring and data logging

MATLAB[®]/Simulink[®] interface

One high-speed PMC IEEE1386 (PCI) I/O board attachable

Speed and turbine control, gas engine management, generator management and cogeneration

Up to 3 actuators controllable

Custom-built module types with short-term period of development obtainable

Ethernet, CAN, RS-232 and RS-485 are supplied as communication interfaces, USB for peripherals. XIOS is reverse battery protected.

All XIOS I/Os are short-circuit proof and offer fault diagnosis. Connections to XIOS are simply established via quick-set terminals.

Application range

- Alarm management & monitoring
- Engine & turbine management
- Gas engine management
- Generator management & cogeneration
- Construction engines
- Any kind of system requiring scalable I/O functions

Technical data

Processor	32 Bit 264 MHz processor, system supervised by watchdog
Memory	32 MByte SDRAM, 133 MHz 16 MByte Flash 0.5 MBit serial error ROM 256 MBit data logger ROM
Interfaces	2× electrically isolated CAN 2× 10/100 MBit Ethernet 1× RS-485 overvoltage protected 1× RS-232 USB (for peripherals only)
I/O extension options	up to 11× I/O modules for additional inputs and outputs 1× PMC PCI module for high-speed or intelligent custom-built I/O functions
Monitors	3 status LEDs
Software	MATLAB®/Simulink®/CoDeSys
Power supply	16 ... 32 VDC
Power consumption	approx. 350 mA (at 24 VDC)
Ambient temperature	-40 ... +70 °C
Degree of protection	IP20
Dimensions	270 × 240 × 48 mm



XIOS UC



XIOS UC + MD2
for XIOS^{GenSet} or XIOS^{CHP} applications

Inputs/outputs

Module type	Function	Extension options
Expander board MD1	8× analogue 0 ... 5 V/10 V or digital input 2× digital input 2× digital output, max. 4 A 2× speed input (inductive) or digital input	6× slot for module type MA
Expander board MD2 for genset or cogeneration	all functions of MD1 and additionally: 4× digital input, isolated 6× analogue input AC voltage (3× bus and 3× generator) 4× analogue input AC phase current, max. 5 A 1× AVR output 1× relay output 1× RS-485 interface	3× slot for module type MA

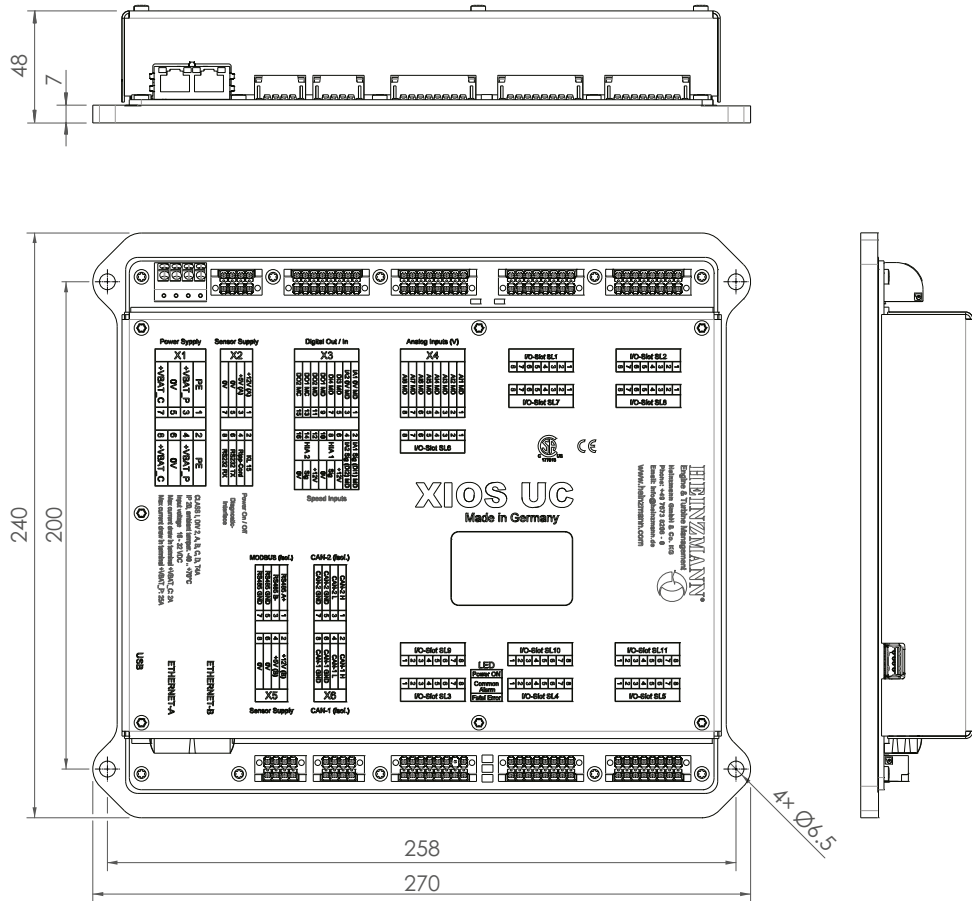
Inputs/outputs

Extension I/O boards (MA)	Each configurable by software, dimension: 45 × 45 mm; plug-in mounting
A1*	2× thermocouple amplifier electrically isolated, (J/K/E/R/S/B/N/T/L) configurable gain and offset
A2	4× analogue or digital output 0 ... 5 VDC (25 mA) 0/4 ... 20 mA digital output: max. 1 A PWM controlled (0 ... 100 %) high-side, low-side voltage and current monitored
A3	4× analogue or digital input 0 ... 5/10/36 VDC 0/4 ... 20 mA digital input: static or frequency temperature input: Pt1000, Pt200, Pt100 1× sensor supply 5 VDC, 8 or 12 VDC optional 1× sensor supply Ubat optional
A4	2× analogue or digital input, electrically isolated 0 ... 5/10/36 VDC 0/4 ... 20 mA digital input: static or frequency temperature input: Pt1000 2× sensor supply (5 VDC, 50mA)
A5	2× analogue or digital output, electrically isolated 0 ... 5 VDC (2.5 mA) 0/4 ... 20 mA digital output: low-side (photo-coupled), 60 VDC/40 VAC, 400 mA static optional: 400 VDC/280 VAC, 100 mA
A6	2× analogue output, electrically isolated 0 ... 5 VDC (2.5 mA) 0/4 ... 20 mA voltage and current monitored
A7*	6× digital input up to 32 VDC
A8	up to 2× digital output, half bridge current read back for control-loop applications PWM controllable 0 ... 100 % PWM frequency: up to 1.5 kHz thermal shutdown
A9*	1× full bridge output (4Q) up to 4 A static current suitable for various HEINZMANN actuators current read back for control-loop applications PWM controllable 0 ... 100 % PWM frequency: 126 Hz ... 20 kHz

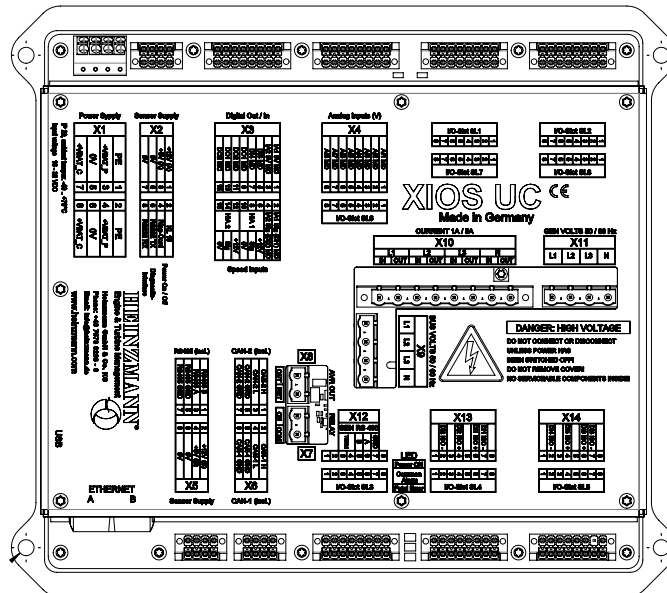
Custom-built module types can be offered with short-term period of development.

* Each extension board of type A1, A7 or A9 applied to a MC or any MD board will reduce the number of the 11 analogue or digital inputs of the MC board by one.

Dimensions



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XIOS UC + MD2