

# Selectric

energy of innovation

SGP-MCZ SERIES AUTOMATIC CIRCUIT BREAKERS WITH ELECTRONIC TRIP UNIT AND SGP-MC WITH THERMOMAGNETIC TRIP UNIT



**SGP molded case circuit breakers comply with current standards and ensure compliance with the following technical regulations:**

- **GOST IEC 60947-1-2017** "Low-voltage switchgear and controlgear. Part 1. General Rules";
- **GOST IEC 60947-2-2021** "Low-voltage switchgear and controlgear. Part 2. Automatic circuit breakers"

Storage conditions for products with respect to exposure to climatic factors in the external environment comply with **GOST 15150-69**.

The circuit breakers are designed to distribute electrical energy in normal operation, perform operational switching on and off, and interrupt current during short circuits, overloads, and unacceptable voltage drops. The circuit breakers are designed for operation in electrical installations with a rated voltage of up to 690 V AC with a frequency of 50 or 60 Hz.

Circuit breakers can be equipped with various accessories, including versions with plug-in or



32A → 1600A

**SGP-MCZ circuit breakers with electronic trip units**

are available in three-pole and four-pole configurations and are designed to protect electrical circuits from overloads and short circuits. Additional options allow for expanded protection functionality, including Modbus data transmission, discrete outputs, and event history storage.



16A → 800A

**SGP-MC circuit breakers with thermal magnetic trip units**

are available in three-pole and four-pole configurations and are designed to protect electrical circuits from overloads and short circuits with fixed settings.

The circuit breakers operate normally under the following operating conditions:

|                                                                                     |                                                                                                                                                                                                                                                                      |                                                                                     |                                                                                                                                                        |
|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <b>Altitude above sea level – no more than 2000 m.</b><br>Operation at altitudes up to 5000 m is permitted with derating in accordance with Tables 1 and 2.                                                                                                          |  | <b>Ambient air temperature – from minus 25°C to plus 40°C.</b> Operation at higher temperatures is permitted with derating in accordance with Table 3. |
|  | <b>Installation location – protected from</b> water, oil, emulsions, and other liquids.                                                                                                                                                                              |  | <b>Pollution degree –</b><br>3 according to GOST IEC 60947-1.                                                                                          |
|  | <b>Without direct exposure to</b> solar radiation and radioactive irradiation.                                                                                                                                                                                       |  | <b>Operating position of circuit breakers –</b><br>vertical or horizontal.                                                                             |
|  | <b>Environment –</b><br>non-explosive, free of dust (including conductive dust) in quantities that could impair switch operation, as well as aggressive gases and vapors in concentrations destructive to metals and insulation, and not saturated with water vapor. |                                                                                     |                                                                                                                                                        |

## Technical characteristics of circuit breakers with electronic trip unit

Table 1

| Model                                             |                  | SGP-MCZ-100          |    |     | SGP-MCZ-250          |    |     | SGP-MCZ-400          |    |     | SGP-MCZ-630           |    |     | SGP-MCZ-800           |    |     | SGP-MCZ-630P   |    | SGP-MCZ-1600                |      |
|---------------------------------------------------|------------------|----------------------|----|-----|----------------------|----|-----|----------------------|----|-----|-----------------------|----|-----|-----------------------|----|-----|----------------|----|-----------------------------|------|
| Rated current In (A)                              |                  | 32, 100              |    |     | 160, 250             |    |     | 400                  |    |     | 630                   |    |     | 800                   |    |     | 400, 630       |    | 800, 1000, 1250, 1400, 1600 |      |
| Number of poles                                   |                  | 3P/4P                |    |     |                      |    |     |                      |    |     |                       |    |     |                       |    |     | 3P             |    | 3P                          |      |
| Ui (B)<br>Rated insulation voltage                |                  | 800                  |    |     |                      |    |     |                      |    |     |                       |    |     |                       |    |     |                |    | 1000                        |      |
| Ue (B)<br>Rated operational voltage at 50/60 Hz   |                  | AC400 / AC690        |    |     |                      |    |     |                      |    |     |                       |    |     |                       |    |     | AC400          |    | AC400 / AC690               |      |
| Uimp (B)<br>Rated withstand impulse voltage       |                  | 8000                 |    |     |                      |    |     |                      |    |     |                       |    |     |                       |    |     |                |    | 12000                       |      |
| Service life of mechanical components             | Maintenance-free | 20000                |    |     |                      |    |     | 10000                |    |     |                       |    |     |                       |    |     |                |    | 10000                       |      |
| Service life of electrical components             | AC400V           | 8000                 |    |     |                      |    |     |                      |    |     |                       |    |     |                       |    |     |                |    | 2000                        |      |
|                                                   | AC690V           | 1500                 |    |     |                      |    |     | 1000                 |    |     |                       |    |     |                       |    |     |                | -  |                             | 1000 |
| Breaking capacity level                           |                  | S                    | H  | R   | S                    | H  | R   | S                    | H  | R   | S                     | H  | R   | S                     | H  | R   | S              | S  | H                           |      |
| Ultimate breaking capacity Icu (kA)               | AC400V           | 50                   | 70 | 100 | 50                   | 70 | 100 | 50                   | 70 | 100 | 50                    | 70 | 100 | 50                    | 70 | 100 | 50             | 50 | 70                          |      |
|                                                   | AC690V           | 10                   | 10 | 10  | 10                   | 10 | 10  | 15                   | 15 | 15  | 15                    | 15 | 15  | 15                    | 15 | 15  |                |    | 20                          |      |
| Operating breaking capacity Ics (kA)              | AC400V           | 50                   | 70 | 70  | 50                   | 70 | 70  | 50                   | 70 | 70  | 50                    | 70 | 70  | 50                    | 70 | 70  | 50             | 50 | 70                          |      |
|                                                   | AC690V           | 10                   | 10 | 10  | 10                   | 10 | 10  | 15                   | 15 | 15  | 15                    | 15 | 15  | 15                    | 15 | 15  |                |    | 20                          |      |
| Rated short-time withstand current Icw (kA)/1 sec |                  |                      |    |     |                      |    |     | 5                    |    |     | 8                     |    |     | 10                    |    |     | 5 (400) 8(630) |    | 20                          |      |
| Application category                              |                  | A                    |    |     | A                    |    |     | B                    |    |     | B                     |    |     | B                     |    |     | B              |    | B                           |      |
| Spark gap                                         |                  | 0 or ≤50             |    |     | 0 or ≤50             |    |     | 0 or ≤100            |    |     | 0 or ≤100             |    |     | 0 or ≤100             |    |     | 0 or ≤100      |    | 0 or ≤100                   |      |
| Outer dimensions, mm                              | W                | 92 (3p)<br>122(4p)   |    |     | 107(3p)<br>142(4p)   |    |     | 140(3p)<br>184(4p)   |    |     | 210(3p)<br>280(4p)    |    |     | 210(3p)<br>280(4p)    |    |     | 140            |    | 210                         |      |
|                                                   | L                | 150                  |    |     | 165                  |    |     | 257                  |    |     | 275                   |    |     | 275                   |    |     | 257            |    | 268                         |      |
|                                                   | H                | 91                   |    |     | 91                   |    |     | 103                  |    |     | 103                   |    |     | 103                   |    |     | 103            |    | 160                         |      |
| Net weight, kg                                    |                  | 1.7 (3p)<br>2.2 (4p) |    |     | 2.3 (3p)<br>3.3 (4p) |    |     | 5.5 (3p)<br>7.2 (4p) |    |     | 8.5 (3p)<br>11.2 (4p) |    |     | 8.8 (3p)<br>11.3 (4p) |    |     | 5.5            |    | 17                          |      |
| Shunt trip unit                                   |                  | ✓                    |    |     | ✓                    |    |     | ✓                    |    |     | ✓                     |    |     | ✓                     |    |     | ✓              |    | ✓                           |      |
| Undervoltage trup unit                            |                  | ✓                    |    |     | ✓                    |    |     | ✓                    |    |     | ✓                     |    |     | ✓                     |    |     | ✓              |    | ✓                           |      |
| Auxiliary contact                                 |                  | ✓                    |    |     | ✓                    |    |     | ✓                    |    |     | ✓                     |    |     | ✓                     |    |     | ✓              |    | ✓                           |      |
| Alarm contact                                     |                  | ✓                    |    |     | ✓                    |    |     | ✓                    |    |     | ✓                     |    |     | ✓                     |    |     | ✓              |    | ✓                           |      |
| Electric actuator                                 |                  | ✓                    |    |     | ✓                    |    |     | ✓                    |    |     | ✓                     |    |     | ✓                     |    |     | ✓              |    | ✓                           |      |
| Rotary handle mechanism                           |                  | ✓                    |    |     | ✓                    |    |     | ✓                    |    |     | ✓                     |    |     | ✓                     |    |     | ✓              |    | ✓                           |      |
| Front connection                                  |                  | ✓                    |    |     | ✓                    |    |     | ✓                    |    |     | ✓                     |    |     | ✓                     |    |     | ✓              |    | ✓                           |      |
| Rear connection                                   |                  | ✓                    |    |     | ✓                    |    |     | ✓                    |    |     | ✓                     |    |     | ✓                     |    |     |                |    |                             |      |
| Plug-in type                                      |                  | ✓                    |    |     | ✓                    |    |     | ✓                    |    |     | ✓                     |    |     | ✓                     |    |     |                |    |                             |      |
| Withdrawable type                                 |                  |                      |    |     |                      |    |     | ✓                    |    |     | ✓                     |    |     | ✓                     |    |     |                |    |                             |      |
| Modbus RTU communication module                   |                  | ✓                    |    |     |                      |    |     |                      |    |     |                       |    |     |                       |    |     |                |    |                             |      |
| Protection rating                                 |                  | IP20                 |    |     |                      |    |     |                      |    |     |                       |    |     |                       |    |     |                |    |                             |      |

## SGP-MCZ-100-800 Electronic Trip Unit Functions

Table 2

| Functions              |                        |                                                                 | Type M (basic type) | Type H (communication type) |
|------------------------|------------------------|-----------------------------------------------------------------|---------------------|-----------------------------|
| Protective function    | Basic protection       | Long-delay overload protection $I_r$ (can be disabled)          | ✓                   | ✓                           |
|                        |                        | Short-delay short-circuit protection $I_{sd}$ (can be disabled) | ✓                   | ✓                           |
|                        |                        | Instantaneous short-circuit protection $I_i$ (can be disabled)  | ✓                   | ✓                           |
|                        | Additional protection  | Ground fault protection $I_g$ (can be disabled)                 | ○                   | ○                           |
|                        |                        | Neutral pole protection (can be disabled)                       | ✓                   | ✓                           |
|                        |                        | Thermal memory (can be disabled)                                | ✓                   | ✓                           |
|                        | Extended protection    | Overload alarm                                                  | ○                   | ○                           |
|                        |                        | Operation of independent trip unit                              | ○                   | ○                           |
|                        |                        | Leakage protection                                              | ○                   | ○                           |
| Maintenance function   | Indication function    | Indication before alarm                                         | ✓                   | ✓                           |
|                        |                        | Overload indication                                             | ✓                   | ✓                           |
|                        |                        | Controller self-diagnosis indication                            | ✓                   | ✓                           |
|                        |                        | Trip test                                                       | ✓                   | ✓                           |
|                        | History recording      | Fault record search                                             | —                   | ✓                           |
| Communication function | Communication function | Standard communication protocol Modbus                          | —                   | ✓                           |
|                        | Signal output function | Closing and tripping signal output                              | —                   | ✓                           |
|                        |                        | Alarm contact output                                            | —                   | ✓                           |
|                        |                        | Ground fault contact output                                     | —                   | ✓                           |
|                        |                        | Overload alarm contact output                                   | —                   | ✓                           |
|                        | Signal input function  | Closing and tripping state test input                           | —                   | ✓                           |

✓ main function   ○ optional function   — no function

## SGP-MCZ-100-800 Electronic Trip Unit Setpoints

Table 3

| Parameters                                                                                                                                                | Values                                                                 |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------|
| Overload protection current settings $I_r$ as a multiple of $I_n$                                                                                         | 0.4, 0.5, 0.6, 0.7, 0.8, 0.9, 1.0 + OFF (overload protection disabled) |
| Overload protection time delay settings $T_L$ at $6I_r$ , s (tolerance $\pm 10\%$ )                                                                       | 3, 4, 6, 8, 10, 12, 16, 18                                             |
| Short-circuit protection tripping current settings with time delay $I_s$ as a multiple of $I_r$ (tolerance $\pm 10\%$ )                                   | 2, 2.5, 3, 4, 6, 8, 10 + OFF (protection disabled)                     |
| Short-circuit protection time delay settings $T_s$ , s (tolerance $\pm 10\%$ for settings from 0.4 to 1.0 and $\pm 0.04$ s for settings from 0.05 to 0.3) | 0.05, 0.1, 0.2, 0.3, 0.4, 0.6, 0.8, 1.0                                |
| Short-circuit protection tripping current settings $I_i$ without time delay as a multiple of $I_n$ (tolerance $\pm 15\%$ )                                | 2, 3, 4, 6, 8, 10, 12 + OFF (protection disabled)                      |
| Overload pre-indication settings $I_p$ as a multiple of $I_r$ (tolerance $\pm 10\%$ )                                                                     | 0.6, 0.7, 0.75, 0.8, 0.85, 0.9, 0.95, 1.0                              |
| Ground fault current settings                                                                                                                             | (0.2, 0.3, 0.4, 0.5, 0.7, 0.9, 1.0) $I_n$ +OFF (protection disabled)   |
| Ground fault time settings                                                                                                                                | 0.4 s fixed                                                            |

## Codes and designations of trip units and accessories of circuit breakers SGP-MCZ-100-800

Table 4

|                                                  |    |                                          |
|--------------------------------------------------|----|------------------------------------------|
| <p>Location of accessories for sizes 100-800</p> | ●  | Alarm contact                            |
|                                                  | ○  | Auxiliary contact                        |
|                                                  | ▲  | Undervoltage trip unit                   |
|                                                  | △  | Shunt trip unit                          |
| <p>Location of accessories for size 1600</p>     | ●○ | Auxiliary contact and alarm contact      |
|                                                  | ○○ | Double auxiliary contact                 |
|                                                  | →  | Right terminal for right-hand connection |
|                                                  | ←  | Left terminal for left-hand connection   |

Note: The external shunt trip module is marked in red

Table 5

| Device code | Circuit breaker model                                             | SGP-MCZ-100/250                                                                                                                                                                       |    | SGP-MCZ-400/630/800 |
|-------------|-------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|---------------------|
|             |                                                                   | 3P                                                                                                                                                                                    | 4P | 3P, 4P              |
| 200, 300    | Without accessories                                               | 200-electromagnetic trip unit (with instantaneous short-circuit protection only)<br>300-combined trip unit (with both instantaneous short-circuit protection and overload protection) |    |                     |
| 208, 308    | Alarm contact                                                     |                                                                                                                                                                                       |    |                     |
| 210, 310    | Shunt trip unit                                                   |                                                                                                                                                                                       |    |                     |
| 220, 320    | Auxiliary contact (1NO1NC)                                        |                                                                                                                                                                                       |    |                     |
| 202, 302    | Auxiliary contact (2NO2NC)                                        |                                                                                                                                                                                       |    |                     |
| 230, 330    | Undervoltage trip unit                                            |                                                                                                                                                                                       |    |                     |
| 240, 340    | Shunt trip unit, auxiliary contact (1NO1NC)                       |                                                                                                                                                                                       |    |                     |
| 212, 312    | Shunt trip unit, auxiliary contact (2NO2NC)                       |                                                                                                                                                                                       |    |                     |
| 250, 350    | Shunt trip, undervoltage trip                                     |                                                                                                                                                                                       |    |                     |
| 260, 360    | 2 groups of auxiliary contacts (2NO2NC)                           |                                                                                                                                                                                       |    |                     |
| 222, 322    | 2 groups of auxiliary contacts (3NO3NC)                           |                                                                                                                                                                                       |    |                     |
| 223, 323    | 2 groups of auxiliary contacts (4NO4NC)                           |                                                                                                                                                                                       |    |                     |
| 270, 370    | Undervoltage trip unit, auxiliary contact (1NO1NC)                |                                                                                                                                                                                       |    |                     |
| 232, 332    | Undervoltage trip unit, auxiliary contact (2NO2NC)                |                                                                                                                                                                                       |    |                     |
| 218, 318    | Shunt trip unit, alarm contact                                    |                                                                                                                                                                                       |    |                     |
| 228, 328    | Auxiliary contact (1NO1NC), alarm contact                         |                                                                                                                                                                                       |    |                     |
| 238, 338    | Undervoltage trip unit, alarm contact                             |                                                                                                                                                                                       |    |                     |
| 248, 348    | Shunt trip unit, auxiliary contact (1NO1NC), alarm contact        |                                                                                                                                                                                       |    |                     |
| 268, 368    | 2 groups of auxiliary contacts (2NO2NC), alarm contact            |                                                                                                                                                                                       |    |                     |
| 205, 305    | 2 groups of auxiliary contacts (3NO3NC), alarm contact            |                                                                                                                                                                                       |    |                     |
| 278, 378    | Undervoltage trip unit, auxiliary contact (1NO1NC), alarm contact |                                                                                                                                                                                       |    |                     |

## SGP-MCZ-1600 Electronic Trip Unit Functions

Table 6

| SM3-1600 function table                                      |                                |                                              | Controller classification                                                                                                                                                                    | M distribution                    | M electric motor | HE              | HP              | HQ              |
|--------------------------------------------------------------|--------------------------------|----------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|------------------|-----------------|-----------------|-----------------|
| Protection and alarm functions                               | Basic protection               |                                              | Long-delay overload protection Ir (can be disabled)                                                                                                                                          | ■                                 | ■                | ■               | ■               | ■               |
|                                                              |                                |                                              | Short-delay short-circuit protection Isd (can be disabled)                                                                                                                                   | ■                                 | ■                | ■               | ■               | ■               |
|                                                              |                                |                                              | Instantaneous short-circuit protection Ii (can be disabled)                                                                                                                                  | ■                                 | ■                | ■               | ■               | ■               |
|                                                              | Auxiliary functions            |                                              | Ground fault protection Ig (can be disabled)                                                                                                                                                 | —                                 | —                | □               | □               | □               |
|                                                              |                                |                                              | Neutral pole protection Irm                                                                                                                                                                  | ■ <sup>1)</sup>                   | ■ <sup>1)</sup>  | ■               | ■               | ■               |
|                                                              |                                |                                              | Current unbalance protection εI                                                                                                                                                              | —                                 | ■                | —               | ■               | ■               |
|                                                              |                                |                                              | Overvoltage Protection Uov                                                                                                                                                                   | —                                 | —                | —               | ■               | ■               |
|                                                              |                                |                                              | Undervoltage Protection Uvp                                                                                                                                                                  | —                                 | —                | —               | ■               | ■               |
|                                                              |                                |                                              | Voltage unbalance protection εU                                                                                                                                                              | —                                 | —                | —               | ■               | ■               |
|                                                              |                                |                                              | Phase Sequence Protection                                                                                                                                                                    | —                                 | —                | —               | ■               | ■               |
|                                                              | Auxiliary protection functions |                                              | Pre-alarm Ip                                                                                                                                                                                 | ■                                 | ■                | ■               | ■               | ■               |
|                                                              |                                |                                              | Thermal modeling function (thermal memory)                                                                                                                                                   | □                                 | □                | □               | □               | □               |
| Measurement functions                                        | Current measurement            |                                              | Ia, Ib, Ic, IN                                                                                                                                                                               | ■                                 | ■                | ■               | ■               | ■               |
|                                                              |                                |                                              | Ig                                                                                                                                                                                           | —                                 | —                | □               | □               | □               |
|                                                              |                                |                                              | Current unbalance factor εI                                                                                                                                                                  | —                                 | ■                | —               | ■               | ■               |
|                                                              | Voltage measurement            |                                              | Line voltage Uab, Ubc, Uac, phase voltage UaN, UbN, UcN, average voltage Uavg                                                                                                                | —                                 | —                | —               | ■               | ■               |
|                                                              |                                |                                              | Voltage unbalance factor                                                                                                                                                                     | —                                 | —                | —               | ■               | ■               |
|                                                              | Power measurement              | Active power, reactive power, apparent power | —                                                                                                                                                                                            | —                                 | —                | —               | ■               |                 |
|                                                              | Frequency measurement          |                                              | —                                                                                                                                                                                            | —                                 | —                | —               | ■               |                 |
|                                                              | Electric energy metering       |                                              | Active energy, reactive energy, apparent energy                                                                                                                                              | —                                 | —                | —               | —               | ■               |
|                                                              | Maintenance functions          | Setting                                      | Digital display                                                                                                                                                                              | Ir, Is, Ii, Ip                    | ■                | ■               | —               | —               |
| Parameter setting method: remote adjustment/button selection |                                |                                              |                                                                                                                                                                                              | ■                                 | ■                | —               | —               | —               |
| LCD display                                                  |                                |                                              | Ir, Is, Ii, Ig, Ip, Irm, εI, Uov, Uvp, εU                                                                                                                                                    | —                                 | —                | ■               | ■               | ■               |
| Maintenance instructions                                     |                                | Fault logging                                | Parameter setting method: remote adjustment/button selection                                                                                                                                 | —                                 | —                | ■               | ■               | ■               |
|                                                              |                                |                                              | Long-delay overload, short-delay short-circuit, instantaneous short-circuit, neutral pole protection, trip time, phase short-circuit                                                         | ■                                 | ■                | ■               | ■               | ■               |
|                                                              |                                |                                              | Ground fault protection, current unbalance protection, phase open-phase protection, overvoltage protection, undervoltage protection, voltage unbalance protection, phase sequence protection | —                                 | —                | ■ <sup>2)</sup> | ■ <sup>2)</sup> | ■ <sup>2)</sup> |
|                                                              |                                |                                              | Test run                                                                                                                                                                                     | —                                 | —                | ■               | ■               | ■               |
|                                                              |                                |                                              | Self-diagnosis function                                                                                                                                                                      | —                                 | —                | □               | □               | □               |
|                                                              |                                | Fault indication                             | Indication and meaning of indicator light (panel)/host computer (communication)                                                                                                              | ■                                 | ■                | ■               | ■               | ■               |
| Archive                                                      |                                | Accumulation of saved events                 | Contact wear                                                                                                                                                                                 | —                                 | —                | —               | ■               | ■               |
|                                                              |                                |                                              | Number of operations                                                                                                                                                                         | —                                 | —                | —               | ■               | ■               |
|                                                              |                                | Trips                                        | Last 10 events                                                                                                                                                                               | Single                            | Single           | ■               | ■               | ■               |
|                                                              |                                | Alarms                                       | Last 10 events                                                                                                                                                                               | —                                 | —                | ■               | ■               | ■               |
|                                                              |                                | Maximum current for the entire period        |                                                                                                                                                                                              | —                                 | —                | ■               | ■               | ■               |
| Digital display                                              |                                | Display of fault information                 | Short-circuit current value and delay time                                                                                                                                                   | ■                                 | ■                | —               | —               | —               |
|                                                              |                                |                                              | Real-time current display                                                                                                                                                                    | Ia, Ib, Ic, In                    | ■                | ■               | —               | —               |
|                                                              |                                | LCD display                                  | Display of fault information                                                                                                                                                                 | Fault type, fault value, duration | —                | —               | ■               | ■               |
|                                                              | Real-time current display      |                                              | Ia, Ib, Ic, In                                                                                                                                                                               | —                                 | —                | ■               | ■               | ■               |
|                                                              |                                |                                              | Ig                                                                                                                                                                                           | —                                 | —                | □               | □               | □               |
|                                                              |                                |                                              | εI                                                                                                                                                                                           | —                                 | —                | —               | ■               | ■               |
|                                                              | Real-time voltage display      |                                              | Uab, Ubc, Uac, UaN, UbN, UcN, Uavg                                                                                                                                                           | —                                 | —                | —               | ■               | ■               |
| εU                                                           |                                | —                                            | —                                                                                                                                                                                            | —                                 | ■                | ■               |                 |                 |
| Communication                                                | Direct communication type      |                                              | Communication protocol Modbus                                                                                                                                                                | □                                 | □                | □               | □               | □               |

1) Im neutral pole protection is a preset value for user's settings

2) The alarm log displays data according to the protection function

■ Main function □ Optional function — no function

## SM3-1600 Electronic Trip Unit Setpoints

Table 7

| Parameters                                                                                                                   | Values                                                                   |
|------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------|
| Overload protection current settings $I_r$ as a multiple of $I_n$                                                            | 0.4, 0.5, 0.6, 0.7, 0.8, 0.9, 1.0 + OFF (overload protection disabled)   |
| Overload protection time delay settings $T_L$ at $2I_r$ , s (tolerance $\pm 10\%$ )                                          | 10, 15, 30, 45, 60, 80, 100, 120 + OFF (overload alarm without tripping) |
| Short-circuit protection tripping current settings with time delay $I_{sd}$ as a multiple of $I_r^*$ (tolerance $\pm 10\%$ ) | 2, 3, 4, 5, 6, 7, 8, 9, 10 + OFF (protection disabled)                   |
| Short-circuit protection time delay settings $t_{sd}$ , s (tolerance $\pm 10\%$ )                                            | 0.1, 0.2, 0.3, 0.4                                                       |
| Short-circuit protection tripping current settings $I_i$ without time delay, as a multiple of $I_n$ (tolerance $\pm 15\%$ )  | 3, 4, 5, 6, 7, 8, 10, 12 + OFF (protection disabled)                     |
| Overload pre-indication tripping settings $I_p$ as a multiple of $I_r^*$ (tolerance $\pm 10\%$ )                             | 0.7, 0.8, 0.9, 1.0                                                       |
| Overload pre-indication reset settings $I_p$ as a multiple of $I_r^*$ (tolerance $\pm 10\%$ )                                | 0.7, 0.8, 0.9                                                            |
| Overload pre-indication tripping delay settings, s                                                                           | 0.1, 0.2, 0.3, 0.4, 0.5, 0.6, 0.7, 0.8, 0.9, 1.0                         |
| Overload pre-indication reset delay settings, s                                                                              | 0.1, 0.2, 0.3, 0.4, 0.5, 0.6, 0.7, 0.8, 0.9, 1.0                         |
| Overload protection thermal memory ***                                                                                       | +                                                                        |

\* The short-circuit protection tripping time with delay  $T$  for a short-circuit current  $I$  less than  $8 I_r$  is determined by the formula:  $T = 64 \cdot t_{sd} \cdot (I_r/I)^2$ .

For a short-circuit current of  $8 I_r$  or greater,  $T = t_{sd}$ .

\*\* When the overload protection is disabled ( $I_r = \text{OFF}$ ), the multiplier of the settings is calculated from the rated current of the circuit breaker  $I_n$ .

\*\*\* With external power supply.

## SGP-MCZ-1600 Circuit Breaker Accessory Designations

Table 8

| Device code | Device Name                                            | Device code | Device Name                                                                              |
|-------------|--------------------------------------------------------|-------------|------------------------------------------------------------------------------------------|
| 00          | No devices                                             | 60          | Two groups of auxiliary contacts                                                         |
| 08          | Alarm contact                                          | 61          | Undervoltage trip unit, shunt trip unit, auxiliary contact                               |
| 10          | Shunt trip unit                                        | 68          | Two groups of auxiliary contacts and alarm contacts                                      |
| 20          | Auxiliary contact                                      | 69          | Undervoltage trip unit, shunt trip unit, auxiliary contact, alarm contact                |
| 30          | Undervoltage trip unit                                 | 70          | Undervoltage trip unit, auxiliary contact                                                |
| 18          | Shunt trip unit, alarm contact                         | 71          | Shunt trip unit, two groups of auxiliary contacts                                        |
| 28          | Auxiliary contact, alarm contact                       | 78          | Undervoltage trip unit, auxiliary contact, alarm contact                                 |
| 38          | Undervoltage trip unit, alarm contact                  | 79          | Shunt trip unit, two groups of auxiliary contacts, alarm contact                         |
| 40          | Shunt trip unit, auxiliary contact                     | 90          | Undervoltage trip unit, two groups of auxiliary contacts                                 |
| 48          | Shunt trip unit, auxiliary contact, alarm contact      | 96          | Undervoltage trip unit, shunt trip unit, two groups of auxiliary contacts                |
| 49          | Undervoltage trip unit, shunt trip unit, alarm contact | 97          | Undervoltage trip unit, shunt trip unit, two groups of auxiliary contacts, alarm contact |
| 50          | Shunt trip unit, undervoltage trip unit                | 98          | Undervoltage trip unit, two groups of auxiliary contacts, alarm contact                  |

## Selection diagram for SGP-MCZ series molded case circuit breaker with electronic trip unit

| SGP-                                                                                                                                 | MCZ- | X | X | X | X | X | X | X | X- | X- | X | X |
|--------------------------------------------------------------------------------------------------------------------------------------|------|---|---|---|---|---|---|---|----|----|---|---|
| <p>Connection kits:<br/> <b>H</b> – rear connection<br/>           No symbol for front connection</p>                                |      |   |   |   |   |   |   |   |    |    |   |   |
| <p>Version kits:<br/> <b>R</b> – Plug-in version<br/> <b>C</b> – Withdrawable Version<br/>           No symbol for fixed version</p> |      |   |   |   |   |   |   |   |    |    |   |   |
| <p>Rated current:<br/> <b>32A, 100A; 160A; 250A; 400A; 630A; 800A; 1000; 1250; 1400; 1600</b></p>                                    |      |   |   |   |   |   |   |   |    |    |   |   |
| <p>Communication module:<br/> <b>M</b> – Without communication module<br/> <b>H</b> – With communication module (Modbus RTU)</p>     |      |   |   |   |   |   |   |   |    |    |   |   |
| <p>Additional accessory:<br/> <b>Selected based on</b><br/> <b>Table 5 for sizes 100-800;</b><br/> <b>Table 8 for size 1600</b></p>  |      |   |   |   |   |   |   |   |    |    |   |   |
| <p>Additional accessory:<br/> <b>Selected based on</b><br/> <b>Table 5 for sizes 100-800;</b><br/> <b>Table 8 for size 1600</b></p>  |      |   |   |   |   |   |   |   |    |    |   |   |
| <p>Trip unit type:<br/> <b>2</b> – Electronic I (for motors)<br/> <b>3</b> – Electronic LSI<br/> <b>3G</b> – Electronic LSIG</p>     |      |   |   |   |   |   |   |   |    |    |   |   |
| <p>Number of poles:<br/> <b>3; 4</b></p>                                                                                             |      |   |   |   |   |   |   |   |    |    |   |   |
| <p>Drive type:<br/> <b>P</b> – motor drive<br/> <b>Z</b> – external remote handle<br/>           No symbol for manual operation</p>  |      |   |   |   |   |   |   |   |    |    |   |   |
| <p>Breaking capacity level:<br/> <b>S; H; R</b></p>                                                                                  |      |   |   |   |   |   |   |   |    |    |   |   |
| <p>Size:<br/> <b>100; 250; 400; 630; 800; 1600</b></p>                                                                               |      |   |   |   |   |   |   |   |    |    |   |   |
| Category designation of molded case circuit breakers with electronic trip units                                                      |      |   |   |   |   |   |   |   |    |    |   |   |
| Company code and product group                                                                                                       |      |   |   |   |   |   |   |   |    |    |   |   |

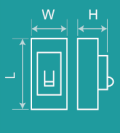
Example: SGP-MCZ-250SP3328H-160A-RH

Notes: \* **L** (overload protection); **S** (selective protection); **I** (instantaneous protection); **G** (ground fault protection)



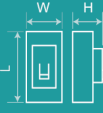
## Technical characteristics of circuit breakers with thermomagnetic trip units

Table 9

| Model                                                       |                                                                                     | SGP-MC- | 63N                                                                               | 63S     | 160C                                                                              | 100N; 160N                                                                          | 100S;<br>160S               | 100H;<br>160H | 100R;<br>160R |
|-------------------------------------------------------------|-------------------------------------------------------------------------------------|---------|-----------------------------------------------------------------------------------|---------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-----------------------------|---------------|---------------|
| Appearance                                                  |                                                                                     |         |  |         |  |  |                             |               |               |
| Rated current In(A)                                         |                                                                                     |         | 16,20,25,32,40,50,63                                                              |         | 16,20,25,32,40,50,63,80,<br>100,125,140,160                                       | 16,20,25,32,40,50,63,80,100(SGP-MC-100)<br>100,125,140,160(SGP-MC-160)              |                             |               |               |
| Number of poles                                             |                                                                                     |         | 3P/4P                                                                             |         | 3P                                                                                | 3P                                                                                  | 3P/4P                       |               |               |
| Rated Insulation Voltage Ui (B)                             |                                                                                     |         | 800                                                                               |         | 800                                                                               | 800                                                                                 |                             |               |               |
| Rated operational voltage at 50/60 Hz Ue (V)                |                                                                                     |         | AC 400                                                                            |         | AC 400                                                                            | AC 400                                                                              | AC 400 /AC 500 /AC 690      |               |               |
| Rated impulse withstand voltage Uimp(V)                     |                                                                                     |         | 8000                                                                              |         | 8000                                                                              | 8000                                                                                |                             |               |               |
| Service life of mechanical part                             | Maintenance-free                                                                    |         | 20000                                                                             |         | 20000                                                                             | 20000                                                                               |                             |               |               |
| Service life of electrical part                             | AC 400                                                                              |         | 8000                                                                              |         | 8000                                                                              | 8000                                                                                |                             |               |               |
|                                                             | AC 690                                                                              |         | -                                                                                 |         | -                                                                                 | 1500                                                                                |                             |               |               |
| Rated ultimate short-circuit breaking capacity (Icu(KA))    | AC 400                                                                              |         | 35                                                                                | 50      | 35                                                                                | 35                                                                                  | 50                          | 70            | 100           |
|                                                             | AC 500                                                                              |         |                                                                                   |         |                                                                                   |                                                                                     | 40                          | 40            | 40            |
|                                                             | AC 690                                                                              |         |                                                                                   |         |                                                                                   |                                                                                     | 10                          | 10            | 10            |
| Rated operational short-circuit breaking capacity (Ics(KA)) | AC 400                                                                              |         | 35                                                                                | 35      | 35                                                                                | 35                                                                                  | 50                          | 70            | 70            |
|                                                             | AC 500                                                                              |         |                                                                                   |         |                                                                                   |                                                                                     | 40                          | 40            | 40            |
|                                                             | AC 690                                                                              |         | -                                                                                 | -       | -                                                                                 | -                                                                                   | 10                          | 10            | 10            |
| Arc discharge range (mm)                                    |                                                                                     |         | 0 or ≤50                                                                          |         | 0 or ≤50                                                                          | 0 or ≤50                                                                            |                             |               |               |
| Overall dimensions                                          |  | W       | 78(3P)                                                                            | 103(4P) | 76                                                                                | 92(3P) 122(4P)                                                                      |                             |               |               |
|                                                             |                                                                                     | L       | 135                                                                               |         | 130                                                                               | 150                                                                                 |                             |               |               |
|                                                             |                                                                                     | H       | 82                                                                                |         | 78                                                                                | 73                                                                                  | 91                          |               |               |
| Weight 3P/4P                                                |                                                                                     |         | 1.1/1.4                                                                           |         | 1.4                                                                               | 1.3(100);1.4(160)                                                                   | 1.5/2(100);<br>1.6/2.1(160) |               |               |
| Shunt trip unit                                             |                                                                                     |         | ✓                                                                                 |         | ✓                                                                                 | ✓                                                                                   |                             |               |               |
| Undervoltage trip unit                                      |                                                                                     |         | ✓                                                                                 |         | ✓                                                                                 | ✓                                                                                   |                             |               |               |
| Auxiliary contact                                           |                                                                                     |         | ✓                                                                                 |         | ✓                                                                                 | ✓                                                                                   |                             |               |               |
| Alarm contact (emergency)                                   |                                                                                     |         | ✓                                                                                 |         | ✓                                                                                 | ✓                                                                                   |                             |               |               |
| Motor drive                                                 |                                                                                     |         | ✓                                                                                 |         | ✓                                                                                 | ✓                                                                                   |                             |               |               |
| Rotary handle mechanism                                     |                                                                                     |         | ✓                                                                                 |         | ✓                                                                                 | ✓                                                                                   |                             |               |               |
| Front connection                                            |                                                                                     |         | ✓                                                                                 |         | ✓                                                                                 | ✓                                                                                   |                             |               |               |
| Rear connection                                             |                                                                                     |         | ✓                                                                                 |         |                                                                                   | ✓                                                                                   |                             |               |               |
| Plug-in type                                                |                                                                                     |         | ✓                                                                                 |         |                                                                                   | ✓                                                                                   |                             |               |               |
| Withdrawable type                                           |                                                                                     |         |                                                                                   |         |                                                                                   |                                                                                     |                             |               |               |
| Protection class                                            |                                                                                     |         | IP20                                                                              |         |                                                                                   |                                                                                     |                             |               |               |
| Application category                                        |                                                                                     |         | A                                                                                 |         |                                                                                   |                                                                                     |                             |               |               |

## Technical characteristics of circuit breakers with thermomagnetic trip unit

Table 10

| Model                                                     | SGP-MC-                                                                             | 250N                                                                              | 250S                   | 250H | 250R | 400N                                                                                | 400S                   | 400H | 400R |
|-----------------------------------------------------------|-------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------|------|------|-------------------------------------------------------------------------------------|------------------------|------|------|
| Appearance                                                |                                                                                     |  |                        |      |      |  |                        |      |      |
| Rated current In(A)                                       |                                                                                     | 100, 125, 140, 160, 180, 200, 225, 250                                            |                        |      |      | 225, 250, 315, 350, 400                                                             |                        |      |      |
| Number of poles                                           |                                                                                     | 3P                                                                                | 3P/4P                  |      |      | 3P                                                                                  | 3P/4P                  |      |      |
| Rated insulation voltage Ui (V)                           |                                                                                     | 800                                                                               |                        |      |      | 800                                                                                 |                        |      |      |
| Rated operational voltage at 50/60 Hz Ue (V)              |                                                                                     | AC 400                                                                            | AC 400 /AC 500 /AC 690 |      |      | AC 400                                                                              | AC 400 /AC 500 /AC 690 |      |      |
| Rated impulse withstand voltage Uimp (V)                  |                                                                                     | 8000                                                                              |                        |      |      | 8000                                                                                |                        |      |      |
| Service life of mechanical part                           | Maintenance-free                                                                    | 20000                                                                             |                        |      |      | 10000                                                                               |                        |      |      |
| Service life of electrical part                           | AC 400                                                                              | 8000                                                                              |                        |      |      | 8000                                                                                |                        |      |      |
|                                                           | AC 690                                                                              | 1500                                                                              |                        |      |      | 1000                                                                                |                        |      |      |
| Rated ultimate short-circuit breaking capacity (Icu(KA))  | AC 400                                                                              | 35                                                                                | 50                     | 70   | 100  | 50                                                                                  | 50                     | 70   | 100  |
|                                                           | AC 500                                                                              | -                                                                                 | 40                     | 40   | 40   | -                                                                                   | 40                     | 40   | 40   |
|                                                           | AC 690                                                                              | -                                                                                 | 10                     | 10   | 10   | -                                                                                   | 15                     | 15   | 15   |
| Rated operating short-circuit breaking capacity (Ics(KA)) | AC 400                                                                              | 35                                                                                | 50                     | 70   | 70   | 35                                                                                  | 50                     | 70   | 70   |
|                                                           | AC 500                                                                              |                                                                                   | 40                     | 40   | 40   |                                                                                     | 40                     | 40   | 40   |
|                                                           | AC 690                                                                              | -                                                                                 | 10                     | 10   | 10   | -                                                                                   | 15                     | 15   | 15   |
| Arc discharge range (mm)                                  |                                                                                     | 0 or ≤50                                                                          |                        |      |      | 0 or ≤100                                                                           |                        |      |      |
| Overall dimensions                                        |  | W                                                                                 | 107(3P) 142(4P)        |      |      | 140(3P) 184(4P)                                                                     |                        |      |      |
|                                                           |                                                                                     | L                                                                                 | 165                    |      |      | 257                                                                                 |                        |      |      |
|                                                           |                                                                                     | H                                                                                 | 73                     | 91   |      | 103                                                                                 |                        |      |      |
| Weight 3P/4P                                              |                                                                                     | 1.9                                                                               | 2.3/3                  |      |      | 5.1                                                                                 | 5.2/6.5                |      |      |
| Shunt trip unit                                           |                                                                                     | ✓                                                                                 |                        |      |      | ✓                                                                                   |                        |      |      |
| Undervoltage trip unit                                    |                                                                                     | ✓                                                                                 |                        |      |      | ✓                                                                                   |                        |      |      |
| Auxiliary contact                                         |                                                                                     | ✓                                                                                 |                        |      |      | ✓                                                                                   |                        |      |      |
| Alarm contact (emergency)                                 |                                                                                     | ✓                                                                                 |                        |      |      | ✓                                                                                   |                        |      |      |
| Motor drive                                               |                                                                                     | ✓                                                                                 |                        |      |      | ✓                                                                                   |                        |      |      |
| Rotary handle mechanism                                   |                                                                                     | ✓                                                                                 |                        |      |      | ✓                                                                                   |                        |      |      |
| Front connection                                          |                                                                                     | ✓                                                                                 |                        |      |      | ✓                                                                                   |                        |      |      |
| Rear connection                                           |                                                                                     | ✓                                                                                 |                        |      |      | ✓                                                                                   |                        |      |      |
| Plug-in type                                              |                                                                                     | ✓                                                                                 |                        |      |      | ✓                                                                                   |                        |      |      |
| Withdrawable type                                         |                                                                                     |                                                                                   |                        |      |      | ✓                                                                                   |                        |      |      |
| Protection Rating                                         |                                                                                     | IP20                                                                              |                        |      |      |                                                                                     |                        |      |      |
| Application category                                      |                                                                                     | A                                                                                 |                        |      |      |                                                                                     |                        |      |      |

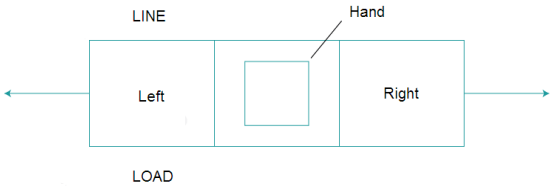
## Technical characteristics of circuit breakers with thermomagnetic trip unit

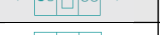
Table 11

| Model                                                     | SGP-MC-                                                                             | 630N                                                                              | 630S                                                                               | 630H                   | 630R | 800S                                                                                | 800H      | 800R |
|-----------------------------------------------------------|-------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|------------------------|------|-------------------------------------------------------------------------------------|-----------|------|
| Appearance                                                |                                                                                     |  |  |                        |      |  |           |      |
| Rated current In(A)                                       |                                                                                     | 400, 500, 630                                                                     |                                                                                    | 400, 500, 630          |      | 630, 700, 800                                                                       |           |      |
| Number of poles                                           |                                                                                     | 3P                                                                                |                                                                                    | 3P/4P                  |      | 3P/4P                                                                               |           |      |
| Rated insulation voltage Ui (V)                           |                                                                                     | 800                                                                               |                                                                                    |                        |      |                                                                                     | 800       |      |
| Rated operational voltage at 50/60 Hz Ue (V)              |                                                                                     | AC 400                                                                            |                                                                                    | AC 400 /AC 500 /AC 690 |      | AC 400 /AC 500 /AC 690                                                              |           |      |
| Rated impulse withstand voltage Uimp(V)                   |                                                                                     | 8000                                                                              |                                                                                    |                        |      |                                                                                     | 8000      |      |
| Service life of mechanical part                           | Maintenance-free                                                                    | 10000                                                                             |                                                                                    |                        |      |                                                                                     | 10000     |      |
| Service life of electrical part                           | AC 400                                                                              | 8000                                                                              |                                                                                    |                        |      |                                                                                     | 8000      |      |
|                                                           | AC 690                                                                              | 1000                                                                              |                                                                                    |                        |      |                                                                                     | 1000      |      |
| Rated ultimate short-circuit breaking capacity (Icu(KA))  | AC 400                                                                              | 50                                                                                | 50                                                                                 | 70                     | 100  | 50                                                                                  | 70        | 100  |
|                                                           | AC 500                                                                              | -                                                                                 | 40                                                                                 | 40                     | 40   | 40                                                                                  | 40        | 40   |
|                                                           | AC 690                                                                              | -                                                                                 | 15                                                                                 | 15                     | 15   | 15                                                                                  | 15        | 15   |
| Rated operating short-circuit breaking capacity (Ics(KA)) | AC 400                                                                              | 35                                                                                | 50                                                                                 | 70                     | 70   | 50                                                                                  | 70        | 70   |
|                                                           | AC 500                                                                              | -                                                                                 | 40                                                                                 | 40                     | 40   | 40                                                                                  | 40        | 40   |
|                                                           | AC 690                                                                              | -                                                                                 | 15                                                                                 | 15                     | 15   | 15                                                                                  | 15        | 15   |
| Arc discharge range (mm)                                  |                                                                                     | 0 or ≤100                                                                         |                                                                                    |                        |      |                                                                                     | 0 or ≤100 |      |
| Overall dimensions                                        |  | W                                                                                 | 140                                                                                | 210(3P) 280(4P)        |      | 210(3P) 280(4P)                                                                     |           |      |
|                                                           |                                                                                     | L                                                                                 | 257                                                                                | 275                    |      | 275                                                                                 |           |      |
|                                                           |                                                                                     | B                                                                                 | 103                                                                                |                        |      |                                                                                     |           | 103  |
| Weight 3P/4P                                              |                                                                                     | 5.5                                                                               | 7.4/8.1                                                                            |                        |      | 8.8/10.5                                                                            |           |      |
| Shunt trip unit                                           |                                                                                     | ✓                                                                                 |                                                                                    |                        |      |                                                                                     | ✓         |      |
| Undervoltage trip unit                                    |                                                                                     | ✓                                                                                 |                                                                                    |                        |      |                                                                                     | ✓         |      |
| Auxiliary contact                                         |                                                                                     | ✓                                                                                 |                                                                                    |                        |      |                                                                                     | ✓         |      |
| Alarm contact (emergency)                                 |                                                                                     | ✓                                                                                 |                                                                                    |                        |      |                                                                                     | ✓         |      |
| Motor drive                                               |                                                                                     | ✓                                                                                 |                                                                                    |                        |      |                                                                                     | ✓         |      |
| Rotary handle mechanism                                   |                                                                                     | ✓                                                                                 |                                                                                    |                        |      |                                                                                     | ✓         |      |
| Front connection                                          |                                                                                     | ✓                                                                                 |                                                                                    |                        |      |                                                                                     | ✓         |      |
| Rear connection                                           |                                                                                     | ✓<br>(for SGP-MC-630N, rear panel connection is not provided)                     |                                                                                    |                        |      |                                                                                     | ✓         |      |
| Plug-in type                                              |                                                                                     | ✓<br>(for SGP-MC-630N, rear panel connection is not provided)                     |                                                                                    |                        |      |                                                                                     | ✓         |      |
| Withdrawable type                                         |                                                                                     | ✓<br>(for SGP-MC-630N, rear panel connection is not provided)                     |                                                                                    |                        |      |                                                                                     | ✓         |      |
| Protection rating                                         |                                                                                     | IP20                                                                              |                                                                                    |                        |      |                                                                                     |           |      |
| Application category                                      |                                                                                     | A                                                                                 |                                                                                    |                        |      |                                                                                     |           |      |

## Codes and designations of trip units and accessories of circuit breakers SGP-MC

Table 4

|                                                                                   |    |                                          |
|-----------------------------------------------------------------------------------|----|------------------------------------------|
|  | ●  | Alarm contact                            |
|                                                                                   | ○  | Auxiliary contact                        |
|                                                                                   | ▲  | Undervoltage trip unit                   |
|                                                                                   | △  | Shunt trip unit                          |
|                                                                                   | ●○ | Auxiliary contact and alarm contact      |
|                                                                                   | ○○ | Double auxiliary contact                 |
|                                                                                   | →  | Right terminal for right-hand connection |
|                                                                                   | ←  | Left terminal for left-hand connection   |

| Trip unit code or accessory | Model                                                             | SGP-MC-63                                                                                                                                                                             | SGP-MC-160C                                                                          | SGP-MC160(100)<br>SGP-MC-250                                                          | SGP-MC-400 SGP-MC-800(630)                                                            |
|-----------------------------|-------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
|                             | Accessory name                                                    | 3P, 4P                                                                                                                                                                                | 3P                                                                                   | 3P, 4P                                                                                | 3P, 4P                                                                                |
| 200, 300                    | Without accessories                                               | 200-electromagnetic trip unit (with instantaneous short-circuit protection only)<br>300-combined trip unit (with both instantaneous short-circuit protection and overload protection) |                                                                                      |                                                                                       |                                                                                       |
| 208, 308                    | Alarm contact                                                     |                                                                                                      |    |    |    |
| 210, 310                    | Shunt trip unit                                                   |                                                                                                      |     |    |    |
| 220, 320                    | Auxiliary contact (1NO1NC)                                        |                                                                                                     |   |   |   |
| 202, 302                    | Auxiliary contact (2NO2NC)                                        |                                                                                                                                                                                       |  |  |                                                                                       |
| 230, 330                    | Undervoltage trip unit                                            |                                                                                                    |   |  |  |
| 240, 340                    | Shunt trip unit, auxiliary contact (1NO1NC)                       |                                                                                                    |  |  |  |
| 212, 312                    | Shunt trip unit, auxiliary contact (2NO2NC)                       |                                                                                                                                                                                       |  |  |  |
| 250, 350                    | Shunt trip unit, undervoltage trip unit                           |                                                                                                                                                                                       |                                                                                      |  |  |
| 260, 360                    | 2 groups of auxiliary contacts (2NO2NC)                           |                                                                                                    |                                                                                      |  |  |
| 222, 322                    | 2 groups of auxiliary contacts (3NO3NC)                           |                                                                                                                                                                                       |                                                                                      |  |  |
| 223, 323                    | 2 groups of auxiliary contacts (4NO4NC)                           |                                                                                                                                                                                       |                                                                                      |  |  |
| 270, 370                    | Undervoltage trip unit, auxiliary contact (1NO1NC)                |                                                                                                    |  |  |  |
| 232, 332                    | Undervoltage trip unit, auxiliary contact (2NO2NC)                |                                                                                                                                                                                       |  |  |  |
| 218, 318                    | Shunt trip unit, alarm contact                                    |                                                                                                    |   |  |  |
| 228, 328                    | Auxiliary contact (1NO1NC), alarm contact                         |                                                                                                    |  |  |  |
| 238, 338                    | Undervoltage trip unit, alarm contact                             |                                                                                                    |   |  |  |
| 248, 348                    | Shunt trip unit, auxiliary contact (1NO1NC), alarm contact        |                                                                                                    |  |  |  |
| 268, 368                    | 2 groups of auxiliary contacts (2NO2NC), alarm contact            |                                                                                                    |                                                                                      |  |  |
| 205, 305                    | 2 groups of auxiliary contacts (3NO3NC), alarm contact            |                                                                                                                                                                                       |                                                                                      |  |  |
| 278, 378                    | Undervoltage trip unit, auxiliary contact (1NO1NC), alarm contact |                                                                                                    |  |  |  |

## Selection diagram for SGP-MC series molded case circuit breaker with thermomagnetic trip unit

| SGP-                                                                            | MC- | X | X | X | X | X | X | X | X | C- | X- | X | X                                                                                                                                                        |
|---------------------------------------------------------------------------------|-----|---|---|---|---|---|---|---|---|----|----|---|----------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                 |     |   |   |   |   |   |   |   |   |    |    |   | Connection kits:<br>H – rear connection<br>No symbol for front connection                                                                                |
|                                                                                 |     |   |   |   |   |   |   |   |   |    |    |   | Version kits:<br>R – Plug-in version<br>C – Withdrawable Version<br>No symbol for fixed version                                                          |
|                                                                                 |     |   |   |   |   |   |   |   |   |    |    |   | Rated current:<br>16A; 20A; 25A; 32A; 40A; 50A; 63A; 80A; 100A; 125A;<br>140A; 160A; 180A; 200A;<br>225A; 250A; 315A; 350A; 400A; 500A; 630A; 700A; 800A |
|                                                                                 |     |   |   |   |   |   |   |   |   |    |    |   | N pole:<br>C – equipped with overcurrent protection, controlled with all poles                                                                           |
|                                                                                 |     |   |   |   |   |   |   |   |   |    |    |   | Protection type:<br>2 – Motor protection<br>No symbol for power distribution protection                                                                  |
|                                                                                 |     |   |   |   |   |   |   |   |   |    |    |   | Additional accessory:<br>Selected on the basis of Table 13                                                                                               |
|                                                                                 |     |   |   |   |   |   |   |   |   |    |    |   | Additional accessory:<br>Selected on the basis of Table 13                                                                                               |
|                                                                                 |     |   |   |   |   |   |   |   |   |    |    |   | Trip unit type:<br>2 – Electromagnetic<br>3 – Thermomagnetic                                                                                             |
|                                                                                 |     |   |   |   |   |   |   |   |   |    |    |   | Number of poles:<br>3; 4                                                                                                                                 |
|                                                                                 |     |   |   |   |   |   |   |   |   |    |    |   | Drive type:<br>P – motor drive<br>Z – external remote handle<br>No symbol for manual operation                                                           |
|                                                                                 |     |   |   |   |   |   |   |   |   |    |    |   | Breaking capacity level:<br>C; N; S; H; R                                                                                                                |
|                                                                                 |     |   |   |   |   |   |   |   |   |    |    |   | Size:<br>63, 100; 160, 250; 400; 630; 800                                                                                                                |
| Category designation of molded case circuit breakers with electronic trip units |     |   |   |   |   |   |   |   |   |    |    |   |                                                                                                                                                          |
| Company code and product group                                                  |     |   |   |   |   |   |   |   |   |    |    |   |                                                                                                                                                          |

Example: SGP-MC-63SP3328C-16A-RH

# Selectric

ELECTRICAL EQUIPMENT  
DESIGNED FOR MAXIMUM RELIABILITY

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