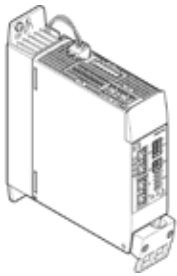


# servo drive CMMT-AS-C2-3A-EC-S1

Part number: 5340819

☆ Core product range

FESTO



## Data sheet

| Feature                                 | Value                                                                                                                                              |
|-----------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|
| Mounting type                           | Mounting plate, bolted                                                                                                                             |
| Assembly position                       | Free convection<br>Vertical                                                                                                                        |
| Product weight                          | 1,300 g                                                                                                                                            |
| Display                                 | LED green/yellow/red                                                                                                                               |
| Control elements                        | Optional: control unit CDSB                                                                                                                        |
| Conforms to standard                    | EN 61800-3<br>EN 61800-5-1<br>EN 61800-5-2<br>EN ISO 13849-1                                                                                       |
| Based on the standard                   | EN 50581<br>EN 60204-1<br>EN 61508-1<br>EN 61508-2<br>EN 61508-3<br>EN 61508-4<br>EN 61508-5<br>EN 61508-6<br>EN 61508-7<br>EN 61800-2<br>EN 62061 |
| Authorisation                           | RCM Mark<br>TÜV<br>c UL us - Listed (OL)                                                                                                           |
| KC mark                                 | KC-EMV                                                                                                                                             |
| CE mark (see declaration of conformity) | to EU directive for EMC<br>to EU directive for machinery<br>to EU directive low-voltage devices<br>in accordance with EU RoHS directive            |
| Certificate issuing department          | TÜV Rheinland 01/205/5640.00/18<br>UL E331130                                                                                                      |
| Storage temperature                     | -25 ... 55 °C                                                                                                                                      |
| Ambient temperature                     | 0 ... 50 °C                                                                                                                                        |
| Note on ambient temperature             | Power must be reduced by 3%/°C at ambient temperatures above 40°C.                                                                                 |
| UL ambient temperature                  | 0 ... 40 °C                                                                                                                                        |
| Relative air humidity                   | 5 - 90 %<br>non-condensing                                                                                                                         |
| Max. installation height                | 2,000 m                                                                                                                                            |
| Note on max. installation height        | From 1000 m, power reduction by 1% per 100 m                                                                                                       |
| Protection class                        | IP20                                                                                                                                               |
| Safety class                            | I                                                                                                                                                  |
| Overvoltage category                    | III                                                                                                                                                |
| Degree of contamination                 | 2                                                                                                                                                  |
| Surge strength                          | 6 kV                                                                                                                                               |
| Materials note                          | Contains PWIS substances<br>Conforms to RoHS                                                                                                       |

| <b>Feature</b>                                                   | <b>Value</b>                                                                                                                                                                                                                                                                                                                                |
|------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Nominal operating voltage, phases                                | Single-phase                                                                                                                                                                                                                                                                                                                                |
| Nominal operating voltage, AC                                    | 230 V                                                                                                                                                                                                                                                                                                                                       |
| Permissible voltage fluctuation                                  | -20 % / +15 %                                                                                                                                                                                                                                                                                                                               |
| Input voltage range AC                                           | 100 ... 230 V                                                                                                                                                                                                                                                                                                                               |
| Line frequency                                                   | 48 ... 62 Hz                                                                                                                                                                                                                                                                                                                                |
| Nominal current, load supply                                     | 2.8 A                                                                                                                                                                                                                                                                                                                                       |
| Peak current, load supply                                        | 8.4 A                                                                                                                                                                                                                                                                                                                                       |
| Active PFC                                                       | No                                                                                                                                                                                                                                                                                                                                          |
| Mains filter                                                     | Integrated                                                                                                                                                                                                                                                                                                                                  |
| System voltage to EN 61800-5-1                                   | 300 V                                                                                                                                                                                                                                                                                                                                       |
| Max. short circuit protection of the mains                       | 100 kA                                                                                                                                                                                                                                                                                                                                      |
| Mains types                                                      | TT<br>TN<br>IT                                                                                                                                                                                                                                                                                                                              |
| Nominal voltage, load supply DC                                  | 320 V                                                                                                                                                                                                                                                                                                                                       |
| Permissible range, load supply                                   | -20 %/+15 %                                                                                                                                                                                                                                                                                                                                 |
| Max. intermediate circuit voltage, DC                            | 395 V                                                                                                                                                                                                                                                                                                                                       |
| Braking resistor, integrated                                     | 100 Ohm                                                                                                                                                                                                                                                                                                                                     |
| Braking resistance pulse power                                   | 1.6 kW                                                                                                                                                                                                                                                                                                                                      |
| Pulse energy for braking resistor                                | 230 Ws                                                                                                                                                                                                                                                                                                                                      |
| Nominal power braking resistor (IEC)                             | 23 W                                                                                                                                                                                                                                                                                                                                        |
| Braking resistor, external                                       | 100 ... 160 Ohm                                                                                                                                                                                                                                                                                                                             |
| Max. continuous output of the external braking resistor (IEC)    | 180 W                                                                                                                                                                                                                                                                                                                                       |
| Nominal DC voltage, logic power supply                           | 24 V                                                                                                                                                                                                                                                                                                                                        |
| Permissible range, logic voltage                                 | ± 20 %                                                                                                                                                                                                                                                                                                                                      |
| Current consumption, logic power supply without clamping brake   | 0.5 A                                                                                                                                                                                                                                                                                                                                       |
| Current consumption for logic supply with locking brake          | 1.5 A                                                                                                                                                                                                                                                                                                                                       |
| Max. current consumption for logic supply, holding brake and I/O | 2.3 A                                                                                                                                                                                                                                                                                                                                       |
| Output voltage range AC                                          | 3x (0 – Input) V                                                                                                                                                                                                                                                                                                                            |
| Effective nominal current per phase                              | 2 A                                                                                                                                                                                                                                                                                                                                         |
| Effective peak current per phase                                 | 6 A                                                                                                                                                                                                                                                                                                                                         |
| Max. peak current duration                                       | 2 s                                                                                                                                                                                                                                                                                                                                         |
| Nominal controller power                                         | 350 W                                                                                                                                                                                                                                                                                                                                       |
| Peak power                                                       | 1,000 W                                                                                                                                                                                                                                                                                                                                     |
| Output frequency                                                 | 0 ... 599 Hz                                                                                                                                                                                                                                                                                                                                |
| Max. length of motor cable without external mains filter         | 25 m                                                                                                                                                                                                                                                                                                                                        |
| Max. output current of holding brake                             | 1 A                                                                                                                                                                                                                                                                                                                                         |
| Max. voltage drop from logic supply to brake output              | 0.8 V                                                                                                                                                                                                                                                                                                                                       |
| Number of inputs for motor temperature sensor                    | 1                                                                                                                                                                                                                                                                                                                                           |
| Controller operating mode                                        | Cascade controller<br>P position controller<br>PI speed controller<br>PI current regulator for F or M<br>Profile operation with record and direct mode<br>Interpolated mode via fieldbus<br>Synchronised operating modes<br>Homing<br>Setting-up<br>Autotuning                                                                              |
| Operating mode                                                   | Field-oriented closed-loop control<br>Position resolution 24 bit/U<br>Sampling rate 16 kHz<br>PWM at 8 or 16 KHz<br>Vector modulation with 3rd harmonic<br>Real-time data acquisition<br>2x Input-Capture (x, v, F)<br>2x Output-Trigger (x, v, F)<br>2x position encoder input<br>1x SYNC interface for encoder emulation or encoder input |
| Ethernet interface, function                                     | Parameterisation and commissioning                                                                                                                                                                                                                                                                                                          |
| Ethernet interface, protocol                                     | TCP/IP                                                                                                                                                                                                                                                                                                                                      |

| Feature                                         | Value                                                                                                          |
|-------------------------------------------------|----------------------------------------------------------------------------------------------------------------|
| Fieldbus interface, protocol                    | EtherCAT                                                                                                       |
| Fieldbus coupling                               | EtherCAT                                                                                                       |
| Communications profile                          | CiA402<br>CoE (CANopen over EtherCAT)<br>EoE (Ethernet over EtherCAT)<br>FoE (File over EtherCAT)              |
| Process interface                               | Interpolated Mode CSP<br>Interpolated Mode CSV<br>Interpolated Mode CST<br>I/O mode for 256 position sets      |
| Fieldbus interface, transmission rate           | 100 Mbit/s                                                                                                     |
| Fieldbus interface, type of connection          | 2x socket                                                                                                      |
| Fieldbus interface, connection technology       | RJ45                                                                                                           |
| Encoder interface, function                     | ENDAT 2.1 encoder<br>ENDAT 2.2 encoder<br>Hiperface encoder<br>Incremental encoder<br>Nikon<br>SIN/COS encoder |
| Encoder interface 2, function                   | Incremental encoder<br>SIN/COS encoder                                                                         |
| Synchronisation interface, function             | Encoder emulation A/B/Z<br>Encoder input A/B/Z<br>Pulse/direction signals CLK/DIR<br>Counting signals CW/CCW   |
| Encoder interface output, characteristics       | 1 MHz maximum output frequency<br>max. 16384 ppr                                                               |
| Encoder interface input, characteristics        | 1 MHz maximum output frequency<br>max. 16384 ppr                                                               |
| Number of digital logic inputs                  | 12                                                                                                             |
| Input circuit logic                             | PNP (positive-switching)                                                                                       |
| Logic input characteristics                     | Freely configurable to a given extent<br>Safety inputs in some cases<br>Not electrically isolated              |
| Specification, logic input                      | Based on IEC 61131-2, type 3                                                                                   |
| Logic input working range                       | -3 ... 30 V                                                                                                    |
| Number of high-speed logic inputs               | 2                                                                                                              |
| Time resolution of high-speed logic inputs      | 1 µs                                                                                                           |
| Number of 24 V DC digital logic outputs         | 6                                                                                                              |
| Switching logic, outputs                        | PNP (positive-switching)                                                                                       |
| Digital logic output characteristics            | Freely configurable to a given extent<br>Not electrically isolated<br>Diagnostics outputs in some cases        |
| Max. current, digital logic outputs             | 20 mA                                                                                                          |
| Number of high-speed switching outputs          | 2                                                                                                              |
| Time resolution of high-speed switching outputs | 1 µs                                                                                                           |
| Number of floating switching outputs            | 1                                                                                                              |
| Max. current of the floating switching outputs  | 50 mA                                                                                                          |
| Number of analogue setpoint inputs              | 1                                                                                                              |
| Setpoint input characteristics                  | Differential inputs<br>Can be configured for speed in RPM<br>Configurable for current/force                    |
| Setpoint input working range                    | ± 10 V                                                                                                         |
| Operating range Analogue inputs                 | ± 10 V                                                                                                         |
| Setpoint input impedance                        | 70 kOhm                                                                                                        |
| Safety function                                 | Safe brake control (SBC)<br>Safe torque off (STO)<br>Safe stop 1 (SS1)                                         |
| Safety Integrity Level (SIL)                    | Safe brake control (SBC) / SIL 3 / SILCL 3<br>Safe torque off (STO)/SIL 3/SILCL 3                              |
| Performance level (PL)                          | Safe brake control (SBC) / category 3, Performance Level e                                                     |

| Feature                      | Value                                                 |
|------------------------------|-------------------------------------------------------|
|                              | Safe Torque off (STO)/Category 4, Performance Level e |
| Diagnostic coverage          | 97 %                                                  |
| SFF Safe Failure Fraction    | 99 %                                                  |
| Hardware fault tolerance     | 1                                                     |
| Number of safe 2-pin inputs  | 2                                                     |
| Number of diagnostic outputs | 2                                                     |