**DIVISION 27 21 29**

**IFS L2+ 24-Port 100/1000Base-X SFP with**

**4-Port 10G SFP+**

**Managed Switch**

**NS4750-24S-4T-4X**

**ENGINEERING SPECIFICATIONS**

# PART 1 - GENERAL

**1.01** SUMMARY

1. IFS Twenty-four 100/1000X SFP slots with Four 10/100/1000Mbps Ethernet ports and Four 10 Gigabit SFP+ Slots Managed Switch

**1.02 SECTION INCLUDES**

1. **NS4750-24S-4T-4X** 24-port 100/1000Mbps SFP slots with 4 Shared 10/100/1000Mbps copper ports and 4 1/10Gbps SFP+ slots Managed Metro Switch

**1.03 REFERENCES**

1. Federal Communications Commission (FCC)
2. European Union Compliance (CE)

**1.04 SYSTEM DESCRIPTION**

1. Performance Requirements: Provides 24 100/1000Base-X SFP mini-GBIC slots with 4 shared 10/100/1000T Ethernet ports.
2. The system shall utilize EIA568, category 5/5e/6, 4-pair cables for 10Base-T or 100Base-TX and 1000Base-T to transfer Ethernet data.
3. The system shall utilize 850nm to 1550nm optics capable of data transmission of 100/1000Mbps on multimode / single mode optical fibers.
4. The Gigabit SFP ports can be optical 1000Base-SX / LX or 100Base-FX through SFP (Small Form-Factor Pluggable) interface.
5. The SFP modules shall utilize **850nm** optics capable of bi-directional data transmission of **1000Base-SX** on four multimode optical fibers.
6. The SFP module shall utilize **1310nm** optics capable of bi-directional data transmission of **1000Base-LX** on four single-mode optical fibers.
7. The SFP module shall utilize **1310nm/1490nm or 1310nm/1550nm** optics capable of bi-directional data transmission of **1000Base-BX** on one single-mode optical fiber.
8. The SFP module shall utilize **1310nm** optics capable of bi-directional data transmission of **100Base-FX** on multimode or single-mode optical fibers.
9. The 10 Gigabit SFP ports can be optical 1000Base-SX / LX and 10GBase-SR/LR through SFP+ interfaces.
10. The SFP+ modules shall utilize **850nm** optics capable of bi-directional data transmission of **10GBase-SR** on four multimode optical fibers.
11. The SFP+ modules shall utilize **1310nm** optics capable of bi-directional data transmission of **10GBase-LR** on four single-mode optical fibers.
12. The **NS4750-24S-4T-4X** Managed Metro Switch provides 24 100/1000Mbps SFP mini-GBIC slots with 4 10/100/1000Mbps shred copper ports and 4 1/10Gbps SFP+ interfaces.

**1.05 SUBMITTALS**

1. Manufacturer’s Installation and Operating Manual: Printed installation and operating information for the Managed Metro Switch.
2. Warranty: Manufacturer’s Printed Warranty.

**1.06 DELIVERY, STORAGE AND HANDLING**

1. Store in original packaging in a climate controlled environment.
2. Storage Temperature not to exceed: **-10˚ C to +70˚ C**

**1.07 PROJECT/SITE CONDITIONS**

1. Temperature Requirements: Products shall operate in an environment with an ambient temperature range of 0**˚** C to +50˚ C with the assistance of fan-forced cooling.
2. Humidity Requirements: Products shall operate in an environment with relative humidity of 5% to 95% (non-condensing).

**1.08 WARRANTY**

1. Standard Carrier Fire & Security Inc. Comprehensive Warranty: Carrier Fire & Security warrants the product to be free of factory defects under manufacture’s 3 Years Warranty.

# PART 2 - PRODUCTS

**2.01 MANUFACTURER**

1. Acceptable Manufacturer:
2. IFS Brand

Carrier Fire & Security Americas Corporation Inc.
13995 Pasteur Blvd, Palm Beach Gardens, FL 33418, USA

1. Website: <https://firesecurityproducts.com>
2. Substitutions: Not Permitted

**2.02 MANUFACTURED UNITS**

1. Model Number Descriptions: Reference Table A: Product Number Descriptions

**2.03 GENERAL SPECIFICATIONS**

1. The Managed Metro Switch shall be an NS4750-24S-4T-4X model.
2. The switch features 24 100/1000X and 100FX optical SFP slots.
3. The switch features four 10/100/1000Mbps shred copper ports.
4. The switch features four 1/10GBase-SR/LR optical SFP+ slots
5. The switch shall support the Ethernet data IEEE 802.3 protocol using Auto-negotiating and Auto-MDI/MDI-X features.
6. The switch shall provide power, fan failure, power or port fault and link / act status indicating LED’s for monitoring proper system operation.
7. The switch shall provide 2 digital input groups and 2 digital output groups.
8. The switch shall provide a RS-232 serial connection for local management of the device.
9. The switch shall be a 1U (one U, 19 inches) 19-inch equipment.
10. The switch shall be connected with EIA568A/B Cat 5/5e/6 UTP/STP cable system for its RJ-45 interface ports.

**2.04 DATA SPECIFICATIONS**

1. Data Interface: Ethernet IEEE802.3/3u/3ab/3z
2. Data Rate:
3. Port-1 to Port-24 SFP: 100/1000Mbps
4. Port-1 to port-4: 10/100/1000Mbps
5. Port-25 to Port-28 SFP+: 1/10 Gbps
6. Data Inputs: 28
7. Operation Mode: Simplex or Duplex

**2.05 STATUS INDICATORS**

1. System

|  |  |  |  |
| --- | --- | --- | --- |
| 1. | PWR | Green | The switch unit is power on |
| 2. | DC1 | Green | Indicates that the Switch is powered on by DC1 input. |
| 3. | DC2 | Green | Indicates that the Switch is powered on by DC2 input. |
| 4.  | Ring | Green | Lit: indicates that Ring state is in idle.Blink: indicates that the Ring state is in protected. |
| 5. | R.O. | Green | Lit: indicates that the switch is set to ring owner.Off: indicates that the switch doesn’t set to ring owner. |

1. 100/1000X SFP Interfaces

|  |  |  |
| --- | --- | --- |
| LNK/ACT | Green | Lit: indicates the link through that SFP port is successfully established with speed **1000Mbps**. |
| Off: indicates that the SFP port is link down. |
| Blinking: indicates that the switch is actively sending or receiving data over that port. |
| Amber | Lit: indicates the link through that SFP or Copper port is successfully established with speed 100Mbps. |
| Off: indicates that the SFP port is link down. |
| Blink: indicates that the switch is actively sending or receiving data over that port. |

1. 10/100/1000T Copper Interfaces (Shared with Port-1 to Port-4)

|  |  |  |
| --- | --- | --- |
| LNK/ ACT | Green | Lit: indicate the link through that port is successfully established at 1000Mbps. |
| Blink: indicate that the switch is actively sending or receiving data over that port. |
|  | Amber | Lit: indicates the link through that copper port is successfully established with speed 10/100Mbps. |
| Off: indicates that the Copper port is link down. |
| Blink: indicates that the switch is actively sending or receiving data over that port. |

1. 10GBase-SR/LR SFP+ Interfaces (Port-25 to Port-28)

|  |  |  |
| --- | --- | --- |
| LNK/ ACT | Green | Lit: indicate the link through that port is successfully established at 10Gbps. |
| Blink: indicate that the switch is actively sending or receiving data over that port. |
| Amber | Lit: indicate the link through that port is successfully established at 1000Mbps. |
| Blink: indicate that the switch is actively sending or receiving data over that port. |

1. Alert

|  |  |  |  |
| --- | --- | --- | --- |
| 1. | Fault | Green | Indicates the power or port fault alarm. |
| 2. | FAN1 | Green | Indicates the FAN1 failure. |
| 3. | FAN2 | Green | Indicates the FAN2 failure. |

**2.06 CONNECTORS**

1. Optical: SFP slot and SFP+ slot
2. Power: Universal AC socket and DC 1 and DC2 input interfaces.
3. Data: RJ-45, SFP and SFP+ fiber-optical.
4. Console: RJ45 Type RS-232 serial com.

**2.07 ELECTRICAL SPECIFICATIONS**

1. Power Characteristics of NS4750-24S-4T-4X:
2. Voltage Input:100~240V AC / 50-60Hz
3. Current: 1.5A max.
4. DC 36V to 60V Power Input
5. Current: 1.6A max.
6. Power Consumption: Maximum 57.6 watts

**2.08 MECHANICAL SPECIFICATIONS**

1. Surface Mount Dimensions: 17” x 7.87” x 1.75” (440mm x 200mm x 44.5mm)
2. Finish: Module shall be constructed of a metal enclosure with a powder coat.
3. Weight: 6.48bs./ 2.94kg

**2.09 ENVIRONMENTAL SPECIFICATIONS**

1. MTBF: > 50,000 Hours
2. Operating Temp: 0˚ C to +50˚ C (AC power only)
3. Operating Temp: -10˚ C to +60˚ C (DC power only)
4. Storage Temp: -10˚ C to +70˚ C
5. Relative Humidity: 5% to 95% (non-condensing).

**2.10 REGULATORY AGENCIES/APPROVALS AND LISTINGS**

1. Federal Communications Commission (FCC) Part 15, Class A
2. European Union Compliance (CE) with following standard:
3. EN 55022:2006, Class A
4. EN61000-3-2:2006
5. EN61000-3-3+A2:2005
6. EN 55024+A2:2003

**2.11 ACCESSORIES**

1. AC Power cord
2. Rubber feet
3. Rack-mount brackets
4. RS-232 RJ45 to DB9 male console cable

**PART 3 - EXECUTION**

**3.01 PREPARATION**

1. Standalone Module (Surface Mount)
2. Shall be mounted on a properly prepared surface adequate for the size and weight of module.
3. The placement of the unit shall allow provision for cable installation and maintenance as indicated on the approved detail drawings and in compliance with the installation manual.
4. Rack Mount Module (19” Rack)
5. The unit is installed in a standard EIA 19” (482.6 mm) rack or wall standoff bracket adequate for the size and weight of the rack mount unit. The placement of the unit shall allow provision for cable installation and maintenance as indicated on the approved detail drawings and in compliance with the user’s manual.
6. Optical Fibers
7. Caution: NEVER look into the end of an active optical fiber when using laser light output. Eye damage can occur. Wear eye protection when cleaving, terminating, and splicing fiber.
8. The number of optical fiber SFP / SFP+ slot shall meet the requirements of the UTC Fire & Security model number.
9. All optical fiber cables shall be properly installed and terminated with the mating optical connectors.
10. The optical link shall be tested with either a power meter, at a minimum, or OTDR to ensure the link budget (overall path loss) plus an added 3dB of optical safety margin does not exceed the optical power budge.

**3.02 INSTALLATION**

1. General: Locate fiber optic modules as indicated on the approved detail drawings and install module in compliance with the UTC Fire & Security User’s manual.

**3.03 TESTING**

1. Testing the 10/100/1000T Gigabit Copper Link.
2. Verify that the data leads and UTP ports are properly connected.
3. Successful data link operation should be confirmed at this point by communicating with other equipment.
4. Testing the 10/100/1000T Copper output capability.
5. Testing the 100/1000X SFP output capability.
6. Testing the 1/10Gbps SFP+ output capability.
7. Testing Digital Input and Digital Output.

**3.04 CLEANING**

1. Follow all instructions for proper use of solvents and adhesives used for termination and splicing.
2. At completion of the installation, dispose of all UTP cable scraps properly.

# MANUFACTURED UNITS REFERENCE TABLES

Table A: Product Number Descriptions

|  |  |  |
| --- | --- | --- |
| **IFS PART NO.** | **DESCRIPTION** | **MAX. DISTANCE\*** |
| **NS4750-24S-4T-4X** | **L2+ 24-Port 100/1000Base-X SFP with** **4-Port 10G SFP+ Managed Metro Ethernet Switch** | 300 feet (100M) electrical |

Table B: Product Compatibility Chart

|  |  |  |
| --- | --- | --- |
| **SFP Transceiver** | **DESCRIPTION** | **MAX. DISTANCE\*** |
| MULTI-MODE |   |   |
| S30-2MLC | SFP-Port 1000Base-SX Mini-GBIC Module - 2 Fiber - 550m - Multi-Mode - 850nm (0~50℃) - Based on 50/125µm OM2 Fiber | 550m |
| S30-2MLC-2 | SFP-Port 1000Base-SX2 Mini-GBIC Module - 2 Fiber - 2Km - Multi-Mode - 1310nm (0~50℃) - Based on 50/125µm OM4 Laser Optimise | 2Km |
| S20-2MLC-2 | SFP-Port 100Base-FX Mini-GBIC Module - 2 Fiber - 2Km - Multi-Mode - 1310nm (0~50℃) | 2Km |
| S40-2MLC | SFP+ Port 10GBase-SR Mini-GBIC Module - 2 Fiber – 300m - Multi-Mode - 850nm (0~50℃) \*\* | 300m |
| SINGLE MODE |   |  |
| S30-2SLC-10 | SFP-Port 1000Base-LX10 Mini-GBIC Module - 2 Fiber - 10Km - Single-Mode - 1310nm (0~50℃ | 10Km |
| S30-2SLC-30 | SFP-Port 1000Base-LHX Mini-GBIC Module - 2 Fiber - 30Km - Single-Mode - 1310nm (0~50℃) | 30Km |
| S30-2SLC-70 | SFP-Port 1000Base-ZX Mini-GBIC Module - 2 Fiber - 70Km - Single-Mode - 1550nm (0~50℃) | 70Km |
| S30-1SLC/A-10 | SFP-Port 1000Base-BX10 Mini-GBIC Module - 1 Fiber - 10Km - Single-Mode - Tx 1310nm - Rx 1490nm (0~50℃) | 10Km |
| S30-1SLC/B-10 | SFP-Port 1000Base-BX10 Mini-GBIC Module - 1 Fiber - 10Km - Single-Mode - Tx 1490nm - Rx 1310nm(0~50 ℃) | 10Km |
| S30-1SLC/A-20 | SFP-Port 1000Base-BX20 Mini-GBIC Module - 1 Fiber - 20Km - Single-Mode - Tx 1310nm - Rx 1490nm (0~50℃) | 20Km |
| S30-1SLC/B-20 | SFP-Port 1000Base-BX20 Mini-GBIC Module - 1 Fiber - 20Km - Single-Mode - Tx 1490nm - Rx 1310nm (0~50℃) | 20Km |
| S30-1SLC/A-60 | SFP-Port 1000Base-BX60 Mini-GBIC Module - 1 Fiber - 60Km - Single-Mode - Tx 1310nm - Rx 1490nm (0~50℃) | 60Km |
| S30-1SLC/B-60 | SFP-Port 1000Base-BX60 Mini-GBIC Module - 1 Fiber - 60Km - Single-Mode - Tx 1490nm - Rx 1310nm (0~50℃) | 60Km |
| S20-1SLC/A-20 | SFP-Port 100Base-BX20 Mini-GBIC Module - 1 Fiber - 20Km - Single-Mode - Tx 1310nm - Rx 1550nm (0~50℃) | 20Km |
| S20-1SLC/B-20 | SFP-Port 100Base-BX20 Mini-GBIC Module - 1 Fiber - 20Km - Single-Mode - Tx 1550nm - Rx 1310nm (0~50℃) | 20Km |
| S20-2SLC-20 | SFP-Port 100Base-LX20 Mini-GBIC Module - 2 Fiber - 20Km - Single-Mode - 1310nm (0~50℃) | 20Km |
| S40-2SLC-10 | SFP+ Port 10GBase-LR Mini-GBIC Module - 2 Fiber - 10Km – Single Mode - 1310nm (0~50℃) | 10Km |

\* Maximum distance is limited to optical loss of the fiber and any additional loss by connectors, splices and patch panels.

\*\* Based on 50/125um OM3 Fiber with a max of 300m.

## END OF SECTION