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# microcon ER Series Programme Logic Control

## Process Automation to Business Information

Energy Conservation | Environment | Process Efficiency

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# ER Series Programme Logic Control

microcon ER Series Process Logic Control (PLC) is an Industry-first IIoT ready platform suitable for equipment control. It can perform small and medium PLC functions such as data transmission, comparison, calculations, cycling, sub-programme calling, network communication, soft-start, multiple-layer nesting and medium-sized functions such as PID control.

It can, not only perform close loop analogue control over parameters such as temperature, pressure, flow, but also motion control over position, speed and acceleration.

**Features**

Can handle bigger process applications with upto 50 PID control loops

Built-in EEPROM. battery back-up not required

Easy programming through IEC 61131-3

OPC server available as an option

4 ports – one RS485, two ethernet, one USB

Micro SD slot (up to 2GB support)

Dual ethernet port – 1 GBPS

Inbuilt firewall for maximizing the cyber security

Inbuilt IIoT enabled remote modbus master and slave connectivity

First platform to have a secured online download possible locally and remotely

Capability to build sequence flow charts for operator selection based process control

Possibility of online event monitoring via web server

Complete access control

RS485 Port + RS232 Port – modbus master connectivity

Modbus TCP master/ slave connectivity – software configurable

Maximum third party IO connectivity - RS485, RS232 and TCP/IP

HMI connectivity – TCP/IP, RS232

Serial display and keypad connectivity – RS232 interface

Direct and easy internet connectivity via internet dongle/ via LAN connection

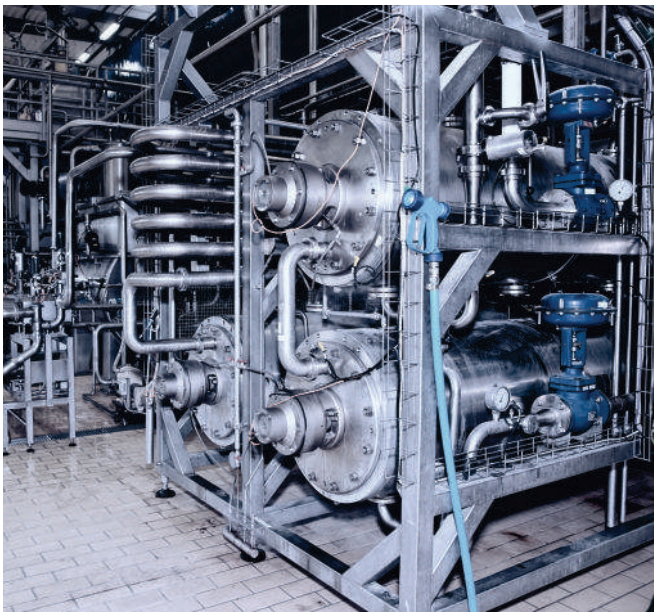
Data can be sent over the internet in the form of secured file transfer to any server/ cloud

Integrated web server - all data and states inside can be hosted on web server and can be accessed through web browser / mobile browser /Wi-Fi from anywhere in the world

GSM modem connectivity (SMS) for critical alerts

NTP client functionality for time synchronization with windows machine connected to internet

## Applications



### Process Industry

Equipment automation like boiler, turbine, heat exchanger, reactor, distillation columns etc.

### Water Industry (Drinking, Potable and Waste)

Complete water distribution including the pump house, bore well/ tube well, Rennywell, OHSR /ESR, water treatment plants, or sewage treatment plants.

### Pharma Machines

Machines requiring USFDA validation, capsule manufacturing machine, machines with integrated CIP /SIP processes

## Applications

### Food (Dairy, Oil and Sugar) Industry

Extensively used for the dairy and edible oil processes like solvent extraction, fractionation, deodorizer toaster, tanker loading /unloading, vacuum pan evaporation , boiling house

### Electrical Industry

For load management, automatic back up, load synchronization.

**PLC Hardware**

## ER Controller Module

| Specifications | ER-201 |
|---|---|
| Module type | CPU |
| **Internal Processor** | |
| Processor type | ARM9 |
| Processor speed | 600MHz |
| Instruction execution time | <0.025us |
| Programming languages | LD, FBD,CFC,SFC,ST,IL |
| **Memory** | |
| RAM | 1GB |
| Flash memory | 1GBN and flash |
| Program memory | 200MB |
| Data memory | 100MB |
| Retain data storage | Feature available |
| Communication | Modbus on ethernet and RS485 serial |
| Number of slaves | 1-31 |
| **Ports** | |
| Ethernet ports | 2nos.–1GBPS |
| RS485 port | 1nos.9600-115200bps |
| RS232 | 1–debug/GSM-GPRS/GPS |
| USB port | 1No.for storage |
| Micro SD card slot | 1No.(up 2GB) |
| LED indication | Red – power,<br>Green – run status |
| External dimensions | 90 x 108 x 114 (w x h x d) mm |
| **Power Supply** | |
| Power rating | 5Vdc-800mA |
| Installation | 35mm standard DIN rail (EN50022) |

## Power Supply Unit – ER 900

| Specifications | Power Supply Module ER-900 |
|---|---|
| Screw terminal | Nickel plated |
| Power indicator | Red color LED (ON when output power is normal) |
| Storage temperature | [-] 40 to [+] 85 °C |
| Ingress protection | IP30 |
| **Input Output Specifications** | |
| Operating supply voltage | 18-36 VDC |
| Supply over-voltage protection | 36 VDC |
| Supply reverse voltage protection | Inbuilt |
| Output voltage | 5 VDC ±1% |
| Maximum load | 200 mA at 24 VDC input |
| **Installation** | |
| Operating temperature | 0-60 °C |
| Operating humidity | 5 to 95 % of RH (non-condensing) |
| Mounting | 35 mm standard DIN rail (EN 50022) |
| Weight | 90 g |
| Dimensions | 22.5 x 108 x 114 (w x h x d) mm |
| Standards and approvals | CE conformity<br>IEC 61000-4-3<br>IEC 61000-4-6<br>IEC 61000-4-5<br>IEC61000-4-8<br>IEC 61000-4-2<br>IEC61000-4-4<br>IEC60068-2-6<br>IEC 60068-2-1 |

## ER 481 – 8-Channel AI (4-20mA)

| Specifications | Analog Input Module ER481 |
|---|---|
| Number of channels | 8 |
| Channel types | Analog input (4-20mA) |
| **Performance** | |
| Accuracy | 0.1 % of span |
| Sensitivity | 10 uA |
| Repeatability | 0.05% |
| Data width and allocation | 16 bit |
| Conversion rate | 150 ms for 8 channels |
| Current consumption | 30 mA |
| Insulation resistance | > 100 G Ohms |
| LED indication | Red - power,<br>Amber - communication,<br>Green for individual 8-channels |
| Isolation | Signal input to power supply and communication to power supply |
| Communication protocol | Modbus-RTU |
| Communication speed | Up to 115200 bps |
| Reverse polarity protection | Yes |
| **Installation** | |
| Mounting | 35 mm standard DIN rail (EN 50022) |
| **Environmental Specifications** | |
| Conformal coating | G3 grade (optional) |
| Storage temperature | -40 to 85ºC |
| Operating temperature | 0 to 60ºC |
| Relative humidity | 10 to 90%, non-condensing |
| Approval and certification | IEC 61000-4-3/4/5/6/8<br>IEC 61000-2-1/6 (ARAI tested) |

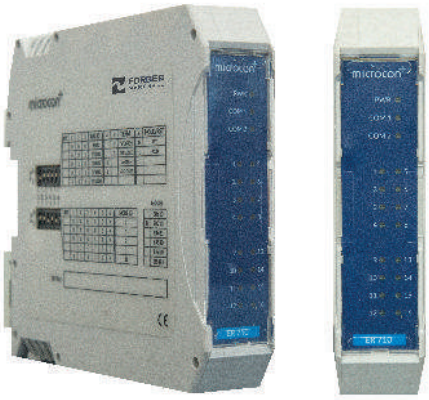
## ER 510 – 4-Channel AO (4-20mA)

| Specifications | Analog Output Module ER510 |
|---|---|
| Number of channels | 4 |
| Channel types | Analog output (4-20mA) |
| **Performance** | |
| Accuracy | 0.1 % of span |
| Sensitivity | 10 uA |
| Repeatability | 0.05% |
| Data width and allocation | 16 bit |
| Conversion rate | 150 ms for 4 channels |
| Current consumption | 125 mA |
| Insulation resistance | |
| LED indication | Red - power,<br>Amber - communication,<br>Green for individual 4-channels |
| Isolation | Signal input to power supply and communication to power supply |
| Communication protocol | Modbus-RTU |
| Communication speed | Up to 115200 bps |
| Reverse polarity protection | Yes |
| **Installation** | |
| Mounting | 35 mm standard DIN rail (EN 50022) |
| **Environmental Specifications** | |
| Conformal coating | G3 grade (optional) |
| Storage temperature | -40 to 85ºC |
| Operating temperature | 0 to 60ºC |
| Relative humidity | 10 to 90%, non-condensing |
| Approval and certification | IEC 61000-4-3/4/5/6/8<br>IEC 61000-2-1/6 (ARAI tested) |

## ER 610 – DI 16 x DC24 V

| Specifications | Digital Input Module ER610 |
|---|---|
| Number of channels | 16 |
| Channel types | Digital input |
| **Input Specifications** | |
| Operating supply voltage | 18-36 VDC |
| Supply over voltage protection | 36 VDC |
| Isolation | Optical isolation<br>( 1 KV) |
| Common ground | Two terminals; one for each group of 8 channels |
| Input impedance | 5K |
| External excitation | 24 V DC +/- 10 % |
| Contact detection | 16 V DC (Max 24 V DC) |
| ON current | 3.6 mA |
| OFF current | < 1 mA |
| **Performance** | |
| Data width and allocation | 1 bit |
| Module scan time | 50 ms for 16 channels |
| Current consumption | 25 mA |
| Insulation resistance | > 100 G Ohms |
| LED indication | Red - power,<br>Amber - communication,<br>Green for individual 16-channels |
| Isolation | Signal input to power supply and communication to power supply |
| Communication protocol | Modbus-RTU |
| Communication speed | Up to 115200 bps |
| Reverse polarity protection | Yes |
| **Installation** | |
| Mounting | 35 mm standard DIN rail<br>(EN 50022) |
| **Environmental Specifications** | |
| Conformal coating | G3 grade (optional) |
| Storage temperature | -40 to 85ºC |
| Operating temperature | 0 to 60ºC |
| Relative humidity | 10 to 90%, non-condensing |
| Approval and certification | IEC 61000-4-3/4/5/6/8<br>IEC 61000-2-1/6 (ARAI tested) |

## ER710 – DO 16 x DC24V Transistor



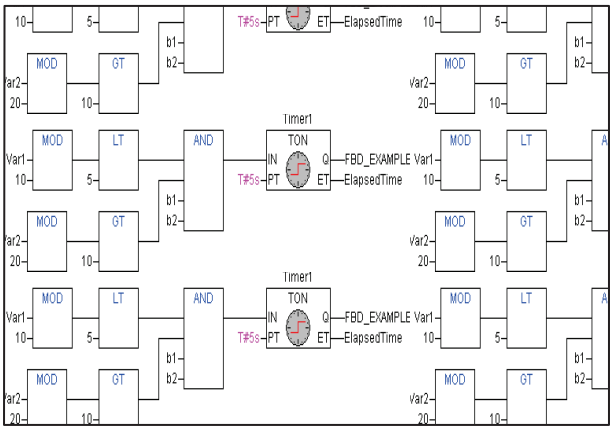
| Specifications | Digital Output Module ER710 |
|---|---|
| Number of channels | 16 |
| Channel types | Digital output |
| **Output Specifications** | **Output Specifications** |
| Operating supply voltage | 18-36 VDC |
| Supply over voltage protection | 36 VDC |
| Output | Open collector |
| Isolation | Optical isolation ( 1 KV) |
| Common ground | Two terminals; one for each group of 8 channels |
| Channel current | 50mA |
| External excitation | 24 V DC +/- 10 % |
| Rated coil voltage | 24 V DC |
| ON current | 3.6 mA |
| OFF current | < 1 mA |
| **Performance** | |
| Data width and allocation | 1 bit |
| Module scan time | 50 ms for 16 channels |
| Current consumption | 25 mA |
| LED indication | Red - Power,<br>Orange - Communication,<br>Green for individual 16-channels |
| Isolation | Signal input to power supply and communication to power supply |
| Communication protocol | Modbus-RTU |
| Communication speed | Up to 115200 bps |
| Reverse polarity protection | Yes |
| **Installation** | |
| Mounting | 35 mm standard DIN rail (EN 50022) |
| **Environmental Specifications** | |
| Conformal coating | G3 grade (optional) |
| Storage temperature | -40 to 85ºC |
| Operating temperature | 0 to 60ºC |
| Relative humidity | 10 to 90%, non-condensing |
| Approval and certification | IEC 61000-4-3/4/5/6/8<br>IEC 61000-2-1/6 (ARAI tested) |

## PLC Software

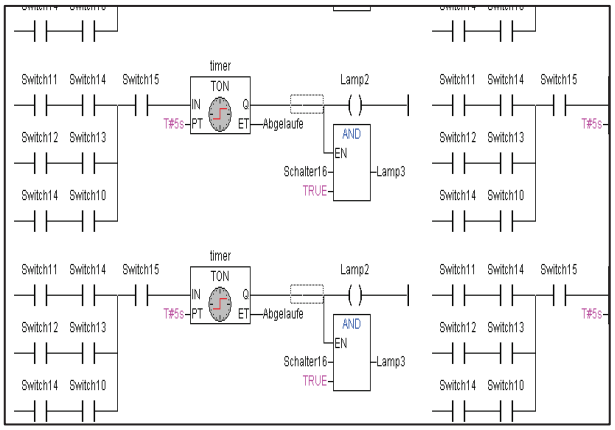
### Proconf - Application Software

Supports five languages - Configuration software supports various programming languages. All the programming languages are compliant with IEC 61131-3. It is also possible to mix and match few languages for certain applications

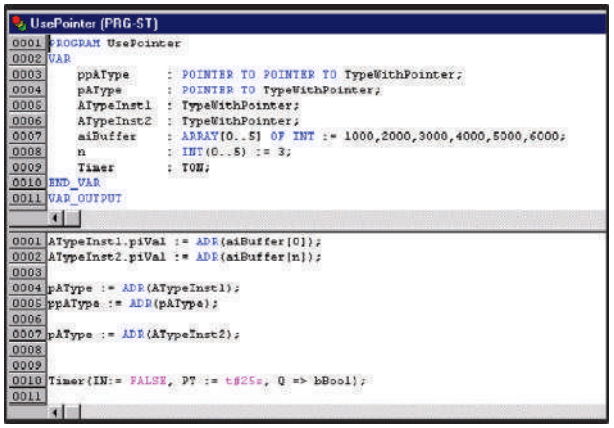
#### Function Block



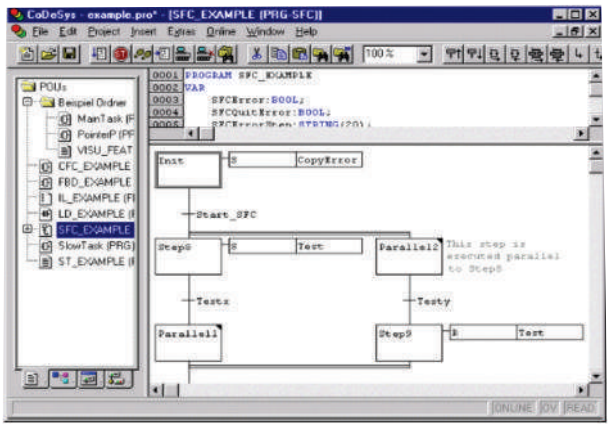

#### Ladder Logic



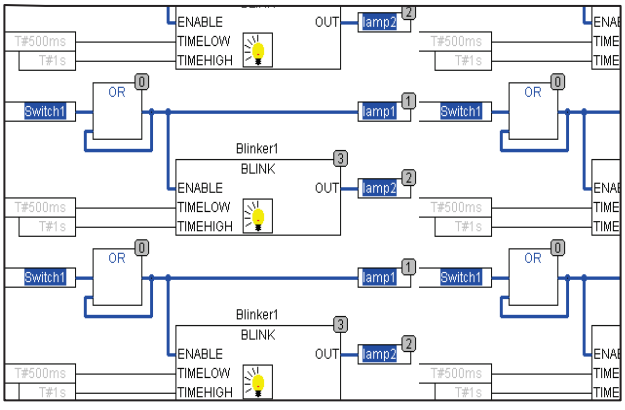

#### Structure Text




#### Instruction List




#### Sequential Flow Chart



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