

■ **Description**

3.3/6.6kV 200, 400 Amps

HN type vacuum magnetic contactors incorporate a SUPER MAGNET provided with a built-in IC. The IC minimizes the power consumption used in the closing circuit. HN types vacuum magnetic contactors operate on both AC and DC power supplies. A common insulating frame for units with a rated voltage of 3kV and 6kV simplifies switchgear design.

■ **Features**

The SUPER MAGNET

- Holding currents are minimized with an IC-controlled closing circuit. This is a cost-effective feature.
- Both AC and DC power supply operation possible.
- The SUPER MAGNET holds without chattering even when the line control voltage drops.
- The SUPER MAGNET's wide range of operating voltages allows it to be used in countries throughout the world.

Operating coil voltage

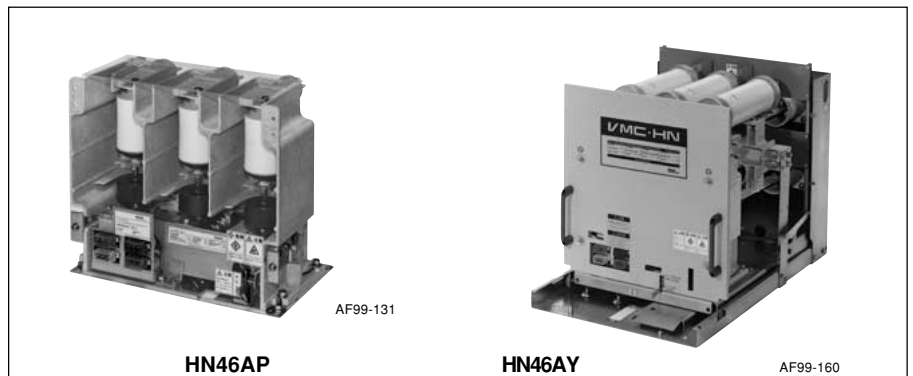
Rated voltage		Operating voltage range
AC (50/60Hz)	DC	
-	21-24V	85-110% of rated voltage
-	48V	
100-110V	100-110V	
200-220V	200-220V	

Shared insulating frame for 3kV and 6kV contactors

HN type vacuum magnetic contactors have a special insulating frame. The dimensions of the frame are the same for both 3kV and 6kV models, which facilitates switchgear design.

Advanced vacuum interrupter

A high performance interrupter minimizes surges due to closing and breaking, which makes special surge precautions unnecessary.



■ **Specifications**

Type	HN46A□*1-2	HN46A□*1-4
Rated voltage (kV)	3.3/6.6	
Rated frequency (Hz)	50/60	
Rated current (A)	200	400
Rated breaking current (kA)	4	
Rated short-time current (kA)	4 (2 sec.)	
Insulation level		
Dielectric strength/1 min (kV)	22 (16 between poles)	
Impulse 1.2X50µs (kV)	60 (45 between poles)	
Making and breaking capacity (kA)	1.6	3.2
Operating frequency (sw/hour)		
Normal energized type	600	
Mechanically latched type	600	
Electrical durability (Operations)	250,000	
Mechanical durability (Operations)		
Normal energized type	2,500,000	
Mechanically latched type	250,000	
Average operating time		
Opening time (ms)	140	
Closing time		
Normal energized type (ms)	100	
Mechanically latched type (ms)	20	
Auxiliary contact	3NO+3NC	
Max. applicable load (3.3/6.6kV)		
3-phase squirrel-cage type induction motor(kW)	750/1500	1500/3000
3-phase transformer (kVA)	1000/2000	2000/4000
Capacitor (kVA)	1000/2000	2000/4000
Mass		
Fixed type (Normal energized) (kg)	19	19
Draw-out type (Normal energized) (kg)	34*2	34*2

□ *1: Installation system
P: Fixed type
X: Draw-out type
H: Draw-out type/Bushing type connector
Y: Draw-out type/Bushing type connector+shutter
(X, Y, H: With fuse holder)

*2: Without VT and cradle

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Vacuum magnetic contactors

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■ Operating coil voltage and current

● Normal energized type

Type	Rated operating voltage (V) *	Current (A)	
		Closing	Holding
HN46A□-2S1, 4S1	100-110 AC	3	0.05
	100-110 DC	3	0.05
HN46A□-2S2, 4S2	200-220 AC	1.5	0.03
	200-220 DC	1.5	0.03
HN46A□-2S4, 4S4	48 DC	8	0.1

● Mechanically-latched type

Type	Rated operating voltage (V) *	Current (A)	
		Closing	Trip
HN46A□-2L1, 4L1	100-110 AC	3	3.5
	100-110 DC	3	3
HN46A□-2L2, 4L2	200-220 AC	1.5	2.2
	200-220 DC	1.5	2
HN46A□-2L3, 4L3	21-24 DC	16	8.5
HN46A□-2L4, 4L4	48 DC	8	4.5

■ Ratings of auxiliary switch (Built-in)

Contact arrangement	3NO+3NC	
Operating current	Res. Load	Ind. Load
100/110V AC	—	6A
200/220V AC	—	6A
48V DC	6A	6A
100/110V DC	2.5A	1.3A
200/220V DC	1A	0.45A

■ Types and ordering codes/Fixed types

Installation system	Operating system	Rated voltage (kV)	Rated current (A)	Appropriate fuse type	Operating coil voltage (V)		Type and ordering code
					AC	DC	
Fixed type (P)	Normal energized	3.3/6.6	200	—	100-110	100-110	HN46AP-2S1
					200-220	200-220	HN46AP-2S2
		—	48	HN46AP-2S4			
		3.3/6.6	400	—	100-110	100-110	HN46AP-4S1
	200-220	200-220	HN46AP-4S2				
	—	48	HN46AP-4S4				
	Mechanically latched	3.3/6.6	200	—	100-110	100-110	HN46AP-2L1
					200-220	200-220	HN46AP-2L2
—		21-24	HN46AP-2L3				
—		48	HN46AP-2L4				
3.3/6.6	400	—	100-110	100-110	HN46AP-4L1		
			200-220	200-220	HN46AP-4L2		
	—	21-24	HN46AP-4L3				
	—	48	HN46AP-4L4				

■ Types and ordering codes/Draw-out types

Installation system	Operating system	Rated voltage (kV)	Rated current (A)	Appropriate fuse type	Operating coil voltage (V)		Type and ordering code
					AC	DC	
Draw-out (X)	Normal energized	3.3/6.6	200	JC-6/5	100-110	100-110	HN46AX-2S1J
				JC-6/10	200-220	200-220	HN46AX-2S2J
				JC-6/30	—	48	HN46AX-2S4J
				JC-6/40	100-110	100-110	HN46AX-2L1J
	Mechanically latched	3.3/6.6	200	JC-6/50	200-220	200-220	HN46AX-2L2J
				JC-6/60	—	21-24	HN46AX-2L3J
				JC-6/75	—	48	HN46AX-2L4J
				JC-6/100*	—	48	HN46AX-2L4J

* Provided fuse holder: K. See page 12/60 (Type number nomenclature)

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■ Type and ordering code/Draw-out types

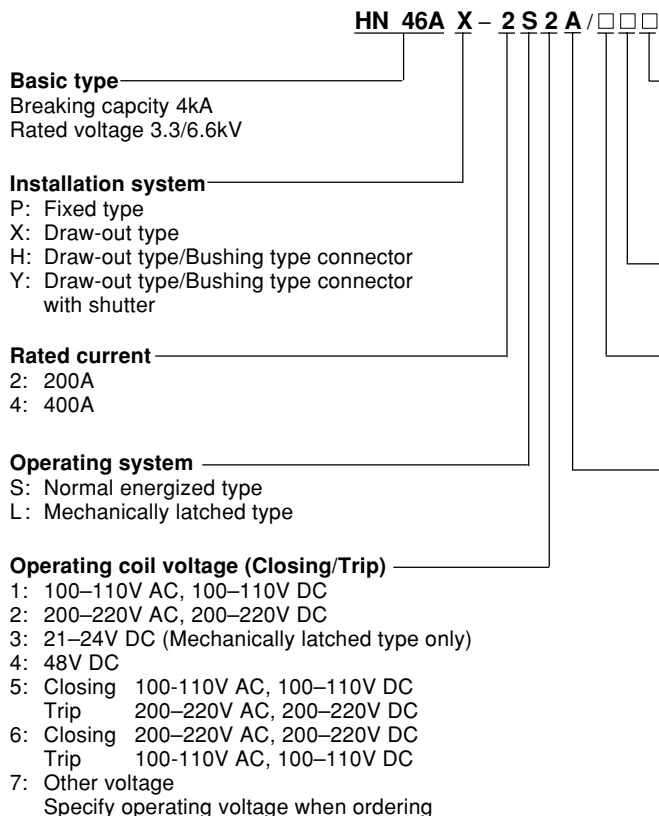
Installation system	Operating system	Rated voltage (kV)	Rated current (A)	Appropriate fuse type	Operating coil voltage (V)		Type and ordering code	
					AC	DC		
Draw-out (X)	Normal energized	3.3/6.6	200	HF338E/3/20-100	100-110	100-110	HN46AX-2S1A HN46AX-2S2A HN46AX-2S4A	
				HF338E/6/20, 30	200-220	200-220		
					-	48		
					HF338E/3/150, 200	100-110	100-110	HN46AX-2S1B HN46AX-2S2B HN46AX-2S4B
					HF338E/6/40-200	200-220	200-220	
						-	48	
				JB-3/50-200	100-110	100-110	HN46AX-2S1C HN46AX-2S2C HN46AX-2S4C	
				JB-6/20, 50	200-220	200-220		
					-	48		
	Mechanically latched	3.3/6.6	200	HF338E/3/20-100	100-110	100-110	HN46AX-2L1A HN46AX-2L2A HN46AX-2L3A HN46AX-2L4A	
				HF338E/6/20, 30	200-220	200-220		
					-	21-24		
					HF338E/3/150, 200	100-110	100-110	HN46AX-2L1B HN46AX-2L2B HN46AX-2L3B HN46AX-2L4B
					HF338E/6/40-200	200-220	200-220	
						-	21-24	
				JB-3/50-200	100-110	100-110	HN46AX-2L1C HN46AX-2L2C HN46AX-2L3C HN46AX-2L4C	
				JB-6/20, 50	200-220	200-220		
					-	21-24		
Draw-out/bushing type connector (H)	Normal energized	3.3/6.6	200	HF338E/3/20-100	100-110	100-110	HN46AH-2S1A HN46AH-2S2A HN46AH-2S4A	
				HF338E/6/20, 30	200-220	200-220		
					-	48		
					HF338E/3/150, 200	100-110	100-110	HN46AH-2S1B HN46AH-2S2B HN46AH-2S4B
					HF338E/6/40-200	200-220	200-220	
						-	48	
				JB-3/50-200	100-110	100-110	HN46AH-2S1C HN46AH-2S2C HN46AH-2S4C	
				JB-6/20, 50	200-220	200-220		
					-	48		
Draw-out/bushing type connector+ shutter (Y)	Normal energized	3.3/6.6	200	HF338E/3/20-100	100-110	100-110	HN46AY-2S1A HN46AY-2S2A HN46AY-2S4A	
				HF338E/6/20, 30	200-220	200-220		
					-	48		
					HF338E/3/150, 200	100-110	100-110	HN46AY-2S1B HN46AY-2S2B HN46AY-2S4B
					HF338E/6/40-200	200-220	200-220	
						-	48	
				JB-3/50-200	100-110	100-110	HN46AY-2S1C HN46AY-2S2C HN46AY-2S4C	
				JB-6/20, 50	200-220	200-220		
					-	48		
	Mechanically latched	3.3/6.6	200	HF338E/3/20-100	100-110	100-110	HN46AY-2L1A HN46AY-2L2A HN46AY-2L3A HN46AY-2L4A	
				HF338E/6/20, 30	200-220	200-220		
					-	21-24		
					HF338E/3/150, 200	100-110	100-110	HN46AY-2L1B HN46AY-2L2B HN46AY-2L3B HN46AY-2L4B
					HF338E/6/40-200	200-220	200-220	
						-	21-24	
				JB-3/50-200	100-110	100-110	HN46AY-2L1C HN46AY-2L2C HN46AY-2L3C HN46AY-2L4C	
				JB-6/20, 50	200-220	200-220		
					-	21-24		
					-	48		

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Vacuum magnetic contactors

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■ Type number nomenclature



Name plate

Blank : Japanese (JEM)
ZJ : English (JEM)
ZC : English (IEC)
ZA : English (AS)
ZB : English (BS)

Bushing CT (BCT) (Optional accessories)*

For Y, H types
A to K (Specify BCT code when ordering, see page 12/61 ②)

VT (Optional accessories)*

For X, Y, H types
P1 to PA (Specify VT code when ordering, see page 12/61 ①)

Fuse holder type (For X, Y, H types)

A: For HF338E/3/20–100 or HF338E/6/20, 30 fuse
B: For HF338E/3/150, 200 or HF338E/6/40–200 fuse
C: For JB-3/50–200 or JB-6/20, 50 fuse
D: For JB-6/100–200 fuse
J: For JC-6/5–75 fuse
K: For JC-6/100 fuse

■ Supplied accessories for draw-out types

● Mechanical interlock

- When the contactor is closed, it is impossible to shift it from the service position to the test position.
- Under the condition where the contactor is closed, it is impossible to change it from the test position to the service position.
- At both the test and the service positions, the interlock pin will engage and so lock the contactor in position. Thus the positions are always fixed correctly. Even if a closing operation is carried out at an intermediate position, the contactor cannot be closed.

● Electrical interlock

When the interlock pin is locked at both the service and test positions the limit switch will be closed, and the contactor can be operated.

● Shutter

Cradle with bushing type connectors can also be provided with a shutter.

● On-off counter (6-digit)

An on-off counter is standard with all VCB series. This easily legible counter enables quick estimation of remaining service life.

Ratings of interlock contact

Contact arrangement	SPDT	
Operating current	Res. Load	Ind. Load
250V AC	16A	10A
125V AC	16A	10A
125V DC	0.6A	0.3A

Ratings of fuse blown indicator

Contact arrangement	1NO + 1NC	
Operating current	Res. Load	Ind. Load
250V AC	16A	10A
250V DC	0.3A	0.06A
125V DC	0.6A	0.3A
30V DC	6A	4A

■ Optional accessories

● **Position switches** (Ordering code HZ1ND)
SPDT position switches can be fitted to indicate the test position and the service position. (For X, Y, H)

Ratings of position switch

Contact arrangement	Service pos. SPDT, Test pos. SPDT Service pos. 2PDT, Test pos. 2PDT	
Operating current	Res. Load	Ind. Load
250V AC/DC	3A	NC: 2A, NO: 1.5A
125V AC/DC	10A	NC: 7.5A, NO: 6A
30V DC	15A	10A
14V DC	15A	NC: 15A, NO: 10A

● VT and bushing CT (BCT)

Draw-out types have room for fitting VTs in the space box.
It is possible to fit up to 2 VTs in the space. 3 BCTs can be fitted to the bushing type connector. The ratings are shown in the Table.

Ratings of VT

For VT	For control power supply *
3300V/110V, 220V 1.0 class 100VA	3300V/110V, 220V 400VA
6600V/110V, 220V 1.0 class 100VA	6600V/110V, 220V 400VA

* When used as control power supply, it becomes short-time rating.

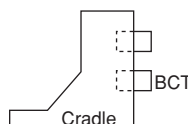
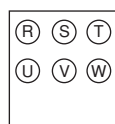
Ratings of BCT

Max. voltage (kV)	Frequency (Hz)	Primary current(A)	Secondary current(A)	Burden (VA)	Overcurrent capacity
6.9	50/60	20, 30, 40, 50 75, 100, 150 200, 300, 400	5	25	40 times, 1 sec

Codes of VTs and BCTs for draw-out types

① VT (For X, Y, H)			② BCT (For Y, H)					
Code	Voltage	No. of VTs	Code	Current	No. of BCTs	Code	Current	No. of BCTs
P1	3.3kV/110V	1	A2	20/5A	2	F2	100/5A	2
P2	3.3kV/110V	2	A3	20/5A	3	F3	100/5A	3
P3	6.6kV/110V	1	B2	30/5A	2	G2	150/5A	2
P4	6.6kV/110V	2	B3	30/5A	3	G3	150/5A	3
P5	3.3kV/220V	1	C2	40/5A	2	H2	200/5A	2
P6	3.3kV/220V	2	C3	40/5A	3	H3	200/5A	3
P7	6.6kV/220V	1	D2	50/5A	2	J2	300/5A	2
P8	6.6kV/220V	2	D3	50/5A	3	J3	300/5A	3
P9	3.3kV/110V	1	E2	75/5A	2	K2	400/5A	2
	3.3kV/220V	1	E3	75/5A	3	K3	400/5A	3
PA	6.6kV/110V	1				Blank	Without BCT	
	6.6kV/220V	1						
Blank	Without VT							

- Mounting position of CT
- 2 CTs- Fit to U and W poles
- 3 CTs- Fit to U, V and W poles



- Example:
- Two 6.6kV/110V VTs and no BCT
HN46A□-□□□□/P4
 - No VT and two 50/5A BCTs
HN46A□-□□□□/D2
 - Two 6.6kV/110V VTs and two 50/5A BCTs
HN46A□-□□□□/P4D2

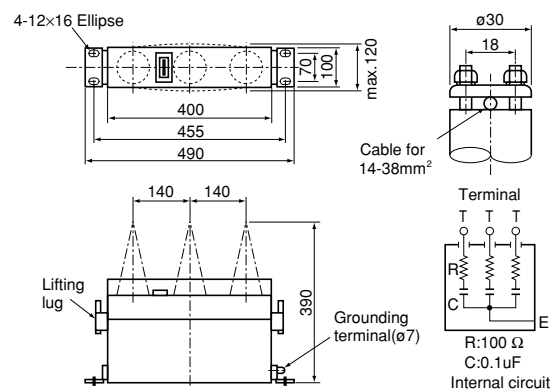
● Capacitor trip devices

Type	Ordering code	Tripping time after power failure:	Input voltage	Tripping coil voltage
VS-T1A	HZ1NI	30 sec.	100-110V AC	100-110V DC
VS-T2A	HZ1NJ		200-220V AC	200-220V DC

● C-R type surge absorber

Type	Ordering code	Max. operating voltage	Frequency	Rated voltage
AF3320R3 TXG0542	HZ1AK	115% rated voltage	50/60Hz	$\frac{3.3kV}{\sqrt{3}}$
AF6620R3 TXG0543	HZ1AL		50/60Hz	$\frac{6.6kV}{\sqrt{3}}$

Dimensions,mm/Surge absorber



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Vacuum magnetic contactors

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■ Optional accessories

● Power fuses for draw-out types

The table indicates the appropriate current limiting fuses for use with HN vacuum magnetic contactors.

System voltage (kV)	Type Refer to the Table below	Ratings Voltage (kV)	Breaking capacity (kA)	Minimum breaking current(A)	Current (A)	Applicable load (max)						
						3 ϕ Motor Squirrel-cage type(kW)	Wound-rotor type(kW)	3 ϕ Transformer (kVA)	3 ϕ Capacitor (kVA)			
3.3	HF338E/3/20	3.6	40 (250MVA)	All excessive currents	20	—	55	50	30			
	HF338E/3/30				30	—	90	100	75			
	HF338E/3/40				40	37	132	150	100			
	HF338E/3/50				50	55	160	200	150			
	HF338E/3/75				75	90	250	300	250			
	HF338E/3/100				100	132	355	400	400			
	HF338E/3/150				150	200	450	500	500			
	HF338E/3/200				200	355	630	750	750			
	JB-3/50				3.6	40 (250MVA)	350 700 1050 1400	50	160	200	250	—
	JB-3/100							100	355	355	500	—
	JB-3/150	150	560	560				750	—			
	JB-3/200	200	710	710				1000	—			
	JC-6/5	3.6	40 (250MVA)	11 22 58 85 120 140 170 250 400	5	—	—	5	5			
	JC-6/10				10	—	—	15	15			
	JC-6/20				20	—	—	50	30			
	JC-6/30				30	—	—	100	50			
	JC-6/40				40	—	—	150	75			
	JC-6/50				50	—	—	200	100			
	JC-6/60				60	—	—	250	150			
	JC-6/75				75	—	—	300	200			
	JC-6/100				100	—	—	500	250			
	6.6				HF338E/6/20	7.2	40 (500MVA)	All excessive currents	20	—	110	75
		HF338E/6/30	30	37	160				150	150		
		HF338E/6/40	40	75	315				250	200		
		HF338E/6/50	50	90	375				300	300		
		HF338E/6/75	75	160	530				500	500		
		HF338E/6/100	100	250	750				750	750		
HF338E/6/150		150	375	1050	1000				1000			
HF338E/6/200		200	530	1500	1500				1500			
JB-6/20		7.2	40 (500MVA)	140 350 700 1050 1400	20				160	200	200	150
JB-6/50					50				355	355	500	500
JB-6/100					100	710	710	1000	750			
JB-6/150					150	1000	1000	1500	1000			
JB-6/200					200	1500	1500	2000	1500			
JC-6/5					7.2	40 (500MVA)	11 22 58 85 120 140 170 250 400	5	—	—	15	15
JC-6/10		10	—	—				30	30			
JC-6/20		20	—	—				100	50			
JC-6/30		30	—	—				200	100			
JC-6/40		40	—	—				300	150			
JC-6/50		50	—	—				300	200			
JC-6/60		60	—	—				500	300			
JC-6/75		75	—	—				750	400			
JC-6/100		100	—	—				1000	500			

Notes: JB fuse: The rated current value meets the requirements of JEC-2330 (1986) M (motor).
 HF and JC fuses: The rated current value meets the requirements of JEC-2330 (1986)G (general).
 Contact FUJI when the JC fuse will be used for a motor load application.

Fuse and fuse holder

Fuse holder	Fuse	
Type number 10th character	Type	Ordering code
A	HF338E/3/20	HF1E-020
	HF338E/3/30	HF1E-030
	HF338E/3/40	HF1E-040
	HF338E/3/50	HF1E-050
	HF338E/3/75	HF1E-075
	HF338E/3/100	HF1E-100
	HF338E/6/20	HF2E-020
	HF338E/6/30	HF2E-030

Fuse holder	Fuse		
Type number 10th character	Type	Ordering code	
B	HF338E/3/150	HF1E-150	
	HF338E/3/200	HF1E-200	
	HF338E/6/40	HF2E-040	
	HF338E/6/50	HF2E-050	
	HF338E/6/75	HF2E-075	
	HF338E/6/100	HF2E-100	
	HF338E/6/150	HF2E-150	
	HF338E/6/200	HF2E-200	
	C	JB-3/50	HF1B-050
		JB-3/100	HF1B-100
JB-3/150		HF1B-150	
JB-3/200		HF1B-200	
JB-6/20		HF2B-020	
JB-6/50		HF2B-050	

Fuse holder	Fuse	
Type number 10th character	Type	Ordering code
D	JB-6/100	HF2B-100
	JB-6/150	HF2B-150
	JB-6/200	HF2B-200
J	JC-6/5	HF2C-005
	JC-6/10	HF2C-010
	JC-6/20	HF2C-020
	JC-6/30	HF2C-030
	JC-6/40	HF2C-040
	JC-6/50	HF2C-050
	JC-6/60	HF2C-060
	JC-6/75	HF2C-075
	JC-6/100	HF2C-100

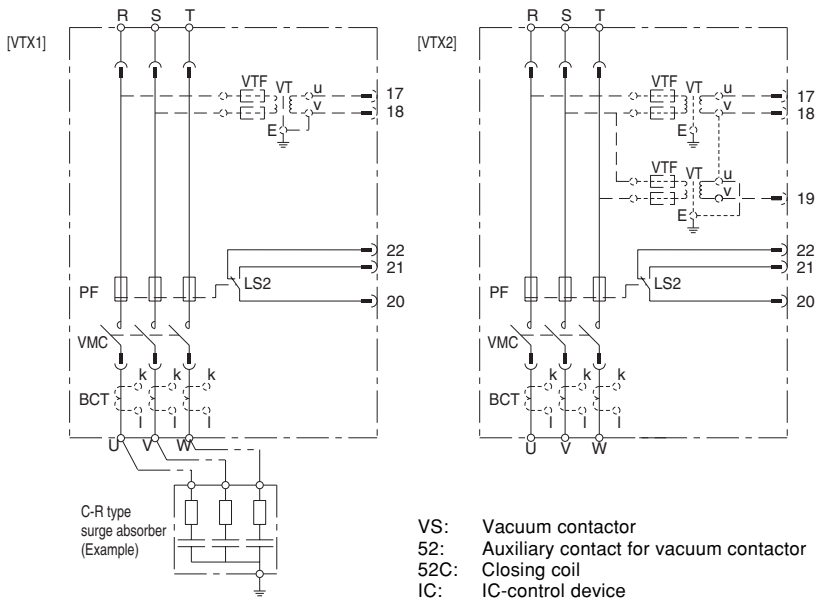
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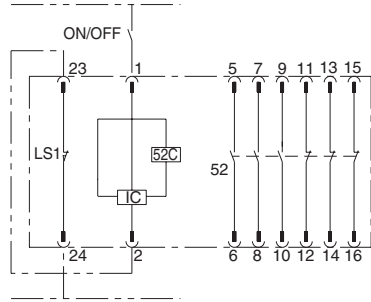
■ Wiring diagrams

Normal energized type

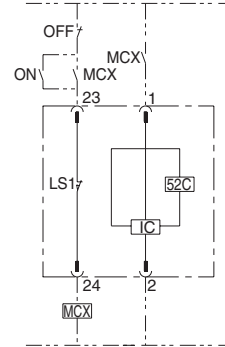


- VS: Vacuum contactor
- 52: Auxiliary contact for vacuum contactor
- 52C: Closing coil
- IC: IC-control device
- LS1: Limit switch for interlock
- MCX: Auxiliary relay for closing
- PF: Power fuse (Optional accessories)
- SW: Power fuse blown indicating contact
- VT: VT
- VTF: Fuse for VT
- BCT: Bushing type CT

- Internal circuit of contactor
- - - Wiring for optional accessories (VT, CT)
- · · External circuit



Wiring diagram for external relay circuit (Example)



■ Terminal numbers

	Fixed type	Draw-out types Without VT	With one VT	With two VTs																								
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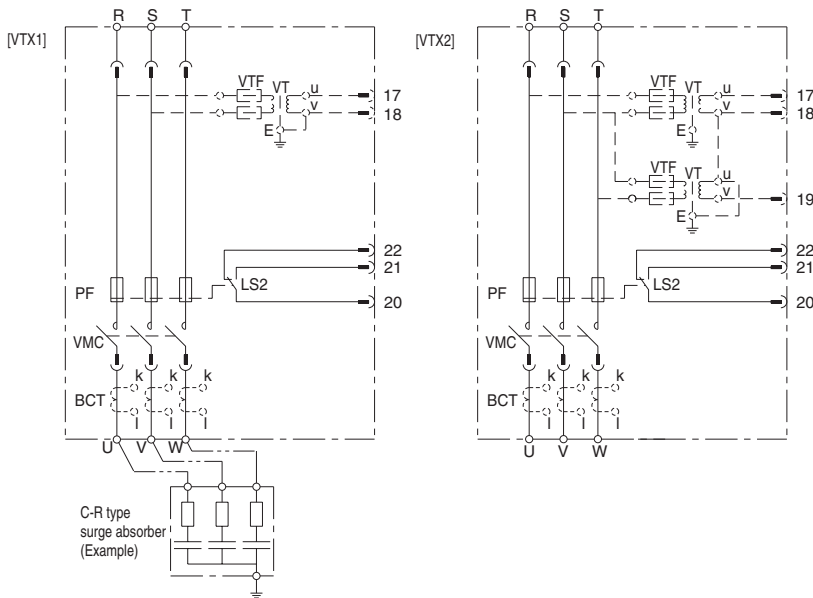
H.V. Distribution Equipment

Vacuum magnetic contactors

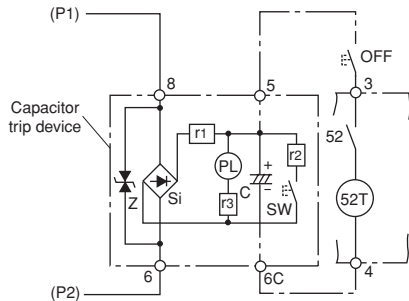
HN series

■ Wiring diagrams

Mechanically-latched type



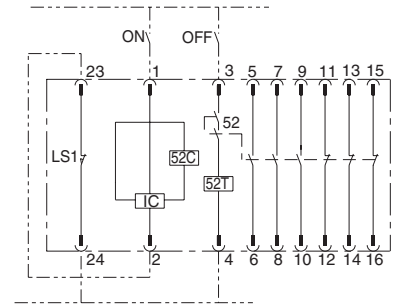
Wiring diagram connected to capacitor trip device (Optional)



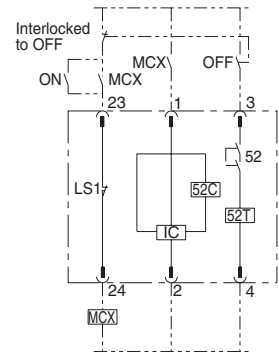
- VS: Vacuum contactor
- 52: Auxiliary contact for vacuum contactor
- 52T: Tripping coil
- 52C: Closing coil
- 52Z: Anti-pumping relay
- IC: IC-control device
- LS1: Limit switch for interlock
- MCX: Auxiliary relay for closing
- PF: Power fuse (Optional accessories)
- SW: Power fuse blown indication contact
- VT: VT
- VTF: Fuse for VT
- BCT: Bushing type CT

- Internal circuit of contactor
- - - Wiring for optional accessories (VT, CT)
- · · External circuit

Note: IC control device is provided with protection circuit from an anti-pumping.



Wiring diagram for external relay circuit (Example)



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