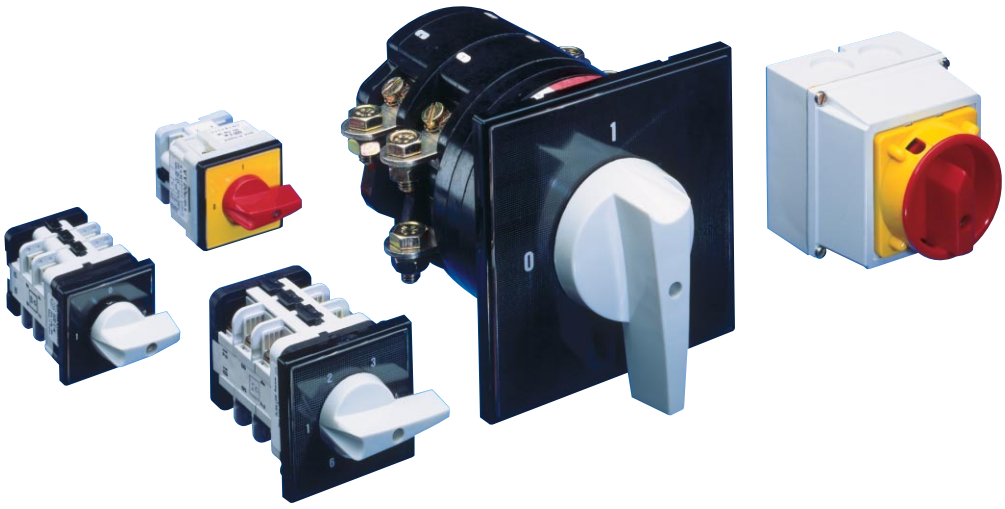
Rotary cam switches



Technical characteristics

Switch type				VY 10	VY 20	VY 40	VY 80	VY 125	VY 200	VY AR 16
Rated insulation voltage	VDE 0110	V		750	660	750	660	660	660	660
	CSA 22-2-14 UL 508	V AC/DC		600	600	600	600	600	600	600
Thermal current	NFC 63130	A		10	20	50				16
	IEC 408 VDE 0660	A		16	25	50	80	125	200	20
	CSA 22-2-14	A		10	20	40	80	125	250	
	UL 508	A		10	26	50	80	125	200	
Max. cross section of conductors		mm^2		2.5①	4①	10①	25	50	M 10 bolt on flange	2 x 2,5
		AWG		12①	12①	6①	0	0		
Mechanical life (number of on-off operations)				1×10^6	1×10^6	10^5	25×10^4	25×10^4	5×10^4	1×10^6
Electrical life (number of on-off operations)				5×10^4	5×10^4	25×10^3	125×10^2	125×10^2	25×10^2	5×10^4
Making capacity 220-660 V	380-415 V	A		87	160	300	800	800	1000	
	600-660 V	A		50	100	175				
Breaking capacity tested in accordance with IEC 408 class AC 3	220-240 V	A		70	128		800	800	1000	
	380-415 V	A		70	128	240	500	500	600	
	500-550 V	A					250	250	250	
	600-660 V	A		40	72	140	200	200	200	
One-second rating (max. cross-section of conductors)		A		200	400	1000	2100	3200	5500	
Max. short circuit current withstand with switch closed		KA peak				6	6	6	10	
Max. short circuit current withstand at making		KA peak				3.5	3.5	3.5	7	

ENTRELEC cam switches are designed according to the requirements of the following standards :
IEC 408, IEC 337, NBN 222, VDE 0660, VERITAS Bureau, CSA 22-2 N° 14, UL 508, GL 91 552 HH - 558 HH, NFC 63-130/140.

They carry the following approvals:

LR 23701 for VY 10 to 200

UL file N° 57541 for
VY 20 to 200
file N° 66 494 for VY 10

All switches are rated 600 VAC/DC nonswitching, at rated current.

ASE, VERITAS Bureau, CEBEC, GL, FIN.ELEK. INSPEKT, Lloyds approval (for VY 40 - 80 - 125 - 200).

① Possibility to connect a link with the same cross-section.

- Higher ratings are available.
  Contact us.

AC performance

Switch type					VY 10		VY 20		VY 40		VY 80		VY 125		VY 200		VY AR 16	
Utilization category according to IEC 408 and IEC 337-1				P kW	le A	P kW	le A	P kW	le A	P kW	le A	P kW	le A	P kW	le A	P kW	le A	P kW	le A
SINGLE- PHASE	220 V 240 V	AC1-AC21					10		20	9.6	50	19.2	80	29.8	125	48	200		12
		AC3-AC23				1.1	8	3	20	4	30	11	80	18.5	100	30	165	1.5	9.8
		AC4				0.75	6	2.2	16	5.5	40	11	80	13	80	17	100		
		AC11					6		12										
	380 V 415 V	AC1-AC21					10		20	16.6	50	33.2	80	52	125	83	200		
		AC3-AC23				1.5	6	4	16	5.5	20	18.5	55	18.5	63	22	75		
		AC4				1.1	5	3	10	10	38	13	50	15	50	17	60		
		AC11					5		10										
THREE-PHASE	220 V 240 V	AC1-AC21					10		20	16.6	50	33.2	80	52	125	83	200		12
		AC3-AC23				2.2	8.7	4	16	7.5	30	22	80	37	125	55	165	2.2	
		AC4				1.5	6	3	12	11	40	22	80	22	80	37	125		
	380 V 415 V	AC1-AC21					10		20	28.7	50	57.5	80	90	125	143	200		12
		AC3-AC23				4	8.5	7.5	16	15	30	30	63	30	63	40	75	4	8.5
		AC4				1.5	6	5.5	12	18.5	38	22	50	22	50	30	60		
	500 V 550 V	AC1-AC21					10		20	38	40	76	80	119	125	190	200		
		AC3-AC23				4	5	7.5	10	15	23	22	31	22	31	22	31	4	6.5
		AC4				1.5	4	5.5	8	15	25	15	25	15	25	15	25		
	600 V 660 V	AC1-AC21					10		20	41.5	40	83	80	130	125	208	200		
		AC3-AC23				4	5	7.5	10	15	17.5	18.5	25	18.5	25	18.5	25	3	3.8
		AC4				1.5	4	5.5	8	11	20	11	20	11	20	11	20		

The power ratings given in the table (left) are for standard motors as shown on the rating plates.
They allow for a normal power factor and the efficiency corresponding to each category.
The rated values of the **ENTRELEC** switches correspond to the electrical input power of the motor and are thus greater than those corresponding to the mechanical power.

- VY 10 to VY 200 switches are equipped with silver contacts.

Minimum utilization characteristics:

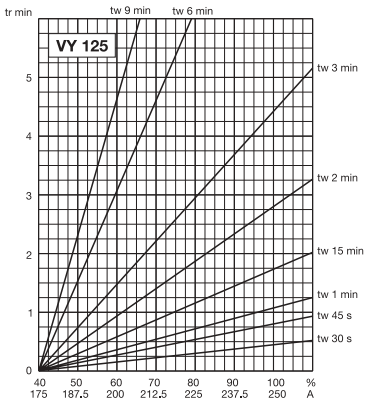
- Standard silver.	
Minimum power	: 0.5 W or VA
Minimum voltage	: 5 V
Minimum current	: 50 mA

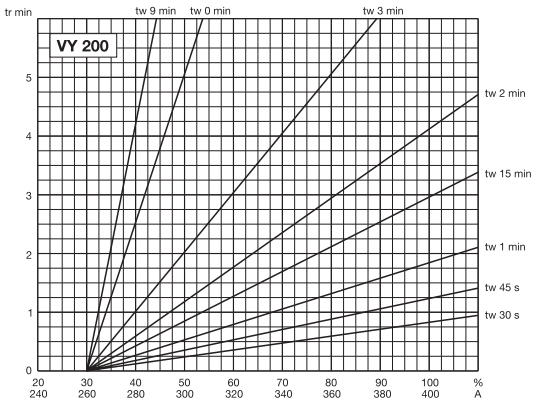
Technical characteristics

AC performance

Utilization category according to UL 508			VY 10 HP	VY 20 HP	VY 40 HP	VY 80 HP	VY 125 HP	VY 200 HP	VY AR 16 HP
SINGLE-PHASE	120 V		1/3	1	2	7.5	10	10	0.5
	200/208 V				5	15	20	20	
	240 V		3/4	2	5	15	20	20	1.5
	480 V				10				
	600 V				15				
THREE-PHASE	120 V				5	10	15	15	
	200/208 V				10	25	30	30	3
	240 V		2	5	10	30	40	40	5
	480 V		5	10	20	40	50	50	3
	600 V				25				
Utilization category according to CSA 22-2-14			VY 10 HP	VY 20 HP	VY 40 HP	VY 80 HP	VY 125 HP	VY 200 HP	VY AR 16 HP
THREE-PHASE	240 V		2		15				
	300 V			5					
	600 V		3	7.5	25	30	50		3

overload curves at max. conductor cross-section





tr.: no-load time.
tw.: overload time.
The period tw + tr is repeated until the temperature at the terminals reaches a steady 70°C (158°F), the permissible limit according to IEC 408.

NOTE: *max. permissible ambient temperature range for all switches is: -30°C (-22°F) to +60°C (140°F).*

The characteristics above are given for information only and can be changed without notice.

Technical characteristics

Maximum switching voltage per contact on DC

Utilization category	Rated utilization current A		Maximum voltage per contact (V)						
			VY 10	**VY 20**	**VY 40**	**VY 80**	**VY 125**	**VY 200**	**VY AR 16**
DC 1 Resistive load	1		220	220	250	250	250	250	
	2		180	180	220	220	220	220	
	4		115	115	160	160	160	160	
	5		95	95	120	120	120	120	
	10		85	85	105	105	105	105	
	16				100	100	100	100	
	20				95	95	95	95	
	25				90	90	90	90	
	30				85	85	85	85	
	40				80	80	80	80	
	50					75	75	75	
	60					70	70	70	
	80					65	65	65	
	100						60	60	
	125						55	55	
	150							52	
	175							48	
	200							45	
DC 21	1		190	190	225	225	225	225	
	2		145	145	160	160	160	160	
	4		100	100	120	120	120	120	
	5		85	85	110	110	110	110	
	10		70	70	90	90	90	90	
	16				85	85	85	85	
	20				80	80	80	80	
	25				75	75	75	75	
	30				72	72	72	72	
	40				68	68	68	68	
	50					64	64	64	
	60					60	60	60	
	80					54	54	54	
	100						48	48	
	125						43	43	
	150							38	
	175							34	
	200							30	
DC 2 DC 3 DC 4 DC 5 DC 22 DC 23 Inductive load	1		145	145	145	145	145	145	
	2		105	105	105	105	105	105	
	4				90	90	90	90	
	5				85	85	85	85	
	10				75	75	75	75	
	16				68	68	68	68	
	20				63	63	63	63	
	25				58	58	58	58	
	30				54	54	54	54	
	40				45	45	45	45	
	50					40	40	40	
	60					36	36	36	
	80					30	30	30	
	100						22	22	
	125						18	18	
	150							14	
	175							12	
	200							10	

UL/CSA

All switches rated at 600 VDC nonswitching – consult us for details.
For maximum switching voltage per contact, refer to this table.

Technical characteristics

Utilization categories for switches on AC

Ie = nominal current

Utilization category		Typical applications	Current: Normal conditions Make	Normal conditions Break	Fault conditions Make	Fault conditions Break	Power factor cos φ
	AC 1	Noninductive or slightly inductive loads, resistance furnaces	Ie*2	Ie	1.5 Ie	1.5 Ie	0.95
IEC 408 App.C. VDE 0660 part 1/8.69 DIN 57660 part. 107	**AC 2** **AC 2'**	Slip-ring motors: Starting, plugging	2.5 Ie	Ie 2.5 Ie	4 Ie	4 Ie	0.65
	AC 3	Squirrel-cage motors: Starting, switching off motors during running — Ie ≤ 17 A	6 Ie	Ie	10 Ie	8 Ie	0.65
		17 A Ie ≤ 100 A			10 Ie	8 Ie	0.35
		Ie > 100 A			8 Ie	6 Ie	0.35
	AC 4	Squirrel-cage motors: Starting, plugging, inching*1 — Ie ≤ 17 A	6 Ie	6 Ie	12 Ie	10 Ie	0.65
		17 A < Ie ≤ 100 A			12 Ie	10 Ie	0.35
		Ie > 100 A			10 Ie	8 Ie	0.35
		* 1/ Inching : energizing a motor once or repeatedly for short periods to obtain small movements of the driven mechanism. Plugging : stopping by reversing motor primary connections while the motor is running. * 2/ Ie : rated operational current.					
IEC 408 App.C. DIN 57660 part. 107	**AC 20**	Connecting and disconnecting under no-load conditions	_	_	_	_	_
	AC 21	Switching of resistive loads including moderate overloads			1.5 Ie	1.5 Ie	0.95
	AC 22	Switching of mixed resistive and inductive loads, including moderate overloads			3 Ie	3 Ie	0.65
	AC 23	Switching of motor loads or other highly inductive loads — Ie ≤ 17 A			10 Ie	8 Ie	0.65
		17 A < Ie ≤ 100 A			10 Ie	8 Ie	0.35
		Ie > 100 A			8 Ie	6 Ie	0.35
VDE 0660 part 2/8.69	**AC 11**	Control of electro-magnets	10 Ie	Ie	10 Ie	10 Ie	0.7
IEC 337-1	**AC 11**	Control of electro-magnets	10 Ie	Ie	11 Ie	11 Ie	0.7

Utilization categories for switches on DC

Utilization category		Typical applications	Current: Normal conditions Make	Normal conditions Break	Fault conditions Make	Fault conditions Break	L/R Time constant
VDE 0660 part 2/8.69	**DC1**	Noninductive or slightly inductive loads, resistance furnaces	Ie	Ie	1.5 Ie	1.5 Ie	1 ms
IEC 408 App.C. VDE 0660 part 1/8.69 DIN 57660 part. 107	**DC 2**	Shunt motors: starting	2.5 Ie	Ie	4 Ie	4 Ie	2.5 ms
		switching off motors during running					
	DC 3	starting, plugging, inching		2.5 Ie			
	DC 4	Series motors: starting	2.5 Ie	Ie	4 Ie	4 Ie	15 ms
		switching off motors during running					
	DC 5	starting, plugging, inching		2.5 Ie			
IEC 408 App.C. DIN 57660 part. 107	**DC 20**	Connecting and disconnecting under no-load conditions	_	_	_	_	_
	DC 21	Switching of resistive loads, including moderate overloads			1.5 Ie	1.5 Ie	1 ms
	DC 22	Switching of mixed resistive and inductive loads including moderate overloads (e.g., shunt motors)			4 Ie	4 Ie	2.5 ms
	DC 23	Switching of highly inductive loads			4 Ie	4 Ie	15 ms
IEC 337-1 VDE 0660 part 1/8.69	**DC 11**	Control of electro-magnets	Ie	Ie	1.1 Ie	1.1 Ie	40 ms