

# NRAO FRONT-END BOX STATUS

OCTOBER 1987

TECHNICAL DATA SHEET NO. 12

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RECEIVER NAME	APPLICABLE TELESCOPE	FREQUENCY (GHz)	AMPLIFIER TYPE	SYSTEM TEMPERATURE (KELVIN)	3 dB BANDWIDTH (MHz)	FEED TYPE	POLARIZATION	CALIBRATION VALUE	SWITCHING SYSTEM	REMARKS	PERSON(S) IN CHARGE		
25-250 MHz Rx	300 FT TRAVELING FEED	25-50 MHz	HIGH DYNAMIC RANGE TRANSISTOR DUAL CHANNEL	300 + Tsky	25	FAT DIPOLE	SINGLE LINEAR E-W	ADJUSTABLE 2 TO 2500K	DICKE SWITCH: REFERENCE TEMPERATURE ADJUSTABLE FROM 100 TO 100,000K OR FREQUENCY SWITCH	CAN ONLY BE INSTALLED ON 300' TRAVELING FEED.	COE (OLIVER)		
	300 FT TRAVELING FEED OR 140 FT	50-88 MHz			38	OPEN SLEEVE CROSSED DIPOLE	ORTHOGONAL LINEAR OR REMOVABLE QUAD HYBRID AT FEED FOR RCP AND LCP			FEED CHANGES FROM 50-88 MHz TO 110-240 MHz OR TO 450-500 MHz REQUIRE TWO HOURS ON THE 140' AND THREE HOURS ON THE 300'.			
		110-240 MHz			130	BROADBAND CROSSED DIPOLE	RCP AND LCP			450-500 MHz AMP IN 25-250 MHz Rx			
300-1000 MHz Rx	300 FT TRAVELING FEED OR 300/140 FT STERLING MOUNT	280-350 MHz	COOLED UP-CONVERTER/GASFET AMP DUAL CHANNEL	45-85	70	280-350 350-410 450-500 CAVITY BACKED CROSSED DIPOLES	DUAL ORTHOGONAL LINEAR IF POLARIMETER OR RF HYBRID FOR RCP AND LCP	5K	FREQUENCY SWITCHING	WHEN INSTALLED ON THE 300' TRAVELING FEED, TWO FEEDS CAN BE USED: THE 750-1000 MHz ON THE WEST END OF THE BOX AND ONE OF THE OTHERS ON THE EAST END. SELECTION OF ONE OF THE TWO FEEDS SHOULD TAKE LESS THAN FIVE MINUTES. TO CHANGE A FEED REQUIRES THREE HOURS.	COE (SHANK)		
		350-420 MHz			60								
		450-500 MHz			50	500-750 SCALAR WITH CROSSED DIPOLES							
		500-750 MHz			250	750-1000 SCALAR WITH CROSSED DIPOLES							
6/25 CM Rx	300/140 FT	1.00-1.45 (25 CM)	COOLED FET DUAL CHANNEL	35-40	450	SINGLE BEAM SCALAR	ORTHOGONAL LINEAR	4K TO 6K	FREQUENCY SWITCHING NOISE ADDING	FEED CHANGE REQUIRED TO SWITCH BANDS. THIS TAKES TWO HOURS ON THE 140' AND THREE HOURS ON THE 300'.	COE (SHANK)		
		4.47-5.05 (6 CM)			580	SINGLE BEAM DUAL BEAM OFFSET 3 HPBW	ORTH CIRCULAR OR ORTH LINEAR IDENTICAL OR IDENTICAL LINEAR					1.4K OR 12.8K	OTHER POLARIZATION BEAM SWITCHING
					1.30-1.50	200 MAX. 77 MIN.	FOUR HORNS					LINEAR	7K (CAL) 440K NOISE ADD
21 CM, 4-FEED Rx	300/140 FT	1.30-1.50	UNCOOLED GASFET 4 CHANNEL	90-100	200 MAX. 77 MIN.	FOUR HORNS	LINEAR	7K (CAL) 440K NOISE ADD	NOISE ADDING OR FREQUENCY SWITCHING	LINE OR CONTINUUM FROM CONTROL ROOM. RF BANDWIDTH VARIABLE FROM CONTROL ROOM.	BEHRENS (VRABLE)		

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1.3-1.8 GHz Rx	300/140 FT	1.30-1.80	DUAL CHANNEL COOLED FET	19-25	UP TO 120 FEED LIMITED	THREE 2HE SINGLE BEAM 1.30-1.36 1.36-1.43 1.60-1.72	ORTHOGONAL LINEAR OR CIRCULAR	2K AND 200K	FREQUENCY OR POLARIZATION SWITCHING OR NOISE ADDING	EITHER CIRCULAR OR LINEAR POLARIZATIONS ARE SELECTABLE. CIRCULAR POLARIZATION REQUIRES ADJUSTMENTS FROM THE CONTROL ROOM. BAND CHANGE REQUIRES 2 TO 3 HOURS. OBSERVATIONS OUTSIDE STATED FEED BANDS POSSIBLE AT REDUCED EFFICIENCIES.	NORROD (CHESTNUT)																		
11 CM, 3-FEED Rx	300/140 FT	2.64-2.75	UNCOOLED GASFET 4 CHANNEL	130	110 DSB (IF 5-55)	3 HORNS	CIRCULAR OR LINEAR	4K	300 K LOAD OR POLARIZATION OR BEAM	CONTINUUM RECEIVER. ON-AXIS HORN HAS RECEIVERS ON BOTH POLARIZATIONS. FOUR HOURS TO CHANGE POLARIZATION. FIXED LO AT 2.695 GHz.	NORROD (CHESTNUT)																		
2-5 GHz Rx	300/140 FT	2.9-3.4	DUAL CHANNEL COOLED FET	25-35	UP TO 250 FEED LIMITED	TWO 2HE SINGLE BEAM 2.90-3.15 3.15-3.40	ORTHOGONAL LINEAR OR CIRCULAR	LOW 1.8 HIGH 150	FREQUENCY SWITCHING NOISE ADDING	BAND CHANGE REQUIRES FEED CHANGE. THIS TAKES 2-3 HOURS. CIRCULAR POLARIZATION REQUIRES PHASE EQUALIZATION ADJUSTMENTS FROM THE CONTROL ROOM. FREQUENCY SWITCHING REQUIRES 50 MS BLANKING TIME.	BEHRENS (CHESTNUT)																		
						ONE 2HE SINGLE BEAM 4.6-4.8																							
9 CM Rx	300/140 FT	3.12-3.37	COOLED PARAMPS DUAL CHANNEL	65 K LOAD SWITCHED 75 K BEAM SWITCHED	250 FIXED TUNED	DUAL BEAMS OFFSET BY 3 HPBW SINGLY POLARIZED	IDENTICAL LINEAR OR IDENTICAL CIRCULAR OR ORTHOGONAL CIRCULAR	4K AND 14K	COOLED DICKE SWITCHES (LATCHING FERRITE) FOR LOAD (20K) SWITCHING OR BEAM SWITCHING WITH NOISE INJECTION FOR BALANCING; 10 Hz MAXIMUM RATE.	CONTINUUM USE.	BEHRENS																		
6 CM, 7-FEED Rx	300/140 FT	4.6-5.1	COOLED FET FOURTEEN CHANNEL	60-70	500	<sup>7</sup> CORRUGATED HORNS 3 HPBW APART	DUAL CIRCULAR	5K	NONE	CONTINUUM USE ONLY. TOTAL POWER RF DETECTION.	BEHRENS																		
CASSEGRAIN A AND B RECEIVERS	140 FT	4.7-7.2	UP CONVERTER MASER	30-50	60-300	CASSEGRAIN	FIXED LINEAR CIRCULAR VLB	3-7K	FREQUENCY OR NUTATOR BEAM	FREQUENCY T. sys z 4.7-4.9 40-50 4.8-6.5 30-40 6.5-7.2 40-50	BROCKWAY (DUNBRACK)																		
												12-16.2	UP CONVERTER MASER	50-80	60-300	CASSEGRAIN	FIXED LINEAR CIRCULAR VLB	3-7K	FREQUENCY OR NUTATOR BEAM	7.6-8.5 50-60 8.5-11.2 35-45									
																					18.2-25.2	MASER	40-70	60-300	CASSEGRAIN	FIXED LINEAR CIRCULAR VLB	3-7K	FREQUENCY OR NUTATOR BEAM	12.0-16.2 50-80
SUBREFLECTOR CORRECTS FOR TELESCOPE ASTIGMATISM AND LATERAL OFFSET. BEAM SPLITTER AVAILABLE ABOVE 8 GHz. NUTATING TRANSITION TIME 50 MILLISECONDS. 5 Hz MAXIMUM FREQUENCY. BEAM SHIFT DIRECTION FIXED. A. RECEIVER: 22.5° SOUTH OF EAST. B. RECEIVER: 22.5° NORTH OF WEST.																													
FOUR HOURS FOR BAND CHANGE. NOISE ADDING AVAILABLE.																													

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12 M	70-115	COOLED MIXER	260-400 SSB	1.0	600 MHz	HORN-LENS	DUAL LINEAR	10 K	NUTATING SUBREFLECTOR		PAYNE
12 M	90-115	SIS	APPROX. 100	TO BE MEASURED	600 MHz	HORN-LENS	DUAL LINEAR	10 K	NUTATING SUBREFLECTOR		LAMB
12 M	330-360	COOLED MIXER	1400-2000 SSB	12	600 MHz	HORN-LENS	SINGLE LINEAR	-	NUTATING SUBREFLECTOR		PAYNE
12 M	200-270	COOLED MIXER	500-1000 SSB	6 AT 230 GHz	600 MHz	HORN-LENS	DUAL LINEAR	-	NUTATING SUBREFLECTOR	RANGE WILL BE EXTENDED TO 270-300 LATER IN 1987.	PAYNE

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VLA	308-343	UNCOOLED TRANSISTER	150	3 MHz (LIMITED BY INTERFERENCE)	PRIME FOCUS	DUAL ORTHOGONAL CIRCULAR	10	NOISE INJECTION, 9.6 Hz, 50 PERCENT CYCLE.	ON 21 ANTENNAS AS OF OCTOBER 1987.	LJLIE
VLA	1340-1730	COOLED FET	60	55	CASSEGRAIN	DUAL ORTHOGONAL CIRCULAR	4	NOISE INJECTION, 9.6 Hz, 50 PERCENT CYCLE.		LJLIE
VLA	4500-5000	COOLED PARAMP OR COOLED PARAMP AND FET	60	55	CASSEGRAIN	DUAL ORTHOGONAL CIRCULAR	4	NOISE INJECTION, 9.6 Hz, 50 PERCENT CYCLE.		LJLIE
VLA	8000-8800	COOLED HEMT	45	55	CASSEGRAIN	DUAL ORTHOGONAL CIRCULAR	4	NOISE INJECTION, 9.6 Hz, 50 PERCENT CYCLE.	ON 14 ANTENNAS AS OF OCTOBER 1987.	LJLIE
VLA	14400-15400	COOLED FET	110	55	CASSEGRAIN	DUAL ORTHOGONAL CIRCULAR	7	NOISE INJECTION, 9.6 Hz, 50 PERCENT CYCLE.		LJLIE
VLA	22000-24000	COOLED MIXER	350	55	CASSEGRAIN	DUAL ORTHOGONAL CIRCULAR	20	NOISE INJECTION, 9.6 Hz, 50 PERCENT CYCLE.		LJLIE
VLA	22000-24000	COOLED HEMT	130	55	CASSEGRAIN	DUAL ORTHOGONAL CIRCULAR	10	NOISE INJECTION, 9.6 Hz, 50 PERCENT CYCLE.	ON 9 ANTENNAS AS OF OCTOBER 1987.	LJLIE