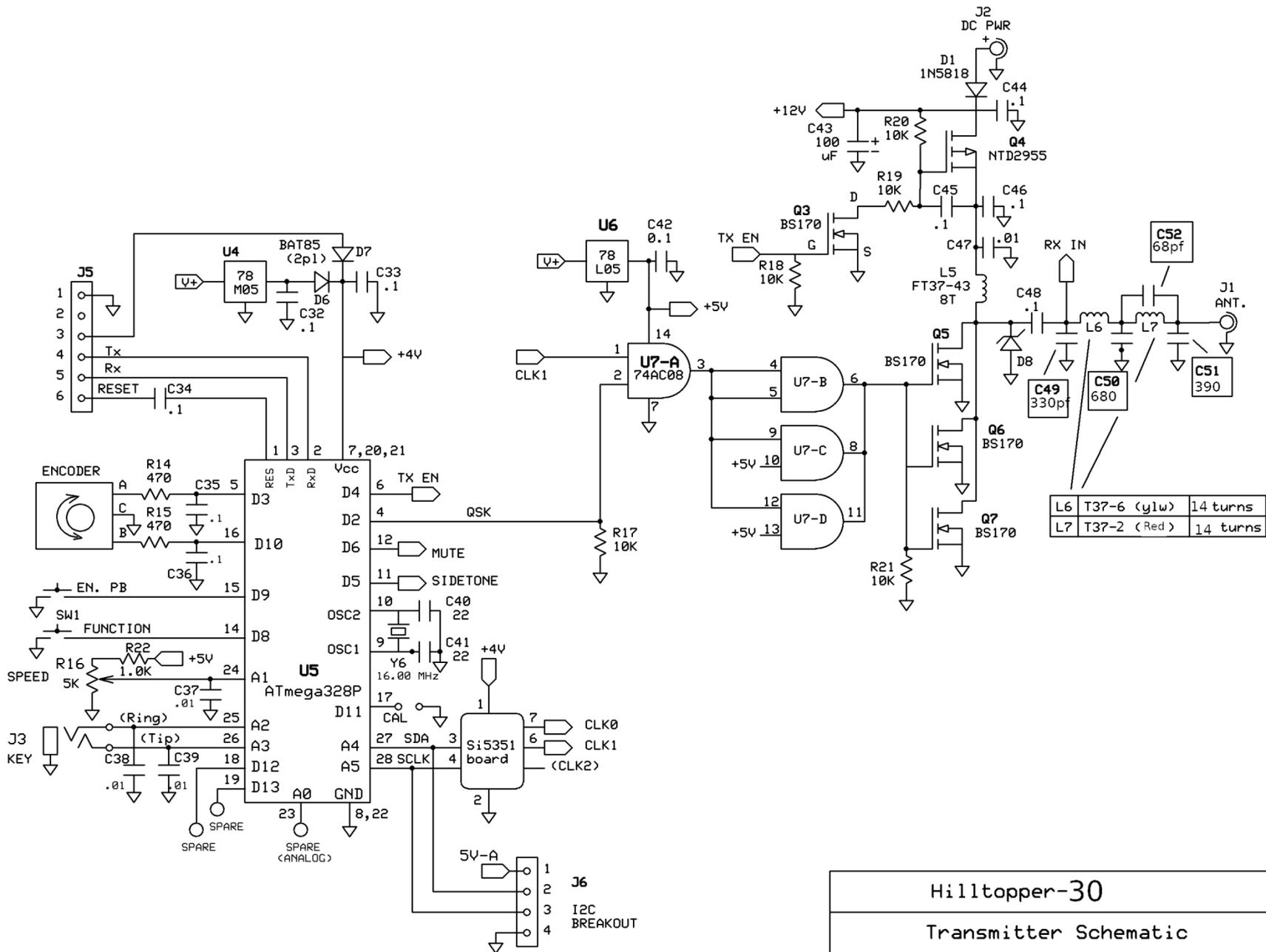


# Hilltopper-30

## Receiver Schematic



**Hilltopper-30**

**Transmitter Schematic**

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	10/21/2019	



## Parts list: Hilltopper 20, 30, and 40 meters

Qty.	Reference designator	Description	Notes/ markings
2	C6, C15	10 pF C0G cap	"100"
2	C40, C41	22 pF C0G cap	"220"
4	C1,C8,C12,C16	47 pF C0G cap	"470"
1	C3 -- 20M	47 pF C0G cap	Band Pack "470"
1	C3 -- 30M	68 pf C0G cap	Band Pack "68J" or "680"
1	C3 -- 40M	100 pF C0G cap	Band Pack "101"
1	C53	12-60 pF trim cap	brown
1	C17	68 pF C0G cap	"680"
1	C52 -- 20M	68 pF C0G cap	Band Pack "680"
1	C52 -- 30M	68 pf C0G cap	Band Pack "68J" or "680"
1	C52 -- 40M	100 pF C0G cap	Band Pack "101"
3	C7,C9,C11	100 pF C0G cap	"101"
1	C10	150 pF C0G cap	"151"
1	C2 -- 20M	150 pF C0G cap	Band Pack "151"
1	C2 -- 30M	220 pf C0G cap	Band Pack "221"
1	C2 -- 40M	330 pF C0G cap	Band Pack "331"
1	C49 -- 20M	220 pF C0G cap	Band Pack "221"
1	C49 -- 30M	330 pf C0G cap	Band Pack "331"
1	C49 -- 40M	470 pF C0G cap	Band Pack "471"
1	C51 -- 20M	270 pF C0G cap	Band Pack "271"
1	C51 -- 30M	390 pf C0G cap	Band Pack "391"
1	C51 -- 40M	470 pF C0G cap	Band Pack "471"
2	C21,C24	470 pF C0G cap	"471"
1	C50 -- 20M	470 pF C0G cap	Band Pack "471"
1	C50 -- 30M	680 pf C0G cap	Band Pack "681"
1	C50 -- 40M	820 pF C0G cap	Band Pack "821"
1	C22	220 pf C0G cap	"221"
1	C26	820 pF C0G cap	"821"
1	C27	.0022 (2200 pF) C0G cap	"222"
10	C4,C5,C13,C14,C31,C37,C38,C39 C47, C54	.01 uF cap (100n)	"103"
1	C18	.033 uF cap	"333"
15	C19,C20,C23,C25,C28,C32,C33, C34,C35,C36,C42,C44,C45,C46 C48	0.1 uF cap (100n)	"104"
3	C29,C30, C43	100 uF16v electrolytic cap	

All resistors are  $\pm 5\%$  tolerance  $\square$  watt.

2	R13, R23	4.7 ohm resistor 5% 1/4w	Yellow-violet-gold-gold
2	R14, R15	470 ohm resistor 5% 1/4w	Yellow-violet-brown-gold
1	R22	1.0K ohm resistor 5% 1/4w	Brown-black-red-gold
2	R1, R16	5K potentiometer, PCB mount	
8	R2, R3, R11, R17-R21	10K ohm resistor 5% 1/4w	Brown-black-orange-gold
1	R8, R9	22K ohm resistor 5% 1/4w	Red-red-orange-gold
1	R8	47K ohm resistor 5% 1/4w	Yellow-brown-orange
1	R4	150K ohm resistor 5% 1/4w	Brown-green-yellow-gold
1	R5	330K ohm resistor 5% 1/4w	Orange-orange-yellow gold
1	R10	510K ohm resistor 5% 1/4w	Green-brown-yellow-gold
3	R6, R7, R12	1.0M ohm resistor 5% 1/4w	Brown-black-green-gold
1	CAL	2-pin male header, .100" spacing	
1	CAL	2-pin female jumper	
1	J5	6 pin ICSP male header strip .1" spacing	Not supplied in kit
1	J6	4 pin I2C male header strip .1" spacing	Not Supplied in kit

1	D1	1N5818 diode	Black case
4	D2, D3, D4, D5	1N4148 diode	Glass case, small
2	D6, D7	BAT85 diode	
1	D8	1N4756 diode	Glass case, larger

1	J1	BNC jack, right-angle mount	
1	J2	DC power jack coaxial 2.1mm x 5.5mm	
2	J3, J4	Key and audio jacks, 3.5mm 3-cond. stereo	
--	J5	6-pin .100" spacing male header	not supplied in kit
--	J6	4-pin .100" spacing male header	not supplied in kit

1	L1 – 20M	3.3 $\mu$ H RF choke	Band Pack Orange-orange-gold-gold
1	L1 – 30M	5.6uh RF Choke	Band Pack green-blue-

			gold-gold
1	L1 – 40M	10 µH RF choke	Band Pack Brown-black-black-gold
1	L2 – 20M	3.3 µH RF choke	Band Pack Orange-orange-gold-gold
1	L2 – 30M	4.7uh RF Choke	Band Pack yellow-violete-gold-gold
1	L2 – 40M	6.8 µH RF choke	Blue gray gold gold
2	L3, L4	18 µH RF choke	Brown-grey-gold-gold
1	L5	FT37-43 toroid	See group 7 nstructions 8 turns #21AWG
1	L6 20M	T37-6 toroid (yellow)	12 turns #24 See group 7 instructions
1	L7 20M	T37-6 toroid (yellow)	14 turns #24 See Group 7 instructions
1	L6 30M	T37-6 toroid (yellow)	See Group 7 istructions 14 turns #21 or 24AWG
1	L7 30M	T37-2 Toroid (red)	See Group 7 instrucitons
1	L6 40M	T37-2 toroid (red)	See group 7 instructions—16 turns #24
1	L7 40M	T37-2 toroid (red)	See group7 Instructions 19 turns #24

5	Q1, Q3, Q5, Q6, Q7	BS170 MOSFET	
1	Q2	J113 JFET	
1	Q4	NTD2955	Small heat sink tab
2	U1, U2	SA612AD 8-pin SOIC-8 IC	(pre-installed)
1	U3	NJM4556AD	8-pin DIP IC
1	U4	LM78M05	Small heat sink tab
1	U5	ATmega328P	28-pin DIP IC
1	U6	LM78L05	
1	U7	74AC08	14-pin DIP IC

#### Miscellaneous:

1	--	Si5351 board	Supplied with 8-pin header strip. See group 3.
1	SW1	pushbutton switch	
2	--	1/16" #2 plastic spacer	Used with pushbutton sw
1	SW2	rotary encoder w/ switch	

5	X1-X5	5.185 MHz HC-49/US crystal	Matched set
1	X6	16 MHz HC-49/US crystal	
1	--	#24 magnet wire <b>20M</b> – Band Pack	18" (45 cm) length
1	--	#21 magnet wire <b>20M</b> – Band Pack	24" (60 cm) length
2		#21 or #24 enamel magnet wire <b>30M</b> Band	10" length
1		#24 magnet wire – <b>40M</b> Band Pack	30" (75 cm) length
1		#22 magnet wire – <b>40M</b> – Band Pack	8" (20 cm) length
3	--	Knobs	
4	--	1/4" #6 spacer unthreaded	
4	--	5/8"#6 spacer, threaded	
4	--	#6-32 x 1/4" or 3/8" machine screw, pan head	
4	--	#6-32 x 5/8" machine screw, pan head	
1	--	8-pin DIP socket	
1	--	14-pin DIP socket	
1	--	28-pin DIP socket	