

## Solid-state relay, 3-phase, 20 A, 42 - 660 V, DC

**Part no.**                      **HLR20/3(DC)600V**  
**360046**

|                                                                       |  |                                                                                                                                              |
|-----------------------------------------------------------------------|--|----------------------------------------------------------------------------------------------------------------------------------------------|
| <b>General specifications</b>                                         |  |                                                                                                                                              |
| Product name                                                          |  | Eaton Moeller series HLR solid state relay                                                                                                   |
| Part no.                                                              |  | HLR20/3(DC)600V                                                                                                                              |
| EAN                                                                   |  | 4015081998135                                                                                                                                |
| Product Length/Depth                                                  |  | 103 millimetre                                                                                                                               |
| Product height                                                        |  | 110 millimetre                                                                                                                               |
| Product width                                                         |  | 54 millimetre                                                                                                                                |
| Product weight                                                        |  | 0.505 kilogram                                                                                                                               |
| Compliances                                                           |  | CE Marked<br>RoHS Compliant                                                                                                                  |
| Certifications                                                        |  | EAC<br>UL 508<br>CE<br>CCC<br>UL-File No.: E251034, UL report applies to both US and Canada                                                  |
| Product Tradename                                                     |  | HLR                                                                                                                                          |
| Product Type                                                          |  | Solid-state relay                                                                                                                            |
| Product Sub Type                                                      |  | None                                                                                                                                         |
| <b>General information</b>                                            |  |                                                                                                                                              |
| Degree of protection                                                  |  | IP20                                                                                                                                         |
| Frequency rating                                                      |  | 45 Hz - 65 Hz                                                                                                                                |
| Mounting position                                                     |  | Mount device in specified orientation and do not obstruct the heatsink                                                                       |
| Number of phases                                                      |  | 3                                                                                                                                            |
| Number of pilot lights                                                |  | 1                                                                                                                                            |
| Overvoltage category                                                  |  | III                                                                                                                                          |
| Pollution degree                                                      |  | 2                                                                                                                                            |
| Rated impulse withstand voltage (Uimp)                                |  | 6 kV (1.2/50 µs)                                                                                                                             |
| Series                                                                |  | HLR                                                                                                                                          |
| Shock resistance                                                      |  | 15/11 g/ms (according to EN 50155, EN 61373)                                                                                                 |
| Type                                                                  |  | Solid-state relay                                                                                                                            |
| Vibration resistance                                                  |  | 2 g/axis (2-100 Hz, IEC 60068-2-6, EN 50155, EN 61373)                                                                                       |
| Voltage type                                                          |  | DC                                                                                                                                           |
| <b>Features &amp; Functions</b>                                       |  |                                                                                                                                              |
| Features                                                              |  | Modular version                                                                                                                              |
| Functions                                                             |  | Switching at zero-crossing                                                                                                                   |
| Electrical connection type for auxiliary- and control-current circuit |  | Screw connection                                                                                                                             |
| Electrical connection type of main circuit                            |  | Screw connection                                                                                                                             |
| <b>Climatic environmental conditions</b>                              |  |                                                                                                                                              |
| Altitude                                                              |  | 9                                                                                                                                            |
| Ambient storage temperature - min                                     |  | -40 °C                                                                                                                                       |
| Ambient storage temperature - max                                     |  | 100 °C                                                                                                                                       |
| Climatic proofing                                                     |  | 95% relative humidity non-condensing at 40°C                                                                                                 |
| Operating temperature - min                                           |  | -40 °C                                                                                                                                       |
| Operating temperature - max                                           |  | 80 °C                                                                                                                                        |
| <b>Electro magnetic compatibility</b>                                 |  |                                                                                                                                              |
| Air discharge                                                         |  | 8 kV (according to IEC/EN 61000-4-2)                                                                                                         |
| Burst Impulse                                                         |  | Main: 2 kV, 5 kHz PC 1 (according to IEC/EN 61000-4-4)<br>Control: 1 kV, 5 kHz PC 1 (according to IEC/EN 61000-4-4)                          |
| Contact discharge                                                     |  | 4 kV (according to IEC/EN 61000-4-2)                                                                                                         |
| Electromagnetic fields                                                |  | 10 V/m, 80 - 1000 MHz and 1.4 - 2.0 GHz, PC 1 (according to IEC/EN 61000-4-3)<br>10 V/m, 2.0 - 2.7 GHz, PC 1 (according to IEC/EN 61000-4-3) |

|                                                                                  |  |                                                                                                                                   |
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| Immunity to line-conducted interference                                          |  | 10 V/m, 0.15 - 80 MHz, PC 1 (according to IEC/EN 61000-4-6)                                                                       |
| Radio interference class                                                         |  | Class A                                                                                                                           |
| <b>Terminal capacities</b>                                                       |  |                                                                                                                                   |
| Terminal capacity (flexible with ferrule)                                        |  | Main: 1 x 1-4 mm <sup>2</sup> , 2 x 1-4 mm <sup>2</sup><br>Control: 1 x 0.5-2.5 mm <sup>2</sup> , 2 x 0.5-2.5 mm <sup>2</sup>     |
| Terminal capacity (solid)                                                        |  | Main: 1 x 2.5-6 mm <sup>2</sup> , 2 x 2.5-6 mm <sup>2</sup><br>Control: 1 x 0.5-2.5 mm <sup>2</sup> , 2 x 0.5-2.5 mm <sup>2</sup> |
| Terminal capacity (solid/stranded AWG)                                           |  | Main: 1 x 14-10, 2 x 14-10<br>Control: 1 x 18-12, 2 x 18-12                                                                       |
| Terminal capacity (stranded)                                                     |  | Main: 1 x 2.5-6 mm <sup>2</sup> , 2 x 2.5-6 mm <sup>2</sup><br>Control: 1 x 0.5-2.5 mm <sup>2</sup> , 2 x 0.5-2.5 mm <sup>2</sup> |
| Tightening torque                                                                |  | Main: 2 Nm (17.7 lb-in)<br>Control: 0.5 Nm (4.4 lb-in)                                                                            |
| Screwdriver size                                                                 |  | Main: Pozidriv 2<br>Control: Pozidriv 1                                                                                           |
| <b>Electrical rating</b>                                                         |  |                                                                                                                                   |
| Operating voltage - max.                                                         |  | 660 V                                                                                                                             |
| Operating voltage - min.                                                         |  | 42 V                                                                                                                              |
| Rated operational current (Ie) at AC-1                                           |  | 0 A                                                                                                                               |
| Rated operational current (Ie) at AC-3                                           |  | 0 A                                                                                                                               |
| Rated operational current (Ie) at AC-51                                          |  | 20 A                                                                                                                              |
| Rated operational current (Ie) at AC-53A                                         |  | 10 A                                                                                                                              |
| Rated operational current (Ie) at AC-53B                                         |  | 0 A                                                                                                                               |
| Rated operational voltage (Ue) at AC - min                                       |  | 42 V                                                                                                                              |
| Rated operational voltage (Ue) at AC - max                                       |  | 660 V                                                                                                                             |
| <b>Short-circuit rating</b>                                                      |  |                                                                                                                                   |
| Rated conditional short-circuit current, type 1, 600 Y/347 V                     |  | kA                                                                                                                                |
| Rated conditional short-circuit current (Iq), type 2, 230 V                      |  | kA                                                                                                                                |
| Rated conditional short-circuit current (Iq), type 2, 380 V, 400 V, 415 V        |  | kA                                                                                                                                |
| <b>Control circuit</b>                                                           |  |                                                                                                                                   |
| Delay time                                                                       |  | 1/2 period + 500 microseconds at 24 V DC                                                                                          |
| Drop-out time                                                                    |  | < 20 ms                                                                                                                           |
| Drop-out voltage                                                                 |  | 1 V DC                                                                                                                            |
| Input current                                                                    |  | 29.5 mA at 24 V DC                                                                                                                |
| Pick-up voltage                                                                  |  | 4.8 V DC                                                                                                                          |
| Rated control supply voltage (Us) at AC, 50 Hz - min                             |  | 0 V                                                                                                                               |
| Rated control supply voltage (Us) at AC, 50 Hz - max                             |  | 0 V                                                                                                                               |
| Rated control supply voltage (Us) at AC, 60 Hz - min                             |  | 0 V                                                                                                                               |
| Rated control supply voltage (Us) at AC, 60 Hz - max                             |  | 0 V                                                                                                                               |
| Rated control supply voltage (Us) at DC - min                                    |  | 5 V                                                                                                                               |
| Rated control supply voltage (Us) at DC - max                                    |  | 32 V                                                                                                                              |
| <b>Motor rating</b>                                                              |  |                                                                                                                                   |
| Rated operational power at 220/230 V, 50 Hz                                      |  | 2.2 kW                                                                                                                            |
| Rated operational power at 400 V, 50 Hz                                          |  | 4 kW                                                                                                                              |
| <b>Design verification</b>                                                       |  |                                                                                                                                   |
| Equipment heat dissipation, current-dependent Pvid                               |  | 58 W                                                                                                                              |
| Heat dissipation per pole, current-dependent Pvid                                |  | 19.3 W                                                                                                                            |
| Rated operational current for specified heat dissipation (In)                    |  | 20 A                                                                                                                              |
| Static heat dissipation, non-current-dependent Pvs                               |  | 0 W                                                                                                                               |
| 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                                 |  | Please enquire                                                                                                                    |
| 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.                                                                                        |

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|----------------------------------------------------------|--|----------------------------------------------------------------------------------------------------------------------------------|
| 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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| Relays (EG000019) / Solid state relay (EC002055)                                                                                                                          |   |          |
| Electric engineering, automation, process control engineering / Low-voltage switch technology / Contactor (LV) / Solid state relay (ecl@ss10.0.1-27-37-10-14 [ACN970011]) |   |          |
| Rated control supply voltage $U_s$ at AC 50HZ                                                                                                                             | V | 0 - 0    |
| Rated control supply voltage $U_s$ at AC 60HZ                                                                                                                             | V | 0 - 0    |
| Rated control supply voltage $U_s$ at DC                                                                                                                                  | V | 5 - 32   |
| Voltage type for actuating                                                                                                                                                |   | DC       |
| Operating voltage                                                                                                                                                         | V | 42 - 660 |
| Rated operation current $I_e$ at AC-1                                                                                                                                     | A | 0        |
| Rated operation current $I_e$ at AC-3                                                                                                                                     | A | 0        |
| Rated operation current $I_e$ at AC-51                                                                                                                                    | A | 20       |
| Rated operation current $I_e$ at AC-53a                                                                                                                                   | A | 10       |
| Rated operation current $I_e$ at AC-53b                                                                                                                                   | A | 0        |
| Number of phases                                                                                                                                                          |   | 3        |
| Modular version                                                                                                                                                           |   | Yes      |
| Switching at zero-crossing                                                                                                                                                |   | Yes      |