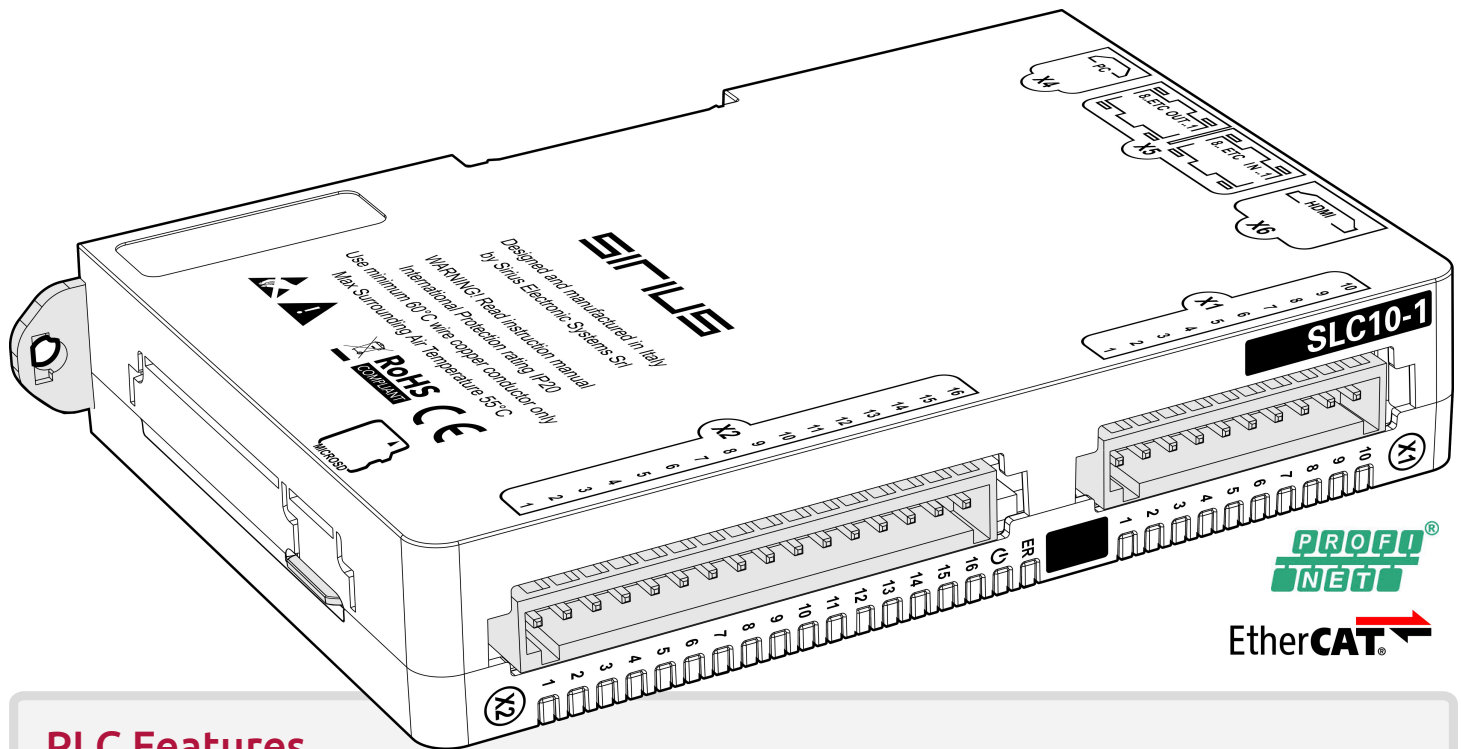


SLC10 can alternately used as PLC or gateway from profinet (master) to ethercat (master)



PLC Features

Sirius designed SLC10 architecture for scalability and efficiency in any application. Whether it is used as a PLC, SLC10 maintains an unmatched price-performance ratio.

Depending on which kind of machine or process you are automating you can choose to use on board I/O, CAN or Ethercat controlled peripherals, or a combination of both. SLC10 is designed to be flexible and you can have it with up to 8 digital inputs and 8 digital outputs.

OS can be updated with a microSD card and the device can be updated via Ethernet or USBmicro pen drive.

SLC10 is compatible to the XML standard IEC 61131-3 and PLCopen Motion and the built-in CNC provides a G-Code interpreter ready for use.

You can't believe how compact your next system could be: Logic and I/O are on the same device, mountable on TS 35 DIN rail.

SLC10 is IoT ready and can be used in industry 4.0 applications and offers full support for remote assistance and remote control via VNC.

SLC10 runs real time linux based on Preempt-rt patch and features hardware floating point calculations. CAN and Ethercat jittering is maintained under 20us.

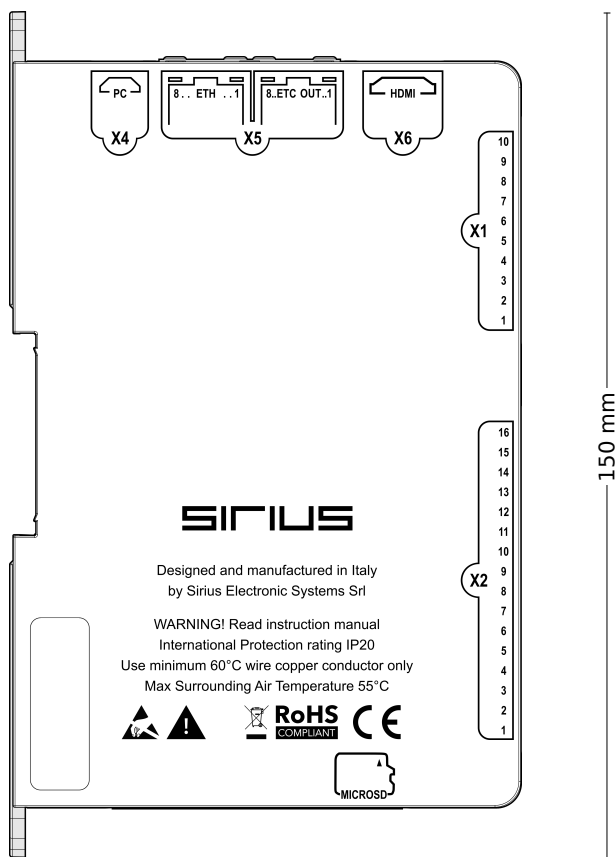
System integrators, developers and manufacturers can protect their work with SLC10 embedded code protection. When deploying a project it could be encrypted allowing it run only on selected SLC10 devices. There is no way that some one else can steal your code.

Gateway Option

SLC10 can be configured as gateway though the PLC function is loss, it comes a slave for profinet net master

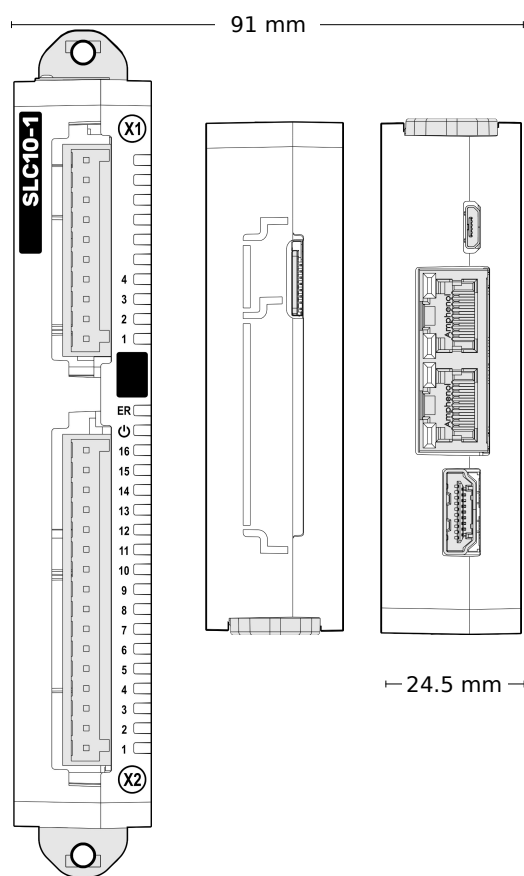


SLC10 PLC | Gateway from Profinet (slave) to Ethercat (master)

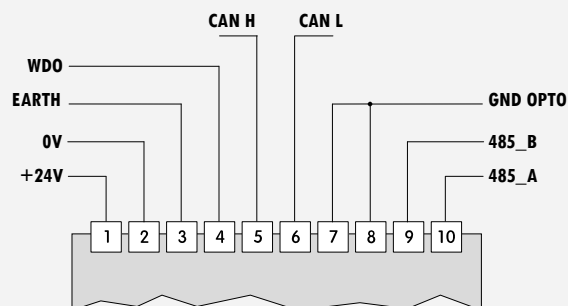


Tech Specs

CPU	ARM Cortex A8 @ 1GHz
GPU	SGX530
Memory	4GB 8 bit eMMC + microSD
RAM	512 MB DDR3
Logic Power supply	24Vdc $\pm$ 20% 1.1A resettable fuse
Video Output	HDMI
Ethernet	1 port @ 10 / 100Mbps
Ethercat	1 master channel @ 10 / 100Mbps
Serial	1 port RS232 / 485 optocoupled cable select
CAN Ports	1 CANopen independent optocoupled channels
USB Ports	1 USBmicro type B ports
I/O Power Supply	24Vdc $\pm$ 20%
Digital IN	up to 8 @ 24V 10mA (4.7us RC)
Digital OUT	up to 8 @ 24V 700mA PNP, protected
Functions	Capable of macro execution
Reverse polarity	Logic circuit, diode
Storage C°	-40 to +85 °C
Operating C°	0 to +45 °C
Humidity	0 to 95%, non condensing
Size (mm)	150 x 91 x 24.5 mm
Weight	160 g
Mounting	M3 screws or TS 35 DIN rail

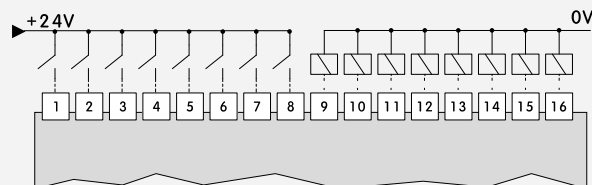


X1



X2

DIGITAL I/Os



SLC10 PLC

Gateway Mode

ENI: file descriptor of Ethercat net topology, any Ethercat net reached through gateway has own ENI file. It can't be generated by Sirius application

GSDML: file descriptor of communication frame exchanged between Profinet master and gateway.
It is composed of 3 slot described below

Gateway have a double role due to its specific function: is a slave for Profinet master and is a master to Ethercat peripheral, can be described as a middle level master.
To ensure a constant cycle timing Ethercat master runs in a dedicated real-time processor
Profinet cycle time must be greater or equal to 8ms

SLOT 1 features: diagnostics of gateway and Ethercat subsystem

- "control" word is used by Profinet master for gateway actions, actually is implemented only error counters reset
- "slaveldx" contains the Ethercat peripheral index to whom referred the diagnostics query from the Profinet master
- "HTB_Count" is a counter used to verify the run status in gateway application
- "expected" and "slaveCount" must be equal, if not the net set up go to error state
- "ethercat_state" indicate the state and any state can or can't do specific action (i.e. "safe op" can read input but can't drive output)
- "frame_ko_count" means that received frame don't match the expected frame structure so the data in payload can be wrong used
- "status_error_count" indicate that one or more peripheral leaves the "operational" state. Master have to inquire who slave change it in next round
- "rx_error_count" is set when an expected frame is not received (never or on time)
- "tx_error_count" is set when the frame is not transmitted by the trasceiver
- "wrong_wkc" indicate that one or more slave have not response to a cyclic command emitted from the master
- "port0../port3" are referred to one Ethercat peripheral, pointed with index "slaveldx" by the Profinet master

SLOT 2 feature: gateway digital I/O

- The gateway I/O can be controlled by Profinet master like a simple Profinet peripheral

SLOT 3 feature: generic frame passed from the other side of gateway to communicate with peripheral in Ethercat net from Profinet master

- Ethercat frame and Profinet frame exchanged through the gateway are the same and have fixed size of 640 byte
- The payload is the the same but, obviously, the header is net-specific
- Value words maintains the endian polarity
- Bit array words swap the endian byte position (not the little or big endian bit order cause is bit oriented array)

GSDML structure

	SLOT 1	Diagnostics	Byte_index
60 byte from Profinet to Gateway	control [uint]	Control word	+0
	slaveldx [uint]	Index of peripheral in Ethercat net	+2
	HTB_Count [uint]	Incremental heartbeat counter	+4
	Other bytes	Reserved for future implementation	+6 to +30
60 byte from Gateway to Profinet	expected [uint]	Number of peripherals reads from ENI file	+0
	slaveCount [uint]	Number of peripherals recognized in ETC net	+2
	ethercat_state [uint]	Master State (INIT/PREOP/SAFE OP/OPERATIONAL)	+4
	frame_ko_count [uint]	Frame format error	+6
	status_error_count [uint]	One or more slave have change their state, out from OPERATIONAL	+8
	rx_error_count [uint]	Frame lost	+10
	tx_error_count [uint]	Frame not sent	+12
	wrong_wkc [uint]	One or more slave have not sent response to cyclic command	+14
	port0 [uint]	Links lost counter on port 0 of target (slaveldx) peripheral	+16
	port1 [uint]	Links lost counter on port 1 of target (slaveldx) peripheral	+18
	port2 [uint]	Links lost counter on port 2 of target (slaveldx) peripheral	+20
	port3 [uint]	Links lost counter on port 3 of target (slaveldx) peripheral	+22
	ALstatuscode [uint]	Slave error code of target (slaveldx) peripheral	+14
	Other bytes	Reserved for future implementation	+16 to +30
	SLOT 2	Gateway digital I/O	
from Profinet to Gateway	2 byte	Gateway digital output, set through Profinet by master	
from Gateway to Profinet	2 byte	Gateway digital input, sent to master through Profinet	
	SLOT 3	Profinet/Ethercat frame	
from Profinet to Gateway	640 byte	Frame received in Profinet to master send from ETC net	
from Gateway to Profinet	640 byte	Frame send from master in Profinet to ETC net	

SLC10 Gateway from Profinet (slave) to Ethercat (master)

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