

# Sirio SR07SE System

## PLC SYSTEM WITH CANBUS INTERFACE, AND I/O EXPANSION MODULE

The Sirio model SR07S is an operator panel with a 7" (800x480) color LCD with resistive touch screen. The CTXA9 board, designed, and manufactured by Mitrol, performs all the PLC, and HMI functions, and delivers 2 independent CanBUS lines.

The CIO1644 expansion board is directly connected to the CTXA9 board. The expansion board makes 16 optocoupled digital channels available. Each channel can be used as an input, or as an output. The nominal current for each output is 0.5A. Should an higher current load be required mind that the maximum 4 channel group current is 2A.

The CIO1644 board also has 4 analog inputs, and 4 analog outputs. The type of analog inputs can be software specified, allowing the board to read differential voltage inputs in the ranges 0/10V or +10/-10V, or current signals in the ranges 4/20 mA or 0/20 mA, or potentiometric transducers directly powered by the module by a stabilized, and short circuit protected reference voltage.

The following connectors are available:

- 2 spring-cage connectors for 24V power supply
- 6 spring-cage connectors for the two CanBus lines
- 2 High Speed USB 2.0 connectors
- 1 Ethernet 10/100 Mbit connector
- 16 spring-cage connectors for digital input/output
- 16 spring-cage connectors for analog input/output
- 8 spring-cage connectors for the 4 analog outputs
- 4 spring-cage connectors for I/O power supply

The keyboard is not present, and all the operator functions are made available on the touch screen. A virtual keyboard is shown on screen automatically in numerical, or alphanumerical form, according to requirements.

The system is based on the CTXA9 board, specifically designed to run both the real time controls for an industrial plant, and the operator interface software.

The processor directly handles CanBus communications on the field bus with a CanOpen protocol complete master software.

The real time processor software is stored on a flash disk, and uploaded to RAM at every boot so updating it is possible over the network, and even in remote assistance.

The following features are available in respect to the real time control:

- Linux operating system with realtime Xenomai extensions
- Loader for the main CPU firmware
- Software for multitasking execution of PLC programs developed according to IEC 61131-3



- Basic CanOpen protocol with standard DS301 profile implementation that, besides supporting product specific standard profiles, allows direct, and easy interfacing with any CanBus device
- CanOpen protocol for the following product standards: DS401, DS402, DS404 e DS406

For developing, and debugging of PLC programs the integrated environment LogicLab is available. This tool allows development of software in all the 5 levels of the IEC 61131-3 standard. The main features follow:

- Integrated text editor for IL (Instruction List), and ST (Structured Text) languages
- Integrated graphical editor for LD (Ladder Diagram), FB (Function Bloc), and SFC (Sequential Function Chart)
- Optimized compiler that directly generates executable machine code
- Debug via graphical, or textual watch windows
- Real-time debugging via triggers, and oscilloscope, that allow sampling of the variable's values in different points of the program
- Library management (creation, use, single block import, etc.)
- Network communication with the target even with remote assistance
- Basic axis movement library

For the operator interface the integrated environment PageLab is available, which makes it possible to design, and build pages, and subpages, according to the user needs. The main features follow:

- Basic controls: edit box, buttons, and base graphics (line, and rectangles)
- Graphical controls: bitmaps, animations, cartesian plots, trend, and histograms
- Character font management
- Dynamic multitasking management
- Support for ST language IEC scripts to handle events associated to controls, and pages in general
- Handling of global, local, and CNC/PLC provided variables
- Diagnostic pages prebuilt by Mitrol

In both environments, the user interface, and the available tools, ease the programmer's work, and minimize development times.

## Technical specifications

Dimensions (H x W x D)		152 x 212 x 70 mm Depth does not include I/O cables.
Power supply		24 V (18 – 36 V)
Current absorption		0.4 A Max
CPU	Type	iMX6 Freescale 32bit 1Ghz
	DDR3 memory	512 MByte
	NAND FLASH memory	256 MByte
	Ethernet port	10/100 Mbit
	USB ports	2 High Speed 2.0
	CanBus controller	2 integrated
	Solid state disk	uSD
LCD		7" color TFT
Touch Screen		Resistive, 4 wires
CanBus Baud Rate		125 kbps / 250 kbps / 500 kbps / 1 Mbps
Marking		CE
Operating temperature		0...50 °C
Storage temperature		-20...85 °C
Warehousing humidity		Max 95% non-condensing
Front panel protection grade		IP54

Scheda di espansione

Dimensions (H x L)	100 x 100mm
Mounting	Integrated inside the SR07SE system
Digital I/O voltage	18...36V
Number of digital channels	16
Optocoupling	Standard on channels
Current absorption per input channel	5 mA
Input channel ON logic	$V_{in} > 15 \text{ V}$
Input channel OFF logic	$V_{in} < 5 \text{ V}$
Nominal output current per channel	0.5 A
Maximum output current per channel with other channels of the same group switched off	2 A
Maximum total output current per group	2 A
Output protection	Shortcircuit, overload
Analog input channels	4
Analog output channels	4
Differential input voltage	0/10 V, or +10/-10 V
Input current	4/20 mA, or 0/20 mA
Minimum potentiometer resistance	1 kOhm
Potentiometric reference voltage	10 V
Output voltage	+10/-10 V
ADC converter resolution	12 bit
DAC converter resolution	12 bit
Minimum load resistance	10 kOhm
Marking	CE
Operating temperature	0 – 55 °C
Storage temperature	-20 – 85 °C
Warehousing humidity	Max 95% non-condensing
Protection grade	IP20