

## DME 1118A / 1119A

### Short Description

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The model 1118A Low Power and 1119A High Power DME are advanced, state of the art DMEs which represents the next generation in SELEX's line of products.

#### **Main features**

- Broad band design requires no tuning
- Fail soft High power amplifier with extra margin of power across the band and temperature displayed on PMDT.
- Dynamic pulse shaping to ensure a consistent and accurate Gaussian pulse shape to output.
- The monitor, interrogator and synthesizer are integrated in a single assembly to eliminate cables across the cabinet and RF leakage.
- Hot stand by monitoring with dual monitors.
- Automatic Monitor certification
- Low power amplifier with integrated synthesizer to eliminate cables and RF leakage.
- Digital receiver technology for higher sensitivity and accuracy.
- Flash memory with firmware updated through the USB PMDT interface.
- LCD graphical touch screen display for supervision
- Ethernet port for RMM connection
- Traffic load monitoring.
- Failsafe LCU design with FAA oversight.
- Software certified to RTCA DO 278; many of the monitoring functions performed in PLD to eliminate overhead in the Processor and ease the DO 278 approval

The 1118A/1119A DME is contained in one 19 inch floor mounted rack.

The dual High Power configuration includes:

- 1 Local Control Unit (LCU)
- 2 high power amplifiers
- 2 Low power amplifiers
- 2 Receivers/ Transmitter controller
- 2 Monitor/interrogator/ synthesizer
- 1 Remote Monitoring System (RMS) processor
- 1 Facilities CCA
- 1 Interface CCA
- 2 Battery Charging Power Supply (BCPS)

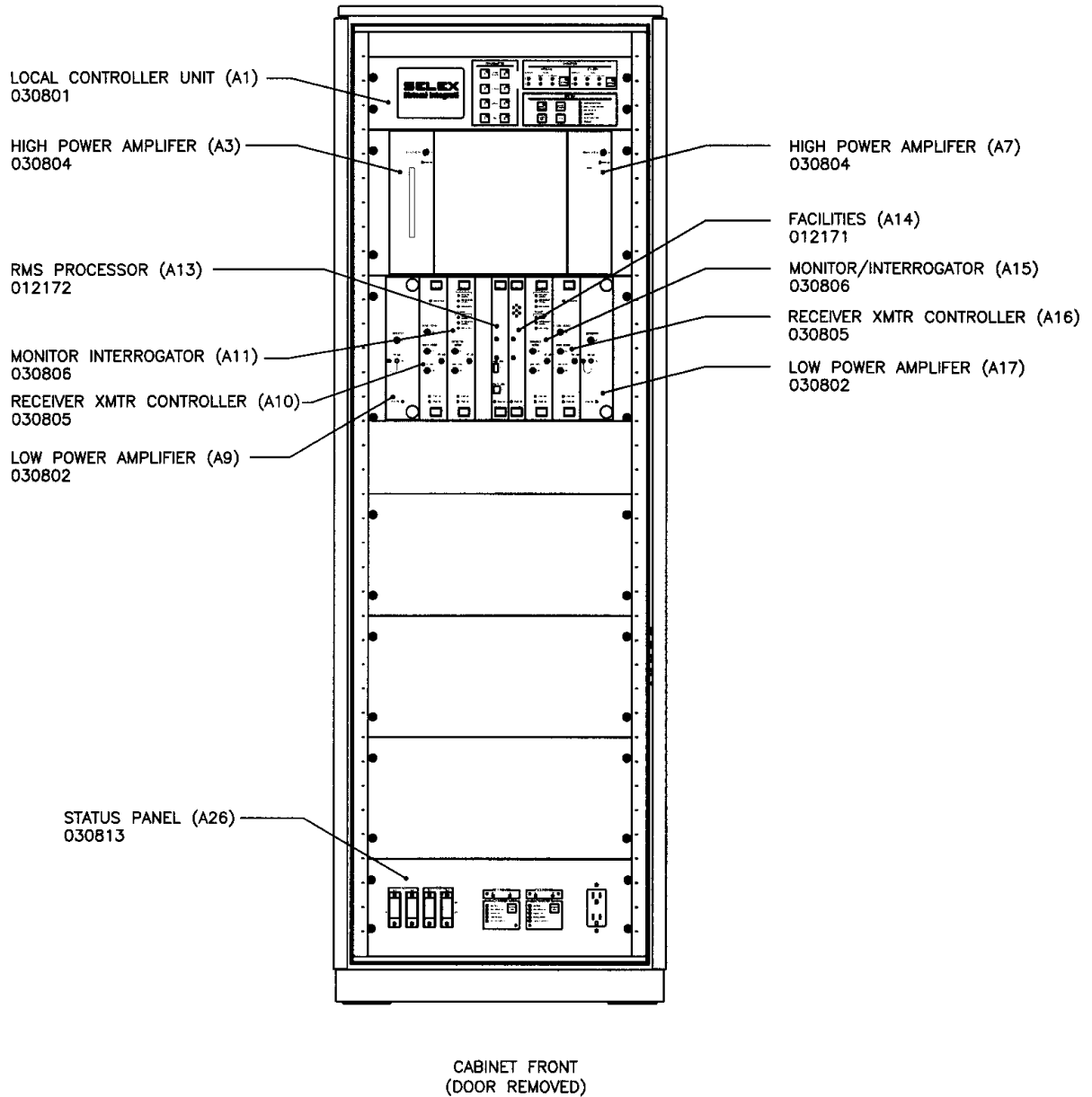
#### **Antenna system**

Two versions of antenna systems are available for installation with the DME depending on customer requirements.

The low power configuration is identical to the HP without the high power amplifier

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**Figure Model 1119A High Power DME  
(Dual Equipment Shown)**

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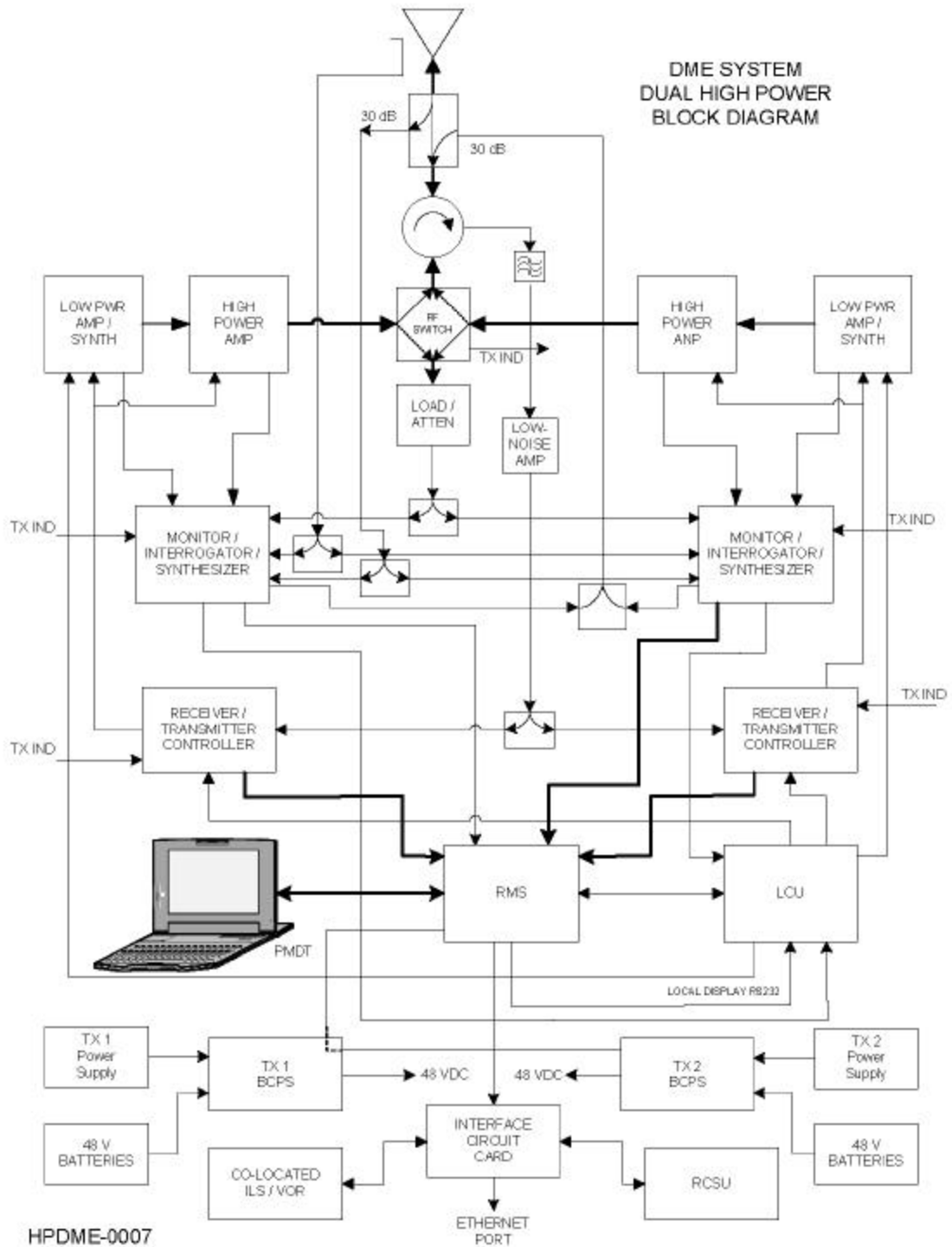
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The block diagram shows a dual high power DME architecture.



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#### **Local Control Unit (LCU)**

The Local Control Unit (LCU) is located in the upper portion of the DME cabinet. The LCU receives and displays station status information.

#### **High Power Amplifier Assembly (1119A DME only)**

The High Power Module has three major assemblies. The Modulator assembly board, which is also the module's I/O, processes the control signals from the RTC (Receiver Transmitter Controller) to properly control the desired output RF pulse shape and amplitude. The Power Supply assembly board contains the DC/DC converters and transmitter energy storage capacitors. The third assembly is the RF amplifier/transmitter portion of the module. It receives a "square wave" pulsed RF signal from the Low Power Amplifier Module and provides the necessary amplification and pulse shaping to obtain the output specifications.

#### **Low Power Amplifier**

The Low Power Amplifier houses the Synthesizer assembly board which generates a pulsed RF signal for the DME transmitter. The RF amplifier/transmitter assembly boards provide the necessary amplification of the Synthesizer signal and the Modulator assembly board which processes the control signals from the RTC (Receiver Transmitter Controller) module to properly control the desired output RF pulse shape and amplitude.

#### **Receiver Transmitter Controller Assembly**

The Receiver Transmitter Controller (RTC) is an integral part of the DME dedicated to receiving aircraft interrogations and controlling the transmitter replies. All of the receiver hardware is contained on the RTC assembly except for the pre-selector filter that is tuned to the station frequency.

#### **Monitor Interrogator Assembly**

The Interrogator (RF board) has all the necessary circuitry to modulate the interrogations from the Monitor and demodulate the replies from the RTCs.

#### **Remote Monitoring System (RMS) Processor CCA**

The Remote Monitoring System (RMS) Processor CCA controls the transmitter and monitoring systems. The RMS CCA performs communications via thirteen serial ports plus a parallel port, and facilitates monitoring/control in a single or dual DME system. The RMS CCA receives battery-backed DC power from the BCPS.

#### **Facilities CCA**

The Facilities CCA provides system I/O for the Remote Monitoring System CCA. Many of the inputs and outputs of the Facilities CCA eventually connect to the Interface CCA after routing through the Low Power Backplane CCA. System battery-backed power supplies (nominally 48VDC) enter and are regulated down into several lower voltages; including +24V,  $\pm 15$ VDC,  $\pm 12$ VDC, +5VDC, and +3.3VDC.

#### **Interface CCA**

The Interface CCA provides interface connections between the RMS/Facilities/Low Power Backplane CCAs and the outside world. Examples include spare analog and digital inputs, spare digital outputs, temperature sensors, smoke detector, intrusion sensor, and a TACAN antenna controller. RS232 communications are provided to RCSU and PMDT terminals as well as an optional Ethernet module. All signals are protected by transient voltage suppression (TVS) devices on the Interface CCA before exiting.

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#### **Battery Charging Power Supply (BCPS) Assembly**

This power supply provides regulated voltage to the transmitter from either the AC to DC power supplies or the batteries. It is also responsible for charging the batteries when AC is present.

#### **AC Monitor Assembly**

The AC Power Monitor CCA provides a means for the DME system to measure the AC current and voltage levels of the obstruction lights and for the DME system itself.

#### **Station Portable Maintenance Data Terminal (PMDT)**

The standard PMDT consists of a laptop computer with the PMDT application software and is the input/output device for controlling and communicating with the DME system. Station control, adjustment and monitoring functions are available through the computer.

Station security control is provided through a four-level password system. Complete access to the system for adjustments and measurements is provided at level 3 and 4. Modification of non-critical parameters is available at level 2, and read-only access is available at level 1. Level 4 provides the additional ability to maintain password access to the DME.

All functions available on the local PMDT are available remotely via a modem and dial-up telephone line to an optional remote laptop or desktop PC running PMDT software.