

# SECURESYNC®

## Option Module Cards



### Option Module Cards

Add only the features you need by selecting SecureSync® option cards. Up to six cards can be accommodated per unit (SecureSync 1200 SAASM units can accommodate up to four additional cards per unit, SecureSync 2400 SAASM units can accommodate up to five additional cards per unit).

Order them as part of the original configuration, or add them to an installed unit to keep up the changing needs of your system. If you do not see a feature that you need, please contact us to discuss customizing a card.

**Safran Electronics & Defense is with you every step of the way, building in the intelligence that gives you a critical advantage in observation, decision-making and guidance.**



**SecureSync 1200** Add the features you need through options modules, up to 6 option modules per unit.



**SecureSync 2400** Add the features you need through options modules, up to 6 option modules per unit and 2 Hot Swap power supplies slots.

## Option Cards Overview

| Feature                 | Configuration (see Specifications)  |
|-------------------------|---|
| 1PPS                    | 1 input/output with 10 MHz input (TTL or RS-485)  |
|                         | 1 input/3 outputs (TTL coax or fiber)   |
|                         | Quad outputs (TTL coax or fiber, 10V or RS-485)   |
| Alarm Relay             | 3 NC/NO indicating unit status  |
| ASCII Time Code         | 1 input/1 output (RS-232 or RS-485)   |
| Event Broadcast         | 1 input (TTL)/broadcast (RS-232) pair   |
| Frequency               | 1 kHz to 10 MHz input with 1PPS input/output (TTL or RS-485)  |
|                         | 3 outputs (1, 5, or 10 MHz)   |
| Gigabit Ethernet        | 3x 10/100/1000 Base-T Ethernet Ports <sup>1</sup><br>2x 100/1000 SFP Ethernet Ports <sup>2</sup><br>4x 100/1000 SFP Ethernet Ports <sup>2</sup> |
| HAVE QUICK              | 4 outputs (TTL or RS-485)   |
|                         | 1 input/3 outputs (TTL)   |
| IRIG                    | 1 input/2 outputs (coax or fiber)   |
|                         | 4 outputs (coax or fiber)   |
| Precision Time Protocol | 1x IEEE 1588 PTP v2 port (master)   |
| Square Wave TTL         | 4 outputs   |
| STANAG                  | Input module: 1x 1PPS, 2 ToD  |
|                         | Output module: 1x 1PPS, 2 ToD, 1 frequency  |
| STL and other signals   | 1 input for other satellite signals   |
| T1                      | 2 data rate outputs/1 frequency output (unbalance or balanced)  |
|                         | 4 data rate outputs (unbalance or balanced)   |
| E1                      | 2 data rate outputs/1 frequency output (unbalanced or balanced)   |
|                         | 4 data rate outputs (unbalance or balanced)   |
| Programmable Frequency  | 4 outputs (RS-485, TTL, or sine wave)   |

1: SecureSync 1200 only

2: SecureSync 2400 only

## Specifications

### 1PPS

The 1PPS option card is the ideal solution when 1PPS distribution is necessary. Option cards that provide four (4) 1PPS outputs are available with TTL, 10V,

RS-485 (terminal block), and Fiber Optic signal types, facilitating a variety of requirements for pulse-per-second timing.

## Specifications

|                            | 1PPS Input   | 1PPS Output  |
|----------------------------|--|--|
| Quantity                   | 1 (1204-28)<br>1 (1204-2A)<br>0 (1204-18)<br>0 (1204-19)<br>0 (1204-21)<br>0 (1204-2B) | 3 (1204-28)<br>2 (1204-2A)<br>4 (1204-18)<br>4 (1204-19)<br>4 (1204-21)<br>4 (1204-2B) |
| Signal Type and Connector  | TTL (BNC into 50 ohms)<br>ST (Fiber Optic)   | TTL or 10v (BNC into 50 ohms), or RS-485 (terminal block)<br>ST (Fiber Optic)          |
| Fiber Optic Compatibility  | 50/125 $\mu$ m, 62.5/125 $\mu$ m multi-mode cable                                      |  |
| Fiber Operating Wavelength | 820/850 nm   |  |
| Fiber Minimum Sensitivity  | -25 dBm @ 820 nm   | —  |
| Fiber Optical Power        | —  | -15 dBm average into 50/125 fiber  |
| Programmable Phase Shift   | —  | $\pm$ 5 ns to 500 ms with 5 ns resolution  |
| Programmable Pulse Width   | —  | 20 ns to 900 ms with 20 ns resolution  |
| Rise Time to 90% of Level  | —  | <10 ns (1204-18)<br><30 ns (1204-19)<br><30 ns (1294-21)                               |
| Absolute Phase Error       | —  | $\pm$ 50 ns (1 $\sigma$ )  |
| Maximum Number of Cards: 6 |  |  |

## Ordering Information

1204-18: Quad 1PPS output module (TTL)

1204-19: Quad 1PPS output module (10 V)

1204-21: Quad 1PPS output module (RS-485 (terminal block))

1204-2B: Quad 1PPS output module (Fiber Optic)

1204-28: 1 in/3 out 1PPS module (TTL (BNC))

1204-2A: 1 in/2 out 1PPS module (Fiber Optic)

## 1PPS/Freq Input and 1PPS Output

The 1PPS/Freq Input and 1PPS Output option card combines timing and frequency solutions on a single card. The option card includes one (1) 1PPS input, one (1) 1PPS output, and one (1) user selectable 1 to 10 MHz sine wave Frequency input capable of handling a wide range of applications.

### Specifications

|                              | 1PPS Input   | Freq Input  | 1PPS Output                                       |
|------------------------------|--|---|---|
| Quantity                     | 1  | 1   | 1   |
| Signal Type and Connector    | TTL (BNC into 50 ohms) or RS-485 (terminal block)                                      | 1 kHz -10 MHz sine ( $1V_{p,p}$ into 50 ohms, BNC) or RS-485 (terminal block) | TTL (BNC into 50 ohms) or RS-485 (terminal block) |
| Input Signal Jitter          | < $\pm 500$ ns to achieve oscillator lock, < $\pm 50$ ns to achieve system performance |   | —   |
| Detected Level               | —  | +13 dBm to -6 dBm   | —   |
| Frequency Setting            | —  | 1 kHz to 10 MHz in 1 Hz steps   | —   |
| Minimum Pulse Width Detected | 100 ns   | —   | —   |
| Programmable Phase Shift     | $\pm 5$ ns to 500 ms with 5 ns resolution  | —   | $\pm 5$ ns to 500 ms with 5 ns resolution         |
| Programmable Pulse Width     | —  | —   | 20 ns to 900 ms with 20 ns resolution             |
| Rise Time to 90% of Level    | —  | —   | <10 ns  |
| Absolute Phase Error         | —  | —   | $\pm 50$ ns ( $1\sigma$ )                         |
| Maximum Number of Cards: 6   |  |   |   |

### Ordering Information

1204-01: 1PPS/freq input (TTL levels) module  
 1204-03: 1PPS/freq input (RS-485 levels) module

## Alarm Contact Outputs

The Model 1204-0F Relay option module card provides three (3) configurable relay outputs for the SecureSync platform.

### Specifications

|                            | Alarms  |
|----------------------------|---|
| Quantity                   | 3   |
| Signal Type and Connector  | NO/NC Relays (terminal block)<br>Contacts Switch under max. load of $30V_{DC}$ , 2A<br>Contacts rated to switch $220V_{DC}$<br>Breakdown voltage of $1000V_{DC}$ between contacts<br>Switch time 4 ms, max. |
| Maximum Number of Cards: 1 |   |

### Ordering Information

1204-0F: Alarm module

## ASCII Time Code

The ASCII Time Code Module (RS-232) provides one RS-232 input interface and one RS-232 output interface for Asynchronous Serial signal including date and time information. The input and output Data Formats are selected among predefined formats.

### Specifications

|                            | Input  | Output   |
|----------------------------|--|--|
| Quantity                   | 1  | 1  |
| Signal Type and Connector  | RS-232 on DB-9 or RS-485 on terminal block   |  |
| Formats <sup>1</sup>       | ICD-GPS-153C: 5101 time transfer; NMEA: RMC, ZDA; Orolia formats: 0, 1, 1S, 2 (IBM Sysplex), 3, 4, 7, 8, 9 | ICD-GPS-153C: 253, 5040, 5101 (SINCGARS); NMEA: GGA, RMC, ZDA; Orolia formats: 0, 1, 1S, 2 (IBM Sysplex), 3, 4, 7, 8, 9; Broadcast formats |
| Accuracy                   | —  | $\pm 100$ to 1000 microsec (format dependent)  |
| Maximum Number of Cards: 6 |  |  |

<sup>1</sup>Contact factory for details.

### Ordering Information

1204-02: ASCII Time Code module (RS-232)  
 1204-04: ASCII Time Code module (RS-485)

## Event Broadcast Output

The Event Broadcast Module (RS-232) provides a BNC connection for an Event Trigger Input and a RS-232 connector for an ASCII message output. When the defined signal edge is detected on the Event Input BNC Connector, an ASCII message is created containing the current time.

### Specifications

| Event Broadcast Output      |  |
|-----------------------------|--|
| Quantity                    | 1 event input/broadcast output pair                      |
| Signal Type and Connector   | Event input: TTL (BNC)<br>Broadcast output: RS-232 (DB9) |
| Event Resolution            | 5 ns   |
| Minimum Time Between Events | 20 ns  |
| Buffer Size                 | 512 entries  |
| Maximum Number of Cards: 6  |  |

### Ordering Information

1204-23: Event broadcast module

## Frequency Output (1, 5, 10 MHz)

The 1, 5, and 10 MHz SecureSync option cards provide three (3) sine wave BNC outputs. These outputs are phased-locked to the SecureSync's disciplined oscillator to supply highly precise waveforms with minimal distortion.

### Specifications

| Frequency Output  |   |
|---|---|
| Quantity  | 3   |
| Signal Type and Connector                                 | +13 dBm (10 MHz) into 50 ohm, BNC<br>+10 dBm (1MHz & 5MHz) into 50 ohm, BNC |
| Spurious  | -70 dBc (10 MHz)<br>-55 dBc (1MHz & 5MHz)                                   |
| Harmonics   | -40 dBc   |
| Maximum Number of Cards: 4 total (1 MHz, 5 MHz or 10 MHz) |   |

### Ordering Information

1204-26: 1MHz output module (3 outputs)

1204-08: 5MHz output module (3 outputs)

1204-1C: 10 MHz output module (3 outputs)

## Gigabit Ethernet for SecureSync 1200

This option module card adds three (3) 10/100/1000 Base-T network interfaces in addition to the standard 10/100 Base-T network interface.

### Specifications

|                            |      |
|----------------------------|------|
| Quantity                   | 3    |
| Signal Type and Connector  | RJ45 |
| Maximum Number of Cards: 1 |      |

### Ordering Information

1204-06: Gigabit Ethernet module (3 ports)

## Gigabit Ethernet for SecureSync 2400

These option modules add two (2) or four (4) 100/1000 network interfaces with independent processing per module via SFP ports supporting copper and fiber optic media. Supports NTP only, no management access.

### Specifications

|                            |                            |
|----------------------------|----------------------------|
| Quantity                   | 2 (1204-49) or 4 (1204-4A) |
| Signal Type and Connector  | SFP                        |
| Maximum Number of Cards: 2 |                            |

### Ordering Information

1204-49 : Dual Gigabit Ethernet Option Card

1204-4A : Quad Gigabit Ethernet Option Card

## HAVE QUICK

The HAVE QUICK input/output option cards provide several user-selectable formats, including STANAG 4246 HAVE QUICK I, STANAG 4246 HAVE QUICK II, STANAG 4372 HAVE QUICK IIA, STANAG 4430 Extended HAVE QUICK, and ICD-GPS-060A HAVE QUICK. HAVE QUICK option module cards are available with one (1) HAVE QUICK input and three (3) HAVE QUICK outputs or four HAVE QUICK (4) outputs.

### Specifications

|                            | Input                                  | Output   |
|----------------------------|--|--|
| Quantity                   | 0<br>1 (1204-29)                       | 4<br>3 (1204-29)   |
| Signal Type and Connector  | TTL (BNC)                              | TTL on BNC or RS-485 on terminal block   |
| Start of Signal            | —                                      | <10 $\mu$ s after 1PPS output (1204-10)<br><10 $\mu$ s after 1PPS output (1204-1B)                           |
| Programmable Phase Shift   | —                                      | $\pm$ 20 ns to 500 ms with 20 ns resolution (1204-10)<br>$\pm$ 5 ns to 500 ms with 5 ns resolution (1204-1B) |
| Time Code Format           | HQI, HQII, HQIIA, XHQ, ICD-GPS-060A HQ |  |
| Maximum Number of Cards: 6 |  |  |

### Ordering Information

1204-10: HAVE QUICK output module (TTL)

1204-1B: HAVE QUICK output module (RS-485)

1204-29: 1 in/3 out HAVE QUICK module (TTL (BNC))

## Precise Time Protocol ( PTP)

The 1Gb Precision Time Protocol (PTP) option module card supports PTP Version 2, as specified in the IEEE 1588-2008 standard. PTP v2 is provided to the SecureSync in the 1Gb card via an SFP port (master only) supporting copper and fiber optic media.

### Specifications

|                            |   |
|----------------------------|---|
| Mode                       | Ordinary clock, master mode, 1 step or 2 step operation                                       |
| Time Resolution            | ±4 ns packet time-stamping  |
| Accuracy                   | 25 ns (3s) via crossover cable  |
| Master Capacity            | Sync rate: 128 syncs/sec (configurable)<br>Up to 4,000 slaves at 128 requests/second (1 step) |
| Network Addressing         | Multicast, unicast, hybrid modes  |
| PTP Profile Support        | Default, telecom, and enterprise profiles   |
| Connectors                 | 1 Gb SFP port, BNC for 1PPS output  |
| Maximum Number of Cards: 6 |   |

### Ordering Information

1204-32: 1Gb PTP module

## IRIG

The IRIG Input/Output modules provide the SecureSync with a variety of IRIG input and output configurations. The IRIG input can be used as the system's primary synchronization reference or as an additional backup to other primary references such as GPS, Precision Time Protocol (PTP), and Network Time Protocol (NTP).

### Specifications

|                            | Input   | Output   |
|----------------------------|---|--|
| Quantity                   | 1 (1204-05)<br>1 (1204-27)<br>0 (1204-15)<br>0 (1204-1E)<br>0 (1204-22)   | 2 (1204-05)<br>2 (1204-27)<br>4 (1204-15)<br>4 (1204-1E)<br>4 (1204-22)      |
| Signal Type and Connector  | Amplitude modulated (0 to 6V <sub>p-p</sub> into 50 ohms) or DC level shift (unmodulated TTL into 50 ohms), user-selectable, BNC connectors. DC level shift ONLY with Fiber on ST connectors and RS-485 on terminal block |  |
| Formats <sup>1</sup>       | IRIG A, B, E, G, NASA 36, IEEE 1344/C37.118   |  |
| Accuracy                   | —   | Amplitude modulated <0.2 to 1.5 µs (format dependent), DC level shift <30 ns |
| Fiber Optic Compatibility  | 50/125 µm, 62.5/125 µm multi-mode cable   |  |
| Fiber Operating Wavelength | 820/850 nm  |  |
| Fiber Minimum Sensitivity  | -25 dBm @ 820 nm  | —  |
| Fiber Optical Power        | —   | -15 dBm average into 50/125 fiber  |
| AM Signal Level            | 500 mV to 10 Vp-p (modulated 2:1 to 6:1)  | —  |
| DCLS Signal Level          | >10k ohms. TTL with DCLS IRIG IN connected to ground  | —  |
| Maximum Number of Cards: 6 |   |  |

<sup>1</sup>Contact factory for details.

## Ordering Information

1204-05: IRIG module, BNC (1 input, 2 outputs)  
1204-27: IRIG module, Fiber Optic (1 input, 2 outputs)  
1204-15: IRIG module, BNC (4 outputs)  
1204-1E: IRIG module, Fiber Optic (4 outputs)  
1204-22: IRIG module, RS-485 (4 outputs)

## Square Wave (TTL) Output

The Square Wave TTL Output option module card provides four (4) programmable outputs for the SecureSync platform.

### Specifications

|                            | Output  |
|----------------------------|---|
| Quantity                   | 4, independently programmable   |
| Signal Type and Connector  | TTL (BNC into 50 ohms)  |
| Programmable Period        | 100 ns to 1,000,000,000 ns in 5 ns steps<br>100 µs to 60,000,000 µs in 1 µs steps |
| Pulse Width Range          | 20 ns to 900 ms in 20 ns steps  |
| Rise Time to 90% of Level  | < 40 ns   |
| Maximum Number of Cards: 2 |   |

### Ordering Information

1204-17: Square Wave (TTL) output module

## STANAG

These cards are compliant to several STANAG specifications for time and frequency typically required for reliable operation and security of radio networks. Version support STANAG as a reference or as an output. Galvanic isolation is supported on specific versions.

### Specifications

|                          | 1PPS  | Time of Day | Frequency                           |
|--------------------------|---|-------------|-------------------------------------|
| Quantity (input module)  | 1   | 2           | —                                   |
| Quantity (output module) | 1   | 2           | 1 (non-isolated output module only) |
| Electrical Format        | Configurable: TTL, 10V or RS-485  |             | Sine Wave, 1 Vrms                   |
| Time Code Format         | ToD configurable formats: HQI, HQII, HQIIA, XHQ, STM, ICD-GPS-060A HQ and BCD |             |                                     |
| Connector                | All signals available on single DB25 connector                                |             |                                     |
| Accuracy                 | 100 ns to valid reference   |             |                                     |
| Offset Range             | -500 to +500 ms in 5 ns steps   |             |                                     |
| Edge                     | Rising or falling edge  |             |                                     |

### Ordering Information

1204-1D: STANAG input module  
1204-11: STANAG output module  
1204-24: STANAG isolated input module  
1204-25: STANAG isolated output module

## STL and Other Signals

The alternate signals card adds the ability to use encrypted satellite signals as an input reference. Such satellite signals are suitable for use indoors.

### Specifications

| Input  |          |
|--|----------|
| Quantity   | 1        |
| Connector  | SMA      |
| Frequency  | 1626 MHz |
| Accuracy to UTC                                      | ±500 ns  |
| Maintenance Port                                     | RJ45     |
| Supplied with Iridium indoor antenna with 96" cable. |          |

### Ordering Information

1204-3E: STL and other signals module

### T1/E1 Output

The T1/E1 Output option cards provide user selectable E1 or T1 data rate outputs and an optional 1.544 MHz or 2.048 MHz frequency output. When installed with the optional Rubidium oscillator, the SecureSync system meets G.812 Type I. The unit is compliant to G.811 when installed with a Rubidium oscillator option and synchronized with GPS.

### Specifications

|                            | Frequency Output                                  | Data Rate Output   |
|----------------------------|---|--|
| Frequency                  | 1.544 or 2.048 MHz                                | 1.544 or 2.048 Mb/sec  |
| Quantity                   | 1 (1204-09, 1204-0A)<br>0 (1204-4C, 1204-53)      | 2 (1204-09, 1204-0A)<br>4 (1204-4C, 1204-53)   |
| Signal Type and Connector  | TTL (BNC into 50 ohms)<br>RS-485 (terminal block) | T1 or E1 into 75 ohms (BNC)<br>Differential T1 into 100 ohms or<br>differential E1 into 120 ohms<br>(terminal block) |
| Maximum Number of Cards: 6 |   |  |

### Ordering Information

1204-09: T1-1.544 (75 ohm) or E1-2.048 (75 ohm) module

1204-0A: T1-1.544 (100 ohm) or E1-2.048 (120 ohm) module

1204-53: Quad T1 (75 ohm) or E1 (75 ohm) module

1204-4C: Quad T1 (100 ohm) or E1 (120 ohm) module

### Programmable Frequency Output

The Programmable Frequency Output option module provides four (4) independently programmable frequency synthesizers that provide square wave pulses or sine wave frequencies from 1PPS (Hz) to 25 MPPS (MHz) in 0.1PPS (Hz) steps, with the output frequency locked to the SecureSync system disciplined oscillator. Outputs are available in three different formats: RS485 square wave on a pluggable terminal block, TTL Square wave on BNC, or Sine Wave on BNC. This option module can be used for a variety of requirements for programmable frequency outputs. The RS485 model of the programmable

frequency output option card can be operated as an N.8 frequency synthesizer. Each output can be phase offset between 0-360 degrees in 0.1 degree steps.

### Specifications

|                                | RS-485 Output  | TTL Output             | Sine Wave Output  |
|--------------------------------|--|------------------------|---|
| Quantity                       | 4, independently programmable                            |                        |   |
| Signal Type and Connector      | RS-485 (terminal block)                                  | TTL (BNC into 50 ohms) | +13 dBm (BNC into 50 ohms)  |
| Output Pulse (frequency) Rates | 1PPS to 25 MPPS in 0.1PPS steps                          |                        | 1 Hz to 25 MHz in 0.1Hz steps   |
| Accuracy                       | Function of input sync source (GPS, IRIG, 1PPS, etc.)    |                        |   |
| Wave Form                      | Square Wave  | Square Wave            | Sine Wave   |
| Synchronization                | Output Frequency locked to SecureSync disciplined 10 MHz |                        |   |
| Jitter Cycle to Cycle          | <10 ns   | <10 ns                 | —   |
| Phase Noise                    | —  | —                      | -120 dBc/Hz @ 1 kHz offset<br>-130 dBc/Hz @ 10 kHz offset<br>-140 dBc/Hz @ 100 kHz offset |
| Harmonics                      | —  | —                      | <-30 dBc  |
| Spurious                       | —  | —                      | <-60 dBc  |
| Maximum Number of Cards: 6     |  |                        |   |

### Ordering Information

1204-13: Programmable Frequency Output Module (Sine Wave)

1204-2F: Programmable Frequency Output Module (TTL)

1204-30: Programmable Frequency Output Module (RS-485)

**POWERED  
BY TRUST**

[safran-navigation-timing.com](https://safran-navigation-timing.com)



June 7, 2023

Safran Electronics & Defense may, at any time and without notice, make changes or improvements to the products and services offered and/or cease producing or commercializing them.