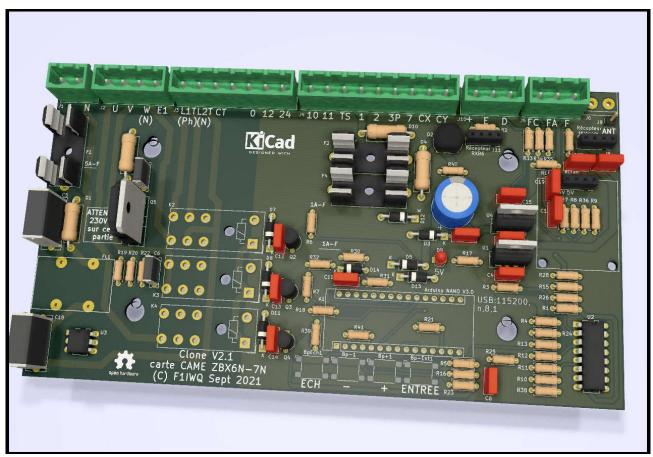
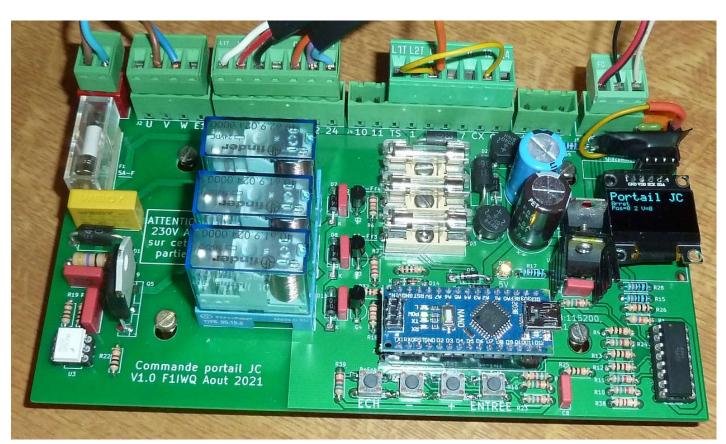
Notice carte F1IWQ clone CAME V1.0/2.0

En remplacement de la carte ZBX6N/7N



Carte V2



Carte V1

Description

La carte existe en deux versions :

La carte V1.0 dispose d'un connecteur pour un récepteur radio à 1 bornier.

La carte V2.1 dispose de deux connecteurs pour un récepteur à 1 ou 2 bornier(s) (type RXB6).

La carte comporte des protections contre les surtensions par des diodes transil, beaucoup plus réactives que les traditionnelles varistances. En cas de surtension, le fusible associé à la diode brule.

Montage

Pour la carte V1, souder un strap entre H11 et H12.

Monter les supports de relais avec une vis + écrou M3, de même que les supports des fusibles. Ne pas trop serrer les écrous des supports de relais sous peine de déformation.

Ponter JP1 ou JP2 à la soudure suivant le récepteur de télécommande utilisé (carte V1.0) pour les récepteurs signalés plus bas, souder JP2.

Insérer l'écran OLED sur le connecteur J7 et mettre deux vis / écrous M2,5 avec entretoise.

Insérer le récepteur de télécommande.

Insérer les fusibles rapides 5x20 sur leurs supports. Leur valeur est sérigraphiée. F1=5A-F, F2 F3 F4=1A-F. Insérer l'arduino NANO programmé à l'emplacement A1, prise USB vers la droite.

Monter la carte dans le boitier CAME et insérer les borniers. Il est impératif de respecter la phase (L) et le neutre (N) sur le bornier J1.

L'origine de la mesure par l'encodeur est fixée sur le fin de course arrière (portail ouvert). Tant que cette position n'a pas été reconnue (c'est-à-dire que le fdc arrière doit avoir été actionné par le portail au moins une fois), le portail se déplacera en petite vitesse (PV).

Télécommande

Le récepteur utilise la librairie rc-switch, compatible uniquement avec les télécommandes à code fixe équipées des puces suivantes :

SC5262 / SC5272

Séries 2262: HX2262 / LX2262 / PT2262

Séries 2272: HX2272 / PT2272 /

Séries 1527: EV1527 / RT1527 / FP1527 / HS1527

Intertechno outlets

HT6P20X

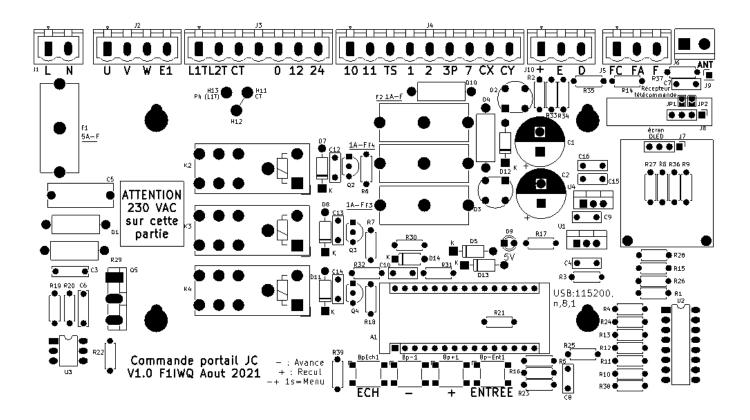
La télécommande TOP 432 EV CAME fonctionne quelque fois.

Les télécommandes Somfy, Cardin ne fonctionnent pas.

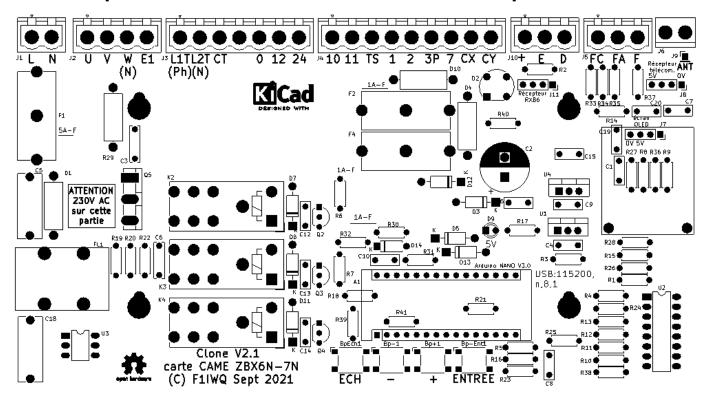
Rc-switch permet de décoder 12 protocoles. Le tableau ci-dessous donne le nom du protocole en fonction du numéro du protocole affiché.

1	EV1527
2	
3	
4	
5	
6	HTP20B
7	HS2303-PT (utilisé dans la télécommande AUKEY)
8	Conrad RS-200 RX
9	Conrad RS-200 TX
10	1ByOne Doorbell
11	HT12E
12	SM5212

Circuit imprimé V1.0 avec référencement des composants



Circuit imprimé V2.1 avec référencement des composants



Nomenclature V1.0

A1	Arduino_Nano_v3.x	Module:Arduino_Nano		
Bp+1	SW_MEC_5E	Button_Switch_SMD:SW_SPST_Omron_B3FS-101xP		
Bp-1	SW_MEC_5E	Button_Switch_SMD:SW_SPST_Omron_B3FS-101xP		
BpEch1 Bp-	SW_MEC_5E SW_MEC_5E	Button_Switch_SMD:SW_SPST_Omron_B3FS-101xP Button_Switch_SMD:SW_SPST_Omron_B3FS-101xP		
Ent1	SW_WEG_SE	Button_owten_owten_over_over_over_over_over_over_over_over		
C1	470µF	Capacitor THT:CP Radial D12.5mm P5.00mm		
C10	1nF	Capacitor_THT:C_Rect_L7.2mm_W2.5mm_P5.00mm_FKS2_FKP2_MKS2_MKP2		
C12	100 nF	Capacitor_THT:C_Rect_L7.2mm_W2.5mm_P5.00mm_FKS2_FKP2_MKS2_MKP2		
C13	100 nF	Capacitor THT:C Rect L7.2mm W2.5mm P5.00mm FKS2 FKP2 MKS2 MKP2		
C14	100 nF	Capacitor_THT:C_Rect_L7.2mm_W2.5mm_P5.00mm_FKS2_FKP2_MKS2_MKP2		
C15	100nF	Capacitor_THT:C_Rect_L7.2mm_W2.5mm_P5.00mm_FKS2_FKP2_MKS2_MKP2		
C16	100nF	Capacitor_THT:C_Rect_L7.2mm_W2.5mm_P5.00mm_FKS2_FKP2_MKS2_MKP2		
C2	470μF	Capacitor_THT:CP_Radial_D12.5mm_P5.00mm		
C3	10nF 400V	Capacitor_THT:C_Rect_L9.0mm_W2.5mm_P7.50mm_MKT		
C4	100nF	Capacitor_THT:C_Rect_L7.2mm_W2.5mm_P5.00mm_FKS2_FKP2_MKS2_MKP2		
C5	100nF	Capacitor_THT:C_Rect_L16.5mm_W6.0mm_P15.00mm_MKT		
C6	10nF 400V	Capacitor_THT:C_Rect_L9.0mm_W2.5mm_P7.50mm_MKT		
C7	100nF	Capacitor_THT:C_Rect_L7.2mm_W2.5mm_P5.00mm_FKS2_FKP2_MKS2_MKP2		
C8	100nF	Capacitor_THT:C_Rect_L7.2mm_W2.5mm_P5.00mm_FKS2_FKP2_MKS2_MKP2		
C9	100nF	Capacitor_THT:C_Rect_L7.2mm_W2.5mm_P5.00mm_FKS2_FKP2_MKS2_MKP2		
D1	1.5KE300CA	Diode_THT:R_Axial_DIN0414_L11.9mm_D4.5mm_P15.24mm_Horizontal		
D10	1.5KE30CA	Diode_THT:R_Axial_DIN0414_L11.9mm_D4.5mm_P15.24mm_Horizontal		
D11	1N4004	Diode_THT:D_DO-41_SOD81_P10.16mm_Horizontal		
D12	1N4004	Diode_THT:D_DO-41_SOD81_P10.16mm_Horizontal		
D13	1N4004	Diode_THT:D_DO-41_SOD81_P10.16mm_Horizontal		
D14 D2	5.1V W04G	Diode_THT:D_A-405_P7.62mm_Horizontal Diode_THT:Diode_Bridge_Round_D8.9mm		
D2 D3	W04G W04G	Diode_THT:Diode_Bridge_Round_D8.9mm		
D3	1.5KE30CA	Diode THT:Diode_Bridge_Round_D8.9mm Diode THT:R Axial DIN0414 L11.9mm D4.5mm P15.24mm Horizontal		
D5	1N4004	Diode_THT:D_DO-41_SOD81_P10.16mm_Horizontal		
D7	1N4004 1N4004	Diode THT:D DO-41 SOD81 P10.16mm Horizontal		
D8	1N4004	Diode_THT:D_DO-41_SOD81_P10.16mm_Horizontal		
D9	LED	LED THT:LED D3.0mm		
F1	Fuse	Fuse:Fuseholder_Cylinder-5x20mm_Schurter_0031_8201_Horizontal_Open + capot		
F2	Fuse	Fuse:Fuseholder_Cylinder-5x20mm_Schurter_0031_8201_Horizontal_Open		
F3	Fuse	Fuse:Fuseholder_Cylinder-5x20mm_Schurter_0031_8201_Horizontal_Open		
F4	Fuse	Fuse:Fuseholder Cylinder-5x20mm Schurter 0031 8201 Horizontal Open		
J1	Conn 01x02 Male	Connector_Phoenix_MSTB:PhoenixContact_MSTBVA_2,5_2-G-5,08_1x02_P5.08mm_Vertical		
J10	Conn 01x03 Male	Connector Phoenix MSTB:PhoenixContact MSTBVA 2,5 3-G-5,08 1x03 P5.08mm Vertical		
J2	Conn_01x04_Male	Connector_Phoenix_MSTB:PhoenixContact_MSTBVA_2,5_4-G_1x04_P5.08mm_Vertical		
J3	Conn_01x07_Male	Connector_Phoenix_MSTB:PhoenixContact_MSTBVA_2,5_7-G_1x07_P5.08mm_Vertical		
J4	Conn_01x09_Male	Connector_Phoenix_MSTB:PhoenixContact_MSTBVA_2,5_9-G_1x09_P5.08mm_Vertical		
J5	Conn_01x03_Male	Connector_Phoenix_MSTB:PhoenixContact_MSTBVA_2,5_3-G-5,08_1x03_P5.08mm_Vertical		
J6	Screw_Terminal_01x02	TerminalBlock:TerminalBlock_bornier-2_P5.08mm		
J7	Conn_01x04	Connector_PinHeader_2.54mm:PinHeader_1x04_P2.54mm_Vertical		
J8	Conn_01x04	Connector_PinHeader_2.54mm:PinHeader_1x04_P2.54mm_Vertical		
J9	Conn_01x04	Connector_PinHeader_2.54mm:PinHeader_1x01_P2.54mm_Vertical		
JP1	SolderJumper_2_Open	Jumper:SolderJumper-2_P1.3mm_Open_TrianglePad1.0x1.5mm		
JP2	SolderJumper_2_Open	Jumper:SolderJumper-2_P1.3mm_Open_TrianglePad1.0x1.5mm		
K2	Finder 40.62.9.024V	Relay_THT:Relay_socket_95.15.2		
K3	Finder 40.61.9.024V	Relay_THT:Relay_socket_95.15.2 Relay_THT:Relay_socket_95.15.2		
K4 Q2	Finder 40.61.9.024V BS170	Package TO SOT THT:TO-92L Inline Wide		
Q3	BS170	Package TO SOT THT:TO-92L Inline Wide		
Q3 Q4	BS170	Package_TO_SOT_THT:TO-92L_Inline_Wide		
Q5	BTA26-600-BWRG ou BTA26-800-BWRG	Package_TO_SOT_THT:TO-32E_Infille_Wide Package_TO_SOT_THT:TO-3P-3_Vertical		
R1	47k	Resistor_THT:R_Axial_DIN0207_L6.3mm_D2.5mm_P7.62mm_Horizontal		
R10	5,6k	Resistor_THT:R_Axial_DIN0207_L6.3mm_D2.5mm_P7.62mm_Horizontal		
R11	5,6k	Resistor_THT:R_Axial_DIN0207_L6.3mm_D2.5mm_P7.62mm_Horizontal		
R12	1k	Resistor_THT:R_Axial_DIN0207_L6.3mm_D2.5mm_P7.62mm_Horizontal		
R13	1k	Resistor_THT:R_Axial_DIN0207_L6.3mm_D2.5mm_P7.62mm_Horizontal		
R14	1,5k	Resistor_THT:R_Axial_DIN0207_L6.3mm_D2.5mm_P7.62mm_Horizontal		
R15	330	Resistor_THT:R_Axial_DIN0207_L6.3mm_D2.5mm_P7.62mm_Horizontal		
R16	5,6k	Resistor_THT:R_Axial_DIN0207_L6.3mm_D2.5mm_P7.62mm_Horizontal		
R17	330	Resistor_THT:R_Axial_DIN0207_L6.3mm_D2.5mm_P7.62mm_Horizontal		
R18	12k	Resistor_THT:R_Axial_DIN0207_L6.3mm_D2.5mm_P7.62mm_Horizontal		
R19 R2	100 1,8k	Resistor_THT:R_Axial_DIN0207_L6.3mm_D2.5mm_P7.62mm_Horizontal		
rs /	1,8K 1k	Resistor_THT:R_Axial_DIN0207_L6.3mm_D2.5mm_P7.62mm_Horizontal Resistor_THT:R_Axial_DIN0207_L6.3mm_D2.5mm_P7.62mm_Horizontal		
		Nesistor_TTT.N_Axiar_DHV0201_E0.5HHH_D2.5HHHL_F1.02HHHL_H0H20Hldl		
R20		Resistor THT:R Avial DIN0207 L6.3mm D2.5mm D7.62mm Horizontal		
R20 R21	330	Resistor_THT:R_Axial_DIN0207_L6.3mm_D2.5mm_P7.62mm_Horizontal		
R20 R21 R22	330 1k	Resistor_THT:R_Axial_DIN0207_L6.3mm_D2.5mm_P7.62mm_Horizontal		
R20 R21 R22 R23	330 1k 5,6k	Resistor_THT:R_Axial_DIN0207_L6.3mm_D2.5mm_P7.62mm_Horizontal Resistor_THT:R_Axial_DIN0207_L6.3mm_D2.5mm_P7.62mm_Horizontal		
R20 R21 R22	330 1k	Resistor_THT:R_Axial_DIN0207_L6.3mm_D2.5mm_P7.62mm_Horizontal		

R27	1,8k	Resistor_THT:R_Axial_DIN0207_L6.3mm_D2.5mm_P7.62mm_Horizontal
R28	330	Resistor_THT:R_Axial_DIN0207_L6.3mm_D2.5mm_P7.62mm_Horizontal
R29	47 2W	Resistor_THT:R_Axial_DIN0414_L11.9mm_D4.5mm_P15.24mm_Horizontal
R3	5,6k	Resistor_THT:R_Axial_DIN0207_L6.3mm_D2.5mm_P7.62mm_Horizontal
R30	1k	Resistor_THT:R_Axial_DIN0207_L6.3mm_D2.5mm_P7.62mm_Horizontal
R31	5,6k	Resistor_THT:R_Axial_DIN0207_L6.3mm_D2.5mm_P7.62mm_Horizontal
R32	1k	Resistor_THT:R_Axial_DIN0207_L6.3mm_D2.5mm_P7.62mm_Horizontal
R33	150	Resistor_THT:R_Axial_DIN0207_L6.3mm_D2.5mm_P7.62mm_Horizontal
R34	1k	Resistor_THT:R_Axial_DIN0207_L6.3mm_D2.5mm_P7.62mm_Horizontal
R35	10k	Resistor_THT:R_Axial_DIN0207_L6.3mm_D2.5mm_P7.62mm_Horizontal
R36	47k	Resistor_THT:R_Axial_DIN0207_L6.3mm_D2.5mm_P7.62mm_Horizontal
R37	0	Resistor_THT:R_Axial_DIN0207_L6.3mm_D2.5mm_P7.62mm_Horizontal
R38	1,2k	Resistor_THT:R_Axial_DIN0207_L6.3mm_D2.5mm_P7.62mm_Horizontal
R39	5,6k	Resistor_THT:R_Axial_DIN0207_L6.3mm_D2.5mm_P7.62mm_Horizontal
R4	1k	Resistor_THT:R_Axial_DIN0207_L6.3mm_D2.5mm_P7.62mm_Horizontal
R5	5,6k	Resistor_THT:R_Axial_DIN0207_L6.3mm_D2.5mm_P7.62mm_Horizontal
R6	12k	Resistor_THT:R_Axial_DIN0207_L6.3mm_D2.5mm_P7.62mm_Horizontal
R7	12k	Resistor_THT:R_Axial_DIN0207_L6.3mm_D2.5mm_P7.62mm_Horizontal
R8	2,7k	Resistor_THT:R_Axial_DIN0207_L6.3mm_D2.5mm_P7.62mm_Horizontal
R9	2,7k	Resistor_THT:R_Axial_DIN0207_L6.3mm_D2.5mm_P7.62mm_Horizontal
U1	7805+radiateur	Package_TO_SOT_THT:TO-220-3_Vertical
U2	ACPL-844 ou 4xSFH620	Package_DIP:DIP-16_W7.62mm_LongPads
U3	MOC3020M	Package_DIP:DIP-6_W7.62mm_LongPads
U4	7824+radiateur	Package_TO_SOT_THT:TO-220-3_Vertical

Nomenclature V2.0

Bigst	Byth Byth Byth Byth Byth Syl Cymon Byth Syl Cymon Byth Syl Byth B	A1	Arduino_Nano_v3.x	Module:Arduino_Nano
BBEENTI SW_MEC 5E Button Switch SMDSW SPST_Omron B3FS-101xP 61 100nF Capacitor THTC. Real L7.2mm W2.5mm P5.00mm FKS2_FKP2_MKS2_MKP2 61 100nF Capacitor THTC. Real L7.2mm W2.5mm P5.00mm FKS2_FKP2_MKS2_MKP2 612 100 nF Capacitor THTC. Real L7.2mm W2.5mm P5.00mm FKS2_FKP2_MKS2_MKP2 613 100 nF Capacitor THTC. Real L7.2mm W2.5mm P5.00mm FKS2_FKP2_MKS2_MKP2 614 100 nF Capacitor THTC. Real L7.2mm W2.5mm P5.00mm FKS2_FKP2_MKS2_MKP2 615 100nF Capacitor THTC. Real L7.2mm W2.5mm P5.00mm FKS2_FKP2_MKS2_MKP2 616 100nF Capacitor THTC. Real L7.2mm W2.5mm P5.00mm FKS2_FKP2_MKS2_MKP2 617 100nF Capacitor THTC. Real L7.2mm W2.5mm P5.00mm FKS2_FKP2_MKS2_MKP2 618 100nF Capacitor THTC. Real L7.2mm W2.5mm P5.00mm FKS2_FKP2_MKS2_MKP2 619 100nF Capacitor THTC. Real L7.2mm W2.5mm P5.00mm FKS2_FKP2_MKS2_MKP2 620 100nF Capacitor THTC. Real L7.2mm W2.5mm P5.00mm FKS2_FKP2_MKS2_MKP2 621 100nF Capacitor THTC. Real L7.2mm W2.5mm P5.00mm FKS2_FKP2_MKS2_MKP2 622 100nF Capacitor THTC. Real L7.2mm W2.5mm P5.00mm FKS2_FKP2_MKS2_MKP2 623 100nF	BBECHT SW MEC 5E Button Switch SMOS W SPST Comron B3FS-1014P 61 100nF Capacitor THTC, Red LT Zmm W2 5mm P5.00mm FKS2, FKP2 MKS2, MKP2 61 100nF Capacitor THTC, Red LT Zmm W2 5mm P5.00mm FKS2, FKP2 MKS2, MKP2 61 100 nF Capacitor THTC, Red LT Zmm W2 5mm P5.00mm FKS2, FKP2, MKS2, MKP2 61 100 nF Capacitor THTC, Red LT Zmm W2 5mm P5.00mm FKS2, FKP2, MKS2, MKP2 61 100 nF Capacitor, THTC, Red LT, Zmm W2 5mm P5.00mm FKS2, FKP2, MKS2, MKP2 616 100nF Capacitor, THTC, Red LT, Zmm W2 5mm P5.00mm FKS2, FKP2, MKS2, MKP2 618 100nF Capacitor, THTC, Red LT, Zmm W2 5mm P5.00mm FKS2, FKP2, MKS2, MKP2 619 100nF Capacitor, THTC, Red LT, Zmm W2 5mm P5.00mm FKS2, FKP2, MKS2, MKP2 619 100nF Capacitor, THTC, Red LT, Zmm W2 5mm P5.00mm FKS2, FKP2, MKS2, MKP2 621 100nF Capacitor, THTC, Red LT, Zmm W2 5mm P5.00mm 622 100nF Capacitor, THTC, Red LT, Zmm W2 5mm P5.00mm 623 10nF 200V Capacitor, THTC, Red LT, Zmm W2 5mm P5.00mm 624 10nF 200V Capacitor, THTC, Red LT, Zmm W2 5mm P5.00mm, KTS2, FKP2, MKS2, MKP2 625 10nF 200V Capac	Bp+1	SW_MEC_5E	Button_Switch_SMD:SW_SPST_Omron_B3FS-101xP
BB_Ent SW MEC SE	Special SW MEC. 5E			
100nF	1,000F			
100 F	167			
Cagacitor THITC. Rect L7.2mm W2.5mm P5.00mm FSS2 FKP2 MKS2 MKP2 C14 100 nF Cagacitor THITC. Rect L7.2mm W2.5mm P5.00mm FSS2 FKP2 MKS2 MKP2 C15 100nF Cagacitor THITC. Rect L7.2mm W2.5mm P5.00mm FSS2 FKP2 MKS2 MKP2 C16 100nF Cagacitor THITC. Rect L7.2mm W2.5mm P5.00mm FSS2 FKP2 MKS2 MKP2 C16 100nF Cagacitor THITC. Rect L7.2mm W2.5mm P5.00mm FSS2 FKP2 MKS2 MKP2 C18 100nF Cagacitor THITC. Rect L7.2mm W2.5mm P5.00mm FSS2 FKP2 MKS2 MKP2 C1900pf SV Cagacitor THITC. Rect L7.2mm W2.5mm P5.00mm FSS2 FKP2 MKS2 MKP2 C1900pf SV Cagacitor THITC. Rect L7.2mm W2.5mm P5.00mm FSS2 FKP2 MKS2 MKP2 C1900pf SV Cagacitor THITC. Rect L7.2mm W2.5mm P5.00mm FSS2 FKP2 MKS2 MKP2 C1900pf	100 n			
100 nF	100 nF			
Capacitor THT.C Rect L7.2mm, W2.5mm P5.00mm FKS2 FKP2_MKS2_MKP2	C14			
Capacitor THT.C Red. L7.2mm W2.5mm P5.00mm FKS2_FKP2_MKS2_MKP2	C15 100nF Capacitor, THTC, Rect. L7, Zmm. W2,5mm, P5,00mm, FKS2, FKP2, MKS2, MKP2 C16 100nF Capacitor, THTC, Rect. L16,5mm, W6,0mm, P15,00mm, MKT C19 100nF Capacitor, THTC, Rect. L16,5mm, W6,0mm, P15,00mm, MKT C21 100nF Capacitor, THTC, PRed. L17,2mm, W2,5mm, P5,00mm, MKT C21 100nF Capacitor, THTC, PRed. L17,2mm, W2,5mm, P5,00mm, MKT C31 10nF Capacitor, THTC, Rect. L17,2mm, W2,5mm, P5,00mm, FKSZ, FKP2, MKS2, MKP2 C32 10nF 400V Capacitor, THTC, Rect. L17,2mm, W2,5mm, P5,00mm, FKSZ, FKP2, MKS2, MKP2 C33 10nF 400V Capacitor, THTC, Rect. L17,2mm, W2,5mm, P5,00mm, FKSZ, FKP2, MKS2, MKP2 C34 100nF Capacitor, THTC, Rect. L17,2mm, W2,5mm, P5,00mm, FKSZ, FKP2, MKS2, MKP2 C36 100nF Capacitor, THTC, Rect. L17,2mm, W2,5mm, P5,00mm, FKSZ, FKP2, MKS2, MKP2 C37 100nF Capacitor, THTC, Rect. L17,2mm, W2,5mm, P5,00mm, FKSZ, FKP2, MKS2, MKP2 C38 100nF Capacitor, THTC, Rect. L17,2mm, W2,5mm, P5,00mm, FKSZ, FKP2, MKS2, MKP2 C39 100nF Capacitor, THTC, Rect. L17,2mm, W2,5mm, P5,00mm, FKSZ, FKP2, MKS2, MKP2 C30 100nF Capacitor, THTC, Rect. L17,2mm, W2,5	C13	100 nF	Capacitor_THT:C_Rect_L7.2mm_W2.5mm_P5.00mm_FKS2_FKP2_MKS2_MKP2
Capacitor THT:C. Rec. L. 7.2mm, W2.5mm, P5.00mm, FKS2_FKP2_MKS2_MKP2	C15 100nF Capacitor THTIC Rect LT, Zmm W2,5mm P5,00mm FKS2 FKP2 MKS2 MKP2 C16 100nF Capacitor THTIC, Rect LT, Zmm W2,5mm P5,00mm FKS2 FKP2 MKS2 MKP2 C19 100nF Capacitor THTIC, Rect LT, Zmm W2,5mm P5,00mm MKT C2 100nF Capacitor THTIC, Rect LT, Zmm W2,5mm P5,00mm MKT C3 100nF Capacitor THTIC, Rect LT, Zmm W2,5mm P5,00mm FKS2, FKP2 MKS2 MKP2 C3 100nF Capacitor THTIC, Rect LT, Zmm W2,5mm P5,00mm FKS2, FKP2 MKS2 MKP2 C3 100nF Capacitor THTIC, Rect LT, Zmm W2,5mm P5,00mm FKS2, FKP2 MKS2 MKP2 C3 100nF Capacitor, THTIC, Rect LT, Zmm W2,5mm P5,00mm FKS2, FKP2 MKS2 MKP2 C3 100nF Capacitor, THTIC, Rect LT, Zmm W2,5mm P5,00mm FKS2, FKP2 MKS2 MKP2 C6 100nF Capacitor, THTIC, Rect LT, Zmm W2,5mm P5,00mm FKS2, FKP2 MKS2, MKP2 C7 100nF Capacitor, THTIC, Rect LT, Zmm W2,5mm P5,00mm FKS2, FKP2 MKS2, MKP2 C8 100nF Capacitor, THTIC, Rect LT, Zmm W2,5mm P5,00mm FKS2, FKP2 MKS2, MKP2 C9 100nF Capacitor, THTIC, Rect LT, Zmm W2,5mm P5,00mm FKS2, FKP2 MKS2, MKP2 D1 1,5KE400CA Diode THTIC, Rect LT, Zmm W2,5mm P5,00mm FKS2, FKP2 MKS2, MKP2 D1	C14	100 nF	Capacitor THT:C Rect L7.2mm W2.5mm P5.00mm FKS2 FKP2 MKS2 MKP2
100nF	C16 100hF Capacitor THTC. Rect L12.6mm. W6.6mm P5.00mm PKS2 FKP2_MKS2_MKP2 C18 100hF 400V Capacitor THTC. Rect L17.6mm W6.6mm P5.00mm PKS2_FKP2_MKS2_MKP2 C2 1000µF 30V Capacitor THTC. Rect L17.2mm W2.5mm P5.00mm FKS2_FKP2_MKS2_MKP2 C3 100hF 400V Capacitor THTC. Rect L17.2mm W2.5mm P5.00mm FKS2_FKP2_MKS2_MKP2 C4 100hF 400V Capacitor THTC. Rect L17.2mm W2.5mm P5.00mm FKS2_FKP2_MKS2_MKP2 C5 100hF 400V Capacitor THTC. Rect L17.2mm W2.5mm P5.00mm FKS2_FKP2_MKS2_MKP2 C6 100hF 400V Capacitor THTC. Rect L1.2mm W2.5mm P5.00mm FKS2_FKP2_MKS2_MKP2 C7 100hF 400V Capacitor THTC. Rect L1.2mm W2.5mm P5.00mm FKS2_FKP2_MKS2_MKP2 C8 100hF 400V Capacitor THTC. Rect L1.2mm W2.5mm P5.00mm FKS2_FKP2_MKS2_MKP2 C8 100hF 400V Capacitor THTC. Rect L1.2mm W2.5mm P5.00mm FKS2_FKP2_MKS2_MKP2 C9 100hF 400V Capacitor THTC. Rect L1.2mm W2.5mm P5.00mm FKS2_FKP2_MKS2_MKP2 C9 100hF 400V Capacitor THTC. Rect L1.2mm W2.5mm P5.00mm FKS2_FKP2_MKS2_MKP2 C9 10hDF 400V Capacitor THTC. Rect L1.2mm W2.5mm P5.00mm FKS2_FKP2_MKS2_MKP2 C9 10hDF 400V Capacitor THTC. Rect L1.2mm W2.5mm P5.00mm FKS2_FKP2_MKS2_MK	C15	100nF	
1001F 400V	100nF 400V		100nF	
100nF	190nF			
1.00 1.00	1000F 1000F 1000F Capacitor THTC. Pead 127am W. 25mm P5.00mm F8.2 FKP2 MKS2 MKP2			
	1001F			
100F 400V	10nF 400V			
100nF	100nF			
100nF 400V	100nF 400V			
100F 400V	100F 100F 100F Capacitor THTC Rect L9.0mm W2.5mm P5.0mm MKT 100F Capacitor THTC Rect L7.2mm W2.5mm P5.00mm FKS2_FKP2_MKS2_MKP2 15.6K400CA Diode THTR. Axial DIN0414_L11.9mm D4.5mm P15.24mm Horizontal 11.6K439CA Diode THTR. Axial DIN0414_L11.9mm D4.5mm P15.24mm Horizontal 11.6K439CA Diode THTR. Axial DIN0414_L11.9mm D4.5mm P15.24mm Horizontal 11.6K439CA Diode THTD. D0-41_SOD81_P10.16mm Horizontal Diode THTD. D0-41_SOD81_P10.16mm Horizontal Diode THTD. D0-41_SOD81_P10.16mm Horizontal Diode HTD. D0-41_SOD81_P10.16mm Horiz			
100 Capacitor THT.C. Rect I.7.2mm W2.5mm P5.00mm FKS2 FKP2 MKS2 MKP2 Capacitor THT.C. Rect I.7.2mm W2.5mm P5.00mm FKS2 FKP2 MKS2 MKP2 100 Capacitor THT.C. Rect I.7.2mm W2.5mm P5.00mm FKS2 FKP2 MKS2 MKP2 15.KE400CA	100nF			
100	1000F			
100nF	1000F			
1.5KE400CA	1.5KE400CA			
1.5KE39CA	1.5KE39CA	29	100nF	Capacitor_THT:C_Rect_L7.2mm_W2.5mm_P5.00mm_FKS2_FKP2_MKS2_MKP2
1.5KE39CA	1.5KE39CA)1	1.5KE400CA	Diode_THT:R_Axial_DIN0414_L11.9mm D4.5mm P15.24mm Horizontal
1	1014 10404 Diode THT:D.DO-41 SODBI P10.16mm Horizontal			
114004	1012 104004 Diode THT:D.DO-41 SODBI P10.16mm Horizontal			
114004 Diode THT:D DO-41 SOD81 P10.16mm Horizontal	1014 D25.1			
Didd	Display			
Diode	100 100			
1.1 1.2 1.2 1.3 1.3 1.4 1.3 1.5 1.4 1.5	1,140,04			
1.5KE39CA	1.5KE39CA			
1.00	1N4004			
1N4004 Diode THT:D DO-41 SOD81 P10.16mm Horizontal	144004 Diode THT:D DO-41 SOD81 P10.16mm Horizontal			
1.00	1M4004 Diode THT.D DO-41 SOD81 P10.16mm Horizontal			
LED	LED			Diode_THT:D_DO-41_SOD81_P10.16mm_Horizontal
Fuse Fuse:Fuseholder_Cylinder-5x20mm_Schurter_0031_8201_Horizontal_Open + capot Fuse:Fuseholder_Cylinder-5x20mm_Schurter_0031_8201_Horizontal_Open Fuse:Fuseholder_Cylinder-5x20mm_Schurter_0031_8201_Horizontal_NSTB:PhoenixContact_MSTBVA_2,5_2-G-5,08_1x02_P5.08mm Fuse:Fuseholder_Cylinder-5x20mm_Schurter_0031_8201_Horizontal_NSTB:PhoenixContact_MSTBVA_2,5_2-G-5,08_1x03_P5.08mm Fuse:Fuseholder_Cylinder-5x20mm_Horizontal_NSTBVA_2,5_2-G-5,08_1x03_P5.08mm Fuse:Fuseholder_Cylinder-5x20mm_Horizontal_NSTBVA_2,5_2-G-5,08_1x04_P5.08mm Fuse:Fuseholder_Cylinder-5x20mm_Horizontal_NSTBVA_2,5_2-G-5,08_1x04_P5.08mm Fuse:Fuseholder_Cylinder_5x20mm_Horizontal_NSTBVA_2,5_2-G-5,08_1x04_P5.08mm Fuse:Fuseholder_Cylinder_Schurter_0031_8201_Horizontal_NSTBVA_2,5_2-G-5,08_1x04_P5.08mm Fuse:Fuseholder_Cylinder_Schurter_0031_8201_Horizontal_NSTBVA_2,5_2-G-5,08_1x04_P5.08mm Fuse:Fuseholder_Cylinder_Schurter_0031_8201_Horizontal_NSTBVA_2,5_2-G-5,08_1x04_P5.08mm Fuse:Fuseholder_Cylinder_Schurter_0031_8201_Horizontal_NSTBVA_2,5_2-G-5,08_1x04_P5.08mm Fuse:Fuseholder_Cylinder_Schurter_0031_8201_Horizontal_NSTBVA_2,5_2-G-5,08_1x04_P5.08mm Fu	Fuse	D8	1N4004	Diode_THT:D_DO-41_SOD81_P10.16mm_Horizontal
Fuse Fuse:Fuseholder_Cylinder-5x20mm_Schurter_0031_8201_Horizontal_Open	Fuse	D9	LED	LED THT:LED D3.0mm
Fuse Fuse:Fuseholder Cylinder-5x20mm Schurter 0031 8201 Horizontal Open	Fuse	- 1	Fuse	Fuse:Fuseholder Cylinder-5x20mm Schurter 0031 8201 Horizontal Open + capot
Fuse	Fuse	-2	Fuse	
Filter:Filtre wurth	Filter-Filtre wurth			
Conn 01x02 Male Connector Phoenix MSTB:PhoenixContact MSTBVA 2,5 2-G-5,08 1x02 P5.08mm	Conn 01x02 Male			
Conn	Conn			
Conn 01x04	Conn 01x04			
Conn	Conn			
Conn	Conn 01x07 Male			
Conn	Conn 01x09 Male			
Conn 01x03 Male Connector Phoenix MSTB:PhoenixContact MSTBVA 2,5 3-G-5,08 1x03 P5.08mm Screw Terminal 01x02 TerminalBlock:TerminalBlock bornier-2 P5.08mm Conn 01x04 Connector PinSocket 2.54mm:PinSocket 1x04 P2.54mm Vertical Conn 01x04 Connector PinSocket 2.54mm:PinSocket 1x04 P2.54mm Vertical Conn 01x04 Connector PinBocket 2.54mm:PinBocket 1x04 P2.54mm Vertical Conn 01x04 Connector PinBocket 2.54mm:PinBocket 1x04 P2.54mm Vertical Conn 01x04 Connector PinHeader 2.54mm:PinBocket 1x04 P2.54mm Vertical Connector PinBocket 2.54mm:PinBocket 1x04 P2.54mm Vertical Conn 01x04 Connector PinHeader 2.54mm:PinBocket 1x04 P2.54mm Vertical Connector PinBocket 2.54mm:PinBocket 1x04 P2.54mm Vertical Connector P1.54mm:PinBocket 1x04 P2.54mm Vertical Connector P1.54mm:PinBocket 1x04 P2.54mm Vertical Connector P1.54mm:PinBocket	Conn O1x03 Male Connector Phoenix MSTB:PhoenixContact MSTBVA 2,5 3-G-5,08 1x03 P5.08mm Vertical	J3	Conn_01x07_Male	Connector_Phoenix_MSTB:PhoenixContact_MSTBVA_2,5_7-G-5,08_1x07_P5.08mm_Vertical
		J4	Conn_01x09_Male	Connector_Phoenix_MSTB:PhoenixContact_MSTBVA_2,5_9-G-5,08_1x09_P5.08mm_Vertical
Conn_01x04 Connector_PinSocket_2.54mm:PinSocket_1x04_P2.54mm_Vertical	Conn_01x04	J5	Conn_01x03_Male	Connector Phoenix MSTB:PhoenixContact MSTBVA 2,5 3-G-5,08 1x03 P5.08mm Vertical
Conn	Conn_01x04	J6	Screw Terminal 01x02	TerminalBlock:TerminalBlock bornier-2 P5.08mm
Conn	Conn 01x04			
Conn	Conn			
K2 Finder 40.62.9.024V Relay_THT:Relay_socket_95.15.2 K3 Finder 40.61.9.024V Relay_THT:Relay_socket_95.15.2 K4 Finder 40.61.9.024V Relay_THT:Relay_socket_95.15.2 G2 BS170 Package_TO_SOT_THT:TO-92L_Inline_Wide G3 BS170 Package_TO_SOT_THT:TO-92L_Inline_Wide G4 BS170 Package_TO_SOT_THT:TO-92L_Inline_Wide G5 BTA26-600-BWRG Package_TO_SOT_THT:TO-92L_Inline_Wide G1 47k Resistor_THT:R_Axial_DIN0207_L6.3mm_D2.5mm_P7.62mm_Horizontal R10 5,6k Resistor_THT:R_Axial_DIN0207_L6.3mm_D2.5mm_P7.62mm_Horizontal R11 5,6k Resistor_THT:R_Axial_DIN0207_L6.3mm_D2.5mm_P7.62mm_Horizontal R12 1k Resistor_THT:R_Axial_DIN0207_L6.3mm_D2.5mm_P7.62mm_Horizontal R13 1k Resistor_THT:R_Axial_DIN0207_L6.3mm_D2.5mm_P7.62mm_Horizontal R14 220 Resistor_THT:R_Axial_DIN0207_L6.3mm_D2.5mm_P7.62mm_Horizontal R15 330 Resistor_THT:R_Axial_DIN0207_L6.3mm_D2.5mm_P7.62mm_Horizontal R16 5,6k Resistor_THT:R_Axial_DIN0207_L6.3mm_D2.5mm_P7.62mm_Horizontal R17 330 Resistor_THT	Finder 40.62.9.024V Relay_THT:Relay_socket_95.15.2		_	
Relay_THT:Relay_socket_95.15.2	Finder 40.61.9.024V Relay THT:Relay socket 95.15.2			
K4 Finder 40.61.9.024V Relay THT:Relay socket 95.15.2 Q2 BS170 Package TO_SOT_THT:TO-92L_Inline_Wide Q3 BS170 Package TO_SOT_THT:TO-92L_Inline_Wide Q4 BS170 Package TO_SOT_THT:TO-92L_Inline_Wide Q5 BTA26-600-BWRG Package TO_SOT_THT:TO-3P-3_Vertical R1 47k Resistor_THT:R_Axial_DIN0207_L6.3mm_D2.5mm_P7.62mm_Horizontal R10 5,6k Resistor_THT:R_Axial_DIN0207_L6.3mm_D2.5mm_P7.62mm_Horizontal R11 5,6k Resistor_THT:R_Axial_DIN0207_L6.3mm_D2.5mm_P7.62mm_Horizontal R12 1k Resistor_THT:R_Axial_DIN0207_L6.3mm_D2.5mm_P7.62mm_Horizontal R13 1k Resistor_THT:R_Axial_DIN0207_L6.3mm_D2.5mm_P7.62mm_Horizontal R14 220 Resistor_THT:R_Axial_DIN0207_L6.3mm_D2.5mm_P7.62mm_Horizontal R15 330 Resistor_THT:R_Axial_DIN0207_L6.3mm_D2.5mm_P7.62mm_Horizontal R16 5,6k Resistor_THT:R_Axial_DIN0207_L6.3mm_D2.5mm_P7.62mm_Horizontal R17 330 Resistor_THT:R_Axial_DIN0207_L6.3mm_D2.5mm_P7.62mm_Horizontal R18 12k Resistor_THT:R_Axial_DIN0207_L6.3mm_D2.5mm_P7.62mm_Horizontal	Relay THT:Relay socket 95.15.2 Inline Wide			7= 7= =
Q2 BS170 Package_TO_SOT_THT:TO-92L_Inline_Wide Q3 BS170 Package_TO_SOT_THT:TO-92L_Inline_Wide Q4 BS170 Package_TO_SOT_THT:TO-92L_Inline_Wide Q5 BTA26-600-BWRG Package_TO_SOT_THT:TO-3P-3_Vertical R1 47k Resistor_THT:R_Axial_DIN0207_L6.3mm_D2.5mm_P7.62mm_Horizontal R21 5,6k Resistor_THT:R_Axial_DIN0207_L6.3mm_D2.5mm_P7.62mm_Horizontal R31 5,6k Resistor_THT:R_Axial_DIN0207_L6.3mm_D2.5mm_P7.62mm_Horizontal R41 1k Resistor_THT:R_Axial_DIN0207_L6.3mm_D2.5mm_P7.62mm_Horizontal R41 220 Resistor_THT:R_Axial_DIN0207_L6.3mm_D2.5mm_P7.62mm_Horizontal R41 220 Resistor_THT:R_Axial_DIN0207_L6.3mm_D2.5mm_P7.62mm_Horizontal R41 330 Resistor_THT:R_Axial_DIN0207_L6.3mm_D2.5mm_P7.62mm_Horizontal	BS170			
BS170	BS170			
Q4 BS170 Package TO_SOT_THT:TO-92L_Inline_Wide Q5 BTA26-600-BWRG Package TO_SOT_THT:TO-3P-3_Vertical R1 47k Resistor_THT:R_Axial_DIN0207_L6.3mm_D2.5mm_P7.62mm_Horizontal R10 5,6k Resistor_THT:R_Axial_DIN0207_L6.3mm_D2.5mm_P7.62mm_Horizontal R11 5,6k Resistor_THT:R_Axial_DIN0207_L6.3mm_D2.5mm_P7.62mm_Horizontal R12 1k Resistor_THT:R_Axial_DIN0207_L6.3mm_D2.5mm_P7.62mm_Horizontal R13 1k Resistor_THT:R_Axial_DIN0207_L6.3mm_D2.5mm_P7.62mm_Horizontal R14 220 Resistor_THT:R_Axial_DIN0207_L6.3mm_D2.5mm_P7.62mm_Horizontal R15 330 Resistor_THT:R_Axial_DIN0207_L6.3mm_D2.5mm_P7.62mm_Horizontal R16 5,6k Resistor_THT:R_Axial_DIN0207_L6.3mm_D2.5mm_P7.62mm_Horizontal R17 330 Resistor_THT:R_Axial_DIN0207_L6.3mm_D2.5mm_P7.62mm_Horizontal R18 12k Resistor_THT:R_Axial_DIN0207_L6.3mm_D2.5mm_P7.62mm_Horizontal	BS170			
BTA26-600-BWRG	BTA26-600-BWRG			
R1 47k Resistor THT:R Axial DIN0207 L6.3mm D2.5mm P7.62mm Horizontal R10 5,6k Resistor THT:R Axial DIN0207 L6.3mm D2.5mm P7.62mm Horizontal R11 5,6k Resistor THT:R Axial DIN0207 L6.3mm D2.5mm P7.62mm Horizontal R12 1k Resistor THT:R Axial DIN0207 L6.3mm D2.5mm P7.62mm Horizontal R13 1k Resistor THT:R Axial DIN0207 L6.3mm D2.5mm P7.62mm Horizontal R14 220 Resistor THT:R Axial DIN0207 L6.3mm D2.5mm P7.62mm Horizontal R15 330 Resistor THT:R Axial DIN0207 L6.3mm D2.5mm P7.62mm Horizontal R16 5,6k Resistor THT:R Axial DIN0207 L6.3mm D2.5mm P7.62mm Horizontal R17 330 Resistor THT:R Axial DIN0207 L6.3mm D2.5mm P7.62mm Horizontal R18 12k Resistor THT:R Axial DIN0207 L6.3mm D2.5mm P7.62mm Horizontal	Resistor THT:R Axia DIN0207 L6.3mm D2.5mm P7.62mm Horizontal			
R10 5,6k Resistor_THT:R_Axial_DIN0207_L6.3mm_D2.5mm_P7.62mm_Horizontal R11 5,6k Resistor_THT:R_Axial_DIN0207_L6.3mm_D2.5mm_P7.62mm_Horizontal R12 1k Resistor_THT:R_Axial_DIN0207_L6.3mm_D2.5mm_P7.62mm_Horizontal R13 1k Resistor_THT:R_Axial_DIN0207_L6.3mm_D2.5mm_P7.62mm_Horizontal R14 220 Resistor_THT:R_Axial_DIN0207_L6.3mm_D2.5mm_P7.62mm_Horizontal R15 330 Resistor_THT:R_Axial_DIN0207_L6.3mm_D2.5mm_P7.62mm_Horizontal R16 5,6k Resistor_THT:R_Axial_DIN0207_L6.3mm_D2.5mm_P7.62mm_Horizontal R17 330 Resistor_THT:R_Axial_DIN0207_L6.3mm_D2.5mm_P7.62mm_Horizontal R18 12k Resistor_THT:R_Axial_DIN0207_L6.3mm_D2.5mm_P7.62mm_Horizontal	Resistor	25	BTA26-600-BWRG	
R10 5,6k Resistor_THT:R_Axial_DIN0207_L6.3mm_D2.5mm_P7.62mm_Horizontal R11 5,6k Resistor_THT:R_Axial_DIN0207_L6.3mm_D2.5mm_P7.62mm_Horizontal R12 1k Resistor_THT:R_Axial_DIN0207_L6.3mm_D2.5mm_P7.62mm_Horizontal R13 1k Resistor_THT:R_Axial_DIN0207_L6.3mm_D2.5mm_P7.62mm_Horizontal R14 220 Resistor_THT:R_Axial_DIN0207_L6.3mm_D2.5mm_P7.62mm_Horizontal R15 330 Resistor_THT:R_Axial_DIN0207_L6.3mm_D2.5mm_P7.62mm_Horizontal R16 5,6k Resistor_THT:R_Axial_DIN0207_L6.3mm_D2.5mm_P7.62mm_Horizontal R17 330 Resistor_THT:R_Axial_DIN0207_L6.3mm_D2.5mm_P7.62mm_Horizontal R18 12k Resistor_THT:R_Axial_DIN0207_L6.3mm_D2.5mm_P7.62mm_Horizontal	Resistor	R1	47k	Resistor_THT:R_Axial_DIN0207_L6.3mm_D2.5mm_P7.62mm_Horizontal
R11 5,6k Resistor THT:R Axial DIN0207 L6.3mm D2.5mm P7.62mm Horizontal R12 1k Resistor THT:R Axial DIN0207 L6.3mm D2.5mm P7.62mm Horizontal R13 1k Resistor THT:R Axial DIN0207 L6.3mm D2.5mm P7.62mm Horizontal R14 220 Resistor THT:R Axial DIN0207 L6.3mm D2.5mm P7.62mm Horizontal R15 330 Resistor THT:R Axial DIN0207 L6.3mm D2.5mm P7.62mm Horizontal R16 5,6k Resistor THT:R Axial DIN0207 L6.3mm D2.5mm P7.62mm Horizontal R17 330 Resistor THT:R Axial DIN0207 L6.3mm D2.5mm P7.62mm Horizontal R18 12k Resistor THT:R Axial DIN0207 L6.3mm D2.5mm P7.62mm Horizontal	Resistor	R10	5,6k	
R12 1k Resistor_THT:R_Axial_DIN0207_L6.3mm_D2.5mm_P7.62mm_Horizontal R13 1k Resistor_THT:R_Axial_DIN0207_L6.3mm_D2.5mm_P7.62mm_Horizontal R14 220 Resistor_THT:R_Axial_DIN0207_L6.3mm_D2.5mm_P7.62mm_Horizontal R15 330 Resistor_THT:R_Axial_DIN0207_L6.3mm_D2.5mm_P7.62mm_Horizontal R16 5,6k Resistor_THT:R_Axial_DIN0207_L6.3mm_D2.5mm_P7.62mm_Horizontal R17 330 Resistor_THT:R_Axial_DIN0207_L6.3mm_D2.5mm_P7.62mm_Horizontal R18 12k Resistor_THT:R_Axial_DIN0207_L6.3mm_D2.5mm_P7.62mm_Horizontal	Resistor			
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		ベノコ	IK.	
		1	5,6k	
R25 1k Resistor_THT:R_Axial_DIN0207_L6.3mm_D2.5mm_P7.62mm_Horizontal	· · · · · · · · · · · · · · · · · · ·			
	R26 1k Resistor_THT:R_Axial_DIN0207_L6.3mm_D2.5mm_P7.62mm_Horizontal		1k	Resistor_THT:R_Axial_DIN0207_L6.3mm_D2.5mm_P7.62mm_Horizontal

R27	4,7k	Resistor_THT:R_Axial_DIN0207_L6.3mm_D2.5mm_P7.62mm_Horizontal
R28	330	Resistor_THT:R_Axial_DIN0207_L6.3mm_D2.5mm_P7.62mm_Horizontal
R29	47 2W	Resistor_THT:R_Axial_DIN0414_L11.9mm_D4.5mm_P15.24mm_Horizontal
R3	5,6k	Resistor_THT:R_Axial_DIN0207_L6.3mm_D2.5mm_P7.62mm_Horizontal
R30	1k	Resistor_THT:R_Axial_DIN0207_L6.3mm_D2.5mm_P7.62mm_Horizontal
R31	6,8k	Resistor_THT:R_Axial_DIN0207_L6.3mm_D2.5mm_P7.62mm_Horizontal
R32	1k	Resistor_THT:R_Axial_DIN0207_L6.3mm_D2.5mm_P7.62mm_Horizontal
R33	150	Resistor_THT:R_Axial_DIN0207_L6.3mm_D2.5mm_P7.62mm_Horizontal
R34	1k	Resistor_THT:R_Axial_DIN0207_L6.3mm_D2.5mm_P7.62mm_Horizontal
R35	10k	Resistor_THT:R_Axial_DIN0207_L6.3mm_D2.5mm_P7.62mm_Horizontal
R36	47k	Resistor_THT:R_Axial_DIN0207_L6.3mm_D2.5mm_P7.62mm_Horizontal
R37	0	Resistor_THT:R_Axial_DIN0207_L6.3mm_D2.5mm_P7.62mm_Horizontal
R38	1,2k	Resistor_THT:R_Axial_DIN0207_L6.3mm_D2.5mm_P7.62mm_Horizontal
R39	5,6k	Resistor_THT:R_Axial_DIN0207_L6.3mm_D2.5mm_P7.62mm_Horizontal
R4	1k	Resistor_THT:R_Axial_DIN0207_L6.3mm_D2.5mm_P7.62mm_Horizontal
R40	220	Resistor_THT:R_Axial_DIN0207_L6.3mm_D2.5mm_P7.62mm_Horizontal
R41	47k	Resistor_THT:R_Axial_DIN0207_L6.3mm_D2.5mm_P7.62mm_Horizontal
R5	5,6k	Resistor_THT:R_Axial_DIN0207_L6.3mm_D2.5mm_P7.62mm_Horizontal
R6	12k	Resistor_THT:R_Axial_DIN0207_L6.3mm_D2.5mm_P7.62mm_Horizontal
R7	12k	Resistor_THT:R_Axial_DIN0207_L6.3mm_D2.5mm_P7.62mm_Horizontal
R8	2,7k	Resistor_THT:R_Axial_DIN0207_L6.3mm_D2.5mm_P7.62mm_Horizontal
R9	2,7k	Resistor_THT:R_Axial_DIN0207_L6.3mm_D2.5mm_P7.62mm_Horizontal
U1	7805+radiateur	Package_TO_SOT_THT:TO-220-3_Vertical
U2	ACPL-844 ou 4xSFH620	Package_DIP:DIP-16_W7.62mm_LongPads
U3	MOC3020M	Package_DIP:DIP-6_W7.62mm_LongPads
U4	7824+radiateur	Package_TO_SOT_THT:TO-220-3_Vertical

Connecteurs phoenix contact:

Ces connecteurs sont composés d'une partie mâle à souder et d'une partie femelle à bornier constituant deux références de commande séparées.

			Commande	Commande
Nb			Conn mâle	conn femelle
pts	Rep	Type	à souder	à bornier
2	J1	MSTBVA 2,5/2-G-5,08	17 55 73 6	17 57 01 9
3	J5-J10	MSTBVA 2,5/3-G-5,08	17 55 74 9	17 57 02 2
4	J2	MSTBVA 2,5/4-G-5,08	17 55 75 2	17 57 03 5
7	J3	MSTBVA 2,5/7-G-5,08	17 55 78 1	17 57 06 4
9	J4	MSTBVA 2,5/9-G-5,08	17 55 80 4	17 57 08 0

Les régulateurs U1 et U4 doivent absolument être montés sur des radiateurs.

R37 est un fusible 1A au format résistance. Ref Little fuse 251001.NRT1L. A monter sur support.

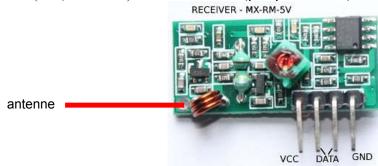
Les relais K2 K3 et K4 sont montés sur support finder référence 95.15.2. Attention K2 est un relais 2RT ; K3 et K4 sont des relais 1RT.

A1 est un arduino NANO, il peut être un clone chinois.

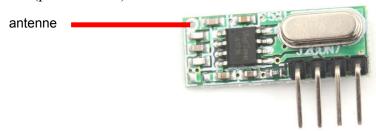
Le module OLED est un 0,96" 128x64



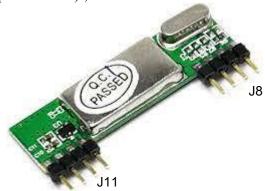
Le récepteur radio commande (433,920 MHz) est MX-RM-5V (peu performant)



ou TDCA RX500A 433 MHz (plus sensible)



ou RXB6 (super hétérodyne : plus sensible, plus sélectif) ; nécessite la version 2 de la carte.



Le module RXB6 ci-dessus est à enficher sur les connecteurs J8 et J11.

Les modules MX-RM-5V et TDCA RX500A sont à enficher sur le connecteur J8. Pour ces deux récepteurs, il faut souder un fil d'antenne du trait rouge jusqu'au point J9 via un fil.

Il est conseillé d'isoler avec du ruban adhésif électricien l'arrière et le devant des récepteurs.

Liste des écrans

Menu

L'entrée dans le menu pour le paramétrage se fait en appuyant sur le bouton ENTREE pendant 1 seconde.

Ecran 1

MENU
>Apprentissage
Sens d'ouverture=0
Sequencement=1
Sauvegarde EPROM
Gestion telecomm
Affichage entrees
Tps max fonction:99

L'écran menu affiche des paramètres modifiables ou non ainsi que des commandes :

Apprentissage
Sens d'ouverture=x
Sequencement=x
Sauvegarde EPROM
Gestion telecomm
Affichage entrees
Tps max fonction:xx
Tps accel
Tps decel

Ecran 2: gestion des télécommandes

1 telecomm.

>Ajouter telecom. Liste/Suppr telecom.

Pour changer de ligne appuyer sur + ou -. Pour choisir une ligne appuyer sur ENTREE Pour sortie appuyer sur ECH

Apprentissage:

Effectue un aller-retour du portail pour fixer l'origine de l'encodeur et les positions de ralentissement avant et arrière dans l'eeprom.

Sens d'ouverture 0 ou 1 : correspond au paramètre F54 0=ouverture à gauche 1=ouverture à droite **Sequencement** 0 ou 1 : correspond au paramètre F7 0=pas à pas (ouverture fermeture sans arrêt) 1=séquentielle (ouverture arret fermeture arret)

Sauvegarde EPROM : écrit les paramètres modifiés dans l'EPROM pour la sauvegarde **Gestion telecommandes** : affiche/ajoute/supprime des télécommandes

Affichage des entrées : affiche les entrées en dynamique (fin de course et boutons)

Tps max fonctionn: Temps maximal de fonctionnement en secondes au-delà duquel le portail s'arrête.

Tps accel/decel : Temps de d'accélération et de décélération en dixièmes de secondes.

Pour ajouter une télécommande

Sélectionner la ligne Gestion telecommandes

Sélectionner "Ajouter telecom" et appuyer sur ENTREE

Appuyer sur le bouton de la télécommande à ajouter.

Si le nombre maximal de télécommandes est atteint, un message d'erreur s'affiche.

Si la télécommande avait déjà été ajoutée, un message s'affiche.

Si rien ne s'affiche quand on appuie sur la télécommande, c'est qu'elle n'est pas reconnue (fréquence ou protocole non reconnus).

Après avoir ajouté une ou plusieurs télécommandes, ne pas oublier d'écrire l'EEPROM pour la sauvegarde.

Liste et suppression des télécommandes : sélectionner "Liste/Suppr des telecom" et appuyer sur ENTREE

2telecomm. >1 26898 2 94119

Le nombre de télécommandes est affiché (maximum 20).

La première colonne affiche le numéro de la télécommande

La deuxième colonne affiche le code d'identification de la télécommande (plus précisément d'un de ses boutons)

Pour supprimer une télécommande :

Sélectionner la télécommande à supprimer

Supprimer la télécommande sélectionnée en appuyant 1s sur ENTREE

Après avoir supprimé une ou plusieurs télécommandes, ne pas oublier d'écrire l'EEPROM pour la sauvegarde.

Mode exploitation

En mode exploitation (hors mode menu) si on appuie sur une télécommande, et que le protocole est reconnu, l'écran affiche les informations transmises par la télécommande :

PORTAIL IWQ

Pos=5465 15s V=208

8745 12b Pr:11 OK

8745 est le code du bouton de la télécommande qui vient d'envoyer le signal.

12b signifie que c'est un code de 12 bits

Pr:11 signifie que c'est le protocole 11.

OK que la télécommande est enregistrée en EPROM, et qu'elle est donc reconnue.

La position du portail par l'encodeur est affichée (5465).

Si un mouvement est en cours, le temps en secondes de la durée du mouvement est affiché (ici 15s).

V=208 indique la vitesse du portail (en points encodeur/0,3s)

Si la durée de mouvement est supérieure au temps maximal de fonctionnement, le mouvement s'arrête sur un message d'erreur.

Si la cellule est occultée (entrée CX sur bornier J4), un message s'affiche et le portail ne pourra pas être manœuvré.

Un appui sur la touche "+" avance le portail Un appui sur la touche "-" recule le portail Un appui sur la touche "ECH" arrête le portail

En cours d'avancée si un obstacle survient, le portail recule en petite vitesse. En cours de recul, si un obstacle survient, le portail s'arrête.

Erreurs pouvant être affichées

- Secteur non trouvé
 - Indique que la tension secteur n'a pas été trouvée.
- Erreur mvt trop long

Indique que le temps maximum de fonctionnement a été atteint. Cette erreur arrête le portail.

- Encodeur muet

L'encodeur n'a pas envoyé de changement de position du moteur alors qu'un mouvement est en cours. Cette erreur arrête le portail si celui-ci est en mouvement de recul, et recule le portail si celui-ci est en mouvement d'avance

Consommation du 24VAC

Consommations relevées sans accessoires branchés sur 10-11:

Au repos: 153 mA

En fonctionnement: 263 mA

Programme Arduino

Le programme est unique pour les deux versions de la carte, il existe une directive de compilation pour la destination du programme en V1 ou V2.

L'entrée analogiques "Onde" est acquise en sous-programme IRQ Timer1. Pour acquérir les valeurs analogiques en temps masqué, le programme manipule directement les registres de l'ATMega328P.

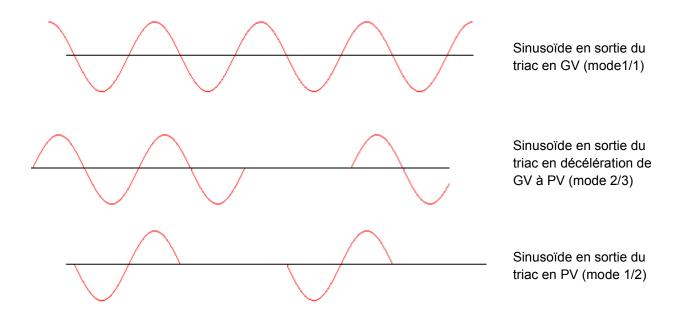
Sur la V1.0 l'encodeur est sur la broche D8, ce qui nécessite de faire réagir l'interruption PCINT0. Sur la V2.0 l'encodeur est sur la broche D3, ce qui nécessite de faire réagir l'interruption INT1.

Il existe une directive de compilation V1/V2 pour adapter le programme à la version de la carte :

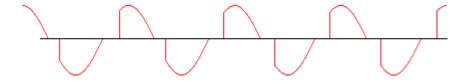
Le nombre de boutons de télécommandes maximal est de 20. Il peut être augmenté à concurrence de la saturation mémoire des variables globales.

```
#define Nbre_Max_telecom 20 // nombre maxi de télécommandes
```

L'interruption timer 1 est générée toutes les 217 µs. Elle gère la génération du signal gâchette du triac U3 vers Q5, pour la modulation de vitesse GV/PV. L'onde secteur est numérisée pour permettre d'avoir le départ du pilotage de la gâchette après changement de signe de l'onde secteur. En GV le triac envoie la totalité de la sinusoïde secteur. En PV, le triac envoie une sinusoïde sur deux (réduction de 50% de la vitesse).



La modulation de vitesse peut être également obtenue de 0 à 100% en faisant varier l'angle de retard à l'amorçage de la gâchette du triac. Dans ce cas on envoie une partie de la sinusoïde à 50 Hz:



La liaison USB dispose d'un terminal de commandes permet de piloter le moteur, de changer des variables etc. Taper ? sur un terminal USB à 115200 bauds pour avoir la liste des commandes disponibles (terminal arduino). Il permet également de piloter le menu grâce aux touches "ENTREE" "8+entrée" pour - et "2+entrée" pour +.

Prix

La carte revient à environ 70€ selon les fournisseurs.

Platine seule : 4€ Composants : 65€