RADCORE, or Radar Data Convertor and Recorder, is a vital part in connecting a surveillance sensor with an ATC centre, with the ability of a smooth integration of legacy radars in new ATM systems or vice versa. The combination of protocol converting and data recording simultaneously, makes Intersoft Electronics’ RADCORE the tool for real time Radar Message Converting and Distribution and offline performance evaluation analysis (like ASTERIX validation). Redundant in hardware and modular in software: the RDCR992 will prove to be an invaluable part in the complete radar-to-ATM processing chain.

Flexible and redundant in hardware

RADCORE has 4 serial interfaces which are completely configurable in software. They support various electrical interfaces. It contains an embedded PC with 2 Ethernet interfaces. Therefore, it supports any ATM network architecture: format convert and protocol convert from serial to Ethernet and from Ethernet to serial, or only protocol convert from Ethernet to Ethernet or serial to serial. The additional ACP/ARP input makes it possible to calculate the radar head processor delay.

Modular in software: protocol convert and recording

RADCORE contains an embedded PC, which runs the RASS-R Data Handling Module (DHM), consisting of a Data Handling Background Server and Data Handling Configuration Manager. In the graphical user interface, a radar technician can easily program the input and output of the RDCR992: choose which serial and/or Ethernet port(s) serve as input and output, select the appropriate protocol convert to make and configure the right settings for surveillance message convert, distribution and/or recording. It is even possible to change in real time a North alignment, or add a range / azimuth offset to the data. When the eccentricity error of the radar encoder was measured, it can be real time corrected in the DHM processing.

The embedded PC is an Intel based chipset with recording capabilities of at least 250GBytes. Connection to the embedded PC can be made with either a remote desktop connection, KVM device directly connected to the rear panel, VNC connection over the iAMT 8.0 equipped network port or an Ethernet connection between DHM Background Server and Configuration Manager. 2 Available Gigabit Ethernet ports offer a lot of possibilities like, for example, a spare (non-operational) port for remote connection or for synchronization with an external NTP server. Because the RASS-R DHM tool on the embedded PC is a widely proven software tool, it offers unlimited features like for example a WatchDog Timer and generation of SNMP messages and alarms for integration in an ATM network monitoring system.

Recording and analysis of the data

Data recordings made by the RDCR992 are suitable for advanced data replay and further evaluation in RASS-S (inventory tool, protocol viewer, ASTERIX and other protocol validation), RASS-R (Radar Comparator Mono/Dual) or for continuous monitoring in the RASS-R Sensor Monitoring System (SMS).
GENERAL SPECS

Dimensions WxHxD (mm) and weight
435.8x82.1x360, 19” plug-in box with handles and perforated cover and bottom plate.

Micro redundant hot swappable power supply (PSU)
AC Input: 100-240VAC, 47-63Hz 4-2A
DC Output: ATX12V, 275Watt max, with audible warning/error LED on front panel and reset in case of faulty power supply unit; built-in fan

Embeded computer
Mini-ITX pc with Intel® QM77 chipset, Intel® i7-3610QE CPU, min. 2GB DDR3 RAM
and 2x250GB SATA harddisks in RAID 1 configuration for redundancy, Intel® HD4000
graphics, 2xDVI and HDMI display outputs with resolution up to 1920x1200, 2 Gigabit
LAN ports, 4 USB 3.0, 4 USB 2.0 (2 on front panel), 1 COM port, Intel® iAMT8.0
supported.

WatchDog Timer (WDT)
Built-in WDT in separate micro controller, with system error LED on front panel

Input for ACP/ARP/Trigger and PPS
DB15HD connector, (with extra output to redundant RDCR992)

NMEA input for UTC time synchronization
(Coming from GPS or time server)
Input for NMEA time string on serial port DB9 female
(with extra output to redundant RDCR992)

Environmental conditions
Ambient Temperature Range
0-50deg (operating), -20 to 70 deg (non-operating)
Relative Humidity:
10% to 90%
Max. Operating Altitude:
3050m

Regulatory Compliance
RoHS, WEEE

Reliability figures according MIL-HDBK217
MTBF (ITX PC, serial interfaces): 28935 hours
MTBF (total unit): 13746 hours

DATA PROCESSING SPECIFICATIONS

Serial interfaces
The RDCR992 has 2 pairs of twin high-speed synchronous serial interfaces with female DB15 connector. Each channel can be configured individually
in the Data Handling Module. They support electrical standards RS232 (single ended) and RS422 (differential), with transmission speeds up to 128
Kbit/sec. The front panel has LEDs showing activity on the individual transmit and receive signals.

SUPPORTED PROTOCOLS

The following protocols are currently foreseen in the Data Handling Module. Customized development of a new protocol input (based on the ICD),
convert or output can be easily requested at Intersoft Electronics. Even in case no ICD is available, a bit recording with a UDR600 and back-
engineering can result in a protocol convert in a short time frame.

Protocol input
U-HDLC: input of HDLC based protocols, including LAP-B and X25.3 passive monitoring,
(e.g. all ASTERIX categories, RIF)
SYNC 13: input of most bit protocols as implemented on US radars (e.g. CD1, CD2,
ASR9, ADCCP)
AIRCAT500 - EV760 - TVT 2 - EADS - RSRP - TPS 77 – RAT31- ALENIA RHP - ALENIA
ASTERIX - LINK1

Protocol Output
U-HDLC – TVT 2 – AIRCAT500 – bit protocols

The following protocols can be recorded and replayed bit-
wise in RASS-R
– RAT31S – SVE – TOSHIBA – TRS 22xx

ORDERING INFORMATION

• RDCR992: including RDCR992, 2 power cables, 2 power supply units (PSU) and user manual installed on embedded computer
• DHM software license, installed on embedded computer

Optional items
• Cable set: with serial (DB15 to DB15 or DB15 to DB25) and/or Ethernet cables
• Keyboard: Video, Monitor (KVM) accessory kit, 19inch rack mounting
• RS232 probe modules: for connection of the DB15 connector to a DB25 standard RS232 connector (EIA-RS530), with micro switches to change clock
and data pins
• APM485 ACP/ARP Probe Module: Differential ACP/ARP input. Note that single ended azimuth input is by default supported by the RDCR992
• Weatherproof GPS receiver for UTC time stamping of messages, NMEA 0183 protocol
• NTP server with NMEA 0183 protocol and NTP on serial port and Ethernet

Spare parts
• Power module for micro redundant hot swappable power supply