Safety Warning

To ensure proper use of the products listed in this catalog, please be sure to read the instruction manual prior to use.

Mitsubishi Electric Corporation Nagoya Works is a factory certified for ISO14001 (standards for environmental management systems) and ISO9001(standards for quality assurance management systems)









Eco Changes is the Mitsubishi Electric Group's environmental statement, and expresses the Group's stance on contribute to the realization of a

MITSUBISHI ELECTRIC CORPORATION

HEAD OFFICE: TOKYO BLDG., 2-7-3, MARUNOUCHI, CHIYODA-KU, TOKYO 100-8310, JAPAN www.MitsubishiFlectric.co.ip/melfansweb





Motor circuit breakers

Motor circuit breakers

Debut!





Bring a breath of fresh air into a Motor Control Circuit!

With Mitsubishi Electric's range of smart Motor circuit breakers!





Motor circuit breakers

MMP-T series

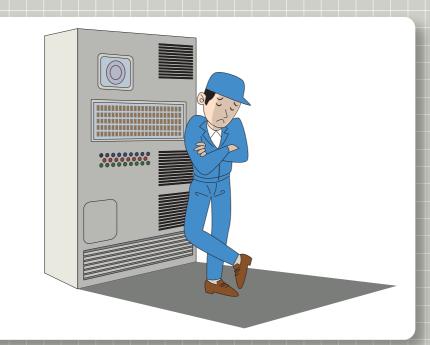
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Customers' Needs	4
Outline of Motor circuit breakers	6
What is a Motor circuit breaker?	6
What is the role of a Motor circuit breaker?	7
Why is a Motor circuit breaker required at this time?	8
Advantages of Adopting Motor circuit breakers	9

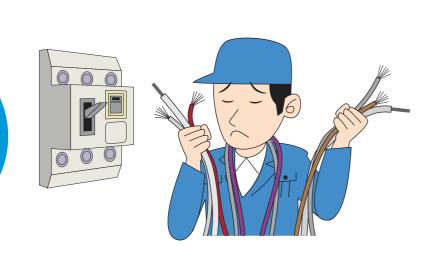
Specifications

Optional Unit	15
Outline Drawing	16
UL Standard and SCCR	22
About Warranty	24
Information of Our FA-related Products	25

Desire to down-size the machine control panels



Desire to increase wiring efficiency



Desire to meet global demands



Do these requirements sound familiar?

The new MMP-T Series can help you solve these issues.

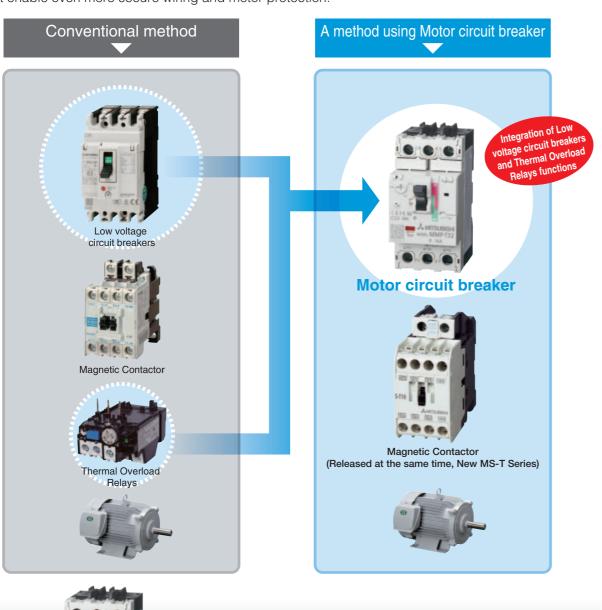


Outline

What is a Motor circuit breaker?

A Motor circuit breaker is a device integrating Low voltage circuit breakers and Thermal Overload Relays functions.

This device is capable of protecting the motor branch circuits from overload, phase-loss, and short-circuit alone. It enable even more secure wiring and motor protection.

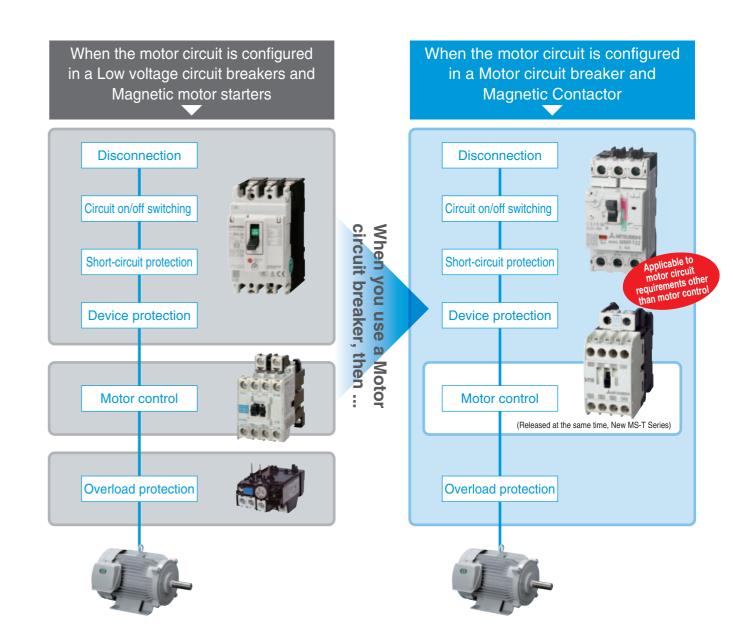




Basic type	MMP-T32			
Rated current (A)	Rated current (A)			
Rated short-circuit breaking capacity	240V	100		
(kA)	415V	50		
Outside dimension (mm) W ×	45 × 96 × 76			

What is the role of a Motor circuit breaker in a motor circuit?

The motor circuit requires various roles, including disconnection, circuit on/off switching, short-circuit protection, device protection, motor control, and overload protection. A motor circuit consisting of a Low voltage circuit breakers, Magnetic Contactor, and Thermal Overload Relays is typically adopted and each of the devices has its own independent role. On the other hand, in a motor circuit consisting of a Motor circuit breaker and an Magnetic Contactor, only motor control is provided by the Magnetic Contactor and other functions are provided by the Motor circuit breaker.



Outline

Advantages of Adopting This Device

Why is a Motor circuit breaker required at this time?

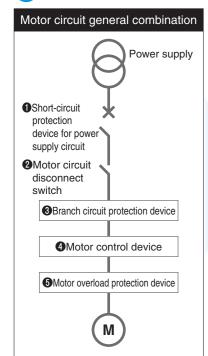
When exporting products to foreign countries including the U.S.A. and European countries, not only the device component but also the motor circuit are required to comply with the standards of the respective countries including UL and EN standards.

The electric wires and devices that make up the motor control circuit (Low Voltage Circuit Breakers, Fuse, Magnetic Contactor, Thermal Overload Relays) must be protected under a short-circuit condition. In addition, we need to select each device considering their functions and characteristics. Thus, we have encountered difficulties in realizing the reliable circuit protection at times.

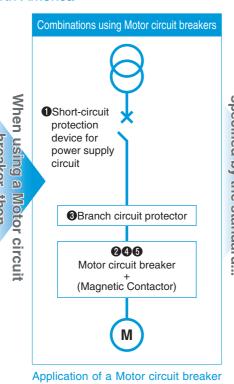
The device to reduce such burden is our "Motor circuit breaker". Undertaking multiple protection roles stated above, the Motor circuit breaker can not only protect electric wires and load devices from short-circuit accident but also simplify motor circuit combination. In addition, in North America, a control panel shall be marked with SCCR (short-circuit current rating), but even high SCCR that cannot be covered by the combination of Low voltage circuit breakers and Magnetic motor starters can be covered by the use of a Motor circuit breaker.

Having these advantages tends to increase demand for "Motor circuit breakers".

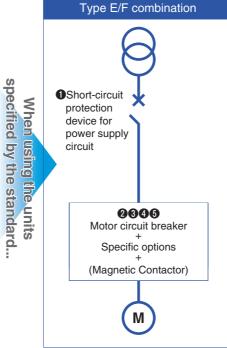
In case of application in North America



General motor circuits have many devices to be combined and are complicated.



Application of a Motor circuit breaker can integrate the role of 2path disconnection, 4motor control and 6motor overload protection, to make the circuit simple.



In addition, using the line side terminal adapter kit and short-circuit indicator unit enables the Type E/F circuit combination and also enables **3** branch circuit protection in addition to the protection functions of **2**, **4**, and **5**.

In order to connect motor circuit breaker and magnetic contactor, please use the connection conductor unit

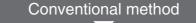
Wiring reduction & Space saving

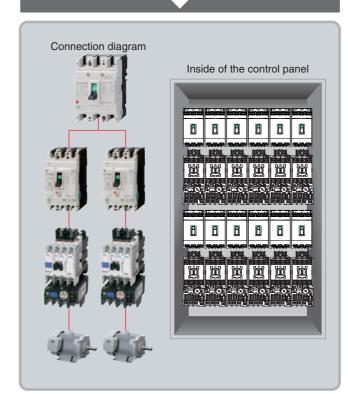
Combination of Motor circuit breaker and option enables wiring reduction and space saving. This allows us to respond to the needs of down-sizing the control panel, which increases the demand for Motor circuit breakers. (For details about wiring reduction & space saving, please refer to the next section.)

S Down-sizing mall

Space-saving design has realized down-sizing of the control panel.

Space saving-applied example





A method in which a Motor circuit breaker is used



Advantages of Adopting This Device



Wiring streamlining terminal

MMP-T seri

Using a wiring streamlining terminal facilitates the wiring!







① Screw holder lifts up the screw

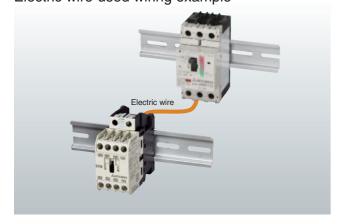
② Insert a round solderless terminal

③ Tighten the screw

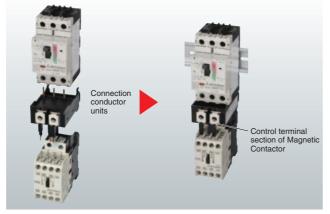
Wiring reduction-applied example

MMP-T seri

Electric wire-used wiring example



Conductor-joint-unit-used wiring example

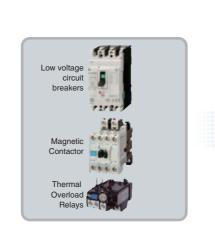


Both common electric wire-used wiring and unit-used wiring are available! Using the unit facilitates combination with respective devices. In addition, the terminal connected to control terminal of magnetic contactor arranged at the front also facilitates the wiring, thus contributing to improvement of production.



Safe and reliable MMP-T32

● As with the combination of Low voltage circuit breakers, Magnetic Contactor, and Thermal Overload Relays, the combination of Motor circuit breaker and Magnetic Contactor can prevent secondary disasters.







Acquisition of main international standards can support customers' overseas business.

Certification to various major international standards

Not only major international standards such as IEC, JIS, UL, CE, and CCC but also other national standards are certified. This will help our customers expand their business in foreign countries. This will help our customers expand their business in foreign countries.

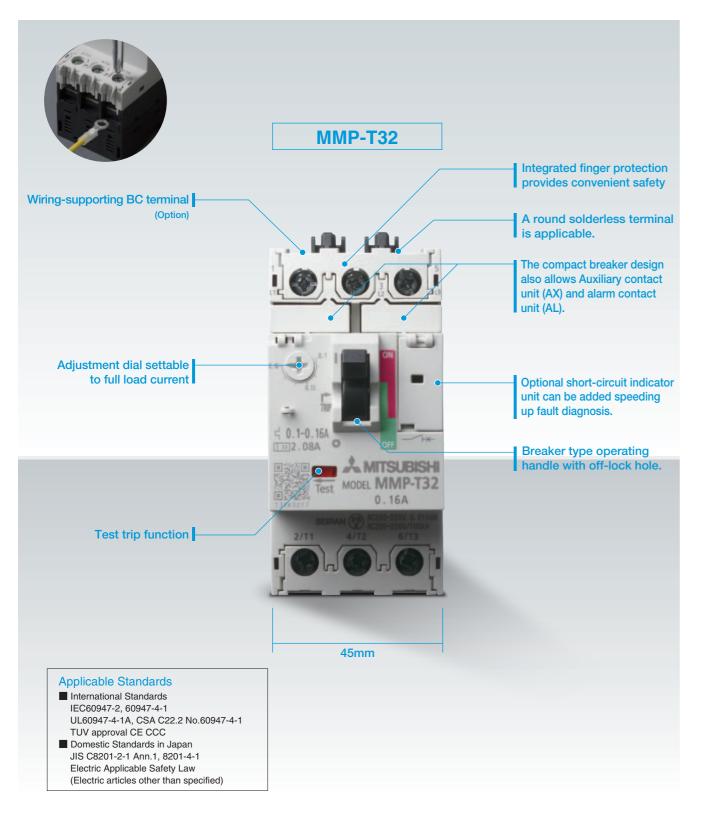
		Safety certification standard				
	International	Japan	European	countries	China	U.S. & Canada
			EN	Certification body	GB	
Standards			EC directive	Certification body	GB	
	IEC	JIS	CE	TÜV Rheinland	((((°)	c UL) us

●UL60947-4-1A Type E/F is also covered.

Compliance of the device to UL's Type E/F combination can surely respond to export to the U.S.A. For details, please read refer to Page 22.

Specifications

Key points



Specification List

Frame A		32										
Type name			MMP-T32BC"									
Standard			JIS C8201-2-1 Ann.1, JIS 8201-4-1, EN60947-2, EN60947-4-1, IEC60947-2, IEC60947-4-1, GB14048.2									
Number of pole	es						3	3				
Handle shape							Tumble	handle				
Rated current I	ln [A]						0.1 t	o 32				
Rated operatio	nal voltage	e Ue [V.]					200 t	690				
Rated frequence	cy [Hz]							60				
Rated insulation	n voltage l	Ji [V]					69	90				
Rated impulse w	ithstand vol	tage Uimp [kV]					6	3				
Rated short-circuit	Rated curi	rent le [A] ²	200/2	40V	400/4	15V	440/	160V	50)0V	600/	690V
breaking capacity		Current setting	lcu	Ics	lcu	Ics	lcu	Ics	lcu	Ics	lcu	Ics
	0.16	0.1 - 0.16	10	0	10	0	10	00	1	00	1(00
JIS C8201-2-1	0.25	0.16 — 0.25	10	0	10	0	10	00	1	00	1(00
Ann.1	0.4	0.25 - 0.4	10	0	10	0	10	00	1	00	1(00
IEC60947-2	0.63	0.4 - 0.63	10	0	10	0	10	00	1	00	1(00
	1	0.63 - 1	10	100		0	10	00	1	00	1(00
	1.6	1 — 1.6	100		10	0	10		1	00	100	
	2.5	1.6 — 2.5	100		100		100		100		8	6
	4	2.5 — 4	10	0	100		100		100		8	6
	6.3	4 - 6.3	10	0	10	0	10	00	1	00	6	5
	8	5.5 — 8	10	0	10	0	50	38	42	32	6	5
	10	7 — 10	10	0	10	0	50	38	42	32	6	5
	13	9 — 13	10	0	10	0	50	38	42	32	6	5
	18	12 — 18	10	0	50	38	35	27	10	8	4	3
	25	18 — 25	10	0	50	38	35	27	10	8	4	3
	32	24 — 32	10	0	50	38	35	27	10	8	4	3
Selectivity category	JIS C8201 IEC60947-	-2-1 Ann.1 -2		Cat.A								
Utilization category	JIS C8201 IEC60947		AC-3									
Trip class (JIS	C8201-4-1,	IEC60947-4-1)	10									
Instantaneous	release cu	rrent					13 × Max	rimum le				
Duna hilitur	Mechanica	al [times]					100	000				
Durability Electrical [times]			100,000									
Phase loss sensitive			Yes									
Trip display							Ye	es				
Test trip function	on						Ye	es				
Auxiliary conta	ct unit		UT-MAX (1a or 1b) AC-12: 125V/5A, 250V/3A									
Alarm contact	unit				UT-	MAL (1a c	r 1b) DC-1	2: 125V/0.4	A, 250V/0.	2A		
Short-circuit in	dicator unit						UT-	TU				
Weight [g]							33	lΩ.				

^{*1:} MMP-T32BC type is based on the specification of wiring streamlining terminal.

How to Order

At time of your order, please specify your desired products as shown below.

(A space should be inserted in the
—marked position.)

Model Heater nominal

MMP-T32

MMP-T32BC

How to Order the Options

	Type name		Contact arrangement
Auxiliary contact unit	UT-MAX		1a
	UT-MAX		1b
Alarm contact unit	UT-MAL		1a
	UT-MAL	•	1b
Short-circuit indicator unit	UT-TU		

^{*2:} UL-compliant rated working current is described on a different page.

Specifications

Optional Unit

Usage Environment

(1) Ambient temperature : -10°C to 40°C

(Applied to the outside of

the control panel) Average daily atmospheric temperature: 35°C (Max.), Average yearly atmospheric temperature: 25°C (Max.)

(2) Maximum temperature of the

inside of the control panel : 55°C (Yearly average temperature of the inside of the control panel should be 40°C or less.)

Please note that the operating characteristic may vary with the ambient temperature.

(3) Ambient temperature : 45% to 85%RH However, dew condensation and freezing should be avoided.

(4) Height above sea level: 2000m or less

(5) Vibration : 10 to 55Hz, 19.6m/s² or less

(6) Impact : 49m/s² or less

(7) Atmosphere : Inclusion of dust, smoke, corrosive gas, moisture, salt content and the like in the atmosphere should be

avoided as much as possible.

Please note that continuing to use the device in a closed condition for a long period may cause contact failure.

Never use the device under an atmosphere that contains flammable gas.

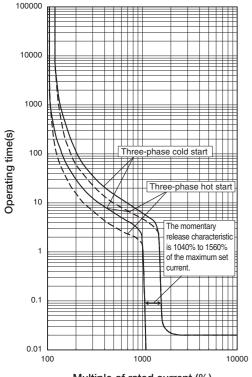
(8) Storage temperature/

Relative humidity : -30°C to 65°C 45% to 85%RH However, dew condensation and freezing should be avoided.

The storage temperature is ambient temperature during transportation or storage and should be within the

usage temperature when starting to use the device.

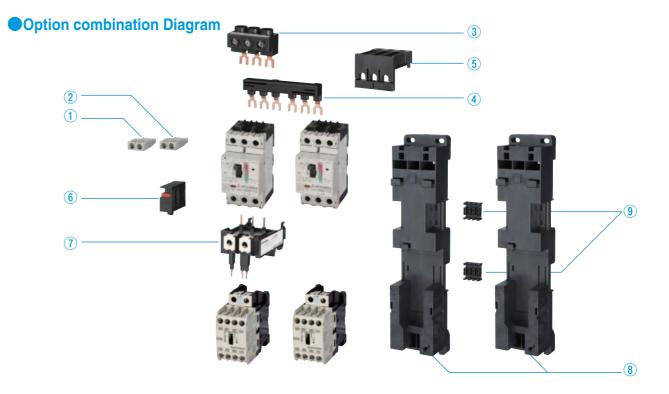
Operating Characteristic Curve



Multiple of rated current (%)

List of Options

Number	Product name	Model	Specification	Description	Applied model
1	Auxiliary contact unit (to be internally installed)	UT-MAX UT-MAXLL (for subtle load)	1a 1b 1a 1b	Contact of the unit operates in conjunction with ON/OFF operation of MMP-T32.	
2	Alarm contact unit (to be internally installed)	UT-MALL UT-MALLL (for subtle load)	1a 1b 1a 1b	Contact of the unit operates in conjunction with the trip operation of MMP-T32.	
3	3 phase feed-in terminal	UT-EP3		A unit to connect the large size electric wire to MMP-T32.	
		UT-2B4	45mm Twin type 45mm		
4	Bus bar	UT-3B4	Triple type 57mm	A unit to supply power to two or three MMP-T32.	MMP-T32
		UT-2B5	Twin type		
		UT-3B5	57mm Triple type		
(5)	Line side terminal adapter kit	UT-CV3		Power supply-side terminal cover to respond to UL60947-4-1A, Type E/F This kit consists of terminal adapter, terminal cover and 3 screws.	
6	Short-circuit indicator unit	UT-TU		This unit has a feature that the red indication is lit only when the device is tripped due to short-circuit. This unit is required for application to UL60947-4-1A, Type E/F.	
(7)	Connection conductor unit	UT-MT20		A unit to connect and link the MMP-T32 and Magnetic Contactor	
	Connection conductor unit	UT-MT32		electrically and mechanically.	
(8)	Mounting base unit	UT-BT20		A plate to install the combination starter with MMP-T32 and Magnetic	
	Mounting base unit	UT-BT32		Contactor combined. Rail mounting and screw mounting are available.	
		UT-RT10			
9	Jointing block unit UT-RT20	UT-RT20		A set of the blocks for mechanically connecting two mounting base units.	
		UT-RT32			

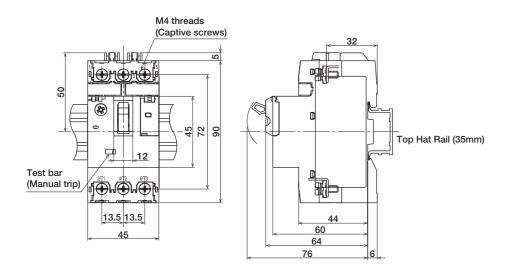


^{*} As for handling, temperature adjustment, and closely-attached installation, please read the Instruction Manual.

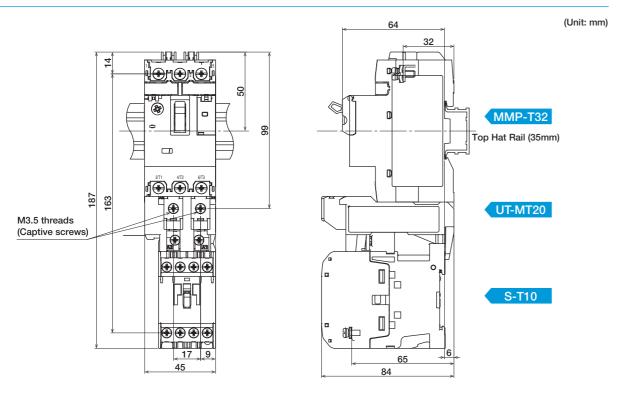
Outline Drawing

MMP-T32

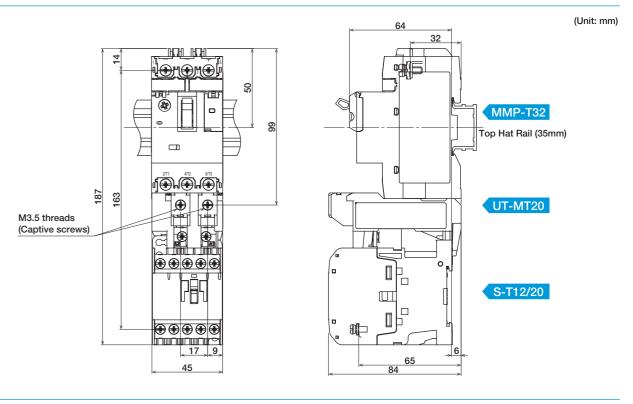
(Unit: mm)



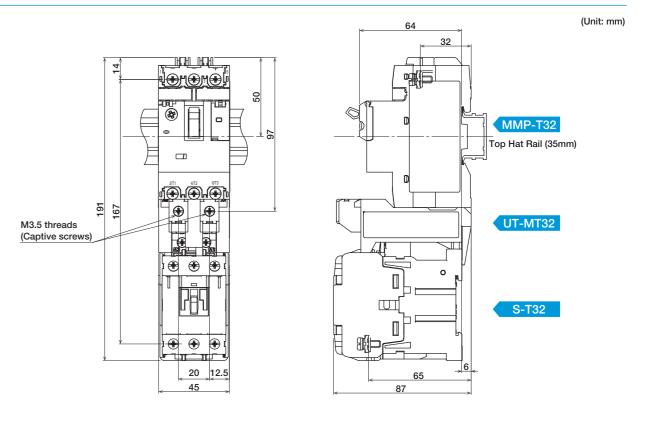
MMP-T32 + UT-MT20 + S-T10



MMP-T32 + UT-MT20 + S-T12/20



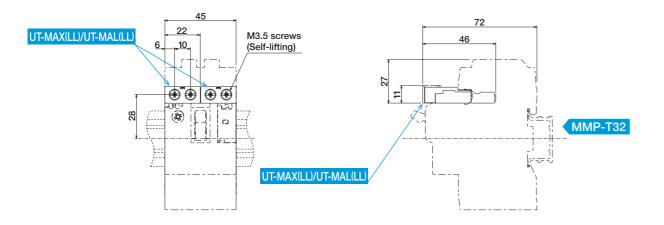
MMP-T32 + UT-MT32 + S-T32



Outline Drawing

MMP-T32 + UT-MAX(LL)/UT-MAL(LL)

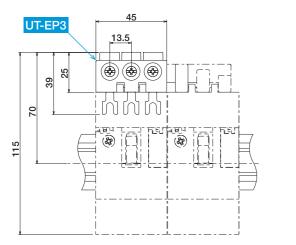
(Unit: mm)

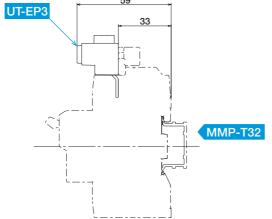


* The diagram above shows two UT-MAX(LL) and/or UT-MAL(LL) in mounted condition. The outline dimensions of UT-MAX(LL) and UT-MAL(LL) are the same.

MMP-T32×2 + UT-EP3 + UT-□B□

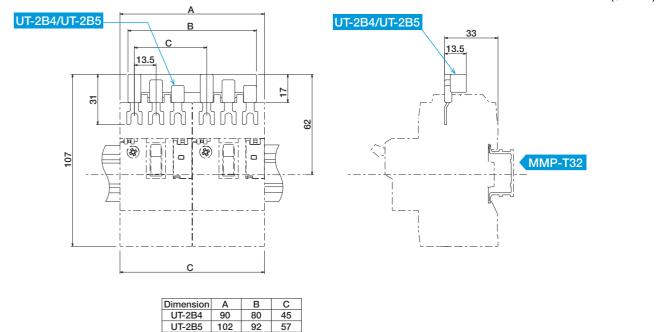
(Unit: mm)





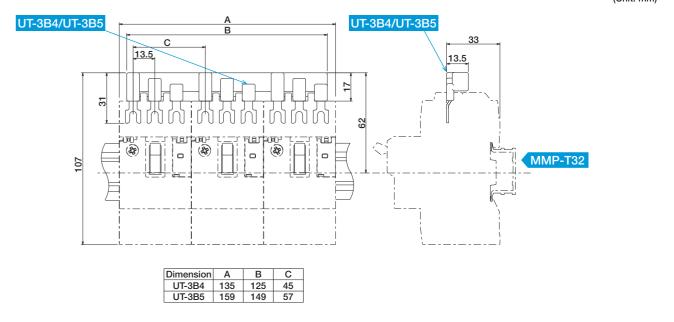
MMP-T32×2 + UT-2B4/UT-2B5

(Unit: mm)



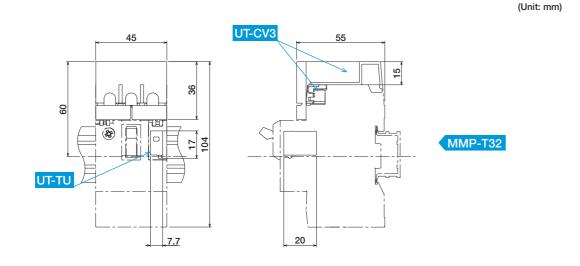
MMP-T32×3 + UT-3B4/UT-3B5

(Unit: mm)

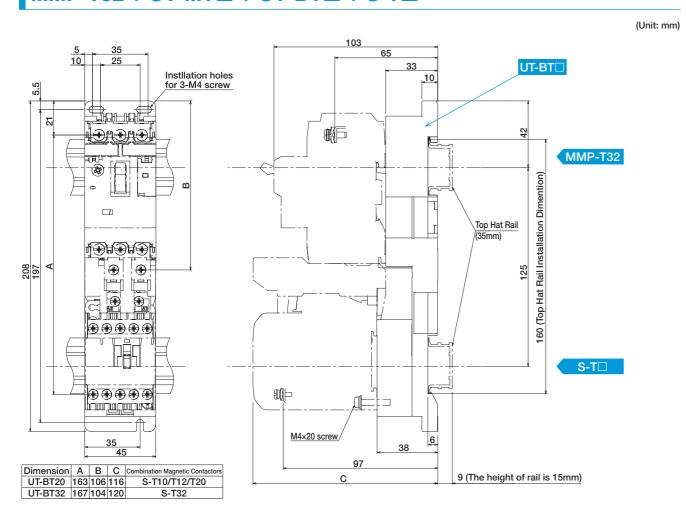


Outline Drawing

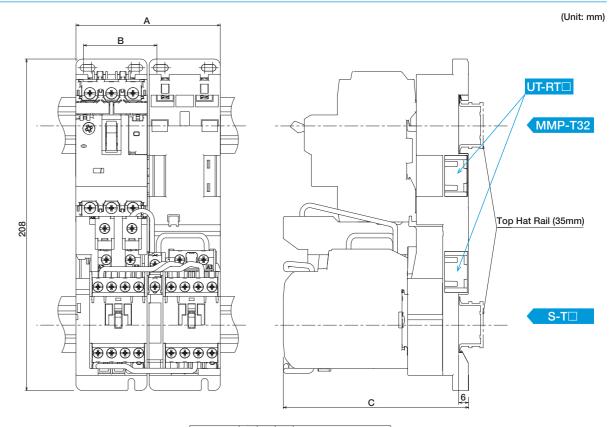
MMP-T32 + UT-CV3 + UT-TU



MMP-T32 + UT-MT□ + UT-BT□ + S-T□



$\mathsf{MMP} ext{-}\mathsf{T32} + \mathsf{UT} ext{-}\mathsf{MT} \square + \mathsf{UT} ext{-}\mathsf{BT} \square + \mathsf{S} ext{-}\mathsf{2} imes\mathsf{T} \square + \mathsf{UT} ext{-}\mathsf{RT} \square$

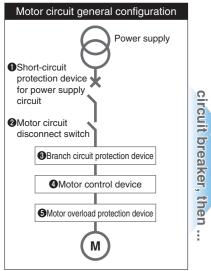


Dimension	Α	В	С	Combination Magnetic Contactors
UT-RT10	91	46	116	S-2×T10
UT-RT20	99	54	116	S-2×T12/T20
UT-RT32	98	53	120	S-2×T32

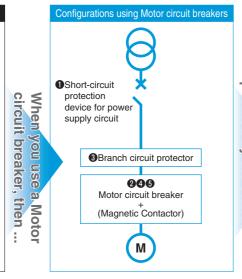
UL Standard and SCCR

On basic configuration circuit of NEC (National Electric Code) and application to Motor circuit breaker

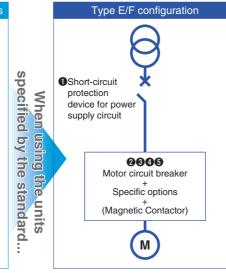
The Clause 430 of NEC (National Electric Code) regulates the basic configuration of an electric motor protection circuit to be as shown in the following figure. UL standards define several motor circuit configurations, and among them you find Type E and Type F using a Motor circuit breaker. A Mitsubishi Motor circuit breaker can be used for path disconnecting, motor control and protection from overload as a single unit, but can also be used as Type E in combination with specific options, and as Type F in combination with Magnetic Contactors. By using a Motor circuit breaker to conform to the motor circuit configuration defined by UL, you can reduce the number of applicable devices against NEC basic circuit configuration, and further enhance the value of SCCR.



General motor circuits have many devices to be combined and are complicated.



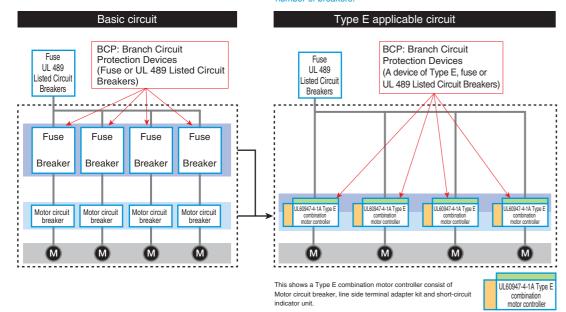
Application of a Motor circuit breaker can integrate the role of 2 path disconnection, 4 motor control and 5 motor overload protection, to make the circuit simple.



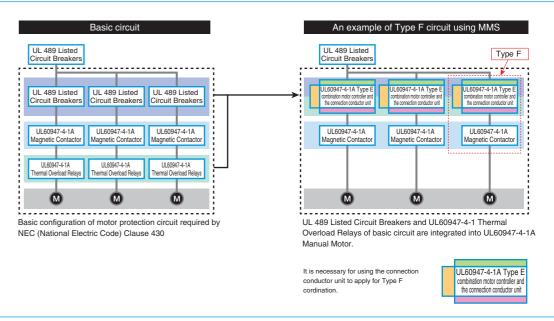
In addition, using the line side terminal adapter kit and short-circuit indicator unit enables the Type E/F circuit configuration and also enables ③branch circuit protection in addition to the protection functions of ②, ④, and ⑤.

UL60947-4-1A and Type E

Since Type E can be used as BCP, it can be used in place of upper class BCP. Therefore you will have a further merit of reducing the number of breakers



UL60497-4-1A and Type F



Type E/F Selection List

[UL60947-4-1A Type E Selection List]

Motor			PH 240V		PH 480V	Combina			
circuit breaker		Setting range		Maximum rated operational current (A)	Maximum rated capacity (HP)	Maximum rated operational current (A)	Line side terminal adapter kit	Short-circuit indicator unit	SCCR [kA]
	0.1 to 0.16		0.16		0.16				
	0.16 to 0.25		0.25	No horse	0.25				
	0.25 to 0.4	No horse	0.4	power settings	0.4				
	0.4 to 0.63	power settings	0.63		0.63				
	0.63 to 1		1	1/2	1				
	1 to 1.6		1.6	3/4	1.6				
	1.6 to 2.5	1/2	2.2	1	2.1			50	
MMP-T32	2.5 to 4	1	4	2	3.4	UT-CV3	UT-TU		
	4 to 6.3	1-1/2	6	3	4.8				
	5.5 to 8	2	6.8	5	7.6				
	7 to 10	3	9.6	5	7.6				
	9 to 13	3	9.6	7-1/2	11				
	12 to 18	5	15.2	10	14				
	18 to 25	7-1/2	22	15	21			25	
	24 to 32	10	28	20	27			25	

[UL60947-4-1A Type F Selection List]

Motor	Current		PH 240V	Combination	3PH 440-480V		Combination	Connection	
circuit breaker	setting range	Maximum rated capacity (HP)	Maximum rated operational current (A)	Magnetic Contactors	Maximum rated capacity (HP)	Maximum rated operational current (A)	Magnetic Contactors	conductor unit	SCCR [kA]
	0.1 to 0.16		0.16	S-T10/T12		0.16			
	0.16 to 0.25		0.25		No horse	0.25	S-T10/T12/		
	0.25 to 0.4	No horse	0.4	S-T10/T12/	power settings	0.4	T20	UT-MT20	
	0.4 to 0.63	power settings	0.63	T20		0.63	120	for	
	0.63 to 1		1		1/2	1		S-T10/T12/T20	
	1 to 1.6]	1.6		3/4	1.6			
	1.6 to 2.5	1/2	2.2		1	2.1			
MMP-T32	2.5 to 4	1	4	S-T10/T12/	2	3.4	S-T10/T12/	UT-MT32	50
	4 to 6.3	1-1/2	6		3	4.8	T20/T32	for	
	5.5 to 8	2	6.8	T20/T32	5	7.6		S-T32	
	7 to 10	3	9.6		5	7.6			
	9 to 13	3	9.6		7-1/2	11	S-T12/T20/T32		
	12 to 18	5	15.2	S-T20/T32	10	14			
	18 to 25	7-1/2	22	S-T32	15	21	S-T32	UT-MT32	
	24 to 32	10	28	3-132	20	27		U 1-IVI I 32	

About Warranty

[Notes for adopting the product]

Before purchasing and using our products, please confirm the following product warranty.

Period and scope of warranty

Warranty period

- (1) The warranty period for our products shall be one year after purchase or delivery to the designated location. However the maximum warranty period shall be 18 months after production, in consideration that the maximum length of distribution period is to be 6 months after shipping.
- (2) This warranty period may not apply in the case where the use environment or use conditions specifically impact the life of products.

Scope of warranty

- (1) When any failure occurs during the above warranty period which is clearly our responsibility, we will replace or repair the failed portion of the product free of charge at the location of purchase or delivery. Note that the "failure" mentioned here shall not include such items as scratches and discoloration which do not affect performance.
- (2) In the following cases, even during the warranty period, charged repair services shall be applied.
 - Failures caused by inappropriate conditions, environment, handling, and uses other than those specified in catalogs, instruction manuals or specifications.
 - 2 Failures caused by inappropriate installation.
 - 3 Failures caused by the design of customer's equipment or software.
 - ④ Failures caused by the customer tampering with our products such as reworks without our authorization.
 - $\ensuremath{\mathfrak{D}}$ Failures caused by uses of the product other than ordinarily intended.
 - ⑥ Failures caused by force majeure such as fire and abnormal voltage accidents, and natural disasters such as earthquake, wind and flood.
 - Tailures caused by reasons that were unforeseeable by the level of technology at the time of shipment.
- (3) The warranty that is mentioned here shall mean warranty of the unit of delivery, and any losses induced by the failures of delivered products shall be excluded from our warranty.

Failure diagnosis

In principle, primary failure diagnosis shall be conducted by the customer. However this job, if requested by the customer, can be performed by us or our service company with charge. In this case, a service fee shall be charged to the customer in accordance with our price list.

Recommendation for renewal due to life

Our Motor circuit breakers with contacts and mechanical parts have certain wear life in line with the number of open/close operations, while our mold components, coil wires, electronic parts and grease have aging degradation life influenced by the use environment and use conditions.

Regarding the use of our Motor circuit breakers, we recommend customers to renew the products every 15 years as a rule, provided that the products are used in line with the number of open/close operations specified by this catalog or the instruction manual or under the standard use conditions of Molded Case Circuit Breakers and Earth-Leakage Circuit Breakers as mentioned by "The Report on Recommended Renewal Timing for Low Voltage Devices" issued by Japan Electrical Manufacturers' Association (JEMA).

Exemption from warranty related to opportunity or secondary losses.

Regardless of in or out of warranty period, loss of opportunity and lost earnings at the customer side caused by the failures of our products, any damages caused by special situation regardless of our foreseeability, secondary losses, accident compensation, damages on anything other than our products, compensation to other jobs, and damages caused by any reasons for which we are not held responsible, shall be outside the scope of our compensation.

Applicable areas of our products

- (1) The contents of products shown in this catalog are for your selection of models. When you actually use the product, read the "Instruction Manual" carefully beforehand and use correctly. Please note that the external view or specifications that should not affect the model selection can change without preannouncement.
- (2) When using a product listed in this catalog, you are required to accept that your use should not lead to any serious accident if by any chance the product develops any failures or errors, and, in the event any failure or error occurs, backup or fail-safe functions are in place outside the device by the system.
- (3) The products described in this catalog are designed and manufactured as general products to be used for general industrial fields. For this reason, the products described in this catalog should not be used for the applications requiring special quality assurance systems, such as serious public uses as atomic power plants and other power plants owned by power companies, railway applications and government and public office applications.

Note, however, that the products shall be applicable to such uses if the use is limited and the customer agrees not to require specially high quality.

Furthermore, when the customer is investigating application for the uses where serious impact is foreseen to the human body and assets and therefore high reliability for security and control system is required, such as aviation, medical services, railways, combustion and fuel equipment, manned transportation equipment, entertainment facilities and security machines, please contact our representatives and discuss any necessary agreement or specifications.

Supply period of spare goods after production stop

- (1) For our Motor circuit breakers, no repairs or supply of spare parts are provided by us.
- (2) For the discontinuation of production, we will announce in such media as "Sales and Service" paper created by us.

Sequencer

MELSEC-Q Series Universal Model

High speed, large capacity data processing is now achieved to cope with increasingly complicated production/manufacturing facilities.

- ©High speed, high accuracy machine control is achieved by multi-CPU configuration using various controllers that support iQ Platform.
- ©The support for Ethernet with built-in CPU allows easy connection of a programming tool, GOT.
- ©Lineup of 20 models, ranging from small capacity of 10k steps to large capacity of 1000k steps
- OA rich network integrates various FA layers seamlessly.



Program capacity	10k steps - 1000k steps
Number of input/output points [X/Y] /	256 points - 4096 points/8192 points
number of input/output device points[X/Y]	
Basic instructions' processing speed (LD instruction)	120ns - 9.5ns
External connection interface	USB (supported by all models), Ethernet, RS-232, memory card
Function unit	I/O, analogue, high-speed counter, positioning, temperature input, temperature adjustment, network un
Unit expansion mode	Building block type
Network	Ethernet, CC-Link IE controller, CC-Link IE field, CC-Link, CC-Link/LT, MELSECNET/H,
	SSCNET AnyWire BS-232 BS-422

HM



To the top of HMIs with further user-friendly, satisfactory standard features.

- ©Comfortable screen operation even if high-load processing (e.g. logging, device data transfer) is running. (Monitoring performance is twice faster than GT16)
- OActual usable space without using an SD card is expanded to 128MB for more flexible screen design.
- OMulti-touch features, two-point press, and scroll operations for more user-friendliness.
- Outline font and PNG images for clear, beautiful screen display.

Graphic Operation Terminal GOT2000 Series GT27 Model

Product Specifications

Screen size	12.1", 10.4", 8.4" (15" coming soon)
Resolution	SVGA, VGA (XGA coming soon)
Intensity adjustment	32-step adjustment
Touch panel type	Analog resistive film
Built-in interface	RS-232, RS-422/485, Ethernet, USB, SD card
Applicable software	GT Works3
Input power supply voltage	100 to 240VAC (+10%, -15%), 24VDC (+25%, -20%)

Inverter

FR-A800 Series

High-functionality, high-performance inverter

- ©Realize even higher responsiveness during real sensor-less vector control or vector control, and achieve faster operating frequencies.
- The latest automatic tuning function supports various induction motors and also sensor-less PM motors.
- The standard model is compatible with EU Safety Standards STO (PLd, SIL2). Add options to support higher level safety standards.
- \bigcirc A variety of useful functions provide USB memory support and customization with a PLC function.

Product Specification

Product Specifications	
Inverter capacity	200V class: 0.4kW to 90kW, 400V class: 0.4kW to 500kW
Control method	High-carrier frequency PWM control (Select from V/F, advanced flux vector,
	real sensor-less vector or PM sensor-less vector control), vector control (when using options)
Output frequency range	0.2 to 590Hz (when using V/F control or advanced flux vector control)
Regenerative braking torque	200V class: 0.4K to 1.5K (150% at 3%ED) 2.2K/3.7K (100% at 3%ED) 5.5K/7.5K (100% at 2%ED)
(Maximum tolerable usage rate)	11K to 55K (20% continuous) 75K or more (10% continuous), 400V class: 0.4K to 7.5K (100% at 2%ED)
	11K to 55K (20% continuous) 75K or more (10% continuous)
Starting torque	200% 0.3Hz (3.7K or less), 150% 0.3Hz (5.5K or more) (when using real sensor-less vector, vector control)



Information of Our FA-related Products

[Related Products]

AC Servomotor Mitsubishi General Purpose AC Servomotor MELSERVO J4 Series



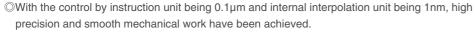
High-performance servomotor of industry-leading level

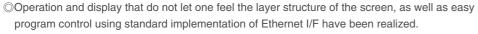
- Olndustry-leading level of basic performance: Speed frequency response (2.5kHz), 4M pulse (4,194,304p/rev) encoder
- @Advanced one-touch tuning function allows one-touch adjustment of advanced vibration suppression control II.
- ©Large capacity drive recorder and machine diagnosis function are implemented. It has achieved reduction of maintenance load.
- ©The lineup of servo-amplifiers with two-axis/three-axis in a body. This has achieved energy saving, space saving, wiring reduction and cost saving.

Production Specifications Power unit specifications Instruction interface Control mode Single phase/3-phase AC200V SSCNETIII/H, pulse train, analogue Control mode Position control, speed control, torque control	
Instruction interface SSCNETIII/H, pulse train, analogue	
Control mode Position control speed control torque control	
Speed frequency response 2.5kHz	
Tuning functions Advanced one-touch tuning, advanced vibration suppression con	ntrol II, robust filter, etc.
Safety functions STO, SS1, SS2, SOS, SLS, SBC, SSM (to be supported by the combin	nation with a motion controller)
Supported servomotors Revolving servomotor, linear servomotor, direct drive motor	
Revolving servomotor capacity range 0.05 - 7kW	

Mitsubishi Numeric Controller M70V Series







- OA compact unit integrating a display and controller being integrated has contributed to miniaturization of the control panel.
- The lineup of Type A suited for combined lathe and Type B suited for tapping center

Production Specifications

1 Toddottori oposiiioditorio	
Maximum number of control axes (NC axis + main axis + PLC axis)	Type A: 11 axes Type B: 9 axes
Maximum number of paths	Type A: 2 paths Type B: 1 path
Minimum instruction unit	0.1µm
Minimum control unit	1nm
Maximum program memory capacity	Type A: Max.2,000KB (5,120m) Type B: 500KB (1,280m)
Maximum PLC program memory capacity	Type A: 32,000 steps Type B: 20,000 steps
Main functions (for machining center)	OMR-DD control (high-speed synchronous tapping function), high-speed high precision control, tool tip control, tilted surface work, etc.
Main functions (for lathe)	Milling interpolation, 2-path simultaneous thread cutting, inter-path control axis synchronization, control axis superposition, mixed control, etc.

Industrial Robot MELFA F Series RV-4F



High-speed, high-precision, high-function 4kg transportable vertical-multijoint robot

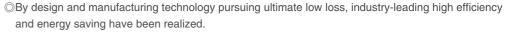
- OUsing the unique driving technology, higher-speed motion has been realized.
- ©Hand wiring and internal piping have contributed to enhanced tooling performance.
- ©Expansion of the rotational axis motion range has enabled full utilization of the installation space.
- OAdoption of flap-shape arm has realized an operational area suited to a compact area.

Production Specifications

Degree of freedom of motion	6
Structure	Vertical multijoint type
Installation posture	Floor standing, hanging from the ceiling, hanging on the wall (with some restrictions on the motion range at J1)
Weight capacity	4kg
Maximum reach diameter	515mm
Cycle time (load weight)	0.36 sec. (1kg)
Position repetition accuracy	±0.020mm
Protection specifications	IP40 (Clean specification: ISO class 3, oil mist specification: IP67)

High Performance Energy Saving Motor, Super Line Eco Series SF-HR

High grade model, pursuing energy saving



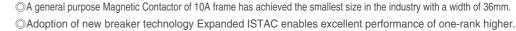


- ©The bearing grease life has been prolonged (by a factor of 2.5 compared to our conventional products). Allowing maintenance-free operation for a long time.
- OAchieved low-noise operation (5 to 6dB reduction compared to our conventional products). The use of identical dimensions by the standard motor (with some exceptions) allows easy switching.

Number of poles	Two-poles, four-poles, six-poles
Voltage, frequency	200/200/220V 50/60/60Hz EPAct 230V 60Hz
	or 400/400/440V 50/60/60Hz EPAct 230V 60Hz
Outer cover structure	Totally-enclosed fan-cooled type (indoor type, outdoor type)
Protection mechanism	IP44
Motive energy transmission method	The two-pole motors of 11kW or higher are only for direct driving, while four poles or higher are used for both direct driving and belt driving.
Rotation direction	Counterclockwise direction as viewed from the axial end (CCW).
Efficiency value	Domestic 3 ratings: JIS C 4212 efficiency standard value or higher, 230 (460) V 60Hz:EPAct standard value or higher

Mitsubishi No-fuse Breaker, Earth Leakage Breaker WS-V Seri

The optimum breaker proposal by double specifications, for mechanical equipment uses and for receiving/distributing equipment uses



- @With conformance to various overseas standards, the product supports the global export of power boards and machines.
- OBy realizing the common use of internal accessory devices, it contributes to shorter delivery time and reduction in number of inventory items.

Production Specifications

i readener opeemeanerie	
Frame	32A - 250A frame
Supported (conforming) standards	Support for (conformance to) various standards such as JIS, IEC, GB, UL and /CSA.
Expand the items of UL registration	Support for SCCR requirements by expansion of AC480V and high breaker capacity products.
Common use of internal accessory devices	The conventional three types of internal accessory devices for each A frame have now been unified to one common type.
Common voltage of AC/DC	The AC/DC for no-fuse breaker 32A/63A frame have been unified (except for NF63-CVF).
Mounting to DIN rail	Supported as standard by all models of small size F Style types 32A - 125A frame.
Support for finger protection	Supports IP20 from the direction of the terminal part front side as standard for all models of
	small size F Style types 32A /63A frame.

Magnetic Starter

MS-T Series



Exceed your expectations.

- ○10A frame model is over 16% smaller with a width of just 36mm!!
- New integrated terminal covers.
- ©Reduce your coil inventory by up to 50%.
- ©Be certified to the highest international levels while work is ongoing to gain other country.

i roduct specifications	
Frame	10 A to 32 A
Applicable standards	Certification to various standards including IEC, JIS, CE, UL, TÜV, CCC.
Terminal cover	Standard terminal cover improves safety, simplifies ordering, and reduces inventory, etc.
Improved wiring	Wiring and operability are improved with streamlining wiring terminal BC specifications.
Operation coil rating	Wide range of operation coil ratings reduces number of coil types from 14 (N Series) to 7 types and simplifies selection.
Option units	Diverse lineup includes Auxiliary Contact Unit, Operation Coil Surge Absorber Unit, Mechanical Interlock Unit.