



Moulded Case Circuit Breakers (GM2-100)

Introduction

Compact circuit breakers			GM2-100	
Number of poles			3	4
Control	Manual	Toggle	■	
		Direct or extended rotary handle	■	
	Electric		■	
Connections	Fixed	Front connection	■	
		Rear connection	■	
	Withdrawable (on chassis)	Front connection	■	
		Rear connection	■	

Electrical characteristics as per IEC60947-2 and GB14048.2

Rated current(A)	In	40℃	100		
Rated insulation voltage(V)	Ui	750			
Rated impulse withstand voltage(KV)	Uimp	8			
Rated operational voltage(V)	Ue	AC 50/60Hz	400		
Type of circuit breaker				N	H
Ultimate breaking capacity (KA rms)	Icu	AC 50/60Hz	400V	35	80
Service breaking capacity	Ics	%Icu	100%		
Suitability for isolation	■				
Utilization category	A				
Max. demand current (C-O cycles)	Mechanical	50000			
	Electrical	440V	In/2	50000	
			In	30000	
Trial longevity	Overload/no overload/total sum			1000/8500/9500	

Protection

Trip units			Thermal magnetic type	
			Electronic type (STK22SE)	
Overload protection	Long time	$I_r(I_n \times \dots)$	■	
Short-circuit protection	Short time	$I_{sd}(I_r \times \dots)$	-	
	Instantaneous	$I_i(I_n \times \dots)$	■	
Residual earth leakage protection	Vigi module		■	

Indication and control auxiliaries

Auxiliary switch	■			
MX shunt and MN undervoltage winding	■			

Installation

Accessories	Terminal extension and spreaders	■		
	Terminal shields and interphase barriers	■		



Moulded Case Circuit Breakers (GM2-160)

Introduction

Compact circuit breakers			GM2-160	
Number of poles			3	4
Control	Manual	Toggle	■	
		Direct or extended rotary handle	■	
Connections	Electric		■	
			■	
	Fixed	Front connection	■	
		Rear connection	■	
	Withdrawable (on chassis)	Front connection	■	
		Rear connection	■	

Electrical characteristics as per IEC60947-2 and GB14048.2

Rated current(A)	In	40℃			160	
Rated insulation voltage(V)	Ui				750	
Rated impulse withstand voltage(KV)	Uimp				8	
Rated operational voltage(V)	Ue	AC 50/60Hz			400	
Type of circuit breaker					N	H
Ultimate breaking capacity (KA rms)	Icu	AC 50/60Hz	400V	35	80	
Service breaking capacity	Ics	%Icu			100%	
Suitability for isolation					■	
Utilization category					A	
Max. demand current (C-O cycles)	Mechanical				40000	
	Electrical	440V	In/2	40000		
			In	20000		
Trial longevity	Overload/no overload/total sum				850/7000/7850	

Protection

			Thermal magnetic type	
Trip units			Electronic type (STK22SE)	
Overload protection	Long time	Ir(In × ...)	■	
Short-circuit protection	Short time	I _{sd} (Ir × ...)	■	
	Instantaneous	Ii(In × ...)	■	
Residual earth leakage protection	Vigi module		■	

Indication and control auxiliaries

Auxiliary switch	■			
MX shunt and MN undervoltage winding	■			

Installation

Accessories	Terminal extension and spreaders			■	
	Terminal shields and interphase barriers			■	



Moulded Case Circuit Breakers (GM2-250)

Introduction

Compact circuit breakers			GM2-250	
Number of poles			3	4
Control	Manual	Toggle	■	
		Direct or extended rotary handle	■	
	Electric		■	
Connections	Fixed	Front connection	■	
		Rear connection	■	
	Withdrawable (on chassis)	Front connection	■	
		Rear connection	■	

Electrical characteristics as per IEC60947-2 and GB14048.2

Rated current(A)	In	40℃		250	
Rated insulation voltage(V)	Ui			750	
Rated impulse withstand voltage(KV)	Uimp			8	
Rated operational voltage(V)	Ue	AC 50/60Hz		400	
Type of circuit breaker				N	H
Ultimate breaking capacity (KA rms)	Icu	AC 50/60Hz	400V	35	80
Service breaking capacity	Ics	%Icu		100%	
Suitability for isolation				■	
Utilization category				A	
Max. demand current (C-O cycles)	Mechanical			20000	
	Electrical	440V	In/2	20000	
			In	10000	
Trial longevity	Overload/no overload/total sum			850/7000/7850	

Protection

			Thermal magnetic type	
Trip units			Electronic type (STK22SE)	
Overload protection	Long time	$I_r(I_n \times \dots)$	■	
	Short time	$I_{sd} (I_r \times \dots)$	■	
	Instantaneous	$I_i(I_n \times \dots)$	■	
Residual earth leakage protection	Vigi module		■	

Indication and control auxiliaries

Auxiliary switch	■			
MX shunt and MN undervoltage winding	■			

Installation

Accessories	Terminal extension and spreaders		■	
	Terminal shields and interphase barriers		■	



Industrial Circuit Brakers (GM2-400)

Introduction

Compact circuit breakers			GM2-400	
Number of poles			3	4
Control	Manual	Toggle	■	
		Direct or extended rotary handle	■	
	Electric		■	
Connections	Fixed	Front connection	■	
		Rear connection	■	
	Withdrawable (on chassis)	Front connection	■	
		Rear connection	■	

Electrical characteristics as per IEC60947-2 and GB14048.2

Rated current(A)		In	40℃	400		
Rated insulation voltage(V)		Ui			750	
Rated impulse withstand voltage(KV)		Uimp		8		
Rated operational voltage(V)		Ue	AC 50/60Hz	400		
Type of circuit breaker				N	H	
Ultimate breaking capacity (KA rms)		Icu	AC 50/60Hz	400V	40	80
Service breaking capacity		Ics	%Icu	100%		
Suitability for isolation				■		
Utilization category				A		
Max. demand current (C-O cycles)	Mechanical				15000	
	Electrical	440V	In/2	12000		
			In	6000		
Trial longevity		Overload/no overload/total sum			850/4000/4850	

Protection

Trip units			Electronic type (STK23SE)	
Overload protection	Long time	Ir(In × ...)	■	
	Short time	I _{sd} (Ir × ...)	■	
		Instantaneous	Ii(In × ...)	■
Residual earth leakage protection		Vigi module	■	

Indication and control auxiliaries

Auxiliary switch			■
MX shunt and MN undervoltage winding			■

Installation

Accessories	Terminal extension and spreaders		■
	Terminal shields and interphase barriers		■



Moulded Case Circuit Breakers (GM2-630)

Introduction

Compact circuit breakers			GM2-630	
Number of poles			3	4
Control	Manual	Toggle	■	
		Direct or extended rotary handle	■	
	Electric		■	
Connections	Fixed	Front connection	■	
		Rear connection	■	
	Withdrawable (on chassis)	Front connection	■	
		Rear connection	■	

Electrical characteristics as per IEC60947-2 and GB14048.2

Rated current(A)	In	40℃		630	
Rated insulation voltage(V)	Ui			750	
Rated impulse withstand voltage(KV)	Uimp			8	
Rated operational voltage(V)	Ue	AC 50/60Hz		400	
Type of circuit breaker				N	H
Ultimate breaking capacity (KA rms)	Icu	AC 50/60Hz	400V	40	80
Service breaking capacity	Ics	%Icu		100%	
Suitability for isolation				■	
Utilization category				A	
Max. demand current (C-O cycles)	Mechanical			15000	
	Electrical	440V	In/2	8000	
			In	4000	
Trial longevity	Overload/no overload/total sum			850/4000/4850	

Protection

Trip units			Electronic type(STK53UE)	
Overload protection	Long time	$I_r(I_n \times \dots)$	■	
Short-circuit protection	Short time	$I_{sd}(I_r \times \dots)$	■	
	Instantaneous	$I_i(I_n \times \dots)$	■	
Residual earth leakage protection	Vigi module		■	

Indication and control auxiliaries

Auxiliary switch	■
MX shunt and MN undervoltage winding	■

Installation

Accessories	Terminal extension and spreaders	■
	Terminal shields and interphase barriers	■

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Adjustable MCCB (GM2-800 Electronic type)

Introduction

Compact circuit breakers			GM2-800	
Number of poles			3	4
Control	Manual	Toggle	■	
Connections	Fixed	Front connection	■	
		Rear connection	■	

Electrical characteristics as per IEC60947-2 and GB14048.2

Rated current(A)	In	50℃	800	
		65℃		
Rated insulation voltage(V)	Ui			750
Rated impulse withstand voltage(KV)	Uimp			8
Rated operational voltage(V)	Ue	AC 50/60Hz		690
Type of circuit breaker				N
Ultimate breaking capacity (KA rms)	Icu	AC 50/60Hz	400V	50
Service breaking capacity	Ics	%Icu		75%
Short-time withstand current (KA rms) V AC 50/60Hz	Icw	0.5s	25	
		1s	17	
Suitability for isolation				■
Utilization category				B
Max. demand current (C-O cycles)	Mechanical			50000
	Electrical	440V	In/2	6000
			In	5000
		690V	In/2	4000
			In	2000
			Pollution degree	

Protection

Interchangeable control units			Electronic type(STK2.0)	
Overload protection	Long time	Ir(In × ...)	■	
	Short time	I _{sd} (Ir × ...)	—	
Short-circuit protection	Instantaneous	Ii(In × ...)	■	

Control auxiliaries

Auxiliary switch			■	
MX shunt and MN undervoltage winding			■	



MCCB Circuit Breakers (Electronic type)

Introduction

Compact circuit breakers			GM2-1000	
Number of poles			3	4
Control	Manual	Toggle	■	
Connections	Fixed	Front connection	■	
		Rear connection	■	

Electrical characteristics as per IEC60947-2 and GB14048.2

Rated current(A)	In	50℃		800
		65℃		
Rated insulation voltage(V)	Ui			750
Rated impulse withstand voltage(KV)	Uimp			8
Rated operational voltage(V)	Ue	AC 50/60Hz		690
Type of circuit breaker				N
Ultimate breaking capacity (KA rms)	Icu	AC 50/60Hz	400V	50
Service breaking capacity	Ics	%Icu		75%
Short-time withstand current (KA rms) V AC 50/60Hz	Icw	0.5s		25
		1s		17
Suitability for isolation				■
Utilization category				B
Max. demand current (C-O cycles)	Mechanical			50000
	Electrical	440V	In/2	6000
			In	5000
		690V	In/2	4000
			In	2000
Pollution degree				III

Protection

Interchangeable control units			Electronic type(STK5.0)
Overload protection	Long time	$I_r(I_n \times \dots)$	■
	Short time	$I_{sd}(I_r \times \dots)$	■
Short-circuit protection	Instantaneous	$I_i(I_n \times \dots)$	■

Control auxiliaries

Auxiliary switch	■
MX shunt and MN undervoltage winding	■



Molded Case Circuit Breaker (MCCB 1250A electronic type)

Introduction

Compact circuit breakers			GM2-1250	
Number of poles			3	4
Control	Manual	Toggle	■	
Connections	Fixed	Front connection	■	
		Rear connection	■	

Electrical characteristics as per IEC60947-2 and GB14048.2

Rated current(A)	In	50℃	1250	
		65℃	1000	
Rated insulation voltage(V)	Ui			750
Rated impulse withstand voltage(KV)	Uimp			8
Rated operational voltage(V)	Ue	AC 50/60Hz		690
Type of circuit breaker				N
Ultimate breaking capacity (KA rms)	Icu	AC 50/60Hz	400V	50
Service breaking capacity	Ics	%Icu		75%
Short-time withstand current (KA rms) V AC 50/60Hz	Icw	0.5s		25
		1s		17
Suitability for isolation				■
Utilization category				B
Max. demand current (C-O cycles)	Mechanical			50000
	Electrical	440V	In/2	5000
			In	4000
		690V	In/2	3000
			In	2000
Pollution degree				III

Protection

Interchangeable control units			Electronic type(STK5.0)	
Overload protection	Long time	$I_r(I_n \times \dots)$	■	
	Short time	$I_{sd}(I_r \times \dots)$	■	
Short-circuit protection	Instantaneous	$I_i(I_n \times \dots)$	■	

Control auxiliaries

Auxiliary switch			■	
MX shunt and MN undervoltage winding			■	



1600A MCCB

Introduction

Compact circuit breakers			GM2-1600	
Number of poles			3	4
Control	Manual	Toggle	■	
Connections	Fixed	Front connection	■	
		Rear connection	■	

Electrical characteristics as per IEC60947-2 and GB14048.2

Rated current(A)	In	50℃	1600
		65℃	1250
Rated insulation voltage(V)	Ui		750
Rated impulse withstand voltage(KV)	Uimp		8
Rated operational voltage(V)	Ue	AC 50/60Hz	690
Type of circuit breaker			N
Ultimate breaking capacity (KA rms)	Icu	AC 50/60Hz 400V	50
Service breaking capacity	Ics	%Icu	75%
Short-time withstand current (KA rms) V AC 50/60Hz	Icw	0.5s	25
		1s	17
Suitability for isolation			■
Utilization category			B
Max. demand current (C-O cycles)	Mechanical		50000
	Electrical	440V	In/2
			In
		690V	In/2
			In
Pollution degree			III

Protection

Interchangeable control units			Electronic type(STK5.0)
Overload protection	Long time	$I_r(I_n \times \dots)$	■
	Short time	$I_{sd}(I_r \times \dots)$	■
Short-circuit protection	Instantaneous	$I_i(I_n \times \dots)$	■

Control auxiliaries

Auxiliary switch	■
MX shunt and MN undervoltage winding	■



Auxiliary Contacts of MCCB

Indication contacts

Common-point changeover contacts are used to remote circuit breaker status information and can thus be used for indications, electrical locking, relaying, etc. They comply with the IEC 60947-5 international recommendation.

Functions

- **OF (ON/OFF)** - indicates the position of the circuit breaker contacts
- **SD (trip indication)** - indicates that the circuit breaker has tripped due to:
 - an overload
 - a short-circuit
 - an earth-leakage fault
 - operation of a voltage release
 - operation of the "push to trip" button
 - disconnection when the device is ON.
 Returns to de-energised state when the circuit breaker is reset.
- **SDE (fault indication)** - indicates that the circuit breaker has tripped due to:
 - an overload
 - a short-circuit
 - an earth-leakage fault.
 Returns to de-energised state when the circuit breaker is reset.
- **SDV (Earth-leakage fault indication)** - indicates that the circuit breaker has tripped due to an earth fault. Returns to de-energised state when the circuit breaker is reset.
- **CAM (early-make or early-break function)** - indicates the position of the rotary handle. Used in particular for advanced opening of safety trip devices (early break) or to energise a control device prior to circuit breaker closing (early make)
- **CE / CD (connected/disconnected position)** - microswitch type carriage switches for withdrawable circuit breakers

Installation

- **OF, SD, SDE and SDV functions** - a single type of contact provides all these different indication functions, depending on where it is inserted in the device. The contacts clip into slots behind the front cover of the circuit breaker (or the Vigi module for the SDV function).
- **The SDE function** on a circuit breaker equipped with a thermal-magnetic trip unit requires the SDE actuator.
- **CAM function** - the contact fits into the rotary-handle unit (direct or extended). **CE / CD (connected/disconnected)** function.

Electrical characteristics of auxiliary contacts

Contacts		Standard				Low level			
Rated thermal current(A)		6				5			
Minimum load		100mA V24				2mA, 15V DC			
Utilisation cat. (IEC 60947-5-1)		AC12	AC15	DC12	DC14	AC12	AC15	DC12	DC14
Operational Vcurrent(A)	24V	6	6	6	1	5	3	5	1
	48V	6	6	2.5	0.2	5	3	2.5	0.2
	110V	6	5	0.6	0.05	5	2.5	0.6	0.05
	220/240V	6	4	-	-	5	2	-	-
	250V	-	-	0.3	0.03	5	-	0.3	0.03
	380/440V	6	2	-	-	5	1.5	-	-
	480V	6	1.5	-	-	5	1	-	-
660/690V		6	0.1	-	-	-	-	-	-



Under voltage Release and Shunt Release

Remote tripping

MX or MN voltage releases are used to trip the circuit breaker.

MN undervoltage release

This release trips the circuit breaker when the control voltage drops below a tripping threshold:

- tripping threshold between 0.35 and 0.7 times the rated voltage
- circuit breaker closing is possible if the voltage exceeds 0.85 times the rated voltage.

For a lower value, circuit breaker closing cannot be guaranteed.

Circuit breaker tripping by an MN release meets the requirements of standard IEC 60947-2.

Time-delay unit for an MN release

Eliminates nuisance tripping due to transient voltage dips lasting 200 ms. It is used in conjunction with:

- a 250 V DC MN release, control voltage 220/240 V AC
- a 48 V DC MN release, control voltage 48 V AC.

MX shunt release

Trips the circuit breaker when the control voltage rises above $0.7 \times U_n$.

Control signals can be of the impulse type (≤ 20 ms) or maintained.

Operation

When the circuit breaker has been tripped by an MN or MX release, it must be reset locally.

MN or MX tripping takes priority over manual closing.

In the presence of a standing trip order, closing of the contacts, even temporary, is not possible.

Mechanical characteristics

endurance is equal to 50 % of the mechanical endurance of the circuit breaker

the releases clip in behind the front cover

connection using wires up to 1.5 mm², to integrated terminal blocks.

Electrical characteristics

consumption:

- pick-up (MX): < 10 VA
- seal-in (MN and MNR): < 5 VA.

response time: < 50 ms.



Rotary Handle (Direct and Extended)

Rotary handles

There are two types of rotary handle:

- direct rotary handle
- extended rotary handle.

There are two models:

- standard with a black handle
- VDE with a red handle and yellow front for machine-tool control.

Direct rotary handle

Degree of protection IP40, IK07. The direct rotary handle maintains:

- visibility of and access to trip unit settings
- suitability for isolation
- indication of the three positions O (OFF), I (ON) and tripped
- access to the "push to trip" button
- circuit breaker locking capability in the OFF position by one to three padlocks, shackle diameter 5 to 8 mm (not supplied).
- It replaces the circuit breaker front cover.
- Accessories transform the standard direct rotary handle for the following situations:
 - motor control centre (MCC) switchboards:
 - door opening disabled when the circuit breaker is ON
 - circuit breaker closing is disabled if the door is open
 - a higher degree of protection (IP43, IK07)
 - machine-tool control, complying with CNOMO E03.81.501, IP54, IK08.

Extended rotary handle

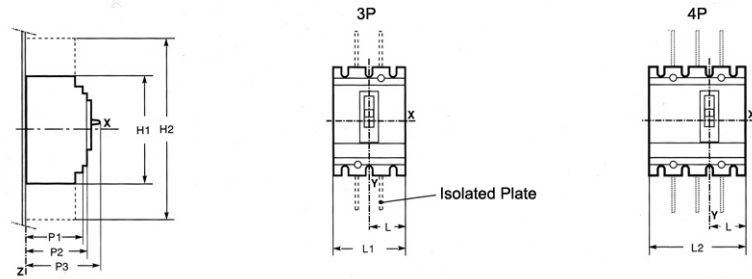
Degree of protection IP 55, IK08. This handle makes it possible to operate circuit breakers installed at the back of switchboards, from the switchboard front. It maintains:

- suitability for isolation
- indication of the three positions O (OFF), I (ON) and tripped
- access to trip unit settings, when the switchboard door is open
- circuit breaker locking capability in the OFF position by one to three padlocks, shackle diameter 5 to 8 mm (not supplied). The door cannot be opened if the circuit breaker is ON or locked. The extended rotary handle is made up of:
 - a unit that replaces the front cover of the circuit breaker (secured by screws)
 - an assembly (handle and front plate) on the door that is always secured in the same position, whether the circuit breaker is installed vertically or horizontally
 - an extension shaft that must be adjusted to the distance. The min/max distance between the back of circuit breaker and door is:
 1. 185 to 600 mm for Compact NS100 to 250
 2. 210 to 625 mm for Compact NS400 to 630.

For withdrawable configurations, the extended rotary handle is also available with a telescopic shaft with two stable positions.

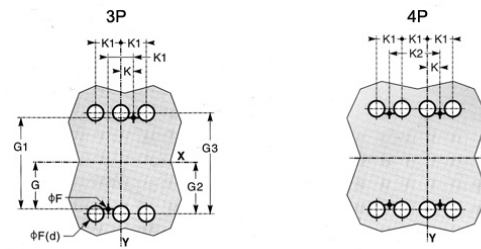
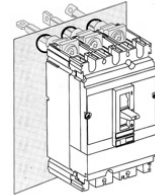
Mounting and outline of GM2-100~630 fixed type

Dimension

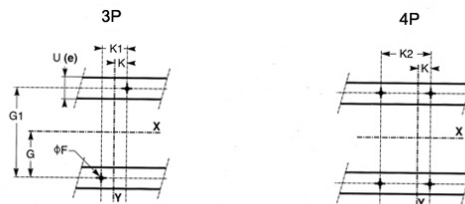
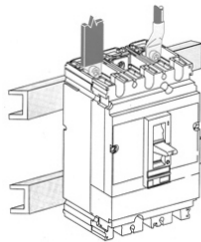


Mounting

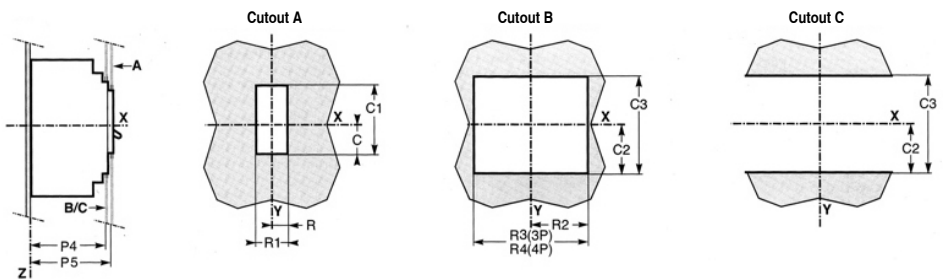
Mounting on backplate



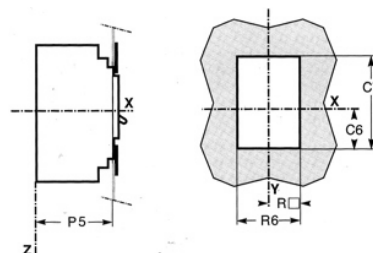
Mounting on rail



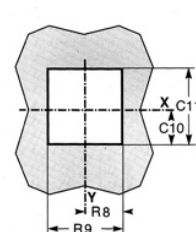
Front panel cutouts



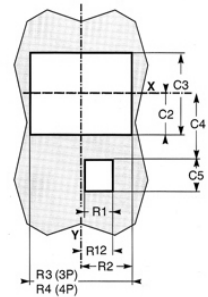
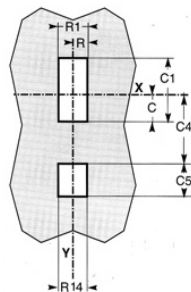
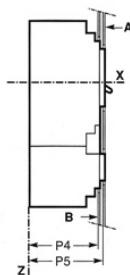
With escutcheon



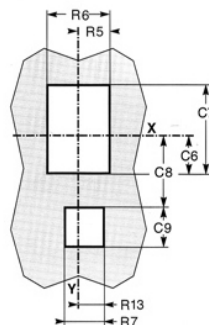
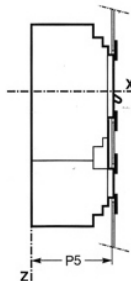
With toggle cover



Front panel cutouts



With escutcheon



Dimension (mm)

Model	C	C1	C2	C3	C4	C5	C6	C7	C8	C9	G	G1	G4	G5	G6	G7	H3	H4
GM2-100/160/250N/H	29	76	54	108	89	38	43	104	71	68	62.5	125	137.5	200	145	215	236	350
GM2-400/630N/H	41.5	116	92.5	184	150	38	56.5	146	132	68	100	200	200	300	213.5	327	355	575

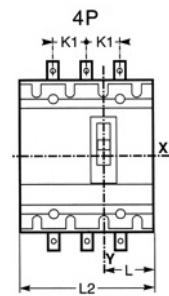
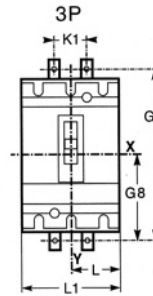
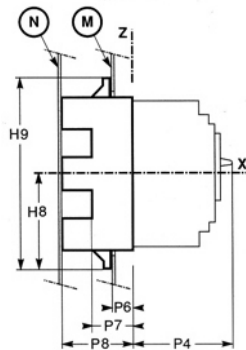
Model	K	K1	K2	L	L1	L2	P1	P2	P3	P4	P5	R	R1
GM2-100/160/250N/H	17.5	35	70	52.5	105	140	73	86	111 ⁽¹⁾	83	88	14.5	29
GM2-400/630N/H	22.5	45	90	70	140	185	95.5	111	168	107	112	31.5	63

(1): P4=126mm, GM2-250N/H

Model	R2	R3	R4	R5	R6	R7	R12 ⁽¹⁾	R13	R14	ØF	ØF(d)	U ^(e)
GM2-100/160/250N/H	54	108	143	29	58	58	14.5	29	29	6	22	≤32
GM2-400/630N/H	71.5	143	188	46.5	93	58	32	47	29	6	32	≤32

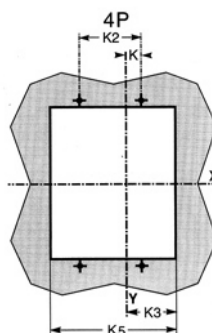
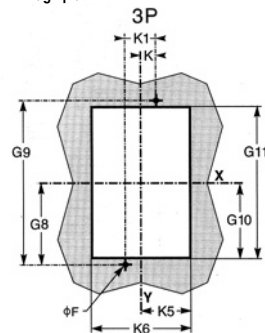
Mounting and outline of GM2-100~630 play-in type

Dimension

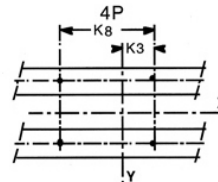
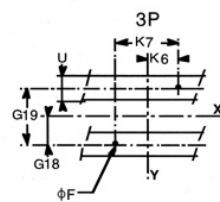


Mounting

through plate



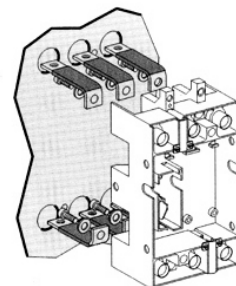
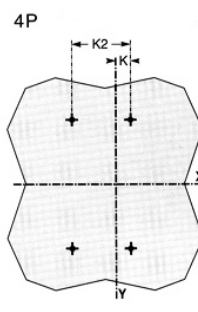
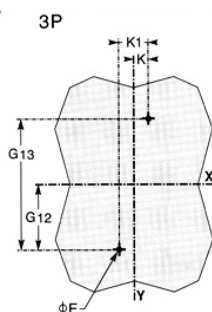
Mounting on rail



Note: Door cutout dimension are given for a device position in the enclosure where $\Delta \geq 100 + (hx5)$

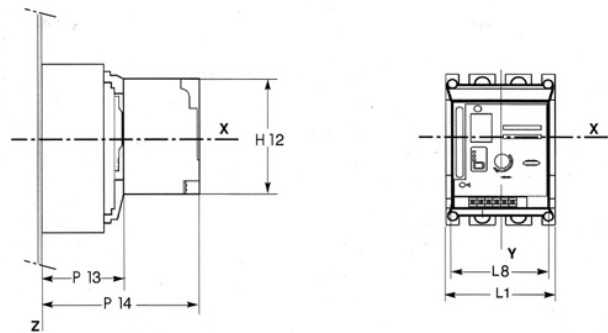
On backplate N (play-in base or chassis)

Front connection (insulating screen is mandatory between the backplate and the base, supplied with the base)

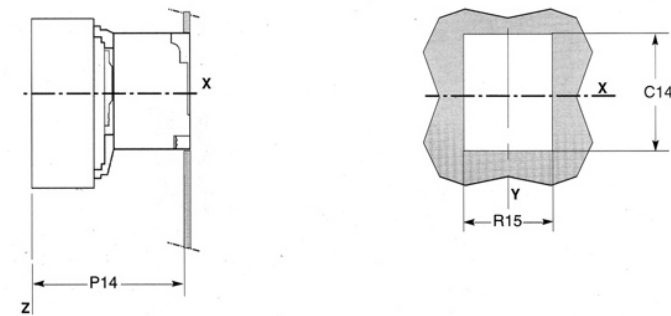


Mounting and outline of GM2-100~630 motor mechanism module

Dimension



Front panel cutouts

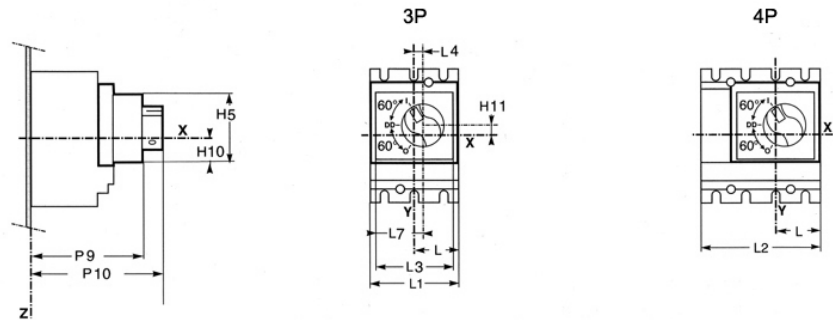


Dimension(mm)

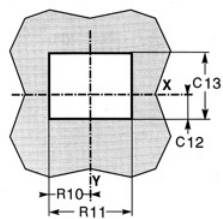
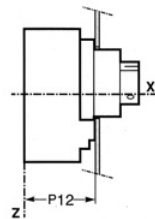
Model	P13	P14	H12	L1	L8	C14	R15
GM2-100/160/250N/H	98	175	115	105	120	117	110
GM2-400/630N/H	129	243	175	140	130	180	145

Mounting and outline of GM2-100~630 standard rotary handle

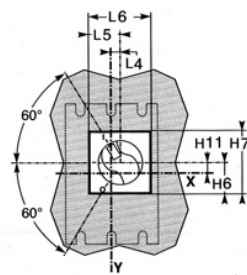
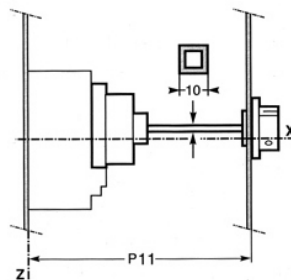
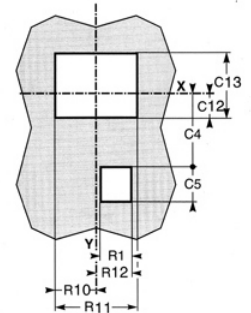
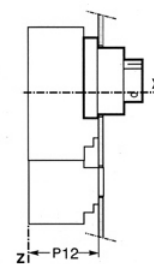
Standard direct rotary handle



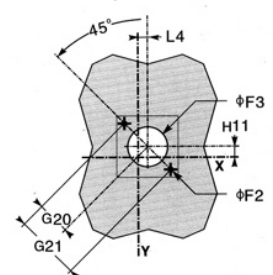
Front panel cutouts



Vigi module



Front panel cutouts



Dimension(mm)

Model	C4	C5	C12	C13	C20	C21	H5	H6	H7	H10	H11
GM2-100/160/250N/H	86	37	29	76	36	72	73	37.5	75	9	28
GM2-400/630N/H	147.5	37	41.5	126	36	72	123	37.5	75	24.5	40

Model	L	L1	L2	L3	L4	L5	L6	L7	P9	P10	P11 ⁽¹⁾
GM2-100/160/250N/H	52.5	105	140	91	9.25	37.5	75	55	124	160	185
GM2-400/630N/H	70	140	185	123	5	37.5	75	66.5	145	182	209

Model	P12	R1	R10	R11	R12	ØF2	ØF3
GM2-100/160/250N/H	86	29	48.5	97	14.5	4.5	55
GM2-400/630N/H	147.5	63	64.5	129	32	4.5	55

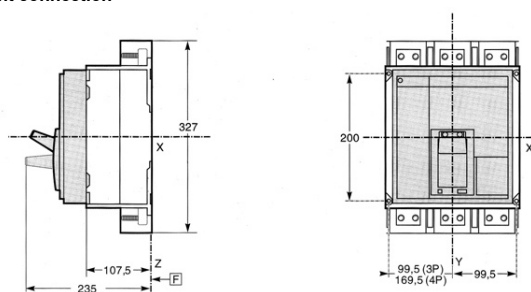
(1) GM2-100/160/250N/H ≤ 585mm GM2-400/630N/H ≤ 610mm

Note: Door cutout dimension are given for a device position in the enclosure where $\Delta \geq 100 + (H \times 5)$

Mounting and outline of GM2-800~1600 fixed type

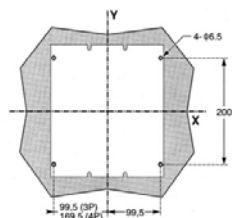
Manul control

Front connection

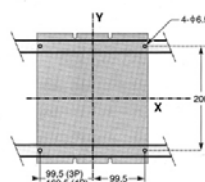


Front of board connection

on back board



on rail



Front panel cutouts

