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XS1 N12NA349●	2/36	XS2 M12KP340●	2/60	XS6 08B1PB●●●	2/22	XS7 G12NA140●	2/82		and 4/10
XS1 N12NB349●	2/36	XS2 M12MA250●	2/56	XS6 12B1MA●●●	2/24	XS7 G12PA140●	2/82	XSZ B118	2/22
XS1 N12NC410●	2/58	XS2 M12MB250●	2/56	XS6 12B1MB●●●	2/24	XS7 G12PC440	2/82		to 2/62,
XS1 N12PA349●	2/36	XS2 M18KP340●	2/60	XS6 12B1NA●●●	2/22	XS7 J1A1●●L01M8	2/32		2/102
XS1 N12PB349●	2/36	XS2 M18MA250●	2/56	XS6 12B1NB●●●	2/22	XS7 J1A1●●L2	2/32		to 2/106,
XS1 N12PC410●	2/58	XS2 M18MB250●	2/56	XS6 12B1PA●●●	2/22	XS7 T4DA210	2/90		4/10
XS1 N18NA349●	2/36	XS2 M30KP340●	2/60	XS6 12B1PB●●●	2/22	XS7 T4DA214LD	2/90		and 4/24
XS1 N18NB349●	2/36	XS2 M30MA250●	2/56	XS6 12B2●●L01M12	2/62	XS7 T4DA214LD01	2/90		4/10
XS1 N18NC410●	2/58	XS2 M30MB250●	2/56	XS6 12B4NA●●●	2/26	XS7 T4NC440●●	2/90	XSZ B130	2/22
XS1 N18PA349●	2/36	XS2 N12NC410●	2/58	XS6 12B4NB●●●	2/26	XS7 T4PC440●●	2/90		to 2/62,
XS1 N18PB349●	2/36	XS2 N12PC410●	2/58	XS6 12B4PA●●●	2/26	XS8 C1A1●●L01U20	2/30		2/102
XS1 N18PC410●	2/58	XS2 N18NC410●	2/58	XS6 12B4PB●●●	2/26	XS8 C1A1MAL2	2/30		to 2/106
XS1 N30NA349●	2/36	XS2 N18PC410●	2/58	XS6 18B1MA●●●	2/24	XS8 C1A1MBL2	2/30	XSZ B165	2/45,
XS1 N30NB349●	2/36	XS2 N30NC410●	2/58	XS6 18B1MB●●●	2/24	XS8 C1A1●●L01M12	2/30		2/51
XS1 N30NC410●	2/58	XS2 N30PC410●	2/58	XS6 18B1NA●●●	2/22	XS8 C1A1●●L2	2/30		and
XS1 N30PA349●	2/36	XS4 P08MA230●	2/42	XS6 18B1NB●●●	2/22	XS8 C1A1●●M8	2/30		2/106
XS1 N30PB349●	2/36	XS4 P08MB230●	2/42	XS6 18B1PA●●●	2/22	XS8 C40D●210	2/86	XSZ BC●0	8/11
XS1 N30PC410●	2/58	XS4 P08N●3●0	2/42	XS6 18B1PB●●●	2/22	XS8 C40FP260	2/88		and
XS2 08ALN●L2	2/48	XS4 P08P●3●0	2/42	XS6 18B2●●L01M12	2/62	XS8 C40MP230	2/88		2/106
XS2 08ALP●L2	2/48	XS4 P12AB1●0	2/69	XS6 18B4MA●●●	2/28	XS8 C40●C44●	2/86	XSZ BD10	4/16,
XS2 08BLNA●●●	2/50	XS4 P12KP340●	2/60	XS6 18B4MB●●●	2/28	XS8 D1A1MAL2●	2/30		4/20
XS2 08BLNB●●●	2/50	XS4 P12MA230●	2/42	XS6 18B4NA●●●	2/26	XS8 D1A1MBL2●	2/30		and
XS2 08BLPA●●●	2/50	XS4 P12MB230●	2/42	XS6 18B4NB●●●	2/26	XS8 D1A1NAL2●	2/30		2/106
XS2 08BLPB●●●	2/50	XS4 P12NA3●0	2/42	XS6 18B4PA●●●	2/26	XS8 D1A1NBL2●	2/30	XSZ BE●0	8/11
XS2 12AANA●●●	2/102	XS4 P12PA3●0	2/42	XS6 18B4PB●●●	2/26	XS8 D1A1PAL2●	2/30		and
XS2 12AAPA●●●	2/102	XS4 P18AB1●0	2/70	XS6 30B1MA●●●	2/24	XS8 D1A1PBL2●	2/30		2/106
XS2 12ALNA●●●	2/48	XS4 P18KP340●	2/60	XS6 30B1MB●●●	2/24	XS8 E1A1M●L01U20	2/30	XSZ BF●0	2/106
XS2 12ALNB●●●	2/48	XS4 P18MA230●	2/42	XS6 30B1NA●●●	2/22	XS8 E1A1●●L2	2/30	XSZ BJ●0	2/106
XS2 12ALPA●●●	2/48	XS4 P18MB230●	2/42	XS6 30B1NB●●●	2/22	XS8 E1A1●●L01M12	2/30	XSZ BPM12	2/62,
XS2 12ALPB●●●	2/48	XS4 P18N●3●0	2/42	XS6 30B1PA●●●	2/22	XS8 E1A1●●M8	2/30		2/67
XS2 12BLNA●●●	2/50	XS4 P18P●3●0	2/42	XS6 30B1PB●●●	2/22	XS8 G12●230	2/84		and
XS2 12BLNB●●●	2/50	XS4 P30AB1●0	2/71	XS6 30B2●●L01M12	2/62	XS8 G12NA140●	2/82		2/106
XS2 12BLPA●●●	2/50	XS4 P30KP340●	2/60	XS6 30B4MA●●●	2/28	XS8 G12NC440	2/82	XSZ BS12	2/98
XS2 12BLPB●●●	2/50	XS4 P30MA230●	2/42	XS6 30B4MB●●●	2/28	XS8 G12PA140●	2/82	XSZ BS30	2/98
XS2 12SANA●●●	2/98	XS4 P30MB230●	2/42	XS6 30B4NA●●●	2/26	XS8 G12PC440	2/82		and
XS2 12SAPA●●●	2/98	XS4 P30N●3●0	2/42	XS6 30B4NB●●●	2/26	XS8 T4NC440●●	2/90		2/100
XS2 18AAMA●●●	2/104	XS4 P30P●3●0	2/42	XS6 30B4PA●●●	2/26	XS8 T4PC440●●	2/90	XSZ E1●●	1/160
XS2 18AANA●●●	2/102	XS5 08B1CAL08M12	2/40	XS6 30B4PB●●●	2/26	XS9 C111A●L01M12	2/73		and
XS2 18AAPA●●●	2/102	XS5 08B1CAM12	2/40	XS7 C1A1●AL0●M12	2/34		and		2/106
XS2 18ALNA●●●	2/48	XS5 08B1DA●●●	2/40	XS7 C1A1DA●●●	2/34		2/75	XSZ E2●●	1/116
XS2 18ALNB●●●	2/48	XS5 08B1DB●●●	2/40	XS7 C1A1●BL01M12	2/34	XS9 C111A1L2	2/73		and
XS2 18ALPA●●●	2/48	XS5 08B1NA●●●	2/38	XS7 C1A1DB●●	2/34	XS9 C111A2L2	2/75		2/106
XS2 18ALPB●●●	2/48	XS5 08B1NB●●●	2/38	XS7 C1A1NA●●	2/34	XS9 C11RMBL01U20	2/67	XSZ E3●●	1/110,
XS2 18BLNA●●●	2/51	XS5 08B1PA●●●	2/38	XS7 C1A1NB●●	2/34	XS9 C11RPBL01M12	2/67		1/160
XS2 18BLNB●●●	2/51	XS5 08B1PB●●●	2/38	XS7 C1A1PA●●	2/34	XS9 D111A1●●●	2/73		and
XS2 18BLPA●●●	2/51	XS5 12B1DA●●●	2/40	XS7 C1A1PB●●	2/34	XS9 D111A2●●●	2/75		2/106
XS2 18BLPB●●●	2/51	XS5 12B1DB●●●	2/40	XS7 C40D●210	2/86	XS9 E111A1●●●	2/73	XSZ F10	2/106
XS2 18SAMA●●●	2/100	XS5 12B1NA●●●	2/38	XS7 C40FP260	2/88	XS9 E111A2L01M12	2/75	XSZ MCR●●	1/103
XS2 18SANA●●●	2/98	XS5 12B1NB●●●	2/38	XS7 C40KPM40	2/78	XS9 E111A2●●●	2/75	XSZ P11●	2/106
XS2 18SAPA●●●	2/98	XS5 12B1PA●●●	2/38	XS7 C40MP230	2/88	XS9 E11RMBL01U20	2/67	XSZ PE13	2/106
XS2 30AAMA●●●	2/104	XS5 12B1PB●●●	2/38	XS7 C40●C44●	2/86	XS9 E11RPBL01M12	2/67	XSZ VF0●	2/106
XS2 30AANA●●●	2/102	XS5 18B1CAL08M12	2/40	XS7 D1A1CAM12	2/34	XS9 F111A●L01M8	2/73		
XS2 30AAPA●●●	2/102	XS5 18B1CAM12	2/40	XS7 D1A1DA●●●	2/34	XS9 F111A●L2	2/73	XT1 12S1●●L2	3/8
XS2 30ALNA●●●	2/48	XS5 18B1DA●●●	2/40	XS7 D1A1DB●●●	2/34	XSA V11373	2/65	XT1 12S1PCM12	3/8
XS2 30ALNB●●●	2/48	XS5 18B1DB●●●	2/40	XS7 D1A1NA●●●	2/34	XSA V11801	2/65	XT1 18B1●●L2	3/8
XS2 30ALPA●●●	2/48	XS5 18B1NA●●●	2/38	XS7 D1A1NB●●●	2/34	XSA V12373	2/65	XT1 18B1PCM12	3/8
XS2 30ALPB●●●	2/48	XS5 18B1NB●●●	2/38	XS7 D1A1PA●●●	2/34	XSA V12801	2/65	XT1 30B1●●L2	3/8
XS2 30BLNA●●●	2/51	XS5 18B1PA●●●	2/38	XS7 D1A1PB●●●	2/34	XSA Z1●●	1/160	XT1 30B1PCM12	3/8
XS2 30BLNB●●●	2/51	XS5 18B1PB●●●	2/38	XS7 D1A3CAM12DIN	2/92	XSC Z01	2/106	XT1 32B1●●L2	3/8
XS2 30BLPA●●●	2/51	XS5 30B1CAL08M12	2/40	XS7 E1A1●AL0●M12	2/34	XSZ A0●●	2/106	XT2 18A1PCM12	3/12
XS2 30BLPB●●●	2/51	XS5 30B1CAM12	2/40	XS7 E1A1DA●●	2/34	XSZ B10●	2/106	XT2 30A1●●L2	3/12
								XT2 30A1PCM12	3/12

XT2 32A1●●L2	3/12	XUB 1AP●●M12	1/30	XUF N053●●	1/70	XUM 0AKSA●●●	1/34	XUY FLCLARY3●●●●	1/110
XT7 C40FP262	3/16	XUB 1BN●●M12	1/32	XUF N123●●●●●	1/68	XUM 0ANSA●●●	1/34	XUY AFCLARY4●●●●	1/110
XT7 C40●●440	3/16	XUB 1BP●●M12	1/32	XUF N2L01●●●	1/69	XUM 0APSA●●●	1/34	XUY AFCLARYE2P	1/111
XTA Z30	2/106	XUB 2AKS●M12T	1/30	XUF N2P01●●●	1/69	XUM 2AKCN●●●	1/36	XUY AFP9●6S	1/86
XU1 N18NP341●	1/116	XUB 2ANA●M12R	1/30	XUF N2S01●●●	1/69	XUM 2ANCN●●●	1/36	XUY AFPCO9●6S	1/86
XU1 N18NP341W●	1/116	XUB 2ANB●M12R	1/30	XUF N35301	1/68	XUM 2ANCNM8●	1/36	XUY AFV9●6S	1/86
XU1 N18PP341●	1/116	XUB 2APA●M12R	1/30	XUF N35311	1/69	XUM 2APCNL2●	1/36	XUY AFVCO9●6S	1/86
XU1 N18PP341D	1/116	XUB 2APB●M12R	1/30	XUF N5L0●L2	1/72	XUM 2APCNM8●	1/36	XUY AU005	1/85
XU1 N18PP341W●	1/116	XUB 2BKS●M12T	1/32	XUF N5●01L10	1/71	XUM 2BNANL2●	1/60	XUY B95●●	1/148
XU2 M18AP20D	1/128	XUB 2BNA●M12R	1/32	XUF N5S01L2	1/71	XUM 2BNBNL2●	1/60	XUY B989●●	1/58
XU2 M18MA230●	1/152	XUB 2BNB●M12R	1/32	XUF S●●20	1/73	XUM 2BPANL2●	1/60	XUY BCO929LSP	1/64
XU2 M18MA230W●	1/152	XUB 2BPA●M12R	1/32	XUF Z0●	1/75	XUM 2BPBNL2●	1/60		and 1/65
XU2 M18MB230●	1/152	XUB 2BPB●M12R	1/32		and	XUM 5ANCN●●	1/36	XUY BCO989S●	1/58
XU2 M18MB230W●	1/152	XUB 4ANA●M12	1/30		1/161	XUM 5APCN●●	1/36	XUY DCFCO966S	1/90
XU2 N18NP341●	1/116	XUB 4ANB●M12	1/30	XUF Z1●	1/75	XUM 5BN●NL2	1/60	XUY E989	1/58
XU2 N18NP341W●	1/116	XUB 4APA●M12	1/30	XUF Z210	1/75	XUM 5BP●NL2	1/60	XUY ECO989	1/58
XU2 N18PP341●	1/116	XUB 4APB●M12	1/30	XUF Z310	1/75	XUM 9ANCN●●	1/36	XUY FALNEP1000●●	1/50
XU2 N18PP341W●	1/116	XUB 4BNA●M12	1/32	XUF Z9●●	1/74	XUM 9APCN●●	1/36	XUY FALNEP100120	1/50
XU5 M18AB20D	1/126	XUB 4BNB●M12	1/32	XUJ B06031H60	1/158	XUM 9BN●NL2	1/60	XUY FALNEP400●●	1/50
XU5 M18MA230●	1/152	XUB 4BPA●M12	1/32	XUJ K803538	1/124	XUM 9BP●NL2	1/60	XUY FALNEP40120	1/50
XU5 M18MA230W●	1/152	XUB 4BPB●M12	1/32	XUJ Z01	1/161	XUM W1KSNL2	1/112	XUY FALNEP600●●	1/50
XU5 M18MB230●	1/152	XUB 5ANA●M12	1/30	XUK 0AKSAL2●	1/40	XUR C3●PML2	1/104	XUY FALNEP60120	1/50
XU5 M18MB230W●	1/152	XUB 5ANB●M12	1/30	XUK 0AKSAM12●	1/40	XUR C4●PML2	1/104	XUY FANEP100002	1/48
XU5 M18U1D	1/94	XUB 5APA●M12	1/30	XUK 0ARCTL2●	1/40	XUR K0955D	1/92	XUY FANEP1000●●	1/48
XU5 N18NP341●	1/116	XUB 5APB●M12	1/30	XUK 1ANAN●●●	1/42	XUR K1KSM12	1/92	XUY FANEP100120	1/48
XU5 N18NP341W●	1/116	XUB 5BNA●M12	1/32	XUK 1ANBN●●●	1/42	XUR Z0●	1/161	XUY FANEP400●●	1/48
XU5 N18PP341●	1/116	XUB 5BNB●M12	1/32	XUK 1APAN●●●	1/42	XUS LZ500	5/188	XUY FANEP40120	1/48
XU5 N18PP341W●	1/116	XUB 5BPA●M12	1/32	XUK 1APBN●●●	1/42	XUV H0312	1/150	XUY FANEP600●●	1/48
XU8 M18MA230●	1/152	XUB 5BPB●M12	1/32	XUK 1ARCNL2	1/42	XUV J0312	1/150	XUY FANEP60120	1/48
XU8 M18MA230W●	1/152	XUB 9ANA●M12	1/30	XUK 2AKSN●●●●	1/42	XUV Z02	1/161	XUY FLCHLR70101	1/108
XU8 M18MB230●	1/152	XUB 9ANB●M12	1/30	XUK 2ANAN●●●●	1/42	XUX 0AKSAM12●	1/44	XUY FLCLFPCF101	1/107
XU8 M18MB230W●	1/152	XUB 9APA●M12	1/30	XUK 2ANBN●●●●	1/42		and 1/46		and
XU9 M18MA230●	1/152	XUB 9APB●M12	1/30	XUK 2APAN●●●●	1/42	XUX 0AKSAT16●	1/44		1/108
XU9 M18MA230K	1/152	XUB 9BNA●M12	1/32	XUK 2APBN●●●●	1/42		and 1/46	XUY FLCLFPCF61	1/107
XU9 M18MA230W●	1/152	XUB 9BNB●M12	1/32	XUK 2ARCN●●●	1/42	XUX 0ARCTT16●	1/44		and
XU9 M18MB230●	1/152	XUB 9BPA●M12	1/32	XUK 5ANAN●●●	1/42		and 1/46		1/108
XU9 M18MB230W●	1/152	XUB 9BPB●M12	1/32	XUK 5ANBN●●●	1/42	XUX 1ANAN●●●	1/46	XUY FLCLFPCP101	1/107
XU9 N18NP341●	1/116	XUB LAKCN●●●●	1/120	XUK 5APAN●●●	1/42	XUX 1ANBN●●●	1/46		and
XU9 N18NP341W●	1/116	XUB LANCN●●●	1/120	XUK 5APBN●●●	1/42	XUX 1APAN●●●	1/46		1/108
XU9 N18PP341●	1/116	XUB LANCNM12●	1/120	XUK 5ARCNL2	1/42	XUX 1APBN●●●	1/46	XUY FLCLFPCP61	1/107
XU9 N18PP341W●	1/116	XUB LAPCNL2●	1/120	XUK 8AKSN●●●	1/132	XUX 1ARCNT16	1/46		and
XUA H0203●	1/56	XUB LAPCNM12●	1/120	XUK 9ANAN●●●	1/42	XUX 2ANAN●●●●	1/46		1/108
XUA H0214●	1/56	XUB LBKCN●●●●	1/120	XUK 9ANBN●●●	1/42	XUX 2ANBN●●●●	1/46	XUY FLCLHR25101	1/107
XUA H0224●	1/56	XUB LBNCN●●●	1/120	XUK 9APAN●●●	1/42	XUX 2APAN●●●●	1/46		and
XUA H0515●	1/56	XUB LBNCNM12●	1/120	XUK 9APBN●●●	1/42	XUX 2APBN●●●●	1/46		1/108
XUA H0525●	1/56	XUB LBPCNL2●	1/120	XUK 9ARCNL2	1/42	XUX 2ARCNT16R	1/46	XUY FLCLHR2561	1/107
XUA J0214●	1/56	XUB LBPCNM12●	1/120	XUK C1●SMM12	1/102	XUX 5ANAN●●●	1/46		and
XUA J0224●	1/56	XUB TANSN●●●	1/98	XUK R1●SMM12	1/88	XUX 5ANBN●●●	1/46		1/108
XUA J0515●	1/56	XUB TANSW●●●	1/98	XUK T1KSM●●●	1/100	XUX 5APAN●●●	1/46	XUY FLCLHR70101	1/107
XUA J0525●	1/56	XUB TAPSN●●●	1/98	XUL A040119●	1/143	XUX 5APBN●●●	1/46	XUY FLCLHR7061	1/107
XUB 0AKSNL2T	1/28	XUB TAPSW●●●	1/98	XUL A040219●	1/143	XUX 9ANAN●●●	1/46		and
XUB 0AKSNM12T	1/28	XUB TSNSN●●●	1/98	XUL A06011●	1/143	XUX 9ANBN●●●	1/46		1/108
XUB 0AKSW●●●	1/28	XUB TSNSW●●●	1/98	XUL A06021●	1/143	XUX 9APAN●●●	1/46	XUY FLNEP1000●●	1/50
XUB 0ANSN●●●	1/28	XUB TSPSN●●●	1/98	XUL A700115●	1/143	XUX 9APBN●●●	1/46	XUY FLNEP100120	1/50
XUB 0ANSW●●●	1/28	XUB TSPSW●●●	1/98	XUL A700215●	1/143	XUX 9ARCNT16	1/46	XUY FLNEP400●●	1/50
XUB 0APSN●●●	1/28	XUC 2AKSA●●●	1/138	XUL H043539●	1/142	XUY 1111	1/58	XUY FLNEP40120	1/50
XUB 0APSW●●●	1/28	XUC 2ARCT●●●	1/140	XUL H06353●	1/142		and 1/64	XUY FLNEP600●●	1/50
XUB 0BKSN●●●	1/28	XUC 8AKSN●●●	1/138	XUL H083534●	1/142	XUY 92●●	1/64,	XUY FLNEP60120	1/50
XUB 0BKSW●●●	1/28	XUC 8ARCT●●●	1/140	XUL H703535●	1/142		1/107	XUY FNEP1000●●	1/48
XUB 0BNSN●●●	1/28	XUC 9AKSA●●●	1/138	XUL J043539●	1/142		and	XUY FNEP100120	1/48
XUB 0BNSW●●●	1/28	XUC 9ARCT●●●	1/140	XUL J06353●	1/142		1/130	XUY FNEP400●●	1/48
XUB 0BPSN●●●	1/28	XUD A1NSM●●●	1/66	XUL J083534●	1/142	XUY 9LC	1/107	XUY FNEP40120	1/48
XUB 0BPSW●●●	1/28	XUD A1PSM●●●	1/66	XUL J703535●	1/142	XUY A00●●●	1/84	XUY FNEP600●●	1/48
XUB 0SKSN●●●	1/114	XUD A2NSM●●●	1/66	XUL K0830●	1/142		and 1/96	XUY FNEP60120	1/48
XUB 0SKSW●●●	1/114	XUD A2PSM●●●	1/66	XUL M040319	1/146	XUY A110	1/84	XUY FP2BRINA005B	1/85
XUB 0SNSN●●●	1/114	XUF 2L01L10	1/69	XUL M0600	1/146	XUY A21●	1/84	XUY FPDC101	1/90
XUB 0SNSW●●●	1/114	XUF N013●1	1/71	XUL M06031	1/146		and 1/85	XUY FPDC61	1/90
XUB 0SPSN●●●	1/114	XUF N02323	1/71	XUL M080314	1/146	XUY A220	1/85	XUY FPDCM8101	1/90
XUB 0SPSWL2	1/114	XUF N04331	1/7	XUL M300318	1/146	XUY A310	1/85	XUY FPDCM861	1/90
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Technical information

Protective treatment of equipment according to climatic environment

Depending on the climatic and environmental conditions in which the equipment is placed, Schneider Electric can offer specially adapted products to meet your requirements.

In order to make the correct choice of protective finish, two points should be remembered:

- the prevailing climate of the country is never the only criterion,
- only the atmosphere in the immediate vicinity of the equipment need be considered.

All climates treatment "TC"

This is the standard treatment for Telemecanique brand equipment and is suitable for the vast majority of applications. It is the equivalent of treatments described as "Klimafest", "Climateproof".

In particular, it meets the requirements specified in the following publications:

- Publication UTE C 63-100 (method I), successive cycles of humid heat at: + 40 °C and 95 % relative humidity.
- DIN 50016 - Variations of ambient conditions within a climatic chamber: + 23 °C and 83 % relative humidity, + 40 °C and 92 % relative humidity.

It also meets the requirements of the following marine classification societies: BV-LR-GL-DNV-RINA.

Characteristics

- Steel components are usually treated with zinc. When they have a mechanical function, they may also be painted.
- Insulating materials are selected for their high electrical, dielectric and mechanical characteristics.
- Metal enclosures have a stoved paint finish, applied over a primary phosphate protective coat, or are galvanised (e.g. some prefabricated busbar trunking components).

Limits for use of "TC" (All climates) treatment

- "TC" treatment is suitable for the following temperatures and humidity:

Temperature (°C)	Relative humidity (%)
20	95
40	80
50	50

"TC" treatment is therefore suitable for all latitudes and in particular tropical and equatorial regions where the equipment is mounted in normally ventilated industrial premises. Being sheltered from external climatic conditions, temperature variations are small, the risk of condensation is minimised and the risk of dripping water is virtually non-existent.

Extension of use of "TC" (All climates) treatment

In cases where the humidity around the equipment exceeds the conditions described above, or in equatorial regions if the equipment is mounted outdoors, or if it is placed in a very humid location (laundries, sugar refineries, steam rooms, etc.), "TC" treatment can still be used if the following precautions are taken:

- The enclosure in which the equipment is mounted must be protected with a "TH" finish (see next page) and must be well ventilated to avoid condensation and dripping water (e.g. enclosure base plate mounted on spacers).
- Components mounted inside the enclosure must have a "TC" finish.
- If the equipment is to be switched off for long periods, a heater must be provided (0.2 to 0.5 kW per square decimetre of enclosure), that switches on automatically when the equipment is turned off. This heater keeps the inside of the enclosure at a temperature slightly higher than the outside surrounding temperature, thereby avoiding any risk of condensation and dripping water (the heat produced by the equipment itself during normal running is sufficient to provide this temperature difference).
- Special considerations for "Operator dialog" and "Detection" products: for certain pilot devices, the use of "TC" treatment can be extended to outdoor use provided their enclosure is made of light alloys, zinc alloys or plastic material. In this case, it is also essential to ensure that the degree of protection against penetration of liquids and solid objects is suitable for the applications involved.

Technical information

Protective treatment of equipment according to climatic environment

“TH” treatment for hot and humid environments

This treatment is suitable for hot and humid atmospheres where installations are regularly subject to condensation, dripping water and the risk of fungi.

In addition, plastic insulating components are resistant to attacks from insects such as termites and cockroaches. These properties have often led to this treatment being described as “Tropical Finish”, but this does not mean that all equipment installed in tropical and equatorial regions must systematically have undergone “TH” treatment. On the other hand, certain operating conditions in temperate climates may well require the use of “TH” treated equipment (see limitations for use of “TC” treatment).

Special characteristics of “TH” treatment

- All insulating components are made of materials which are either resistant to fungi or treated with a fungicide, and which have increased resistance to creepage (Standards IEC 60112, NF C 26-220, DIN 5348).
- Metal enclosures receive a top-coat of stoved, fungicidal paint, applied over a rust inhibiting undercoat. Components with “TH” treatment may be subject to a surcharge (1). Please consult your Regional Sales Office.

Protective treatment selection guide

Surrounding environment	Duty cycle	Internal heating of enclosure when not in use	Type of climate	Protective treatment	
				of equip-ment	of encl-o-sure
Indoors					
No dripping water or condensation	Unimportant	Not necessary	Unimportant	"TC"	"TC"
Presence of dripping water or condensation	Frequent switching off for periods of more than 1 day	No	Temperate	"TC"	"TH"
			Equatorial	"TH"	"TH"
	Yes	Unimportant	"TC"	"TH"	
	Continuous	Not necessary	Unimportant	"TC"	"TH"
Outdoors (sheltered)					
No dripping water or dew	Unimportant	Not necessary	Temperate	"TC"	"TC"
			Equatorial	"TH"	"TH"
Exposed outdoors or near the sea					
Frequent and regular presence of dripping water or dew	Frequent switching off for periods of more than 1 day	No	Temperate	"TC"	"TH"
			Equatorial	"TH"	"TH"
	Yes	Unimportant	"TC"	"TH"	
	Continuous	Not necessary	Unimportant	"TC"	"TH"

These treatments cover, in particular, the applications defined by methods I and II of guide UTE C 63-100.

Special precautions for electronic equipment

Electronic products always meet the requirements of “TC” treatment. A number of them are “TH” treated as standard.

Some electronic products (for example: programmable controllers, flush mountable controllers CCX and flush mountable operator terminals XBT) require the use of an enclosure providing a degree of protection to at least IP 54, as defined by standards IEC 60664 and NF C 20 040, for use in industrial applications or in environmental conditions requiring “TH” treatment.

These electronic products, including flush mountable products, must have a degree of protection to at least IP 20 (provided either by their own enclosure or by their installation method) for restricted access locations where the degree of pollution does not exceed 2 (a test booth not containing machinery or other dust producing activities, for example).

Special treatments

For particularly harsh industrial environments, Schneider Electric is able to offer special protective treatments. Please consult your Regional Sales Office.

(1) A large number of the Telemecanique brand products are “TH” treated as standard and are, therefore, not subject to a surcharge.

Standardisation

Conformity to standards

Telemecanique brand products satisfy, in the majority of cases, national (for example: BS in Great Britain, NF in France, DIN in Germany), European (for example: CENELEC) or international (IEC) standards. These product standards precisely define the performance of the designated products (such as IEC 60947 for low voltage equipment).

When used correctly, as designated by the manufacturer and in accordance with regulations and correct practices, these products will allow users to build equipment, machine systems or installations that conform to their appropriate standards (for example: IEC 60204-1, relating to electrical equipment used on industrial machines).

Schneider Electric is able to provide proof of conformity of its production to the standards it has chosen to comply with, through its quality assurance system.

On request, and depending on the situation, Schneider Electric can provide the following:

- a declaration of conformity,
- a certificate of conformity (ASEFA/LOVAG),
- a homologation certificate or approval, in the countries where this procedure is required or for particular specifications, such as those existing in the merchant navy.

Code	Certification authority		Country
	Name	Abbreviation	
ANSI	American National Standards Institute	ANSI	USA
BS	British Standards Institution	BSI	Great Britain
CEI	Comitato Elettrotecnico Italiano	CEI	Italy
DIN/VDE	Verband Deutscher Electrotechniker	VDE	Germany
EN	Comité Européen de Normalisation Electrotechnique	CENELEC	Europe
GOST	Gosudarstvennoy Komitet Standartov	GOST	Russia
IEC	International Electrotechnical Commission	IEC	Worldwide
JIS	Japanese Industrial Standard	JISC	Japan
NBN	Institut Belge de Normalisation	IBN	Belgium
NEN	Nederlands Normalisatie Instituut	NNI	Netherlands
NF	Union Technique de l'Electricité	UTE	France
SAA	Standards Association of Australia	SAA	Australia
UNE	Asociación Española de Normalización y Certificación	AENOR	Spain

European EN standards

These are technical specifications established in conjunction with, and with approval of, the relative bodies within the various CENELEC member countries (European Union, European Free Trade Association and many central and eastern European countries having «member» or «affiliated» status). Prepared in accordance with the principle of consensus, the European standards are the result of a weighted majority vote. Such adopted standards are then integrated into the national collection of standards, and contradictory national standards are withdrawn.

European standards incorporated within the French collection of standards carry the prefix NF EN. At the 'Union Technique de l'Electricité' (*Technical Union of Electricity*) (UTE), the French version of a corresponding European standard carries a dual number: European reference (NF EN ...) and classification index (C ...).

Therefore, the standard NF EN 60947-4-1 relating to motor contactors and starters, effectively constitutes the French version of the European standard EN 60947-4-1 and carries the UTE classification C 63-110.

This standard is identical to the British standard BS EN 60947-4-1 or the German standard DIN EN 60947-4-1.

Whenever reasonably practical, European standards reflect the international standards (IEC).

With regard to automation system components and distribution equipment, in addition to complying with the requirements of French NF standards, Telemecanique brand components conform to the standards of all other major industrial countries.

Regulations

European Directives

Opening up of European markets assumes harmonisation of the regulations pertaining to each of the member countries of the European Union.

The purpose of the European Directive is to eliminate obstacles hindering the free circulation of goods within the European Union, and it must be applied in all member countries. Member countries are obliged to transcribe each Directive into their national legislation and to simultaneously withdraw any contradictory regulations. The Directives, in particular those of a technical nature which concern us, only establish the objectives to be achieved, referred to as "essential requirements".

The manufacturer must take all the necessary measures to ensure that his products conform to the requirements of each Directive applicable to his production.

As a general rule, the manufacturer certifies conformity to the essential requirements of the Directive(s) for his product by affixing the CE mark.

The CE mark is affixed to Telemecanique brand products concerned, in order to comply with French and European regulations.

Significance of the CE mark

- The CE mark affixed to a product signifies that the manufacturer certifies that the product conforms to the relevant European Directive(s) which concern it; this condition must be met to allow free distribution and circulation within the countries of the European Union of any product subject to one or more of the E.U. Directives.
- The CE mark is intended solely for national market control authorities.
- The CE mark must not be confused with a conformity marking.

European Directives (continued)

For electrical equipment, only conformity to standards signifies that the product is suitable for its designated function, and only the guarantee of an established manufacturer can provide a high level of quality assurance.

For Telemecanique brand products, one or several Directives are likely to be applicable, depending on the product, and in particular:

- the Low Voltage Directive 73/23/EEC amended by Directive 93/68/EEC: the CE mark relating to this Directive has been compulsory since 1st January 1997.
- the Electromagnetic Compatibility Directive 89/336/EEC, amended by Directives 92/31/EEC and 93/68/EEC: the CE mark on products covered by this Directive has been compulsory since 1st January 1996

ASEFA-LOVAG certification

The function of ASEFA (Association des Stations d'Essais Française d'Appareils électriques - Association of French Testing Stations for Low Voltage Industrial Electrical Equipment) is to carry out tests of conformity to standards and to issue certificates of conformity and test reports. ASEFA laboratories are authorised by the French authorisation committee (COFRAC). ASEFA is now a member of the European agreement group LOVAG (Low Voltage Agreement Group). This means that any certificates issued by LOVAG/ASEFA are recognised by all the authorities which are members of the group and carry the same validity as those issued by any of the member authorities.

Quality labels

When components can be used in domestic and similar applications, it is sometimes recommended that a "Quality label" be obtained, which is a form of certification of conformity.

Code	Quality label	Country
CEBEC	Comité Electrotechnique Belge	Belgium
KEMA-KEUR	Keuring van Electrotechnische Materialen	Netherlands
NF	Union Technique de l'Electricité	France
ÖVE	Österreichischer Verband für Electrotechnik	Austria
SEMKO	Svenska Elektriska Materiel Kontrollnatanalen	Sweden

Product certifications

In some countries, the certification of certain electrical components is a legal requirement. In this case, a certificate of conformity to the standard is issued by the official test authority.

Each certified device must bear the relevant certification symbols when these are mandatory:

Code	Certification authority	Country
CSA	Canadian Standards Association	Canada
UL	Underwriters Laboratories	USA
CCC	China Compulsory Certification	China

Note on certifications issued by the Underwriters Laboratories (UL). There are two levels of approval:

"Recognized" (UL) The component is fully approved for inclusion in equipment built in a workshop, where the operating limits are known by the equipment manufacturer and where its use within such limits is acceptable by the Underwriters Laboratories.
The component is not approved as a "Product for general use" because its manufacturing characteristics are incomplete or its application possibilities are limited.
A "Recognized" component does not necessarily carry the certification symbol.

"Listed" (UL) The component conforms to all the requirements of the classification applicable to it and may therefore be used both as a "Product for general use" and as a component in assembled equipment. A "Listed" component must carry the certification symbol.

Marine classification societies

Prior approval (= certification) by certain marine classification societies is generally required for electrical equipment which is intended for use on board merchant vessels.

Code	Classification authority	Country
BV	Bureau Veritas	France
DNV	Det Norske Veritas	Norway
GL	Germanischer Lloyd	Germany
LR	Lloyd's Register	Great Britain
NKK	Nippon Kaiji Kyokai	Japan
RINA	Registro Italiano Navale	Italy
RRS	Register of Shipping	Russia

Note

For further details on a specific product, please refer to the "Characteristics" pages in this catalogue or consult your Regional Sales Office.

Degrees of protection against the penetration of solid bodies, water and personnel access to live parts

The European standard EN 60529 dated October 1991, IEC publication 529 (2nd edition - November 1989), defines a coding system (IP code) for indicating the degree of protection provided by electrical equipment enclosures against accidental direct contact with live parts and against the ingress of solid foreign objects or water. This standard does not apply to protection against the risk of explosion or conditions such as humidity, corrosive gasses, fungi or vermin.

Certain equipment is designed to be mounted on an enclosure which will contribute towards achieving the required degree of protection (example : control devices mounted on an enclosure).

Different parts of an equipment can have different degrees of protection (example : enclosure with an opening in the base).

Standard NF C 15-100 (May 1991 edition), section 512, table 51 A, provides a cross-reference between the various degrees of protection and the environmental conditions classification, relating to the selection of equipment according to external factors.

Practical guide UTE C 15-103 shows, in the form of tables, the characteristics required for electrical equipment (including minimum degrees of protection), according to the locations in which they are installed.

IP ●●● code

The IP code comprises **2 characteristic numerals** (e.g. **IP 55**) and may include **an additional letter** when the actual protection of personnel against direct contact with live parts is better than that indicated by the first numeral (e.g. IP 20C).

Any characteristic numeral which is unspecified is replaced by an X (e.g. IP XXB).

1st characteristic numeral:


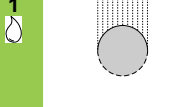

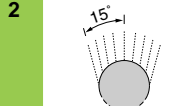

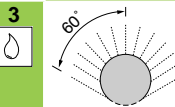
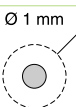
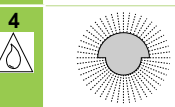

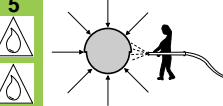

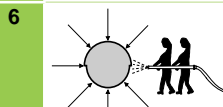
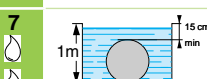
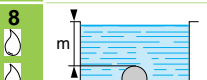
corresponds to protection of the equipment against penetration of solid objects and protection of personnel against direct contact with live parts.

2nd characteristic numeral:

corresponds to protection of the equipment against penetration of water with harmful effects.

Additional letter:

corresponds to protection of personnel against direct contact with live parts.

Protection of the equipment		Protection of personnel				
0	Non-protected	Non-protected	0	Non-protected	A	With the back of the hand.
1	 Protected against the penetration of solid objects having a diameter greater than or equal to 50 mm.	Protected against direct contact with the back of the hand (accidental contacts).	1	 Protected against vertical dripping water, (condensation).	B	With the finger.
2	 Protected against the penetration of solid objects having a diameter greater than or equal to 12.5 mm.	Protected against direct finger contact.	2	 Protected against dripping water at an angle of up to 15°.	C	With a Ø 2.5 mm tool.
3	 Protected against the penetration of solid objects having a diameter greater than or equal to 2.5 mm.	Protected against direct contact with a Ø 2.5 mm tool.	3	 Protected against rain at an angle of up to 60°.	D	With a Ø 1 mm wire.
4	 Protected against the penetration of solid objects having a diameter > 1 mm.	Protected against direct contact with a Ø 1 mm wire.	4	 Protected against splashing water in all directions.		
5	 Dust protected (no harmful deposits).	Protected against direct contact with a Ø 1 mm wire.	5	 Protected against water jets in all directions.		
6	 Dust tight.	Protected against direct contact with a Ø 1 mm wire.	6	 Protected against powerful jets of water and waves.		
			7	 Protected against the effects of temporary immersion.		
			8	 Protected against the effects of prolonged immersion under specified conditions.		

Degrees of protection against mechanical impact

The European standard EN 50102 dated March 1995 defines a coding system (IK code) for indicating the degree of protection provided by electrical equipment enclosures against external mechanical impact. Standard NF C 15-100 (May 1991 edition), section 512, table 51 A, provides a cross-reference between the various degrees of protection and the environmental conditions classification, relating to the selection of equipment according to external factors.

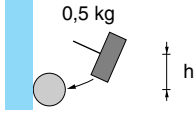
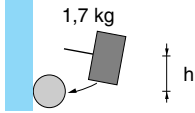
Practical guide UTE C 15-103 shows, in the form of tables, the characteristics required for electrical equipment (including minimum degrees of protection), according to the locations in which they are installed.

IK ●● code

The IK code comprises **2 characteristic numerals** (e.g. **IK 05**).

2 characteristic numerals:

corresponding to a value of impact energy.

		h (cm)	Energy (J)
00	Non-protected		
01		7.5	0.15
02		10	0.2
03		17.5	0.35
04		25	0.5
05		35	0.7
06		20	1
07		40	2
08		30	5
09		20	10
10		40	20