



IPERTU

Industrial Process Control Platform



IPERTU PLC

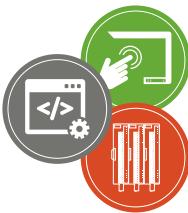
IPERTU Platform



Proop Professional
Operator Panel



Ipertu IDE | Integrated Development Environment

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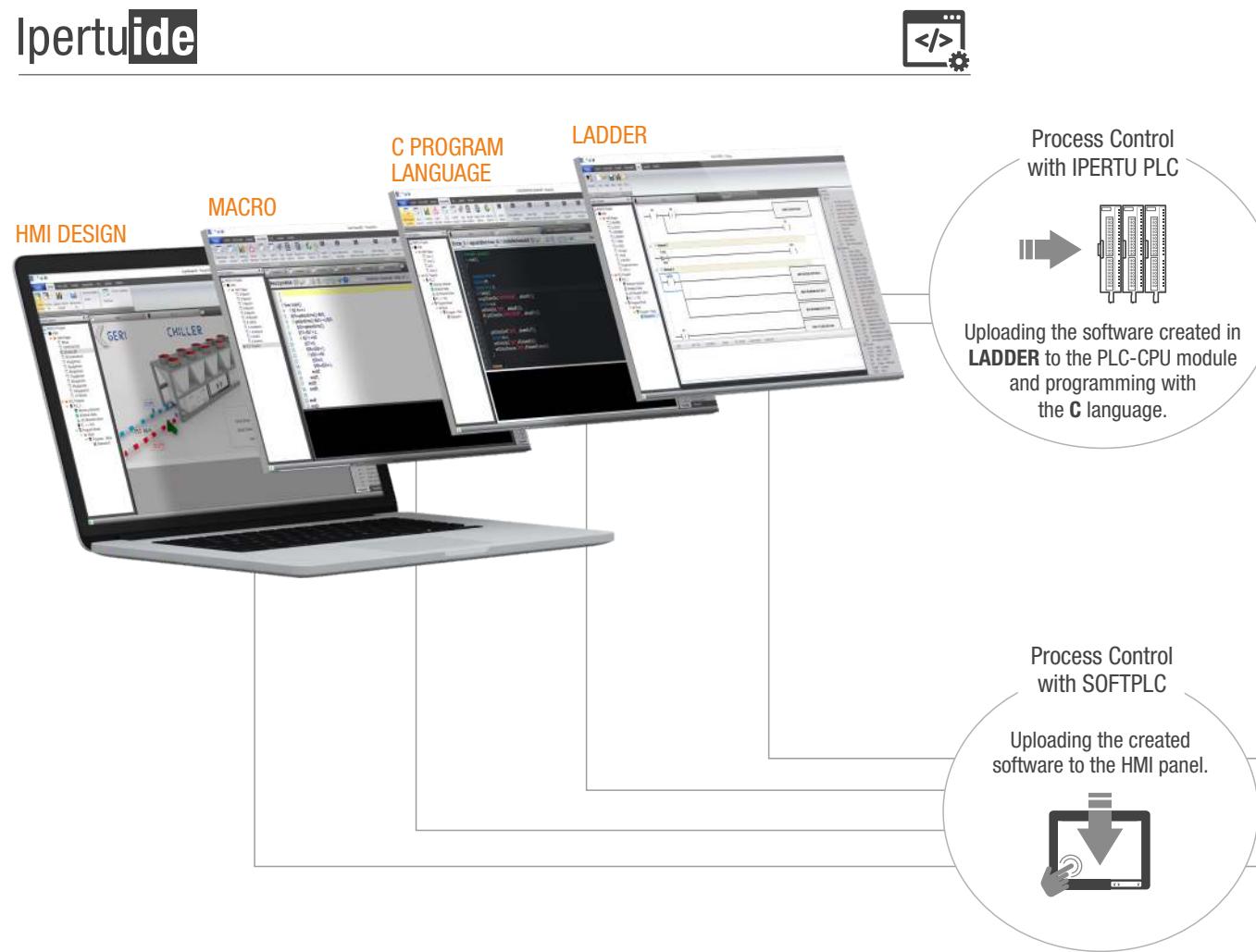
What is the IPERTU ?

“EMKO Industrial Objects Platform” IPERTU was developed as a solution platform for industrial process control and monitoring.

IPERTU Process control solution platform which consists of ;

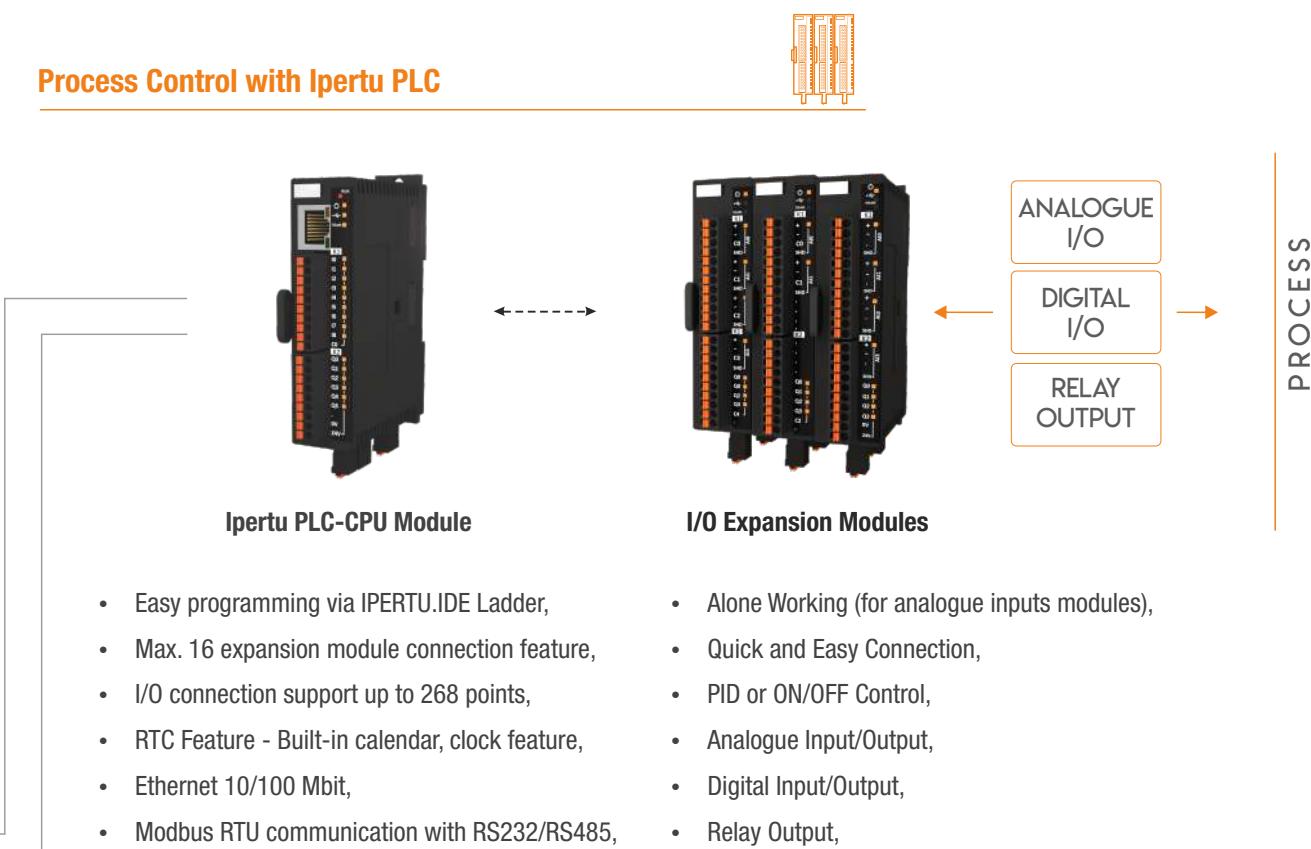
- “Ipertu.ide” Integrated software development environment where Ladder, Macro, C language and HMI design programs are integrated,
- “IPERTU PLC” with PLC-CPU module and Analog/Digital Input I/O expansion modules,
- “Proop Professional HMI Panels” with Internal Analog/Digital Input-Output options.

All components of the IPERTU platform can work alone or integrated, depending on the process. IPERTU platform, which performs data collection, remote access, control and monitoring processes under the leadership of Industry 4.0, offers fast, effective and flexible solutions that make your work easier in process control with its constantly evolving structure.

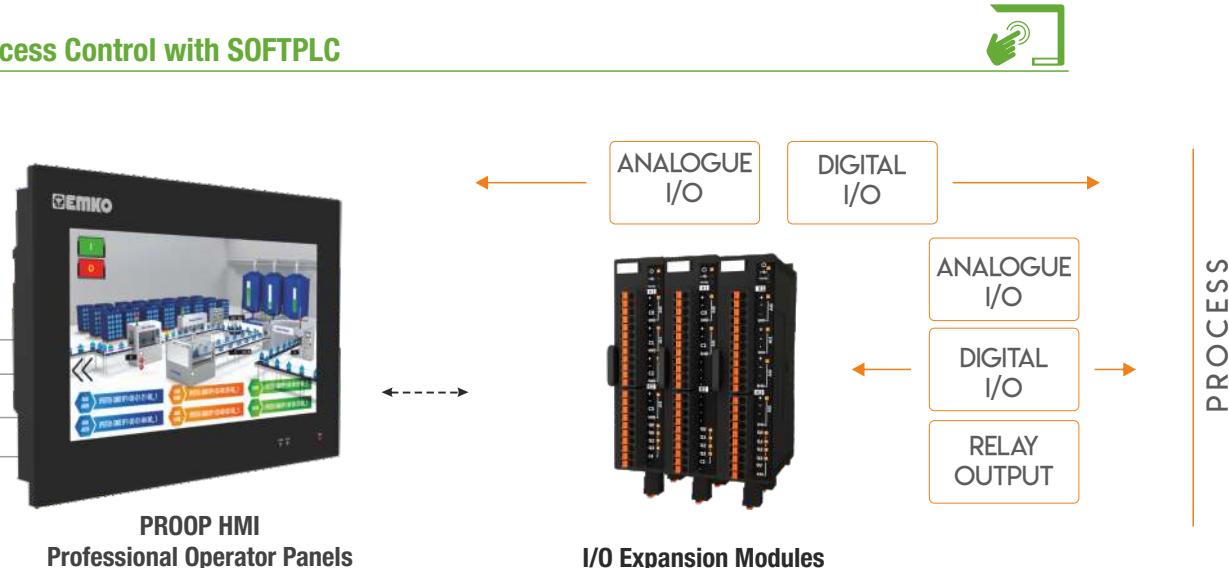


- **High visual** interface design with HMI Design,
- EASY application creation with **IPERTU Ladder**, performing many programming operations with blocks in ladder logic,
- **IPERTU Ladder, IPERTU Macro, C programming language, integrated work.**
- **SOFTPLC** running on HMI panel.

Process Control with Ipertu PLC



Process Control with SOFTPLC



SOFTPLC

It is a software created by the user on the **Ipertu.ide** platform and running on the **Proop HMI**, converting the HMI panel into a PLC-CPU module. In this way, process control can be done with I/O expansion modules via Proop HMI without the need for a PLC-CPU module.

- Alone Working (for analogue inputs modules),
- Quick and Easy Connection,
- PID or ON/OFF Control,
- Analogue Input/Output,
- Digital Input/Output,
- Relay Output,
- Easy Configuration Via Mini USB.



Ipertu PLC programming, Ipertu HMI screen design and SOFTPLC creation via Ipertu.İde

Programming with integrated **Ladder (IEC61131-3)**, **Macro** and **C code** with **FAST** and **USER-FRIENDLY INTERFACE**.

Saving **TIME** while designing a high visual HMI screen with the Design feature with an easy menu structure.

Ipertuide

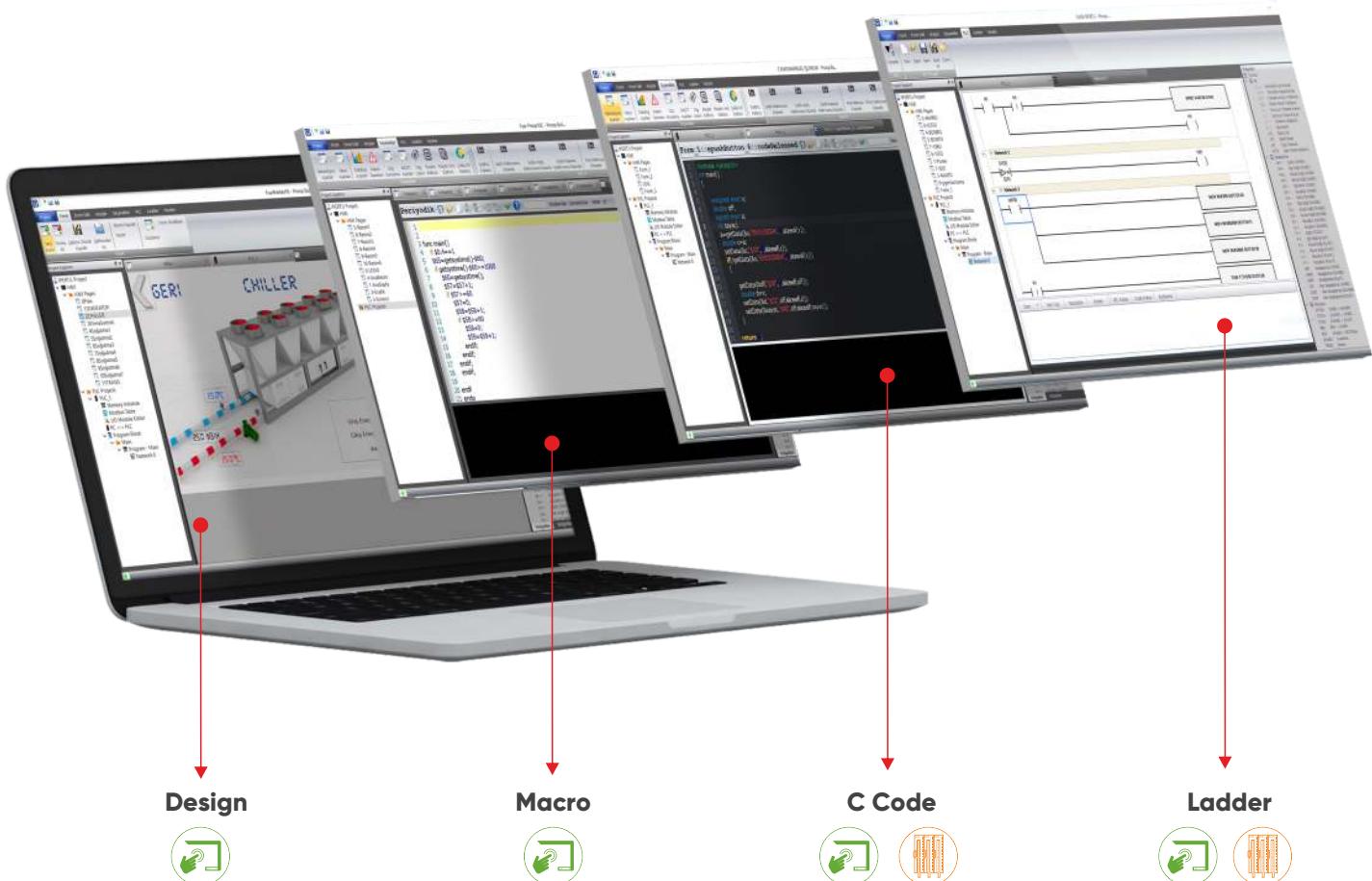
Integrated Development Environment

Design

Macro

C Code

Ladder



Easy to use interface,
Quick accessible menus,
Wide font and image format support,
Rapid development projects.



Easier use of Prop HMI special functions thanks to ready-made Macro functions.



The power of the C programming language and the use of library functions for program development.



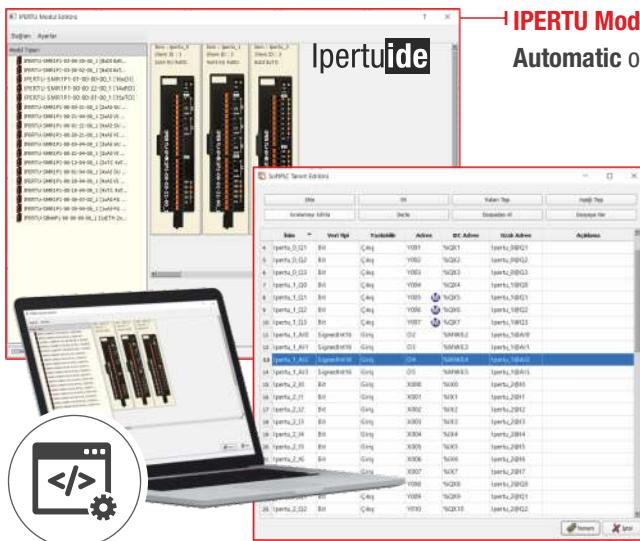
EASY application creation IEC61131 standard. Performing many programming operations with the blocks in "Ladder Logic".



Ipertu.ide

Integrated Software Development Environment

PLC-CPU and SOFTPLC programming with Ipertu.ide



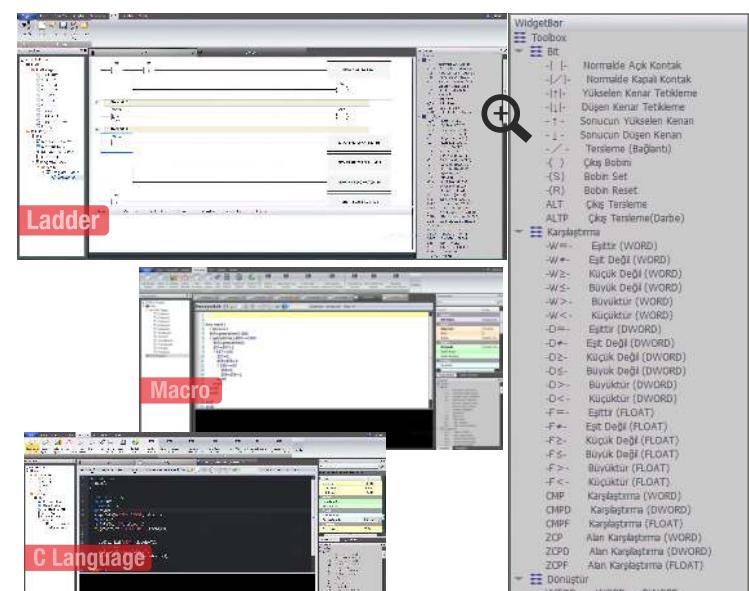
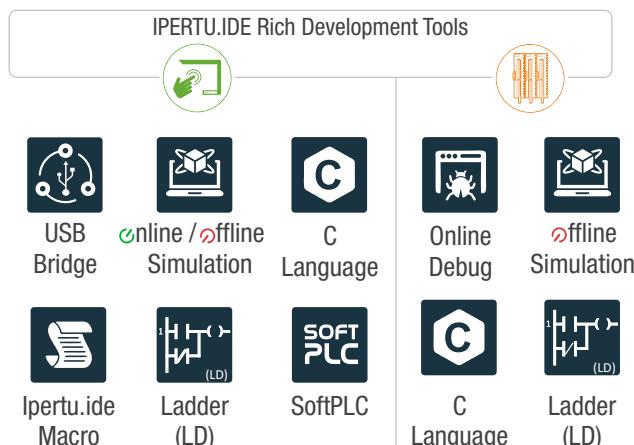
IPERTU Module Editor;

Automatic or Manual identification of IPERTU expansion modules connected to Proop HMI.

Definition Editor ;

QUICK and **EASY** automatic import of "IPERTU Module Definitions" and creation of new Definitions via Definition Editor

FASTER, FLEXIBLE and **STRONG** programming with Ipertu.ide Integrated Software Development Environment, integrated **Ladder, Macro, C Code**.



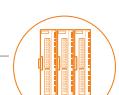
Process control via SOFTPLC and Ipertu I/O Modules for Simple Applications



IPERTU HMI Panel



IPERTU I/O Module



Process control via PLC-CPU and Ipertu I/O Modules for Complex Applications



IPERTU I/O Module



Proop Professional HMI Panel Series

Key Features:

- 10", 7", 5" Touchscreen Displays
- ARM Cortex-A Series CPU
- 8GB eMMC Flash Memory
- 512 MB DDR3 SDRAM
- 50000 hours Backlight Life
- Datalogger
- Alarm Recording

Proop Eco Series

ModBus
RS-232ModBus
RS-485

DEVICE

HOST

Proop Lite Series

ModBus
RS-232ModBus
RS-485

DEVICE

HOST

ModBus
RS-232

ETHERNET

Proop Control Series

ModBus
RS-232ModBus
RS-485

DEVICE

HOST

ModBus
RS-232

ETHERNET

ETHERNET

Proop Process Series

ModBus
RS-232ModBus
RS-485

DEVICE

HOST

ModBus
RS-232

ETHERNET

ETHERNET



Interface and Process Connection Options for Proop HMI



Process Control with PLC

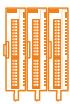


Process Control	IPERTU PLC CPU Module
Analog Inputs/Outputs Digital Inputs/Outputs Relay Outputs	IPERTU PLC I/O Modules
Process Monitoring Parameter Settings	Professional Operator Panel

Process Control with SOFT PLC



Process Control	Professional Operator Panel
Process Monitoring Parameter Settings	Professional Operator Panel
Analog Inputs/Outputs Digital Inputs/Outputs Relay Outputs	IPERTU PLC I/O Modules



IPERTU PLC Module Types and Features

Ipertu PLC-CPU module, I/O expansion modules (Analog Input/Output Control modules, Digital Input/Output modules), Communication modules;

IPERTU Slim PLC-CPU Module

Slim PLC CPU Module with Digital Input/Transistor Output

- PLC online debug feature,
 - Configurable via mini USB 2.0 connection,
 - Modbus RTU communication with RS485 or RS232,
 - Ethernet 10/100 Mbit.
- Easy programming via IPERTU.IDE Ladder,
- Transactions;
Special purpose function blocks: PID and position control,
Standard PLC commands: Logic, mathematical, time and counting relays,
Hardware specific function blocks: Communication, fast counter and pulse outputs.

Via WQC "Web Quick Connect" feature ;
Easy access via internet connection
from all around the world



Accessing and monitoring Ipertu PLC modules
without the need for any program via Web
Browser with IPERTU Scada feature.



Max. 16 expansion module
connections. I/O connection
support up to 268 points.

9 Digital input (NPN/PNP)



Built-in calendar, clock feature.

6 Transistor output (PNP).



Data Log feature via USB

3 Channel 200kHz dual-phase,
encoder or fast counter input.



Easy Supply and Communication
connection via special BUS structure.

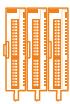
Maximum frequency
100kHz for 6 channels.



"Pulse-Width-Modulation" feature



"Pulse-Train-Output" feature



IPERTU PLC Module Types and Features

IPERTU Slim Plus PLC-CPU Module

CPU Speed / Command Times

CPU Speed	LD Command Speed	MOV Command Speed	I/O Module Renewal time
12ns/command	30ns/command	80ns/command	~300µs/module

Memory

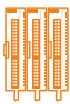
Program Capacity	Data Memory	Retain Memory	Retain Memory Lifetime
196kB	27kB	4kB	10 Year

Application Memory

Decimal Operation Support	Counter Relays	Signed Integer	Time Relay Resolution
VAR	200 piece 16bit 56 piece 32bit	16bit sign 8192 piece	56 piece 1ms, 100 piece 10ms, 100 piece 100ms

Volatile Memory Area Map

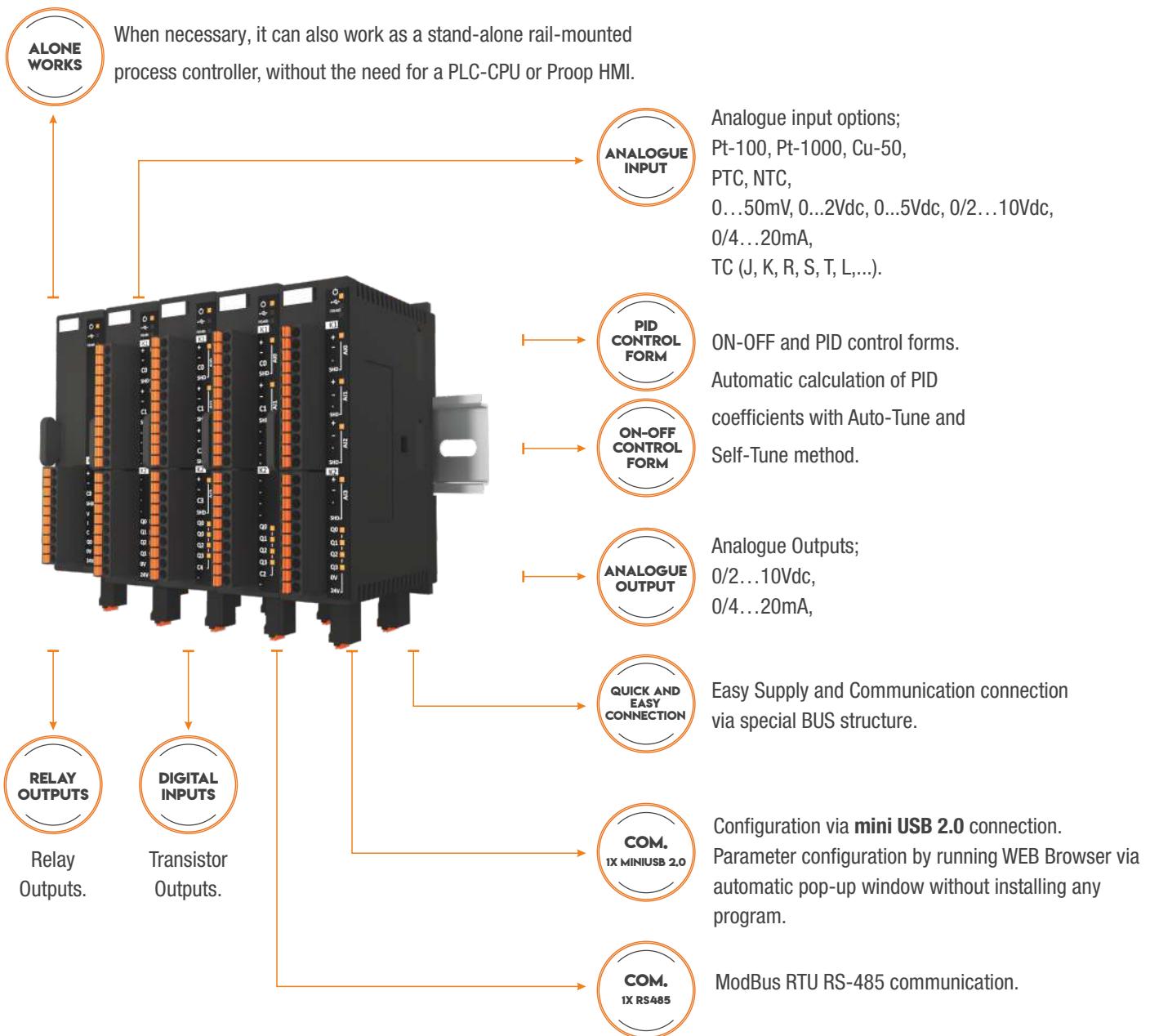
Address Name	Address Range	Address Type	Defination
X	0 - 127	BOOL	Logic Input Memory Area
Y	0 - 127	BOOL	Logic Output Memory Area
AI	0 - 31	WORD	Analog Input Memory Area
AO	0 - 31	WORD	Analog Output Memory Area
M	0 - 8191	BOOL	Bit Memory Area
D	0 - 8191	WORD	Data Memory Area
S	0 - 1023	BOOL	Status Bits
CV	0 - 199 200 - 255	WORD DWORD	Counter Memory Area
TV	0 - 255	WORD	Timer Memory Area
C	0 - 255	BOOL	Counter Bit Memory Area
T	0 - 255	BOOL	Timer Bit Memory Area

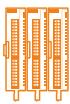


IPERTU PLC Module Types and Features

Analogue Input I/O Expansion Modules

I/O expansion modules with analog inputs can be configured with a Mini USB 2.0 connection. Depending on the process; It can work together with PLC-CPU module or Proop HMI. In addition, with its programmable parametric structure, it can work as a rail-mounted process control device without the need for any control unit.

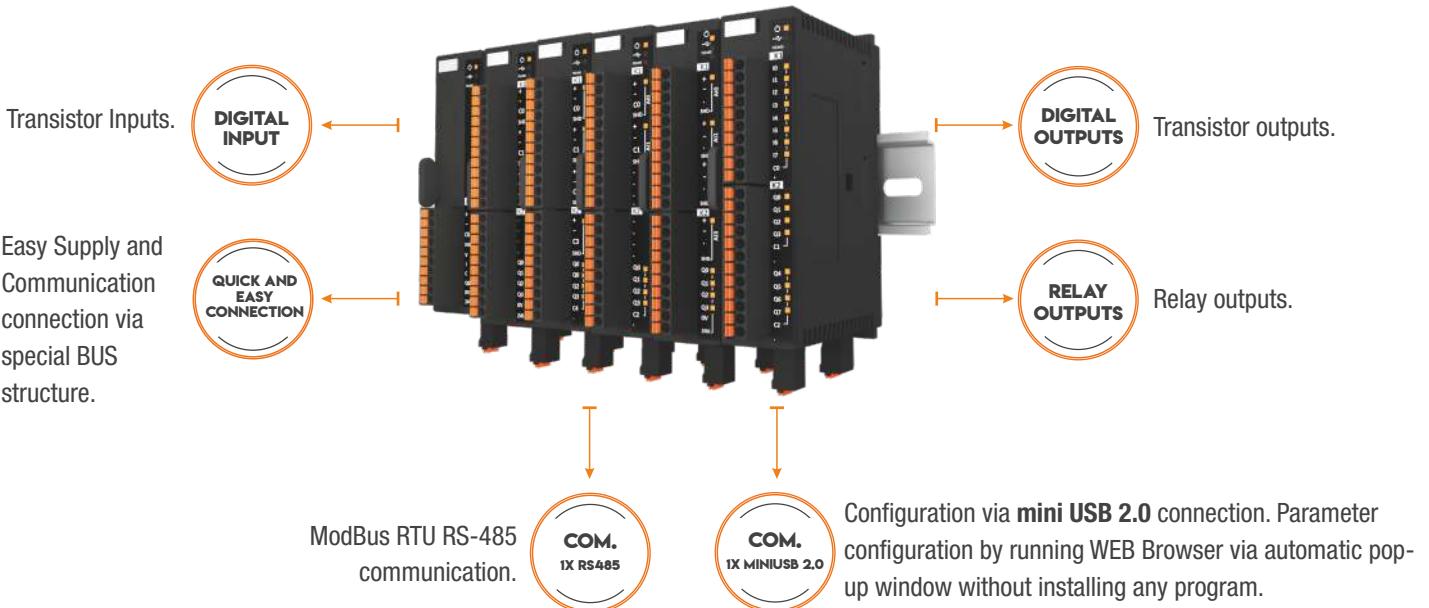




IPERTU PLC Module Types and Features

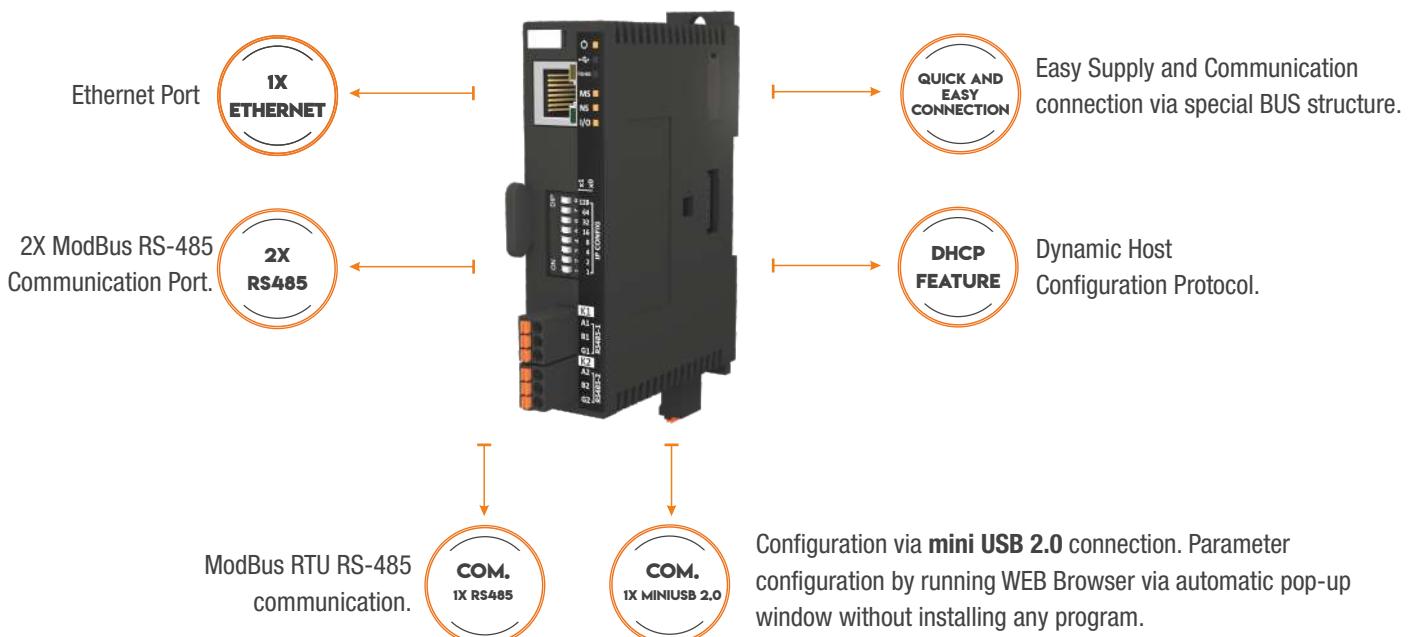
Digital Input I/O Expansion Modules

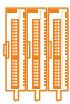
IPERTU PLC-I/O expansion modules with digital inputs are expansion modules with digital input, relay or transistor output. In cases where extra digital input, transistor or relay output is needed, it works as an expansion module with PLC-CPU module and Proop HMI panel.



Communication Modules

IPERTU Communication Modules provide communication with PLC, HMI panel with 1x Ethernet input, 2x ModBus RS485 communication port.





IPERTU PLC Module Properties

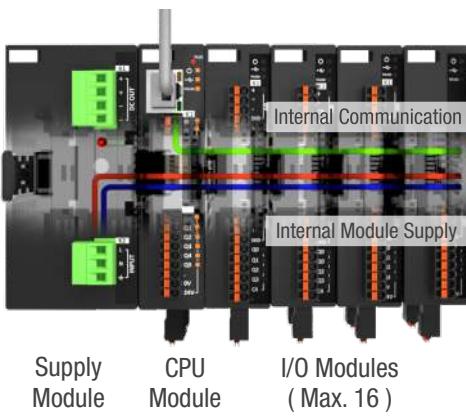
Quick and Easy Connection
Working alone

Quick and Easy Connection



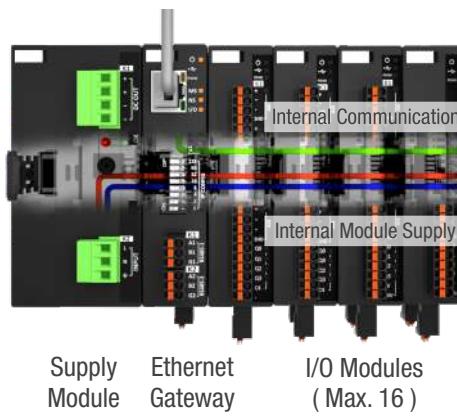
Thanks to the special BUS structure between the modules, fast and easy connection without the need for communication and supply cables.

IPERTU CPU Module + I/O Module Connection



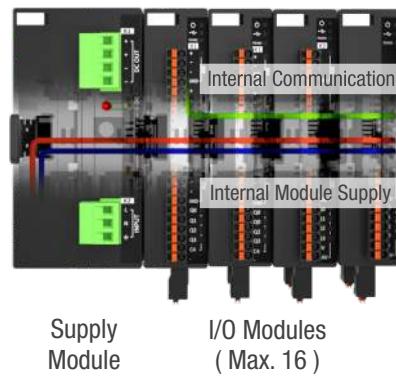
Supply Module CPU Module I/O Modules (Max. 16)

IPERTU Ethernet Module + I/O Module Connection



Supply Module Ethernet Gateway Modules I/O Modules (Max. 16)

IPERTU I/O Module Connection



Supply Module I/O Modules (Max. 16)

Easy Configuration via USB



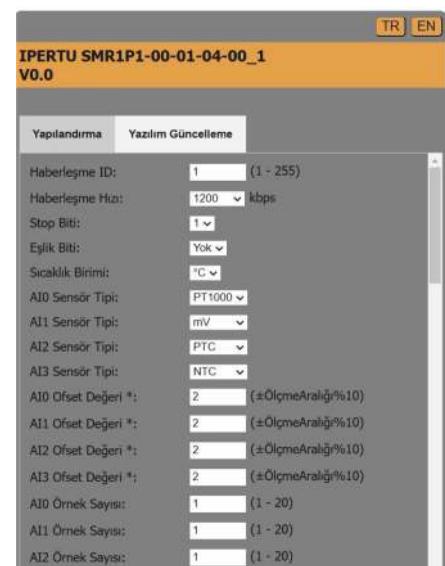
IPERTU modules are configured with Mini USB 2.0 connection. Without installing any program, parameter configuration and module software update can be done via the automatically opened window in WEB Browser. Uploading the LADDER code compiled from the PC to the PLC-CPU module or adjusting the Expansion modules depending on the process with its programmable parametric structure.

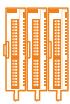


Quick Parameter Configuration via mini USB

connection; Parameter configuration by running WEB Browser via automatic pop-up window without installing any program.

* The software update is done with the latest version software downloaded from the WEB site.





IPERTU PLC Expansion Modules

Module Types

IPERTU PLC-CPU Modules

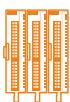
	Model	Inputs	(A,B,Z) Dual Phase Encoder or Fast Counter Input	Outputs	Output Speed
CPU Modules	Slim Basic	9x	Digital Input (NPN-PNP)	3x 20kHz	20kHz
	Slim Plus			3x 200kHz	100kHz

IPERTU PLC - I/O Modules

	Inputs	Outputs	Communication/ Supply
Analogue Input (PID) Modules	2x Pt-100, Pt-1000, Cu-50, PTC, NTC, 0...50mV	4x (NO) Relay 1,5A Transistor	Module Parameter Configuration via USB2.0
	2x 0/2...10Vdc, 0...2/5Vdc, 0/4...20mA	4x (NO) Relay 1,5A Transistor	ModBus RS-485 Communication
	2x TC (J, K, R, S, T, L, ...)	4x Transistor	24Vdc Supply
	1x RTD, PTC, NTC, Vdc, mVdc, Adc, TC (J, K, R, S, T, L, ...),	4x Transistor	—
	1x RTD, PTC, NTC, Vdc, mVdc, Adc, TC (J, K, R, S, T, L, ...),	1x Transistor and (0...10Vdc, 0...20mA)	PLC BUS
Digital Input Modules	8x Digital Input	8x (NO) Relay 1,5A	* Parameter Configuration, Communication, Module Supply to be done via PLC BUS
	8x Digital Input	8x Transistor	
	16x Digital Input	-	
	-	14x (NO) Relay 1,5A	
	-	15x Transistor	

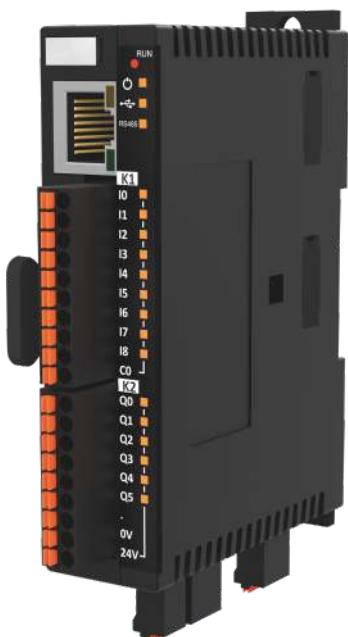
IPERTU Communication Modules

	Communication Properties
Ethernet Gateway Modules	2x RS485 + 1x miniUSB 2.0 + 1x Ethernet
	1x miniUSB 2.0 + 1x Ethernet



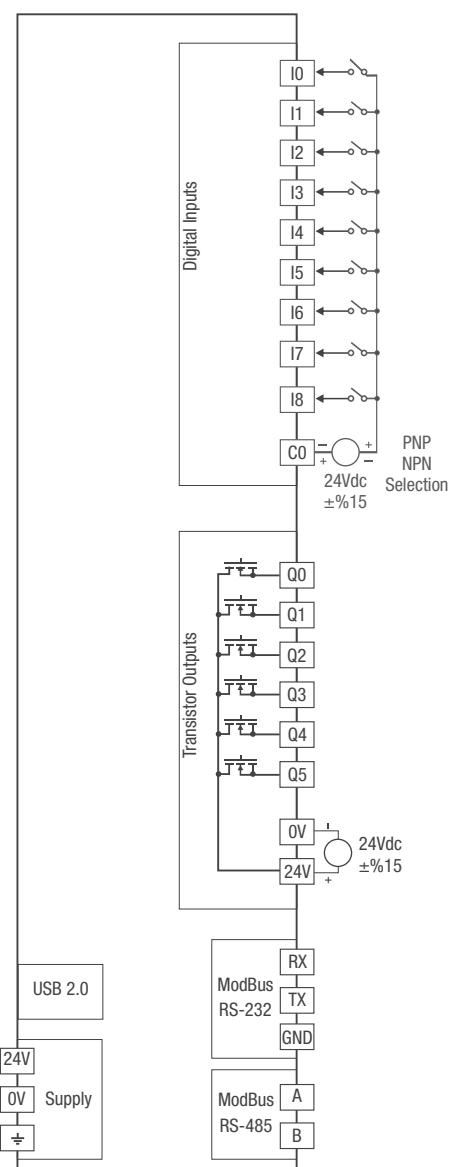
IPERTU PLC CPU Modules

Digital Input - Transistor Output
Slim Plus and Slim Basic PLC CPU Modules



WQC	WQC "Web Quick Connect" feature ; Easy access via internet connection from all around the world
IPERTU SCADA	Accessing and monitoring Ipertu PLC modules without the need for any program via Web Browser with IPERTU Scada feature.
CPU Speed	12ns/command
LD Command Speed	30ns/command
MOV Command Speed	80ns/command
Program Capacity	196kB
Data Memory	27kB
Retain Memory/Lifetime	4kB / 10 Year
(A,B,Z) Dual Phase Encoder or Fast Counter Input	
Slim Plus PLC-CPU Module IPERTU-SPP3P1-30-00-51-00_1	3 piece 200Khz
Slim Basic PLC-CPU Module IPERTU-SPL3P1-02-00-03-00_1	3 piece 20Khz

Easy programming with IPERTU.IDE Ladder (LD) language,
9 Digital inputs (NPN / PNP),
6 Digital Outputs (PNP),
Modular connectivity (Max. 16 devices, 268 I/O ports),
Built-in calendar-clock (RTC),
Data logging via USB,
Ethernet 10/100 Mbit,
Modbus RTU communication with RS485 and RS232.



General Specifications

Supply

Supply Voltage 24 VDC ($\pm 20\%$) (19,2 VDC - 28,8 VDC)

Power Consumption 2W

Communication Ports

Communication Port 1x RS-232, 1x RS-485 Modbus RTU

Program Installation/Configuration 1x USB (Mini USB2.0)

Inputs

Digital Inputs 9x Digital NPN /PNP inputs

Response Speed 2.5 μ s for 9 inputs

Max. Current 6 mA

Outputs

Digital Outputs 6x PNP outputs

Reaction Time 5 μ s

Digital Output Current 0.3 A (single channel), 1.8 A (total COM currents)

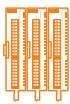
Environmental Conditions

Operating / Storage Temperature -10°C...+60°C / -20°C...+70°C

Mounting Type Rail Mounting

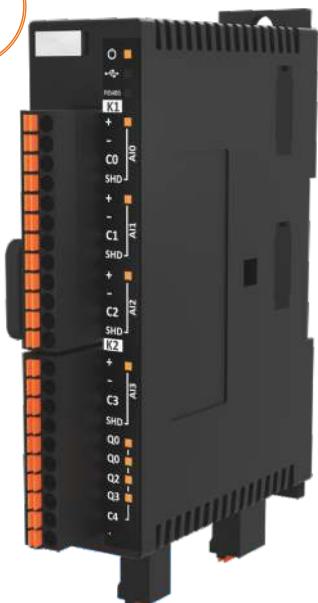
Product Codes

IPERTU PLC CPU Modules	Module Types	Digital Inputs	(A,B,Z) Dual Phase Encoder or Fast Counter Input	Digital Input (100KHz)	Digital Output (20KHz)	ETH	USB	RS232	RS485
IPERTU-SPP3P1-30-00-51-00_1	Slim Plus	9x NPN/PNP	3 pcs 200Khz	6x Transistor	-	+	+	+	+
IPERTU-SPL3P1-02-00-03-00_1	Slim Basic	9x NPN/PNP	3 pcs 20Khz	-	6x Transistor	+	+	+	+



IPERTU Analog Input (PID) Modules

2x or 4x Analog Inputs (RTD,PTC,NTC,mVdc)
4x Relay Output, PID Module

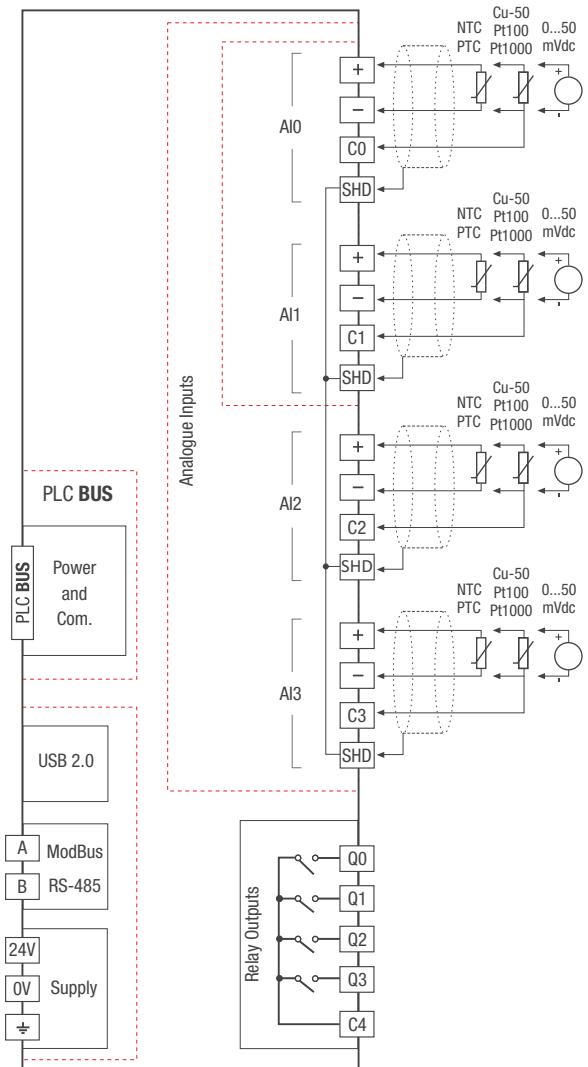


SMR1P1-00-01-21-00_1



SMR1P1-00-03-21-00_1

Compatible with ModbusRTU (RS-485) Master devices,
2x Semi-Universal inputs (RTD,PTC,NTC,mVdc),
4x Semi-Universal inputs (RTD,PTC,NTC,mVdc),
4x NO 1.5A Relay output,
Programmable PID and ON-OFF control forms,
Automatic PID calculation with Self-Tune or Auto-Tune operations,
Mini USB-USB2.0 (Software Download/Configuration),
Modular Connection (Maximum 16 devices),
Snap-in type terminal, 25mm wide.



General Specifications

Supply

Supply Voltage 24Vdc ($\pm 20\%$) or PLCBUS

Power Consumption 1,5W

Communication Ports

Communication Port 1x RS-485 or PLCBUS

Program Installation/Configuration 1x USB (Mini USB2.0) or PLCBUS

Inputs

Analogue Inputs 2x or 4x (Pt-100, Pt-1000, PTC, NTC, 0...50mV)

ADC Resolution 15bit

Measuring Speed Per Channel 160msn

Outputs

Relay Outputs 4x (NO) Relay Output (1,5A)

Reaction time 10 msn

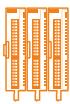
Environmental Conditions

Operating / Storage Temperature -10°C...+60°C / -20°C...+70°C

Mounting Type Rail Mounting

Product Codes

IPERTU Expansion Module	Digital Input	Analogue Input	Digital Output	Relay Output	Analogue Output	Communication Port	PID - ON/OFF Control Form
IPERTU-SMR1P1-00-03-21-00_1	-	2x	-	4x	-	1x RS485 + 1x miniUSB 2.0	+
IPERTU-SMR1P1-00-01-21-00_1	-	4x	-	4x	-	1x RS485 + 1x miniUSB 2.0	+
IPERTU-SMROPO-00-03-21-00_1	-	2x	-	4x	-	PLC BUS	+
IPERTU-SMROPO-00-01-21-00_1	-	4x	-	4x	-	PLC BUS	+



IPERTU Analog Input (PID) Modules

2x or 4x Analog Inputs (RTD,PTC,NTC,mVdc)
4x Transistor Output, PID Module

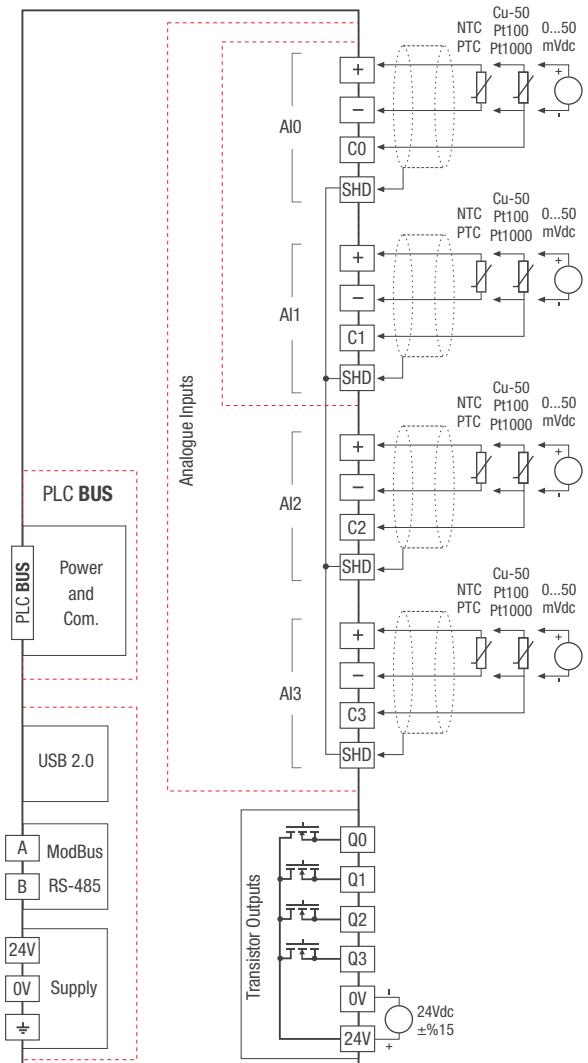


SMR1P1-00-01-04-00_1



SMR1P1-00-03-04-00_1

Compatible with ModbusRTU (RS-485) Master devices,
2x Semi-Universal inputs (RTD,PTC,NTC,mVdc),
4x Semi-Universal inputs (RTD,PTC,NTC,mVdc),
4x Transistor outputs,
Programmable PID and ON-OFF control forms,
Automatic PID calculation with Self-Tune or Auto-Tune operations,
Mini USB-USB2.0 (Software Download/Configuration),
Modular Connection (Maximum 16 devices),
Snap-in type terminal, 25mm wide.



General Specifications

Supply

Supply Voltage 24Vdc ($\pm 20\%$) or PLCBUS

Power Consumption 1W

Communication Ports

Communication Port 1x RS-485 or PLCBUS

Program Installation/Configuration 1x USB (Mini USB2.0) or PLCBUS

Inputs

Analogue Inputs 2x or 4x (Pt-100, Pt-1000, PTC, NTC, 0...50mV)

ADC Resolution 15bit

Measuring Speed Per Channel 160msn

Outputs

Digital Outputs 4x Transistor (24Vdc@0,3A)

Reaction time 170 μ s

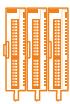
Environmental Conditions

Operating / Storage Temperature -10°C...+60°C / -20°C...+70°C

Mounting Type Rail Mounting

Product Codes

IPERTU Expansion Module	Digital Input	Analogue Input	Digital Output	Relay Output	Analogue Output	Communication Port	PID - ON/OFF Control Form
IPERTU-SMR1P1-00-03-04-00_1	-	2x	4x	-	-	1x RS485 + 1x miniUSB 2.0	+
IPERTU-SMR1P1-00-01-04-00_1	-	4x	4x	-	-	1x RS485 + 1x miniUSB 2.0	+
IPERTU-SMROPO-00-03-04-00_1	-	2x	4x	-	-	PLC BUS	+
IPERTU-SMROPO-00-01-04-00_1	-	4x	4x	-	-	PLC BUS	+



IPERTU Analog Input (PID) Modules

2x or 4x Analog Inputs (Vdc,mA)
4x Relay Outputs, PID Module

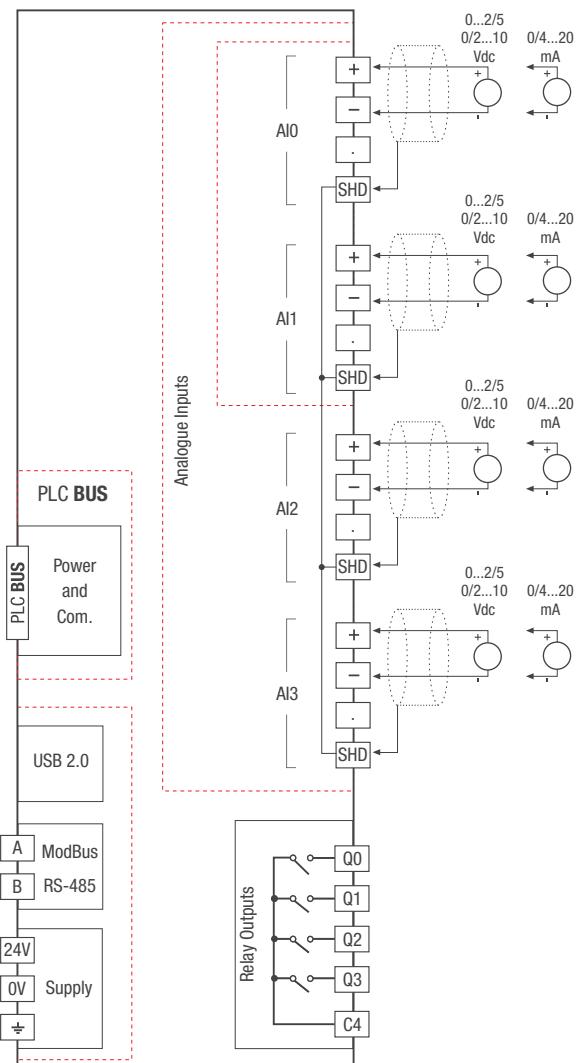


SMR1P1-00-20-21-00_1



SMR1P1-00-21-21-00_1

Compatible with Modbus RTU (RS-485) Master devices,
2x Analog input (Vdc,mA),
4x Analog inputs (Vdc,mA),
4x NO 1.5A Relay output,
Programmable PID and ON-OFF control forms,
Automatic PID calculation with Self-Tune or Auto-Tune operations,
Mini USB-USB2.0 (Software Download/Configuration),
Modular Connection (Maximum 16 devices),
Snap-in type terminal, 25mm wide.



General Specifications

Supply

Supply Voltage 24Vdc ($\pm 20\%$) or PLCBUS

Power Consumption 1,5W

Communication Ports

Communication Port 1x RS-485 or PLCBUS

Program Installation/Configuration 1x USB (Mini USB2.0) or PLCBUS

Inputs

Analogue Inputs 2x or 4x (0/2...10Vdc, 0/4...20mA)

ADC Resolution 15bit

Measuring Speed Per Channel 160msn

Outputs

Relay Outputs 4x (NO) Relay Output (1,5A)

Reaction time 10 msn

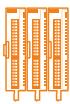
Environmental Conditions

Operating / Storage Temperature -10°C...+60°C / -20°C...+70°C

Mounting Type Rail Mounting

Product Codes

IPERTU Expansion Module	Digital Input	Analogue Input	Digital Output	Relay Output	Analogue Output	Communication Port	PID - ON/OFF Control Form
IPERTU-SMR1P1-00-21-21-00_1	-	2x	-	4x	-	1x RS485 + 1x miniUSB 2.0	+
IPERTU-SMR1P1-00-20-21-00_1	-	4x	-	4x	-	1x RS485 + 1x miniUSB 2.0	+
IPERTU-SMROPO-00-21-21-00_1	-	2x	-	4x	-	PLC BUS	+
IPERTU-SMROPO-00-20-21-00_1	-	4x	-	4x	-	PLC BUS	+



IPERTU Analog Input (PID) Modules

2x or 4x Analog Inputs (Vdc,mA)
4x Transistor Output, PID Module

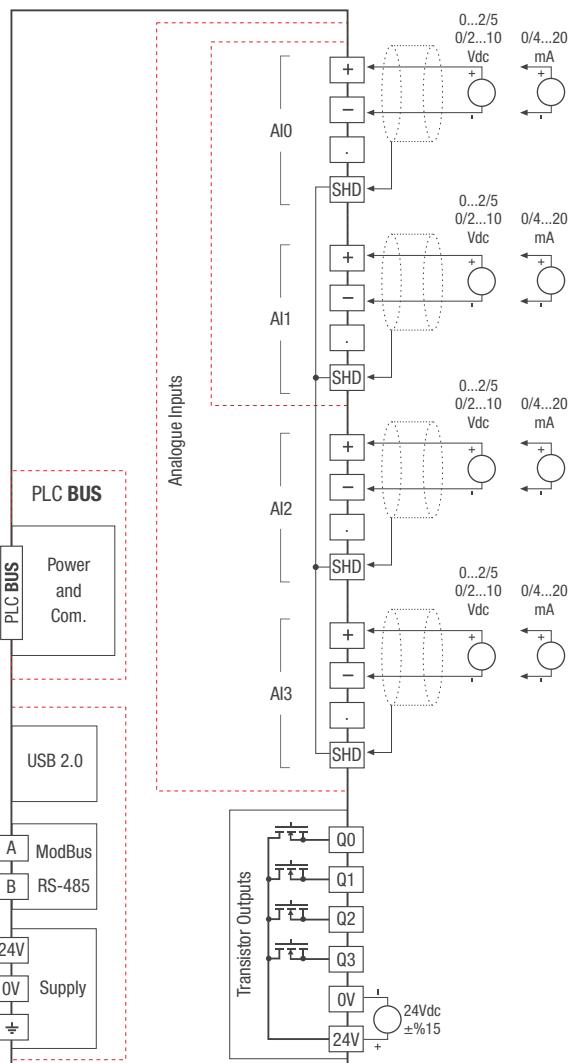


SMR1P1-00-20-04-00_1



SMR1P1-00-21-04-00_1

Compatible with Modbus RTU (RS-485) Master devices,
2x Analog input (Vdc,mA),
4x Analog inputs (Vdc,mA),
4x Transistor output,
Programmable PID and ON-OFF control forms,
Automatic PID calculation with Self-Tune or Auto-Tune operations,
Mini USB-USB2.0 (Software Download/Configuration),
Modular Connection (Maximum 16 devices),
Snap-in type terminal, 25mm wide.



* Ground (SHD) must be connect for each sensor type

General Specifications

Supply

Supply Voltage 24Vdc ($\pm 20\%$) or PLCBUS

Power Consumption 1W

Communication Ports

Communication Port 1x RS-485 or PLCBUS

Program Installation/Configuration 1x USB (Mini USB2.0) or PLCBUS

Inputs

Analogue Inputs 2x or 4x (0/2...10Vdc, 0/4...20mA)

ADC Resolution 15bit

Measuring Speed Per Channel 160msn

Outputs

Digital Outputs 4x Transistor (24Vdc@0,3A)

Reaction time 170 μ s

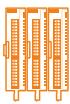
Environmental Conditions

Operating / Storage Temperature -10°C...+60°C / -20°C...+70°C

Mounting Type Rail Mounting

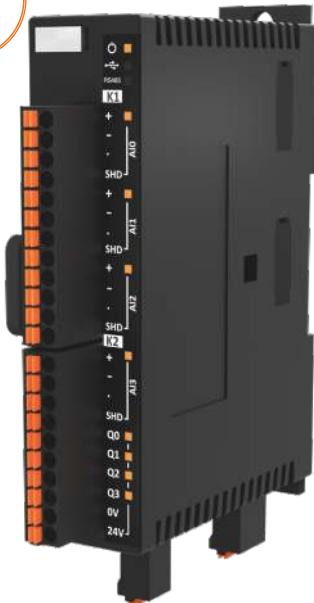
Product Codes

IPERTU Expansion Module	Digital Input	Analogue Input	Digital Output	Relay Output	Analogue Output	Communication Port	PID - ON/OFF Control Form
IPERTU-SMR1P1-00-21-04-00_1	-	2x	4x	-	-	1x RS485 + 1x miniUSB 2.0	+
IPERTU-SMR1P1-00-20-04-00_1	-	4x	4x	-	-	1x RS485 + 1x miniUSB 2.0	+
IPERTU-SMROPO-00-21-04-00_1	-	2x	4x	-	-	PLC BUS	+
IPERTU-SMROPO-00-20-04-00_1	-	4x	4x	-	-	PLC BUS	+



IPERTU TC Input (PID) Modules

2x or 4x Analog Inputs (J, K, R, S, T, L, ...)
4x Transistor Output, PID Module

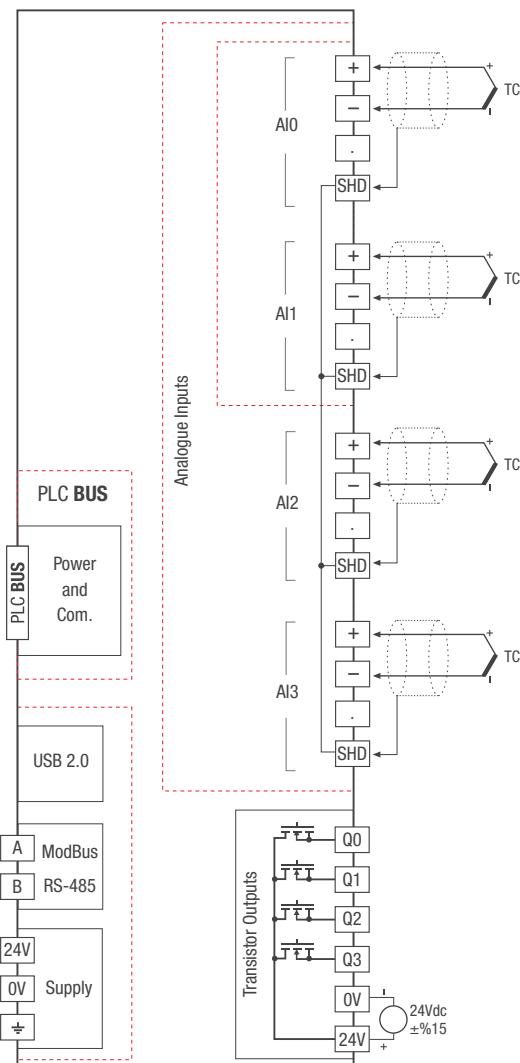


SMR1P1-00-10-04-00_1



SMR1P1-00-12-04-00_1

Compatible with Modbus RTU (RS-485) Master devices,
2x Thermocouple input TC (J, K, R, S, T, L, ...),
4x Thermocouple input TC (J, K, R, S, T, L, ...),
4x Transistor output,
Programmable PID and ON-OFF control forms,
Automatic PID calculation with Self-Tune or Auto-Tune operations,
Mini USB-USB2.0 (Software Download/Configuration),
Modular Connection (Maximum 16 devices),
Snap-in type terminal, 25mm wide.



* Ground (SHD) must be connect for each sensor type

General Specifications

Supply

Supply Voltage 24Vdc ($\pm 20\%$) or PLCBUS

Power Consumption 1,5W

Communication Ports

Communication Port 1x RS-485 or PLCBUS

Program Installation/Configuration 1x USB (Mini USB2.0) or PLCBUS

Inputs

Analogue Inputs 2x or 4x TC (J, K, R, S, T, L, ...)

ADC Resolution 15bit

Measuring Speed Per Channel 160msn

Outputs

Digital Outputs 4x Transistor (24Vdc@0,3A)

Reaction time 170 μ sn

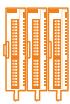
Environmental Conditions

Operating / Storage Temperature -10°C...+60°C / -20°C...+70°C

Mounting Type Rail Mounting

Product Codes

IPERTU Expansion Module	Digital Input	Analogue Input	Digital Output	Relay Output	Analogue Output	Communication Port	PID - ON/OFF Control Form
IPERTU-SMR1P1-00-12-04-00_1	-	2x TC	4x	-	-	1x RS485 + 1x miniUSB 2.0	+
IPERTU-SMR1P1-00-10-04-00_1	-	4x TC	4x	-	-	1x RS485 + 1x miniUSB 2.0	+
IPERTU-SMROPO-00-12-04-00_1	-	2x TC	4x	-	-	PLC BUS	+
IPERTU-SMROPO-00-10-04-00_1	-	4x TC	4x	-	-	PLC BUS	+



IPERTU Universal Analog Input (PID) Modules

1x Universal Input (RTD,PTC,NTC, Vdc,mVdc,Adc,TC)
4x Transistor Output PID Module



SMR1P1-00-30-04-00_1

General Specifications

Supply

Supply Voltage 24Vdc ($\pm 20\%$) or PLCBUS

Power Consumption 1,5W

Communication Ports

Communication Port 1x RS-485 or PLCBUS

Program Installation/Configuration 1x USB (Mini USB2.0) or PLCBUS

Inputs

Analogue Inputs 1x Universal analogue input

ADC Resolution 15 bit

Measuring Speed Per Channel 160msn

Outputs

Digital Outputs 4x Transistor (24Vdc@0,3A)

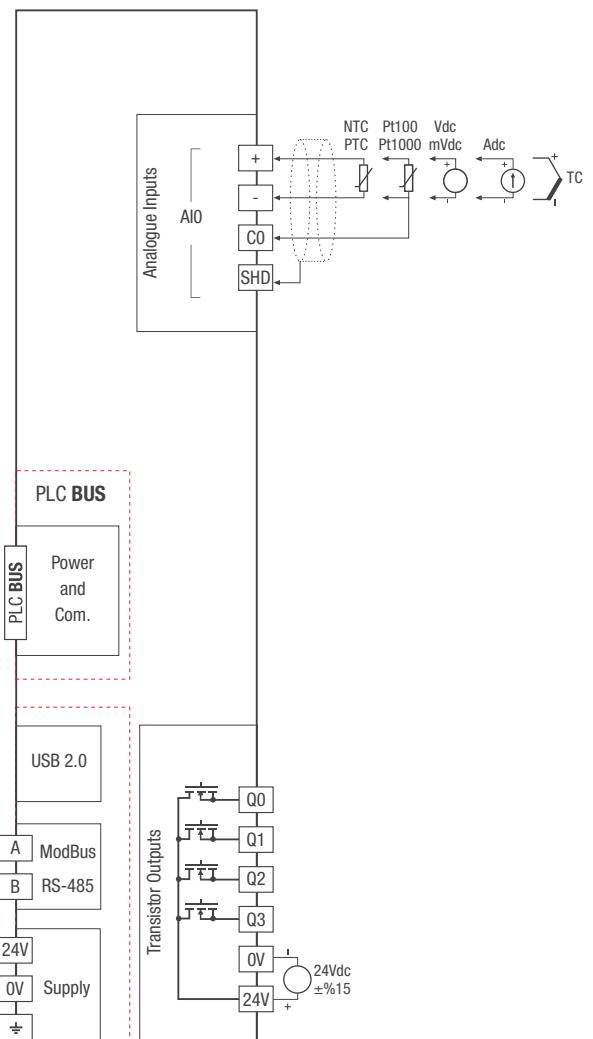
Reaction time 170 μ sn

Environmental Conditions

Operating / Storage Temperature -10°C...+60°C / -20°C...+70°C

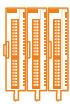
Mounting Type Rail Mounting

Compatible with Modbus RTU (RS-485) Master devices,
1x Universal Analog Input (RTD,PTC,NTC, Vdc,mVdc,Adc,TC),
4x Transistor Digital Output (Active High),
Programmable PID and ON-OFF control forms,
Automatic PID calculation with Self-Tune or Auto-Tune operations,
Mini USB-USB2.0 (Software Download/Configuration),
Modular Connection (Maximum 16 devices),
Snap-in type terminal, 25mm wide.



Product Codes

IPERTU Expansion Module	Digital Input	Analogue Input	Digital Output	Relay Output	Analogue Output	Communication Port	PID - ON/OFF Control Form
IPERTU-SMR1P1-00-30-04-00_1	-	1x Universal Input	4x	-	-	1x RS485 + 1x miniUSB 2.0	+
IPERTU-SMROPO-00-30-04-00_1	-	1x Universal Input	4x	-	-	PLC BUS	+



IPERTU Universal Analog Input / Output (PID) Modules

1x Universal Input (RTD,PTC,NTC, Vdc,mVdc,Adc,TC)
Transistor + 1x Analog Output PID Module



SMR1P1-00-30-07-02_1

General Specifications

Supply

Supply Voltage 24Vdc ($\pm 20\%$) or PLCBUS

Power Consumption 1,5W

Communication Ports

Communication Port 1x RS-485 or PLCBUS

Program Installation/Configuration 1x USB (Mini USB2.0) or PLCBUS

Inputs

Analogue Inputs 1x Universal analogue input

ADC Resolution 15bit

Measuring Speed Per Channel 160msn

Outputs

Digital Outputs 1x Transistor (24Vdc@0,3A)

Reaction time 170 μ sn

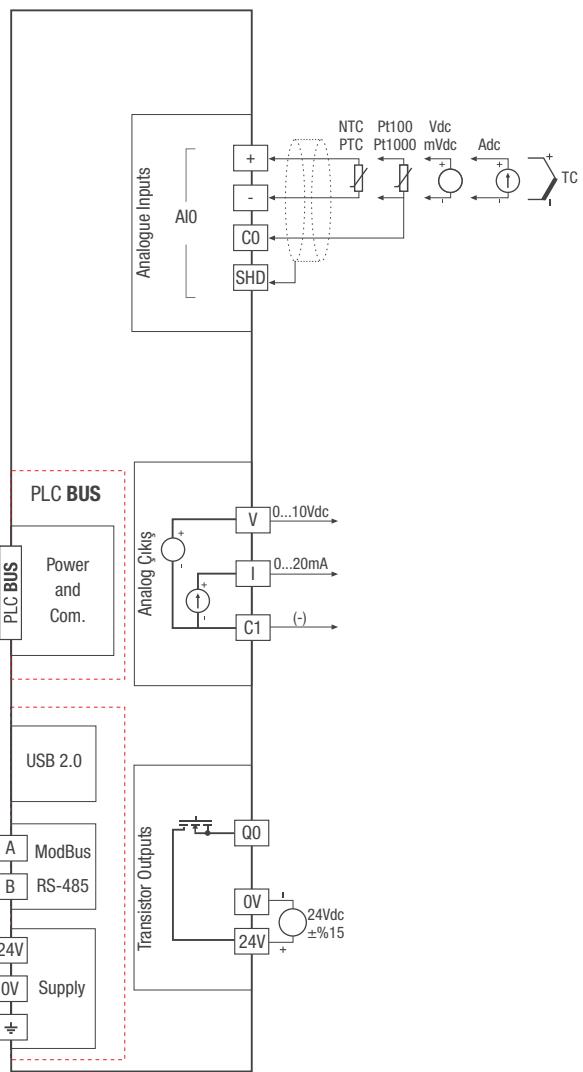
Analogue Output 1x (0...10Vdc, 0...20mA)

Environmental Conditions

Operating / Storage Temperature -10°C...+60°C / -20°C...+70°C

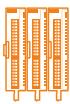
Mounting Type Rail Mounting

Modbus RTU (RS-485) haberleşmeli Master cihazlar ile uyumlu,
1x Üniversal analog giriş (RTD,PTC,NTC, Vdc,mVdc,Adc,TC),
1x Transistor çıkış (Aktif Yüksek),
1x Analog çıkış (0...10Vdc, 0...20mA),
Programlanabilir PID ve ON-OFF kontrol formları,
Self-Tune veya Auto-Tune işlemleri ile otomatik PID hesaplama,
Mini USB-USB2.0 (Yazılım Yükleme/Konfigürasyon),
Modüler Bağlantı (Maksimum 16 cihaz),
Snap-in tip terminal, 25mm genişlik.



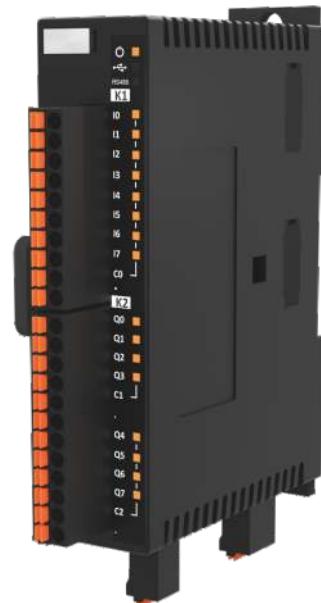
Product Codes

IPERTU Expansion Module	Digital Input	Analogue Input	Digital Output	Relay Output	Analogue Output	Communication Port	PID - ON/OFF Control Form
IPERTU-SMR1P1-00-30-07-02_1	-	1x Universal Input	1x	-	1x	1x RS485 + 1x miniUSB 2.0	+
IPERTU-SMROPO-00-30-07-02_1	-	1x Universal Input	1x	-	1x	PLC BUS	+



IPERTU Digital I/O Modules

8x Digital Input
8x Relay Output Module



SMR1P1-03-00-20-00_1

General Specifications

Supply

Supply Voltage 24Vdc ($\pm 20\%$) or PLCBUS

Power Consumption 2W

Communication Ports

Communication Port 1x RS-485 or PLCBUS

Program Installation/Configuration 1x USB (Mini USB2.0) or PLCBUS

Inputs

Digital Inputs 8x Digital Input

Response Speed 20 μ sn

Maximum Current 6 mA

Outputs

Relay Outputs 8x (NO) Relay Output (1,5A)

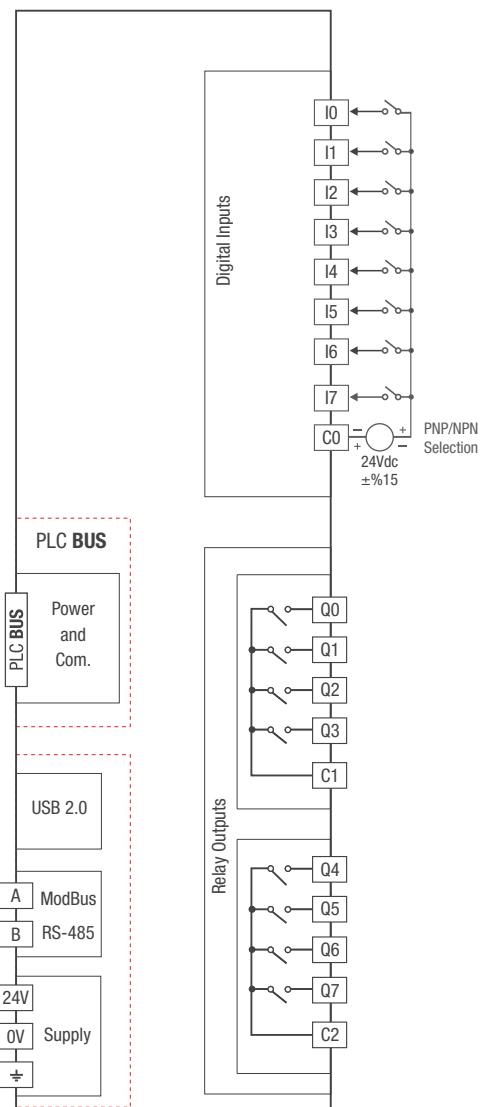
Reaction time 10msn

Environmental Conditions

Operating / Storage Temperature -10°C...+60°C / -20°C...+70°C

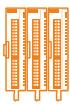
Mounting Type Rail Mounting

Compatible with Modbus RTU (RS-485) Master devices,
8x Digital inputs,
8x Relay output (1.5A),
Mini USB-USB2.0 (Software Download/Configuration),
Modular Connection (Maximum 16 devices),
Snap-in type terminal,
25mm width.



Product Codes

IPERTU Expansion Module	Digital Input	Analogue Input	Digital Output	Relay Output	Analogue Output	Communication Port	PID - ON/OFF Control Form
IPERTU-SMR1P1-03-00-20-00_1	8x	-	-	8x	-	1x RS485 + 1x miniUSB 2.0	-
IPERTU-SMROPO-03-00-20-00_1	8x	-	-	8x	-	PLC BUS	-



IPERTU Digital I/O Modules

8x Digital Input
8x Transistor Output Module



SMR1P1-03-00-02-00_1

General Specifications

Supply

Supply Voltage 24Vdc ($\pm 20\%$) or PLCBUS

Power Consumption 1,5W

Communication Ports

Communication Port 1x RS-485 or PLCBUS

Program Installation/Configuration 1x USB (Mini USB2.0) or PLCBUS

Inputs

Digital Inputs 8x Digital Input

Response Speed 20 μ s

Maximum Current 6 mA

Outputs

Digital Outputs 8x (24Vdc@0,3A)

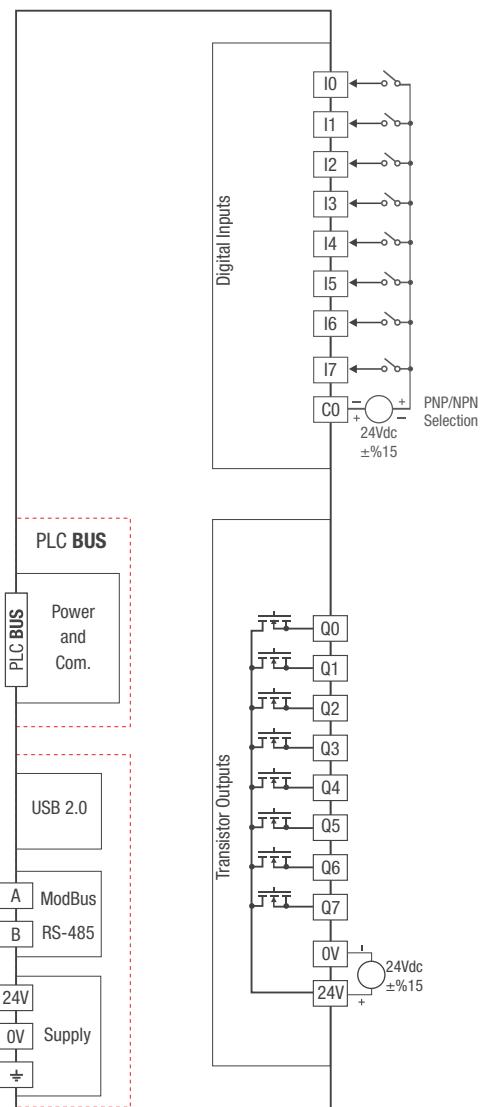
Reaction time 170 μ s

Environmental Conditions

Operating / Storage Temperature -10°C...+60°C / -20°C...+70°C

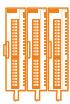
Mounting Type Rail Mounting

Compatible with Modbus RTU (RS-485) Master devices,
8x Digital inputs,
8x Transistor output,
Mini USB-USB2.0 (Software Download/Configuration),
Modular Connection (Maximum 16 devices),
Snap-in type terminal,
25mm width.



Product Codes

IPERTU Expansion Module	Digital Input	Analogue Input	Digital Output	Relay Output	Analogue Output	Communication Port	PID - ON/OFF Control Form
IPERTU-SMR1P1-03-00-02-00_1	8x	-	8x	-	-	1x RS485 + 1x miniUSB 2.0	-
IPERTU-SMROPO-03-00-02-00_1	8x	-	8x	-	-	PLC BUS	-



IPERTU Digital Input Module

16x Digital Input Module



SMR1P1-01-00-00-00_1

General Specifications

Supply

Supply Voltage 24Vdc ($\pm 20\%$) or PLCBUS

Power Consumption 1W

Communication Ports

Communication Port 1x RS-485 or PLCBUS

Program Installation/Configuration 1x USB (Mini USB2.0) or PLCBUS

Inputs

Digital Inputs 16x Digital Inputs

Outputs

Digital Outputs -

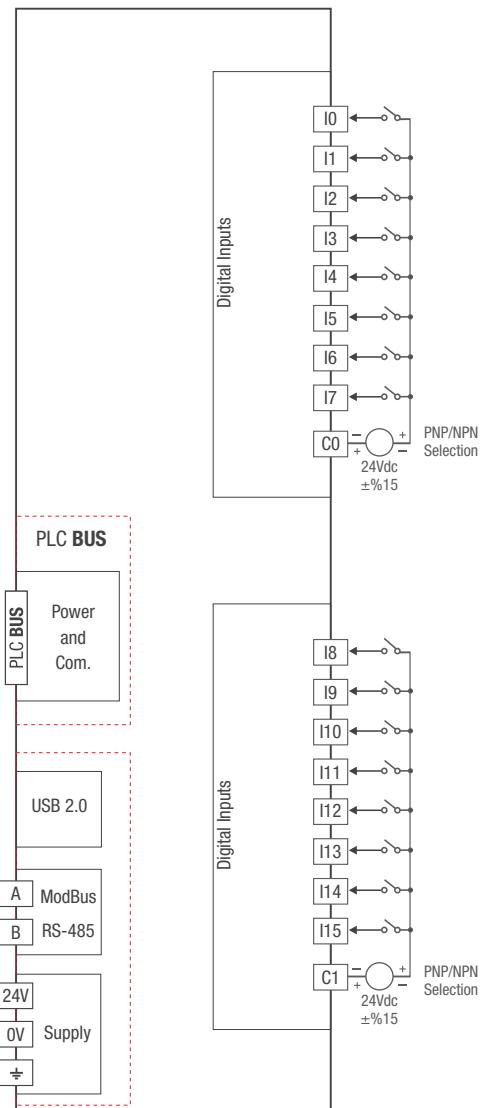
Reaction time -

Environmental Conditions

Operating / Storage Temperature $-10^{\circ}\text{C} \dots +60^{\circ}\text{C}$ / $-20^{\circ}\text{C} \dots +70^{\circ}\text{C}$

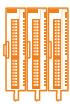
Mounting Type Rail Mounting

Compatible with Modbus RTU (RS-485) Master devices,
16x Digital inputs (PNP/NPN),
Mini USB-USB2.0 (Software Download/Configuration),
Modular Connection (Maximum 16 devices),
Snap-in type terminal,
25mm width.



Product Codes

IPERTU Expansion Module	Digital Input	Analogue Input	Digital Output	Relay Output	Analogue Output	Communication Port	PID - ON/OFF Control Form
IPERTU-SMR1P1-01-00-00-00_1	16x	-	-	-	-	1x RS485 + 1x miniUSB 2.0	-
IPERTU-SMROPO-01-00-00-00_1	16x	-	-	-	-	PLC BUS	-



IPERTU Transistor Output Module

15x Transistor Output Module



SMR1P1-00-00-01-00_1

General Specifications

Supply

Supply Voltage 24Vdc ($\pm 20\%$) or PLCBUS

Power Consumption 2W

Communication Ports

Communication Port 1x RS-485 or PLCBUS

Program Installation/Configuration 1x USB (Mini USB2.0) or PLCBUS

Inputs

Digital Inputs -

Outputs

Digital Outputs 15x (24Vdc@0,3A)

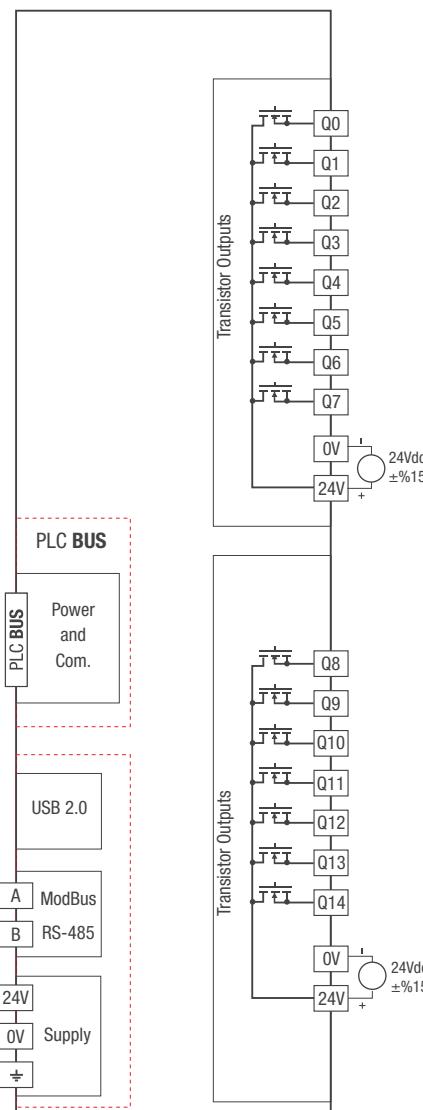
Reaction time 170 μ s

Environmental Conditions

Operating / Storage Temperature -10°C...+60°C / -20°C...+70°C

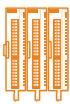
Mounting Type Rail Mounting

Compatible with Modbus RTU (RS-485) Master devices,
15x Transistor output,
PNP/NPN output selection,
Mini USB-USB2.0 (Software Download/Configuration),
Modular Connection (Maximum 16 devices),
Snap-in type terminal,
25mm width.



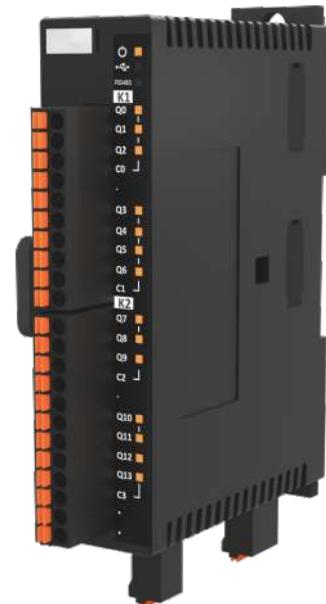
Product Codes

IPERTU Expansion Module	Digital Input	Analogue Input	Digital Output	Relay Output	Analogue Output	Communication Port	PID - ON/OFF Control Form
IPERTU-SMR1P1-00-00-01-00_1	-	-	15x	-	-	1x RS485 + 1x miniUSB 2.0	-
IPERTU-SMROPO-00-00-01-00_1	-	-	15x	-	-	PLC BUS	-



IPERTU Relay Output Module

14x Relay Output Module



SMR1P1-00-00-22-00_1

General Specifications

Supply

Supply Voltage 24Vdc ($\pm 20\%$) or PLCBUS

Power Consumption 2,5W

Communication Ports

Communication Port 1x RS-485 or PLCBUS

Program Installation/Configuration 1x USB (Mini USB2.0) or PLCBUS

Inputs

Digital Inputs -

Outputs

Digital Outputs 14x (1,5A)

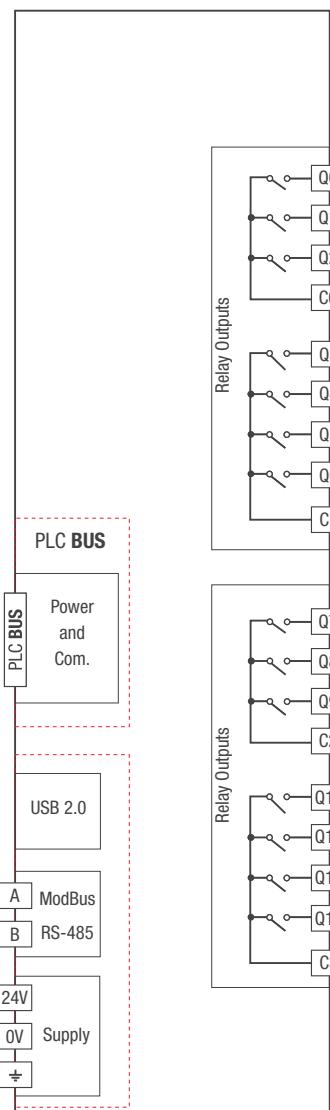
Reaction time 10msn

Environmental Conditions

Operating / Storage Temperature -10°C...+60°C / -20°C...+70°C

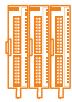
Mounting Type Rail Mounting

Compatible with Modbus RTU (RS-485) Master devices,
14x Relay (NO) output,
Mini USB-USB2.0 (Software Download/Configuration),
Modular Connection (Maximum 16 devices),
Snap-in type terminal,
25mm width.



Product Codes

IPERTU Expansion Module	Digital Input	Analogue Input	Digital Output	Relay Output	Analogue Output	Communication Port	PID - ON/OFF Control Form
IPERTU-SMR1P1-00-00-22-00_1	-	-	-	14x	-	1x RS485 + 1x miniUSB 2.0	-
IPERTU-SMROPO-00-00-22-00_1	-	-	-	14x	-	PLC BUS	-



IPERTU Communication Modules

Ethernet Gateway Communication Modules



SGN4P1-00-00-00-00_1



SGN8P1-00-00-00-00_1

Compatible with Modbus RTU (RS-485) Master devices,
Mini USB-USB2.0 (Software Download/Configuration),
Ethernet DHCP Feature (Dynamic Host Configuration Protocol),
USB, RS-485, supply and communication status led indicators.

* On the MODBUS-TCP side, 8 MASTER devices can be
operated simultaneously ability to log in to query SLAVE devices.

SGN4P1-00-00-00-00_1

SGN8P1-00-00-00-00_1

General Specifications

Supply

Supply Voltage 24Vdc ($\pm 20\%$)

Power Consumption 2W

Communication Ports

Communication Port 2x RS-485

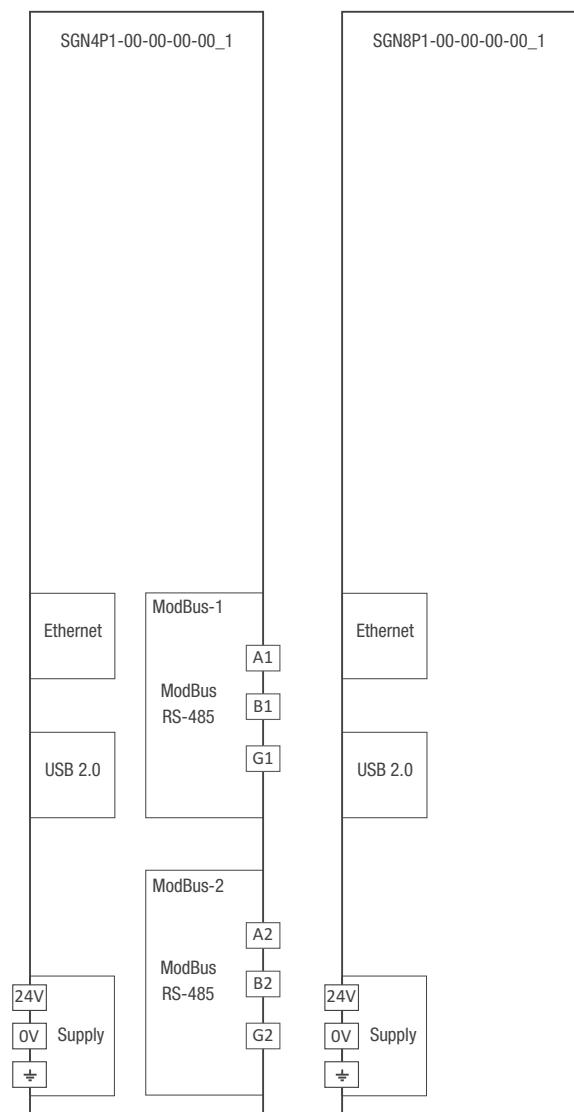
Program Installation/Configuration 1x USB (Mini USB2.0)

Ethernet 1x Ethernet

Environmental Conditions

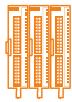
Operating / Storage Temperature -10°C...+60°C / -20°C...+70°C

Mounting Type Rail Mounting



Product Codes

IPERTU Communication Modules	Communication-1 ModBus RS-485	Communication-2 ModBus RS-485	Ethernet	Mini USB2.0
IPERTU-SGN4P1-00-00-00-00_1	1x	1x	1x	1x
IPERTU-SGN8P1-00-00-00-00_1	-	-	1x	1x



IPERTU Power Supply Module

Power Supply Module



IPERTU-MPS060-00-00-00-00_1

General Specifications

Supply

Efficiency > 84%

Starting current max 33A@230 Vac

Output

Power 60W 2,5A@24Vdc

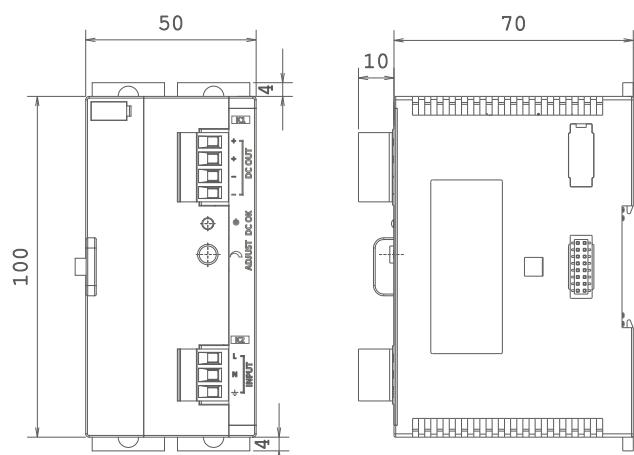
Ripple 300 mVpp max

Environmental Conditions

Operating / Storage Temperature -20°C...+50°C / -30°C...+75°C

Mounting Type Rail Mounting

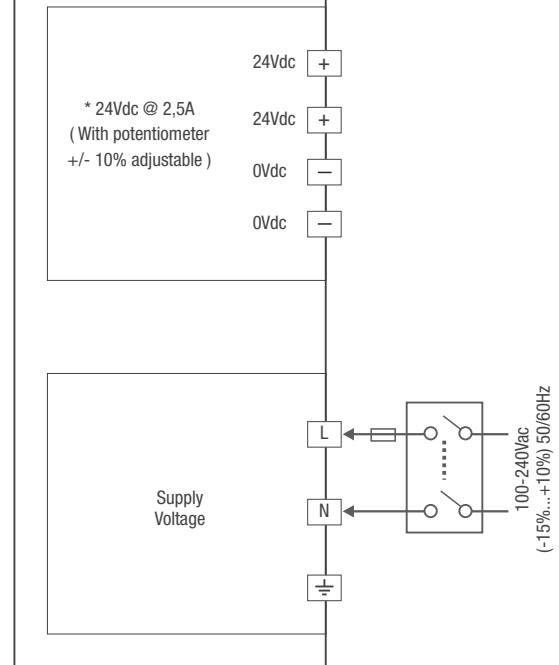
Dimensions

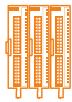


Universal Supply Input,
100-240Vac (-15%...+10%) 50/60Hz,
24Vdc ($\pm 10\%$) adjustable output voltage,
2.5A / 60W@24Vdc,
Active output led indicator,
Output Load regulation < 1.5%,
Output Line regulation < 1.5%,

* Internal supply to IPERTU PLC CPU and expansion modules
via IPERTU BUS structure.
(It should be installed on the far left of the devices)

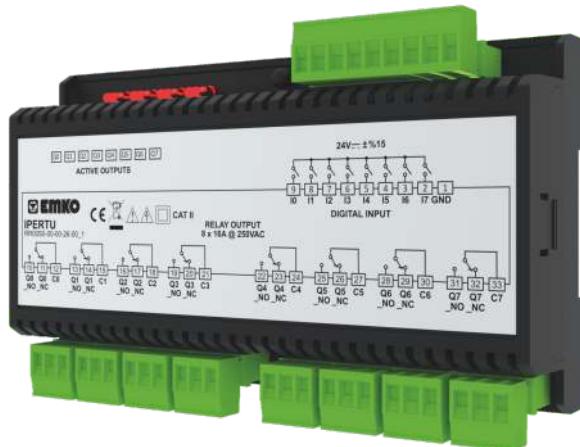
IPERTU-MPS060-00-00-00-00_1





IPERTU Relay Output Module

8x 16A-Relay Output Module



IPERTU-RR00S0-00-00-26-00_1

8x Digital inputs,

8x NO/NC Relay output (16A@250Vac),

8x Relay active leds.

General Specifications

Dimensions

Inputs

Digital Inputs 8x Digital Inputs

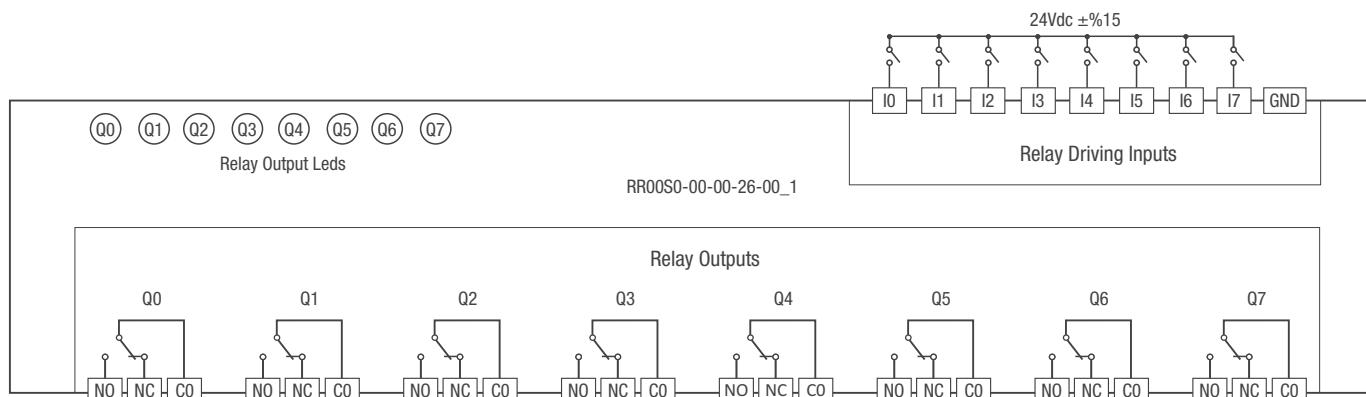
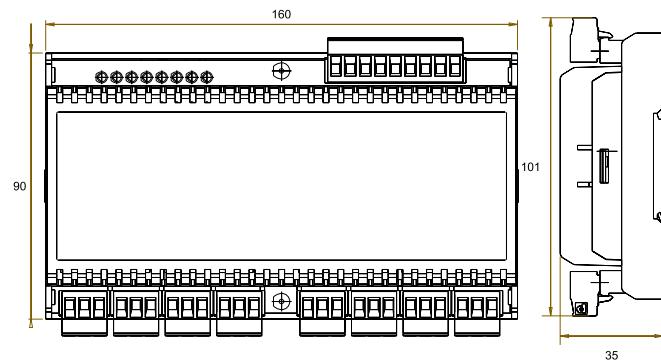
Outputs

Relay Outputs 8x (16A@250Vac)

Environmental Conditions

Operating / Storage Temperature -10°C...+60°C / -20°C...+70°C

Mounting Type Rail Mounting



Product Codes

IPERTU Expansion Module	Digital Input	Analogue Input	Digital Output	Relay Output	Analogue Output	Communication Port	PID - ON/OFF Control Form
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RR00S0-00-00-26-00_1

8x Digital Inputs

-

8x

-

-

-



IPERTU I/O Modules Comparison Table

IPERTU Expansion Output Modules	Digital Input	Analogue Input	Digital Output	Relay Output	Analogue Output	Communication	PID / ON-OFF Control Form
IPERTU-SMR1P1-00-01-21-00_1	-	4x Pt-100, Pt-1000, Cu-50, PTC, NTC, 0...50mV	-	4x (NO) 1,5A	-	1x RS485 + 1x miniUSB 2.0	+
IPERTU-SMR1P1-00-03-21-00_1	-	2x Pt-100, Pt-1000, Cu-50, PTC, NTC, 0...50mV	-	4x (NO) 1,5A	-	1x RS485 + 1x miniUSB 2.0	+
IPERTU-SMR1P1-00-01-04-00_1	-	4x Pt-100, Pt-1000, Cu-50, PTC, NTC, 0...50mV	4x Transistor	-	-	1x RS485 + 1x miniUSB 2.0	+
IPERTU-SMR1P1-00-03-04-00_1	-	2x Pt-100, Pt-1000, Cu-50, PTC, NTC, 0...50mV	4x Transistor	-	-	1x RS485 + 1x miniUSB 2.0	+
IPERTU-SMR1P1-00-20-21-00_1	-	4x 0/2...10Vdc, 0...2/5Vdc, 0/4...20mA	-	4x (NO) 1,5A	-	1x RS485 + 1x miniUSB 2.0	+
IPERTU-SMR1P1-00-21-21-00_1	-	2x 0/2...10Vdc, 0...2/5Vdc, 0/4...20mA	-	4x (NO) 1,5A	-	1x RS485 + 1x miniUSB 2.0	+
IPERTU-SMR1P1-00-20-04-00_1	-	4x 0/2...10Vdc, 0...2/5Vdc, 0/4...20mA	4x Transistor	-	-	1x RS485 + 1x miniUSB 2.0	+
IPERTU-SMR1P1-00-21-04-00_1	-	2x 0/2...10Vdc, 0...2/5Vdc, 0/4...20mA	4x Transistor	-	-	1x RS485 + 1x miniUSB 2.0	+
IPERTU-SMR1P1-00-10-04-00_1	-	4x TC (J, K, R, S, T, L,...)	4x Transistor	-	-	1x RS485 + 1x miniUSB 2.0	+
IPERTU-SMR1P1-00-12-04-00_1	-	2x TC (J, K, R, S, T, L,...)	4x Transistor	-	-	1x RS485 + 1x miniUSB 2.0	+
IPERTU-SMR1P1-00-30-04-00_1	-	1x Universal Input	4x Transistor	-	-	1x RS485 + 1x miniUSB 2.0	+
IPERTU-SMR1P1-00-30-07-02_1	-	1x Universal Input	1x Transistor	-	1x (0...10Vdc, 0...20mA)	1x RS485 + 1x miniUSB 2.0	+
IPERTU-SMR1P1-03-00-20-00_1	8x	-	-	8x (NO) 1,5A	-	1x RS485 + 1x miniUSB 2.0	-
IPERTU-SMR1P1-03-00-02-00_1	8x	-	8x Transistor	-	-	1x RS485 + 1x miniUSB 2.0	-
IPERTU-SMR1P1-01-00-00-00_1	16x	-	-	-	-	1x RS485 + 1x miniUSB 2.0	-
IPERTU-SMR1P1-00-00-22-00_1	-	-	-	14x (NO) 1,5A	-	1x RS485 + 1x miniUSB 2.0	-
IPERTU-SMR1P1-00-00-01-00_1	-	-	15x Transistor	-	-	1x RS485 + 1x miniUSB 2.0	-



IPERTU I/O Modules Comparison Chart (with PLCBUS Communication)

IPERTU Expansion Output Modules	Digital Input	Analogue Input	Digital Output	Relay Output	Analogue Output	Communication	PID / ON-OFF Control Form
IPERTU-SMROPO-00-01-21-00_1	-	4x Pt-100, Pt-1000, Cu-50, PTC, NTC, 0...50mV	-	4x (NO) 1,5A	-	PLCBUS	+
IPERTU-SMROPO-00-03-21-00_1	-	2x Pt-100, Pt-1000, Cu-50, PTC, NTC, 0...50mV	-	4x (NO) 1,5A	-	PLCBUS	+
IPERTU-SMROPO-00-01-04-00_1	-	4x Pt-100, Pt-1000, Cu-50, PTC, NTC, 0...50mV	4x Transistor	-	-	PLCBUS	+
IPERTU-SMROPO-00-03-04-00_1	-	2x Pt-100, Pt-1000, Cu-50, PTC, NTC, 0...50mV	4x Transistor	-	-	PLCBUS	+
IPERTU-SMROPO-00-20-21-00_1	-	4x 0/2...10Vdc, 0...2/5Vdc, 0/4...20mA	-	4x (NO) 1,5A	-	PLCBUS	+
IPERTU-SMROPO-00-21-21-00_1	-	2x 0/2...10Vdc, 0...2/5Vdc, 0/4...20mA	-	4x (NO) 1,5A	-	PLCBUS	+
IPERTU-SMROPO-00-20-04-00_1	-	4x 0/2...10Vdc, 0...2/5Vdc, 0/4...20mA	4x Transistor	-	-	PLCBUS	+
IPERTU-SMROPO-00-21-04-00_1	-	2x 0/2...10Vdc, 0...2/5Vdc, 0/4...20mA	4x Transistor	-	-	PLCBUS	+
IPERTU-SMROPO-00-10-04-00_1	-	4x TC (J, K, R, S, T, L,...)	4x Transistor	-	-	PLCBUS	+
IPERTU-SMROPO-00-12-04-00_1	-	2x TC (J, K, R, S, T, L,...)	4x Transistor	-	-	PLCBUS	+
IPERTU-SMROPO-00-30-04-00_1	-	1x Universal Input	4x Transistor	-	-	PLCBUS	+
IPERTU-SMROPO-00-30-07-02_1	-	1x Universal Input	1x Transistor	-	1x (0...10Vdc, 0...20mA)	PLCBUS	+
IPERTU-SMROPO-03-00-20-00_1	8x	-	-	8x (NO) 1,5A	-	PLCBUS	-
IPERTU-SMROPO-03-00-02-00_1	8x	-	8x Transistor	-	-	PLCBUS	-
IPERTU-SMROPO-01-00-00-00_1	16x	-	-	-	-	PLCBUS	-
IPERTU-SMROPO-00-00-22-00_1	-	-	-	14x (NO) 1,5A	-	PLCBUS	-
IPERTU-SMROPO-00-00-01-00_1	-	-	15x Transistor	-	-	PLCBUS	-

Analogue Inputs																
Input Types	Scale (°C)	Scale (°F)	Input Types	Scale (°C)	Scale (°F)											
Cu-50	-200...+200°C / 0,1°C	-328...+392°F / 0,1°F	V	0 +10V/1mV												
PT-100	-200...+650°C / 0,1°C	-328...+1202°F / 0,1°F	V	2 +10V/1mV												
PT-1000	-200...+650°C / 0,1°C	-328...+1202°F / 0,1°F	mA	0 +20mA /µA												
PTC	-50.....+150°C / 0,1°C	-58...+302°F / 0,1°F	mA	4 +20mA /µA												
NTC	-50.....+100°C / 0,1°C	-58...+212°F / 0,1°F	TC (J)	-200...+900°C / 0,1°C	-328...+1652°F / 0,1°F											
mV	0+50mV / 10 µV		TC (K)	-200...+1300°C / 0,1°C	-328...+2372°F / 0,1°F											
V	0+2V / 1mV		TC (R)	0+1700°C / 0,1°C	32+3092°F / 0,1°F											
V	0+5V / 1mV		TC (S)	0+1700°C / 0,1°C	32+3092°F / 0,1°F											
ADC Resolution		15 bit														
Input Impedance		V > 48 kΩ	mA > 47 Ω	Other ~ 15,4 MΩ												
Accuracy		% 0.2 (Full measuring range)														
Measuring Speed		Per channel 160msn														
Digital Inputs																
Type / Rated Input Voltage	NPN-PNP / 24Vdc															
Level	Low Level < 7Vdc, High Level > 10Vdc															
Input Impedance	>5,9kΩ															
Maksimum Akım	6 mA															
Response Time	20µsn															
Measuring Speed	1-500msn filter option															
Relay Outputs																
Relay Current	1,5A (Single channel)															
Response Time	0'dan 1'e = 10 ms , 1'den 0'a = 5 ms															
Digital Outputs																
Digital Output Current	0,3A (Single channel)															
Transistor Supply	Externally 24Vdc supply															
Response Time	~170 µsn															
Protection	Short circuit protection															
Analogue Outputs																
Output Range	0-10V veya 0-20mA (Only one output caliber can be used at a time)															
Accuracy	% 0.5 (Full measuring range)															
Response Time	~ 200 ms															
Dimensions																



⌂: Emko Elektronik A.Ş. Bursa Organize Sanayi Bölgesi, (Fethiye OSB Mah.)
Ali Osman Sönmez Bulvarı, 2. Sokak, No:3 16215 Nilüfer - BURSA
☎: +90 224 261 19 00 - ☎: +90 224 261 19 12
🌐: www.emkoelektronik.com.tr