HMI D1

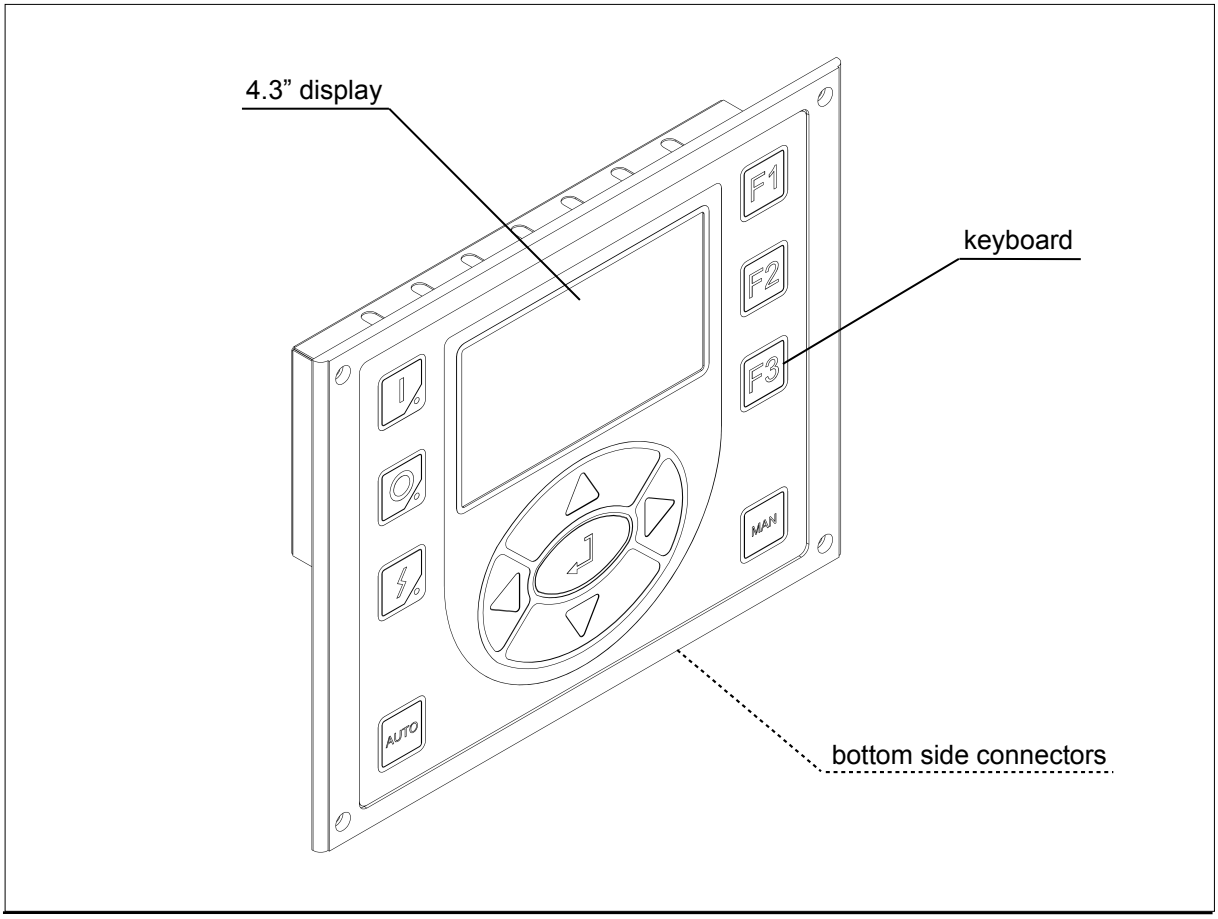
Process control unit with graphical interface

Datasheet

Description

Process control unit with graphical display and keypad. Main characteristics:

- Equipped with 32 bit Renesas RX62N processor with 96kbytes RAM and 512kbits Flash inside
- 64 kbit non-volatile RAM, 16 Mbit flash ROM and 128 Mbit SDRAM
- 1 USB host port
- 2 FLXIO / RS 485 ports
- 4.3” LCD display with 24 bits color depth (16.7M colors)
- 13 buttons keypad with 3 LED lamps
- customizable features on demand (keyboard layout, memories sizes, ethernet, RTC, SD card reader, and more)



Ordering information

Products	SMITEC part number
HMI D1 module	KZ010367

Accessories	SMITEC part number
RTC CR2032 replacement battery	TB010554

Documentation	SMITEC part number
Datasheet for HMI D1 (english)	DK400150
FLXMOD system integration manual (english)	DK400076

Technical data

General data	
Housing dimensions (width x height x depth)	210 mm x 170 mm x 34.3 mm
Weight	520 g (without connectors)
Permissible operating temperature	+5° to +55°C
Permissible storage and transport temperature	-25° to +85°C
Permissible humidity	10% to 95%, not condensing
Permissible air pressure (operation)	80 to 106 kPa (up to 2000 m above sea level)
Permissible air pressure (storage and transport)	70 to 106 kPa (up to 3000 m above sea level)
Degree of protection	IP65 according to IEC 60529 (when flush mounted)
Connection method for power connector	Spring cage terminals
Conductor cross-section for power connector	0.14 to 1.5 mm^2 (26 ÷ 16 AWG)
Functional earth connection	By fast-on terminal on rear-panel
Mode state visual indicators	Two green LED lamps for FLXIO ports status

Power supply	
Main power supply V_m	24 V DC (-15% ÷ + 20% according to IEC 61131-2)
Maximum allowed ripple	5% of supply voltage (according to IEC 61131-2)
Current consumption from main supply	0.5 A max.
Supply overvoltage protection	Bidirectional Zener clamp (V_z > 30 V)
Supply reverse polarity protection	Protection diode and safety fuse
Supply fuse	2 A time-delayed

CPU characteristics	
Microcontroller type	Renesas Technology type RX62N
Microcontroller architecture	Harvard 32 bit
Microcontroller RAM size	96 kbytes
Microcontroller FLASH size	512 kbytes
Board external RAM	128 Mbits SDRAM
Board external non-volatile RAM	64 kbits
Board external ROM	16 Mbits FLASH

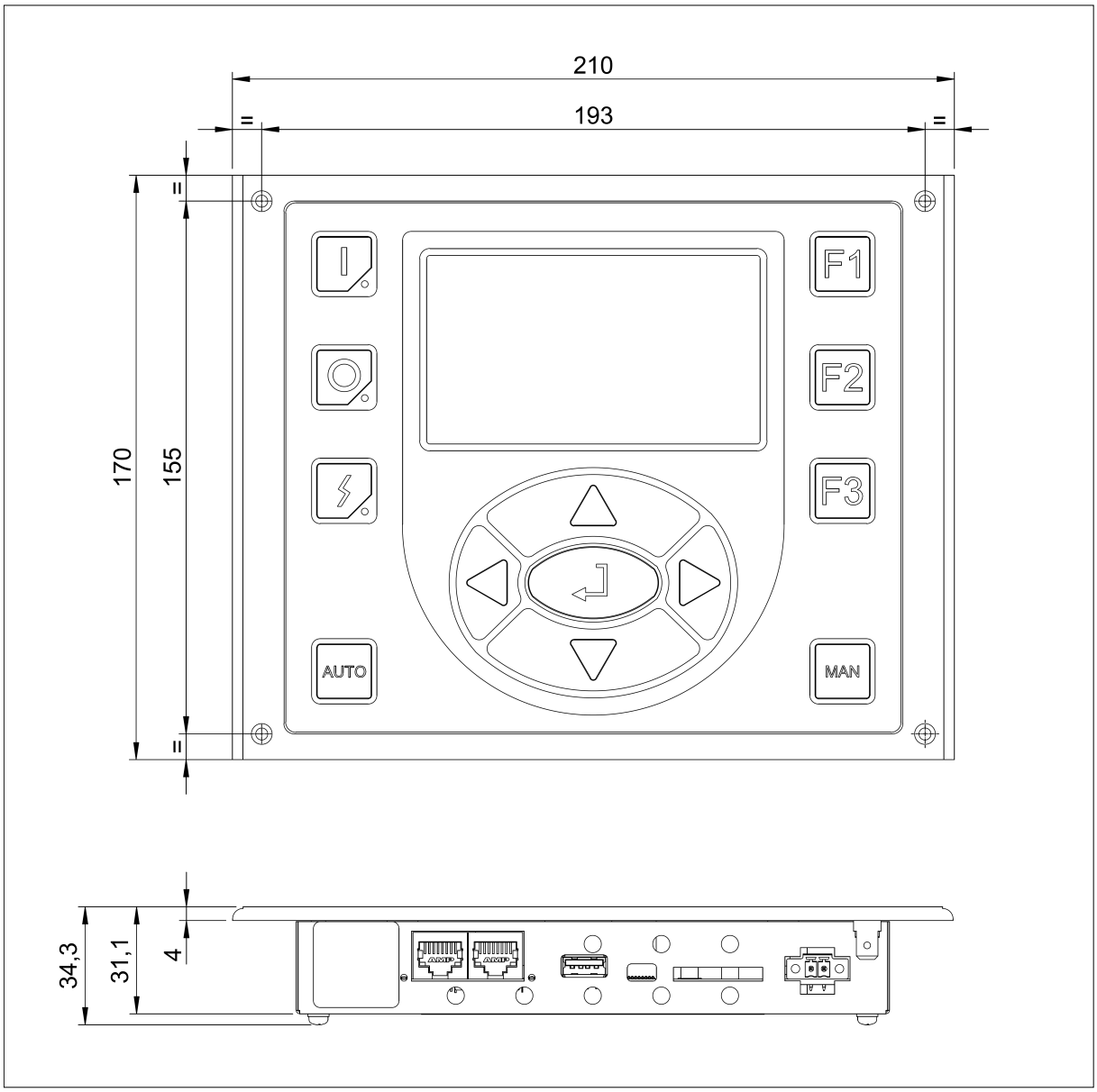
Display characteristics	
Display type	TFT LCD
Display size	4.3” (diagonal)
Color depth	24 bits (16.7M colors)

Communication ports	
FLXIO ports	2 on RJ45 connectors, useable also as EIA RS-485 ports
FLXIO ports speed	Up to 2.5 Mbps
USB host ports	1 on standard type A female connector

Other characteristics	
USB host output current	250 mA max.
Acoustic peripherals	1 buzzer

Mechanical drawing

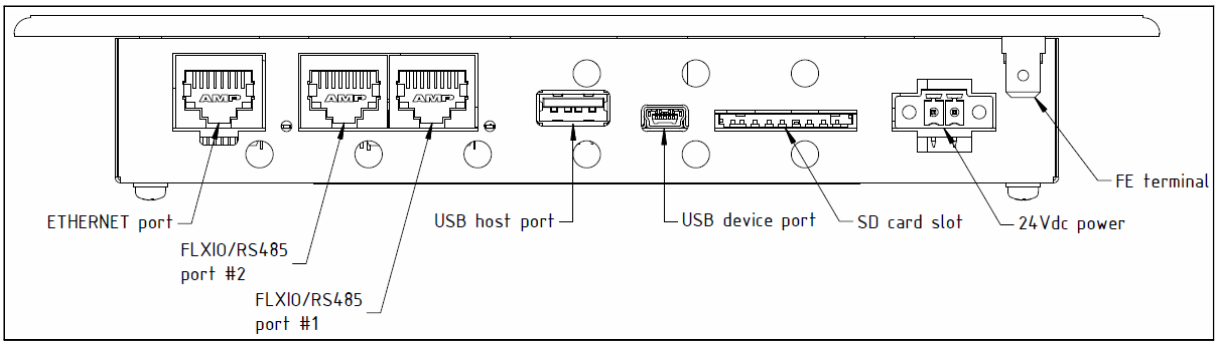
The image below depicts the mechanical dimensions of the device (base version shown):



Connections

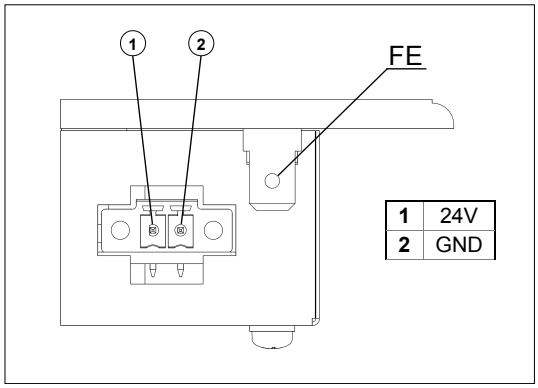
The module has several connectors for power supply and peripherals, all located on the bottom side of the module (see illustration below).

Warning: HMI D1 module is an electronic high technology device with numerous connectors; for these reasons it results an ESD sensitive device. Observe ESD mitigation techniques or damage might occur.



Power connector

The power connector is located on the bottom side of the module; the pinout is shown in the illustration aside.



Warning: Use a cable with cross-section suited to the current involved. A wire smaller than necessary could cause risk of fire and unwanted voltage drops.

Warning: To ensure conformance with EMC directive 89/336/EEC, the length of the cables must not exceed 30 m.

For EMC reasons, a secure connection to earth is always required; a suitable fast-on terminal is provided for the purpose (labelled as FE in the illustration).

SD card connector

This device (depending on versions), is provided with a peripheral for interfacing SD cards. These could be used for storing large data or for updating software.

A suitable connector is provided on the bottom side of the module, able to accommodate standard SD cards.

USB device connector

This port (depending on versions), provided with a standard type mini B connector located on the bottom side of the module, is useable as a communication port for connection with a computer; the main purpose is data exchanging.

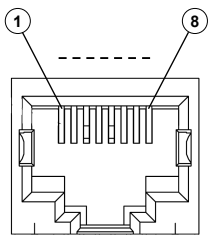
USB host connector

This port, provided with a standard type A connector located on the bottom side of the module, is thought for connecting USB flash disks. Any different use should be avoided.

Warning: Never connect a device absorbing a current beyond the rating of the device, or internal damage might occur.

FLXIO / RS485 connectors

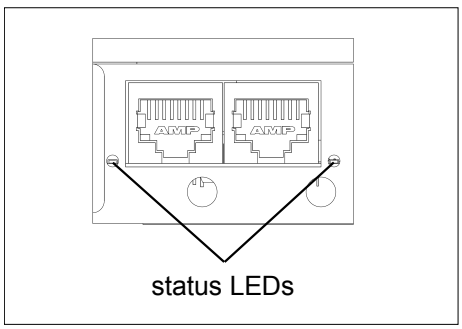
The device can act as a dual-channel FLXIO master, and two RJ45 connectors are provided for the purpose on the bottom side of the module. The illustration aside shows the pinout of each connector; use standard CAT 5E Ethernet cable to wire the buses.



1	DATA+
2	DATA-
3	GND
4	NC
5	NC
6	NC
7	NC
8	NC

Refer to the FLXMOD System Integration Manual for bus wiring topology.

Depending on the configuration of the device, these two ports could be used also as general purpose EIA RS485; the maximum transmission speed is 2.5 Mbps. Even if not mandatory, the use of shielded cable is highly recommended, particularly when transmission speed is high.



Near each connector a green LED lamp is provided to indicate the status of the bus; the following table resumes all the possible states.

LED BEHAVIOUR	SYSTEM STATUS
Blinking slowly	System initialization
	Searching modules on the bus
	FW updating
Off (fixed)	No slaves found on the bus
On (fixed)	Bus operating correctly
Blinking fast	Bus error