

Speed controllers, 5.6 A, 2.2 kW, Sensor input 4, 180/207 V DC, AS-Interface®, S-7.4 for 31 modules, HAN Q4/2, with manual override switch, with braking resistance



**Part no. RASP5-5401A31-412R100S1  
198821**

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|-------------------------------|---|
| Product name                  | Eaton Moeller® series Rapid Link Speed controller   |
| Part no.                      | RASP5-5401A31-412R100S1   |
| EAN                           | 4015081968794   |
| Product Length/Depth          | 157 millimetre  |
| Product height                | 270 millimetre  |
| Product width                 | 220 millimetre  |
| Product weight                | 3.59 kilogram   |
| Certifications                | IEC/EN 61800-5-1<br>CE<br>UL 61800-5-1<br>UL approval<br>RoHS   |
| Product Tradename             | Rapid Link  |
| Product Type                  | Speed controller  |
| Product Sub Type              | None  |
| Catalog Notes                 | 3 fixed speeds and 1 potentiometer speed 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>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                      | Parameterization: drivesConnect<br>Parameterization: Fieldbus<br>Parameterization: Keypad<br>Diagnostics and reset on device and via AS-Interface<br>Parameterization: drivesConnect mobile (App)   |
| Fitted with:                  | PC connection<br>Manual override switch<br>PTC thermistor monitoring<br>Control unit<br>Braking resistance<br>IGBT inverter<br>Key switch position AUTO<br>Key switch position HAND<br>Two sensor inputs through M12 sockets (max. 150 mA) for quick stop and interlocked manual operation<br>Braking resistance<br>Internal DC link<br>Selector switch (Positions: REV - OFF - FWD)<br>Key switch position OFF/RESET<br>Thermo-click with safe isolation   |
| Functions                     | Brake chopper with braking resistance for dynamic braking<br>4-quadrant operation possible<br>For actuation of motors with mechanical brake<br>3 fixed speeds<br>1 potentiometer speed  |
| Degree of protection          | NEMA 12<br>IP65   |
| Electromagnetic compatibility | 1st and 2nd environments (according to EN 61800-3)  |
| Overvoltage category          | III   |
| Product category              | Speed controller  |
| Protocol                      | ASI<br>AS-Interface profile cable: S-7.4 for 31 modules   |
| Radio interference class      | C2, C3: depending on the motor cable length, the connected load, and ambient conditions. External radio interference suppression filters (optional) may be necessary.   |

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|  |  | C1: for conducted emissions only   |
| Rated impulse withstand voltage (Uimp)               |  | 2000 V   |
| System configuration type                            |  | Phase-earthed AC supply systems are not permitted.<br>AC voltage<br>Center-point earthed star network (TN-S network)   |
| 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   |  | Above 1000 m with 1 % performance reduction per 100 m<br>Max. 2000 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                                    |  | < 95 %, no condensation<br>In accordance with IEC/EN 50178   |
| Current limitation                                   |  | 0.5 - 5.6 A, motor, main circuit<br>Adjustable, motor, main circuit  |
| Delay time   |  | < 10 ms, On-delay<br>< 10 ms, Off-delay  |
| Efficiency   |  | 98 % ( $\eta$ )  |
| 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                                       |  | U/f control<br>BLDC motors<br>PM and LSPM motors<br>Sensorless vector control (SLV)<br>Synchronous reluctance motors   |
| Output frequency - max                               |  | 500 Hz   |
| Output frequency - min                               |  | 0 Hz   |
| Overload current                                     |  | At 40 °C<br>For 60 s every 600 s   |
| 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                            |  | 480 V AC, 3-phase<br>400 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  |

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| 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/I <sub>e</sub> ), DC - Main circuit<br>≤ 30 % (I/I <sub>e</sub> )  |
| Braking voltage  |  | 280/207 V DC -15 % / +10 %, Actuator for external motor brake   |
| Switch-on threshold for the braking transistor                                   |  | 765 V DC  |
| Rated conditional short-circuit current (I <sub>q</sub> )                        |  | 10 kA   |
| Short-circuit protection (external output circuits)                              |  | Type 1 coordination via the power bus' feeder unit, Main circuit  |
| Rated control voltage (U <sub>c</sub> )  |  | 180/207 V DC (external brake 50/60 Hz)<br>24 V DC (-15 %/+20 %, external via AS-Interface® plug)  |
| Communication interface  |  | AS-Interface  |
| Connection   |  | Plug type: HAN Q4/2   |
| Interfaces   |  | Specification: S-7.4 (AS-Interface®)<br>Max. total power consumption from AS-Interface® power supply unit (30 V): 190 mA<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

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| 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       |

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| 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         |

