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

Catalog Number
106391

EAN
4015081061617

Product Length/Depth
72 mm

Product Height
90 mm

Product Width
107.5 mm

Product Weight
0.31 kg

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

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 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

± 5 s/day (± 0.5 h/year), Real-time clock, normally

± 3 %, of actual value, two devices (Analog Inputs)

± 2, (I7, I8, I11, I12) ± 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 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

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 MΩ, 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, 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)

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)

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 (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

Incremental counter

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

Counter frequency: ≤ 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 kΩ

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 ≤ 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

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, T0.95 = 1 ms, R = 48 Ω, L = 16 mH)

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 = 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 mm²

Switching frequency

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 %))
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 %))

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

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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