

# Servo drive CMMT-AS-C18-11A-P3-MP-S3

Part number: 8166886

**FESTO**



 [General operating condition](#)

## Data sheet

| Feature                                      | Value                                                                                                                                  |
|----------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|
| Type of mounting                             | Mounting plate, attached with screws                                                                                                   |
| Mounting position                            | Open convection<br>Vertical                                                                                                            |
| Product weight                               | 4300 g                                                                                                                                 |
| Display                                      | Green/yellow/red LED                                                                                                                   |
| Operator controls                            | Optional: Operator 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 standard                            | 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 |
| Approval                                     | RCM<br>German Technical Control Board (TÜV)<br>c UL us - Listed (Oil)                                                                  |
| KC mark                                      | KC-EMV                                                                                                                                 |
| CE mark (see declaration of conformity)      | To EU EMC Directive<br>To EC Machinery Directive<br>In accordance with EU RoHS Directive                                               |
| UKCA marking (see declaration of conformity) | To UK regulations for machines<br>To UK RoHS instructions                                                                              |
| Certificate issuing authority                | German Technical Control Board (TÜV) Rheinland 01/205/6032.00/25<br>UL E331130                                                         |
| Storage temperature                          | -25 °C ... 55 °C                                                                                                                       |
| Ambient temperature                          | 0 °C ... 50 °C                                                                                                                         |
| Note on ambient temperature                  | Power must be reduced by 3% per °C at ambient temperatures above 40°C.                                                                 |
| UL ambient temperature                       | 0 °C ... 50 °C                                                                                                                         |
| Relative air humidity                        | 5 - 90%<br>Non-condensing                                                                                                              |
| Max. installation height                     | 2000 m                                                                                                                                 |
| Note on max. installation height             | From 1000 m: power reduction by 1% per 100 m.                                                                                          |
| Degree of protection                         | IP20                                                                                                                                   |
| Protection class                             | I                                                                                                                                      |

| Feature                                                                  | Value                                                                                                                                                                                                                                                           |
|--------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Overvoltage category                                                     | III                                                                                                                                                                                                                                                             |
| Pollution degree                                                         | 2                                                                                                                                                                                                                                                               |
| Immunity to surge                                                        | 6 kV                                                                                                                                                                                                                                                            |
| Note on materials                                                        | RoHS compliant                                                                                                                                                                                                                                                  |
| LABS (PWIS) conformity                                                   | VDMA24364 zone III                                                                                                                                                                                                                                              |
| Phases of nominal operating voltage                                      | 3 Phase ~                                                                                                                                                                                                                                                       |
| Nominal operating voltage AC                                             | 400 V                                                                                                                                                                                                                                                           |
| Permissible voltage fluctuations                                         | +/-10%                                                                                                                                                                                                                                                          |
| Input voltage range AC                                                   | 200 V ... 480 V                                                                                                                                                                                                                                                 |
| Mains frequency                                                          | 48 Hz ... 62 Hz                                                                                                                                                                                                                                                 |
| Nominal current, load supply                                             | 22 A                                                                                                                                                                                                                                                            |
| Peak current load power supply                                           | 66 A                                                                                                                                                                                                                                                            |
| Active PFC                                                               | No                                                                                                                                                                                                                                                              |
| Mains filter                                                             | Built in                                                                                                                                                                                                                                                        |
| System voltage to EN 61800-5-1                                           | 300 V                                                                                                                                                                                                                                                           |
| Max. short circuit current rating of the mains                           | 10 kA                                                                                                                                                                                                                                                           |
| Mains types                                                              | PN<br>IT                                                                                                                                                                                                                                                        |
| Nominal voltage load voltage DC                                          | 560 V                                                                                                                                                                                                                                                           |
| Permissible range for load power supply                                  | ±10%                                                                                                                                                                                                                                                            |
| Max. intermediate circuit voltage DC                                     | 800 V                                                                                                                                                                                                                                                           |
| Brake resistor, integrated                                               | 24 Ohm                                                                                                                                                                                                                                                          |
| Pulse power, brake resistance                                            | 24 kVA                                                                                                                                                                                                                                                          |
| Pulse energy for braking resistor                                        | 1200 Ws                                                                                                                                                                                                                                                         |
| Nominal power braking resistor (IEC)                                     | 100 W                                                                                                                                                                                                                                                           |
| Brake resistor, external                                                 | 30 Ohm ... 40 Ohm                                                                                                                                                                                                                                               |
| Max. continuous output of the external braking resistor (IEC)            | 4500 W                                                                                                                                                                                                                                                          |
| Nominal voltage for logic power supply DC                                | 24 V                                                                                                                                                                                                                                                            |
| Permissible range for logic voltage                                      | ±20%                                                                                                                                                                                                                                                            |
| Current consumption of logic power supply without clamping brake         | 0.7 A                                                                                                                                                                                                                                                           |
| Current consumption for logic supply with parking brake                  | 3 A                                                                                                                                                                                                                                                             |
| Max. current consumption, logic power supply with clamping brake and I/O | 3.5 A                                                                                                                                                                                                                                                           |
| Output voltage class AC                                                  | 3x (0 – input) V                                                                                                                                                                                                                                                |
| Nominal current per phase, effective                                     | 18 A                                                                                                                                                                                                                                                            |
| Peak current per phase, effective                                        | 54 A                                                                                                                                                                                                                                                            |
| Max. peak current duration                                               | 2 s                                                                                                                                                                                                                                                             |
| Controller nominal output                                                | 9000 VA                                                                                                                                                                                                                                                         |
| Maximum output                                                           | 27000 VA                                                                                                                                                                                                                                                        |
| Output frequency                                                         | 0 Hz ... 599 Hz                                                                                                                                                                                                                                                 |
| Max. length of motor cable without external mains filter                 | 50 m                                                                                                                                                                                                                                                            |
| Max. output current of holding brake                                     | 2.3 A                                                                                                                                                                                                                                                           |
| Max. voltage drop from logic supply to brake output                      | 1 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 controller 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 |

| Feature                                | Value                                                                                                                                                                                                                                                                                                                                            |
|----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Operating mode                         | Field-oriented closed-loop control<br>Position resolution 24 bit/rev.<br>Sampling rate 16 kHz<br>PWM with 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                                                                                                                                                                                                                                                                                                                                           |
| Field bus, protocol                    | EtherCAT®<br>EtherNet/IP<br>Modbus/TCP<br>PROFINET IRT<br>PROFINET RT                                                                                                                                                                                                                                                                            |
| Fieldbus interface, function           | Bus connection incoming/outgoing<br>EtherCAT® slave<br>PROFINET slave<br>EtherNet/IP slave                                                                                                                                                                                                                                                       |
| Fieldbus link                          | EtherCAT®<br>EtherNet/IP<br>Modbus/TCP<br>PROFINET                                                                                                                                                                                                                                                                                               |
| Communication profile                  | CiA402<br>CoE (CANopen over EtherCAT)<br>EoE (Ethernet over EtherCAT)<br>FoE (File over EtherCAT)<br>PROFIdrive<br>DriveProfile                                                                                                                                                                                                                  |
| Secure communication profile           | PROFIsafe                                                                                                                                                                                                                                                                                                                                        |
| Process interfacing                    | AC1: Adjustable-speed drives<br>AC3: Drives with positioning function<br>AC4: Synchronous servo application<br>Adjustable-speed drives<br>Drives with positioning function<br>I/O mode for 256 positioning records<br>Interpolated mode CSP<br>Interpolated mode CST<br>Interpolated mode CSV                                                    |
| Field bus interface, transmission rate | 100 Mbit/s                                                                                                                                                                                                                                                                                                                                       |
| Field bus, connection type             | 2x socket                                                                                                                                                                                                                                                                                                                                        |
| Field bus, connection system           | RJ45                                                                                                                                                                                                                                                                                                                                             |
| Encoder interface, function            | BiSS-C<br>EnDat® 2.1 encoder<br>EnDat® 2.2-sensor<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                                                                                                                                                                                                                                                                                                   |
| Encoder interface output, features     | 1 MHz maximum output frequency<br>max. 16384 ppr                                                                                                                                                                                                                                                                                                 |
| Encoder interface input, features      | 1 MHz maximum output frequency<br>max. 16384 ppr                                                                                                                                                                                                                                                                                                 |
| Number of digital logic inputs         | 12                                                                                                                                                                                                                                                                                                                                               |
| Switching logic for inputs             | PNP (positive switching)                                                                                                                                                                                                                                                                                                                         |
| Features of logic input                | Freely configurable in some cases<br>Safety inputs in some cases<br>Not galvanically isolated                                                                                                                                                                                                                                                    |
| Specification logic input              | Based on IEC 61131-2, type 3                                                                                                                                                                                                                                                                                                                     |

| Feature                                         | Value                                                                                                                                                                                                                                                 |
|-------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Working range of logic input                    | -3 V ... 30 V                                                                                                                                                                                                                                         |
| Number of high-speed logic inputs               | 2                                                                                                                                                                                                                                                     |
| Time resolution of high-speed logic inputs      | 1 µs                                                                                                                                                                                                                                                  |
| Number of digital logic outputs 24 V DC         | 6                                                                                                                                                                                                                                                     |
| Switching logic for outputs                     | PNP (positive switching)                                                                                                                                                                                                                              |
| Features of digital logic outputs               | Freely configurable in some cases<br>Not galvanically isolated<br>partial diagnostic outputs                                                                                                                                                          |
| 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                                                                                                                                                                                                                                                     |
| Features of setpoint inputs                     | Differential inputs<br>Configurable for speed<br>Configurable for current/force                                                                                                                                                                       |
| Working range setpoint input                    | ± 10 V                                                                                                                                                                                                                                                |
| Working range of analogue inputs                | ± 10 V                                                                                                                                                                                                                                                |
| Impedance of setpoint input                     | 70 kOhm                                                                                                                                                                                                                                               |
| Safety function                                 | Safe brake control (SBC)<br>Safe torque off (STO)<br>Safely limited speed (SLS)<br>Safe Operating Stop (SOS)<br>Safe Stop 1 (SS1)<br>Safe Stop 2 (SS2)<br>Safe maximum speed (SMS)                                                                    |
| Safety sub-functions up to SIL3                 | Safe torque off<br>Safe stop 1 ramp monitored<br>Safe stop 1 time controlled<br>Safe stop 2 ramp monitored<br>Safe stop 2 time controlled<br>Safe operating stop<br>Safely limited rotational speed/speed<br>Safe brake control<br>Safe maximum speed |
| Performance Level (PL)                          | Safe brake control (SBC)/category 3, performance level e<br>Safe Torque Off (STO)/category 4, performance level e                                                                                                                                     |
| Safety sub-function up to PL e, Cat. 3          | Safely limited rotational speed/speed<br>Safe operating stop<br>Safe stop 1 ramp monitored<br>Safe stop 2 ramp monitored<br>Safe stop 2 time controlled<br>Safe maximum speed                                                                         |
| Safety sub-function up to PL e, Cat. 4          | Safe brake control<br>Safe stop 1 with time control<br>Safe torque off                                                                                                                                                                                |
| Hardware fault tolerance                        | 1                                                                                                                                                                                                                                                     |
| Number of safe 2-pin inputs                     | 4                                                                                                                                                                                                                                                     |
| Number of diagnostic outputs                    | 4                                                                                                                                                                                                                                                     |