Specialists in Defence and Aerospace Electronic Systems
State of the art design & manufacturing facility Chennai, India
Company Overview

- Technology based Product Company.
- Products for Defence, Aerospace applications in Air, Land, Surface, Underwater and Space.
- Recognized as a leader of High Technology and Reliable Electronic Systems with broad spectrum capabilities.
- Expertise in the Product Life Cycle from Conceptualization to Life cycle support with established Processes and Quality Assurance Checklists.
- More than 1000+ building blocks and 60+ System/sub-system products
- Team of 700 Young talent backed with experienced team
- State of the art infrastructure to cater present and future expansion with Industrial licenses for Defence products.
- Certified for National and International Standards:
Over 35 years of experience in Design & Development of Defence and Aerospace Electronics

- Avionics
- Radars
- Electronics Warfare
- Missile Electronics
- Laser & Optics
- Communication
- Seekers
- Satellite / Launch Vehicles
- Automatic Testing
- COTS / MOTS
Radars

- Phased Array Tracking Radars
- Surveillance Radars
- Wind Profile Radar
- Doppler Weather Radar
Radars

Precision Approach Radar (PAR) – X band Phased Array

Designed in India by Data Patterns

Contract Awarded by MoD in 2019 for 9 Radars is currently under execution
Long Range Surveillance Radar

Phased Array Antenna for LRDE-DRDO's Ashwini LLT Radar
Radars

X Band Coastal Surveillance Radar

Wind Profiler Radar for CUSAT
Doppler Weather Radar - Upgrade

- Dual Polarimetric DWR
- X Band (9.3 to 9.4 GHz) SSPA
- RF / IF receivers
- Digital Receivers
- Modern Signal & Data processing
- Configurable S/w for 24/7 local and remote operation
- 3D & 2D Visualization of weather products with Geo Map overlays
- Base data Storage
- Op. Temp : -20 to 50 Deg C
C-Band Doppler Weather Radar (DWR)

SYSTEM OVERVIEW

C-Band Weather Radar under installation in Mumbai
Tracking Radar Upgrades

Data Patterns has implemented Tracking Radars of up to 3000Km Range

TERLS Tracking Radar

C Band Radar Upgrade at SHAR

PCMC Radar Upgrade at SHAR
Electronic Warfare Systems

- COMINT (Communication Intelligence)
- Communication ECM
- SIGINT (Signals Intelligence)
- Radar Electronic Counter Measure
Electronic Warfare Systems

- **ESM Systems**
  - 20MHz to 6000MHz Spectrum
    - VHF/UHF Wide Band Fast Scan Receiver
    - VHF/UHF Monitoring Receiver

- **ECM Systems**
  - 1.5MHz to 30MHz
    - HF Search and Monitoring Receiver
    - HF Search & Monitoring Receiver with Exciter
  - 20MHz to 6000MHz
    - VHF/UHF Search and Monitoring Receiver
    - HF Search & Monitoring Receiver with Exciter
  - 20MHz to 500MHz
    - Solid State 500W Power Amplifier with FSU
Electronic Warfare Systems

- Wide Band Signal Processing Unit
- Real Time Monitoring Receiver Unit
- Jammer Power Amplifier
- Heliborne Direction Finder
- V/UHF Monitoring Receiver
- V/UHF Search Receiver

(COMINT/ELINT/ESM/ECM)
Digital Direction Finder (ELINIT Receiver)

- 0.5 to 18 GHz
- Open Standard Modular design
- High Performance SBC with Octal Processing cores
- FPGA based Pulse Processing
- High Speed Multibit Digitizer
- Built in storage
- Built in GPS receiver (with external antenna connectivity)
- Compact design suitable for various platforms
- Mil 810F, 461E, DO 254
Radar Electronic Counter Measure

Airborne Radar Warning Receiver – Next Gen.

- Multi bit Wide Band RWR
- Modular Open architecture design
- 1 to 18 GHz wide open detection
- Effective detection of Pulse on Pulse.
- 100% POI.
- Detects multiple emitters simultaneously (pulse on pulse / pulse on CW).
- Instantaneous 360 deg coverage
- Wave forms: Long pulses (Pulse Compressed) & LPI threats
- Detection in the presence of strong CW signals.
- Compact design for various platforms
- Mil 810F, 461E, DO 254
Avionics

Platforms: Fixed & Rotary Wings, Missiles & UAC.

- Flight Control Computers
- On-board Computers
- Actual Control Systems
- Data Interface Units
- Radar Exciter Receivers
- Flight Data Recorder
- Identify Friend or Foe (IFF)
- Protocol Converters
Avionics

Design, Develop, Manufacture & Quality with Certification Agencies.
LAAD Aircraft Cockpit

Large Area Avionics Display

- 20*8 inch, AMLCD display,
- LED Backlighting
- 2560 x 1024 Pixels
- Redundant Architecture
- Split Screen
- Sunlight Readable
- Wide Viewing Angle
- High Contrast Ratio
- NVIS Compatibility
- 14ms Response time
- Supports upto - 40 deg C
- Automatic Brightness Control
- Built-In Test
- Mil 810, DO 160, DO 254, DO 178

- **Interfaces**
  - ARINC 818, AFDX,
  - STANAG, DVI
  - ARINC 429,
  - Discretes, RS422
Fire Control Systems & Naval Equipment

Fire Control & Launch Control System

- Single and Salvo missile FCS
- Launch Control Systems
- Platform Stabilization System
- Power source to Missiles
- Servo control system
- Missile Simulators
- Decoy launchers

Platforms
- Ground Mobile : Army - Brahmos
- Shipborne : Navy
- Airborne : Su 30
Missile Launcher

Data Patterns is the Supplier of Launch and Fire control Systems for Land and Air for Brahmos.

Launch & Fire Control Systems
Fire Control Systems

ASW System – Indian Navy

Torpedo Launch System

Decoy Launch System
Avionics

Air Version Launcher for Brahmos on Sukhoi 30

Article PSU

Article Control Unit – Intelligent Unit
Avionics – IFF Systems

Developed along with DRDO with Features to upgrade to “Indian” MK XII(A) with Mode 5

IFF Transponder  Medium Range Interrogator  Medium Range Combined Interrogator Transponder  M-Scan Power Amplifier Unit

Man Pad Interrogator  Light Weight Transponder  Compact Transponder  Control and Display Unit

Built for Fighter Aircraft, UAV, Helicopter, Naval Platforms, Mobile and Land Platforms
Cockpit Displays

- Complete Glass Cockpit Displays
- Multifunction Displays & Indicators
- Start, Dumb, Redundant
Helicopter Glass Cockpit Display

Light Utility Helicopter Cockpit Display

Smart Cockpit Display

Data Interface Unit
Aircraft Cockpit Display

Smart Standby Instrument Display for LCA

Smart Display Unit for IJT
Communication Systems

Beyond Line of Sight SATCOM Data Link for RUSTOM UAV
Communication Systems

Satellite communication
Airborne Up Down Converter for UAV

DSSS modem
Communication Systems

Anti Submarine Warfare Equipment

Homing System

- To locate the sonobuoys
- Receives & Processes VHF signals from Sonobuoys
- Displays to the pilot.

Homing Receiver

Antenna Front-end

PWM Waveform Generator

Cockpit Control Unit
Sonobuoy Positioning System

- Positions the Sonobuoy by obtaining signals from the multiple antennas mounted in the aircraft.
- Relative Phase between antennas in the VHF band will be used for the sonobuoy position estimation.
- The estimated angle of arrival with the own position of the aircraft will be used for computing the sonobuoy transmitter location.
Data Distribution Unit

- Acquires RLG data and distributes to equipment's like Navigation Radar, CCA Radar, and ECDIS etc.
- Interfaces with ship data network.
- Capable of selecting FWD or AFT RLG either manually or automatically.
- Provides high fan out & distributes suitable outputs to various sink equipment's.
- The outputs are available (Repeaters / sink equipment's) in both analog & digital formats
- System also performs the critical job of failure indication and alarm.
Underwater Systems

AUPD – Autonomous Underwater Profiling Drifter

- CPU for MET, Tsunami and Wave Buoys
- CPU for Kalpasar Observatory - II
- Autonomous Underwater Profiling Drifter
- OMNI Buoy CPU

Made by Data Patterns for NIOT
Data Buoy

**Measures**
- Wind Speed & Direction, Atmospheric Pressure
- Air Temperature, Humidity, Conductivity
- Sea Surface Temperature
- Current Speed & Direction and Wave Parameters.
- Water quality parameters
- Subsurface temperature

**Equipped with**
- GPS, beacon light & satellite transceiver.
- Lithium / Lead Acid Battery with Solar Charger.

Made by Data Patterns for NIOT
Electro-Optics

Scan Mirror Test System

IR Guided Missile Tester

Laser Guided Bomb Kit Tester

Optical Target Locator
Automatic Testing

- Sea King Integrated Avionics System
- Launch Pad Count Down System
- Missile Checkout System
- Airborne LRU Production Test System
- I and O Level Test System
- Automatic Test Equipment for EW System
Integrated Avionics Testing - Sea King MK42B Helicopter

Three Independent ATEs
Low Frequency ATE: 27 LRUs
Radio Frequency ATE: 32 LRUs
Tactical Mission Equipment Test Unit (TMETU): 09 LRUs
Second Launch Pad Count Down System

14000 I/O point system Automates the checkout of the launch vehicle at the time of launch

Validates Missile performance when stored at their depots
Airborne LRU Production Test System

SRU level tester for Digital Flight Control Computer

ATE for Radar Components

Ensures maintainability of Equipment by identifying failed parts and also confirming that working systems are meeting tolerance levels
Airborne LRU Production Test System

- ESM & ECM test system for V/UHF frequency
- Production level LRU tester for HF
- Monitoring & Search Receiver
- Compact & Portable
- User friendly Test software GUI

Ensures maintainability of Equipment by identifying failed parts and also confirming that working systems are meeting tolerance levels
Satellite

Presently building 2 more Satellites

Images from IN-1C

Complete Ground Station
VHF, TTC, Payload receiver, Mission Control Centre,

Our first Nano Satellite (NUSAT) developed for Noorul University, Nagercoil.
Design and Production facility

Approved by Indian Defence, ISRO, Europe and US MNCs

Electronic Assembly Area

EMS Line
Pick and Place
Reflow Oven
Optical Inspection

Quality Control

Cabling
Manual Soldering
Under scope Inspection
Automatic Optical Inspection
Ion Contamination Testing
Stereo Microscope Inspection
X-ray Inspection
Design and Production Facility

Space / Defence Certified Cabling Bay
Assembly & System Test Bay
Clean Room

Vibration Table
Thermal Cycling & HALT / HASS
Space Grade Assembly Area

Space Grade Assembly Area realized as per ISRO-ISAC-ST-0142.
Data Patterns Offers

- ‘Make in India’ Destination for Electronic systems including Design, Manufacture and Maintenance for both Indian and International Requirements
- Joint Participation in MoD requirements as Prime bidder / as Partner
- Joint development and engineering of new products for your programs and equivalent solutions to manage obsolescence
- Offset opportunities in products, value added services, banking and any other special requirements
- Design/Supply of specific and generic test systems
- MRO, upgrades of your products in India for both existing and new platforms
- Integration and Installation of Systems in Land, Air & Sea Platforms
THANK YOU

Contact Address:

Data Patterns (India) Pvt. Ltd.
Block 2, Ground Floor,
Plot.No H9, 4th Main Road, SIPCOT IT Park
Off Rajiv Gandhi Salai (OMR)
Siruseri, Chennai - 603 103
Tamil Nadu
India
T: +91-44-4741 4000 / F: +91-44-4741 4444
   +91-80-42424141 / F : +91-80-42424142
Email: marketing@datapatterns.co.in