# DATASHEET - RASP5-5402A31-5120100S1

**Speed controller, 5.6 A, 2.2 kW, Sensor input 4, 230/277 V AC, AS-Interface®, S-7.4 for 31 modules, HAN Q5, with braking resistance**

Powering Business Worldwide™

**Part no.** RASP5-5402A31-5120100S1
198570

| | |
|---|---|
| Product name | Eaton Moeller® series Rapid Link Speed controller |
| Part no. | RASP5-5402A31-5120100S1 |
| EAN | 4015081964451 |
| Product Length/Depth | 157 millimetre |
| Product height | 270 millimetre |
| Product width | 220 millimetre |
| Product weight | 3.42 kilogram |
| Certifications | UL 61800-5-1<br>IEC/EN 61800-5-1<br>UL approval<br>CE<br>RoHS |
| Product Tradename | Rapid Link |
| Product Type | Speed controller |
| Product Sub Type | None |
| Catalog Notes | can be switched over from U/f to (vector) speed control<br>Connection of supply voltage via adapter cable on round or flexible busbar junction<br>Diagnostics and reset on device and via AS-Interface<br>Four fixed speeds<br>integrated PTC thermistor monitoring and Thermoclick with safe isolation<br>optional: 4 sensor inputs with M12-Y adapter for switchover to creep speed<br>optional: Faster stop if external 24 V fails<br>Two sensor inputs through M12 sockets (max. 150 mA) for quick stop and interlocked manual operation<br>with AUTO - OFF/RESET - HAND key switches<br>with selector switch REV - OFF - FWD |
| | |
| Features | Diagnostics and reset on device and via AS-Interface<br>Parameterization: Fieldbus<br>Parameterization: drivesConnect mobile (App)<br>Parameterization: drivesConnect<br>Parameterization: Keypad |
| Fitted with: | PC connection<br>Thermo-click with safe isolation<br>Key switch position AUTO<br>Key switch position OFF/RESET<br>Selector switch (Positions: REV - OFF - FWD)<br>Braking resistance<br>Control unit<br>Internal DC link<br>Breaking resistance<br>IGBT inverter<br>PTC thermistor monitoring<br>Four fixed speeds<br>Key switch position HAND<br>Two sensor inputs through M12 sockets (max. 150 mA) for quick stop and interlocked manual operation |
| Functions | For actuation of motors with mechanical brake<br>4-quadrant operation possible<br>Brake chopper with braking resistance for dynamic braking |
| | |
| Degree of protection | IP65<br>NEMA 12 |
| Electromagnetic compatibility | 1st and 2nd environments (according to EN 61800-3) |
| Overvoltage category | III |
| Product category | Speed controller |
| Protocol | AS-Interface profile cable: S-7.4 for 31 modules<br>ASI |
| Radio interference class | C1: for conducted emissions only<br>C2, C3: depending on the motor cable length, the connected load, and ambient conditions. External radio interference suppression filters (optional) may be necessary. |
| Rated impulse withstand voltage (Uimp) | 2000 V |

| | |
|---|---|
| System configuration type | AC voltage<br>Center-point earthed star network (TN-S network)<br>Phase-earthed AC supply systems are not permitted. |
| | |
| Mounting position | Vertical |
| Shock resistance | 15 g, Mechanical, According to IEC/EN 60068-2-27, 11 ms, Half-sinusoidal shock 11 ms, 1000 shocks per shaft |
| Vibration | Resistance: According to IEC/EN 60068-2-6<br>Resistance: 10 - 150 Hz, Oscillation frequency<br>Resistance: 57 Hz, Amplitude transition frequency on acceleration<br>Resistance: 6 Hz, Amplitude 0.15 mm |
| | |
| Altitude | Max. 2000 m<br>Above 1000 m with 1 % performance reduction per 100 m |
| Ambient operating temperature - min | -10 °C |
| Ambient operating temperature - max | 40 °C |
| Ambient storage temperature - min | -40 °C |
| Ambient storage temperature - max | 70 °C |
| Climatic proofing | In accordance with IEC/EN 50178<br>< 95 %, no condensation |
| | |
| Current limitation | Adjustable, motor, main circuit<br>0.5 - 5.6 A, motor, main circuit |
| Delay time | < 10 ms, Off-delay<br>< 10 ms, On-delay |
| Efficiency | 98 % (η) |
| Heat dissipation at current/speed | 36.6 W at 25% current and 0% speed<br>38.1 W at 25% current and 50% speed<br>42 W at 50% current and 0% speed<br>42.5 W at 50% current and 90% speed<br>44.2 W at 50% current and 50% speed<br>55.9 W at 100% current and 0% speed<br>58.3 W at 100% current and 90% speed<br>60.4 W at 100% current and 50% speed |
| Input current ILN at 150% overload | 5.3 A |
| Leakage current at ground IPE - max | 3.5 mA |
| Mains current distortion | 120 % |
| Mains switch-on frequency | Maximum of one time every 60 seconds |
| Mains voltage - max | 480 V |
| Mains voltage - min | 380 V |
| Mains voltage tolerance | 380 - 480 V (-10 %/+10 %, at 50/60 Hz) |
| Operating mode | Sensorless vector control (SLV)<br>BLDC motors<br>U/f control<br>PM and LSPM motors<br>Synchronous reluctance motors |
| Output frequency - max | 500 Hz |
| Output frequency - min | 0 Hz |
| Overload current | For 60 s every 600 s<br>At 40 °C |
| Overload current IL at 150% overload | 8.4 A |
| Rated frequency - max | 66 Hz |
| Rated frequency - min | 45 Hz |
| Rated operational current (Ie) | 5.6 A at 150% overload (at an operating frequency of 8 kHz and an ambient air temperature of +40 °C) |
| Rated operational power at 380/400 V, 50 Hz, 3-phase | 2.2 kW |
| Rated operational voltage | 400 V AC, 3-phase<br>480 V AC, 3-phase |
| Resolution | 0.1 Hz (Frequency resolution, setpoint value) |
| Starting current - max | 200 %, IH, max. starting current (High Overload), For 2 seconds every 20 seconds, Power section |
| Supply frequency | 50/60 Hz |
| Switching frequency | 8 kHz, 4 - 32 kHz adjustable, fPWM, Power section, Main circuit |
| | |
| Assigned motor power at 460/480 V, 60 Hz, 3-phase | 3 HP |
| | |

| | | |
|---|---|---|
| Braking current | | ≤ 0.6 A (max. 6 A for 120 ms), Actuator for external motor brake |
| Braking torque | | Adjustable to 100 % (I/Ie), DC - Main circuit<br>≤ 30 % (I/Ie) |
| Braking voltage | | 230/277 V AC -15 % / +10 %, Actuator for external motor brake |
| Switch-on threshold for the braking transistor | | 765 V DC |
| | | |
| Rated conditional short-circuit current (Iq) | | 10 kA |
| Short-circuit protection (external output circuits) | | Type 1 coordination via the power bus' feeder unit, Main circuit |
| | | |
| Rated control voltage (Uc) | | 24 V DC (-15 %/+20 %, external via AS-Interface® plug)<br>230/277 V AC (external brake 50/60 Hz) |
| | | |
| Communication interface | | AS-Interface |
| Connection | | Plug type: HAN Q5 |
| Interfaces | | Max. total power consumption from AS-Interface® power supply unit (30 V): 190 mA<br>Specification: S-7.4 (AS-Interface®)<br>Number of slave addresses: 31 (AS-Interface®) |
| | | |
| Cable length | | C2 ≤ 5 m, maximum motor cable length<br>C3 ≤ 25 m, maximum motor cable length<br>C1 ≤ 1 m, maximum motor cable length |
| | | |
| 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. |
| 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 | | Does not apply, since the entire switchgear needs to be evaluated. |
| 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. |
| 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. The specifications for the switchgear must be observed. |
| 10.12 Electromagnetic compatibility | | Is the panel builder's responsibility. The specifications for the switchgear must be observed. |
| 10.13 Mechanical function | | The device meets the requirements, provided the information in the instruction leaflet (IL) is observed. |

## Technical data ETIM 8.0

| | | |
|---|---|---|
| Low-voltage industrial components (EG000017) / Frequency converter =< 1 kV (EC001857) | | |
| Electric engineering, automation, process control engineering / Electrical drive / Static frequency converter / Static frequency converter = < 1 kV (ecl@ss10.0.1-27-02-31-01 [AKE177014]) | | |
| Mains voltage | V | 380 - 480 |
| Mains frequency | | 50/60 Hz |
| Number of phases input | | 3 |
| Number of phases output | | 3 |
| Max. output frequency | Hz | 500 |
| Max. output voltage | V | 500 |
| Nominal output current I2N | A | 5.6 |
| Max. output at quadratic load at rated output voltage | kW | 2.2 |

| | | |
|---|---|---|
| Max. output at linear load at rated output voltage | kW | 2.2 |
| Relative symmetric net frequency tolerance | % | 10 |
| Relative symmetric net voltage tolerance | % | 10 |
| Number of analogue outputs | | 0 |
| Number of analogue inputs | | 0 |
| Number of digital outputs | | 0 |
| Number of digital inputs | | 4 |
| With control element | | Yes |
| Application in industrial area permitted | | Yes |
| Application in domestic- and commercial area permitted | | Yes |
| Supporting protocol for TCP/IP | | No |
| Supporting protocol for PROFIBUS | | No |
| Supporting protocol for CAN | | No |
| Supporting protocol for INTERBUS | | No |
| Supporting protocol for ASI | | Yes |
| Supporting protocol for KNX | | No |
| Supporting protocol for Modbus | | No |
| Supporting protocol for Data-Highway | | No |
| Supporting protocol for DeviceNet | | No |
| Supporting protocol for SUCONET | | No |
| Supporting protocol for LON | | No |
| Supporting protocol for PROFINET IO | | No |
| Supporting protocol for PROFINET CBA | | No |
| Supporting protocol for SERCOS | | No |
| Supporting protocol for Foundation Fieldbus | | No |
| Supporting protocol for EtherNet/IP | | No |
| Supporting protocol for AS-Interface Safety at Work | | No |
| Supporting protocol for DeviceNet Safety | | No |
| Supporting protocol for INTERBUS-Safety | | No |
| Supporting protocol for PROFIsafe | | No |
| Supporting protocol for SafetyBUS p | | No |
| Supporting protocol for BACnet | | No |
| Supporting protocol for other bus systems | | No |
| Number of HW-interfaces industrial Ethernet | | 0 |
| Number of interfaces PROFINET | | 0 |
| Number of HW-interfaces RS-232 | | 0 |
| Number of HW-interfaces RS-422 | | 0 |
| Number of HW-interfaces RS-485 | | 1 |
| Number of HW-interfaces serial TTY | | 0 |
| Number of HW-interfaces USB | | 0 |
| Number of HW-interfaces parallel | | 0 |
| Number of HW-interfaces other | | 1 |
| With optical interface | | No |
| With PC connection | | Yes |
| Integrated breaking resistance | | Yes |
| 4-quadrant operation possible | | Yes |
| Type of converter | | U converter |
| Degree of protection (IP) | | IP65 |
| Degree of protection (NEMA) | | 12 |
| Height | mm | 270 |
| Width | mm | 220 |
| Depth | mm | 157 |