Specifications

Eaton 106399

Catalog Number: 106399

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



General specifications

Product Name
Eaton EC4P Compact PLC

Catalog Number
106399

EAN
4015081061693

Product Length/Depth
72 mm

Product Height
90 mm

Product Width
107.5 mm

Product Weight
0.314 kg

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

Catalog Notes
Expandable: Inputs/outputs and bus systems

Powering Business Worldwide

Product specifications

Features

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 1: Q1 - Q4
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-00004416.pdf

DA-DC-00004404.pdf

Drawings

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

eaton-general-m22-standards.eps

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

eCAD model

ETN.EC4P-222-MTXD1

Installation instructions

IL05003003Z

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:

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

Ethernet on board

Display

Analog input module

Other components

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

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

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

Burst impulse

2 kV, Supply cable

2 kV, Signal 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

Vertical

Horizontal

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, 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, 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

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

According to IEC/EN 61000-4-5, 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

19.2 kBit/s, PRG interface RS232, Master mode
500 kBit/s at 25 m, CANopen®
125 kBit/s at 125 m, CANopen®
10 kBit/s at 1000 m , CANopen®
9.6 kBit/s, PRG interface RS232, Master mode
1.2 kBit/s, PRG interface RS232, Master mode
2.4 kBit/s, PRG interface RS232, Master mode

38.4 kBit/s, PRG interface RS232, Master mode

10 MBit/s, 100 m, Ethernet

0.6 kBit/s, PRG interface RS232, Master mode

4.8 kBit/s, PRG interface RS232, Master mode

57.6 kBit/s, PRG interface RS232, Master mode

250 kBit/s at 60 m, CANopen®

50 kBit/s at 300 m, CANopen®

0.3 kBit/s, PRG interface RS232, Master mode

20 kBit/s at 700 m, CANopen®

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

≤ 20 m (cable length, screened)

Square (pulse shape)

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

16/32 Bit (value range)

50 kHz, Counter frequency

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

Incremental counter

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

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)
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
1 mA (Analog inputs)

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

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 Input Memory

4 kByte Output Memory

8 kByte Retain Memory

256 kByte Program memory code

14 segments of 16 kByte Program memory data

16 kByte Marker Memory

Number of bytes

190 transmission bytes (in a block)

Number of inputs (digital)

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

12

12 (24 V DC)

4 (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)

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

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

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

Voltage dips

≤ 10 ms

According to EN 61131-2

Potential isolation

Between Transistor outputs and Memory card: yes

Between Analog inputs and Interface/memory card: no

Between Digital inputs 24 V DC and Outputs: yes

Between Transistor outputs and Inputs: yes

Between Analog inputs and Outputs: yes

Supply voltage UAUX: yes

Between Transistor outputs and Power supply: yes

Between Digital inputs 24 V DC and network easyNet, easyLink

Rated operational voltage

20.4 - 28.8 V DC

20.4 - 28.8 V DC (Transistor outputs)

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

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 = 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 %))

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 %))

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

Eaton Corporation plc
Eaton House
30 Pembroke Road
Dublin 4, Ireland
Eaton.com

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