



### Main

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| Range                               | TeSys                                                  |
| Product name                        | TeSys LF                                               |
| Product or component type           | Enclosed DOL starter                                   |
| Device application                  | AS interface                                           |
| Device composition                  | Circuit-breaker<br>AS interface module<br>Contactor    |
| Utilisation category                | AC-3                                                   |
| Network type                        | AC                                                     |
| Control circuit voltage             | 24 V for AC circuit at 50/60 Hz                        |
| Thermal protection adjustment range | 0.4...0.63 A                                           |
| Control type                        | Rotary handle for protection control - OFF - Trip - ON |

### Complementary

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| Motor power kW                               | 0.09 kW at 400/415 V - AC at 50/60 Hz<br>0.06 kW at 220/230 V - AC at 50/60 Hz                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Network frequency                            | 50/60 Hz                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| [Ue] rated operational voltage               | 30 V - DC for output control relay<br>250 V - AC at 50/60 Hz for output control relay<br>415 V - AC at 50/60 Hz for power circuit                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| [Uimp] rated impulse withstand voltage       | 2.5 kV for AS-Interface conforming to IEC 60947-1<br>2.5 kV for sensor conforming to IEC 60947-1<br>2.5 kV for 24 V conforming to IEC 60947-1<br>6 kV for power circuit conforming to IEC 60947-1                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Insulation resistance                        | > 1000 mOhm between output and communication                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Insulation                                   | Between input and communication<br>1500 V between output and internal logic<br>1500 V between output and ground                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| [Ui] rated insulation voltage                | 415 V AC at 50/60 Hz conforming to IEC 60947                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| [Ithe] conventional enclosed thermal current | 5 A for output control relay at 40 °C                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Protection type                              | Phase failure<br>Inductive overvoltage                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Breaking capacity                            | 100 kA at 400/415 V conforming to IEC 60947-2<br>100 kA at 230/240 V conforming to IEC 60947-2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Mechanical durability                        | Contactor : 30 Mcycles<br>Circuit breaker : 0.1 Mcycles                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Electrical durability                        | Relay : ≥ 1 Mcycles - 24 V with 30 cyc/mn - DC-3 - 0.25 A<br>Relay : 0.5 Mcycles - 24 V with 15 cyc/mn - DC-3 - 1 A<br>Relay : 0.2 Mcycles - 24 V with 6 cyc/mn - DC-12 - 2 A<br>Relay : 0.1 Mcycles - 24 V with 6 cyc/mn - DC-12 - 5 A<br>Relay : 5 Mcycles - 24 V with 30 cyc/mn - AC-14 - 0.25 A<br>Relay : 1 Mcycles - 24 V with 15 cyc/mn - AC-14 - 0.5 A<br>Relay : 0.5 Mcycles - 24 V with 15 cyc/mn - AC-14 - 1 A<br>Relay : 1 Mcycles - 24 V with 15 cyc/mn - AC-12 - 1 A<br>Relay : 0.1 Mcycles - 24 V with 6 cyc/mn - AC-12 - 5 A<br>Contactor : 0.8 Mcycles - AC-3 - 8.5 A<br>Circuit breaker : 0.1 Mcycles |
| Current consumption                          | 110 mA at 24 V for supply circuit inrush<br>30 mA at 24 V for supply circuit maintained mode<br>0 mA at 24 V for supply circuit de-energisation<br>60 mA for communication bus sensor<br>20 mA for communication bus during operation                                                                                                                                                                                                                                                                                                                                                                                   |
| Local signalling                             | Input/Output status by LED<br>Product status by 3 LEDs                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |

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| Number of inputs              | 2 M12                                                                                                                                                                                                                                                                                                                                                                                                       |
| Nominal input value           | 19...30 V 0...50 mA - DC                                                                                                                                                                                                                                                                                                                                                                                    |
| Input description             | Status D3 : unused - bit value 1<br>Status D2 : enable relay - bit value 1<br>Status D1 : reverse start - bit value 1<br>Status D0 : forward start - bit value 1<br>Status D3 : unused - bit value 0<br>Status D2 : disable relay - bit value 0<br>Status D1 : reverse stop - bit value 0<br>Status D0 : forward stop - bit value 0                                                                         |
| Input type                    | Resistive                                                                                                                                                                                                                                                                                                                                                                                                   |
| Sensor compatibility          | 2 or 3-wire PNP                                                                                                                                                                                                                                                                                                                                                                                             |
| Output description            | Command D3 : sensor 2 present - bit value 1<br>Command D2 : sensor 1 present - bit value 1<br>Command D1 : started - bit value 1<br>Command D0 : ready - bit value 1<br>Command D3 : sensor 2 missing - bit value 0<br>Command D2 : sensor 1 missing - bit value 0<br>Command D1 : stopped - bit value 0<br>Command D0 : not ready - bit value 0                                                            |
| Response time                 | Output control relay : ≤ 15 ms during opening<br>Output control relay : ≤ 10 ms during closing                                                                                                                                                                                                                                                                                                              |
| Contacts type and composition | 1 C/O                                                                                                                                                                                                                                                                                                                                                                                                       |
| AS-interface profile          | 7A70 - extended A/B                                                                                                                                                                                                                                                                                                                                                                                         |
| Cable gland type              | Output control relay : Pg 16 - 10...15 mm<br>Output control relay : Pg 13 - 10...15 mm<br>Power circuit : Pg 16 - 10...15 mm<br>Supply circuit : Pg 16 - 10...15 mm                                                                                                                                                                                                                                         |
| Connections - terminals       | Supply circuit : HARTING socket<br>Output control relay : HARTING socket<br>Power circuit : screw clamp terminals with 1...2 cables of 1.5...2.5 mm <sup>2</sup> - flexible with cable end<br>Power circuit : screw clamp terminals with 1...2 cables of 1.5...4 mm <sup>2</sup> - flexible without cable end<br>Power circuit : screw clamp terminals with 1...2 cables of 1.5...4 mm <sup>2</sup> - rigid |
| Tightening torque             | Power circuit : 0.8 N.m - with screwdriver flat Ø 5.5 mm                                                                                                                                                                                                                                                                                                                                                    |
| Width                         | 279 mm                                                                                                                                                                                                                                                                                                                                                                                                      |
| Height                        | 245 mm                                                                                                                                                                                                                                                                                                                                                                                                      |
| Depth                         | 179 mm                                                                                                                                                                                                                                                                                                                                                                                                      |
| Product weight                | 1.3 kg                                                                                                                                                                                                                                                                                                                                                                                                      |

## Environment

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| Electromagnetic compatibility         | Disturbing field emission class B conforming to CISPR 11<br>Disturbing field emission class B conforming to ENV 55011<br>Radiated radio-frequency electromagnetic field immunity test 10 V/m conforming to ENV 50140<br>Radiated radio-frequency electromagnetic field immunity test 10 V/m conforming to ENV 50204<br>Radiated radio-frequency electromagnetic field immunity test 10 V/m conforming to IEC 61000-4-3<br>Conducted RF disturbances 10 V/m conforming to ENV 50141<br>Conducted RF disturbances 10 V/m conforming to IEC 61000-4-6<br>Electrical fast transient/burst immunity test 2 kV level 3 conforming to EN/IEC 61000-4-4<br>Surge immunity test 500 V level 2 - control circuit, line to line - conforming to EN/IEC 61000-4-5<br>Surge immunity test 2 kV level 2 - control circuit, line to ground - conforming to IEC 61000-4-5<br>Surge immunity test 2 kV level 4 - power, line to line - conforming to EN/IEC 61000-4-5<br>Surge immunity test 4 kV level 4 - power, line to ground - conforming to IEC 61000-4-5<br>Electrostatic discharge 4 kV level 2 - in indirect mode - conforming to EN/IEC 61000-4-2<br>Electrostatic discharge 8 kV level 3 - in air - conforming to EN/IEC 61000-4-2 |
| Mechanical robustness                 | Vibrations : 4 Gn during contactor closed conforming to IEC 60068-2-6<br>Vibrations : 2 Gn during contactor open conforming to IEC 60068-2-6<br>Shocks : 15 gn during contactor closed conforming to IEC 60068-2-27<br>Shocks : 10 Gn during contactor open conforming to IEC 60068-2-27                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| IP degree of protection               | IP54 conforming to IEC 60529                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Protective treatment                  | TC                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Fire resistance                       | 960 °C conforming to IEC 60695-2-1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Operating altitude                    | 2000 m                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Standards                             | EN 60204-1<br>EN 60439-1<br>EN 60947-1<br>IEC 60204-1<br>IEC 60439-1<br>IEC 60947-1<br>UL 508<br>CSA C22.2 No 14                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Material                              | Steel - white : RAL 9001                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Ambient air temperature for operation | -5...40 °C conforming to IEC 61439-1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Ambient air temperature for storage   | -40...80 °C conforming to IEC 61439-1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |