SIEMENS

## Data sheet 3UG5616-1CR20

digitally adjustable monitoring relay phase failure, phase sequence, asymmetry, frequency, over- and under-voltage monitoring 3x 90-690 V AC, 15-70 Hz 2 changeover contacts screw terminal

| | |
|---|---|
| **product brand name** | SIRIUS |
| **product designation** | Network monitoring relay with digital setting |
| **design of the product** | monitoring of phase sequence, phase failure, phase asymmetry, N-conductor (adjustable), frequency, undervoltage and overvoltage |
| **product type designation** | 3UG5 |
| **General technical data** | |
| **product function** | line monitoring |
| **display version LED** | No |
| **design of the display** | LCD |
| **power loss [W] maximum** | 2 W |
| **power loss [V·A] maximum** | 5.1 VA |
| **insulation voltage for overvoltage category III according to IEC 60664** | |
| ● with degree of pollution 2 rated value | 690 V |
| ● with degree of pollution 3 rated value | 690 V |
| **degree of pollution** | 3 |
| **type of voltage** | |
| ● for monitoring | AC |
| ● of the operating voltage for actuation | AC/DC |
| **surge voltage resistance rated value** | 6 kV |
| **shock resistance according to IEC 60068-2-27** | sinusoidal half-wave 15g / 11 ms |
| **vibration resistance according to IEC 60068-2-6** | 10 ... 55 Hz: 0.35 mm |
| **switching behavior** | monostable |
| **mechanical service life (operating cycles) typical** | 10 000 000 |
| **electrical endurance (operating cycles) at AC-15 at 230 V typical** | 100 000 |
| **thermal current of the switching element with contacts maximum** | 5 A |
| **adjustable OFF-delay time** | 0.1 ... 30 s |
| **reference code according to IEC 81346-2** | K |
| **relative repeat accuracy** | 0.4 % |
| **Substance Prohibitance (Date)** | 06/01/2023 |
| **SVHC substance name** | Lead - 7439-92-1<br>Lead monoxide (lead oxide) - 1317-36-8<br>6,6'-di-tert-butyl-2,2'-methylenedi-p-cresol - 119-47-1 |
| **Weight** | 0.176 kg |
| **Product Function** | |
| **product function** | |
| ● undervoltage detection | Yes |
| ● overvoltage detection | Yes |
| ● phase sequence recognition | Yes |
| ● phase failure detection | Yes |

| | |
|---|---|
| ● asymmetry detection | Yes |
| ● overvoltage detection 3 phase | Yes |
| ● undervoltage detection 3 phases | Yes |
| ● voltage window recognition 3 phase | Yes |
| ● adjustable open/closed-circuit current principle | Yes |
| ● auto-RESET | Yes |
| ● neutral conductor monitoring adjustable | Yes |
| suitability for use safety-related circuits | No |
| **Control circuit/ Control** | |
| **type of voltage of the control supply voltage** | AC |
| **control supply voltage at AC** | |
| ● at 50 Hz rated value | 120 ... 690 V |
| ● at 60 Hz rated value | 120 ... 690 V |
| **control supply voltage 1 at AC** | |
| ● at 50 Hz | 200 ... 690 V |
| ● at 60 Hz | 200 ... 690 V |
| **control supply voltage 2 at AC** | |
| ● at 50 Hz | 120 ... 400 V |
| ● at 60 Hz | 120 ... 400 V |
| **operating range factor control supply voltage rated value at AC at 50 Hz** | |
| ● initial value | 0.85 |
| ● full-scale value | 1.1 |
| **operating range factor control supply voltage rated value at AC at 60 Hz** | |
| ● initial value | 0.85 |
| ● full-scale value | 1.1 |
| **Supply voltage** | |
| supply voltage frequency rated value | 70 ... 15 Hz |
| **Interfaces** | |
| design of the interface bluetooth | No |
| **Measuring circuit** | |
| **measurable voltage at AC** | 90 ... 760 V |
| **adjustable operating delay time initial value** | 0 s |
| **adjustable response delay time** | |
| ● when starting | 0.1 ... 999.9 s |
| ● with lower or upper limit violation | 0.1 ... 30 s |
| **buffering time in the event of power failure minimum** | 20 ms |
| **response time maximum** | 500 ms |
| **accuracy of digital display** | +/-1 digit |
| **relative temperature-related measurement deviation** | 1 % |
| **Precision** | |
| **relative metering precision** | 3 % |
| **temperature drift per °C** | 0.001 %/°C |
| **Short-circuit protection** | |
| **design of the fuse link** | |
| ● for short-circuit protection of the NO contacts of the relay outputs required | gL/gG: 6 A or MCB type C: 1 A |
| ● for short circuit protection of the NC contacts of the relay outputs required | gL/gG: 6 A or MCB type C: 1 A |
| **Communication/ Protocol** | |
| protocol is supported IO-Link protocol | No |
| **type of voltage supply via input/output link master** | No |
| **Auxiliary circuit** | |
| **material of switching contacts** | AgSnO2 |
| number of NC contacts delayed switching | 0 |
| number of NO contacts delayed switching | 0 |
| **number of CO contacts** | |
| ● for auxiliary contacts | 2 |
| ● delayed switching | 2 |
| **operating frequency with 3RT2 contactor maximum** | 5 000 1/h |

| | |
|---|---|
| **contact reliability of auxiliary contacts** | one incorrect switching operation of 100 million switching operations (17 V, 5 mA) |
| **contact rating of auxiliary contacts according to UL** | R300 / B300 |
| **Main circuit** | |
| **number of poles for main current circuit** | 4 |
| **ampacity of the output relay at AC-15** | |
| ● at 250 V at 50/60 Hz | 3 A |
| **ampacity of the output relay at DC-13** | |
| ● at 24 V | 1 A |
| ● at 110 V | 0.2 A |
| ● at 125 V | 0.2 A |
| ● at 230 V | 0.1 A |
| ● at 250 V | 0.1 A |
| **operational current at 17 V minimum** | 5 mA |
| **continuous current of the DIAZED fuse link of the output relay** | 6 A |
| **Electromagnetic compatibility** | |
| EMC emitted interference according to IEC 60947-1 | class A |
| **conducted interference** | |
| ● due to burst according to IEC 61000-4-4 | 2 kV (power ports), 2 kV (signal ports) |
| ● due to conductor-earth surge according to IEC 61000-4-5 | 2 kV |
| ● due to conductor-conductor surge according to IEC 61000-4-5 | 1 kV |
| **field-based interference according to IEC 61000-4-3** | 10 V/m |
| **electrostatic discharge according to IEC 61000-4-2** | 6 kV contact discharge / 8 kV air discharge |
| **Galvanic isolation** | |
| **design of the electrical isolation** | galvanic isolation |
| **galvanic isolation** | |
| ● between input and output | Yes |
| ● between the outputs | Yes |
| ● between the voltage supply and other circuits | Yes |
| Electrical Safety | |
| **protection class IP on the front according to IEC 60529** | IP20 |
| **Connections/ Terminals** | |
| **product component removable terminal for main circuit** | Yes |
| **product component removable terminal for auxiliary and control circuit** | Yes |
| **type of electrical connection** | screw terminal |
| **design of terminals with cross-head screw** | PZ 1 |
| **type of connectable conductor cross-sections** | |
| ● solid | 1x (0.5 ... 4 mm²), 2x (0.5 ... 2.5 mm²) |
| ● finely stranded with core end processing | 1x (0.5 ... 4 mm²), 2x (0.5 ... 2.5 mm²) |
| ● for AWG cables solid | 1x (20 ... 12), 2x (20 ... 14) |
| **connectable conductor cross-section** | |
| ● solid | 0.5 ... 4 mm² |
| ● finely stranded with core end processing | 0.5 ... 4 mm² |
| **AWG number as coded connectable conductor cross section** | |
| ● solid | 20 ... 12 |
| ● stranded | 20 ... 12 |
| tightening torque with screw-type terminals | 0.6 ... 0.8 N·m |
| **stripped length** | 10 mm |
| **Installation/ mounting/ dimensions** | |
| **mounting position** | any |
| **fastening method** | screw and snap-on mounting onto 35 mm DIN rail |
| **height** | 100 mm |
| **width** | 22.5 mm |
| **depth** | 90 mm |
| **required spacing** | |
| ● with side-by-side mounting | |
| — forwards | 0 mm |
| — backwards | 0 mm |

| | |
|---|---|
| — upwards | 0 mm |
| — downwards | 0 mm |
| — at the side | 0 mm |
| • for grounded parts | |
| — forwards | 0 mm |
| — backwards | 0 mm |
| — upwards | 0 mm |
| — at the side | 0 mm |
| — downwards | 0 mm |
| • for live parts | |
| — forwards | 0 mm |
| — backwards | 0 mm |
| — upwards | 0 mm |
| — downwards | 0 mm |
| — at the side | 0 mm |

| Ambient conditions | |
|---|---|
| installation altitude at height above sea level maximum | 2 000 m |
| **ambient temperature** | |
| • during operation | -25 ... +60 °C |
| • during storage | -40 ... +85 °C |
| • during transport | -40 ... +85 °C |
| relative humidity during operation maximum | 70 % |

| Environmental footprint | |
|---|---|
| Environmental Product Declaration(EPD) | Yes |
| global warming potential [CO2 eq] total | 17.3 kg |
| global warming potential [CO2 eq] during manufacturing | 5.06 kg |
| global warming potential [CO2 eq] during operation | 12.3 kg |
| global warming potential [CO2 eq] after end of life | -0.132 kg |

**Approvals Certificates**

**General Product Approval** | **EMV**

**Test Certificates** | **other** | **Environment**

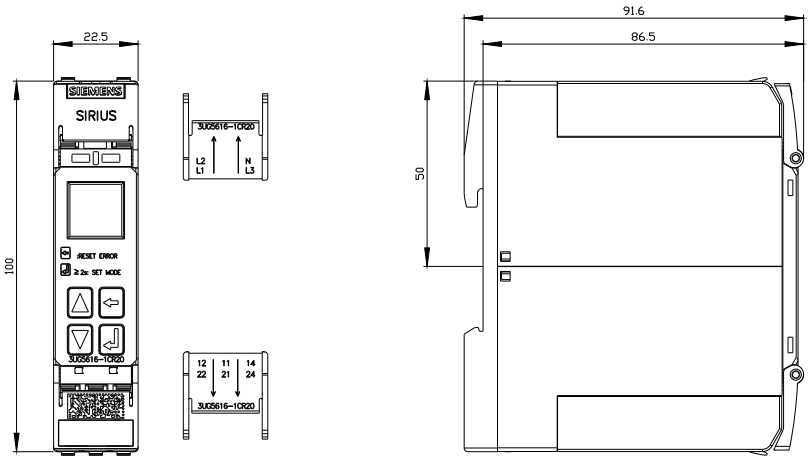
Type Test Certificates/Test Report

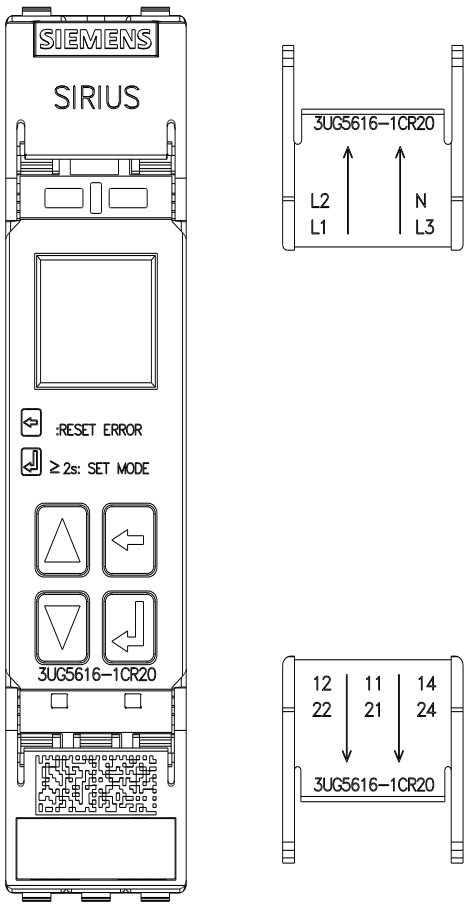
Confirmation

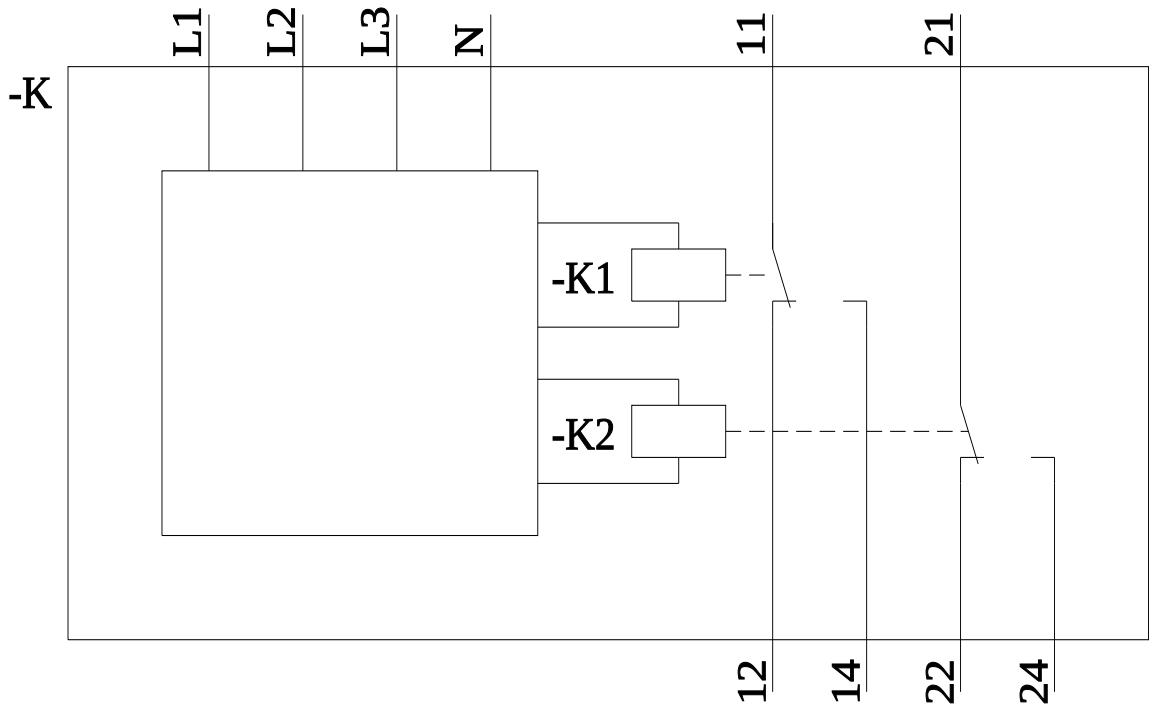
Environmental Confirmations

## Further information

**Information on the packaging**
https://support.industry.siemens.com/cs/ww/en/view/109813875
**Information for data generation and storage**
https://support.industry.siemens.com/cs/ww/en/view/109995012
**Information- and Downloadcenter (Catalogs, Brochures,…)**
https://www.siemens.com/ic10
**Industry Mall (Online ordering system)**
https://mall.industry.siemens.com/mall/en/en/Catalog/product?mlfb=3UG5616-1CR20
**Cax online generator**
http://support.automation.siemens.com/WW/CAXorder/default.aspx?lang=en&mlfb=3UG5616-1CR20
**Service&Support (Manuals, Certificates, Characteristics, FAQs,...)**
https://support.industry.siemens.com/cs/ww/en/ps/3UG5616-1CR20
**Image database (product images, 2D dimension drawings, 3D models, device circuit diagrams, EPLAN macros, ...)**
http://www.automation.siemens.com/bilddb/cax_de.aspx?mlfb=3UG5616-1CR20&lang=en






**last modified:** 9/5/2025