Specifications

# Eaton 106396

## Catalog Number: 106396

Eaton EC4P Compact PLC, 24 V DC, 12DI(of 4AI), 8DO(T), 1AO, CAN




### General specifications

**Product Name**
Eaton EC4P Compact PLC

**Catalog Number**
106396

**EAN**
4015081061662

**Product Length/Depth**
72 mm

**Product Height**
90 mm

**Product Width**
107.5 mm

**Product Weight**
0.29 kg

**Certifications**
UL Category Control No.: NRAQ
UL508
CSA Class No.: 2252-01
CSA File No.: 012528
UL File No.: E135462
CSA-C22.2 No. 142-M
UL
CSA-C22.2 No. 0-M
CSA
CE
IEC/EN 61000-4-2, Level 3

**Catalog Notes**
Expandable: Inputs/outputs and bus systems

Powering Business Worldwide

## Product specifications

### Features

Parallel connection of transistor outputs with resistive load, inductive load with external suppressor circuit, combination within a group - Group 2: Q5 - Q8
Asynchronous, cyclic, acyclic PDO types (operating modes of the slave)
Parallel connection of transistor outputs with resistive load, inductive load with external suppressor circuit, combination within a group - Group 1: Q1 - Q4
Overload and short-circuit protection
190 received bytes in a block (PRG interface RS232, Master mode)

### Air discharge

8 kV

### 10.10 Temperature rise

The panel builder is responsible for the temperature rise calculation. Eaton will provide heat dissipation data for the devices.

### 10.11 Short-circuit rating

Is the panel builder's responsibility.

### 10.12 Electromagnetic compatibility

Is the panel builder's responsibility.

### 10.13 Mechanical function

The device meets the requirements, provided the information in the instruction leaflet (IL) is observed.

### 10.2.2 Corrosion resistance

Meets the product standard's requirements.

### 10.2.3.1 Verification of thermal stability of enclosures

Meets the product standard's requirements.

### 10.2.3.2 Verification of resistance of insulating materials to normal heat

Meets the product standard's requirements.

### 10.2.3.3 Resist. of insul. mat. to abnormal heat/fire by internal elect. effects

Meets the product standard's requirements.

### 10.2.4 Resistance to ultra-violet (UV) radiation

Meets the product standard's requirements.

### 10.2.5 Lifting

Does not apply, since the entire switchgear needs to be evaluated.

## Resources

### Catalogs

eaton-product-overview-for-machinery-catalogue-ca08103003zen-en-us.pdf

### Characteristic curve

eaton-electrical-timers-easy-control-relays-characteristic-curve.eps

### Declarations of conformity

DA-DC-00004404.pdf

DA-DC-00004416.pdf

### Drawings

eaton-modular-plc-easy-module-ec4p-compact-plc-dimensions.eps

eaton-general-approval-easy-control-relays-standards.jpg

eaton-general-m22-standards.eps

### eCAD model

DA-CE-ETN.EC4P-221-MTAX1

### Installation instructions

IL05003003Z

IL05013018Z

### Manuals and user guides

MN05003003Z_EN

### mCAD model

DA-CD-easy800_x

DA-CS-easy800_x

### Sales notes

eaton-control-relay-easye4-flyer-fl050007en-en-us.pdf

### 10.2.6 Mechanical impact

Does not apply, since the entire switchgear needs to be evaluated.

### 10.2.7 Inscriptions

Meets the product standard's requirements.

### 10.3 Degree of protection of assemblies

Meets the product standard's requirements.

### 10.4 Clearances and creepage distances

Meets the product standard's requirements.

### 10.5 Protection against electric shock

Does not apply, since the entire switchgear needs to be evaluated.

### 10.6 Incorporation of switching devices and components

Does not apply, since the entire switchgear needs to be evaluated.

### 10.7 Internal electrical circuits and connections

Is the panel builder's responsibility.

### 10.8 Connections for external conductors

Is the panel builder's responsibility.

### 10.9.2 Power-frequency electric strength

Is the panel builder's responsibility.

### 10.9.3 Impulse withstand voltage

Is the panel builder's responsibility.

### 10.9.4 Testing of enclosures made of insulating material

Is the panel builder's responsibility.

### Fitted with:

Memory unit
Documentation
Engineering software
Basic device
Power supply
Other components
Analog input module
Digital input module
Function module
Communication module
easyNet/CANopen® on board
Analog output module
Digital output module
Libraries

### Operating frequency

40000 Operations/h at resistive load
Depending on the suppressor circuit (Inductive load to EN 60947-5-1, With external suppressor circuit, Max. switching frequency, max. duty factor)

### Pollution degree

2

### Accuracy

1 %, Analog outputs at 25 °C
± 3 %, of actual value, two devices (Analog Inputs)
± 5 s/day (± 0.5 h/year), Real-time clock, normally
± 2, (I7, I8, I11, I12) ± 0.12 V, of actual value, within a single device (Analog Inputs)
2 %, Analog outputs at-25 °C - 55 °C

### Burst impulse

2 kV, Signal cable
2 kV, Supply cable
According to IEC/EN 61000-4-4, level 3

### Air pressure

1080 hPa (operation)

### Bus termination

EASY-NT-R plug (incl. bus terminating resistor 120 Ω), first and last station, CANopen®

### Environmental conditions

Condensation: prevent with appropriate measures
Clearance in air and creepage distances according to EN 50178, UL 508, CSA C22.2, No. 142

### Indication

LCD-display used as status indication of Digital inputs 24 V DC
LCD-display used as Output status indication of Transistor outputs

### Input

Voltage (DC)

### Cable length

30 m, screened, Analog inputs
100 m, unshielded, Digital inputs 24 V DC

### Output voltage

$U = U_e$ - 1 V (signal 1 at $I_e$ = 0.5 A, transistor outputs)
Max. 2.5 V (at signal 0 at external load < 10 MΩ, transistor outputs)

### Mounting method

Top-hat rail fixing (according to IEC/EN 60715, 35 mm)
Screw fixing using fixing brackets ZB4-101-GF1 (accessories)

### Number of outputs

Max. 4 (for parallel connection)

8 Transistor Outputs

### Character formats

8E1, 8O1, 8N1, 8N2, 7E2, 7O2, 7N2, 7E1, PRG interface

RS232, Master mode

### Screwdriver size

3.5 x 0.8 mm, Terminal screw

### Mounting position

Horizontal

Vertical

### Output

Voltage (DC)

### Contact discharge

6 kV, Electrostatic discharge (ESD)

### Overvoltage category

II

### Connection type

RJ45, Ethernet

RJ45, PRG Interface RS232

2 x RJ45, 8 pole, CANopen®

### Duty factor

100 % (Inductive load to EN 60947-5-1, Without external suppressor circuit, T0.95 = 15 ms, R = 48 Ω, L = 0.24 H)

100 % (Inductive load to EN 60947-5-1, With external suppressor circuit)

100 % (Inductive load to EN 60947-5-1, Without external suppressor circuit, T0.95 = 1 ms, R = 48 Ω, L = 16 mH)

100 % (Inductive load to EN 60947-5-1, Without external suppressor circuit, DC-13, T0.95 = 72 ms, R = 48 Ω, L = 1.15 H)

### Peak short-circuit current

32 A

### Constant acceleration

2 g, 57 - 150 Hz, according to IEC/EN 60068-2-6, Vibrations

### Constant amplitude

0,15 mm, 10 - 57 Hz, according to IEC/EN 60068-2-6, Vibrations

### Surge rating

According to IEC/EN 61000-4-5, power pulses (Surge), EMC

2 kV, Supply cables, symmetrical, EASY...AC, power pulses (Surge), EMC

0.5 kV, Supply cables, symmetrical, EASY…DC, power pulses

(Surge), EMC

### Terminal capacity (flexible with ferrule AWG)

22 - 12

### Conversions

Each CPU cycle, Analog inputs
Each CPU cycle, Analog outputs

### Electromagnetic fields

10 V/m (according to IEC EN 61000-4-3)

### Protection against polarity reversal

Yes (Caution: A short circuit will result if 0 V or earth is applied to the outputs in the event that the supply voltage is connected to the wrong poles.)

### Terminal capacity (solid AWG)

22 - 12

### Current consumption

2 A, max. total current of Transistor outputs (Caution! Outputs must be actuated simultaneously and for the same length of time.)

### Number of inputs (analog)

4 (I7, I8, I11, I12)

### Cycle time

< 0.3 ms, for 1 k of instructions (Bit, Byte), CPU

### Number of modules

Max. 126 (slaves)

### Drop and topple

50 mm Drop height, Drop to IEC/EN 60068-2-31

### Immunity to line-conducted interference

10 V (according to IEC/EN 61000-4-6)

### Radio interference class

Class B (EN 55011)
Class B (EN 55022)

### Data transfer rate

125 kBit/s at 125 m, CANopen®
57.6 kBit/s, PRG interface RS232, Master mode
500 kBit/s at 25 m, CANopen®
10 MBit/s, 100 m, Ethernet
0.3 kBit/s, PRG interface RS232, Master mode
1.2 kBit/s, PRG interface RS232, Master mode
20 kBit/s at 700 m, CANopen®
0.6 kBit/s, PRG interface RS232, Master mode

2.4 kBit/s, PRG interface RS232, Master mode

10 kBit/s at 1000 m , CANopen®

250 kBit/s at 60 m, CANopen®

4.8 kBit/s, PRG interface RS232, Master mode

50 kBit/s at 300 m, CANopen®

9.6 kBit/s, PRG interface RS232, Master mode

38.4 kBit/s, PRG interface RS232, Master mode

19.2 kBit/s, PRG interface RS232, Master mode

### Relative humidity

5 - 95 % (non-condensing)

### Degree of protection

IP20

### Delay time

0.02 ms typ., Digital inputs 24 DC (I1 - I4), Delay time from 0 to 1

0.25 ms typ., Digital inputs 24 DC (I5 - I12), Delay time from 0 to 1

### Residual current

0.1 mA (on signal "1" per channel)

### Residual ripple

5 % (transistor outputs)

≤ 5 %

### Rapid counter inputs

50 kHz, Counter frequency

16/32 Bit (value range)

2 (I1, I2) at 16 Bit or 1 (I1) at 32 Bit

≤ 20 m (cable length, screened)

Square (pulse shape)

### Recovery time

100 µs

### Rated operational current (Ie)

Max. 0.5 A at signal „1” DC per channel

### Insulation resistance

According to EN 50178

### Functions

Thermal cutout

Building blocks

### Heat dissipation

3.4 W

### Supply voltage at DC - max

24 VDC

### Resolution

0.01 V analog (Analog inputs)
0.01 V DC analog (Analog outputs)
0.01 V digital (Analog inputs)
10 Bit (value 0 - 1023, Analog inputs)
10 Bit (value 0 - 1023, digital, Analog outputs)

### Incremental counter

Value range: 32 Bit
Reference input: I3
Signal offset: 90°
Counter frequency: ≤ 40 kHz
Pulse shape: Square
Number of counter inputs: 1 (I1, I2, I3, I4)
Counter inputs: I1, I2
Input for reference switch: I4

### Short-circuit current

16 A, Transistor outputs

### Station

To DS 301 V4, Control contact rated current, Mode slave, Interfaces

### Input current

3.3 mA (I1 - I6, at 24 V DC, at signal 1)
1 mA (Analog inputs)
2.2 mA (I7 - I8, at 24 V DC, at signal 1)
3.3 mA (I9 - I10, at 24 V DC, at signal 1)
2.2 mA (I11 - I12, at 24 V DC, at signal 1)
140 mA

### Input impedance

11.2 kΩ

### Input voltage

Signal 1: > 15 V DC (I1 - I6, I9 - I10, Digital inputs, 24 V DC)
Signal 0: < 8 V DC (I7 - I8, I11 - I12, Digital inputs, 24 V DC)
Signal 1: > 8 V DC (I7 - I8, I11 - I12, Digital inputs, 24 V DC)
Signal 0: < 5 V DC (I1 - I6, I9 - I10, Digital inputs, 24 V DC)

### Processor

Infineon XC161

### Shock resistance

15 g, Mechanical, according to IEC/EN 60068-2-27, Half-sinusoidal shock 11 ms, 18 Impacts

### Inscription

Individual inscription possible with EC4-COMBINATION-*

### Short-circuit tripping current

0.7 ≤ Ie ≤ 2 per output, For Ra ≤ 10 mΩ, Transistor outputs

### Lamp load

5 W (without Rv per channel)

### Signal range

0 - 10 V DC, Analog inputs

### Load resistance

1 kΩ

### Supply current

18/32 mA, Normally/max., On 0 signal, Transistor outputs

24/44 mA, Normally/max., On 1 signal, Transistor outputs

### Memory

4 kByte Output Memory

16 kByte Marker Memory

4 kByte Input Memory

256 kByte Program memory code

8 kByte Retain Memory

14 segments of 16 kByte Program memory data

### Number of bytes

190 transmission bytes (in a block)

### Number of inputs (digital)

12

4 (can also be used as analog inputs)

12 (24 V DC)

4 (I7, I8, I11, I12, can also be used as analog inputs)

### Utilization factor

0.25 (Inductive load to EN 60947-5-1, Without external suppressor circuit, DC-13, T0.95 = 72 ms, R = 48 Ω, L = 1.15 H)

0.25 (Inductive load to EN 60947-5-1, Without external suppressor circuit, T0.95 = 1 ms, R = 48 Ω, L = 16 mH)

0.25 (Inductive load to EN 60947-5-1, Without external suppressor circuit, T0.95 = 15 ms, R = 48 Ω, L = 0.24 H)

1 (Inductive load to EN 60947-5-1, With external suppressor circuit)

### Voltage dips

≤ 10 ms

According to EN 61131-2

### Potential isolation

Supply voltage UAUX: yes

Between Digital inputs 24 V DC and Outputs: yes

Between Analog inputs and Outputs: yes

Between Transistor outputs and Inputs: yes

Between Digital inputs 24 V DC and network easyNet, easyLink

Between Transistor outputs and Memory card: yes

Between Transistor outputs and Power supply: yes

Between Analog inputs and Interface/memory card: no

### Rated operational voltage

24 V DC (-15 %/+ 20 % - power supply)

20.4 - 28.8 V DC (Transistor outputs)

20.4 - 28.8 V DC

### Short-circuit protection

Yes, electronic (Q1 - Q4), thermal (Q5 - Q8), (analysis via diagnostics input I16, I15), Transistor outputs

### Terminal capacity (flexible with ferrule)

0.2/2.5 mm²

### Switching frequency

Max. 1500 Operations (Inductive load to EN 60947-5-1, without external suppressor circuit, DC-13, T0.95 = 72 ms, R = 48 Ω, L = 1.15 H, f = 0.5 Hz (max. DF = 50 %))

Max. 1500 Operations (Inductive load to EN 60947-5-1, without external suppressor circuit, T0.95 = 15 ms, R = 48 Ω, L = 0.24 H, f = 0.5 Hz (max. DF = 50 %))

Max. 1500 Operations (Inductive load to EN 60947-5-1, without external suppressor circuit, T0.95 = 1 ms, R = 48 Ω, L = 16 mH, f = 0.5 Hz (max. DF = 50 %))

### Terminal capacity (solid)

0.2/4 mm²

### Tightening torque

0.6 Nm

### Write cycles of the retentive memory

10,000,000,000 read-write cycles

### Ambient operating temperature - max

55 °C

### Ambient operating temperature - min

-25 °C

### Ambient storage temperature - max

70 °C

Ambient storage temperature - min

-40 °C

Display temperature - max

55 °C

Display temperature - min

0 °C

Equipment heat dissipation, current-dependent Pvid

0 W

Heat dissipation capacity Pdiss

0 W

Heat dissipation per pole, current-dependent Pvid

0 W

Height of fall (IEC/EN 60068-2-32) - max

1 m

Number of outputs (analog)

1

Output current (mA) - max

100 mA

Rated operational current for specified heat dissipation (In)

0 A

Rated operational voltage (Ue) at DC - max

24 V

Static heat dissipation, non-current-dependent Pvs

3.4 W

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