

This is a set of diagrams for the electrical systems in some Corbin Sparrows with a KiloVac controller. They are the result of a rough job of reverse engineering. It may be somewhat indicative of your Sparrow (every Sparrow is different).

The controller schematics belong to whomever owns the KiloVac assets, as KiloVac no longer exists (I wonder what made them go under...hmmm). They are given here for repair purposes only.

It includes:

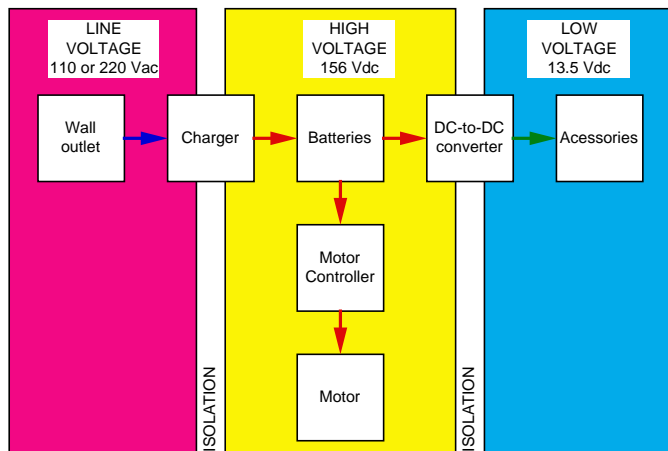
\*) 3 block diagrams, with increasing level of detail:

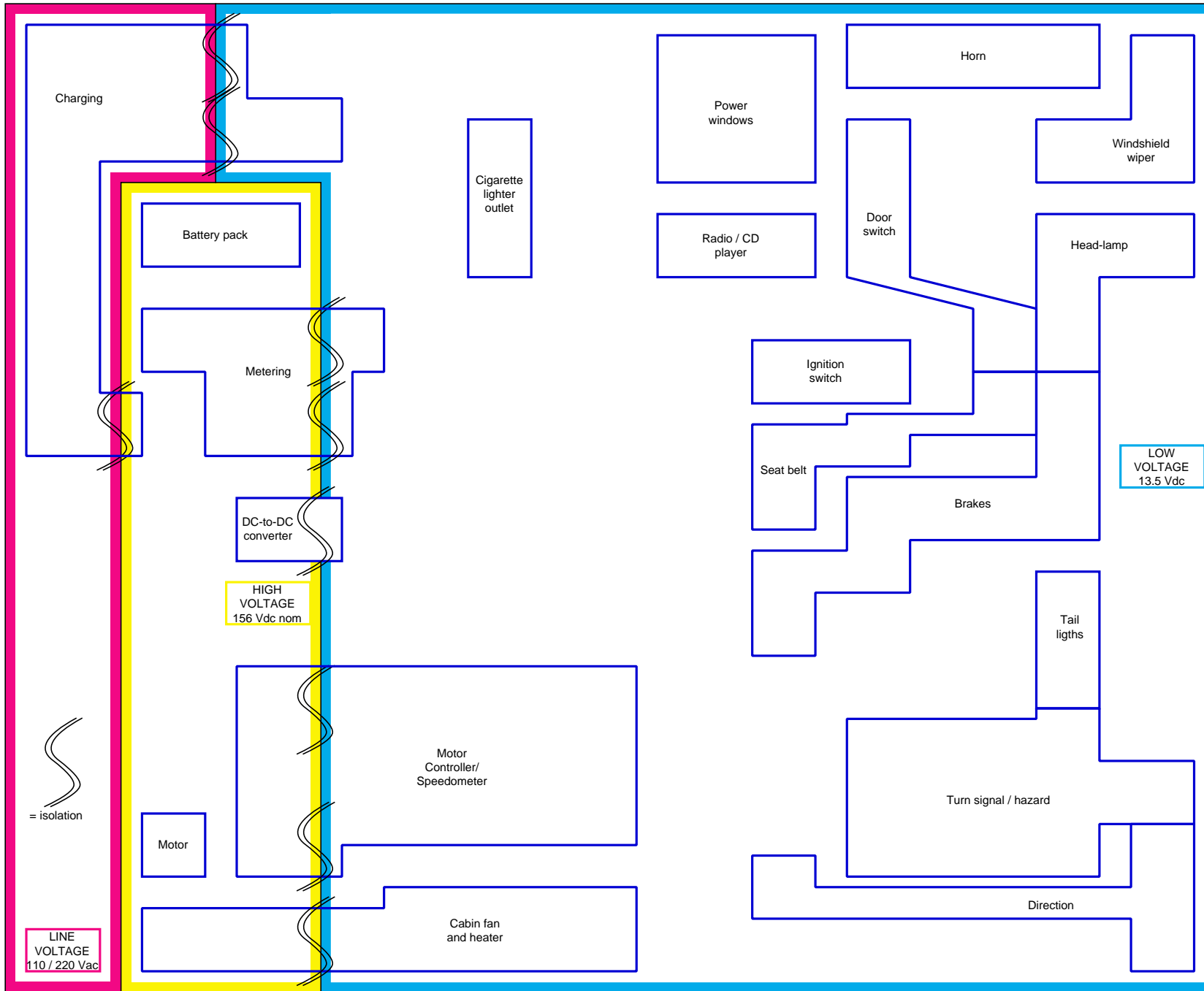
[3 systems](#),  
[simplified](#) and  
[complete](#).

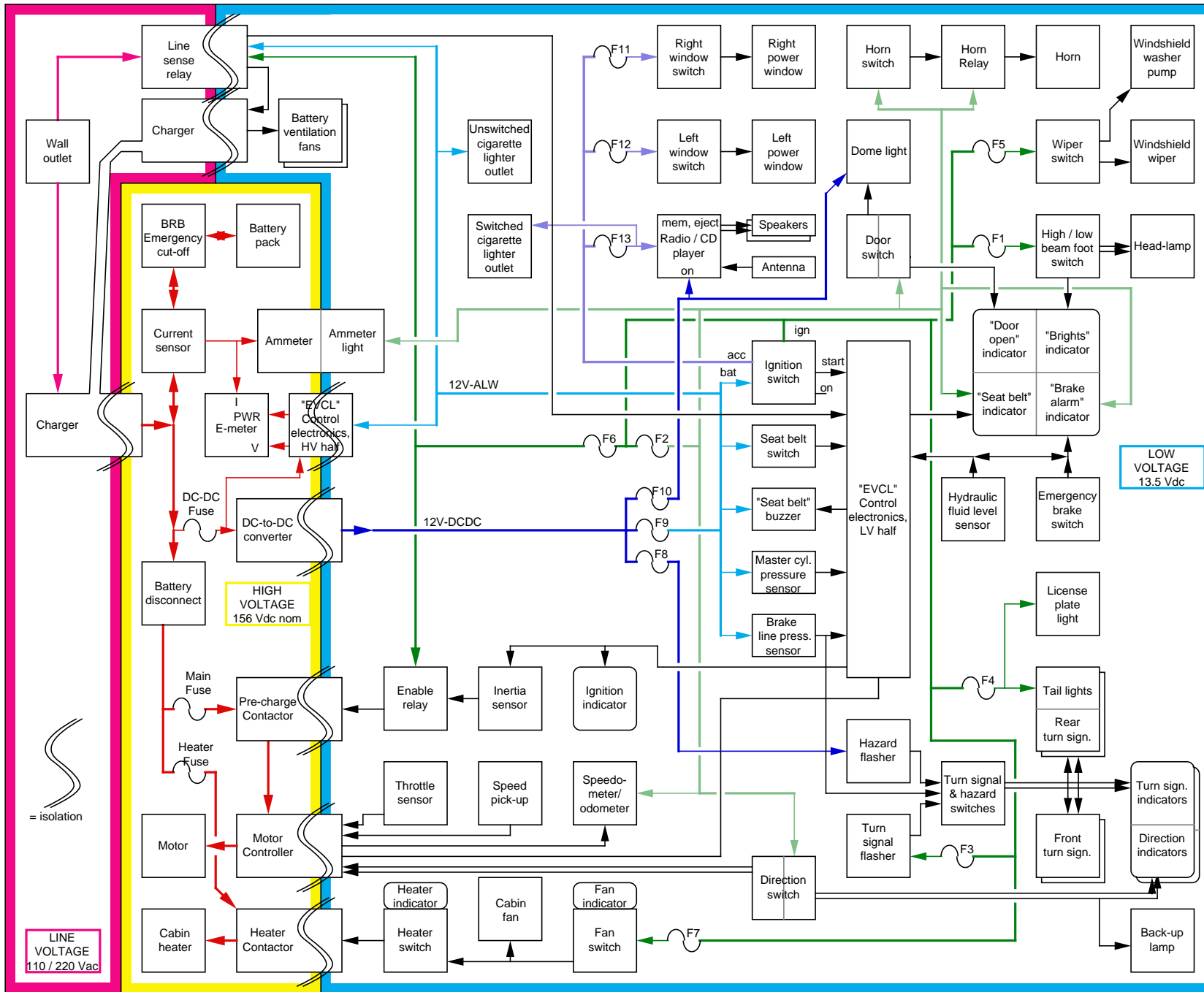
\*) schematic diagrams:

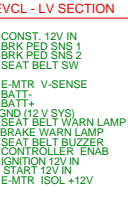
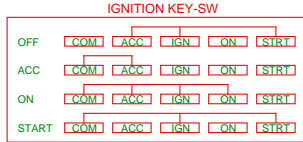
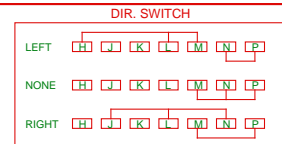
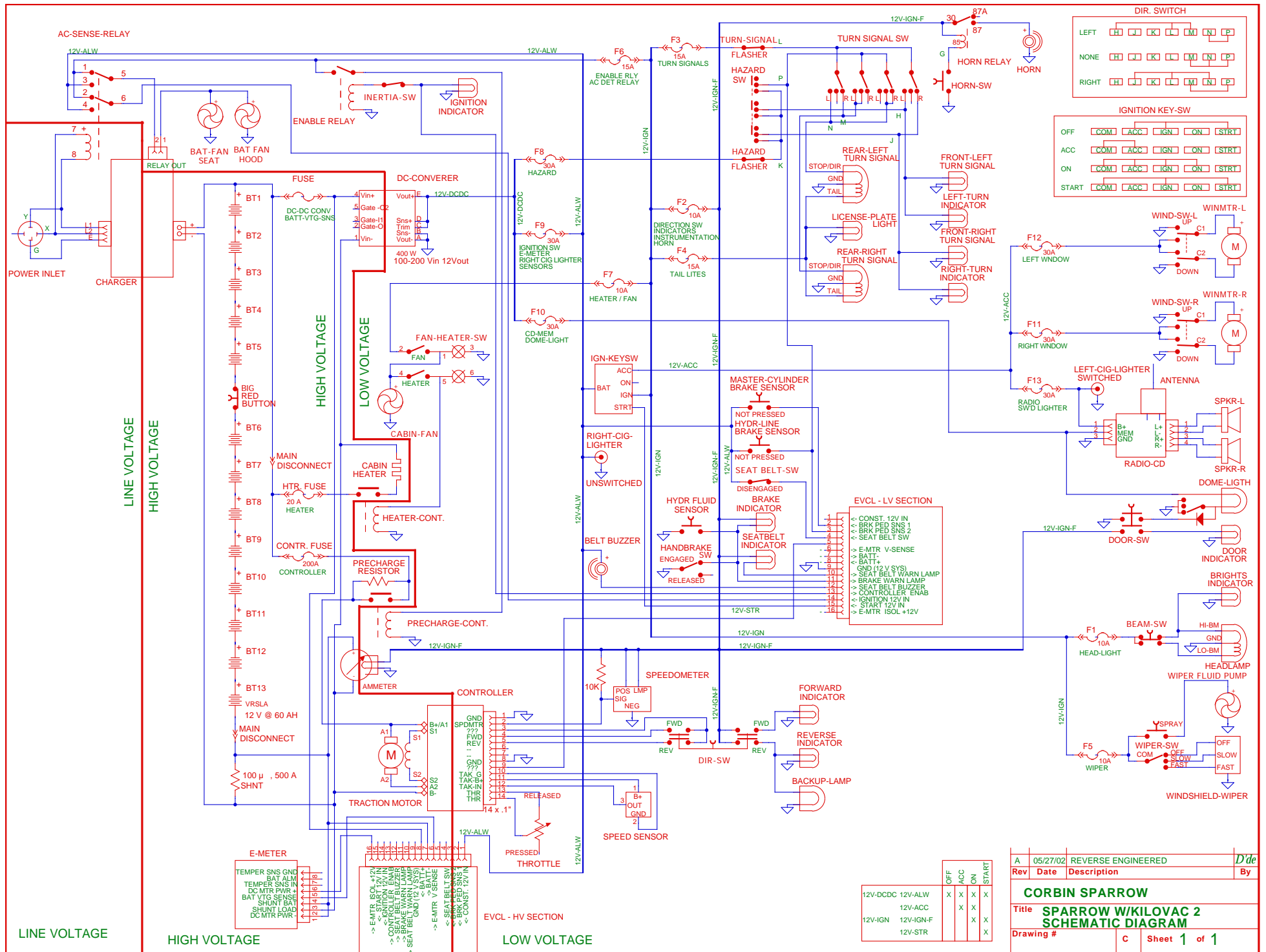
[vehicle schematic](#),  
[EVCL](#) (NOTE: this is an earlier circuit, as pin 5 has not function)  
[Prototype Controller](#)  
[Final Controller](#) (CS1MC)

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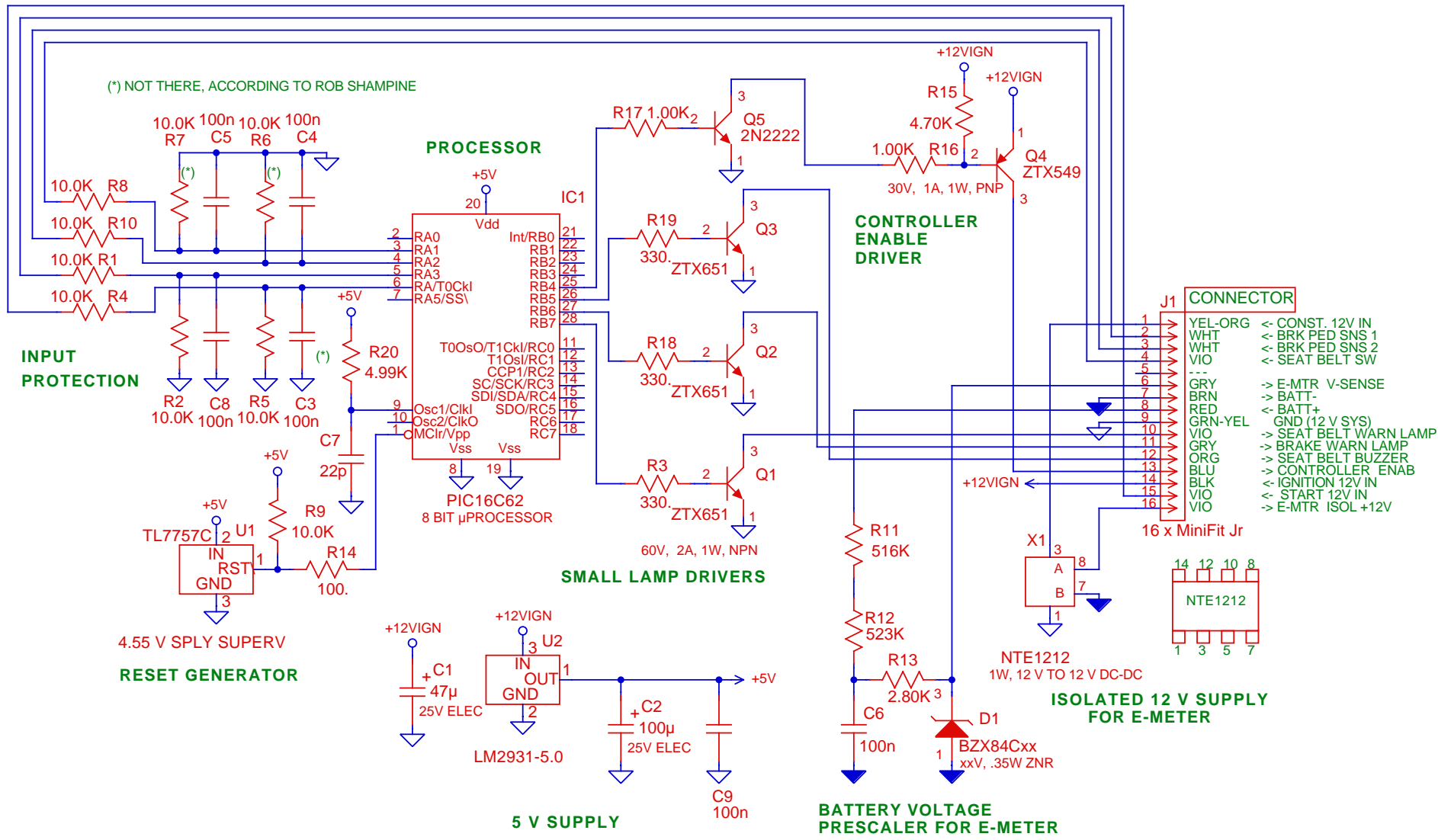






	OFF	ACC	ON	START
12V-DDCDC	X	X	X	X
12V-IGN		X	X	X
12V-IGN-F		X	X	X
12V-STR				X

A	05/27/02	REVERSE ENGINEERED	D'de
Rev	Date	Description	By
<b>CORBIN SPARROW</b>			
<b>Title SPARROW W/KILOVAC 2 SCHEMATIC DIAGRAM</b>			
Drawing #		C	Sheet 1 of 1



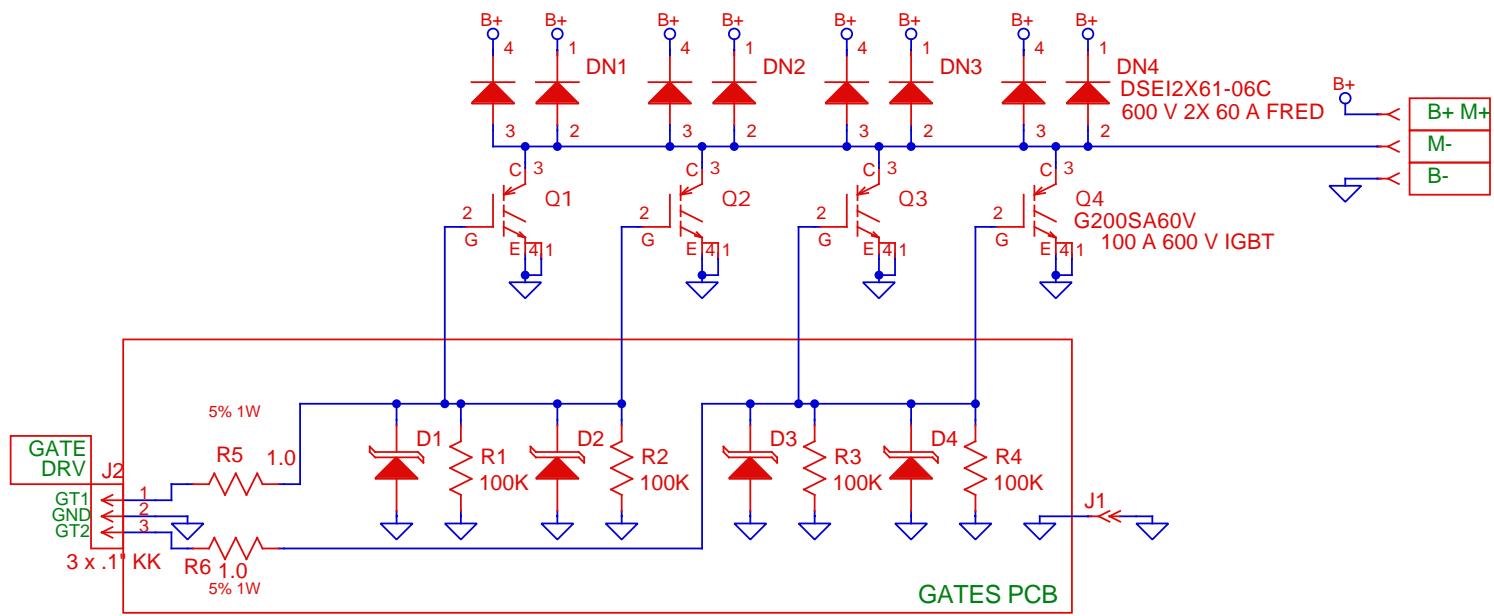
NOTES  
 ALL RESISTORS IN Ω, ALL CAPACITORS IN F, ALL INDUCTORS IN H  
 LAST USED: C9,D1,IC1,J1,Q5,R20,U2,X1

X2	5/10/04	WITH ROB SHAMPINE'S FEEDBACK	
X1	6/25/01	REVERSE ENGINEERED	
Rev	Date	Description	By

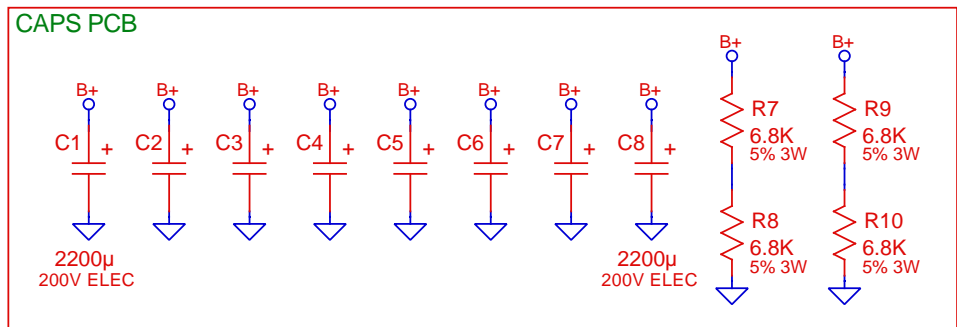
**DAVIDE** BOULDER CO 80306-4825  
 1 (303) 4131500 1daveide@att.net

Title KILOVAC'S EVCL SCHEMATIC  
 CORBIN SPARROW

Drawing #	Size B	Sheet 1 of 1
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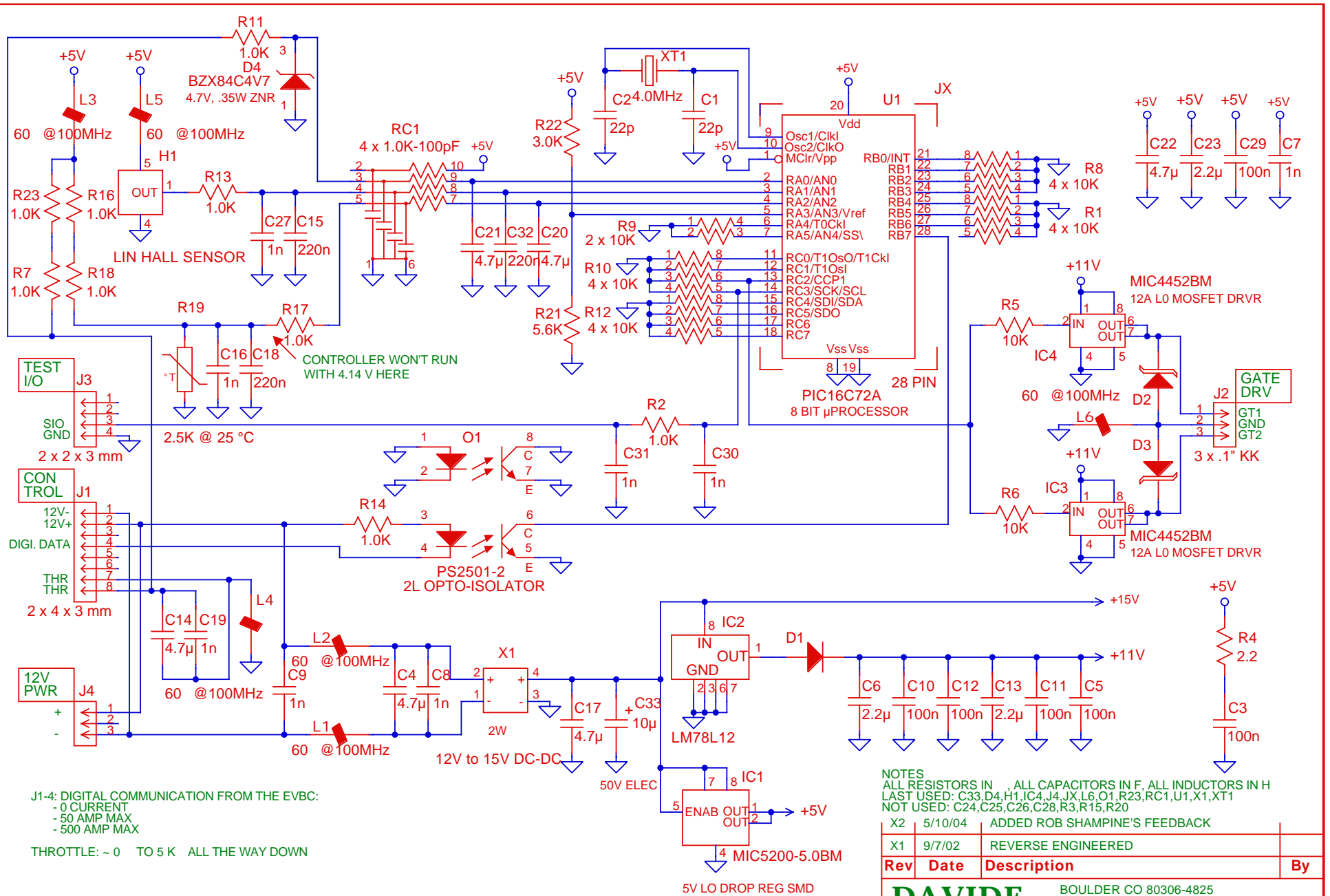


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NOTES  
 ALL RESISTORS IN Ω, ALL CAPACITORS IN F, ALL INDUCTORS IN H

X1	9/7/02	REVERSE ENGINEERED	
Rev	Date	Description	By
		<b>DAVIDE</b>	BOULDER CO 80306-4825 1 (303) 4131500 1davide@att.net
<b>Title</b> KILOVAC'S EVMC PROTO SN 0138 SCHEMATIC POWER SECTION - CORBIN SPARROW			
<b>Drawing #</b>		<b>Size</b> B	<b>Sheet</b> 1 of 2



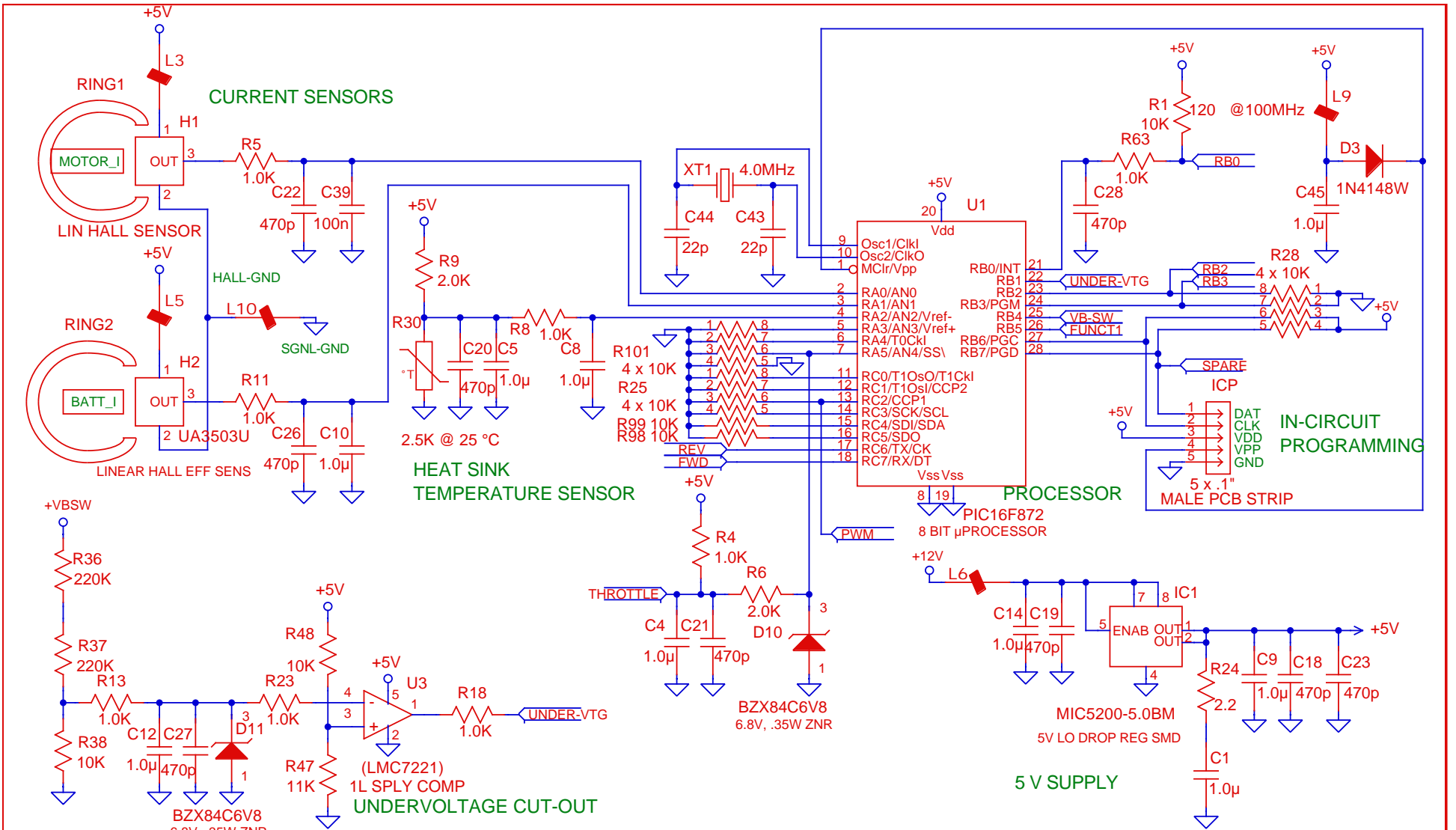
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Title KILOVAC'S EVMC PROTO SN 0138 SCHEMATIC  
 CONTROLLER SECTION- CORBIN SPARROW

Drawing #	Size B	Sheet 2 of 2
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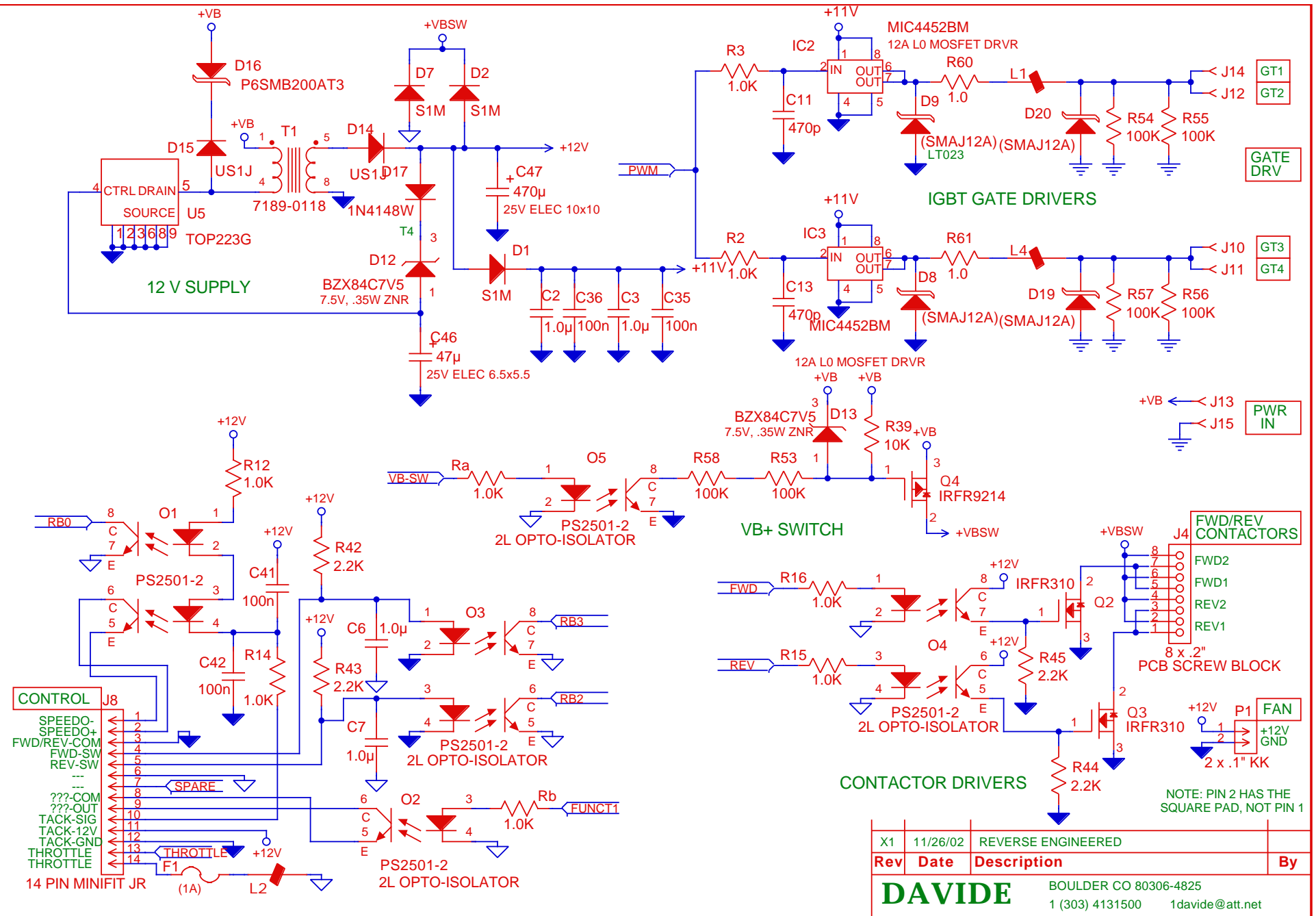




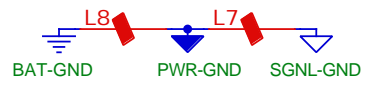
NOTES  
 ALL RESISTORS IN Ω ALL CAPACITORS IN F, ALL INDUCTORS IN H  
 VALUES IN PARENTHESIS ARE EDUCATED GUESSES

X1	11/26/02	REVERSE ENGINEERED	
Rev	Date	Description	By
<b>DAVIDE</b> BOULDER CO 80306-4825 1 (303) 4131500 1daveide@att.net			
<b>Title</b> KILOVAC'S CORBIN SPARROW CONTROLLER CONTROL BOARD- SIGNAL SECTION			
<b>Drawing #</b>	<b>Size</b>	<b>Sheet</b>	<b>of</b>
CS1MC	B	1	2

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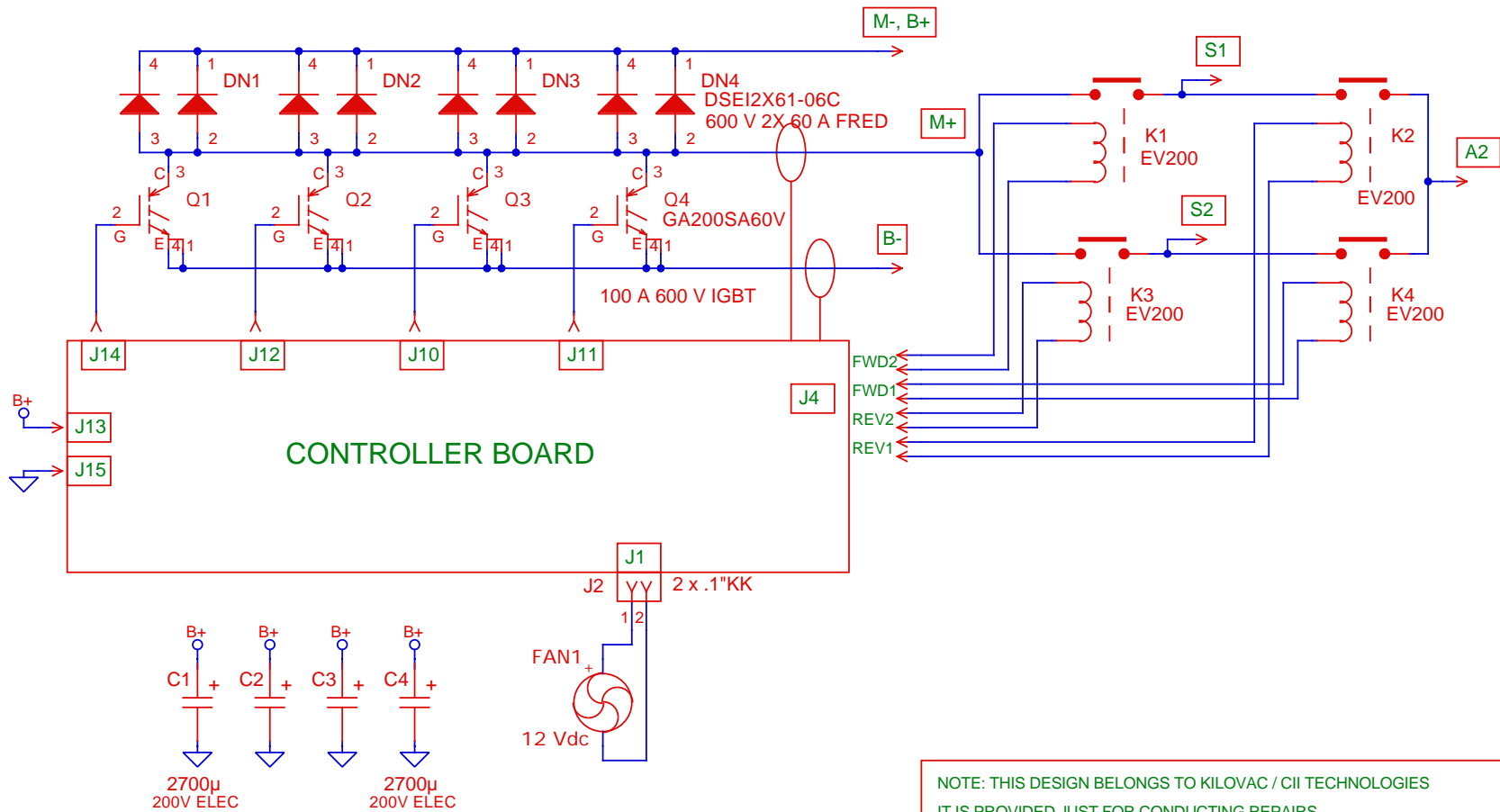


Rev	Date	Description	By
X1	11/26/02	REVERSE ENGINEERED	

**DAVIDE** BOULDER CO 80306-4825  
 1 (303) 4131500 1davide@att.net

**Title** KILOVAC'S CORBIN SPARROW CONTROLLER CONTROL BOARD- POWER SECTION

**Drawing #** CS1MC **Size** B **Sheet** 2 **of** 2



NOTE: THIS DESIGN BELONGS TO KILOVAC / CII TECHNOLOGIES  
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NOTES  
 ALL RESISTORS IN  $\Omega$ , ALL CAPACITORS IN F, ALL INDUCTORS IN H

X1	11/26/02	REVERSE ENGINEERED	D'de
Rev	Date	Description	By
		<b>DAVIDE</b>	BOULDER CO 80306-4825 1 (303) 4131500 1david@att.net
Title KILOVAC'S CORBIN SPARROW CONTROLLER POWER SECTION			
Drawing #	CS1MC	Size B	Sheet 1 of 2

QTY	PART NO	VALUE	ATTRIBUTES	COMPONENT	LABELS
1	ECE4703SS	47μ	25V ELEC 6.5x5.5	CAP	C46
1	ECE4713SB	470μ	25V ELEC 10x10	CAP	C47
5	ECM1045XS	100n	50V X7R MONO	CAP	C35-36, 39, 41-42
13	ECM1052XS	1.0μ	16V Y5P MONO	CAP	C1-10, 12, 14, 45
2	ECM2205CR	22p	100V NPO MONO	CAP	C43-44
11	ECM4717CR	470p	100V NPO MONO	CAP	C11, 13, 18-23, 26-28
1	EFU0102VS	(1A)	AGC	FUSE	F1
1	EKB2108FS	8 x .2"	PCB SCREW BLOCK	CON	J4
1	EKH4605MP	5 x .1"	MALE PCB STRIP	CON	ICP
1	EKP6102SG	2 x .1" KK	MALE PCB HDR STR GLD	CON	J1
1	EKP9414RM	14 PIN MINIFIT JR	MALE PCB HDR RA	CON	J8
10	EMF1210MV	120 @100MHz	FERRITE IMPED 1812	FERRITE	L1-10
1	EMX7189AA	7189-0118	156:12	XFMR	T1
5	E0I2501MS	PS2501-2	2L OPTO-ISOLATOR	OPTO-ISO	01-5
16	ERE0102JR	1.0K	5% 1/10W	RES	R2-5, 8, 11-16, 18, 23, 63, Ra, Rb
6	ERE0103JR	10K	5% 1/10W	RES	R1, 38-39, 48, 98-99
6	ERE0104JR	100K	5% 1/10W	RES	R53-58
2	ERE0109JY	1.0	5% 1W	RES	R60-61
1	ERE0113JR	11K	5% 1/10W	RES	R47
2	ERE0202JR	2.0K	5% 1/10W	RES	R6, 9
4	ERE0222JR	2.2K	5% 1/10W	RES	R42-45
2	ERE0224JR	220K	5% 1/10W	RES	R36-37
1	ERE0229JR	2.2	5% 1/10W	RES	R24
1	ERM0252JS	2.5K @ 25 °C	SMD 1206	THERMISTOR	R30
3	ERN1034GK	4 x 10K	2% ISOL DIP 0820	RNET	R25, 28, 101
1	EXA0223SN	TOP223G	INTEGRATED SWITCHER	IN	U5
1	EXA5200SD	MIC5200-5.0BM	5V LO DROP REG SMD	IC	IC1
1	EXA7221CL	(LMC7221)	1L SPLY COMP	IC	U3
3	EXD0001MB	S1M	1A 1KV SMA	DIODE	D1-2, 7
2	EXD0001UB	US1J	1A 400V ULTRAFAST R	DIODE	D14-15
4	EXD0033TB	(SMAJ12A)	12V, 400W TVS SMA	DIODE	D8-9, 19-20
1	EXD0200TB	P6SMB200AT3	200V, 600W TVS SMB	DIODE	D16
2	EXD4148LB	1N4148W	SWITCHING	DIODE	D3, 17
2	EXD8468ZL	BZX84C6V8	6.8V, .35W ZNR	DIODE	D10-11
2	EXD8475ZL	BZX84C7V5	7.5V, .35W ZNR	DIODE	D12-13

X1 11/26/02

KILOVAC CS1MC CONTROLLER - BOARD

1 of 2

REV.	DATE	DWNG NO.	TITLE	SHEET
APPROVALS			SIZE	
PREPARED BY <i>D'de</i>			<b>A</b>	
			<b>Davide</b>	
			80306-4825	
			1-303-413-1500	
			1davide@att.net	

QTY	PART NO	VALUE	ATTRIBUTES	COMPONENT	LABELS
2	EXI4452RN	MIC4452BM	12A LO MOSFET DRVR	IC	IC2-3
1	EXP6872CN	PIC16F872	8 BIT $\mu$ PROCESSOR	IC	U1
2	EXS0310MD	IRFR310	400V 3.6 1.7 A	XSTR	Q2-3
1	EXS9214PD	IRFR9214	250V 3 2.7 A P-MOS	XSTR	Q4
1	EZX4004AB	4.0MHz	AT CUT	XTAL	XT1

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KILOVAC CS1MC CONTROLLER - BOARD

2 of 2

REV.	DATE	DWNG NO.	TITLE		SHEET
APPROVALS			SIZE	80306-4825 1-303-413-1500 1davide@att.net	
PREPARED BY		<i>D'de</i>	<b>A</b>		

LABEL	PART NO	VALUE	ATTRIBUTES	COMPONENT
C1	ECM1052XS	1.0μ	16V Y5P MONO	CAP
C2	ECM1052XS	1.0μ	16V Y5P MONO	CAP
C3	ECM1052XS	1.0μ	16V Y5P MONO	CAP
C4	ECM1052XS	1.0μ	16V Y5P MONO	CAP
C5	ECM1052XS	1.0μ	16V Y5P MONO	CAP
C6	ECM1052XS	1.0μ	16V Y5P MONO	CAP
C7	ECM1052XS	1.0μ	16V Y5P MONO	CAP
C8	ECM1052XS	1.0μ	16V Y5P MONO	CAP
C9	ECM1052XS	1.0μ	16V Y5P MONO	CAP
C10	ECM1052XS	1.0μ	16V Y5P MONO	CAP
C11	ECM4717CR	470p	100V NPO MONO	CAP
C12	ECM1052XS	1.0μ	16V Y5P MONO	CAP
C13	ECM4717CR	470p	100V NPO MONO	CAP
C14	ECM1052XS	1.0μ	16V Y5P MONO	CAP
C18	ECM4717CR	470p	100V NPO MONO	CAP
C19	ECM4717CR	470p	100V NPO MONO	CAP
C20	ECM4717CR	470p	100V NPO MONO	CAP
C21	ECM4717CR	470p	100V NPO MONO	CAP
C22	ECM4717CR	470p	100V NPO MONO	CAP
C23	ECM4717CR	470p	100V NPO MONO	CAP
C26	ECM4717CR	470p	100V NPO MONO	CAP
C27	ECM4717CR	470p	100V NPO MONO	CAP
C28	ECM4717CR	470p	100V NPO MONO	CAP
C35	ECM1045XS	100n	50V X7R MONO	CAP
C36	ECM1045XS	100n	50V X7R MONO	CAP
C39	ECM1045XS	100n	50V X7R MONO	CAP
C41	ECM1045XS	100n	50V X7R MONO	CAP
C42	ECM1045XS	100n	50V X7R MONO	CAP
C43	ECM2205CR	22p	100V NPO MONO	CAP
C44	ECM2205CR	22p	100V NPO MONO	CAP
C45	ECM1052XS	1.0μ	16V Y5P MONO	CAP
C46	ECE4703SS	47μ	25V ELEC 6.5x5.5	CAP
C47	ECE4713SB	470μ	25V ELEC 10x10	CAP
D1	EXD0001MB	S1M	1A 1KV SMA	DIODE
D2	EXD0001MB	S1M	1A 1KV SMA	DIODE
D3	EXD4148LB	1N4148W	SWITCHING	DIODE

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KILOVAC CS1MC CONTROLLER - BOARD

1 of 4

REV.	DATE	DWNG NO.	TITLE	SHEET
APPROVALS			SIZE	
PREPARED BY <i>D'de</i>			<b>A</b>	80306-4825 1-303-413-1500 1davide@att.net

LABEL	PART NO	VALUE	ATTRIBUTES	COMPONENT
D7	EXD0001MB	S1M	1A 1KV SMA	DIODE
D8	EXD0033TB	(SMAJ12A)	12V, 400W TVS SMA	DIODE
D9	EXD0033TB	(SMAJ12A)	12V, 400W TVS SMA	DIODE
D10	EXD8468ZL	BZX84C6V8	6. 8V, . 35W ZNR	DIODE
D11	EXD8468ZL	BZX84C6V8	6. 8V, . 35W ZNR	DIODE
D12	EXD8475ZL	BZX84C7V5	7. 5V, . 35W ZNR	DIODE
D13	EXD8475ZL	BZX84C7V5	7. 5V, . 35W ZNR	DIODE
D14	EXD0001UB	US1J	1A 400V ULTRAFAST R	DIODE
D15	EXD0001UB	US1J	1A 400V ULTRAFAST R	DIODE
D16	EXD0200TB	P6SMB200AT3	200V, 600W TVS SMB	DIODE
D17	EXD4148LB	1N4148W	SWITCHING	DIODE
D19	EXD0033TB	(SMAJ12A)	12V, 400W TVS SMA	DIODE
D20	EXD0033TB	(SMAJ12A)	12V, 400W TVS SMA	DIODE
F1	EFU0102VS	(1A)	AGC	FUSE
IC1	EXA5200SD	MIC5200- 5. 0BM	5V LO DROP REG SMD	IC
IC2	EXI 4452RN	MIC4452BM	12A LO MOSFET DRVR	IC
IC3	EXI 4452RN	MIC4452BM	12A LO MOSFET DRVR	IC
ICP	EKH4605MP	5 x . 1"	MALE PCB STRIP	CON
J1	EKP6102SG	2 x . 1" KK	MALE PCB HDR STR GLD	CON
J4	EKB2108FS	8 x . 2"	PCB SCREW BLOCK	CON
J8	EKP9414RM	14 PIN MINIFIT JR	MALE PCB HDR RA	CON
L1	EMF1210MV	120 @100MHz	FERRITE IMPED 1812	FERRITE
L2	EMF1210MV	120 @100MHz	FERRITE IMPED 1812	FERRITE
L3	EMF1210MV	120 @100MHz	FERRITE IMPED 1812	FERRITE
L4	EMF1210MV	120 @100MHz	FERRITE IMPED 1812	FERRITE
L5	EMF1210MV	120 @100MHz	FERRITE IMPED 1812	FERRITE
L6	EMF1210MV	120 @100MHz	FERRITE IMPED 1812	FERRITE
L7	EMF1210MV	120 @100MHz	FERRITE IMPED 1812	FERRITE
L8	EMF1210MV	120 @100MHz	FERRITE IMPED 1812	FERRITE
L9	EMF1210MV	120 @100MHz	FERRITE IMPED 1812	FERRITE
L10	EMF1210MV	120 @100MHz	FERRITE IMPED 1812	FERRITE
01	E0I 2501MS	PS2501- 2	2L OPTO- ISOLATOR	OPTO- IS0
02	E0I 2501MS	PS2501- 2	2L OPTO- ISOLATOR	OPTO- IS0
03	E0I 2501MS	PS2501- 2	2L OPTO- ISOLATOR	OPTO- IS0
04	E0I 2501MS	PS2501- 2	2L OPTO- ISOLATOR	OPTO- IS0
05	E0I 2501MS	PS2501- 2	2L OPTO- ISOLATOR	OPTO- IS0

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KILOVAC CS1MC CONTROLLER - BOARD

2 of 4

REV.	DATE	DWNG NO.	TITLE	SHEET
APPROVALS			SIZE	
PREPARED BY <i>D'de</i>			<b>A</b>	
			<b>Davide</b>	
			80306-4825	
			1-303-413-1500	
			1davide@att.net	

LABEL	PART NO	VALUE	ATTRIBUTES	COMPONENT
Q2	EXS0310MD	IRFR310	400V 3.6 1.7 A	XSTR
Q3	EXS0310MD	IRFR310	400V 3.6 1.7 A	XSTR
Q4	EXS9214PD	IRFR9214	250V 3 2.7 A P-MOS	XSTR
R1	ERE0103JR	10K	5% 1/10W	RES
R2	ERE0102JR	1.0K	5% 1/10W	RES
R3	ERE0102JR	1.0K	5% 1/10W	RES
R4	ERE0102JR	1.0K	5% 1/10W	RES
R5	ERE0102JR	1.0K	5% 1/10W	RES
R6	ERE0202JR	2.0K	5% 1/10W	RES
R8	ERE0102JR	1.0K	5% 1/10W	RES
R9	ERE0202JR	2.0K	5% 1/10W	RES
R11	ERE0102JR	1.0K	5% 1/10W	RES
R12	ERE0102JR	1.0K	5% 1/10W	RES
R13	ERE0102JR	1.0K	5% 1/10W	RES
R14	ERE0102JR	1.0K	5% 1/10W	RES
R15	ERE0102JR	1.0K	5% 1/10W	RES
R16	ERE0102JR	1.0K	5% 1/10W	RES
R18	ERE0102JR	1.0K	5% 1/10W	RES
R23	ERE0102JR	1.0K	5% 1/10W	RES
R24	ERE0229JR	2.2	5% 1/10W	RES
R25	ERN1034GK	4 x 10K	2% ISOL DIP 0820	RNET
R28	ERN1034GK	4 x 10K	2% ISOL DIP 0820	RNET
R30	ERM0252JS	2.5K @ 25 °C	SMD 1206	THERMI STOR
R36	ERE0224JR	220K	5% 1/10W	RES
R37	ERE0224JR	220K	5% 1/10W	RES
R38	ERE0103JR	10K	5% 1/10W	RES
R39	ERE0103JR	10K	5% 1/10W	RES
R42	ERE0222JR	2.2K	5% 1/10W	RES
R43	ERE0222JR	2.2K	5% 1/10W	RES
R44	ERE0222JR	2.2K	5% 1/10W	RES
R45	ERE0222JR	2.2K	5% 1/10W	RES
R47	ERE0113JR	11K	5% 1/10W	RES
R48	ERE0103JR	10K	5% 1/10W	RES
R53	ERE0104JR	100K	5% 1/10W	RES
R54	ERE0104JR	100K	5% 1/10W	RES
R55	ERE0104JR	100K	5% 1/10W	RES

X1 11/26/02

KILOVAC CS1MC CONTROLLER - BOARD

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REV.	DATE	DWNG NO.	TITLE	SHEET
APPROVALS			SIZE	
PREPARED BY <i>D'de</i>			<b>A</b>	
			<b>Davide</b>	
			80306-4825	
			1-303-413-1500	
			1davide@att.net	



LABEL	PART NO	VALUE	ATTRIBUTES	COMPONENT
R56	ERE0104JR	100K	5% 1/10W	RES
R57	ERE0104JR	100K	5% 1/10W	RES
R58	ERE0104JR	100K	5% 1/10W	RES
R60	ERE0109JY	1.0	5% 1W	RES
R61	ERE0109JY	1.0	5% 1W	RES
R63	ERE0102JR	1.0K	5% 1/10W	RES
R98	ERE0103JR	10K	5% 1/10W	RES
R99	ERE0103JR	10K	5% 1/10W	RES
R101	ERN1034GK	4 x 10K	2% ISOL DIP 0820	RNET
Ra	ERE0102JR	1.0K	5% 1/10W	RES
Rb	ERE0102JR	1.0K	5% 1/10W	RES
T1	EMX7189AA	7189-0118	156:12	XFMR
U1	EXP6872CN	PIC16F872	8 BIT $\mu$ PROCESSOR	IC
U3	EXA7221CL	(LMC7221)	1L SPLY COMP	IC
U5	EXA0223SN	TOP223G	INTEGRATED SWITCHER	IN
XT1	EZX4004AB	4.0MHz	AT CUT	XTAL

X1 11/26/02

KILOVAC CS1MC CONTROLLER - BOARD

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REV.	DATE	DWNG NO.	TITLE	SHEET
APPROVALS			SIZE	
PREPARED BY <i>D'de</i>			<b>A</b>	<b>Davide</b>
			80306-4825	
			1-303-413-1500	
			1davide@att.net	