

SIIA

Scientific/Industrial IOT Amplifier

Our SIIA Inductive Output Tube (IOT) amplifier meets the flexibility and broad power requirements that scientific and industrial designers demand.

Hitachi-Comark provides high performance and award winning television transmitters that are backed by more than 40 years of leadership in both inductive output tube (IOT) and solid-state broadcast technologies.

Whether used in physics research such particle acceleration, X-ray free electron laser (X-FEL), and energy recovery linac (ERL) applications; component testing; or virtually any type of industrial use requiring high-power RF sources, our SIIA inductive output tube (IOT) amplifier meets the flexibility and broad power requirements that scientific and industrial designers demand. Adapted from our highly-successful, field-proven television broadcast transmitter line, this amplifier technology has been a world standard for nearly three decades.

Extremely versatile and adaptable, the SIIA amplifier accommodates multiple IOT high-power amplifiers (HPAs) operating in parallel at whatever frequency you require. It also comes complete with three high voltage power supply (HVPS) system choices, a passive RF system, and a variety of cooling options. These features enable you to configure the amplifier for virtually any industrial or scientific application that requires high-power RF sources.

Flexible HPA Accepts Virtually Any IOT Design

The HPA cabinet assembly of the SIIA amplifier supports the IOT amplifier by providing the appropriate support circuitry to produce the system output power you require from a specified input signal. You simply apply this input



signal to the amplifier's solid-state driver system; the system is designed to provide the appropriate amount of gain and power to meet your output requirements.

Designed to accept IOT amplifiers from all suppliers, the HPA also provides an unprecedented level of flexibility. You can use field-proven amplifiers currently in use in conventional television transmitters, or those that have been specifically designed for particular scientific or industrial markets.

The HPA system also features a key-interlocked HV grounding/AC isolate mechanism to provide a high-level of safety as well as full compliance with IEC-215 HV access

KEY FEATURES

- ▶ Supports single or multiple parallel amplifiers to meet the widest range of RF power requirements
- ▶ Supports continuous wave, pulse, AM, FM, and digital modulation standards
- ▶ Supports 400-450 MHz, 470-810 MHz, or 1.3GHz frequencies
- ▶ Supports a wide range of building and project requirements via customizable:
 - ✓ HVPS systems
 - ✓ Passive RF systems
- ▶ Available control cabinet with and industrial programmable logic controller (PLC)

requirements. A microprocessor-based control chassis—designed and built to operate and protect an IOT—provides the main control of the HPA. In addition, the SIIA amplifier control cabinet, which is available if required, contains everything you need, including the system controller and any low-level, passive RF splitting, phasing, or balancing equipment necessary.

Supports for Multiple HVPS Systems

The SIIA platform supports three HVPS options: a three-phase power

supply, that comes in an indoor or outdoor oil-filled, unitized-type design of a standard rectifier-type, choke-input filter; a second type that is similar to the first, but does not use oil around the power transformer, rectifiers, or filter choke; and a switching power supply based on multiple pulse-step-modulated modules to control the output voltage.

Choose Your Cooling System

Depending on the application, the SIIA platform’s versatile water/glycol IOT cooling system uses outdoor water-to-air heat exchangers, liquid-to-liquid

heat exchangers, or may directly use a cooling water supply from a traditional building or plant-type system.

Passive RF System Aids Customization

Customize the RF system of your SIIA amplifier to meet your particular design requirements. In creating your RF system, we can consider several factors, including output power required, amplifier configuration, RF signal specifications such as harmonic levels and spectral mask, as well as your specific building layout and installation plan.

AUSTRALIAN SYNCHROTRON POWERED WITH COMARK SIIA



Images courtesy of Australian Synchrotron

SPECIFICATIONS

Modulation Standard:

- CW, pulse, AM, FM, digital

Operating Frequency:

- 400-450MHz, 470-810 MHz, or 1.3GHz (dependent on IOT)
- Other bands upon request

RF Output Power:

- 80-320 kW CW @ UHF
- 15-60 kW CW @ 1.3GHz

Amplifier Gain:

- 20-23 dB for IOT plus solid state driver as configured

AC Consumption:

- Refer to GTD document

Power Factor:

- 0.95 typical, 0.9 minimum

Physical Characteristics:

- Refer to GTD document

Mains Power:

- 480 VAC (±3%), 3-phase, 4 wire (WYE) plus ground
- Frequency: 48-62 Hz

Environmental Conditions:

- 0° to 45° C Temp range (32-113° F)
- 0 to 95% non-condensing relative humidity
- Altitude: 2,286 meters (7,500 ft.)
- Access safety: IEC 215 compliant

ORDERING INFORMATION

Please contact your authorized Hitachi-Comark representative.
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