

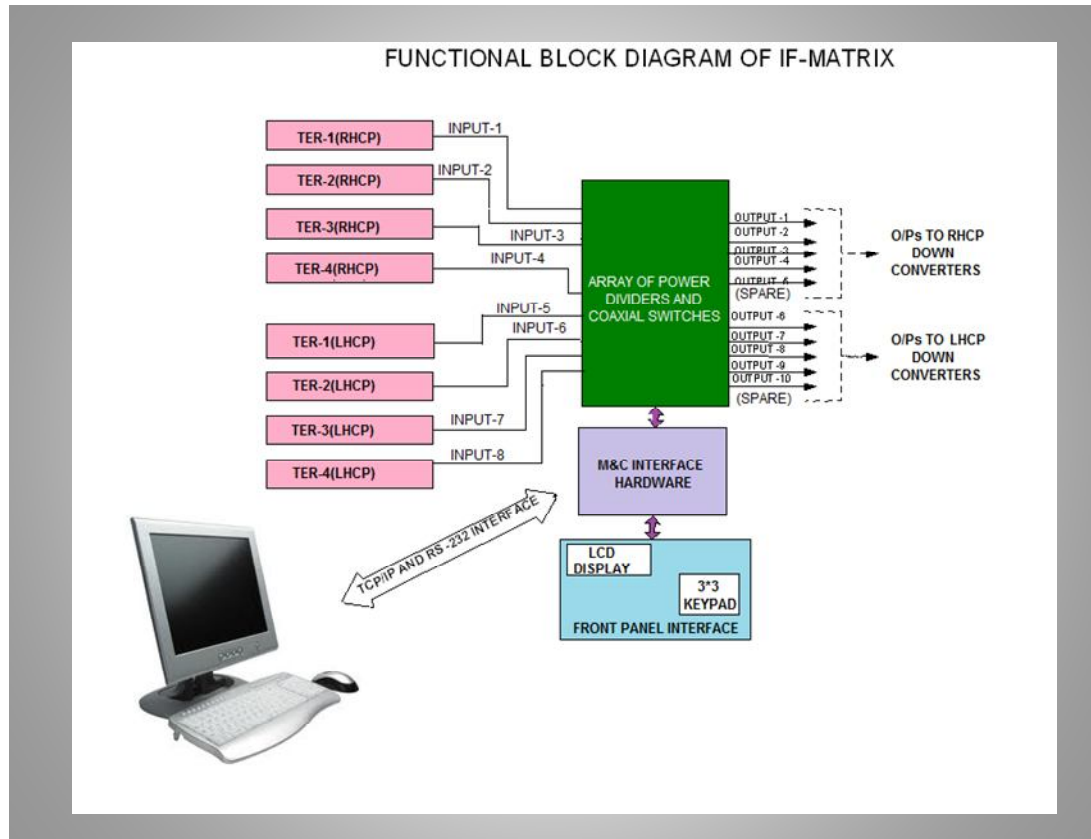
## **Programmable IF Matrix**

The main objective of the Programmable IF matrix is to facilitate total automation of the data reception chain including the RF signal routing path. The main function of the IF Switching Matrix is to facilitate the connectivity between any Antenna Terminal IF to any Demodulator.

Programmable IF matrix is designed for automatic operation by eliminating the manual intervention in the routing of various signals in the data reception chain. It eliminates the problems associated with manual patch panel like loose contact problems, mechanical wear and tear of the patch chords due to frequent operations, human errors etc., which in turn improves the reliability of the system while increasing the flexibility and reducing the complexity.

The in-house developed programmable IF matrix is an 8 x 10 switching matrix. It supports 4 input ports in the RHCP chain and another set of 4 input ports in the LHCP chain. The 4 RHCP Inputs can be routed as desired to a set of 4 demodulators and the inputs to another set of 4 demodulators can be routed as desired either from RHCP IF or LHCP IF. This Programmable IF matrix Unit also includes a Stand by port in both RHCP and LHCP signal path that acts as hot standby to any one of the 4 Terminal IFs. Programmable IF matrix also supports a monitoring port for all the input signals, this facilitates measurement of the input signal level on a Spectrum Analyzer. The configuration of this unit is done using Front Panel Key Pad in local mode or with TCP/IP or RS-232 in remote mode. The mode selection is done with the help of Local/Remote switch provided on the Keypad on the front panel. In remote mode the Keypad option is also available to the user apart from the TCP/IP or RS-232 interface.

The functional block diagram of IF Switching Matrix with all the support interfaces is as shown below.



## Salient Features

- Facilitates Multi-port Matrix operation.
- Port-to-port isolation in DC- 4 GHz band is more than 100dB.
- The Path length of all the signal paths has maintained constant within the Programmable IF matrix. Hence, this mode of configuration has lesser Insertion loss and better VSWR.
- Loads default configuration after Power ON.
- User can modify the inputs any number of times before configuring the signal path.
- Remote configuration through TCP/IP or RS-232

## Specifications

### ➤ **Electrical**

- Frequency Range : DC - 4 GHz
- Matrix Size : 8 (Inputs) X 10 (Outputs)
- Matrix Type : Non-Blocking
- Insertion Loss : 20 dB (aprox.)
- Port to Port Isolation : > 90 dB
- VSWR : 1.2 : 1
- Key Pad : 3 x 3 Matrix type
- LCD screen : 240 x 128 Graphics LCD
- Remote interface : Ethernet and RS-232

### ➤ **Environmental**

- Operating Temperature : +5<sup>0</sup> C to +40<sup>0</sup> C
- Storage Temperature : -10<sup>0</sup> C to +60<sup>0</sup> C

### ➤ **Power supply (external)**

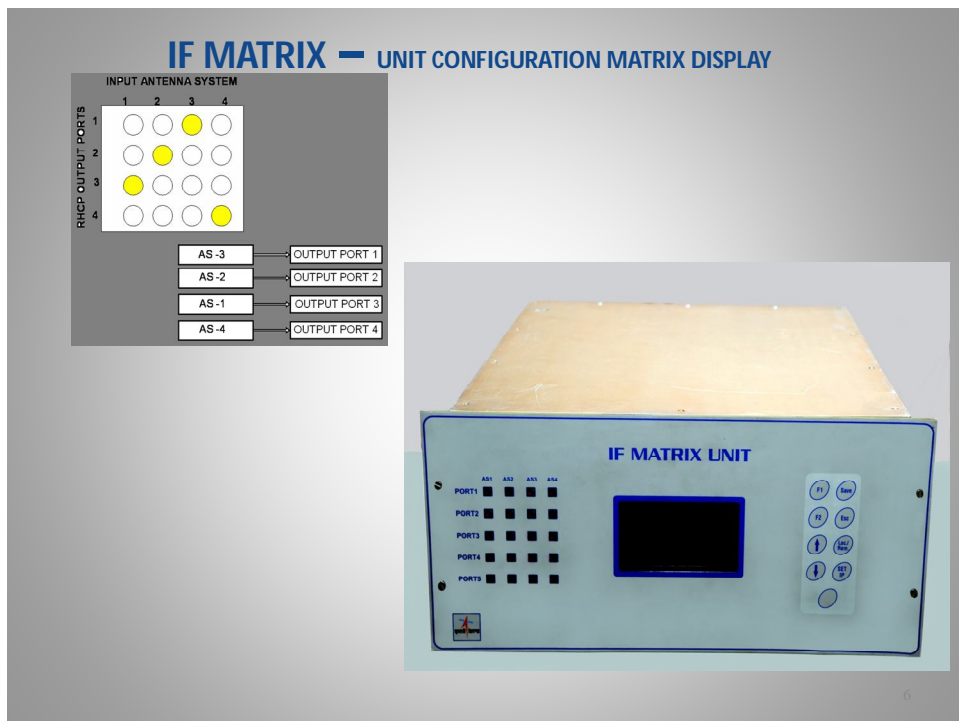
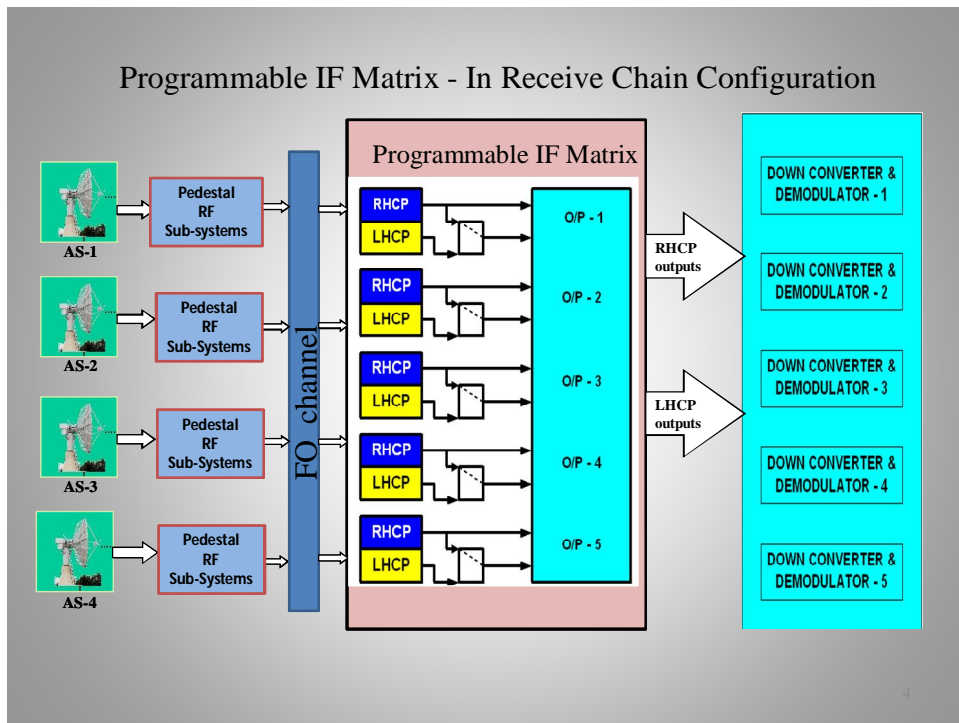
- Input Power Supply : 230V +/- 10% AC @ 50Hz +/- 3Hz
- Operating voltages : +5V ,+15V and +24V

## Applications

- Routing various RF signals in a multi-mission ground station.

## Current installation

National Remote Sensing Centre, Earth Station, Shadnagar.



## **Technology Transfer from NRSC/ISRO**

NRSC/ISRO is willing to transfer the knowhow of this technique to academics/industries that deal with natural resource assessment from satellite data. Interested individuals/party (s) may write to the address given below stating the end use of the technology or diversification of the existing technology, if any.

*Director  
National Remote Sensing Centre  
Indian Space Research Organisation  
Dept. of Space, Govt. of India  
Hyderabad - 500 037 (AP)*