BUILT
TO RUN

Remote I/O E1

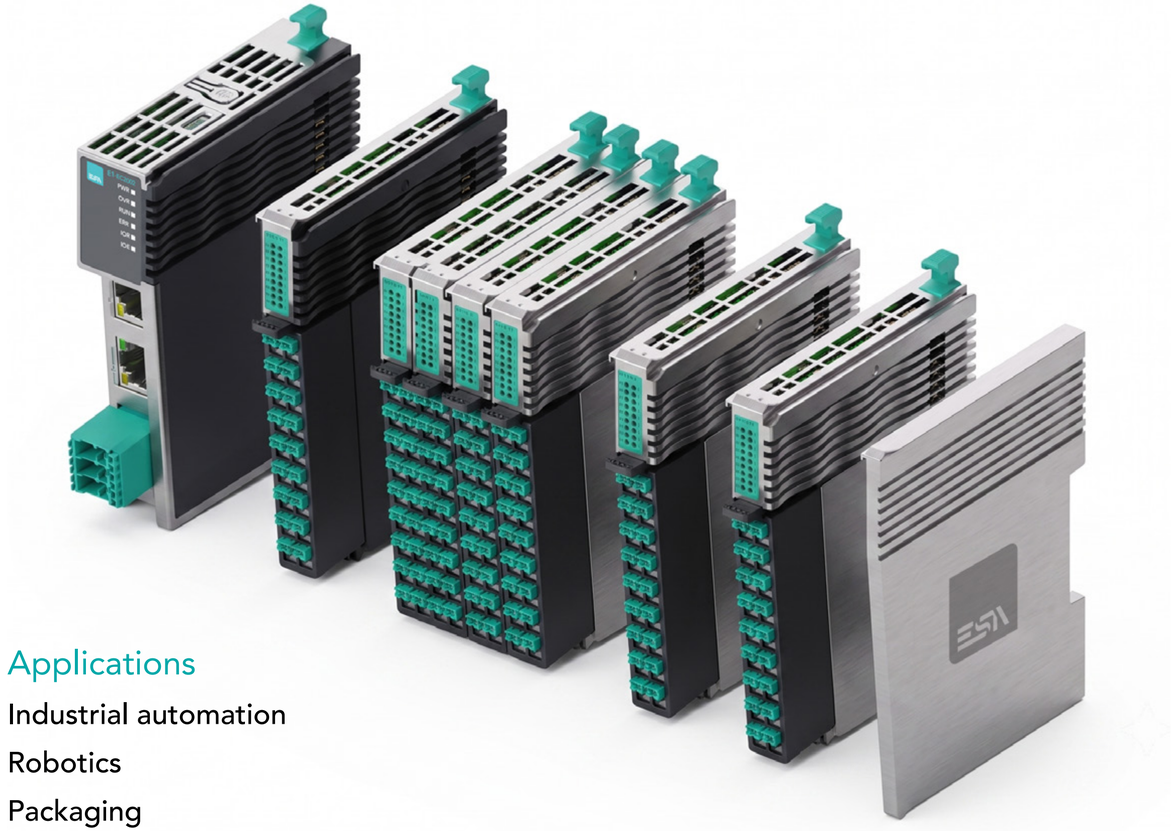
High-performance modular I/O system for distributed automation and real-time control

www.esa-automation.com

Remote I/O E1

High-performance modular I/O system for distributed automation and real-time control

The Remote I/O E1 series is a next-generation modular I/O platform designed to meet the requirements of modern industrial automation. Combining real-time communication, high flexibility and a wide range of modules, it enables high-performance distributed architectures while simplifying system integration, configuration and management.



Applications

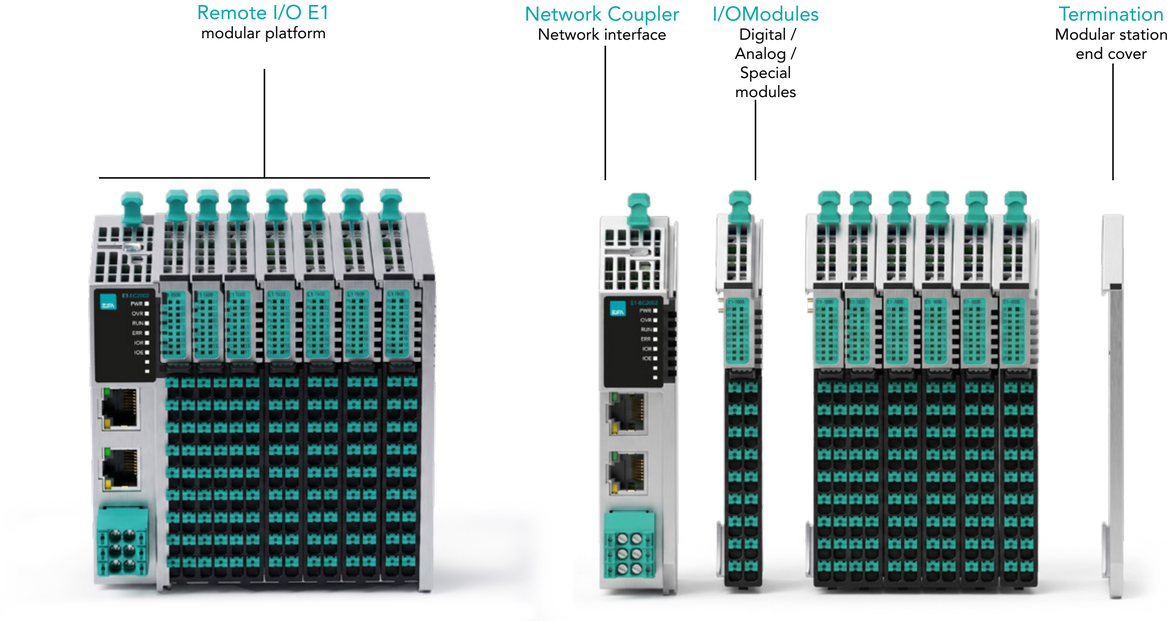
Industrial automation

Robotics

Packaging

Intralogistics

OEM Machine builder



Key Features

+ **Support for large industrial standards**
  EtherCAT, PROFINET, EtherNet/IP, Modbus TCP and CC-Link.

+ **Real-time performance**
  Cycle time down to 250 µs for high-speed applications.

+ **Scalable modular architecture**
  Expandable system with up to 32 I/O modules per station.

+ **Wide range of I/O modules**
  Digital, analog and special modules for temperature, encoder, motion and communication applications.

+ **High accuracy and speed**
  Digital inputs with response time <50 µs and analog modules up to 16-bit resolution.

+ **High-density compact design**
  Optimized structure for DIN rail installation in limited cabinet space

+ **Fast and simple installation**
  Quick wiring with tool-free connections.

+ **Integrated diagnostics**
  Channel LEDs, alarm functions and diagnostic features with self-recovery mechanisms.

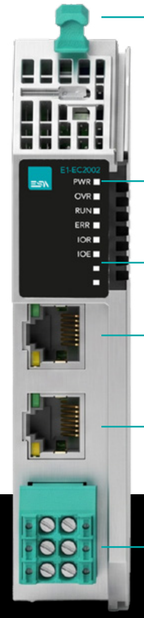
+ **High industrial reliability**
  Integrated protection against short circuit, reverse polarity and overvoltage.

Remote I/O E1

High-performance modular I/O system for distributed automation and real-time control

Parameter	Value
System power supply	24 VDC nominal
Operating temperature	-20…+60 °C
Mounting	DIN rail
Protection class	IP20
Modularity	Up to 32 modules per station
Internal communication	High-speed bus
Diagnostics	Status LEDs for module and channel
Protection	Short circuit, reverse polarity, overvoltage
Installation	Tool-free connections
Certification	CE

Coupler Modules

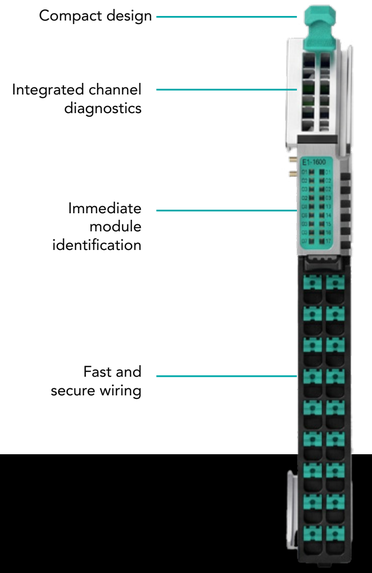


The coupler modules manage communication between the I/O system and the controller. They support the main industrial protocols and ensure real-time performance.

+ Supported protocols
  EtherCAT, PROFINET, EtherNet/IP, Modbus TCP, CC-Link
+ Cycle time
  Down to 250 µs (EtherCAT)
+ Network speed
  Up to 1 Gbps (CC-Link IE TSN)
+ Process data
  Up to 1024 bytes
+ Number of connectable modules
  Up to 32 modules per station
+ Diagnostics
  LEDs, alarms and status monitoring
+ Advanced functions
  Real-time management and data synchronization

Code	Protocol	Description
E1-EC2002	EtherCAT	Coupler module for EtherCAT communication with cycle time down to 250 µs.
E1-PN2002	PROFINET	Coupler module for integration with PROFINET networks in industrial and motion applications.
E1-EI2002	EtherNet/IP	Coupler module for EtherNet/IP communication in distributed automation architectures.
E1-MT2002	Modbus TCP	Coupler module with Modbus TCP interface for simple and flexible integration.
E1-CB2002	CC-Link IE Field Basic	Coupler module for CC-Link IE Field Basic communication over Industrial Ethernet.
E1-CT2002	CC-Link IE TSN	Coupler module with TSN technology for high-performance communication up to 1 Gbps.

I/O Modules



The I/O modules of the Remote I/O E1 series acquire and control digital and analog signals, offering high performance, accuracy and flexibility for a wide range of industrial applications.

Category	Characteristics
Digital modules	8 and 16 channels, input/output, NPN/PNP support
Digital response time	<50 µs
Analog modules	Voltage and current input/output
Analog resolution	Up to 16 bit
Analog accuracy	Up to ±0.1%

+ Wide module range
  Digital, analog and special modules for different application needs
+ High acquisition speed
  Digital input response time down to <50 µs
+ High analog accuracy
  Resolution up to 16 bit with accuracy up to ±0.1%
+ Flexible configuration
  Support for voltage and current signals: ±10 V, 0–20 mA, 4–20mA
+ Integrated advanced functions
  Encoder, motion (PTO), temperature and serial communication management
+ Channel diagnostics
  Status LEDs and continuous operating monitoring
+ High reliability
  Integrated protection for operation in industrial environments

Digital Modules

Digital modules manage discrete signals with high speed and reliability, offering flexible solutions for inputs, outputs and combined configurations in industrial applications.

Code	Type	Configuration	Description
E1-1600	Digital input	16 inputs	High-speed NPN/PNP inputs (<50 µs)
E1-0800	Digital input	8 inputs	Compact solution for digital signals
E1-3200	Digital input	32 inputs	High-speed NPN/PNP inputs (<50 µs)
E1-0808A	Mixed I/O (NPN)	8 IN / 8 OUT	Combined NPN input/ output module
E1-0808B	Mixed I/O (PNP)	8 IN / 8 OUT	Combined PNP input/ output module
E1-0016A	Digital output (NPN)	16 outputs	NPN outputs up to 0.5 A per channel
E1-0032B	Digital output (PNP)	32 outputs	High-density PNP output module
E1-0016B	Digital output (PNP)	16 outputs	High-density PNP outputs
E1-0008A	Digital output (NPN)	8 outputs	Compact version
E1-0008B	Digital output (PNP)	8 outputs	Standard industrial solution
E1-0004J	Relay output	4 outputs	AC/DC load control
E1-0008J	Relay output	8 outputs	AC/DC load control

Analog Modules

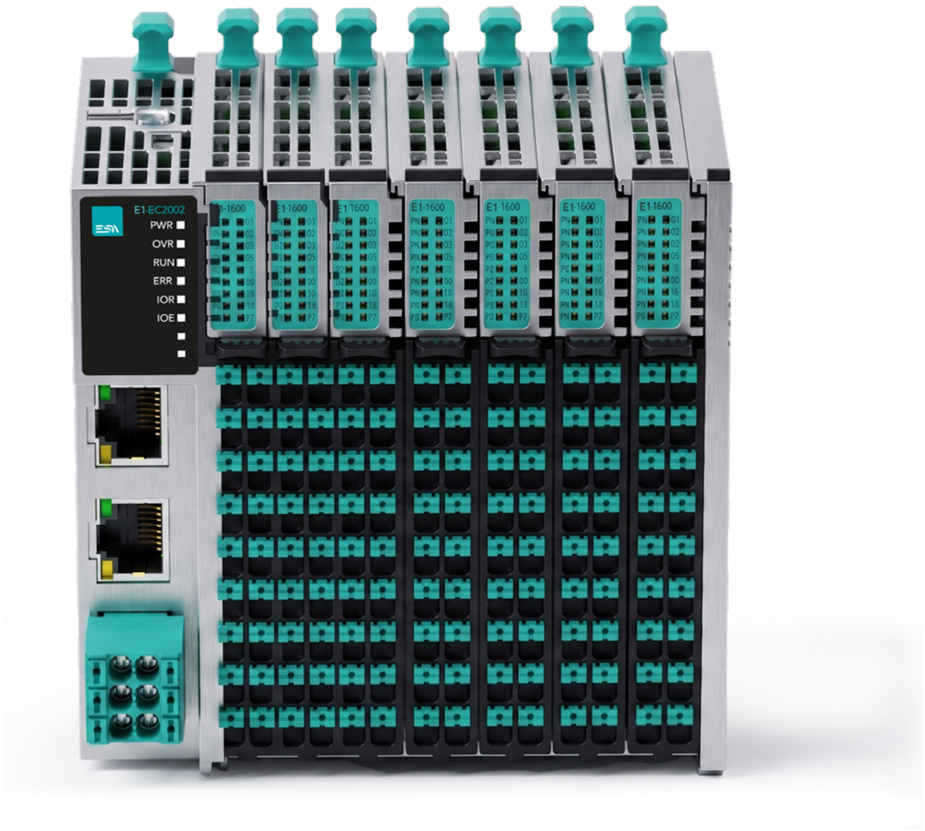
Analog modules enable the acquisition and generation of analog signals with high accuracy, providing flexible configurations for voltage and current inputs and outputs.

Code	Type	Configuration	Description
E1-A40V	Analog input (V)	4 inputs	±10 V signal acquisition
E1-A40I	Analog input (I)	4 inputs	4–20 mA sensors
E1-A80V	Analog input (V)	8 inputs	High-density voltage signals
E1-A80I	Analog input (I)	8 inputs	Multi-channel applications
E1-A04V	Analog output (V)	4 outputs	Analog actuator control
E1-A04I	Analog output (I)	4 outputs	4–20 mA signal regulation
E1-A08V	Analog output (V)	8 outputs	High-density output solution
E1-A08I	Analog output (I)	8 outputs	Advanced industrial applications

Special Modules

Special modules extend the functionality of the Remote I/O system, enabling advanced applications such as temperature measurement, encoder and motion control, and serial communication. They provide high performance and flexibility, making the system suitable for complex and highly dynamic industrial applications.

Code	Type	Channels / Function	Main Characteristics
E1-A40TM	Temperature module	4 channels	RTD and thermocouple support, high accuracy, wide measuring range
E1-PL10	Incremental encoder	1 channel	Encoder input up to 1 MHz, high speed, advanced counting functions
E1-PL20	Incremental encoder	2 channels	Dual encoder channel, high performance for motion applications
E1-PL10D	Differential incremental encoder	1 channel	Differential input, improved noise immunity
E1-PS10D	SSI absolute encoder	1 channel	SSI interface, high-accuracy absolute encoder reading
E1-PT02A	Motion / PTO	2 outputs + 8 inputs	Pulse generation up to 200 kHz, integrated motion functions
E1-C01SP	Serial communication	1 channel	RS232 / RS485 / RS422 support, Modbus RTU / ASCII protocols
E1-P2000	Power expansion module	System expansion	Auxiliary power supply for module expansion
E1-CVR00	End cover module	Station termination	Termination module for node completion



BUILT TO RUN

ESA S.p.A. | Headquarters
Via Padre Masciadri 4/A
22066 Mariano Comense (CO) - Italy
Tel.+39 031757400
info@esa-automation.com

ESA S.p.A. | LBU
Via Molise, 1 - Z.I. Gello
56025 Pontedera (PI) - Italy
Tel. +39 0587296014

ESA S.p.A. | LBU | Robotics
Via Aldo Moro 27
56010 Vicopisano (PI) - Italy
Tel. +39 050701047

ESA S.p.A. | LBU
Via della Scienza, 2737
139 Verona (VR) - Italy
Tel. +39 045 837 8411

ESA energy S.r.l.
Via Fortunato Zeni 8
38068 Rovereto (TN) - Italy
Tel.+39 0464443272

ESA S.p.A. | LBU
Via Monari Sardè 1[4]
40010 Bentivoglio (BO) - Italy
Tel. +39 0516640464

ESA Europa S.L.U.
Passeig del Ferrocarril, 335
08860 Castelldefels (Barcelona) - España
Tel.+34 936455014

ESA Elettronica GmbH
Carl-Zeiss-Strasse, 35
63322 Rödermark - Deutschland
Tel. +49 6074486450

ESA Automation Technology (Shanghai) Co., Ltd.
Office address: Floor 3rd, No. 8 Building, No. 188
ZhongChen Road, Songjiang District - Shanghai
Postcode: 201613
Tel. +86 2137788206

ESA Software & Automation India Pvt. Ltd
HYBRID TOWERS , NO: 5AC-101 , Ist Floor, 2nd
Main,HRBR Layout, 3 rd Block,Kalyan Nagar Post,
Bangalore-560 043 – India
Tel. +91 9845378673

esa-automation.com