

## Specifications

# Eaton 106391

Catalog Number: 106391

Eaton EC4P Compact PLC, 24 V DC, 12DI(of 4AI), 8DO(T), CAN, display EC4P-221-MTXD1



### General specifications

**Product Name**  
Eaton EC4P Compact PLC

**EAN**  
4015081061617

**Product Height**  
90 mm

**Product Weight**  
0.31 kg

**Catalog Number**  
106391

**Product Length/Depth**  
72 mm

**Product Width**  
107.5 mm

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

### Catalog Notes

Expandable: Inputs/outputs and bus systems

## Product specifications

### Features

Parallel connection of transistor outputs with resistive load, inductive load with external suppressor circuit, combination within a group - Group 1: Q1 - Q4

190 received bytes in a block (PRG interface RS232, Master mode)

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)

### 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-m22-standards.eps](#)

[eaton-general-approval-m22-symbol.eps](#)

[eaton-general-approval-easy-control-relays-standards.jpg](#)

### eCAD model

[DA-CE-ETN.EC4P-221-MTXD1](#)

### Installation instructions

[IL05003003Z](#)

[IL05013018Z](#)

### Manuals and user guides

[MN05003003Z\\_EN](#)

### mCAD model

[DA-CS-easy800](#)

[DA-CD-easy800](#)

### 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:

Display

Basic device

Function module

Digital output module

Communication module

Libraries

Power supply

Control unit

Analog input module

Digital input module

Memory unit

Engineering software

easyNet/CANopen® on board

Documentation

Other components

Monitor

Keypad

### Operating frequency

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

40000 Operations/h at resistive load

### Pollution degree

2

### Accuracy

$\pm 5$  s/day ( $\pm 0.5$  h/year), Real-time clock, normally

$\pm 3$  %, of actual value, two devices (Analog Inputs)

$\pm 2$ , (I7, I8, I11, I12)  $\pm 0.12$  V, of actual value, within a single device (Analog Inputs)

### Burst impulse

According to IEC/EN 61000-4-4, level 3

2 kV, Signal cable

2 kV, Supply cable

### Air pressure

1080 hPa (operation)

### Bus termination

EASY-NT-R plug (incl. bus terminating resistor 120  $\Omega$ ), 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

100 m, unshielded, Digital inputs 24 V DC

30 m, screened, Analog inputs

### 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  $< 10$  M $\Omega$ , transistor outputs)

### Mounting method

Screw fixing using fixing brackets ZB4-101-GF1 (accessories)

Top-hat rail fixing (according to IEC/EN 60715, 35 mm)

#### 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

Vertical

Horizontal

#### Contact discharge

6 kV, Electrostatic discharge (ESD)

#### Overvoltage category

II

#### Connection type

2 x RJ45, 8 pole, CANopen®

RJ45, PRG Interface RS232

RJ45, Ethernet

#### Duty factor

100 % (Inductive load to EN 60947-5-1, Without external suppressor circuit,  $T_{0.95} = 1$  ms,  $R = 48 \Omega$ ,  $L = 16$  mH)

100 % (Inductive load to EN 60947-5-1, Without external suppressor circuit, DC-13,  $T_{0.95} = 72$  ms,  $R = 48 \Omega$ ,  $L = 1.15$  H)

100 % (Inductive load to EN 60947-5-1, Without external suppressor circuit,  $T_{0.95} = 15$  ms,  $R = 48 \Omega$ ,  $L = 0.24$  H)

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

#### 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

0.5 kV, Supply cables, symmetrical, EASY...DC, power pulses (Surge), EMC

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

#### Terminal capacity (flexible with ferrule AWG)

22 - 12

#### Conversions

Each CPU cycle, Analog inputs

#### 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

10 kBit/s at 1000 m, CANopen®

0.3 kBit/s, PRG interface RS232, Master mode

2.4 kBit/s, PRG interface RS232, Master mode

4.8 kBit/s, PRG interface RS232, Master mode

9.6 kBit/s, PRG interface RS232, Master mode

250 kBit/s at 60 m, CANopen®

19.2 kBit/s, PRG interface RS232, Master mode

20 kBit/s at 700 m, CANopen®

38.4 kBit/s, PRG interface RS232, Master mode

0.6 kBit/s, PRG interface RS232, Master mode

500 kBit/s at 25 m, CANopen®

10 MBit/s, 100 m, Ethernet

125 kBit/s at 125 m, CANopen®

1.2 kBit/s, PRG interface RS232, Master mode

50 kBit/s at 300 m, CANopen®

57.6 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

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

16/32 Bit (value range)

50 kHz, Counter frequency

≤ 20 m (cable length, screened)

Square (pulse shape)

#### Rated operational current (I<sub>e</sub>)

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

#### Incremental counter

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

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

#### 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)  
2.2 mA (I11 - I12, at 24 V DC, at signal 1)  
3.3 mA (I9 - I10, at 24 V DC, at signal 1)  
140 mA

#### Input impedance

11.2 k $\Omega$

#### Input voltage

Signal 1:  $> 8$  V DC (I7 - I8, I11 - I12, Digital inputs, 24 V DC)  
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 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

$0.7 \leq I_e \leq 2$  per output, For  $R_a \leq 10$  m $\Omega$ , Transistor

outputs

#### Lamp load

5 W (without R<sub>v</sub> per channel)

#### Signal range

0 - 10 V DC, Analog inputs

#### Supply current

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

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

#### Memory

16 kByte Marker Memory

256 kByte Program memory code

4 kByte Output Memory

4 kByte Input Memory

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)

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

12 (24 V DC)

#### Utilization factor

0.25 (Inductive load to EN 60947-5-1, Without external suppressor circuit, T<sub>0.95</sub> = 1 ms, R = 48 Ω, L = 16 mH)

0.25 (Inductive load to EN 60947-5-1, Without external suppressor circuit, DC-13, T<sub>0.95</sub> = 72 ms, R = 48 Ω, L = 1.15 H)

0.25 (Inductive load to EN 60947-5-1, Without external suppressor circuit, T<sub>0.95</sub> = 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

Between Analog inputs and Interface/memory card: no

Between Transistor outputs and Power supply: yes

Supply voltage UAUX: yes

Between Transistor outputs and Inputs: yes

Between Analog inputs and Outputs: yes

Between Digital inputs 24 V DC and Outputs: yes

Between Transistor outputs and Memory card: yes

Between Digital inputs 24 V DC and network easyNet, easyLink

#### Rated operational voltage

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

20.4 - 28.8 V DC

20.4 - 28.8 V DC (Transistor outputs)

#### 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 mm<sup>2</sup>

#### Switching frequency

Max. 1500 Operations (Inductive load to EN 60947-5-1, without external suppressor circuit, T<sub>0.95</sub> = 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, T<sub>0.95</sub> = 1 ms, R = 48 Ω, L = 16 mH, f = 0.5 Hz (max. DF = 50 %))

Max. 1500 Operations (Inductive load to EN 60947-5-1, without external suppressor circuit, DC-13, T<sub>0.95</sub> = 72 ms, R = 48 Ω, L = 1.15 H, f = 0.5 Hz (max. DF = 50 %))

#### Terminal capacity (solid)

0.2/4 mm<sup>2</sup>

#### 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 P<sub>vid</sub>

0 W

Heat dissipation capacity  $P_{diss}$

0 W

Heat dissipation per pole, current-dependent  $P_{vid}$

0 W

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

1 m

Rated operational current for specified heat dissipation ( $I_n$ )

0 A

Rated operational voltage ( $U_e$ ) at DC - max

24 V

Static heat dissipation, non-current-dependent  $P_{vs}$

3.4 W



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