Eaton 106400

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

PRODUCT NAME	Eaton EC4P Compact PLC
CATALOG NUMBER	106400
PRODUCT LENGTH/DEPTH	72 mm
PRODUCT HEIGHT	90 mm
PRODUCT WIDTH	107.5 mm
PRODUCT WEIGHT	0.292 kg
CERTIFICATIONS	CSA-C22.2 No. 0-M CSA File No.: 012528 UL CSA Class No.: 2252-01 UL File No.: E135462 CE CSA-C22.2 No. 142-M IEC/EN 61000-4-2, Level 3 UL Category Control No.: NRAQ UL508 CSA
CATALOG NOTES	Expandable: Inputs/outputs and bus systems

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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) 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
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.

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CHARACTERISTIC CURVE	eaton-electrical-timers-easy-control-relays-characteristic-curve.eps
□□□□□	IL05003003Z
□□	eaton-modular-plc-easy-module-ec4p-compact-plc-dimensions.eps eaton-general-approval-easy-control-relays-standards.jpg

10.2.5 LIFTING	Does not apply, since the entire switchgear needs to be evaluated.
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:	easyNet/CANopen® on board Engineering software Basic device Communication module Memory unit Other components Ethernet on board Analog input module Digital output module Documentation Power supply Digital input module Function module Libraries
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	± 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) ± 5 s/day (± 0.5 h/year), Real-time clock, normally
BURST IMPULSE	According to IEC/EN 61000-4-4, level 3 2 kV, Supply cable 2 kV, Signal 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	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
CONTACT DISCHARGE	6 kV, Electrostatic discharge (ESD)
OVERVOLTAGE CATEGORY	II
CONNECTION TYPE	RJ45, Ethernet 2 x RJ45, 8 pole, CANopen® RJ45, PRG Interface RS232
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	2 kV, Supply cables, symmetrical, EASY...AC, power pulses (Surge), EMC According to IEC/EN 61000-4-5, 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
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 55022) Class B (EN 55011)
DATA TRANSFER RATE	10 MBit/s, 100 m, Ethernet 250 kBit/s at 60 m, CANopen® 20 kBit/s at 700 m, CANopen® 19.2 kBit/s, PRG interface RS232, Master mode 0.3 kBit/s, PRG interface RS232, Master mode 50 kBit/s at 300 m, CANopen® 0.6 kBit/s, PRG interface RS232, Master mode 2.4 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

	38.4 kBit/s, PRG interface RS232, Master mode 1.2 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
RELATIVE HUMIDITY	5 - 95 % (non-condensing)
DEGREE OF PROTECTION	IP20
DELAY TIME	0.25 ms typ., Digital inputs 24 DC (I5 - I12), Delay time from 0 to 1 0.02 ms typ., Digital inputs 24 DC (I1 - I4), 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 ≤ 20 m (cable length, screened) 16/32 Bit (value range) 50 kHz, Counter frequency Square (pulse shape)
RATED OPERATIONAL CURRENT (IE)	Max. 0.5 A at signal „1” DC per channel
INSULATION RESISTANCE	According to EN 50178
FUNCTIONS	Building blocks Thermal cutout
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	Counter frequency: ≤ 40 kHz Counter inputs: I1, I2 Signal offset: 90° Pulse shape: Square Number of counter inputs: 1 (I1, I2, I3, I4) Input for reference switch: I4 Reference input: I3

	Value range: 32 Bit
SHORT-CIRCUIT CURRENT	16 A, Transistor outputs
STATION	To DS 301 V4, Control contact rated current, Mode slave, Interfaces
INPUT CURRENT	2.2 mA (I7 - I8, at 24 V DC, at signal 1) 140 mA 3.3 mA (I1 - I6, at 24 V DC, at signal 1) 2.2 mA (I11 - I12, at 24 V DC, at signal 1) 1 mA (Analog inputs) 3.3 mA (I9 - I10, at 24 V DC, at signal 1)
INPUT IMPEDANCE	11.2 kΩ
INPUT VOLTAGE	Signal 0: < 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 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	24/44 mA, Normally/max., On 1 signal, Transistor outputs 18/32 mA, Normally/max., On 0 signal, Transistor outputs
MEMORY	4 kByte Input Memory 4 kByte Output Memory 8 kByte Retain Memory 14 segments of 16 kByte Program memory data

	256 kByte Program memory code 16 kByte Marker Memory
NUMBER OF BYTES	190 transmission bytes (in a block)
NUMBER OF INPUTS (DIGITAL)	4 (can also be used as analog inputs) 12 (24 V DC) 4 (I7, I8, I11, I12, can also be used as analog inputs) 12
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	According to EN 61131-2 ≤ 10 ms
POTENTIAL ISOLATION	Between Digital inputs 24 V DC and Outputs: yes Supply voltage UAUX: yes Between Transistor outputs and Inputs: yes Between Transistor outputs and Power supply: yes Between Transistor outputs and Memory card: yes Between Digital inputs 24 V DC and network easyNet, easyLink Between Analog inputs and Outputs: yes Between Analog inputs and Interface/memory card: no
RATED OPERATIONAL VOLTAGE	20.4 - 28.8 V DC 24 V DC (-15 %/+ 20 % - power supply) 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, 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

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

PROJECT NAME:
PROJECT NUMBER:
PREPARED BY:
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