

Names, Type Numbers, and Serial Numbers of VLBA Racks and Modules.
(Revision of VLBA Memoranda Nos. 66 and 99)

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This memorandum provides a list of recommended numbers and names for racks and modules of the VLBA electronics system. Units of the computer and correlator system are not included. As used here, the term "module" is not limited to equipment built in NRAO VLA-type modules, but includes any type of unit that may be interchanged for maintenance, such as front ends. The names are those that will appear on the modules and are therefore chosen to be brief as well as descriptive. This update contains names and numbers of units in the Formatter and the Recorder Rack supplied by G. Peck.

The letters in the type numbers which designate subsystems are based on the scheme outlined in VLA Technical Report No. 31, p. 9-3. These designations are as follows:

- D = Digital Signal Processing (includes Formatter)
- F = Front End
- L = Local Oscillator
- M = Monitor and Control (General)
- S = Subreflector Control
- T = Signal Transmission, IF, and Baseband
- P = Power Supply
- R = Recorder

The list of modules is given in Table 1. Type numbers begin with 101 to distinguish VLBA modules from VLA modules. Type numbers of modules designed by the Haystack group begin with 121. Under package type, the number preceding the letter W specifies the module width in units of 1.375 inches. No package type is given if the module is a non-standard special design.

Racks in the VLBA system are given reference letters and descriptive names as follows:

- Rack A Front End Interface Rack, (vertex room)
- Rack B LO/IF Rack, (vertex room)
- Rack C Master LO Rack, (electronics room)
- Rack D Data Acquisition Rack (DAR), (elect. rm.)¹
- [Rack E DAR modified for 14 Baseband Converters]¹
- Rack F FRM-Control and ACU Rack (in Pedestal room)

¹ Not used in the VLBA but installed at some geodetic VLBI antennas for Mark 3 compatibility.

Rack R Recorder (Honeywell Tape Drive)

To refer to positions of bins and modules, bins within each rack are designated A, B, C, etc. starting from the top of the rack, and slots within a bin are designated 1 through 12 from left to right as viewed from the front of the bin.

TABLE 1. VLBA MODULES

<u>Type Number</u>	<u>Module Name</u>	<u>Package Type</u>	<u>Top Assembly Drawing No.</u>
D121	Sampler	2W	
D131	Timing and Control	VME Board	C54201A001-003
D132	A/D Buffer	VME Board	C54202A001-004
D133	Header Control	VME Board	C54203A001-003
D134	Transport Driver	VME Board	C54204A001-003
D135	Quality Analysis	VME Board	C54205A001
D136	Data Buffer	VME Board	C54206A001
D137	VME Computer	VME Board	
F102	330/610 MHz Front End		C53201A002
F103	1.5 GHz Front End		D53203A001
F104	2.3 GHz Front End		D53204A001
F105	4.8 GHz Front End		D53205A001
F106	8.4 GHz Front End		D53200A005-1
F107	10.7 GHz Front End		D53200A005-2
F108	15 GHz Front End		D53200A005-3
F109	23 GHz Front End		D53200A005-4
F110	43 GHz Front End		D53213A001
F111**	86 GHz Front End		
F112*	6.1 GHz Front End		
F117	Front-End Interface	1W	D53510A001
F118	330/610 MHz Adapter	2W	D53510A002
L102	LO Transmitter	2W	D53304A003
L103	Round-Trip Monitor	2W	D53304A010
L104	2-16 GHz Synthesizer	3W	D53300A001
L105	LO Receiver	2W	D53304A009
L106*	9.4 GHz Oscillator	2W	
L107	Switch Driver	2W	D53303A001
L108	Station Timer	1W	D53311A001
L109	Uninterruptible 1-PPS	19-inch	D53311A003
L121	5 MHz Distributor	2W	
L122	32 MHz Synthesizer	2W	
L123	Output Rate Synthesizer	2W	
M101	Inc/Temp Interface	3W	D55001A002
M102	Rack B Interface	2W	D53510A003
M103	Utility Interface	3W	D55001A010
M104	Maser Interface	2W	D55001A006
M105**	Rack D Interface	2W	
P101	15V Power Supply	4W	D53305A001
P102	15V Power Supply	3W	D53305A002
P103	5V Power Supply	3W	D53305A003
P104	28V Power Supply	3W	D53305A003
P105	5V Power Supply	4W	D53305A004
P106***	5V Power Supply	4W	

P111	Model 22 Power Supply		D53200A007-1
P112	Model 350 Power Supply		D53200A007-2
S101	F-R Control	2W	D55007A002
S102	Apex Interface	2W	D55007A003
S103	F-R Switching	4W	D55007A004
S104	F-R Interface	1W	D55007A005
S105	F-R Power Supply	4W	D55007A006
T101	330 MHz Converter	2W	D53500A015
T102	610 MHz Filter	3W	D53500A001
T103	1.5 GHz Converter	2W	D53500A002
T104	2.3 GHz Converter	2W	D53500A016
T105	4.8 GHz Converter	2W	D53500A003
T106	8.4/23 GHz Converter	2W	D53500A010
T107	10.7 GHz Converter	2W	D53500A004
T108	15 GHz Converter	2W	D53500A005
T109*	23 GHz Converter	2W	
T110**	43 GHz Converter	2W	
T112*	6.1 GHz Converter	2W	
T121	IF Distributor	2W	
T122	Baseband Converter	2W	
R121	VME 117 Computer	VME Board	
R122	Analog I/O	VME Board	
R123	VME Transport	VME Board	
R124	VME Write	VME Board	
R125	VME Monitor	VME Board	
R126	VME Clock Recovery	VME Board	
R131	Read Interface	NIM 2W	
R132	Parallel Reproduce		
R133	Write Driver	NIM 2W	
R134	Analog Conditioner	NIM 3W	
R135	Inchworm Controller	NIM 3W	
R136	Head Assembly		
R137	Vacuum Motor		
R141	Capstan Servo		
R142	Dual Reel Servo Amp.		
R143	Reel Servo		
R144	Capstan Servo		
R145	Fan		
R151	Analog Power Supply		
R152	Digital Power Supply		
R153	Honeywell Power Supply		
R154	System Power Distribution		
R155	VME Power Distribution		

* Will not be implemented.

** Not yet designed.

*** Used only with 14-BBC D-Rack, i.e. not used in VLBA.

Serial Numbers.

All units of types listed in Table 1 are assigned serial numbers when made. Serial numbers of units constructed within NRAO or Haystack Observatory begin at 1 for each type of unit and are incremented by 1 for each new unit. They are intended to distinguish between different units of the same type, but not between different types of units. Serial numbers should not be extended to include information on the unit type. An exception to the above has been made in the case of racks. Serial numbers for VLBA racks begin at 101 to distinguish them from VLA racks, which in several cases have the same type designation letters (see VLBA Memo No 79).

A revision letter preceding the numeric part of the serial number should be used to indicate any major modification to the original design. Major modifications are those which make a module incompatible as a direct replacement for any other units of the same type. The practice that we have been following with VLBA modules is to have no revision letter in the serial number for the original design. Thus, for example, if major modifications to a certain type of module were introduced at the third and fifth units, the serial numbers would be 1, 2, A3, A4, B5, etc. It has been pointed out that the practice with the VLA was to use the letter A, rather than no letter, for the original design (see Specification No. A13010N1A in VLA Tech. Rep. 31). This inconsistency seems to me to be only of minor importance, and does not necessitate any change in the current VLBA practice. When retrofits are made the revision letters of the serial numbers are revised accordingly. When all units of a given type have been brought up to date with the latest modification, the corresponding revision letter is retained in the serial number even though there is no longer any incompatibility between units.

Interferometrics Inc. has agreed to start the serial numbers of VLBA type units that they build at 500 to avoid any overlap of serial numbers with NRAO, and as an aid in distinguishing their units in the future. Similar arrangements should be made with any other manufacturers of these units.