

Product Datasheet

MS1UE-63DC

1U Intelligent Circuit Breaker for Telecom Applications



V1.2 · 2025-02-06

Revision History

Revision	Date	Changes
F1.0	20240113	Initial release for pilot production
F1.1	20240730	Updated dimension drawings and overcurrent protection logic
F1.1a	20240831	Updated overvoltage recovery description; minor text and symbol revisions
V1.2	20250206	Updated low-current processing logic

Contents

Revision History.....	2
1. Overview.....	3
2. Applications	3
3. Model Designation.....	3
4. Technical Specifications.....	4
Electrical Specifications	4
Protection Characteristics	5
Operating Environment	6
Insulation Specifications	7
5. Interfaces and Dimensions.....	7
Product Interfaces	7
Control Signals.....	7
Dimensions (mm).....	7
6. Signals and Communication	8
Operating Mode	8
Boot Mode	8
7. Standards and Certification	8

1. Overview

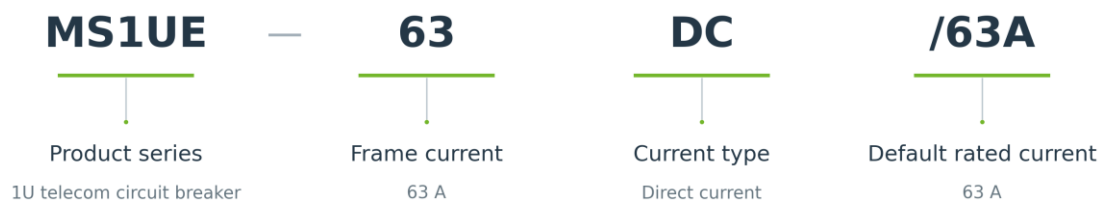
The MS1UE-63DC is a 1U intelligent circuit breaker for telecom base stations and low-voltage DC distribution systems. It integrates electrical protection, energy metering and remote opening/closing to address limited installation space, poor visibility of branch-circuit energy use and the high cost of on-site switching operations.

Compared with a conventional circuit breaker combined with separate metering and control modules, this integrated design reduces component space and wiring, enabling branch-circuit energy monitoring and remote management in space-constrained installations.

2. Applications

- DC power distribution for telecom base stations
- DC power supply for telecom rooms and network equipment
- Low-voltage DC power distribution and energy management

3. Model Designation



Note: The default rated current is the factory-set rated current (e.g. 63 A). If not specified, it is equal to the frame current.

4. Technical Specifications

Electrical Specifications

Unless otherwise specified, values apply to a resistive load at an ambient temperature of 25°C.

Parameter	Min.	Typ.	Max.	Unit
Operating voltage range	-40		-80	Vdc
Breaking capacity (I _{cu} =I _{cs})		10		kA
Voltage measurement accuracy			0.5	%FS Note 1
Current measurement accuracy Note 2			0.5	%FS Note 1
Energy measurement accuracy			1	%
Negative-pole on-state resistance		1.5		mΩ
Insulation resistance at 500 Vdc, poles to plastic enclosure	10			MΩ
Electrical endurance Note 3	10000			cycles
Current setting range	5		100	%
Rated current setting step		1		A

Note 1: %FS means percentage of full scale. Full-scale values for the 63DC frame are 80 V and 63 A.

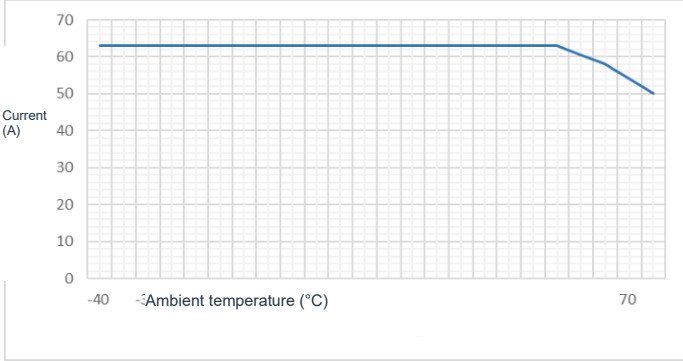
Note 2: To account for device characteristics and field conditions, currents below 1% FS (0.63 A) receive special processing: readings below 0.5% FS are set to zero, and readings between 0.5% and 1% FS are smoothed.

Note 3: During frequent switching, allow at least 20 s between opening/closing operations to prevent actuator coil overheating.

Protection Characteristics

Protection function	Protection Characteristics	Description	
Undervoltage protection	Automatic recovery	At default settings, the breaker opens when the main-circuit DC voltage remains below -40 V for 10 s. It automatically returns to its previous state when the voltage recovers above -42 V.	
Overvoltage protection	Automatic recovery	At default settings, the breaker opens immediately when the main-circuit voltage reaches -85 V. It automatically returns to its previous state when the voltage drops below -82 V.	
Overcurrent protection	Limited automatic recovery	Overcurrent alarm and protection settings are user-configurable. Default settings:	
			63DC/63A
		Overcurrent alarm threshold	66.15A
		Stage 1 overcurrent trip threshold	69.3A
		Stage 1 overcurrent trip delay	60s
		Stage 2 overcurrent protection uses an analog inverse-time characteristic based on the factory-set rated current I_n . Overload protection: 1. When $I < 5 \times I_n$, inverse-time operation applies: $T = (2 \times I_n / I)^2 \times T_r$, where: T: Actual operating time I_n : Rated current I: Actual current T_r : Operating time at $2 \times I_n$ For the 63 A model: $I_n = 63$ A, $T_r = 24$ s. 2. When $I \geq 5 \times I_n$, definite-time operation applies, with an operating time of 2 s. Protection time tolerance: ± 1 s.	
Short-circuit protection	No automatic recovery	No automatic recovery	
Overtemperature protection	Automatic recovery	The breaker opens if overheating occurs internally or at the wiring terminals.	
Communication loss alarm	Automatic recovery	At default settings, an alarm is generated if no command is received from the host for more than 300 s. The breaker does not operate. The alarm clears when communication is restored.	

Operating Environment

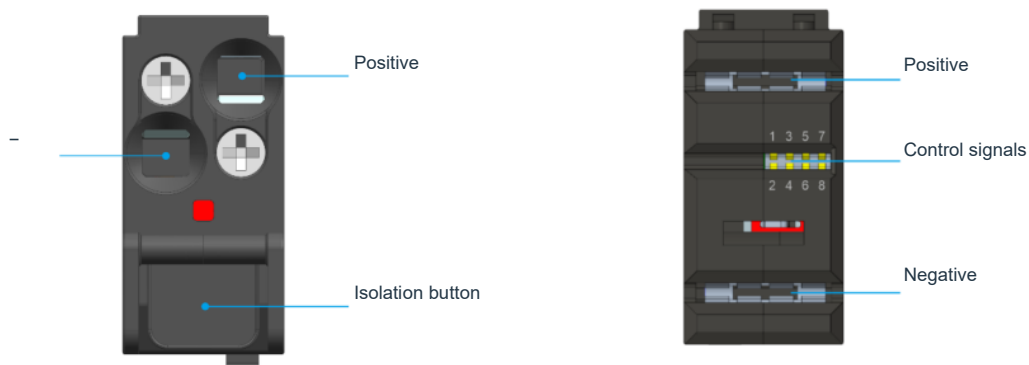
Parameter	Conditions	Min.	Typ.	Max.	Unit
Operating temperature	Altitude < 2000 m	-40		+75	°C
	See derating curve below				
Temperature derating curve					
Storage conditions	-40 to +85°C, 10–95% RH, non-condensing; up to 24 months from the date of manufacture				
Cooling method	Natural convection				
Altitude	Above 2000 m, derate current by 1% for each additional 100 m			3000	m
Humidity		5		95	%
Salt spray	Neutral salt spray; no red rust or visible corrosion deposits	48			h
Conductor size	Screw terminals	0.75		16	mm ²
Insertion / extraction force	Complete unit insertion	35		85	N
	Complete unit extraction	20		60	
Mating cycles	Normal operation within the specified number of mating cycles	200			
Pollution degree	3				
Installation	Keep the button free of obstruction and external force. Horizontal installation in a distribution enclosure is recommended.				

Insulation Specifications

Control signals to switching circuit (mechanical contacts closed)	500 Vac for 1 min, <2 mA; no breakdown or flashover
Input to output (mechanical contacts open)	4000 Vdc for 1 min, <2 mA; no breakdown or flashover
Control signals to input/output (mechanical contacts open)	500 Vac for 1 min, <2 mA; no breakdown or flashover

5. Interfaces and Dimensions

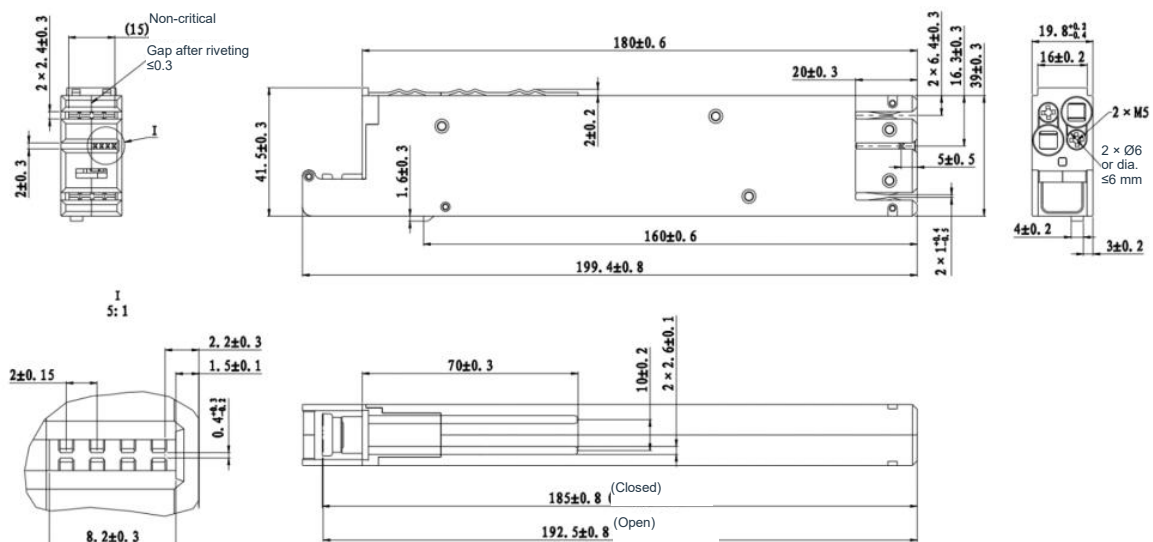
Product Interfaces



Control Signals

Pin	1	2	3	4	5	6	7	8
Function	Power + External power +	Power - External power -	Vx X address	Vy Y address	PRS+ Presence signal +	PRS- Presence signal -	RS485 A Digital comm. +	RS485 B Digital comm. -

Dimensions (mm)



6. Signals and Communication

The product uses an RS485 interface and supports the Modbus RTU protocol. Default settings: 9600 bit/s, 8 data bits, no parity and 1 stop bit (8N1).

Under default settings, communication response time is less than 30 ms, measured from the last byte of the host request to the first valid byte of the device response. The breaker opening/closing operating time is less than 20 ms.

Messages use binary encoding and are shown in hexadecimal in the documentation. Each byte is represented by two hexadecimal characters (0–9, A–F). For function codes, register definitions and message formats, refer to the MS1UE MODBUS Communication Protocol.

LED Indicators

Operating Mode

LED	①	②	③	④	⑤
	Steady red	Steady green	Steady yellow	Slow flashing (1 flash/s)	Fast flashing (3 flashes/s)
Device state	Fully closed	Fully open or standby	Fully open or standby	State indicated by colors ①–③	State indicated by colors ①–③
Operating status	Normal operation	Breaker open	Not authorized	Alarm or protection activated	Device locating

Device locating: When a breaker is selected on the monitoring interface, its LED flashes continuously to help on-site personnel identify the corresponding device.

Boot Mode

LED	⑥	⑦
	Slow flashing yellow (2 flashes/s)	Fast flashing yellow (4 flashes/s)
Device state	Unrestricted	Unrestricted
Operating status	Boot mode entered at power-up or for other reasons	Firmware update in progress

7. Standards and Certification

Standards and certification	Reference standards	Requirements of GB14048.2 and IEC60947-2.
	Certification	CCC, CE
Lightning surge	Impulse current	With system-level DC surge protection, withstands a 15 kA (8/20 μs) impulse current, 5 impulses of each polarity.