

REV	ZONE	ECN	DESCRIPTION OF REVISION	CK APPD	ENG APPD
				DATE	DATE
A			RR501 SCHEM RELEASE	2/5/2000	2/5/2000
B			REVISE FOR PUBLIC RELEASE	7/1/2000	7/1/2000
C			FIX PU VOLTAGE FOR POR	5/22/2K1	5/22/2K1
D			CHANGE TRIAC TO SCR	10/24/2K1	10/24/2K1
E			FIX R13 & D4 ERRORS	1/26/2K2	1/26/2K2
F			FIX D12 & T14 ERRORS	2/10/2K2	2/10/2K2
G			FIX RESONATER AT OSC	2/24/2K2	2/24/2K2
H			CORRECT RF TRANSISTORS	11/30/2K3	11/30/2K3

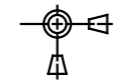
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Section	Page	Description
Contents	1.	Cover Page
	2.	Technical Block Diagram
Decoder	3.	RR501 Schematic
Other	4.	Reference Info & Refvision History

PCB VERSION SUPPORT				
PART NUMBER	QTY	DESCRIPTION	ASSOCIATED REFERENCE DESIGNATORS	BOM OPTION
RR501 PCB1	1	PCB, RR501, FAB	PCB1	\$PCB-PROD FAB

**BOM OPTIONS
SPECIAL CHARACTERS
LEGEND**
(SHOWN DIRECTLY IN FRONT OF THE BOM OPTION NAME)

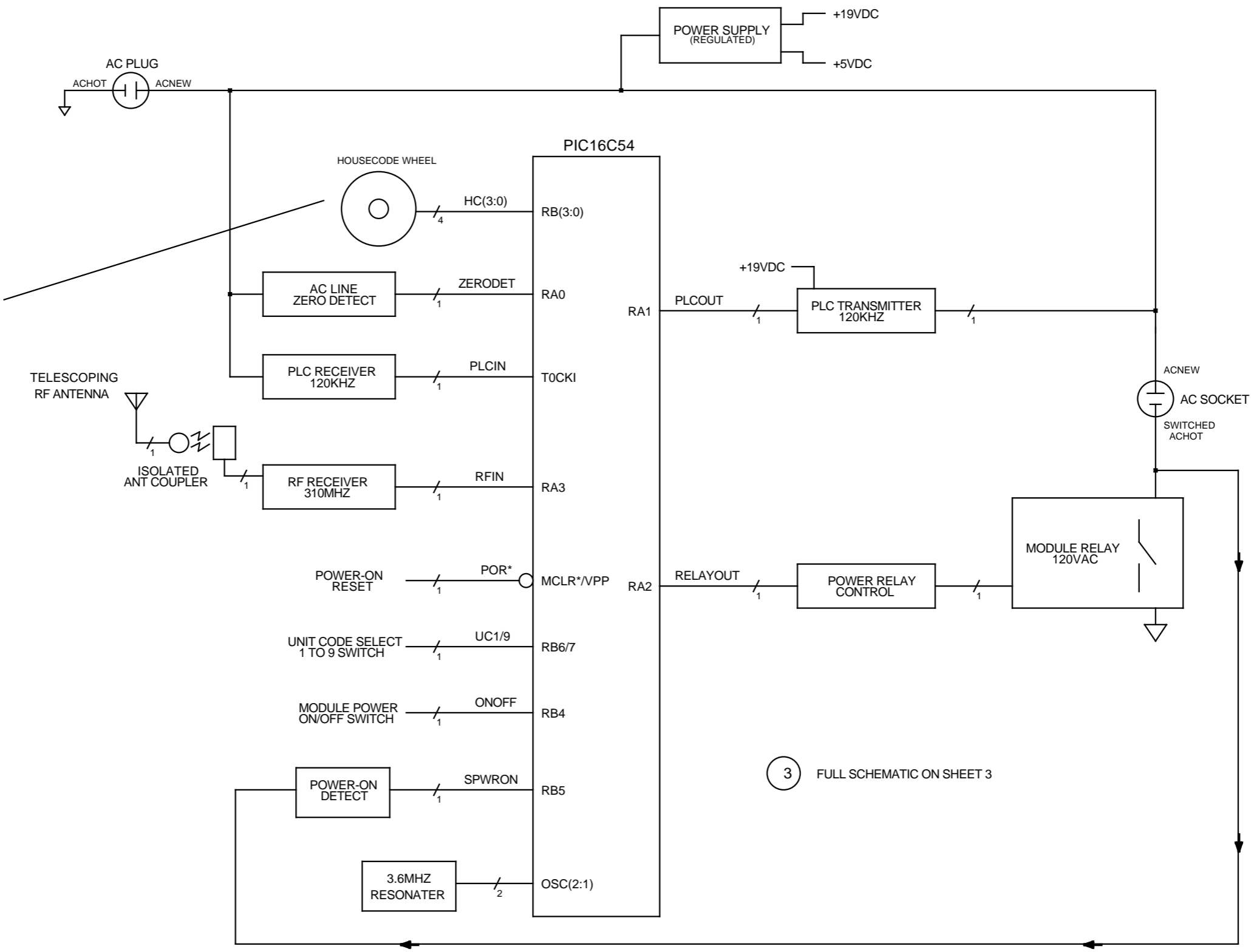
- "\$" = DEFAULT BOM OPTION
- "=" = COPY TO COOKED BOM BUT DO NOT COOK

Cover Page

DIMENSIONS ARE EXPRESSED IN MILLIMETERS X.X ± _____ X.XX ± _____ X.XXX ± _____ ANGLES ± _____ DO NOT SCALE DRAWINGS  THIRD ANGLE PROJECTION	METRIC			ORYSHNET SYSTEMS	
	DRAFTER	DESIGN CK		NOTICE OF EDUCATIONAL INFORMATION THE INFORMATION CONTAINED HEREIN IS FOR EDUCATIONAL PURPOSES ONLY. ORYSHNET SYSTEMS IS NOT RESPONSIBLE FOR ANY USE OF THIS INFORMATION.	
	ENG APPD	MFG APPD			
	QA APPD	DESIGNER			
RELEASE	SCALE	NONE	TITLE RR501 RF/PLC XEIVER		
MATERIAL/FINISH NOTED AS APPLICABLE	SIZE	D	DRAWING NUMBER 0001 REV. H		
			SHT 1 OF 4		

HOUSE-CODE CHART

HC	HC3	HC2	HC1	HC0
A	1	0	1	0
B	0	0	1	0
C	1	1	1	0
D	0	1	1	0
E	1	1	0	1
F	0	1	0	1
G	1	0	0	1
H	0	0	0	1
I	1	0	0	0
J	0	0	0	0
K	1	1	0	0
L	0	1	0	0
M	1	1	1	1
N	0	1	1	1
O	1	0	1	1
P	0	0	1	1



LEGEND

= P/N

= SCHEMATIC SHEET NUMBER

Block Diagram

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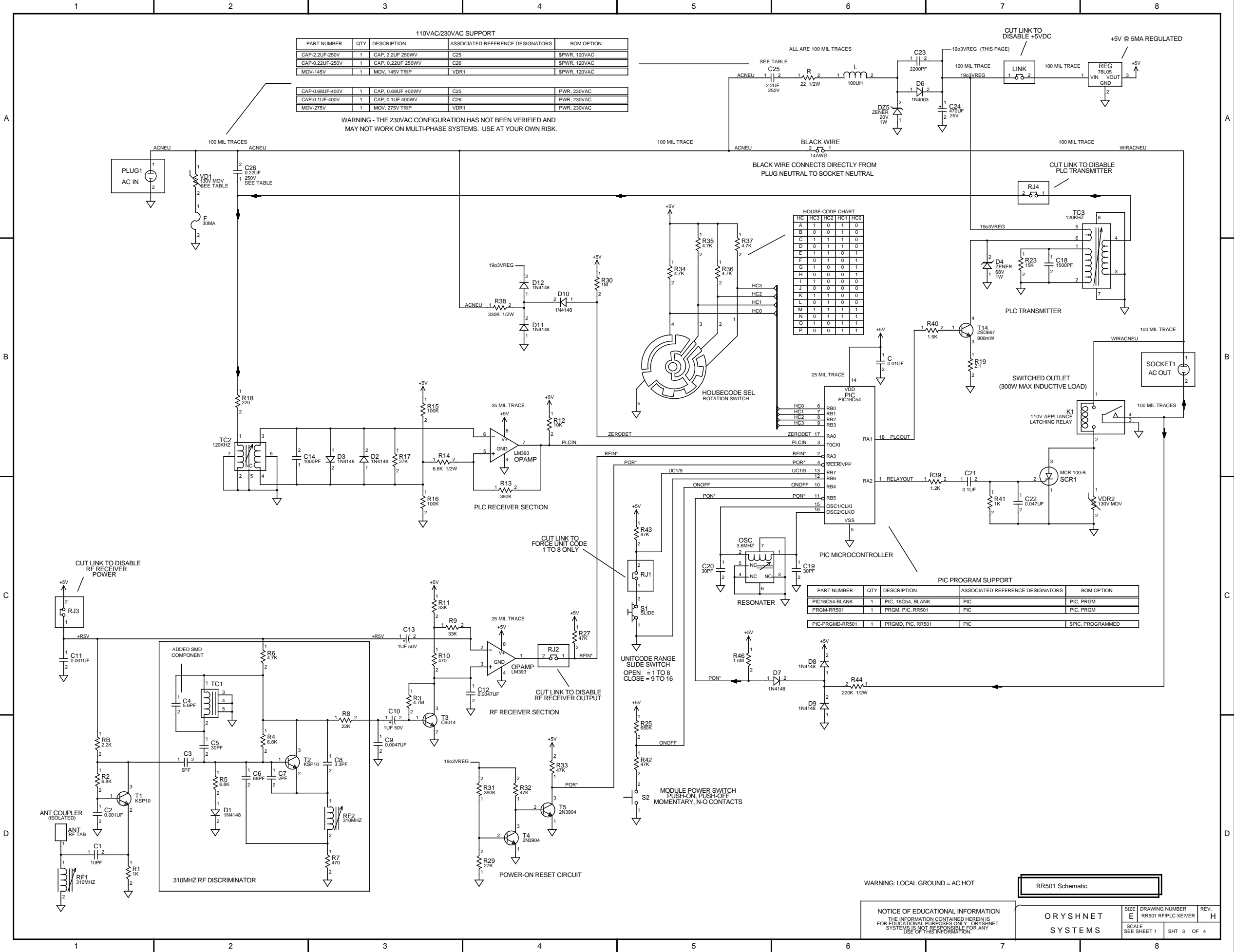
ORYSHNET SYSTEMS

SIZE D	DRAWING NUMBER RR501 RF/PLC XEIVER	REV. H
SCALE SEE SHEET 1	SHT 2 OF 4	

110VAC/230VAC SUPPORT

PART NUMBER	QTY	DESCRIPTION	ASSOCIATED REFERENCE DESIGNATORS	BOM OPTION
CAP-2.2UF-250V	1	CAP, 2.2UF 250WV	C25	\$PWR, 120VAC
CAP-0.22UF-250V	1	CAP, 0.22UF 250WV	C26	\$PWR, 120VAC
MOV-145V	1	MOV, 145V TRIP	VDR1	\$PWR, 120VAC
CAP-0.68UF-400V	1	CAP, 0.68UF 400WV	C25	PWR, 230VAC
CAP-0.1UF-400V	1	CAP, 0.1UF 400WV	C26	PWR, 230VAC
MOV-275V	1	MOV, 275V TRIP	VDR1	PWR, 230VAC

WARNING - THE 230VAC CONFIGURATION HAS NOT BEEN VERIFIED AND MAY NOT WORK ON MULTI-PHASE SYSTEMS. USE AT YOUR OWN RISK.



HOUSE-CODE CHART

HC	HC3	HC2	HC1	HC0
A	1	0	1	0
B	0	0	1	0
C	1	1	1	0
D	0	1	1	0
E	1	1	0	1
F	0	1	0	1
G	1	0	0	1
H	0	0	0	1
I	1	0	0	0
J	0	0	0	0
K	1	1	1	1
L	0	1	0	0
M	1	1	1	1
N	0	1	1	1
O	1	0	1	1
P	0	0	1	1

PIC PROGRAM SUPPORT

PART NUMBER	QTY	DESCRIPTION	ASSOCIATED REFERENCE DESIGNATORS	BOM OPTION
PIC16C54-BLANK	1	PIC, 16C54, BLANK	PIC	PIC, PRGM
PRGM-RR501	1	PRGM, PIC, RR501	PIC	PIC, PRGM
PIC-PRGMD-RR501	1	PRGMD, PIC, RRS01	PIC	\$PIC, PROGRAMMED

A

A

B

B

C

C

D

D

REFERENCE DESIGNATOR LOCATIONS			
ANT	3-D1	R38	3-B4
		R39	3-C6
BLACK	3-A6	R40	3-B6
		R41	3-C7
		R42	3-D5
		R43	3-C5
		R44	3-C6
		R46	3-C5
		RB	3-D1
		REG	3-A7
		RELAY1	3-B8
		RFC1	3-D1
		RFC2	3-D2
		RJ1	3-C5
		RJ2	3-C4
		RJ3	3-C1
		RJ4	3-A7
		S1	3-C5
		S2	3-D5
		SCR1	3-C7
		SEL	3-B5
		SOCKET1	3-B8
		T1	3-D1
		T2	3-D2
		T3	3-D3
		T4	3-D4
		T5	3-D4
		T14	3-B7
		TC1	3-C2
		TC2	3-B2
		TC3	3-B8
		VDR1	3-A2
		VDR2	3-C7
		WIRE	3-A6
D1	3-D3		
D2	3-B3		
D3	3-B3		
D4	3-B7		
D6	3-A6		
D7	3-C5		
D8	3-C6		
D9	3-C6		
D10	3-B4		
D11	3-B4		
D12	3-B4		
DZ5	3-A6		
F	3-A2		
HOUSECODE0	3-B5		
L	3-A6		
LINK	3-A7		
OPAMP	3-B4		
OSC	3-C5		
PIC	3-C6		
PLUG1	3-A1		
R	3-A6		
R1	3-D1		
R2	3-D1		
R3	3-C3		
R4	3-D3		
R5	3-D3		
R6	3-C2		
R7	3-D2		
R8	3-D3		
R9	3-C3		
R10	3-C3		
R11	3-C3		
R12	3-B4		
R13	3-B4		
R14	3-B3		
R15	3-B3		
R16	3-C3		
R17	3-B2		
R18	3-B2		
R19	3-B7		
R23	3-B7		
R25	3-D5		
R27	3-C4		
R29	3-D4		
R30	3-B4		
R31	3-D4		
R32	3-D4		
R33	3-D4		
R34	3-B5		
R35	3-B5		
R36	3-B5		
R37	3-B5		

REVISION HISTORY

RR501 DESIGN HISTORY

02/05/2000 - SCHEMATIC CREATED
- VERSION A RELEASED

07/01/2000 - UPDATE SCHEMATIC FOR PUBLIC RELEASE
- VERSION B RELEASED

05/22/2001 - CORRECT PULL-UP RESISTOR VOLTAGES
- VERSION C RELEASED

10/24/2001 - CHANGE TRIAC TO SCR
- VERSION D RELEASED

01/26/2002 - CORRECT R13 AND D4 ERROR
- VERSION E RELEASED

02/10/2002 - CORRECT D12 CONNECTION & T14 TYPE
- VERSION F RELEASED

02/24/2002 - CORRECT OSC NUMBER OF INTERNAL COILS
- VERSION G RELEASED

11/30/2003 - CORRECT RF SECTION TRANSISTORS
- VERSION H RELEASED

GLOBAL NETS	
NET NAME	PAGE
GND	3
+5V	3

REFERENCE DESIGNATIONS	
LAST USED	NOT USED
ANT0	ANT1--1
BLACK0	BLACK1--1
C26	C1--1 C15-17
D12	D5
DZ5	DZ1-4
F0	F1--1
HOUSECODE0	HOUSECODE1--1
L0	L1--1
LINK0	LINK1--1
OPAMP0	OPAMP1--1
OSC0	OSC1--1
PIC0	PIC1--1
PLUG1	
R46	R1--1 R20-22 R24 R26 R28 R45
RB0	RB1--1
REG0	REG1--1
RELAY1	
RFC2	
RJ4	
S2	
SCR1	
SEL0	SEL1--1
SOCKET1	
T14	T6-13
TC3	
VDR2	
WIRE0	WIRE1--1

Reference Info & Revision History

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ORYSHNET SYSTEMS	SIZE D	DRAWING NUMBER RR501 RF/PLC XEIVER	REV. H
	SCALE SEE SHEET 1	SHT 4 OF 4	

RR501 vH 120V BOM

RR501 vH 120V BOM										
Item#	Qty	Part#	Description	Value	Voltage	Wattage	Tolerance	Mfg	Mfg PN	Ref. Designators
STUFF List:										
1	1	2SD667	TRAN, 2SD667 NPN	2SD667		900mW		UNKNOWN	UNKNOWN	T14
2	1	Ant-Metal Tab	X-10 ANTENNA TAB	ANT()						ANT
3	2	CAP-0.001UF	CAPACITOR, NON-POLARIZED,	0.001UF						C2,C11
4	2	CAP-0.0047UF	CAPACITOR, NON-POLARIZED,	0.0047UF						C9,C12
5	1	CAP-0.01UF-20%-50V	CAPACITOR, NON-POLARIZED,	0.01UF	50V		20%			C
6	1	CAP-0.047UF-20%-50V	CAPACITOR, NON-POLARIZED,	0.047UF	50V		20%			C22
7	1	CAP-0.1UF	CAPACITOR, NON-POLARIZED,	0.1UF						C21
8	1	CAP-0.22UF-250V	CAP, 0.22UF 250WV							C26
9	1	CAP-1000PF	CAPACITOR, NON-POLARIZED,	1000PF						C14
10	1	CAP-10PF	CAPACITOR, NON-POLARIZED,	10PF						C1
11	1	CAP-1500PF	CAPACITOR, NON-POLARIZED,	1500PF						C18
12	2	CAP-1UF-50V	CAPACITOR, POLARIZED,	1UF	50V					C10,C13
13	1	CAP-2.2UF-250V	CAP, 2.2UF 250WV							C25
14	1	CAP-2200PF	CAPACITOR, NON-POLARIZED,	2200PF						C23
15	1	CAP-2PF	CAPACITOR, NON-POLARIZED,	2PF						C7
16	1	CAP-3.3PF	CAPACITOR, NON-POLARIZED,	3.3PF						C8
17	1	CAP-30PF	CAPACITOR, NON-POLARIZED,	30PF						C5
18	2	CAP-30PF-20%-50V	CAPACITOR, NON-POLARIZED,	30PF	50V		20%			C19,C20
19	1	CAP-470UF-25V	CAPACITOR, POLARIZED,	470UF	25V					C24
20	1	CAP-5.6PF	CAPACITOR, NON-POLARIZED,	5.6PF						C4
21	1	CAP-5PF	CAPACITOR, NON-POLARIZED,	5PF						C3
22	1	CAP-68PF	CAPACITOR, NON-POLARIZED,	68PF						C6
23	1	DIODE-1N4003	DIODE,	1N4003						D6
24	9	DIODE-1N4148	DIODE,	1N4148						D1,D2,D3,D7,D8,D9,D10,D11,D12
25	1	FUSE-30MA	FUSE,	30MA						F
26	1	IND-100UH	INDUCTOR,	100UH						L
27	1	IND-3.6MHZ-TUNABLE	IND, X10 TUNEABLE RF COIL							OSC
28	1	IND-310MHZ AIR CORE	IND, X10 TUNEABLE RF AIR COIL							RF2
29	2	IND-310MHZ IRON CORE	IND, X10 TUNEABLE RF AIR COIL							RF1,TC1
30	1	MOV-130V	MOV	130V MOV						VDR2
31	1	MOV-145V	MOV, 145V TRIP							VDR1
32	1	OPAMP-LM393	IC, COMPARATOR, LM393							OPAMP
33	1	OUTLET-110V-3P	CONN,3 PIN,OUTLET							SOCKET1
34	1	PIC-PRGMD-RR501	PRGMD, PIC, RR501							PIC
35	1	PLUG-110V-3P	CONN,3 PIN,OUTLET							PLUG1
36	1	REG-5V-78L05	VREG, 78L05 VOLTAGE REGULATOR							REG
37	1	RELAY-110VAC-SPST								K1
38	1	RES-1.2K-5%-1/8W	RESISTOR,	1.2K						R39
39	1	RES-1.5M-5%-1/8W	RESISTOR,	1.5M						R46
40	1	RES-1/5K-5%-1/8W	RESISTOR,	1.5K						R40
41	2	RES-100K-5%-1/8W	RESISTOR,	100K						R15,R16

RR501 vH 120V BOM

42	1	RES-10K-5%-1/8W	RESISTOR,	10K					R12
43	1	RES-15K-5%-1/8W	RESISTOR,	15K					R23
44	2	RES-1K-5%-1/8W	RESISTOR,	1K					R1,R41
45	1	RES-1M-5%-1/8W	RESISTOR,	1M					R30
46	1	RES-2.1-5%-1/8W	RESISTOR,	2.1					R19
47	1	RES-2.2K-5%-1/8W	RESISTOR,	2.2K					RB
48	1	RES-22-5%-1/2W	RESISTOR,	22		1/2W			R
49	1	RES-220-5%-1/8W	RESISTOR,	220					R18
50	1	RES-220K-5%-1/2W	RESISTOR,	220K		1/2W			R44
51	1	RES-22K-5%-1/8W	RESISTOR,	22K					R8
52	2	RES-27K-5%-1/8W	RESISTOR,	27K					R17,R29
53	1	RES-330K-5%-1/2W	RESISTOR,	330K		1/2W			R38
54	2	RES-33K-5%-1/8W	RESISTOR,	33K					R9,R11
55	2	RES-390K-5%-1/8W	RESISTOR,	390K					R13,R31
56	5	RES-4.7K-5%-1/8W	RESISTOR,	4.7K					R6,R34,R35,R36,R37
57	1	RES-4.7M-5%-1/8W	RESISTOR,	4.7M					R3
58	2	RES-470-5%-1/8W	RESISTOR,	470					R7,R10
59	5	RES-47K-5%-1/8W	RESISTOR,	47K					R27,R32,R33,R42,R43
60	1	RES-6.8K-5%-1/2W	RESISTOR,	6.8K		1/2W			R14
61	3	RES-6.8K-5%-1/8W	RESISTOR,	6.8K					R2,R4,R5
62	1	RES-680K-5%-1/8W	RESISTOR,	680K					R25
63	1	RR501 PCB1	PCB, RR501, FAB						PCB1
64	1	SCR-MCR 100-B	TRA, SCR	MCR 100-B					SCR1
65	1	SWITCH-MOMENTARY-2PST	SWITCH, KEYTYPE						S2
66	1	SWITCH-SLIDE-2PST	SWITCH, SLIDE						S1
67	2	KSP10	TRAN, KSP10 NPN	KSP10					T1,T2
68	1	C9014	TRAN, C9014, NPN	C9014					T3
69	2	TRA-2N3904	TRAN, 2N3904 NPN	2N3904					T4,T5
70	2	XFMR-120KHZ-ISO	IND, X10 TUNEABLE RF COIL						TC2
71	2	XFMR-120KHZ-PWR	IND, X10 TUNEABLE RF COIL						TC3
72	2	ZENER-1N4747A	ZENER,	ZENER	20V	1W			DZ5
73	2	ZENER-1N4760	ZENER,	ZENER	68V	1W			D4

RR501 vH 230V BOM

RR501 vH 230V BOM										
Item#	Qty	Part#	Description	Value	Voltage	Wattage	Tolerance	Mfg	Mfg PN	Ref. Designators
STUFF LIST:										
1	1	2SD667	TRAN, 2SD667 NPN	2SD667		900mW		UNKNOWN	UNKNOWN	T14
2	1	Ant-Metal Tab	X-10 ANTENNA TAB	ANT()						ANT
3	2	CAP-0.001UF	CAPACITOR, NON-POLARIZED,	0.001UF						C2,C11
4	2	CAP-0.0047UF	CAPACITOR, NON-POLARIZED,	0.0047UF						C9,C12
5	1	CAP-0.01UF-20%-50V	CAPACITOR, NON-POLARIZED,	0.01UF	50V		20%			C
6	1	CAP-0.047UF-20%-50V	CAPACITOR, NON-POLARIZED,	0.047UF	50V		20%			C22
7	1	CAP-0.1UF	CAPACITOR, NON-POLARIZED,	0.1UF						C21
8	1	CAP-0.1UF-400V	CAP, 0.1UF 400WV							C26
9	1	CAP-0.68UF-400V	CAP, 0.68UF 400WV							C25
10	1	CAP-1000PF	CAPACITOR, NON-POLARIZED,	1000PF						C14
11	1	CAP-10PF	CAPACITOR, NON-POLARIZED,	10PF						C1
12	1	CAP-1500PF	CAPACITOR, NON-POLARIZED,	1500PF						C18
13	2	CAP-1UF-50V	CAPACITOR, POLARIZED,	1UF	50V					C10,C13
14	1	CAP-2200PF	CAPACITOR, NON-POLARIZED,	2200PF						C23
15	1	CAP-2PF	CAPACITOR, NON-POLARIZED,	2PF						C7
16	1	CAP-3.3PF	CAPACITOR, NON-POLARIZED,	3.3PF						C8
17	1	CAP-30PF	CAPACITOR, NON-POLARIZED,	30PF						C5
18	2	CAP-30PF-20%-50V	CAPACITOR, NON-POLARIZED,	30PF	50V		20%			C19,C20
19	1	CAP-470UF-25V	CAPACITOR, POLARIZED,	470UF	25V					C24
20	1	CAP-5.6PF	CAPACITOR, NON-POLARIZED,	5.6PF						C4
21	1	CAP-5PF	CAPACITOR, NON-POLARIZED,	5PF						C3
22	1	CAP-68PF	CAPACITOR, NON-POLARIZED,	68PF						C6
23	1	DIODE-1N4003	DIODE,	1N4003						D6
24	9	DIODE-1N4148	DIODE,	1N4148						D1,D2,D3,D7,D8,D9,D10,D11,D12
25	1	FUSE-30MA	FUSE,	30MA						F
26	1	IND-100UH	INDUCTOR,	100UH						L
27	1	IND-3.6MHZ-TUNABLE	IND, X10 TUNEABLE RF COIL							OSC
28	1	IND-310MHZ AIR CORE	IND, X10 TUNEABLE RF AIR COIL							RF2
29	2	IND-310MHZ IRON CORE	IND, X10 TUNEABLE RF AIR COIL							RF1,TC1
30	1	MOV-130V	MOV	130V MOV						VDR2
31	1	MOV-275V	MOV, 275V TRIP							VDR1
32	1	OPAMP-LM393	IC, COMPARATOR, LM393							OPAMP
33	1	OUTLET-110V-3P	CONN,3 PIN,OUTLET							SOCKET1
34	1	PIC-PRGMD-RR501	PRGMD, PIC, RR501							PIC
35	1	PLUG-110V-3P	CONN,3 PIN,OUTLET							PLUG1
36	1	REG-5V-78L05	VREG, 78L05 VOLTAGE REGULATOR							REG
37	1	RELAY-110VAC-SPST								K1
38	1	RES-1.2K-5%-1/8W	RESISTOR,	1.2K						R39
39	1	RES-1.5M-5%-1/8W	RESISTOR,	1.5M						R46
40	1	RES-1/5K-5%-1/8W	RESISTOR,	1.5K						R40
41	2	RES-100K-5%-1/8W	RESISTOR,	100K						R15,R16

RR501 vH 230V BOM

42	1	RES-10K-5%-1/8W	RESISTOR,	10K					R12
43	1	RES-15K-5%-1/8W	RESISTOR,	15K					R23
44	2	RES-1K-5%-1/8W	RESISTOR,	1K					R1,R41
45	1	RES-1M-5%-1/8W	RESISTOR,	1M					R30
46	1	RES-2.1-5%-1/8W	RESISTOR,	2.1					R19
47	1	RES-2.2K-5%-1/8W	RESISTOR,	2.2K					RB
48	1	RES-22-5%-1/2W	RESISTOR,	22		1/2W			R
49	1	RES-220-5%-1/8W	RESISTOR,	220					R18
50	1	RES-220K-5%-1/2W	RESISTOR,	220K		1/2W			R44
51	1	RES-22K-5%-1/8W	RESISTOR,	22K					R8
52	2	RES-27K-5%-1/8W	RESISTOR,	27K					R17,R29
53	1	RES-330K-5%-1/2W	RESISTOR,	330K		1/2W			R38
54	2	RES-33K-5%-1/8W	RESISTOR,	33K					R9,R11
55	2	RES-390K-5%-1/8W	RESISTOR,	390K					R13,R31
56	5	RES-4.7K-5%-1/8W	RESISTOR,	4.7K					R6,R34,R35,R36,R37
57	1	RES-4.7M-5%-1/8W	RESISTOR,	4.7M					R3
58	2	RES-470-5%-1/8W	RESISTOR,	470					R7,R10
59	5	RES-47K-5%-1/8W	RESISTOR,	47K					R27,R32,R33,R42,R43
60	1	RES-6.8K-5%-1/2W	RESISTOR,	6.8K		1/2W			R14
61	3	RES-6.8K-5%-1/8W	RESISTOR,	6.8K					R2,R4,R5
62	1	RES-680K-5%-1/8W	RESISTOR,	680K					R25
63	1	RR501 PCB1	PCB, RR501, FAB						PCB1
64	1	SCR-MCR 100-B	TRA, SCR	MCR 100-B					SCR1
65	1	SWITCH-MOMENTARY-2PST	SWITCH, KEYTYPE						S2
66	1	SWITCH-SLIDE-2PST	SWITCH, SLIDE						S1
67	2	KSP10	TRAN, KSP10 NPN	KSP10					T1,T2
68	1	C9014	TRAN, C9014, NPN	C9014					T3
69	2	TRA-2N3904	TRAN, 2N3904 NPN	2N3904					T4,T5
70	1	XFMR-120KHZ-ISO	IND, X10 TUNEABLE RF COIL						TC2
71	1	XFMR-120KHZ-PWR	IND, X10 TUNEABLE RF COIL						TC3
72	1	ZENER-1N4747A	ZENER,	ZENER	20V	1W			DZ5
73	1	ZENER-1N4760	ZENER,	ZENER	68V	1W			D4