B. SCHNEIDER ELECTRIC

2. TELEMECANIQUE:
CONTROL & AUTOMATION

a. Control & protection

- Modular equipment
- Contactors and reversing contactors
- Protection parts
- Bare or enclosed starters & equipment

b. Detectors

- Proximity & sensors
- Photoelectric detectors
- Limit switches

c. Data processing

- External interfaces for discrete signals
- Telefast two pre-wired system

d. Man-machine dialogue

- Control & signaling units
- Boxes & enclosures

e. Assemble and cable

- Housing: Enclosures
- Assembly and wiring accessories
- Distribution of power in equipment

MODULAR EQUIPMENT

Applications	Control of lighting heating, hot water systems, ventilation systems and small motors

Functions	Contactors : - GC1 for standard applications, - GC3 for use in extremely "noise sensitive" environments	Contactors with manual override: - GY1 for standard applications, - GY3 for use in extremely "noise sensitive" environments
Rating	16...63 A	16...63 A
Number of 17.5 mm modules (variable, depending on size and number of poles)	1...3	1...4
Type reference	GC1, GC3	GY1, GY3

MODULAR EQUIPMENT

Direct control of motors	Fuse protection	Motor control and protection	Relay based equipment
Rotary switch disconnectors	Single, 2, 3 or 4-pole fuse carriers, with or without neutral	Thermal-magnetic motor circuit breakers	Electronic timers with solid state output
25...80 A	Up to 125 A	0.1...32 A	Timing range 0.1 s...60 min
2,5	1...8	2.5	1
VVD, VVE	DF6, GK1	GV2-M	RE1-L

CONTACTORS & REVERSING CONTACTORS

Applications		Automation systems		
Rated operational current				
Ie max AC-3 (Ue ≤ 440 V)		6 A	9 A	12 A
Ie AC-1 (ϑ ≤ 40 °C)		–	20 A	–
Rated operational voltage		690 V	690 V	690 V
Rated operational power in category AC-3	220/240 V	1.5 kW	2.2 kW	3 kW
	380/400 V	2.2 kW	4 kW	5.5 kW
	415/440 V	2.2 kW	4 kW	5.5 kW
	500 V	3 kW	4 kW	4 kW
	660/690 V	3 kW	4 kW	4 kW
Coil consumption standard, low consumption		–	–	–
Operating ranges		–	–	–
Coil consumption wide range, low consumption		1.8 W / 0.06 A	1.8 W / 0.06 A	1.8 W / 0.06 A
Operating ranges		0.7…1.30 Uc	0.7…1.30 Uc	0.7…1.30 Uc
Operating time at 20 °C and at Uc	Opening	30…40 ms	30…40 ms	30…40 ms
	Closing	10…20 ms	10…20 ms	10…20 ms
Auxiliary contact blocks:				
instantaneous		LA1-KN●● 2 contacts	LA1-KN●● 2 contacts	LA1-KN●● 2 contacts
electronic time delay		LA2-KT2●	LA2-KT2●	LA2-KT2●
Suppressor module		Built-in as standard		
Interfaces		Not necessary		
Contactor type references		LP4-K06	LP4-K09	LP4-K12
Reversing contactor type references		LP5-K06	LP5-K09	LP5-K12

CONTACTORS & REVERSING CONTACTORS

9 A 20 A	12 A 20 A	18 A 25 A	25 A 40 A
690 V	690 V	690 V	690 V
2.2 kW 4 kW 4 kW 5.5 kW 5.5 kW	3 kW 5.5 kW 5.5 kW 7.5 kW 7.5 kW	4 kW 7.5 kW 9 kW 10 kW 10 kW	5.5 kW 11 kW 11 kW 15 kW 15 kW
1.2 W / 0.05 A 0.8...1.1 Uc	1.2 W / 0.05 A 0.8...1.1 Uc	1.5 W / 0.06 A 0.8...1.1 Uc	2 W / 0.08 A 0.8...1.1 Uc
1.6 W / 0.06 A 0.7...1.25 Uc	1.6 W / 0.06 A 0.7...1.25 Uc	2 W / 0.08 A 0.7...1.25 Uc	2.4 W / 0.1 A 0.7...1.25 Uc
60 ms 15 ms	60 ms 15 ms	50 ms 15 ms	60 ms 15 ms
LN1-DN11 (2 contacts) LA4-DT●U (serial timer)			
By addition of a bidirectional peak limiting diode or contactors with built-in suppression as standard			
LP4-D09	LP4-D12	LP4-D18	LP4-D25
LP5-D09	LP5-D12	LP5-D18	LP5-D25

CONTACTORS & REVERSING CONTACTORS

Applications	Control of all types of motor for standard or severe duty applications Control of resistive, inductive and capacitive circuits: heating, lighting, power factor correction, transformers, normal-standby					
Rated operational current: Ie max AC-3 (Ue ≤ 440 V)	115 A	150 A	185 A	225 A	265 A	330 A
Ie max AC-1 (θ ≤ 40 °C)	200 A	250 A	275 A	315 A	350 A	400 A
Rated operational voltage	1000 V	1000 V	1000 V	1000 V	1000 V	1000 V
Number of poles	3 or 4	3 or 4	3 or 4	3 or 4	3 or 4	3 or 4
Rated operational power in AC-3 220/240 V	30 kW	40 kW	55 kW	63 kW	75 kW	100 kW
380/400 V	55 kW	75 kW	90 kW	110 kW	132 kW	160 kW
415 V	59 kW	80 kW	100 kW	110 kW	140 kW	180 kW
440 V	59 kW	80 kW	100 kW	110 kW	140 kW	200 kW
500 V	75 kW	90 kW	110 kW	129 kW	160 kW	200 kW
660/690 V	80 kW	100 kW	110 kW	129 kW	160 kW	220 kW
1000 V	65 kW	65 kW	100 kW	100 kW	147 kW	160 kW
Add-on auxiliary contact blocks	Front mounting, identical to those used on LC1-D contactors (contacts: instantaneous LA1-DN●●, time delay LA2-DT or LA3-DR, dust and damp protected LA1-DX or DY or DZ)					
Associated thermal overload relays Manual-automatic	LR9-F					
Electronic	LT6					
Interfaces Specific	LA4-FWB					
Universal	With or without, depending on the control circuit					
Contactor type references	LC1-F115	LC1-F150	LC1-F185	LC1-F225	LC1-F265	LC1-F330
Reversing contactor type references	LC2-F115	LC2-F150	LC2-F185	LC2-F225	LC2-F265	For customer assembly

CONTACTORS & REVERSING CONTACTORS

400 A	500 A	630 A	780 A	800 A	750 A	1000 A	1500 A	1800 A
500 A	700 A	1000 A	1600 A	1000 A	800 A	1250 A	2000 A	2750 A
1000 V	1000 V	1000 V	1000 V	1000 V	1000 V	1000 V	1000 V	1000 V
2, 3 or 4	2, 3 orr 4	2, 3 or 4	3 or 4	3	1 to 4	1 to 4	1 to 4	1 to 4
110 kW	147 kW	200 KW	220 kW	250 kW	220 kW	280 kW	425 kW	500 kW
200 kW	250 kW	335 kW	400 kW	450 kW	400 kW	500 kW	750 kW	900 kW
220 kW	280 kW	375 kW	425 kW	450 kW	425 kW	530 kW	800 kW	900 kW
250 kW	295 kW	400 kW	425 kW	450 kW	450 kW	560 kW	800 kW	900 kW
257 kW	355 kW	400 kW	450 kW	450 kW	500 kW	600 kW	700 kW	900 kW
280 kW	335 kW	450 kW	475 kW	475 kW	560 kW	670 kW	750 kW	900 kW
185 kW	335 kW	450 kW	450 kW	450 kW	530 kW	530 kW	670 kW	750 kW
					4 instantaneous contact compositions: 2 N/C + 2 N/O, 3 N/O + 1 N/C, 1 N/O + 3 N/C or 4 N/O			
					LR9-F LT6			
					–			
LC1-F400	LC1-F500	LC1-F630	LC1-F780	LC1-F800	LC1-BL	LC1-BM	LC1-BP	LC1-BR
For customer assembly								

PROTECTION PARTS

Applications	Motor protection		
Tripping threshold on short circuit	About 13 In		
Standard motor power ratings in AC-3, 415 V	Up to 15 kW	Up to 11 kW	Up to 37 kW
Operational current at 415 V	0.1…32 A		1…80 A
Breaking capacity at 415 V (Icu) to IEC 947-2	10…100 kA	50…100 kA	35…100 kA
Door interlock mechanism	Without	With	Without
Type references	GV2-M	GV2-P	GV3-M

PROTECTION PARTS

		Protection of motors with high starting current peak
		About 20 In
15…110 kW		Up to 11 kW
25…220 A		0.25…23 A
25 and 35 kA	70 kA	15…100 kA
With		With
GV7-RE	GV7-RS	GV2-RT

PROTECTION PARTS

Applications	Motor protection Magnetic circuit breakers provide short-circuit protection. They must be combined with thermal overload relays to provide motor overload protection.	
Tripping threshold on short circuit	About 13 In	
Standard motor power ratings in AC-3, 415 V	Up to 11 kW	
Operational current at 415 V	0,4...25 A	
Breaking capacity at 415 V (Icu) to IEC 947-2	15 kA	50 kA
Door interlock mechanism	With	With
Device type reference	GV2-LE	GV2-L

PROTECTION PARTS

	6...14 In	8...13 In	6,3...12,5 In
11...37 kW	0,37...250 kW		
40...80 A	1,5...500 A		
35 and 50 kA	25,70 and 150 kA	35,70 and 150 kA	45,70 and 150 kA
GK3-EF	NS 80	NS100 to NS 250	NS 400 and NS 630

PROTECTION PARTS

Applications	Protection of industrial equipment control circuits and solenoid valves	
Tripping threshold on short circuit	About 6 In	About 13 In
Operational current	0.5 and 1 A	0.5...12 A
Maximum operational voltage	415 V	
Number of poles	1	
Breaking capacity (Icu) **to IEC 947-2**	50 kA at 415 V	1.5...50 kA at 415 V
Device type references	GB2-CS	GB2-CB

PROTECTION PARTS

	Protection of transformers	
	Single-phase ≤ 2500 VA/415 V	3-phase ≤ 10 kVA/415 V
		About 20 In
		0.25...23 A
250 V	415 V	690 V
1 + Neutral	1	3
1.5...50 kA at 250 V	1.5...50 kA at 415 V	15...100 kA at 415 V
GB2-CD	GB2-CB	GV2-RT

PROTECTION PARTS

Applications	Protection of control circuits or transformers

Breaking under load	
Fuse type (emergency stop)	NF C or DIN
Cartridge fuses	1...125 A
Device type	Fuse carriers
Device type references	DF6, GK1-C, D, E, F

PROTECTION PARTS

Motor protection	Protection of motors or variable speed controllers
Yes, only if combined with a contactor	Yes
	NF C, DIN or BS
	1...1250 A
	Switch-disconnector-fuses
LS1, GK1-E, GK1-F (without fuses)	GS1

PROTECTION PARTS

Applications	GS1 switch-disconnector fuses provide on-load breaking and making, safe isolation and overcurrent. They are used, in particular, on the incoming supply for control panels, for protecting and switching off main. They provide simultaneous disconnection, together with all the other associated functions such as padlocking. Their compact design means that they can also be fitted in small automation system equipment to provide.

Fuse type	NF C or DIN								
Rated thermal current (Ith)	50 A	63 A	100 A	125 A	160 A	250 A	400 A	630 A	1250 A
Number of poles	3 or 4								
Fuse size	14 x 51	T00C	22 x 58	22 x 58 T00	T0 T00	T1	T2	T3	T4
Internal operator, padlockable	Side						Side or front		
External operator, padlockable and lockable	Side or front						Side or front		
Rated operational voltage (Ue)	690 V								
Rated operational current (Ie) **at 400 V, AC-23A**	50 A	63 A	100 A	125 A	160 A	250 A	400 A	630 A	1250 A
Rated breaking capacity at 400 V, AC-23B	400 A	500 A	800 A	1000 A	1280 A	2000 A	3200 A	5040 A	10 000 A
Rated making capacity at 400 V, AC-23B	500 A	630 A	1000 A	1250 A	1600 A	2500 A	4000 A	6300 A	12 500 A
Rated rms conditional short circuit current at 400 V, with gG (gl) fuses	100 kA	100 kA	100 kA	100 kA	100 kA	100 kA	100 kA	100 kA	100 kA
Switch-disconnector-fuse type references	GS1-F	GS1-G	GS1-J or KK	GS1-K or LL	GS1-L	GS1-N	GS1-Q	GS1-S	GS1-V

PROTECTION PARTS

protection.
circuits (including emergency stop).
and interlocking.
disconnect and protection functions on the incoming supply of equipment, generators, starters or motors.

BS										
32 A	63 A	100 A	160 A	200 A	250 A	315 A	400 A	630 A	800 A	1250 A
3 or 4										
A1	A2-A3	A4 Ø ≤ 31 mm	A4-B1-B2	B1-B2	B1...B3	B1...B3	B1...B4	C1-C2	C1...C3	D1
Side							Side or front			
Side or front							Side or front			
690 V										
32 A	63 A	100 A	160 A	200 A	250 A	250 A	400 A	630 A	800 A	1000 A
260 A	500 A	800 A	1280 A	1600 A	2000 A	2000 A	3200 A	5040 A	6400 A	10 000 A
320 A	630 A	1000 A	1600 A	2000 A	2500 A	2500 A	4000 A	6300 A	8000 A	8000 A
100 kA	100 kA	100 kA	80 kA	80 kA	80 kA	55 kA	100 kA	100 kA	100 kA	100 kA
GS1-DB	GS1-GB	GS1-JB	GS1-LB or LLB	GS1-MB	GS1-NB	GS1-PB	GS1-QB	GS1-SB	GS1-TB	GS1-VB

PROTECTION PARTS

Applications	Motor protection			Motor protection and general protection		
Type of load	Motors without PTC thermistor probes			Motors without PTC thermistor probes or general circuits		Motors with PTC thermistor probes
Protection against overload only	•	•	–	–	–	•
Protection against short-circuits only	–	–	–	•	•	–
Protection against overload and short-circuits	–	–	•	–	–	–
• *Function performed*						
Monitoring	–	–	–	–	–	–
Maximum power at 415 V	500 kW	–	110 kW	–	37 kW	Unlimited
Maximum operational current	1000 A	630 A	220 A	1250 A	80 A	Unlimited
Type of device	Thermal overload relays	Overcurrent relays	Thermal magnetic circuit-breakers	Fuse carriers and switch-disconnector-fuses	Magnetic circuit-breakers and trip switches	Thermistor protection units for use with PTC probes
References	LR2-K LR●-D LR●-F LT7-F0M	RM1-XA	GV2-M, P GV2-RT GV3-M	LS1 GK1 GS1	GV2-L, LE GK3-EF	LT3-S

PROTECTION PARTS

Protection and control of motors	Monitoring of motors, 3-phase supplies, liquid levels, sensitive contacts	Variable speed controller protection	Protection of industrial equipment control circuits and solenoid valves		Transformer protection		
Motors with PTC thermistor probes	Motors or 3-phase supplies, Automation systems	Variable speed controller	Contactor coils and solenoid valves		Single-phase transformers ≤ 2500 VA at 415 V		3-phase transformers ≤ 10 kVA at 415 V
•	•	–	–	–	–	–	–
–	–	•	•	–	•	–	–
–	–	–	–	•	–	Short-circuit protection at the primary Overload and short-circuit protection at the secondary	
•	•	–	–	–	–	–	–
–	–	–	–		–	2500 VA	0...10 kVA
5 A	15 A	1250 A	125 A	125 A	32 A	–	–
Multifunction overload relays	Measurement and control relays	Fused switch disconnectors with quick blow fuses	Fuse carriers	Thermal magnetic circuit-breakers	Fuse carriers	Thermal magnetic circuit-breakers	Thermal magnetic circuit-breakers
LT6	RM3 RM1-XA	GS1 + UR fuses	DF6 GK1	GB2	DF6	GB2	GV2-RT

PROTECTION PARTS

Applications	Current measurement ⎓ and ∼		Voltage measurement ⎓ and ∼		3-phase supply control
	Overcurrent	Undercurrent and overcurrent	Overvoltage	Undervoltage or overvoltage	
Measurement or control	Adjustable threshold 0.003…1 A	Adjustable thresholds 0.003…1 A or 0.3…15 A depending on model	Adjustable thresholds 0.05…5 V or 1…100 V or 30…500 V depending on model		Control : rotational direction of phases, total failure of one phase, 220…500 V
Supply voltage	∼ 24 V ∼ 42…48 V ∼ 110…130 V ∼ 220…240 V	⎓ 24…240 V ∼ 110…130 V ∼ 220…240 V ∼ 380…415 V	∼ 24 V ∼ 42…48 V ∼ 110…130 V ∼ 220…240 V	⎓ 24…240 V ∼ 110…130 V ∼ 220…240 V ∼ 380…415 V	∼ 220…500 V
Number of output relay contacts	1 C/O	2 C/O	1 C/O	2 C/O	2 C/O
Output relay state	Energised when threshold exceeded				De-energised on detection of a fault
Display	Green LED : RM3 supply on Yellow LED : relay energised				Yellow LED : relay energised
Built-in time delay	Fixed 80 ms	Adjustable 0.05 to 30 s	Fixed 80 ms	Adjustable 0.05 to 30 s	None
Width	22.5 mm	45 mm	22.5 mm	45 mm	22.5 mm
References	RM3-JA2	RM3-JA1	RM3-UA2	RM3-UA1	RM3-TG2

PROTECTION PARTS

			Liquid level control		Insulation control	Protection of sensitive contacts
Control : rotational direction and total failure of one or more phases, undervoltage and overvoltage (fixed or adjustable thresholds)	Control : asymmetry of phases, failure of one or more phases, rotational direction of phases, 220…240 V, 380…415 V	Control : asymmetry of phases, failure of one of the phases, rotational direction of phases, 220…240 V, 380…415 V, 480…500 V	Measurement of liquid resistance by submersible probes		Control of a.c. or d.c. supply circuits	Control of contact closing
∿ 110…130 V ∿ 160…300 V ∿ 220…240 V ∿ 300…500 V ∿ 380…415 V	∿ 220…240 V ∿ 380…415 V	∿ 110…130 V ∿ 220…240 V ∿ 380…415 V	∿ 24 V ∿ 110…130 V ∿ 220…240 V ∿ 380…415 V	⎓ 24…240 V ∿ 110…130 V ∿ 220…240 V ∿ 380…415 V	⎓ 24…240 V ∿ 110…130 V ∿ 220…240 V	∿ 24 V ∿ 110…130 V ∿ 220…240 V ∿ 380…415 V
	1 C/O	2 C/O	1 C/O	2 C/O	1 C/O	2 C/O
			Energised when high level electrode immersed. De-energised when low level electrode not immersed.	Energised when high level electrode immersed. De-energised when low level electrode not immersed.	Energised on detection or absence of a fault.	–
Green LED : RM3 supply on Yellow LED : relay energised 3 red LEDs : faults	Yellow LED : relay energised	Green LED : RM3 supply on Yellow LED : relay energised 2 red LEDs : faults	Green LED : RM3 supply on Yellow LED : relay energised	Green LED : RM3 supply on Yellow LED : relay energised		
Adjustable 0.1 to 10 s	Fixed 500 ms	Adjustable 0.1 to 10 s	Fixed 250 ms	Adjustable 0.1 to 10 s	None	None or adjustable 0.05 to 30 s
45 mm	22.5 mm	45 mm	22.5 mm	45 mm		
RM3-TR1	RM3-TA2	RM3-TAR1	RM3-LG2	RM3-LA1	RM3-PA1	RM3-EA1

PROTECTION PARTS

Applications	Relay based automation systems							
	Solid state output					Relay output		
Enclosure type	Modular 17.5 mm		DIN, width 22.5 mm			DIN, width 22.5 mm		
Timing ranges								
Number of ranges	1		1		2	10	7 or 10	
Max...min values	0.1...3 s; 1...30 s; 10...300 s 2...60 min (2)		0.1...10 s; 0.3...30 s; 3...300 s; 0.6...60 min		3...300 s and 0.1...10 s	0.05 s...300 h	0.05 s...300 h	
Output circuit	Solid state					1 C/O or 2 C/O		
Functions								
On-delay	•		•		•	•		
Off-delay		•		•			•	
On and Off-delay								
Pulse on energisation					•			
Flashing					•			
For star-delta starters								
Control circuit voltage	⎓ 24...240 V ~ 24...240 V	~ 24...240 V	⎓ 24...240 V ~ 24...240 V	~ 24...240 V	⎓ 24...240 V (1) ~ 24...240 V	⎓ or ~ 24 V,		
Type	RE1-LA	RE1-LC	RE6-TA	RE6-RA	RE6-MS	RE4-T	RE4-R	

PROTECTION PARTS

10					1				
0.05 s...300 h					0.1...10 s; 0.3...30 s; 3...300 s; 20 s...30 min (2)				
			2 C/O	1 C/O or 2 C/O	1 C/O				1 C/O or 1 N/C + 1 N/O
				•	•				
				•		•			
•									
	•			•			•		
		•		•				•	
			•	• (RE4-MY)					•
⎓ or ∼ 42...48 V, ∼ 110...240 V, ⎓ or ∼ 24...240 V (2)					⎓ 24 V, ∼ 24, ∼ 110...130 V, ∼ 220...240 V, ∼ 380...415 V (3)				
RE4-MA	RE4-P	RE4-C	RE4-Y	RE4-ML RE4-MY	RE5-TA	RE5-R	RE5-P	RE5-C	RE5-Y

PROTECTION PARTS

Applications	Standard motor protection		
	Line protection		
Protection	Motor overload Stalling Phase failure		
Communication	–		
Associated with contactor type	LC1, LP1-K	LC1, LP1-D	LC1-F
Motor current (In)	0.11...16 A	0.1...150 A	30...630 A
Relay type references	LR2-K	LR●-D	LR9-F

PROTECTION PARTS

	Protection and control of motors	Standard motor protection	
Protection of resistors, bearings, capacitors	Protection	Protection of slip ring motors and circuits not subject to current peaks	Protection of d.c. motors
Frequent starting Harsh environments	Thermal overload Phase imbalance and failure Stalling Reversal of phase rotation Underload Protracted starting time Earth fault Too low power factor, cos φ	High overcurrents Stalling	
–	yes	–	
LC1, LP1-D or LC1-F			
Unlimited	1...5 A	0.7...630 A	1.6...3000 A
LT3-S	LT6	RM1-XA	RME-TC

BARE OR ENCLOSED STARTERS & EQUIPMENT

Applications		3-phase automatic motor starter ensuring operating reliability. Overall concept allowing protection, power switching, fully											
Standard power ratings of motors (50/60 Hz), in kW	220/240 V	•	•	0.06	•	0.09	0.12 0.18	0.25 0.37	0.55	0.75 1.1	1.5	2.2 3	4
	400/415 V	•	0.06	0.09	0.12	0.18 0.25	0.37	0.55 0.75	1.1	1.5 2.2	3	4 5.5	9
	440 V	•	•	•	•	0.37	0.55	1.1	1.5	2.2	4	5.5	9
	480/525 V	•	•	•	•	0.37	0.75	1.1	2.2	3.7	5.5	7.5	11
	600/690 V	•	•	•	0.37	0.55	1.1	1.5	3	4	7.5	10	15
Adjustable thermal protection (Ith) (A)	Min	0.10	0.16	0.25	0.40	0.63	1.00	1.6	2.5	4	6	10	12
	Max	0.16	0.25	0.40	0.63	1.00	1.60	2.5	4	6	10	16	18
Magnetic protection (A) Fixed at 15 x Ith max		2.4	3.75	6	9.45	15	24	37.5	60	90	150	195	270
Adjustable: 6 to 12 Ith max	Min	–	–	–	–	–	–	–	–	–	–	–	–
	Max	–	–	–	–	–	–	–	–	–	–	–	–
Breaking capacity in kA w/o (or with) limiter (1)	220/240 V	≥130	≥130	≥130	≥130	≥130	≥130	≥130	≥130	≥130	50 (65)	50 (65)	50 (65)
	400/415 V	≥130	≥130	≥130	≥130	≥130	≥130	≥130	≥130	≥130	50 (65)	50 (65)	50 (65)
	440 V	≥130	≥130	≥130	≥130	≥130	≥130	≥130	≥130	50 (65)	50 (65)	25 (65)	25 (65)
	480/525 V	≥130	≥130	≥130	≥130	≥130	≥130	≥130	≥130	50 (65)	10 (65)	7.5 (65)	7.5 (65)
	600/690 V	≥130	≥130	≥130	≥130	≥130	≥130	50 (50)	50 (50)	5 (42)	5 (42)	2 (42)	2 (42)
Rated operational current in AC-43		18 A											
Number of poles and operating directions		3-pole, non reversing 2 x 3-pole, reversing											
Locking	Without control test function	Yes											
	With control test function	No											
Type references of contactor-breakers + protection modules or complete unit (2)		LD1-LB (2) + LB1-LB03P, LD5-LB (2) + LB1-LB03P or LD3-LB (3)											

• There are no standard power ratings for these motors.
(1) The breaking capacity **with current limiter** is shown in brackets.
(2) Without control test function, with padlocking facility.

BARE OR ENCLOSED STARTERS & EQUIPMENT

visible isolation and padlocking. For control and protection of resistive circuits in AC-1, see references pages 4/116 and 4/117

0.06	•	0.09 0.12	0.18 0.25	0.37 0.75	0.55	1.1 2.2	1.5 2.2	3	5.5	7.5		3	4	5.5	7.5	9	11	15
•	•	•	•	1.1	1.5	2.2	4	7.5	11	15		5.5	9	11	15	22	25	33
•	•	0.37	0.55	1.1	1.5	2.2	4	7.5	11	15		5.5	9	11	15	22	25	33
•	•	0.37	0.75	1.1	2.2	3.7	5.5	10	15	18.5		7.5	11	15	18.5	25	33	40
•	•	0.55	1.1	1.5	3	4	7.5	11	18.5	25		10	15	18.5	22	33	45	55
0.25	0.40	0.63	1.00	1.6	2.5	4	6.3	10	16	23		10	13	18	23	28	35	45
0.40	0.63	1.00	1.60	2.5	4.0	6.3	10	16	25	32		13	18	25	32	40	50	63
–	–	–	–	–	–	–	–	–	–	–		195	270	375	480	600	750	945
2.4	3.78	6	9.6	15	24	37.8	60	96	150	192		78	108	150	192	240	300	378
4.8	7.56	12	19.2	30	48	75.6	120	192	300	384		156	216	300	384	480	600	756
≥130	≥130	≥130	≥130	≥130	≥130	≥130	≥130	≥130	50 (**65**)	50 (**65**)		≥130	≥130	≥130	≥130	≥130	≥130	≥130
≥130	≥130	≥130	≥130	≥130	≥130	≥130	≥130	≥130	50 (**65**)	50 (**65**)		≥130	≥130	≥130	50	50	50	50
≥130	≥130	≥130	≥130	≥130	≥130	≥130	≥130	50 (**65**)	50 (**65**)	50 (**65**)		≥130	≥130	50	50	50	50	50
≥130	≥130	≥130	≥130	≥130	≥130	≥130	≥130	15 (**65**)	15 (**65**)	15 (**65**)		≥130	≥130	35	35	30	30	30
≥130	≥130	≥130	≥130	≥130	≥130	15 (**42**)	10 (**42**)	4 (**42**)	4 (**42/20**)	4 (**42/20**)		10	10	10	10	10	10	10
32 A												63 A						
3-pole, non reversing 2 x 3-pole, reversing												3-pole, non reversing 2 x 3-pole, reversing						
Yes Yes												Yes Yes						
LD1-LC (2) + LB1-LC03P (5). LD4-LC (4) + LB1-LC03P (5). LD5-LC (4) + LB1-LC03P (5)												LD1-LD (2) + LB1-LD03● (6). LD4-LD (4) + LB1-LD03● (6). LD5-LD (4) + LB1-LD03● (6)						

(3) Complete unit consisting of a contractor-breaker with protection module, supplied assembled.
(4) With control test function and padlocking facility. Black or red knob on yellow background.
(5) Fixed magnetic protection. (6) **LB1-LD03M** for adjustable magnetic protection or **LB1-LD03P** for fixed magnetic protection.

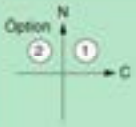
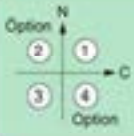
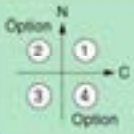
BARE OR ENCLOSED STARTERS & EQUIPMENT

Applications		Equipment based on control relays	
		Control relays	Mini-control relays
Control voltages	~	24...660 V	12...690 V
	⎓	12...440 V	12...250 V
Functions			
Instantaneous relays		●	●
On-delay or Off-delay relays		●	●
Latching relays		●	–
Fleeting contact relays		–	–
Flashing relays		–	–
● Applicable			
Features		Low consumption version for ⎓	
		Linked contacts (in accordance with INRS and BIA specifications)	
		–	
		–	
Number of contacts	On basic device	4 N/C or N/O combined double break	4 N/C or N/O combined double break
	On auxiliary contact blocks	8 N/C or N/O combined double break	4 N/C or N/O combined double break
Rated conventional thermal current		10 A	
Operational voltage		Up to 660 V	
Durability			
	1 A/230 V, AC-15	3 million operating cycles	2 million operating cycles
	1 A/24 V, DC-13	10 million operating cycles	6 million operating cycles
Device type references		CA●-D	CA●-K

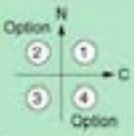
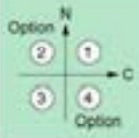
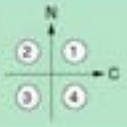
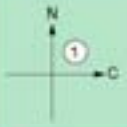
BARE OR ENCLOSED STARTERS & EQUIPMENT

Equipment based on plug-in control relays		
Plug-in control relays	Universal type plug-in control relays	Miniature plug-in control relays
12...240 V	24...230 V (other voltages available on request)	24...230 V (other voltages available on request)
5...240 V	24 or 48 V (other voltages available on request)	12, 24, 48 or 110 V (other voltages available on request)
●	●	●
●	●	–
●	–	–
●	●	–
●	●	–
Low consumption as standard, for ∼ and ⎓		
–		
Version with low level contacts (gold flashed contacts)		–
–	Other functions and connections available on request	
4 C/O (Off-delay, On-relay)	2 or 3 C/O (Off-delay, On-relay)	2 or 4 C/O (Off-delay, On-relay)
–	–	–
5 A	10 A (RUN-21 and RUN-31), 4 A (RUN-33)	5 A
Up to 250 V		
400 000	500 000	300 000
–	–	–
RH	RU	RX

BARE OR ENCLOSED STARTERS & EQUIPMENT

Applications	Soft start - soft stop of asynchronous motors	Variable speed control of asynchronous motors	
		Constant torque or variable torque	
1 or 2 direction	1	2	2
Operating quadrants			
Power supply (50/60 Hz)	3-phase 220…500 V	• Single-phase 200…240 V • 3-phase 200…230 V and 400…460 V	• Single-phase 208…240 V • 3-phase 208…240 V and 400…460 V
Motor Voltage	220…500 V	200…460 V	208…460 V
Power	3…800 kW	0,37…15 kW	0,37…5,5 kW
Breaking to a standstill	Pulse breaking	By d.c. injection	By d.c. injection
Slow-down	By torque control	Rheostatic	Rheostatic
Technology	Digital	Digital	Digital
Communication			
Serial link	RS 232 C, RS 485	RS 232 C	RS 232 C RS 485, RS 422
Industrial bus	UNI-TELWAY Modbus		UNI-TELWAY Modbus, FIPIO
Controller type	ATS-46	ATV-18	ATV-16

BARE OR ENCLOSED STARTERS & EQUIPMENT

		Variable speed control of d.c.motors			
	Closed loop flux vector with sensor				
2	2	1	2	1	2
					
3-phase 208…230 V and 400…460 V	3-phase 400 V	Single-phase 220…415 V		3-phase 220…660 V	
208…460 V	400 V	160…300 V	150…280 V	260…750 V	230…680 V
0,75…250 kW	0,75…132 kW	0,65…9,3 kW	0,6…8,6 kW	6…1690 kW	2,7…1530 kW
By d.c. injection	Rheostatic		Regenerative		Regenerative
Rheostatic	Rheostatic		Regenerative		Regenerative
Digital	Digital	Analogue		Digital	
RS 232 C RS 485, RS 422				RS 485	
UNI-TELWAY, Modbus + Modbus, FIPIO, INTERBUS S	FIPIO			UNI-TELWAY Modbus	
ATV-66	ATV-66F	RTV-04	RTV-44	RTV-74	RTV-84

2.b. DETECTORS

PROXIMITY AND SENSORS

Applications	**Detection of metal objects : inductive sensors**			
Optimum series Basic functions. Economical series, meeting the needs of machine manufacturers. **Universal series** Multiple functions. Series tailored to meet the multiple and various needs of machine users.	**Optimum, cylindrical**	**Universal, cylindrical**	**Optimum, sub-miniature**	**Optimum, miniature**
	Normal conditions : assembly machines, robotics	Arduous conditions : machines subjected to splashing liquids (machining shops, agricultural and food industries)	Assembly, robotics	Packaging, valve position monitoring
Form Cylindrical	Plain Ø 4 or 6.5 Threaded M5, M8, M12, M18 or M30	Threaded M8, M12, M18 or M30	–	–
Block (w x h x d) (dimensions in mm)	–	–	8 x 43 x 8	10 x 28 x 16
Case	Metal, form A or short. Plastic, short	Metal or plastic, form A	Metal	Plastic
Sensing distance (mm) Flush mountable in metal models	0.8…20 depending on model	1.5…10 depending on model	1.5	2
Non flush mountable in metal models	2.5…15 depending on model	2.5…15 depending on model	–	3
Degree of protection	IP 65, IP 67 or IP 68 depending on model	IP 65, IP 67 or IP 68 depending on model	IP 67	IP 67
Supply ⎓	●	●	●	●
∿	–	–	–	–
⎓/∿	●	●	–	–
Connection Pre-cabled	●	●	●	●
Connector	●	●	●	–
Screw terminals	●	●	–	–
Type reference	XS●-D/N/P	XS●-M/P	XS5-L	XS●-H

PROXIMITY AND SENSORS

Optimum & universal, sub-compact	Optimum, cubic 26	Universal, compact	Universal, compact, plug-in	Optimum, cubic 40	Universal, form C	Universal, form D
Packaging, coding, indexing, light mechanical handling	Welding machines, machine tools, mechanical handling		Mechanical handling, conveyor systems and other industries			
–	–	–	–	–	–	–
12 x 40 x 26	26 x 26 x 26	26 x 45 x 26	33 x 76.5 x 33.5 50 x 64.5 x 41	40 x 40 x 40	40 x 117 x 41	80 x 92 x 40
Plastic	Plastic, cubic, multi-position head	Plastic	Plastic, plug-in	Plastic, cubic, multi-position head	Plastic, form C, plug-in, turret head	Plastic, form D, plug-in
2	10	10	–	15	15 or 20 depending on model	40 or 50 depending on model
4	15	15	13 or 25 depending on model	20	20 or 40 depending on model	30...60 depending on model
IP 67	IP 67	IP 67 or IP 68 depending on model	IP 67	IP 67	IP 67	IP 67
● – ●	● – –	● – –	● ● –	● – –	● ● ●	● ● ●
● ● –	● ● –	● ● ●	– – ●	● ● –	– – ●	– – ●
XS●-G	XS●-T2	XSE	XSB	XS●-T4	XS●-C	XSD

PROXIMITY AND SENSORS

Applications	Detection of metal objects : inductive sensors				
Application series : sensors for specific tasks Developed specially to meet the needs expressed by our customers, these sensors provide a complete solution for specific applications : rotation monitoring, selective detection, analogue control, etc.	**NAMUR type sensors for intrinsically safe applications**	**Sensors for welding machine applications**	**Universal sensors**	**Selective sensors**	**Sensors for rotation monitoring**
	Chemical and petrochemical plants, paint spraying booths, silos	Detection applications on welding machines	Detection of ferrous or non ferrous materials without variation of sensing distance	Selective detection of ferrous materials only or non ferrous materials only	Rotation monitoring : - underspeed, - shaft overload, - slowing down of conveyor belt
Form Cylindrical	Plain Ø 4 or 6.5 Threaded M5, M8, M12, M18 or M30	Plain Ø 12 or 18 Threaded M12, M18 or M30	Threaded M18 or M30	Threaded M18	Threaded M30
Block (w x h x d) (dimensions in mm)	40 x 114.5 x 40 33 x 76.5 x 33.5 50 x 64.5 x 41 80 x 92 x 40	–	40 x 117 x 41	–	–
Case	Metal or plastic, cylindrical, or plastic form C or D	Metal, cylindrical, with shoulder or threaded, with Teflon coating	Metal, cylindrical, or plastic, form C, turret head	Metal, form A	Metal
Sensing distance (mm) Flush mountable in metal models	0.8...15 depending on model	2...10 depending on model	5, 10 or 15 depending on model	5	10
Non flush mountable in metal models	4 or 40 depending on model	4 or 10 depending on model	–	–	–
Degree of protection	IP 64 or IP 67 depending on model	IP 67	IP 67 or IP 68 depending on model	IP 68	IP 67
Supply ⎓	●	●	●	●	●
∿	–	–	–	–	–
⎓/∿	–	–	–	–	●
Connection Pre-cabled	●	–	●	●	●
Connector	–	●	●	●	–
Screw terminals	●	–	●	–	–
Type reference	XS●-N	XSL-C, XS●-M	XS1, XS7	XS1	XSA-V

PROXIMITY AND SENSORS

					Detection of all types of materials (metal or insulating) : capacitive sensors	
Sensors for flow control	**Sensors with analogue output**	**Sensors for connection to AS-i bus**	**Sensors with self learning feature ("smart-sensors")**	**Senors for establishing position of piston in cylinder**		
Monitoring the flow of objects and other applications requiring a time delay output signal	Monitoring position-ing, displacement, deformation. Sensors with analogue output signal	Monitoring of passage, flow, mechanical handling	All sectors. Savings in setting-up times, background suppression.	Monitoring position of pistons in pneumatic cylinders	Detection of insulating materials: presence, passage of paper, cardboard, glass	Detection of conductive materials Liquid level control
–	Threaded M12, M18 or M30	Threaded M30	–	–	Threaded M12, M18 or M30. Plain Ø 32	Threaded M18 or M30. Plain Ø 32
40 x 114.5 x 40 40 x 92 x 80	40 x 114.5 x 40 40 x 92 x 80	40 x 117 x 41	40 x 117 x 41	12 x 14 x 19	40 x 117 x 41	–
Plastic, form C or D	Metal or plastic, cylindrical, or plastic, form C or D	Metal, cylindrical, or plastic, form C, turret head	Plastic, form C, turret head	Plastic	Metal, cylindrical, or plastic, form C, turret head	Plastic
– 20 or 40 depending on model	0.2…10 depending on model 0.4…60 depending on model	10 or 15 dpg. on model 20	25 25	– 0…3.5	2, 5, 10 or 15 depending on model –	– 8, 15 or 20 depending on model
IP 67	IP 67	IP 67	IP 67	IP 67	IP 63 or IP 67 depending on model	IP 63 or IP 67 depending on model
– ● –	● – –	● By the AS-i bus – –	● – –	● – –	● ● –	● ● –
– – ●	● – ●	● – ●	– – ●	● ● –	● – ●	● – –
XS●-T	XS●	XS●	XS8	XS7-V	XT1, XT7	XT4

PHOTOELECTRIC DETECTORS

Applications	Osiris® optimum detectors : basic functions					
	Small machines, conveyor systems, packaging, counting			Access control, conveyor systems,		Areas with restricted access positioning, counting small objects, temperature extremes
Type	**Design 18**		**Miniature design**	**Compact design**		**Fibre design**
	Cylindrical, Ø 18 mm		Miniature, rectangular	Compact, rectangular		For glass or plastic fibre optics
Dimensions (in mm) (w x h x d)	Ø 18, M18 x 1 threaded L : 62		12 x 38 x 27	18 x 70 x 35 18 x 70 x 45	27 x 85 x 61	14 x 32 x 61 (amplifier)
Case	Plastic	Metal	Plastic	Plastic	Plastic	Plastic (amplifier)
Sensing distance (m) **related to system**						
Thru-beam	15	15	8	8	15	0.050...2 dpg. on fibres
Reflex (with Ø 80 mm reflector)	4 (1)	4 (1)	4	6	8	–
Polarised reflex	1.5 (1)	1.5 (1)	2	4	6	–
Diffuse	0.10	0.10	0.10 or 0.40 dpg. on model	0.70	–	0.006...0.095 dpg. on fibres
Diffuse with background suppression	–	–	–	0.10 or 0.25 dpg. on model	–	–
Degree of protection	IP 67	IP 67	IP 67	IP 67	IP 67	IP 64 or IP 66 (amplifier) IP 64 (fibres)
Supply ⎓	●	●	●	●	–	●
∿	–	–	–	–	–	–
⎓/∿	–	–	–	●	●	–
Output	Solid state	Solid state	Solid state	Solid state Relay, 1 C/O	Relay, 1 C/O	Solid state
Connection						
Pre-cabled	●	●	●	●	–	●
Connector	●	●	●	●	–	●
Screw terminals	–	–	–	–	●	–
Type reference	XU●-P18	XU●-N18	XUM-L	XUL	XUJ-L	XUD-●0035

PHOTOELECTRIC DETECTORS

Osiris® universal detectors : multi-function (programmable, adjustable, multi-current, multi-voltage)

Small machines, conveyor systems, packaging, counting			Access control, conveyor systems, autonomous machines			Areas with restricted access, positioning, counting small objects, extreme temperatures
Design 18		**Miniature design**	**Compact design**			**Fibre design**
Cylindrical		Miniature, rectangular	Compact, rectangular			For glass or plastic fibre optics, high switching speed
Ø 18, M18 x 1 thrd. L : 55	Ø 18, M18 x 1 thrd. L : 82	10 x 32 x 22	18 x 50 x 50	27 x 85 x 61	45 x 95 x 44	14 x 32 x 61 (amplifier)
Plastic	Metal	Plastic	Plastic	Plastic	Plastic	Plastic (amplifier)
15	15	10	20	15	50	0.050...1.5 depending on fibres
4 (1)	–	3	7 (1)	8	–	–
2 (1)	2 (1)	2	4 (1)	6	6	–
0.10 or 0.40 depending on model	0.40	0.10 or 0.70 depending on model	1	–	–	0.006...0.070 depending on fibres
–	0.10	–	–	0.7 or 1.2 depending on model	1.2	–
IP 67	IP 67	IP 67	IP 65	IP 67	IP 67	IP 64 or IP 66 (amplifier) IP 64 (fibres)
●	●	●	–	●	●	●
–	–	–	–	–	–	–
–	●	–	●	●	●	–
Solid state	Solid state	Solid state	Relay, 1 C/O	Solid state Relay, 1 C/O	Solid state	Solid state
●	●	●	●	–	●	●
●	●	–	–	●	●	●
–	–	–	–	●	–	–
XU●-B18	XU●-M18	XUM	XUK	XUJ	XUC	XUD-●0039

PHOTOELECTRIC DETECTORS

Applications	Assembly			Packaging	
				For transparent materials	
Series	**Assembly series**			**Packaging series**	
Type	Design 8	Frame design	Optical head design	Design 18	Compact design
Dimensions (in mm) (w x h x d)	Ø 8, M8 x 1 threaded L : 40	15 x 50 x 108 15 x 86 x 131 25 x 230 x 205/265/335	14 x 28 x 60 (amplifier)	Ø 18, M18 x 1 threaded L : 55	18 x 50 x 50
Case	Metal	Metal	Plastic	Plastic	Plastic
Sensing distance (m) **related to system**					
Thru-beam	2	0.03-0.06-0.12-0.18 0.25 depending on model	0.005...6 depending on head & amplifier	–	–
Reflex (with Ø 80 mm reflector)	–	–	1 or 2 depending on amplifier	0.8 (1)	1.5 (1)
Polarised reflex	–	–	–	–	–
Diffuse	0.05	–	0.01...0.05 depending on head and amplifier	–	–
Diffuse with background suppression	–	–	–	–	–
Degree of protection	IP 67	IP 65	Amplifier : IP 50 Heads : IP 50, IP 66 or 67	IP 67	IP 65
Supply ⎓	●	●	●	●	●
~	–	–	●	–	–
⎓ ~	–	–	–	–	–
Output	Solid state	Solid state	Solid state or relay	Solid state	Solid state
Connection					
Pre-cabled	●	–	●	●	●
Connector	●	●	–	●	–
Screw terminals	–	–	●	–	–
Type reference	XUA	XUV-F	XUV	XUB	XUK-T

PHOTOELECTRIC DETECTORS

With adjustable background suppression	For label detection	For colour detection	For colour mark detection		Luminescence detectors	
Packaging series						
Compact design	Fork design	Compact design or fibre design	Compact design	Miniature design	Design 18	Compact design
18 x 70 x 35	20 x 90 x 26	30 x 80 x 57 25 x 92 x 54	30 x 87 x 63 31 x 81 x 58	10 x 32 x 24	Ø 18, M18 x 1 threaded L = 82	31 x 81 x 58
Plastic	Metal	Metal	Metal	Plastic	Metal	Metal
–	0.002	–	–	–	–	–
–	–	–	–	–	–	–
–	–	–	–	–	–	–
–	–	0.040...0.060 0.004...0.250 depending on fibre	0.009	0.015	0.02	0.009
0.15 or 0.30 depending on model	–	–	–	–	–	–
IP 67	IP 65	IP 67	IP 67	IP 67	IP 67	IP 67
●	●	●	●	●	●	●
–	–	–	–	–	–	–
–	–	–	–	–	–	–
Solid state	Solid state	Solid state	Solid state	Solid state	Solid state	Solid state
●	–	●	–	●	–	–
●	●	–	●	–	●	●
–	–	–	–	–	–	–
XUL	XUV-K	XUR-C	XUR-K	XUM	XU5-M	XUR-U

PHOTOELECTRIC DETECTORS

Applications	Mechanical handling					
	With plug-in case	With analogue output		With high "excess gain"	Laser beam for very long sensing distances	Fork type
Series	**Mechanical handling series**					
Type	Compact design	Design 18	Compact design	Design 18	Design 18	Fork design
Dimensions (in mm) (w x h x d)	35.5 x 100 x 71	Ø 18, M18 x 1 threaded L = 82	27 x 85 x 61	Ø 18, M18 x 1 threaded L = 82	Ø 18, M18 x 1 threaded L = 76	14 x 58 x 68
Case	Plastic	Metal	Plastic	Metal	Plastic	Plastic
Sensing distance (m) **related to system**						
Thru-beam	50	–	–	50	100	0.03
Reflex (with Ø 80 mm reflector)	15	–	–	–	–	–
Polarised reflex	10	–	–	–	–	–
Diffuse	2	0.05...0.4	0.20...0.80	–	–	–
Diffuse with background suppression	2	–	–	–	–	–
Degree of protection	IP 67	IP 67	IP 67	IP 67	IP 67	IP 54
Supply ⎓	●	●	●	●	●	●
~	–	–	–	–	–	–
⎓/~	●	–	–	–	–	–
Output	Solid state Relay, 1 C/O	Analogue	Analogue	Solid state + analogue	Solid state	Solid state
Connection						
Pre-cabled	–	–	–	–	–	●
Connector	–	●	–	●	●	–
Screw terminals	●	–	●	–	–	–
Type reference	XUE	XU5-M	XUJ	XU2-M	XU2	XUV-H

PHOTOELECTRIC DETECTORS

Commercial premises, tertiary sectors			Specific applications		Safety : protection of zone around potentially dangerous installations	
Access control	Control of movement in loading bays featuring automatic doors	Access monitoring using integral buzzer	Detectors for connection to AS-i bus	Thermal emission monitors (2)	Surveillance using single beam light curtains (3)	Surveillance using multi-beam light curtains
Tertiary applications series						
Compact design						
18 x 70 x 45	27 x 85 x 61	27 x 85 x 61	27 x 85 x 67	Head : Ø 30, M30 x 1.5 threaded Amplifier : 45 x 78.5 x 91.5	Ø 18, M18 x 1 thrd. L : 63 ...95 dpg. on model	54 x 394...1714 (depending on model) x 54
Plastic	Plastic	Plastic	Plastic	Plastic	Metal or plastic	Metal
–	–	–	15	–	8 or 50 depending on model	1...9 depending on model
6 (1)	–	6	–	–	–	–
–	7	–	6	–	–	–
–	–	–	–	0.05 or 0...0.50 depending on model	–	–
–	–	–	0.7 or 1.2 depending on model	–	–	–
IP 67	IP 67	IP 40	IP 65	Head : IP 67 Amp. : IP 20	IP 67 (XU2-S)	IP 65
–	–	–	● by the AS-i bus	●	● (XU2-S)	●
–	–	–	–	–	–	–
●	●	●	–	–	● (XPS-CE)	–
Relay, 1 C/O	2 relays, each 1 N/O	Relay, 1 N/O	AS-i	Analogue	Solid state	Solid state or relay
●	–	–	–	–	● (XU2-S)	–
–	–	–	●	●	● (XU2-S)	–
–	●	●	–	–	● (XPS-CE)	●
XUL	XUJ-G	XUJ-B	XUJ	XUT	XU2-S + XPS-CE	XUS-L

LIMIT SWITCHES

Applications	Light industrial machinery Light handling equipment Agricultural machinery and installations Building installations		Food processing and chemical industries. Handling equipment and packaging machines	Manufacturing workshops Packing machines Small packaging machines	
Enclosure	Plastic, double insulated		Plastic, double insulated	Metal	Metal
Features	–	–	–	–	–
CENELEC conformity	EN 50047	– (compatible)	EN 50041	–	–
Body dimensions in mm (w x h x d)	30 x 73 x 30	60 x 61 x 30	40 x 72.5 x 36	63 x 64 x 30	52 x 72 x 30
Head	Linear, rotary or multi-directional		Linear *or* rotary Rotary multi-directional (when built up from sub-assemblies)	Linear, rotary or multi-directional	
Contact blocks					
N/C + N/O snap action	•	•	•	•	•
N/C + N/O break before make, slow break	•	•	•	•	•
N/O + N/C make before break, slow break	•	•	•	•	•
N/C + N/C simultaneous, slow break	•	•	•	•	•
N/O + N/O simultaneous, slow break	•	•	•	•	•
C/O snap action	–	–	–	–	–
C/O slow break	–	–	–	–	–
N/C + N/C 2-step, slow break	–	–	–	–	–
N/O + N/O 2-step, slow break	–	–	–	–	–
N/C + N/C snap action	•	–	•	•	–
Adapt. sub-assemblies	Body/contact assembly + head + operator				
Degree of protection	IP 653	IP 653	IP 653	IP 665	IP 665
Cabling - screw terminals (entry for cable gland)	1 entry for n° 11 or n° 13 cable gland, ISO M16 or 1/2" NPT	2 entries for n° 11 cable gland, ISO M16 or 1/2" NPT	1 entry for n° 13 cable gland or ISO M20	3 entries for n° 11 cable gland, ISO M20 or 1/2" NPT	1 entry incorporating cable gland or tapped 1/2" NPT
- pre-cabled	–	–	–	–	–
- connector	–	–	–	–	–
Special environment	–	–	–	–	–
Type reference	XCK-P	XCK-T	XCK-S	XCK-M	XCK-L

LIMIT SWITCHES

Machine tools, forming and transfer machines. Precision equipment	Assembly machines Machine shops High detection rate applications	Processing and treatment installations. Conveyor systems	Lifting and handling equipment	Safety applications
Metal	Metal	Metal	Metal or polyester	Plastic or metal
Compact Fixing by the body or by the head	Fixed or plug-in body	Fixed or plug-in body	–	With or without locking of the operating key
–	EN 50041	–	–	EN 50041 or EN 50047
30 x 51 x 16	40 x 77 x 44 42.5 x 84 x 36	40 x 81 x 41 42 x 81 x 41	Depending on type	Depending on type
Linear or rotary	Linear or rotary Rotary multi-directional (when built up from sub-assemblies)		Linear or rotary	For operating key
			Depending on type	Depending on type
–	●	–	●	–
●	●	–	●	–
–	●	–	●	–
–	●	–	●	–
–	●	–	●	–
●	–	●	●	–
–	–	–	●	–
–	–	–	●	–
–	–	–	●	–
–	●	–	–	–
Not available	Body/contact assembly + head + operator		Not available	Not available
IP 675	IP 667	IP 657	IP 665, IP 655 or IP 545	IP 67
–	1 entry for n° 13 cable gland, ISO M20 or 1/2" NPT	1 entry incorporating cable gland	1 or 3 entries for n° 13 cable gland or ISO M20, depending on type	●
●	–	–	–	–
● (M12 or 7/8" 16 UN)	● (M12 or 7/8" 16 UN)	–	–	–
–	- 40 °C or + 120 °C	- 40 °C or + 120 °C	–	–
XCM	XCK-J	XC2-J	XCR, XC1-AC, XCK-MR	XCS

EXTERNAL INTERFACES FOR DISCRETE SIGNALS

Applications	Electromechanical interface modules			
Functions	Input		Output	
Width (mm)	17.5	9.5	17.5	12
Contact arrangement	1 N/O 2 N/O 1 C/O	1 N/O	1 N/O 2 N/O 1 C/O 1 N/C + 1 N/O	1 N/O
Thermal current	–		12 A	5 A
Control voltages	~ 230/240 V ⎓ 24 V, 48 V ⎓ 110...127 V ~ 115...127 V	⎓ 24 V, 48 V ~ 115...127/50 Hz ~ 115...127/60 Hz ~ 230...240/50-60 Hz	⎓ 24 V ⎓ 24 V, 48 V ~ 115...127 V ~ 110 V	⎓ 24 V
Indication	Mechanical for contacts and/or LED for control	LED for control	Mechanical for contacts and/or LED for control	LED for control
References	ABR-1E	ABR-2E	ABR-1S	ABR-2S

EXTERNAL INTERFACES FOR DISCRETE SIGNALS

	Solid state interface modules		Sub-bases with electromechanical relays		
Input and output Very low level switching	Input	Output	Output sub-base 1, 4, 8 and 16 relays	Output sub-base 1, 4 and 8 relays	Replacement relays
17.5	9.5	9.5/17.5	12.5, 70, 128 and 250	26, 70 and 128	–
1 C/O	–		Sub-base with relays 1 C/O	Sub-base with relays 2 C/O	1 C/O and 2 C/O
–		5 A			
	⎓ 5, 24, 48 V ∿ 115...127/50 Hz ∿ 120...127/60 Hz ∿ 230...240/50 Hz ∿ 230...240/60 Hz	⎓ 24 V			
			1 LED per channel for control		–
ABR-2●B312B	ABS-2E	ABS-2S	ABE-6R●●S●3	ABE-6R0●S●7	ABR-6S●02B

TELEFAST TWO PRE-WIRED SYSTEM

Applications	Discrete input or output			Discrete input			
Relay amplification	–					Solid state fixed	Solid state removable
Equipped with relay	–					Yes	No
Control voltage	⎓ 24 V					From ⎓ 24 V to ∿ 230 V	From 5 V TTL to ∿ 230 V
Output voltage	⎓ 24 V						
Output current per channel	0.5 A				125 mA	12 mA	
Modularity	8 - 12 - 16			16			
No. of terminals per channel	1	2		3	2		
Type of connection terminals	Signal	Signal, Common (configurable ⎓ 24 V or 0 V)		Signal, ⎓ 24 V and 0 V	Signal can be isolated, protected common	Signal	Signal and common
Connectors	20-way HE 10 connector						
Terminal block removable	No			No		Yes	No
type of terminals	Screw or spring			Screw		Screw or spring	
Additional or optional* function	Compact size *	Type 2 input * (1)	Isolator	3-wire proximity sensor	Isolator and fuse (indicator)	–	
Type of device	ABE-7H●●R1● 7H●●R50	ABE-7H●●R2●	ABE-7H●●S21	ABE-7H16R3●	ABE-7H16S43	ABE-7S16E2●●	ABE-7P16F31●

TELEFAST TWO PRE-WIRED SYSTEM

Discrete output

Solid state fixed	–	Electromechanical fixed		Electromechanical removable		For electromechanical or solid state
Yes	–	Yes				No
⎓ 24 V						
		⎓ 5 to 30 V ~ 230 V	⎓ 5 to 150 V ~ 230 V			
From 0.5 to 2 A	125 mA	3 A (th)	5 A (th)		8 A (th)	Depends on relay mounted
		8 - 16		16		8 or 16
2		1	2	2 to 3	2 to 6	2 to 3
Signal and 0 V		1 N/O contact	1 N/O contact and common	1 C/O contact or 1 N/O contact and common	1 N/O contact or 2 C/O contacts and common	Signal, Polarities
Yes	No	Yes		No		No
Screw or spring		Screw or spring		Screw		Screw or spring
Fault signal *	Isolator and fuse (indicator)	Volt-free or common per : 8 channels			4 channels	Isolator and fuse
ABE-7S●●S2B●	ABE-7H16F43	ABE-7R●●S1●●	ABE-7R●●S2●●	ABE-7R16T2●	ABE-7R16T3●●	ABE-7P16T●●● 7P08T●●●

TELEFAST TWO PRE-WIRED SYSTEM

Applications

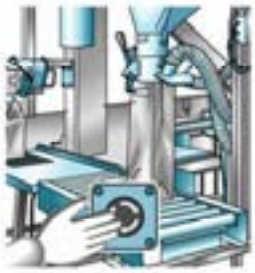
Modules	For emergency stop and limit switch monitoring		
Conforming to standards			
Machine assemblies	IEC 204-1, EN 292, EN 418 EN 60204-1		IEC 204-1, EN 292, EN 418 EN 60204-1
Principles for design	EN 954-1 - category 3 EN 1088		EN 954-1 - category 4 (instantaneous contacts) EN 954-1 - category 3 (time delay contacts) EN 1088
Number of circuits			
Safety	2 N/O	3 N/O	3 N/O instantaneous break + 2 N/O time delay
Additional	–	1 N/C	1 N/C
Display	2 LED	2 LED	4 LED
Supply voltage	∿ and ⎓ 24 V ∿ 115 V ∿ 230 V	∿ and ⎓ 24 V	∿ and ⎓ 24 V ∿ 115 V ∿ 230 V
Synchronisation time between inputs	Unlimited	Unlimited	75 ms (automatic start)
Input channel voltages			
24 V/48 V version	∿ and ⎓ 24 V/–	∿ and ⎓ 24 V/–	⎓ 24 V/–
115 V/230 V version	∿ 115 V/230 V	–	⎓ 48 V/48 V
Module type	XPS-AL	XPS-AX	XPS-AT

TELEFAST TWO PRE-WIRED SYSTEM

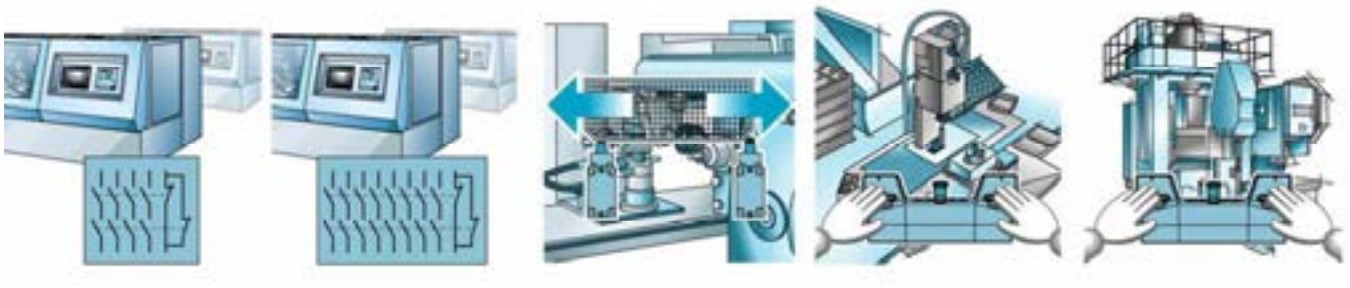
For emergency stop, limit switch and two-hand control monitoring

IEC 204-1, EN 292, EN 418 EN 60204-1		
EN 954-1 - category 4 EN 1088 EN 574 type III A		
2 N/O	3 N/O	6 N/O
–	1 N/C	1 N/C
4 LED ~ and ⎓ 24 V ~ and ⎓ 48 V ~ 115 V ~ 230 V	4 LED ~ and ⎓ 24 V ~ and ⎓ 48 V ~ 115 V ~ 230 V	4 LED ~ and ⎓ 24 V ~ and ⎓ 48 V ~ 115 V ~ 230 V
300 ms (automatic start)		
⎓ 24 V/48 V		
⎓ 48 V/48 V		
XPS-AS	XPS-AM	XPS-AP

TELEFAST TWO PRE-WIRED SYSTEM

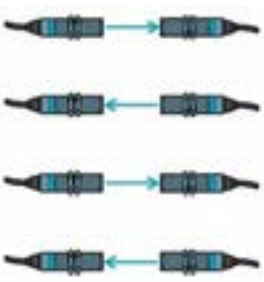
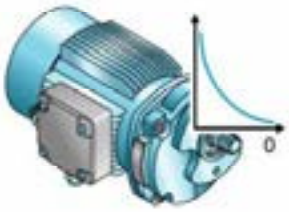
Applications			
Modules	For emergency stop, limit switch, two-hand control, safety mat and edge monitoring		
Conforming to standards Machine assemblies	IEC 204-1, EN 292, EN 418 EN 60204-1		IEC 204-1, EN 292, EN 418 EN 60204-1
Principles for design	EN 954-1 - category 4 EN 1088 EN 574 type III A		EN 954-1 - category 4 EN 1088 EN 574 type III A
Number of circuits Safety	2 N/O	3 N/O	6 N/O
Additional	2 solid state outputs for signalling to PLC	1 N/C + 2 solid state outputs for signalling to PLC	1 N/C + 2 solid state outputs for signalling to PLC
Display	4 LED	4 LED	4 LED
Supply voltage	~ and ⎓ 24 V ~ and ⎓ 48 V ~ 115 V ~ 230 V	~ and ⎓ 24 V ~ and ⎓ 48 V ~ 115 V ~ 230 V	~ and ⎓ 24 V ~ and ⎓ 48 V ~ 115 V ~ 230 V
Synchronisation time between inputs	300 ms (automatic start)		
Input channel voltages 24 V/48 V version	⎓ 24 V/48 V		
115 V/230 V version	⎓ 48 V/48 V		
Module type	XPS-ASF	XPS-AMF	XPS-APF

TELEFAST TWO PRE-WIRED SYSTEM



For increasing the number of safety contacts		For electrical monitoring of limit switches combined in pairs	For electrical monitoring of two-hand control stations	
IEC 204-1, EN 292, EN 418 EN 60204-1		IEC 204-1, EN 292 EN 60204-1	IEC 204-1, EN 292 EN 60204-1	IEC 204-1, EN 292 EN 60204-1
EN 954-1 - category 4		EN 954-1 - category 4 EN 1088	EN 954-1 - category 1 EN 574 type III A	EN 954-1 - category 4 EN 574 type III C
4 N/O	8 N/O	3 N/O	1 N/O	2 N/O
1 N/C + 1 solid state output for signalling to PLC	1 N/C + 1 solid state output for signalling to PLC	N/C + 2 solid state outputs for signalling to PLC	1 N/C	1 N/C
3 LED ~ and ⎓ 24 V ~ 115 V ~ 230 V	3 LED ~ and ⎓ 24 V ~ 115 V ~ 230 V	3 LED ~ and ⎓ 24 V ~ and ⎓ 48 V ~ 115 V ~ 230 V	2 LED ~ and ⎓ 24 V ~ 115 V ~ 230 V	3 LED ⎓ 24 V ~ 24 V ~ 115 V ~ 230 V
–	–	1.5 s	500 ms	500 ms
⎓ 24 V/–	⎓ 24 V/–	⎓ 24 V/48 V	⎓ 24 V/–	⎓ 24 V (~ 24 V), ⎓ 48 V (~ 24 V)
⎓ 24 V/24 V	⎓ 24 V/24 V	⎓ 48 V/48 V	⎓ 24 V/24 V	⎓ 48 V/48 V
XPS-ECM	XPS-ECP	XPS-FB	XPS-BA	XPS-BC

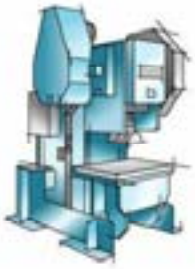
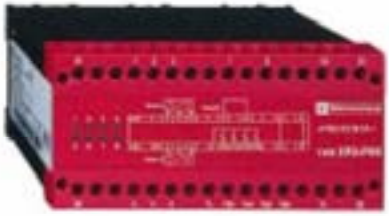
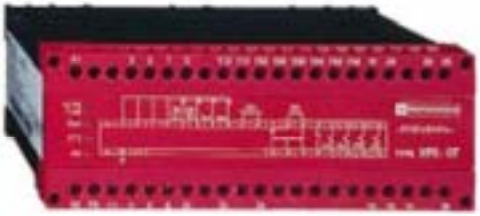
TELEFAST TWO PRE-WIRED SYSTEM

Applications		
Modules	For cyclic monitoring of 1 to 4 single beam, infra-red security light barrier detectors type XU2-S, with test input	For zero speed detection of a.c. or d.c. motors
Functions	Guarding access points to potentially hazardous zones (combination of safety module + 1 to 4 single beam, infra-red security light barrier detectors type XU2-S)	Detecting stop condition of motor by measuring the remanent voltage in the stator windings (compatible with electronic motor control devices such as variable speed drives, d.c. injection brakes, etc.)
Conforming to standards Machine assemblies	IEC 204-1, EN 292 EN 60204-1	IEC 204-1, EN 292, EN 692 EN 60204-1
Principles for design	EN 61496-1 - type 2	EN 954-1 - category 3 EN 1088
Number of circuits Safety	2 N/O	1 N/O + 1 N/C
Additional	1 solid state output for signalling to PLC	2 solid state outputs for signalling to PLC
Display	4 LED	2 LED
Supply voltage	~ and ⎓ 24 V	⎓ 24 V ~ 115 V ~ 230 V
Module type	XPS-CE	XPS-VN

TELEFAST TWO PRE-WIRED SYSTEM

For lift control	For monitoring overtravel on linear presses	For dynamic monitoring of solenoid valves on linear hydraulic presses
Checks the height of the car when it stops at a landing, in order to compensate any difference generated by modification of the load in the car	Automatically monitors the slow down distance of linear presses (for example: hydraulic, pneumatic or screw presses)	Dynamic monitoring of the position of the gate valve pistons in a hydraulic safety circuit on linear presses. Dangerous movements of the machine are allowed when the correct change of signal occurs
IEC 204-1, EN 292 EN 60204-1	IEC 204-1, EN 292, EN 693 EN 60204-1	IEC 204-1, EN 292, EN 693 EN 60204-1
EN 954-1 - category 4 EN 81-1, EN 81-2	EN 954-1 - category 4	EN 954-1 - category 4
2 N/O	3 N/O	2 N/O + 1 N/C
2 solid state outputs for signalling to PLC	1 N/C	–
4 LED	8 LED	8 LED
∼ or ⎓ 24 V ∼ 115 V ∼ 230 V	∼ and ⎓ 24 V ∼ 120 V ∼ 230 V	⎓ 24 V
XPS-DA	GNK-L	XPS-PVT

TELEFAST TWO PRE-WIRED SYSTEM

Applications		
Modules	For dynamic monitoring of double-bodied solenoid valves	For safety stop at top dead centre with automatic overtravel monitoring
		
Functions	Dynamic monitoring of double-bodied safety solenoid valves on eccentric presses. The device prevents engagement of the clutch and engages the brake if a fault occurs in the solenoid	Automatically monitors the stopping distance at each cycle + maintain open function, for eccentric presses
Conforming to standards Machine assemblies	IEC 204-1, EN 292, EN 692 EN 60204-1	IEC 204-1, EN 292, EN 692 EN 60204-1
Principles for design	EN 954-1 - category 4	EN 954-1 - category 4
Number of circuits Safety	1 N/O + 1 N/C	3 N/O
Additional	4 solid state outputs for signalling to PLC	4 solid state outputs for signalling to PLC
Display	8 LED	4 LED
Supply voltage	⎓ 24 V ~ 120 V ~ 230 V	– ~ 120 V ~ 230 V
Module type	XPS-PVK	XPS-OT

TELEFAST TWO PRE-WIRED SYSTEM

For shaft or chain break monitoring	For applications with safety amplifier relay with one or two proximity sensors or limit switches
Equipment for monitoring the mechanical transmission of movement between a cam shaft and switching cams on an eccentric press.	Error-free detection and amplification of signals emitted by limit switches, PNP or NPN type electronic proximity sensors (⎓ 24 V) or a 2-wire type connection with "-" and "+" switching. Conversion to contact signals for self-monitoring safety modules.
IEC 204-1, EN 292, EN 692 EN 60204-1	IEC 204-1, EN 292 EN 60204-1
Suitable for use in systems up to category 4 (EN 954-1)	Suitable for use in systems up to category 4 (EN 954-1)
2 N/O + 2 N/C	2 N/O + 2 N/C
–	1 N/C
1 LED	4 LED
– ~ 120 V ~ 230 V	– ~ 120 V ~ 230 V
GBS	XPS-NS

CONTROL & SIGNALING UNITS

Applications	Pushbuttons and pilot lights			
Features	Black plastic bezel	Chromium plated or black metal bezel	Black plastic bezel	Black plastic bezel
Cut-out for fixing	Ø 16	Ø 22	Ø 22	Ø 22
Description of the range	Pushbuttons, Mushroom head emergency stop buttons, Selector switches, Pilot lights, Illuminated pushbuttons	Pushbuttons, Mushroom head emergency stop buttons, Selector switches, Pilot lights, Illuminated pushbuttons	Pushbuttons, Mushroom head emergency stop buttons, Selector switches, Pilot lights, Illuminated pushbuttons	Pushbuttons, Mushroom head emergency stop buttons, Selector switches, Pilot lights, Illuminated pushbuttons
Cabling	Push on connector Connector for printed circuit board Female connector + ribbon cable	Screw and captive cable clamp terminals	Screw and captive cable clamp terminals	Screw and captive cable clamp terminals
Degree of protection conforming to IEC 529 and NF C 20-010	IP 65	IP 40, IP 65	IP 65	IP 40, IP 65
Type references	DU•••••/D5••••• DV•••••/D6•••••	XB2-B ZB2-B	XA2-B ZA2-B	D1•••••/DA••••• DK•••••/D2••••• DB•••••/D3•••••

CONTROL & SIGNALING UNITS

General purpose type	Chromium plated metal bezel	Chromium plated metal bezel	Square key pushbuttons and LED pilot lights, on 19.05 mm centres	Compact size, low consumption
Ø 22	Ø 30	Ø 30	Ø 16	Ø 8 and Ø 12
Pushbuttons, Pilot lights	Pushbuttons, spring return, Mushroom head pushbuttons, Selector switches, Pilot lights, Illuminated pushbuttons	Pushbuttons, Wobble sticks, Mushroom head pushbuttons, Selector switches, Pilot lights	Key pushbuttons with or without LED, LED pilot lights	LED pilot lights
Screw and captive cable clamp terminals	Screw and captive cable clamp terminals	Screw and captive cable clamp terminals	Solder tags for 2.8 x 0.5 connector	Solder tags for 2.8 x 0.5 connector or screw connector
IP 40 or IP 65 (LED pilot lights)	IP 65	IP 65	IP 65	IP 40 IP 65 (with seal)
XB2-E	XB3-B	XB2-M	XBL-T XBL-V	XVL-A

CONTROL & SIGNALING UNITS

Applications	Joystick controllers			Counter, hour-run timer programmer
Features	Chrome plated metal or black plastic bezel	Chrome plated metal bezel	Chrome plated metal bezel	Mechanical thumb-wheel, LCD or LED
Cut-out for fixing	Ø 22	Ø 22	Ø 30	20 x 30 mm to 60 x 75 mm
Description of the range	2 or 4 directions, with or without spring return to zero position	Analogue 1 or 2 axes	2, 4 or 8 directions	5 to 8 digits 10 Hz to 7,5 kHz With or without display of preselected value
Cabling	Screw and captive cable clamp terminals	Pre-cabled	Screw and captive cable clamp terminals	By AMP cable tags, on 8 or 10-pole screw terminal blocks
Degree of protection conforming to IEC 529 and NF C 20-010	IP 66	IP 65	IP 40 or IP 65 (depending on models)	IP 40 or IP 65
Type references	XD2-●A XDL-PA	XDA	XD2	XBK-T/H/P

CONTROL & SIGNALING UNITS

Cam switches		Keypads	Digital display units		Illuminated beacons Indicator banks
Fixed by plate and 2 or 4 screws or by Ø 22 hole	Fixed by plate and 4 screws or by Ø 22 hole	Flush or surface mounting	7 segment LED + decimal point	7 segment LED + decimal point	Direct fixing or tube fixing
Ø 22	Ø 22	- 12 keys: 59 x 78 mm or 62 x 81 mm, - 16 keys: 78 x 78 mm or 81 x 81 mm, - 20 keys: 97 x 78 mm, - 54 keys: 274 x 97 mm	Ø 22	110 x 38 mm	Direct fixing: 2 x Ø 4 or M6, or Tube fixing: 4 x Ø 5 or M6
For control circuits	For power circuits 12 to 250 A	Keypads with encoded or non encoded output	Display units for assembly by the customer: body + 1-digit head	4 or 6-digit industrial digital display units	Beacons: complete units, indicator banks: for assembly by the customer
Screw and captive cable clamp terminals	Screw and captive clamp terminals	Connector	Connector	Plug-in terminal block	Screw and captive cable clamp terminals
IP 40: fixing by plate and 2 or 4 screws IP 65: fixing by Ø 22 hole	IP 40: fixing by plate and 4 screws IP 65: fixing by Ø 22 hole	IP 65	IP 65	IP 65	IP 42, (IP 54 with set of sealing gaskets)
K1, K2	K1 to K9	XBL-C	ZA2-VA	XBL-A	XVA-L XVA-C

BOXES & ENCLOSURES

Applications	Empty control station enclosures			Empty angled enclosures for mounting on vertical support	Empty flush-mounting enclosures
Features	Empty, drilled or undrilled	Empty, drilled or undrilled	Empty, drilled	Empty, drilled	Front plate
Material	Polyester	Zinc alloy or aluminium	Zinc alloy	Aluminium	Brushed aluminium
Colour	Coloured grey throughout	Blue enclosure and cover	Blue enclosure, yellow cover	Light grey cover, dark grey base	Unpainted aluminium
Number of cut-outs for Ø 22 control and signalling units	1, 2, 4, 8, 16	1, 2, 3, 4, 6, 8, 12	1	1 to 7	1 to 5
Degree of protection	IP 65	IP 65	IP 65	IP 65	IP 65
Function	–	–	–	–	–
Cable entries	Undrilled	Drilled	Drilled	–	Knock-outs
Type references	XAP-A	XAP-M	XAP-J	DWG-●	XAP-E

BOXES & ENCLOSURES

Control stations Complete or for customer assembly		Vandal-proof control stations	Safety control stations	
Empty drilled or complete	Empty drilled or complete	With lock	Conforming to NF C 15-100	Commercial premises type : semi-recessed mounting Industrial type : wall fixing
Polycarbonate	Polycarbonate	Zinc alloy	Zinc alloy	Commercial premises type : plastic Industrial type : zinc alloy
Grey enclosure, yellow cover	Grey enclosure and cover	Grey	Red enclosure and cover	Red enclosure and cover
1	1, 2 or 3	–	–	–
IP 65	IP 65	IP 54	IP 54	Comm. premises type : IP 40 Industrial type : IP 54
Emergency stop	Start or Stop, Start-stop with indication, Movement control	Start-Stop	Emergency stop	Fire alarm
Knock-outs	Knock-outs	Tapped for addition of cable gland	Tapped for addition of cable gland	Tapped for addition of cable gland
XAL-J	XAL-B XAL-N	XAP-S	XAS-E	XAS-P XAS-E

HOUSING: ENCLOSURES

Types	Metal

Construction	Metal enclosures, supplied empty, with pre-slotted or solid mounting plate.
Features	- Degree of protection : IP 55. - Textured paint finish. - Protection ensured by seal fitted to door opening rim. - Automatic latching door fasteners. - New door knob with integral key for opening.

Usable internal surface area (dm²)			5.1	7	8.7	12.1	11.3	15.9		19.6		25.1	30.7	29.2	35.7	41.5		56.5	55.8	71.1		86.2
External dimensions (mm)	Height		300	400	400	400	500	500		600		600	600	700	700	800		800	900	1000		1200
	Width		250	250	300	400	300	400		400		500	600	500	600	600		800	700	800		800
	Depth		150	150	200	200	200	200	250	200	250	250	300	250	300	200	300	300	300	300	400	300
For chassis assembly:																						
Mounting plates	Pre-slotted	AM3-PA	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
		AM1-PA	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
		AM1-PS	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	Solid	AM3-PE	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Uprights	Pre-drilled	AM3-MU	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
	Notched	AM1-EC	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Mounting rails		AM1-ED or AM1-D	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Cable ducting		blue AK2-GA or grey AK2-GD	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•

Enclosure colour (textured paint finish)	Industrial blue	Grey RAL 7032
Enclosure type references: Empty	ACM-BV	ACM-GV
With pre-slotted plate	ACM-BP	ACM-GP

HOUSING: ENCLOSURES

Insulated "monobloc"	Insulated "increased size"
Glass reinforced polyester enclosures (polycarbonate for ACP-G●312116). - Degree of protection : IP 66. - Specifically designed for highly corrosive environments. Protection ensured by a neoprene seal resistant to chemical agents. - Built-in protective door canopies (top and bottom) and opening direction of door can be reversed by turning the enclosure upside down. - Option: solid door or transparent door with inner door.	Glass reinforced polyester enclosures - Degree of protection : IP 55. - Specifically designed for highly corrosive environments (port installations, chemical plants, dairies, ...). - Protection ensured by continuous rubber gasket, resistant to chemical agents.

4.6	9.4	17.3	20.9	31.3	41.3	7.1	66.2	75	95
310	430	530	647	747	847	1000	1250	1000	1250
215	330	430	436	536	636	800	750	1000	1000
160	200	200	250	300	300	350	300	300	300
●	●	●	●	●	●	●	–	–	–
–	–	–	–	–	–	–	–	–	–
–	–	–	–	–	–	–	●	●	●
●	●	●	●	●	●	●	–	–	–
●	●	●	●	●	●	●	–	–	–
–	–	–	–	–	–	–	●	●	●
●	●	●	●	●	●	●	●	●	●
●	●	●	●	●	●	●	●	●	●
Grey							Grey		
ACP-GV and ACP-GH							AC4-PB		
–							–		

HOUSING: ENCLOSURES

Type	Suite style
Characteristics	Assembled by Telemecanique (without side panels)
Colour	Industrial blue
Plinth	With

Construction			1 or 2 door enclosures with opening handle: screw on rear panel, screw on top.					
Features			100 mm high plinth, gland plate, angled fixing brackets for chassis: supplied					
Usable internal surface area (dm^2)			85	118	184	95	132	206	280
External dimensions (mm)	Height (1)		1800	1800	1800	2000	2000	2000	2000
	Width		600	800	1200	600	800	1200	1600
	Depth		400 500	400 500 600	600	400 500	400 500 600 800	600 800	400
For chassis assembly:									
Mounting plates	Pre-slotted	AM3-PA	•	•	•	•	•	•	–
	Solid	AA●-P	•	•	•	•	•	–	–
Cross members Angle brackets		AA3-TF, AA3-XC1N	•	•	•	•	•	•	•
Notched uprights Maximum fixing centres for mounting plates or rails (mm)		AM3-EC	450	650	2x450 or 1x1050	450	650	2x450 or 1x1050	2 x 650
Mounting rails	⊥ or ⊤	AM1-ED AM1-D	•	•	•	•	•	•	•
Cable ducting	Blue or Grey	AK2-GA AK2-GD	•	•	•	•	•	•	•
Type references	Enclosure		(1) Add 100 mm for plinth.						
	Side panels		AA3-EB						
			AA3-PL						

HOUSING: ENCLOSURES

	"Monobloc"
	Ready to use
Grey RAL 7032	
Without (to be ordered separately)	

	1 or 2 door enclosures supplied complete with adjustable depth fixing brackets for mounting chassis
100 mm or 200 mm high plinth, gland plate, angled fixing brackets for chassis: to be ordered separately	

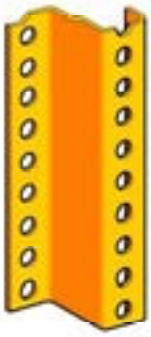
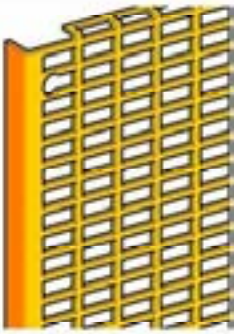
85	118	152	184	95	132	169	206	280
1800	1800	1800	1800	2000	2000	2000	2000	2000
600	800	1000	1200	600	800	1000	1200	1600
400 500 600	400 500 600	400 500 600	400 500 600	400 500 600	400 500 600 800	400 500 600	400 500 600 800	400
•	•	•	•	•	•	•	•	–
•	•	•	•	•	•	•	–	–
•	•	•	•	•	•	•	•	•
450	650	850	2x450 or 1x1050	450	650	850	2x450 or 1x1050	2x650
•	•	•	•	•	•	•	•	•
•	•	•	•	•	•	•	•	•
AA3-EG								
AA3-PL								

114	100	158	113	180	244	128	202	274
1200	1600	1600	1800	1800	1800	2000	2000	2000
1200	800	1200	800	1200	1600	800	1200	1600
400	400	400	400	400	400	500	500	500
•	•	•	•	•	•	•	•	•
–	•	–	•	–	–	•	–	–
•(2)	•(2)	•(2)	•(2)	•(2)	•(2)	•(2)	•(2)	•(2)
1050	650	1050	650	1050	2x650	650	1050	2x650
•	•	•	•	•	•	•	•	•
•	•	•	•	•	•	•	•	•

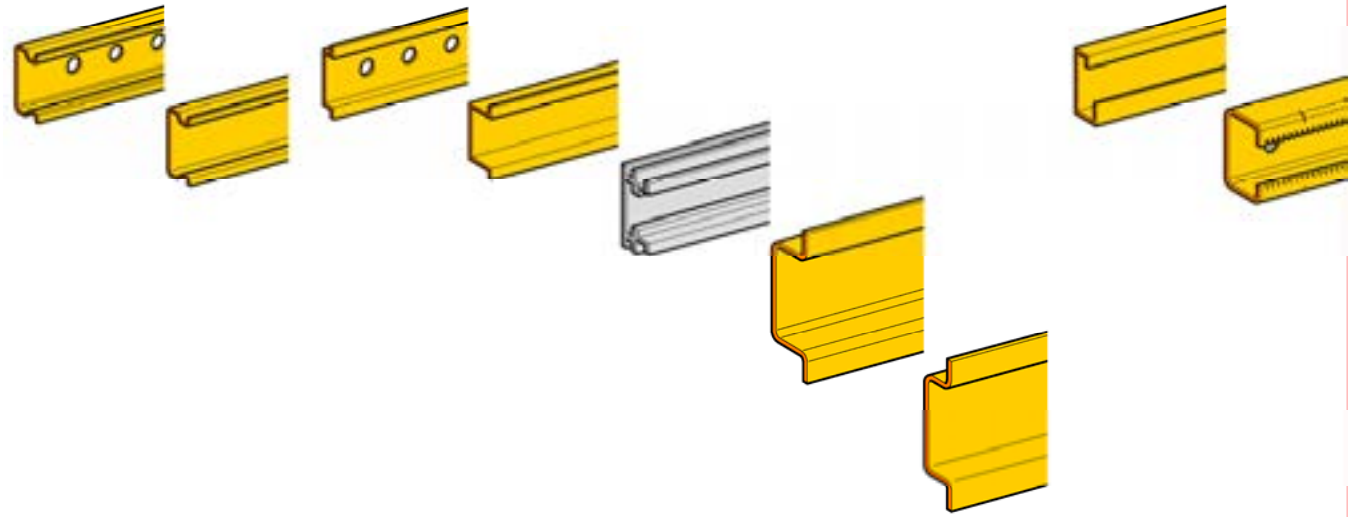
(2) Angle brackets supplied as standard.

AA2-EB
–

ASSEMBLY & WIRING ACCESSORIES

Applications	For fixing mounting plates and rails			For fixing equipment		
						
Description	Notched uprights	Pre-drilled notched uprights	Pre-drilled uprights	Pre-slotted Telequick mounting plates (designed for butt mounting vertically)		
Uprights for fixing mounting plates and rails in enclosures		For enclosures AA2, AA3		For enclosures AA2, AA3 : uprights AM3-EC		
Usage	Vertical or horizontal	Flat or edgewise	For supporting heavy equipment. Can be fitted with high capacity vertical cable ducting.	For supporting equipment The plates can be butt mounted vertically without affecting the continuity of the slot pattern		
Adjustment between rows of equipment	2.5 mm steps (notch pitch) Ref. marks every 25 mm	2.5 mm steps - by notches - with 11 x 13 slot	20 mm steps (Ø 11 holes on 20 pitch)	11 x 26 mm rectangular slots on 15 x 30 mm pitch allowing the mounting of any equipment, irrespective of fixing centres		
References in range	3	4	6	16	20	
Dimensions (mm)	Length : 900 to 2000	Length : 1075 to 1875	Length : 1020 to 1920	Width : 508-708-908-1108	Width : 434-534-634-734	
Material	Steel, 2 mm zinc chromate treated		Steel, 2.5 mm zinc chromate treated	Steel, 2 mm zinc chromate treated		
Type reference	AM1-EC	AM3-EC	DZ6-MZ	AM3-PA	AM1-PA	

ASSEMBLY & WIRING ACCESSORIES

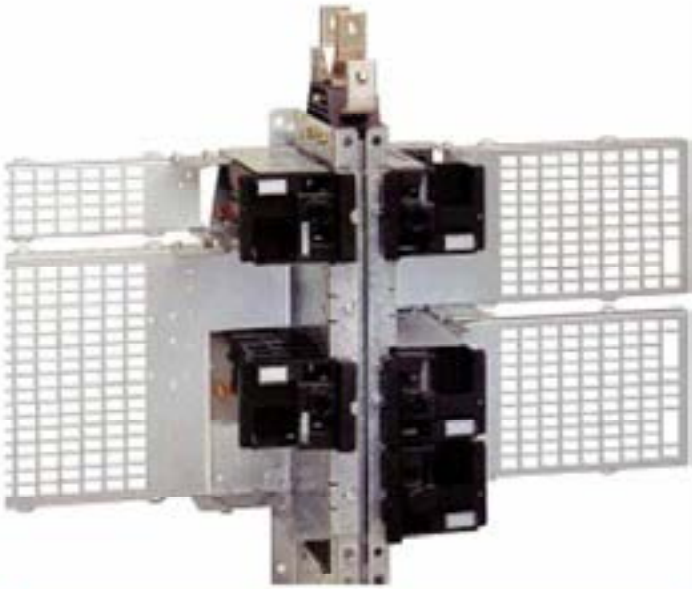


Combination rails ⊿	Omega rails ◡	Asymmetrical rail	Notched rail
For enclosures AA2, AA3 : uprights AM3-EC			
For supporting clip-on fixing equipment or screw fixing equipment using 1/4 turn sliding nuts type AF1-CF	For supporting clip-on fixing equipment	Fixing by screw and 1/4 turn sliding nut type DZ5-ME	Fixing by screw and 1/4 turn sliding nut type AF1-CD
2 Width : 35 Depth : 15 Length : 2000 & 3000	11 Width : 35 Depth : 15 Length : 250 to 2000	2 Width : 35 Depth : 7.5 Length : 2000	2 Width : 35 Depth : 15 Length : 2000 & 3000	1 Width : 35 Depth : 16 Length : 2000	1 Width : 75 Depth : 25 Length : 2000	1 Width : 75 Depth : 15 Length : 2000	2 Width : 32 Depth : 15 Length : 2000 & 3000	1 Width : 40 Depth : 25 Length : 1590 & 2000
Steel, 1 mm zinc chromate treated	Steel, 1.5 mm zinc chromate treated	Steel, 1 mm zinc chromate treated or galvanised	Steel, 1.5 mm zinc chromate treated	Aluminium, 1.8 mm	Steel, 3 mm zinc chromate treated	Steel, 2 mm zinc chromate treated	Steel, 1.5 mm zinc chromate treated	Steel, 2 mm zinc chromate treated
AM1-ED●00	AM1-ED●●●	AM1-D●200	AM1-DE●00	AM1-EA200	AM1-DL200	AM1-DL201	DZ5-MB●01	AM1-EC200

DISTRIBUTION OF POWER IN EQUIPMENT

Application	Single pole splitter block	Horizontal busbar system
Type	Single-pole splitter block - 1 upstream cable connection (35 mm² solid or 25 mm² flexible cable). - 6 downstream cable connections (up to 6 mm² solid or 4 mm² flexible cables).	Complete busbar system for the distribution of current using removable tap-off units or component mounting plates incorporating an electrical tap-off.
Composition	Single-pole splitter block incorporating universal fixing for ⊔, ⊓, ⊔, ⊔, mounting rails and Telequick pre-slotted mounting plates.	- 1 set of prefabricated 4-pole busbars comprising 12 to 54 tap-off outlets (depending on model) and incorporating an incoming supply terminal block. - Prefabricated removable 16 and 32 A tap-offs, either 2-pole, 3-pole, 4-pole or 3-pole + common. - Mounting plates for 1 or 2 components providing both electrical supply (25 and 50 A ratings) and support for all types of equipment. - Width extension plates for use with the above mounting plates for building more complex equipment.
Features	- Compact size. - Suitable for control circuits. - Can be referenced using AB1 clip-in markers. - Degree of protection IP 20.	- Prefabricated busbar system suitable for all types of equipment, with possibility of adding or modifying outgoing loads, quite safely, under live circuit conditions. - Degree of protection IP 20.
Rating	90 A	160 A
Type references	AB3	AK5

DISTRIBUTION OF POWER IN EQUIPMENT

Horizontal and vertical distribution system	Vertical and horizontal distribution system
	
Sub-assemblies and accessories for mounting and cabling to copper busbar sets (thickness 5 mm, height 12 to 60 mm).	Complete prefabricated plug-in busbar system for supply of power to several partitioned individual motor starters, etc..
- Insulated busbar supports for 3 or 4-pole systems (busbars not supplied). - Screw clamp connectors that clamp directly onto the copper busbars (no drilling required). - Connector plates and associated screw terminal clamps. - Protective cover. - Single-pole adaptor block that clamps directly onto the copper busbar (no drilling required) enabling up to 6 cables to be tapped off.	- 1 set of 3 or 4-pole busbars, height 1800 mm, comprising 32 tap-off outlets (16 on each side). - Disconnect blocks rated at 125 and 250 A, 3-pole + N + PE. - Pre-slotted mounting plates for components. - Operating key ensuring operation of stab connectors incorporated in the disconnect block. - Available as option: partitioning accessories and extra lateral supports for mounting plates.
- Sub-assemblies enabling variable composition by the customer to suit individual application needs. - Screw clamp connectors and adaptor blocks clamp directly onto the copper busbars; no drilling required.	- Self-supporting 1800 mm high metal cased busbar system (for other sizes, please consult your Regional Sales Office). - Each tap-off can be isolated by means of a visible break disconnect block without having to switch off the mains supply, thus allowing continuous operation. - Degree of protection IP 20.
200 to 690 A	400 and 800 A
AK2	AK3

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