



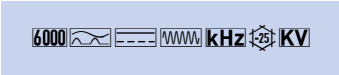
## DATA SHEET

### residual current circuit-breaker

#### DFS 4 040-4/0,03-HP R HD

AC/DC sensitive, fire protection according to VDE 0100-420, for heat pumps, for harsh environments

Article number 09134807HD



#### Function

Residual current circuit-breakers (RCCBs) are components for implementing protective measure "Automatic disconnection of the power supply" as per VDE 0100 part 410 or corresponding international installation regulations. Devices in the DFS 4 series are compact four-pole residual current circuit-breakers for single-phase or three-phase networks. In the standard version, they only occupy four division units. The AC/DC-sensitive switches detect smooth DC residual currents and all other residual currents in accordance with DIN VDE 0664-400. Switches of the HP (Heat Pump) series have been specially developed for the protection of heat pumps. The protection level of the AC/DC sensitive residual current circuit breaker meets all requirements of heat pump manufacturers. In addition, the HP-optimised short-time delay ensures increased system availability. With an airtight, encapsulated tripping mechanism from a special alloy and the stainless steel latch, residual current circuit-breakers in HD design are protected, in particular from corrosion, corrosive gases, moisture and extreme temperature fluctuations. Devices in the standard design are intended for monitoring circuits with a rated voltage of 230 V, 400 V and a rated frequency of 50 Hz. With an airtight, encapsulated tripping mechanism from a special alloy and the stainless steel latch, residual current circuit-breakers in HD design are protected, in particular from corrosion, corrosive gases, moisture and extreme temperature fluctuations.

#### Features

AC/DC sensitive for residual currents with frequencies and mixed frequencies from 0 Hz to 20 kHz, fire protection according to VDE 0100-420, complete functionality with mains voltages from at least 50 V AC on any two active conductors, high short-circuit resistance, double-sided double-decker terminals for large conductor cross-section and busbar connection, switching position indicator, multifunction control toggle with three positions: "on", "off", "triggered", any neutral conductor position

#### Mounting

quick fastening to mounting rail, any installation position, supply preferably from above

#### Applications

RCCBs of the variant HP are suitable for private, commercial and industrial installations with TN-S-, TT- and TN-C-S systems which use heat pumps.

#### Notes

suitable for use in 50 Hz AC networks, not intended for use on the output side of controlled electrical equipment such as frequency converters

#### Accessories

automatic reclosing devices DFA, terminal caps KA, information stickers HAS, auxiliary switches DHi, restart locks DFS WES, software DBS

#### Technical Data

| Technical Data                      | DFS 4 040-4/0,03-HP R HD |
|-------------------------------------|--------------------------|
| Series                              | DFS 4 HP HD              |
| Number of poles                     | 4                        |
| Residual current type               | B+                       |
| Rated current (AC)                  | 40 A                     |
| Rated residual current I $\Delta$ n | 0.03 A                   |
| Short-time delayed                  | true                     |
| Selective                           | false                    |

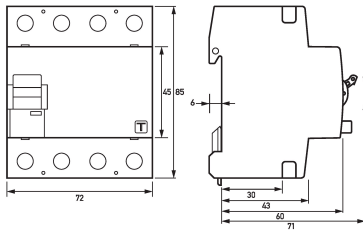
Subject to technical changes

| Technical Data  | DFS 4 040-4/0,03-HP R HD  |
|---|---|
| min. Operating voltage range of test circuit            | 150 V   |
| max. Operating voltage range of test circuit            | 250 V   |
| Minimum rated operating voltage (Type A/AC operation)   | 0 V AC  |
| Minimum rated operating voltage (Type B operation)      | 50 V AC   |
| Non-trip time   | 13 ms   |
| Tripping frequency                                      | 0 Hz ... 20 kHz   |
| Maximum disconnection times                             | $1 \cdot I_{\Delta n} \leq 300 \text{ ms}$ ; $5 \cdot I_{\Delta n} \leq 40 \text{ ms}$                  |
| Internal consumption                                    | max. 1.3 W  |
|   | <b>load circuit</b>   |
| Specification   | load disconnect contact   |
| min. Contact opening                                    | 4 mm  |
| Rated voltage (AC)                                      | 230 V, 400 V  |
| Rated current (AC)                                      | 40 A  |
| Rated short-circuit current                             | 6 kA  |
| Surge current strength                                  | 3 kA  |
| max. Total rated switching capacity                     | 500 A   |
| Rated insulation voltage                                | 400 V   |
| Rated impulse withstand voltage                         | 4 kV  |
| Rated frequency   | 50 Hz   |
| Current heat loss per current path                      | 1.3 W   |
| Thermal Backup-fuse OCPD                                | 40 A  |
| Short-circuit backup-fuse SCPD                          | 100 A   |
| Back-up fuse type                                       | gG  |
|   | <b>screw-type terminal top and bottom (load circuit)</b>  |
| Neutral conductor position                              | right   |
| Protection against direct contact                       | DGUV V3, VDE 0660-514, finger and back-of-hand proof  |
| Connection C1 Maximum number of conductors per terminal | 2 (conductors of same type and cross-section)   |
| Cross section solid                                     | 1-wire: 1.5 mm <sup>2</sup> ... 50 mm <sup>2</sup> ; 2-wire: 1.5 mm <sup>2</sup> ... 16 mm <sup>2</sup> |
| Connecting capacity flexible                            | 1-wire: 1.5 mm <sup>2</sup> ... 50 mm <sup>2</sup> ; 2-wire: 1.5 mm <sup>2</sup> ... 16 mm <sup>2</sup> |
| Cross section stranded                                  | 1-wire: 1.5 mm <sup>2</sup> ... 50 mm <sup>2</sup> ; 2-wire: 1.5 mm <sup>2</sup> ... 16 mm <sup>2</sup> |
| Cross section AWG, solid                                | 15 ... 1  |
| Cross section AWG, stranded                             | 15 ... 1  |
| Cross section AWG, flexible                             | 15 ... 1  |
| Cross section AWG, flexible with ferrule                | 15 ... 1  |
| Tightening torque                                       | 2.5 Nm ... 3 Nm   |
|   | <b>General data</b>   |
| Operating position                                      | optional  |
| max. Operating altitude above MSL                       | 2000 m  |
| Mechanical endurance                                    | min. 4000 cycles  |
| Electrical endurance                                    | min. 2000 cycles  |
| Surrounding atmosphere                                  | harsh environmental conditions  |
| Storage temperature                                     | -35 °C ... 75 °C  |

Subject to technical changes

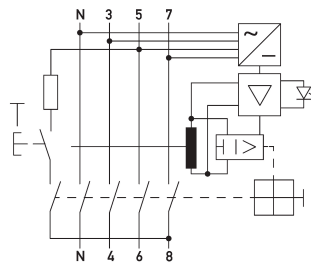
| Technical Data                | DFS 4 040-4/0,03-HP R HD   |
|-------------------------------|--|
| Ambient temperature           | -25 °C ... 60 °C   |
| Climate resistance            | according to IEC 60068-2-30: humid heat / cyclic (25 °C / 55 °C; 93 % / 97 % RH) |
| Housing type                  | distribution board housing   |
| Installation type             | Mounting rail (35 mm)  |
| Housing material              | thermoplastic  |
| Protection class              | IP20 (installed: IP40)   |
| sealable                      | true   |
| Width                         | 72 mm  |
| Height                        | 85 mm  |
| Depth                         | 75 mm  |
| Installation depth            | 69 mm  |
| Module widths                 | 4  |
| Weight                        | 0.489 kg   |
| Design requirements/Standards | VDE 0664-10, VDE 0664-400, ÖVE/ÖNORM E 8601                                      |
| Degree of pollution           | 2  |

**Dimensions**



Dimensional drawing Group view

**Wiring example**



Wiring diagram