Racal Instruments™
1257A-C
2U through 6U Customized RF Interface Unit

The Racal Instruments™ 1257A-C is a sixth-generation RFIU tailored to your specifications. It comes with a new easy-to-use LXI Core 2011-compliant device and new enhanced features, including 2U through 6U configurations.

Key Features

- **Complete custom engineering and fabrication solution**
- **2U through 6U chassis sizes**
- **Components may include Power, RF, Microwave or Optical Relays, Amplifiers, Isolators, Couplers, and Attenuators**
- **Up to 480 control, indicator read-back, and LED channels with TTL, open collector, and/or pulse latching I/O control**
- **LXI/Ethernet, USB, and GPIB control interface**
- **Full documentation – design, components, and system performance**
- **Easily replicated – subsequent RFIU systems are 100% identical**
- **Relay counter**

Product Information

The Racal Instruments™ 1257A-C is a custom RFIU solution that is engineered, fabricated, and tested by us to meet customer-specific application requirements. By utilizing unique and proven design tools and leveraging a versatile instrument platform, the 1257A-C delivers a custom RFIU solution with the reproducibility, documentation, cost, and supportability of Commercial-Off-The-Shelf equipment.

In certain applications where a configured 1257A COTS RFIU or a pre-engineered, customer-assembled 1257A development kit do not address customer needs, the 1257A custom RFIU represents an ideal solution.

In these cases, we conduct an initial application discussion in which a customer block diagram and basic requirements are collected. We then generate a technical proposal and quotation. After we receive the order, we complete the engineering, fabricate and assemble the system, and complete cabling and final path testing. The result is a tailored RFIU solution that meets exact customer requirements.

The benefits of outsourcing a custom RFIU design and build project to us are substantial:

- **Faster engineering** – Since we have decades of RF/microwave experience and apply automated design tools, engineering can be completed more rapidly than in-house options.
- **Simplified procurement** – RFIUs incorporate a large number of individual components, chassis parts, cables, and boards. Outsourcing to us eliminates time consuming individual component procurement activities.
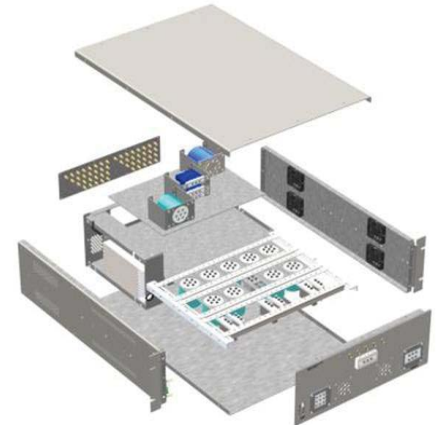

Figure 1. The 1257A-C top and bottom covers are removable to provide easy access.

- **Faster fabrication** – The tedious and time-consuming process of installing multiple internal RFIU components, cabling them together, and completing software/control integration often slows manufacturing. Our proprietary design tools and expertise not only speed fabrication, but also ensure signal and path integrity.
- **Easy to integrate** – Flexible control options, a complete set of standard and customized drivers, and easy-to-use program commands simplify integration.
- **Easy to operate, service, and support** – Since the 1257A-C is based on a standardized instrument chassis, it offers COTS-like reliability, making it easy to operate. Built-in relay counters, complete system documentation, and ready access to internal components enable speedy service and simplified product support.

- **100% Reproducibility for Future Systems** – Since each unit comes with a complete set of documentation, including BOM and system performance data, additional RFIU's are 100% reproducible, making replacement or additional capacity as simple as placing a purchase order.

Applications for the 1257A-C

Common applications for the 1257A-C RFIU include the testing of communications equipment in production/installation/commissioning and the operational monitoring of RF, Microwave, and radar signals. It can be used for base station, satellite antenna, or ATE test applications.

Relays with a frequency range of up to 18, 26.5, or 40 GHz can be designed into the 1257A-C to accommodate a wide range of signal types. In many cases, the RFIU is utilized for routing and switching signals from one or more UUT's or antennae to different RF test and monitoring equipment such as spectrum analyzers, frequency counters, and/or power meters.

Due to the expense of RF test instrumentation, and the frequent need to measure or monitor multiple RF signals very quickly, the 1257A-C can provide a substantial ROI and fast payback in RF test applications.

A complete RFIU solution tailored to your application requirements

Because of the flexibility of the 1257A-C platform, it can incorporate a wide range of RF components including Power, RF, Microwave or Optical Relays, Amplifiers, Isolators, Coupler, Attenuators, and Terminations. These components may be controlled with TTL, open collector, pulse latching and/or general purpose Digital I/O logic.

The 1257A-C can be configured to specific application requirements with one to ten driver boards. This scalable design can support up to a maximum of 480 I/O, control, and LED channels.

The 1257A-C is offered in 2U through 6U chassis options to ensure that the form factor of the solution properly addresses your requirements in terms of space and mounting options. The 2U and 3U Chassis offer a compact form factor, while the 4U through 6U chassis offer full capacity and front, inside, or rear component mounting.

In addition, the front and rear panels can be designed to meet exact requirements as far as the types of connectors, location/layout, and reference designators, as seen in Figure 2.

Figure 2. The 1257A-C front and rear panels can be customized to your exact specifications.

Easy to integrate, control, and program

The 1257A-C comes standard with LXI/Ethernet, USB, and GPIB control interfaces. A rich SCPI command set and IVI drivers provide easy integration and compatibility with almost all software environments. This new LXI interface is based on Ethernet and offers discovery and a web-based interface. Programming has been simplified with the incorporation of powerful and easy-to-use commands and features:

- Path Names – Makes paths intuitive
- Scan Lists – Set up a list that will run automatically
- Relay Counter – Counts relay closures and tracks relay end of life

Easy to service and support

The modular design of the 1257A-C platform and complete set of documentation reduce the Mean-Time-To-Repair (MTTR). 4U through 6U units offer removable top and bottom covers, facilitating service while the RFIU is still installed in the rack. These features enable relay or component replacement by dropping them out of the bottom of the unit, minimally disturbing sensitive microwave cables and preventing damage during service.

Since each unit is delivered with a complete BOM and system performance documentation, evaluating system performance degradation and finding part numbers for replacements is straightforward.

Additionally, relay counters provide visibility when components reach the end of their useful service life, enabling preventative maintenance instead of system downtime.

Fully documented system performance

Prior to shipping, every specific path within the 1257A-C is fully tested and documented. VSWR and insertion loss are typical measurements, with the validation plots for the applicable frequency range delivered on a CD with the product for customer viewing and future evaluation.

This initial system characterization data often proves useful for quantifying the service life in electro-mechanical switches, drawer troubleshooting, and for determining calibration factors.

Specifications

Note: The Astronics Test Systems policy is one of continuous development and improvement. Consequently, the equipment may vary in detail from the description and specifications in this publication.

Interface

Front Panel Indicators
- System Power Indicator
- LAN Status

Rear Panel Indicators
- Ethernet

Front Connections (2U, 4U to 6U)
- USB Type A

Rear Connections
- GPIB
- USB Type B
- USB Type A (3U)
- Ethernet

Power Requirements
- Power Consumption: 550 VA (max)
- Input Voltage: 100 to 120/200 to 240 VAC
- Input Frequency: 50/60 Hz

Front Panel Control
- System Reset

Rear Panel Control
- LAN Reset

Software

Native Language
- SCPI

Driver Support
- IVI(C and Com), LabView™ version 9.0**

Web Page
- LXI Control v1.4 – LXI Core 2011 Compliant Device

Environmental

Temperature
- Operating: 0° C to 50° C (Ethernet and USB only)
- Storage: -40° C to 71° C

Relative Humidity
- 80% RH at 40° C

Emissions/Immunity
- EN61326:2006 Class B

Safety
- EN61010-1:2010-06

Mechanical

2U

Weight*
- 13.5 lbs

Dimensions (base chassis)
- 3.47 H x 17.00 W x 16.00 D

3U

Weight*
- 14.1 lbs

Dimensions (base chassis)
- 5.22" H x 19.00" W x 16.59" D (including front panel); chassis W = 16.50")

4U

Weight*
- 24 lbs

Dimensions (base chassis)
- 6.90" H x 16.63" W x 24.34" D

5U

Weight*
- 25.4 lbs

Dimensions (base chassis)
- 8.63" H x 16.63" W x 24.34" D

6U

Weight*
- 26.50 lbs

Dimensions (base chassis)
- 10.40" H x 16.63" W x 24.34" D

* Actual weight is based upon the final configuration

** Contact factory regarding other versions of LabView™

Ordering Information

408547-S-xxxx : Racal Instruments™ 1257A-C2-S-xxxx
   2U Customized RF Interface Unit

408438-S-xxxx : Racal Instruments™ 1257A-C3-S-xxxx
   3U Customized RF Interface Unit

408439-S-xxxx : Racal Instruments™ 1257A-C4-S-xxxx
   4U Customized RF Interface Unit

408340-S-xxxx: Racal Instruments™ 1257A-C5-S-xxxx
   5U Customized RF Interface Unit

408440-S-xxxx : Racal Instruments™ 1257A-C6-S-xxxx
   6U Customized RF Interface Unit

Optional Accessories

602269 : European power cord (unterminated)
602269-001 : African power cord
602269-003 : UK power cord
602269-008 : China power cord
500310-001 : GPIB cable, 1 m
500310-002 : GPIB cable, 2 m
407813 : Rackmount slides (pair), 4U or 6U
408415 : Rackmount brackets (ears) (pair), 2U
408491-001 : Rackmount brackets (ears) (pair), 4U
408548 : Rackmount brackets (ears) (pair), 5U
408428-001 : Rackmount brackets (ears) (pair), 6U

Notes:

For rackmount kit ordering, contact our sales department.
The 1257A-C3 chassis has built-in rackmount ears and, therefore, does not require a separate rackmount kit.

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