



E-series™ Routing Platforms

ERX™ End-of-Life Module Guide

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This guide provides an overview and description of ERX modules that are end-of-life (EOL) and can no longer be ordered for the following routers:

- ERX-7xx models
- ERX-14xx models
- ERX-310 router

Depending on the EOL schedule of a module, new software releases might not support the module.

The modules are listed alphabetically in Table 1 on page 3. For more information about ERX routers and modules, refer to the following books:

- Module installation and maintenance—*ERX Hardware Guide*
- Managing E-series routers—*JUNOS System Basics Configuration Guide*
- Configuring E-series modules—*JUNOS Link Layer Configuration Guide*

To obtain the most current list of EOL modules, see the End-of-Life Products page on the Juniper Networks Web site at <http://www.juniper.net/support/eol>.

Table 1: End-of-Life Modules for ERX Routers

Combination Name	Line Module Label	I/O Module Label	First JUNOS ^e Support	Last JUNOS ^e Support	Page
CE1					
CE1	CE1	CE1 FULL I/O	1.1.0	7.3.x	7
Channelized T1					
CT1	CT1	CT1 FULL I/O	1.1.0	7.3.x	8
Channelized T3					
CT3 (3 ports)	CT3	CT3/T3 I/O	1.0.0	7.0.x	9
E3					
E3 ATM	E3 ATM	E3 I/O	1.1.0	7.1.x	10
E3 Frame (3 ports)	E3 FRAME	E3 I/O	1.1.0	7.0.x	11
Fast Ethernet					
FE-2 (2 ports)	FE-2	FE-2 I/O	1.3.0	7.0.x	12
FE-8 (8 ports) (128 MB)	GE/FE	FE-8 I/O	2.0.0	5.2.x	13
Only line module is EOL.					
Gigabit Ethernet (1-port)					
GE 1000Base-LH (128 MB)	GE/FE	GE I/O SFP	2.0.0	5.2.x	14
Only line module is EOL.					
GE 1000Base-SX (128 MB)	GE/FE	GE I/O SFP	2.0.0	5.2.x	16
Only line module is EOL.					
GE 1000Base-ZX (128 MB)	GE/FE	GE I/O SFP	2.0.0	5.2.x	18
Only line module is EOL.					
HSSI					
HSSI	HSSI-3F	HSSI-3 I/O	3.1.0	7.3.x	20
OC3/STM1					
OC3 (dual-port) multimode	OC3	OC3 I/O	1.0.0	4.1.x	21
MULTI MODE					

Table 1: End-of-Life Modules for ERX Routers *(continued)*

Combination Name	Line Module Label	I/O Module Label	First JUNOS ^e Support	Last JUNOS ^e Support	Page
OC3 (dual-port) single-mode	OC3	OC3 I/O SINGLE MODE	1.0.0	4.1.x	22
OC3/STM1 ATM					
OC3/STM1 ATM multimode without APS/MSP redundancy (128 MB)	OCx/STMx ATM <i>or</i> OCx/STMx /DS3-ATM	OC3-4 I/O MULTI MODE	2.0.0	5.2.x	23
Only line module is EOL.					
OC3/STM1 ATM single-mode intermediate reach without APS/MSP redundancy (128 MB)	OCx/STMx ATM <i>or</i> OCx/STMx /DS3-ATM	OC3-4 I/O SINGLE MODE	2.0.0	5.2.x	25
Only line module is EOL.					
OC3/STM1 ATM single-mode long reach without APS/MSP redundancy (128 MB)	OCx/STMx ATM <i>or</i> OCx/STMx /DS3-ATM	OC3-4 I/O LONG HAUL	2.0.0	5.2.x	27
Only line module is EOL.					
OC12/STM4 ATM					
OC12/STM4 ATM multimode without APS/MSP redundancy (128 MB)	OCx/STMx ATM <i>or</i> OCx/STMx /DS3-ATM	OC12 STM4 I/O MULTI MODE	2.0.0	5.2.x	29
Only line module is EOL.					

Table 1: End-of-Life Modules for ERX Routers *(continued)*

Combination Name	Line Module Label	I/O Module Label	First JUNOS ^e Support	Last JUNOS ^e Support	Page
OC12/STM4 ATM single-mode intermediate reach without APS/MSP redundancy (128 MB)	OCx/STMx ATM <i>or</i> OCx/STMx /DS3-ATM	OC12 STM4 I/O SINGLE MODE	2.0.0	5.2.x	31
Only line module is EOL.					
OC12/STM4 ATM single-mode long reach without APS/MSP redundancy (128 MB)	OCx/STMx ATM <i>or</i> OCx/STMx /DS3-ATM	OC12 STM4 I/O LONG HAUL	2.0.0	5.2.x	33
Only line module is EOL.					
SRPs					
SRP-5G (512 MB)	SRP-5G	SRP I/O	1.0.0	5.2.x	35
SRP-5G + (512 MB)	SRP-5G +	SRP I/O	3.0.2	8.0.x	36
SRP-10G (512 MB)	SRP-10G	SRP I/O	1.1.0	5.2.x	37
SRP-10G (1-GB memory)	SRP-10G	SRP I/O	4.1.3, 5.0.4, 5.1.2, 5.2.0	8.0.x	38
SRP-SE10G (512 MB)	SRP-SE10G	SRP-SE I/O	5.1.0	7.1.x	39
SRP-40G (512 MB)	SRP-40G	SRP I/O	3.4.1	5.2.x	40
SRP-40G PLUS (1 GB)	SRP-40G PLUS	SRP I/O	4.0.0	7.1.x	41
T3					
T3 ATM (3 ports)	T3 ATM	CT3/T3 I/O	1.1.0	7.0.x	42
T3 ATM (4 ports) (128 MB)	OCx/STMx ATM <i>or</i> OCx/STMx /DS3-ATM	4xDS3 ATM I/O	4.1.0	5.2.x	43
Only line module is EOL.					
T3 Frame (3 ports)	T3 FRAME	CT3/T3 I/O	1.1.0	7.0.x	44

Table 1: End-of-Life Modules for ERX Routers *(continued)*

Combination Name	Line Module Label	I/O Module Label	First JUNOS ^e Support	Last JUNOS ^e Support	Page
Tunnel Service Module (TSM)					
TSM	TUNNEL SERVICE	No I/O module	3.0.2	8.0.x	45
X.21/V.35					
X.21/V.35	X.21/V.35	X.21/V.35 I/O	2.10.1, 3.3.2	7.3.x	46

CE1 Module Combination

Line module label	CE1
I/O module label	CE1 FULL I/O
Number of I/O ports	■ 20
Software release	<ul style="list-style-type: none"> ■ First supported: 1.1.0 ■ Final supported: 7.3.x
Description	<ul style="list-style-type: none"> ■ 40 W ■ Channelized E1
Type	■ Non-ASIC
Capability	<ul style="list-style-type: none"> ■ E1 ■ HDLC framing
Software features	■ See <i>ERX Module Guide, Appendix A, Module Protocol Support</i> for information about the layer 2 and layer 3 protocols and applications that this module combination supports.
Model compatibility	<ul style="list-style-type: none"> ■ ERX-7xx models ■ ERX-1410 router
SRP module compatibility	<ul style="list-style-type: none"> ■ SRP-5G ■ SRP-5G + ■ SRP-10G
Module redundancy support	■ 1:N redundancy
Cables and connectors	<ul style="list-style-type: none"> ■ RJ-48C, 120 ohm ■ BNC, 75-ohm via a balun panel that connects to the I/O module ■ Use shielded cables to maintain EMC compliance. ■ The transmitted signal complies with ITUT G.703, Physical/electrical characteristics of hierarchical digital interfaces (November 2001) for cable lengths up to 450 m (492 yards). ■ See <i>ERX Hardware Guide, Chapter 5, Cabling ERX Routers</i> for more information.
LEDs	■ See <i>ERX Module Guide, Appendix B, Module LEDs</i> .
Alarms, errors, and events	■ See <i>Monitoring Interfaces</i> in the <i>Configuring Channelized T1 and Channelized E1 Interfaces</i> chapter of the <i>JUNOS Physical Layer Configuration Guide</i> for Release 8.0.x and earlier.

CT1 Module Combination

Line module label	CT1
I/O module label	CT1 FULL I/O
Number of I/O ports	■ 24
Software release	<ul style="list-style-type: none"> ■ First supported: 1.1.0 ■ Final supported: 7.3.x
Description	<ul style="list-style-type: none"> ■ 40 W ■ Channelized T1
Type	■ Non-ASIC
Capability	<ul style="list-style-type: none"> ■ DS1, DS0 ■ HDLC Framing
Software features	■ See <i>ERX Module Guide, Appendix A, Module Protocol Support</i> for information about the layer 2 and layer 3 protocols and applications that this module combination supports.
Model compatibility	<ul style="list-style-type: none"> ■ ERX-7xx models ■ ERX-1410 router
SRP module compatibility	<ul style="list-style-type: none"> ■ SRP-5G ■ SRP-5G + ■ SRP-10G
Module redundancy support	■ 1:N redundancy
Cables and connectors	<ul style="list-style-type: none"> ■ RJ-48C 100-ohm connector ■ Use shielded cables to maintain EMC compliance. ■ The line interface unit supports multiple line buildouts. ■ Signal strength is software controlled. ■ The transmitted signal complies with ANSI T1.102-1993 Digital Hierarchy - Electrical Interfaces (1999) for cable lengths up to 201 m (660 feet). ■ See <i>ERX Hardware Guide, Chapter 5, Cabling ERX Routers</i> for more information.
LEDs	■ See <i>ERX Module Guide, Appendix B, Module LEDs</i> .
Alarms, errors, and events	■ See <i>Monitoring Interfaces</i> in the <i>Configuring Channelized T1 and Channelized E1 Interfaces</i> chapter of the <i>JUNOS Physical Layer Configuration Guide</i> for Release 8.0.x and earlier.

CT3 Module Combination (3 Ports)

Line module label	CT3
I/O module label	CT3/T3 I/O
Number of I/O ports	■ 3
Software release	<ul style="list-style-type: none"> ■ First supported: 1.0.0 ■ Final supported: 7.0.x
Description	<ul style="list-style-type: none"> ■ 60 W ■ Channelized T3
Type	■ Non-ASIC
Capability	<ul style="list-style-type: none"> ■ DS3, DS1, DS0 ■ HDLC framing
Software features	■ See <i>ERX Module Guide, Appendix A, Module Protocol Support</i> for information about the layer 2 and layer 3 protocols and applications that this module combination supports.
Model compatibility	<ul style="list-style-type: none"> ■ ERX-7xx models ■ ERX-1410 router
SRP module compatibility	<ul style="list-style-type: none"> ■ SRP-5G ■ SRP-5G + ■ SRP-10G
Module redundancy support	■ 1:N redundancy
Cables and connectors	<ul style="list-style-type: none"> ■ BNC 75-ohm connector ■ The line interface unit supports two line buildouts: <ul style="list-style-type: none"> ■ 0–68.5 m (0–225 feet) ■ 69–137 m (226–450 feet) ■ Signal strength is software controlled. ■ The transmitted signal complies with ANSI T1.102-1993 Digital Hierarchy - Electrical Interfaces (1999) for cable lengths up to 201 m (660 feet). ■ See <i>ERX Hardware Guide, Chapter 5, Cabling ERX Routers</i> for more information.
LEDs	■ See <i>ERX Module Guide, Appendix B, Module LEDs</i> .
Alarms, errors, and events	■ See <i>Monitoring Interfaces</i> in the <i>Configuring Channelized T3 Interfaces</i> chapter of the <i>JUNOS Physical Layer Configuration Guide</i> for Release 8.0.x and earlier.

E3 ATM Module Combination

Line module label	E3 ATM
I/O module label	E3 I/O
Number of I/O ports	■ 3
Software release	<ul style="list-style-type: none"> ■ First supported: 1.1.0 ■ Final supported: 7.1.x
Description	<ul style="list-style-type: none"> ■ 60 W ■ Unchannelized E3 for ATM
Type	■ Non-ASIC
Capability	■ ATM/AAL5
Software features	<ul style="list-style-type: none"> ■ See <i>ERX Module Guide, Appendix A, Module Protocol Support</i> for information about the layer 2 and layer 3 protocols and applications that this module combination supports.
Model compatibility	<ul style="list-style-type: none"> ■ ERX-7xx models ■ ERX-1410 router
SRP module compatibility	<ul style="list-style-type: none"> ■ SRP-5G ■ SRP-5G + ■ SRP-10G
Module redundancy support	■ 1:N redundancy
Cables and connectors	<ul style="list-style-type: none"> ■ BNC 75-ohm connector ■ The transmitted signal complies with ITUT G.703, Physical/electrical characteristics of hierarchical digital interfaces (November 2001) for cable lengths from 0–137 m (0–450 feet). ■ See <i>ERX Hardware Guide, Chapter 5, Cabling ERX Routers</i> for more information.
LEDs	■ See <i>ERX Module Guide, Appendix B, Module LEDs</i> .
Alarms, errors, and events	<ul style="list-style-type: none"> ■ See <i>Monitoring Interfaces</i> in the <i>Configuring T3 and E3 Interfaces</i> chapter of the <i>JUNOS Physical Layer Configuration Guide</i> for Release 8.0.x and earlier.

E3 Frame Module Combination (3 Ports)

Line module label	E3 FRAME
I/O module label	E3 I/O
Number of I/O ports	■ 3
Software release	<ul style="list-style-type: none"> ■ First supported: 1.1.0 ■ Final supported: 7.0.x
Description	<ul style="list-style-type: none"> ■ 60 W ■ Unchannelized E3 for Frame
Type	■ Non-ASIC
Capability	<ul style="list-style-type: none"> ■ E3 ■ HDLC framing
Software features	■ See <i>ERX Module Guide, Appendix A, Module Protocol Support</i> for information about the layer 2 and layer 3 protocols and applications that this module combination supports.
Model compatibility	<ul style="list-style-type: none"> ■ ERX-7xx models ■ ERX-1410 router
SRP module compatibility	<ul style="list-style-type: none"> ■ SRP-5G ■ SRP-5G + ■ SRP-10G
Module redundancy support	■ 1:N redundancy
Cables and connectors	<ul style="list-style-type: none"> ■ BNC 75-ohm connector ■ The transmitted signal complies with ITUT G.703, Physical/electrical characteristics of hierarchical digital interfaces (November 2001) for cable lengths from 0–137 m (0–450 feet). ■ See <i>ERX Hardware Guide, Chapter 5, Cabling ERX Routers</i> for more information.
LEDs	■ See <i>ERX Module Guide, Appendix B, Module LEDs</i> .
Alarms, errors, and events	■ See <i>Monitoring Interfaces</i> in the <i>Configuring T3 and E3 Interfaces</i> chapter of the <i>JUNOS Physical Layer Configuration Guide</i> for Release 8.0.x and earlier.

FE-2 Module Combination (2 Ports)

Line module label	FE-2
I/O module label	FE-2 I/O
Number of I/O ports	■ 2
Software release	<ul style="list-style-type: none"> ■ First supported: 1.3.0 ■ Last supported: 7.0.x
Description	<ul style="list-style-type: none"> ■ 60 W ■ Fast Ethernet
Type	■ Non-ASIC
Capability	<ul style="list-style-type: none"> ■ IEEE 802.3 standards compliance ■ 10/100Base-T
Software features	■ See <i>ERX Module Guide, Appendix A, Module Protocol Support</i> for information about the layer 2 and layer 3 protocols and applications that this module combination supports.
Model compatibility	<ul style="list-style-type: none"> ■ ERX-7xx models ■ ERX-1410 router
SRP module compatibility	<ul style="list-style-type: none"> ■ SRP-5G ■ SRP-5G + ■ SRP-10G
Module redundancy support	■ Not applicable
Cables and connectors	<ul style="list-style-type: none"> ■ Accepts up to two RJ-45 connectors. ■ For 10-Mbps operation, use CAT 3, 4, or 5 UTP cable. ■ For 100-Mbps operation, use only CAT 5 UTP cable. ■ The transmitted signal complies with IEEE 802.3/802.3u for cable lengths up to 100 m (328 feet). ■ See <i>ERX Hardware Guide, Chapter 5, Cabling ERX Routers</i> for more information.
LEDs	■ See <i>ERX Module Guide, Appendix B, Module LEDs</i> .
Alarms, errors, and events	■ See <i>Monitoring Ethernet Interfaces</i> in the <i>Configuring Ethernet Interfaces</i> chapter of the <i>JUNOS Physical Layer Configuration Guide</i> for Release 8.0.x and earlier.

FE-8 Module Combination (8 Ports) (128 MB)

This module combination is no longer supported because the line module has reached end-of-life. However, the I/O module is still supported.

Line module label	GE/FE
I/O module label	FE-8 I/O
Number of I/O ports	■ 8
Software release	<ul style="list-style-type: none"> ■ First supported: 2.0.0 ■ Final supported: 5.2.x
Description	<ul style="list-style-type: none"> ■ 130 W ■ Fast Ethernet
Type	■ ASIC
Capability	<ul style="list-style-type: none"> ■ IEEE 802.3 standards compliance ■ 10/100Base-T
Software features	<ul style="list-style-type: none"> ■ See <i>ERX Module Guide, Appendix A, Module Protocol Support</i> for information about the layer 2 and layer 3 protocols and applications that this module combination supports.
Model compatibility	<ul style="list-style-type: none"> ■ ERX-7xx models ■ ERX-14xx models ■ ERX-310 router
SRP module compatibility	<ul style="list-style-type: none"> ■ SRP-5G + ■ SRP-10G ■ SRP-40G ■ SRP-40G PLUS ■ SRP-SE10G
Module redundancy support	■ Not applicable
Cables and connectors	<ul style="list-style-type: none"> ■ RJ-45 connectors ■ For 10-Mbps operation, use CAT 3, 4, or 5 UTP cable. ■ For 100-Mbps operation, use only CAT 5 UTP cable. ■ The transmitted signal complies with IEEE 802.3/802.3u for cable lengths up to 100 m (328 feet). ■ See <i>ERX Hardware Guide, Chapter 5, Cabling ERX Routers</i> for more information.
LEDs	■ See <i>ERX Module Guide, Appendix B, Module LEDs</i> .
Alarms, errors, and events	<ul style="list-style-type: none"> ■ See <i>Monitoring Ethernet Interfaces</i> in the <i>Configuring Ethernet Interfaces</i> chapter of the <i>JUNOS Physical Layer Configuration Guide</i> for Release 8.0.x and earlier.

GE 1000Base-LH Module Combination (1 Port) (128 MB)

This module combination is no longer supported because the line module has reached end-of-life. However, the I/O module is still supported.

Line module label	GE/FE
I/O module label	GE I/O SFP
Number of I/O ports	<ul style="list-style-type: none"> ■ 1 active, 1 redundant
Software release	<ul style="list-style-type: none"> ■ First supported: 2.0.0 ■ Final supported: 5.2.x
Description	<ul style="list-style-type: none"> ■ 130 W ■ Gigabit Ethernet ■ The GE SFP I/O module uses a range of small form-factor pluggable (SFP) transceivers to support different modes and cable lengths. ■ The transceivers on this GE I/O module are 1000Base-LX/LH compliant.
Type	<ul style="list-style-type: none"> ■ ASIC
Capability	<ul style="list-style-type: none"> ■ Ethernet (IEEE 802.3z) ■ 1000Base-LH
Software features	<ul style="list-style-type: none"> ■ See <i>ERX Module Guide, Appendix A, Module Protocol Support</i> for information about the layer 2 and layer 3 protocols and applications that this module combination supports.
Model compatibility	<ul style="list-style-type: none"> ■ ERX-7xx models ■ ERX-14xx models ■ ERX-310 router
SRP module compatibility	<ul style="list-style-type: none"> ■ SRP-5G + ■ SRP-10G ■ SRP-40G ■ SRP-40G PLUS ■ SRP-SE10G
Module redundancy support	<ul style="list-style-type: none"> ■ Not applicable

Cables and connectors

- LC full duplex
- Tx power:
 - min: -9.5 dBm
 - max: -3 dBm
- Center wavelength: 1300 nm
- Rx input power:
 - min: -20 dBm
 - max: -3 dBm
- Rated for 10 km (6.2 miles) over 10-micron core cable
- See *ERX Hardware Guide, Chapter 5, Cabling ERX Routers* for more information.

LEDs

- See *ERX Module Guide, Appendix B, Module LEDs*.

Alarms, errors, and events

- See *Monitoring Ethernet Interfaces* in the *Configuring Ethernet Interfaces* chapter of the *JUNOS Physical Layer Configuration Guide* for Release 8.0.x and earlier.
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GE 1000Base-SX Module Combination (1 Port) (128 MB)

This module combination is no longer supported because the line module has reached end-of-life. However, the I/O module is still supported.

Line module label	GE/FE
I/O module label	GE I/O SFP
Number of I/O ports	<ul style="list-style-type: none"> ■ 1 active, 1 redundant
Software release	<ul style="list-style-type: none"> ■ First supported: 2.0.0 ■ Final supported: 5.2.x
Description	<ul style="list-style-type: none"> ■ 130 W ■ Gigabit Ethernet ■ The GE SFP I/O module uses a range of small form-factor pluggable (SFP) transceivers to support different modes and cable lengths. ■ The transceivers on this GE I/O module are 1000Base-SX compliant.
Type	<ul style="list-style-type: none"> ■ ASIC
Capability	<ul style="list-style-type: none"> ■ Ethernet (IEEE 802.3z) ■ 1000Base-SX
Software features	<ul style="list-style-type: none"> ■ See <i>ERX Module Guide, Appendix A, Module Protocol Support</i> for information about the layer 2 and layer 3 protocols and applications that this module combination supports.
Model compatibility	<ul style="list-style-type: none"> ■ ERX-7xx models ■ ERX-14xx models ■ ERX-310 router
SRP module compatibility	<ul style="list-style-type: none"> ■ SRP-5G + ■ SRP-10G ■ SRP-40G ■ SRP-40G PLUS ■ SRP-SE10G
Module redundancy support	<ul style="list-style-type: none"> ■ Not applicable

Cables and connectors

- LC full duplex
- Tx power:
 - min: -9.5 dBm
 - max: -4 dBm
- Center wavelength: 850 nm
- Rx input power:
 - min: -17 dBm
 - max: -3 dBm
- Rated for 275 m (300 yards) over 62.5-micron core cable
- Rated for 550 m (601 yards) over 50-micron core cable
- See *ERX Hardware Guide, Chapter 5, Cabling ERX Routers* for more information.

LEDs

- See *ERX Module Guide, Appendix B, Module LEDs*.

Alarms, errors, and events

- See *Monitoring Ethernet Interfaces* in the *Configuring Ethernet Interfaces* chapter of the *JUNOS Physical Layer Configuration Guide* for Release 8.0.x and earlier.
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GE 1000Base-ZX Module Combination (1 Port) (128 MB)

This module combination is no longer supported because the line module has reached end-of-life. However, the I/O module is still supported.

Line module label	GE/FE
I/O module label	GE I/O SFP
Number of I/O ports	<ul style="list-style-type: none"> ■ 1 active, 1 redundant
Software release	<ul style="list-style-type: none"> ■ First supported: 2.0.0 ■ Final supported: 5.2.x
Description	<ul style="list-style-type: none"> ■ 130 W ■ Gigabit Ethernet ■ The GE SFP I/O module uses a range of small form-factor pluggable (SFP) transceivers to support different modes and cable lengths. ■ The transceivers on this GE I/O module are 1000Base-ZX compliant.
Type	<ul style="list-style-type: none"> ■ ASIC
Capability	<ul style="list-style-type: none"> ■ Ethernet (IEEE 802.3z) ■ 1000Base-ZX
Software features	<ul style="list-style-type: none"> ■ See <i>ERX Module Guide, Appendix A, Module Protocol Support</i> for information about the layer 2 and layer 3 protocols and applications that this module combination supports.
Model compatibility	<ul style="list-style-type: none"> ■ ERX-7xx models ■ ERX-14xx models ■ ERX-310 router
SRP module compatibility	<ul style="list-style-type: none"> ■ SRP-5G + ■ SRP-10G ■ SRP-40G ■ SRP-40G PLUS ■ SRP-SE10G
Module redundancy support	<ul style="list-style-type: none"> ■ Not applicable

Cables and connectors	<ul style="list-style-type: none">■ LC full duplex■ Tx power:<ul style="list-style-type: none">■ min: -3 dBm■ max: 2 dBm■ Center wavelength: 1550 nm■ Rx input power:<ul style="list-style-type: none">■ min: -23 dBm■ max: -3 dBm■ Rated for 70 km (43.4 miles) over 10-micron core cable■ See <i>ERX Hardware Guide, Chapter 5, Cabling ERX Routers</i> for more information.
LEDs	<ul style="list-style-type: none">■ See <i>ERX Module Guide, Appendix B, Module LEDs</i>.
Alarms, errors, and events	<ul style="list-style-type: none">■ See <i>Monitoring Ethernet Interfaces</i> in the <i>Configuring Ethernet Interfaces</i> chapter of the <i>JUNOS Physical Layer Configuration Guide</i> for Release 8.0.x and earlier.

HSSI Module Combination

Line module label	HSSI-3F
I/O module label	HSSI-3 I/O
Number of I/O ports	■ 3
Software release	<ul style="list-style-type: none"> ■ First supported: 3.1.0 ■ Final supported: 7.3.x
Description	<ul style="list-style-type: none"> ■ 60 W ■ High-speed serial interface
Type	■ Non-ASIC
Capability	<ul style="list-style-type: none"> ■ Up to 44.736 MHz data rate ■ HDLC Framing
Software features	■ See <i>ERX Module Guide, Appendix A, Module Protocol Support</i> for information about the layer 2 and layer 3 protocols and applications that this module combination supports.
Model compatibility	<ul style="list-style-type: none"> ■ ERX-7xx models ■ ERX-1410 router
SRP module compatibility	<ul style="list-style-type: none"> ■ SRP-5G ■ SRP-5G + ■ SRP-10G
Module redundancy support	■ Not applicable
Cables and connectors	<ul style="list-style-type: none"> ■ Standard HSSI connector: 2-row, 50-pin, receptacle header with rails and latch blocks ■ 50 feet (15.24 m) maximum cable length ■ See <i>ERX Hardware Guide, Chapter 5, Cabling ERX Routers</i> for more information.
LEDs	■ See <i>ERX Module Guide, Appendix B, Module LEDs</i> .
Alarms, errors, and events	■ See <i>Monitoring Interfaces</i> in the <i>Configuring HSSIs</i> chapter of the <i>JUNOS Physical Layer Configuration Guide</i> for Release 8.0.x and earlier.

OC3 (Dual-Port) Multimode Module Combination

Line module label	OC3
I/O module label	OC3 I/O MULTI MODE
Software release	<ul style="list-style-type: none"> ■ First supported: 1.0.0 ■ Final supported: 4.1.x
Description	<ul style="list-style-type: none"> ■ Obsolete, no longer supported

OC3 (Dual-Port) Single-Mode Module Combination

Line module label	OC3
I/O module label	OC3 I/O SINGLE MODE
Software release	<ul style="list-style-type: none">■ First supported: 1.0.0■ Final supported: 4.1.x
Description	<ul style="list-style-type: none">■ Obsolete, no longer supported

OC3/STM1 ATM Multimode Without APS/MSP Redundancy Module Combination (128 MB)

This module combination is no longer supported because the line module has reached end-of-life. However, the I/O module is still supported.

Line module label	OCx/STMx ATM or OCx/STMx /DS3-ATM
I/O module label	OC3-4 I/O MULTI MODE
Number of I/O ports	■ 4
Software release	■ First supported: 2.0.0 ■ Final supported: 5.2.x
Description	■ 130 W ■ Unchannelized, concatenated OC3/STM1 for ATM
Type	■ ASIC
Capability	■ OC3/STM1 ■ ATM:AAL5
Software features	■ See <i>ERX Module Guide, Appendix A, Module Protocol Support</i> for information about the layer 2 and layer 3 protocols and applications that this module combination supports.
Model compatibility	■ ERX-7xx models ■ ERX-14xx models ■ ERX-310 router
SRP module compatibility	■ SRP-5G + ■ SRP-10G ■ SRP-40G ■ SRP-40G PLUS ■ SRP-SE10G
Module redundancy support	■ 1:N redundancy ■ NOTE: Line module redundancy is not supported on the ERX-310 router.

Cables and connectors	<ul style="list-style-type: none"> ■ SC full duplex connector ■ Tx power: <ul style="list-style-type: none"> ■ min: -19 dBm ■ max: -14 dBm ■ Center wavelength: 1310 nm ■ Rx input power: <ul style="list-style-type: none"> ■ min: -30 dBm ■ max: -14 dBm ■ Rated for 2 km (1.2 miles) over 62.5-micron core cable with an optical loss of 0–9 dB or 50-micron core cable with an optical loss of 7 dB ■ See <i>ERX Hardware Guide, Chapter 5, Cabling ERX Routers</i> for more information.
LEDs	<ul style="list-style-type: none"> ■ See <i>ERX Module Guide, Appendix B, Module LEDs</i>.
Alarms, errors, and events	<ul style="list-style-type: none"> ■ See <i>Monitoring SONET/SDH Interfaces</i> in the <i>Configuring Unchannelized OCx/STMx Interfaces</i> chapter of the <i>JUNOS Physical Layer Configuration Guide</i> for Release 8.0.x and earlier.

OC3/STM1 ATM Single-Mode Intermediate Reach Without APS/MSP Redundancy Module Combination (128 MB)

This module combination is no longer supported because the line module has reached end-of-life. However, the I/O module is still supported.

Line module label	OCx/STMx ATM <i>or</i> OCx/STMx /DS3-ATM
I/O module label	OC3-4 I/O SINGLE MODE
Number of I/O ports	■ 4
Software release	■ First supported: 2.0.0 ■ Final supported: 5.2.x
Description	■ 130 W ■ Unchannelized, concatenated OC3/STM1 for ATM
Type	■ ASIC
Capability	■ OC3/STM1 ■ ATM/AAL5
Software features	■ See <i>ERX Module Guide, Appendix A, Module Protocol Support</i> for information about the layer 2 and layer 3 protocols and applications that this module combination supports.
Model compatibility	■ ERX-7xx models ■ ERX-14xx models ■ ERX-310 router
SRP module compatibility	■ SRP-5G + ■ SRP-10G ■ SRP-40G ■ SRP-40G PLUS ■ SRP-SE10G
Module redundancy support	■ 1:N redundancy ■ NOTE: Line module redundancy is not supported on the ERX-310 router.

Cables and connectors	<ul style="list-style-type: none">■ SC full duplex■ Tx power:<ul style="list-style-type: none">■ min: -15 dBm■ max: -8 dBm■ Center wavelength: 1310 nm■ Rx input power:<ul style="list-style-type: none">■ min: -31 dBm■ max: -8 dBm■ Rated for 15 km (9.3 miles) of 9-micron core cable■ See <i>ERX Hardware Guide, Chapter 5, Cabling ERX Routers</i> for more information.
LEDs	<ul style="list-style-type: none">■ See <i>ERX Module Guide, Appendix B, Module LEDs</i>.
Alarms, errors, and events	<ul style="list-style-type: none">■ See <i>Monitoring SONET/SDH Interfaces</i> in the <i>Configuring Unchannelized OCx/STMx Interfaces</i> chapter of the <i>JUNOS Physical Layer Configuration Guide</i> for Release 8.0.x and earlier.

OC3/STM1 ATM Single-Mode Long Reach Without APS/MSP Redundancy Module Combination (128 MB)

This module combination is no longer supported because the line module has reached end-of-life. However, the I/O module is still supported.

Line module label	OCx/STMx ATM <i>or</i> OCx/STMx /DS3-ATM
I/O module label	OC3-4 I/O LONG HAUL
Number of I/O ports	■ 4
Software release	■ First supported: 2.0.0 ■ Final supported: 5.2.x
Description	■ 130 W ■ Unchannelized, concatenated OC3/STM1 for ATM
Type	■ ASIC
Capability	■ OC3/STM1 ■ ATM/AAL5
Software features	■ See <i>ERX Module Guide, Appendix A, Module Protocol Support</i> for information about the layer 2 and layer 3 protocols and applications that this module combination supports.
Model compatibility	■ ERX-7xx models ■ ERX-14xx models ■ ERX-310 router
SRP module compatibility	■ SRP-5G + ■ SRP-10G ■ SRP-40G ■ SRP-40G PLUS ■ SRP-SE10G
Module redundancy support	■ 1:N redundancy ■ NOTE: Line module redundancy is not supported on the ERX-310 router.

Cables and connectors	<ul style="list-style-type: none">■ SC full duplex■ Tx power:<ul style="list-style-type: none">■ min: -5.0 dBm■ max: 0 dBm■ Center wavelength: 1310 nm■ Rx input power:<ul style="list-style-type: none">■ min: -34 dBm■ max: -7 dBm■ Rated for 40 km (24.8 miles) of 9-micron core cable■ See <i>ERX Hardware Guide, Chapter 5, Cabling ERX Routers</i> for more information.
LEDs	<ul style="list-style-type: none">■ See <i>ERX Module Guide, Appendix B, Module LEDs</i>.
Alarms, errors, and events	<ul style="list-style-type: none">■ See <i>Monitoring SONET/SDH Interfaces</i> in the <i>Configuring Unchannelized OCx/STMx Interfaces</i> chapter of the <i>JUNOS Physical Layer Configuration Guide</i> for Release 8.0.x and earlier.

OC12/STM4 ATM Multimode Without APS/MSP Redundancy Module Combination (128 MB)

This module combination is no longer supported because the line module has reached end-of-life. However, the I/O module is still supported.

Line module label	OCx/STMx ATM or OCx/STMx /DS3-ATM
I/O module label	OC12 STM4 I/O MULTI MODE
Number of I/O ports	■ 1
Software release	■ First supported: 2.0.0 ■ Final supported: 5.2.x
Description	■ 130 W ■ Unchannelized, concatenated OC12/STM4 for ATM
Type	■ ASIC
Capability	■ OC12/STM4 ■ ATM/AAL5
Software features	■ See <i>ERX Module Guide, Appendix A, Module Protocol Support</i> for information about the layer 2 and layer 3 protocols and applications that this module combination supports.
Model compatibility	■ ERX-7xx models ■ ERX-14xx models ■ ERX-310 router
SRP module compatibility	■ SRP-5G + ■ SRP-10G ■ SRP-40G ■ SRP-40G PLUS ■ SRP-SE10G
Module redundancy support	■ 1:N redundancy ■ NOTE: Line module redundancy is not supported on the ERX-310 router.

Cables and connectors	<ul style="list-style-type: none"> ■ SC full duplex ■ Tx power: <ul style="list-style-type: none"> ■ min: -19 dBm ■ max: -14 dBm ■ Center wavelength: 1310 nm ■ Rx input power: <ul style="list-style-type: none"> ■ min: -30 dBm ■ max: -14 dBm ■ Rated for 2 km (1.2 miles) over 62.5-micron core cable with an optical loss of 0–9 dB or 50-micron core cable with an optical loss of 7 dB ■ See <i>ERX Hardware Guide, Chapter 5, Cabling ERX Routers</i> for more information.
LEDs	<ul style="list-style-type: none"> ■ See <i>ERX Module Guide, Appendix B, Module LEDs</i>.
Alarms, errors, and events	<ul style="list-style-type: none"> ■ See <i>Monitoring SONET/SDH Interfaces</i> in the <i>Configuring Unchannelized OCx/STMx Interfaces</i> chapter of the <i>JUNOS Physical Layer Configuration Guide</i> for Release 8.0.x and earlier.

OC12/STM4 ATM Single-Mode Intermediate Reach Without APS/MSP Redundancy Module Combination (128 MB)

This module combination is no longer supported because the line module has reached end-of-life. However, the I/O module is still supported.

Line module label	OCx/STMx ATM <i>or</i> OCx/STMx /DS3-ATM
I/O module label	OC12 STM4 I/O SINGLE MODE
Number of I/O ports	■ 1
Software release	■ First supported: 2.0.0 ■ Final supported: 5.2.x
Description	■ 130 W ■ Unchannelized, concatenated OC12/STM4 for ATM
Type	■ ASIC
Capability	■ OC12/STM4 ■ ATM/AAL5
Software features	■ See <i>ERX Module Guide, Appendix A, Module Protocol Support</i> for information about the layer 2 and layer 3 protocols and applications that this module combination supports.
Model compatibility	■ ERX-7xx models ■ ERX-14xx models ■ ERX-310 router
SRP module compatibility	■ SRP-5G + ■ SRP-10G ■ SRP-40G ■ SRP-40G PLUS ■ SRP-SE10G
Module redundancy support	■ 1:N redundancy ■ NOTE: Line module redundancy is not supported on the ERX-310 router.

Cables and connectors	<ul style="list-style-type: none">■ SC full duplex■ Tx power:<ul style="list-style-type: none">■ min: -15 dBm■ max: -8 dBm■ Center wavelength: 1310 nm■ Rx input power:<ul style="list-style-type: none">■ min: -31 dBm■ max: -8 dBm■ Rated for 15 km (9.3 miles) of 9-micron core cable■ See <i>ERX Hardware Guide, Chapter 5, Cabling ERX Routers</i> for more information.
LEDs	<ul style="list-style-type: none">■ See <i>ERX Module Guide, Appendix B, Module LEDs</i>.
Alarms, errors, and events	<ul style="list-style-type: none">■ See <i>Monitoring SONET/SDH Interfaces</i> in the <i>Configuring Unchannelized OCx/STMx Interfaces</i> chapter of the <i>JUNOS Physical Layer Configuration Guide</i> for Release 8.0.x and earlier.

OC12/STM4 ATM Single-Mode Long Reach Without APS/MSP Redundancy Module Combination (128 MB)

This module combination is no longer supported because the line module has reached end-of-life. However, the I/O module is still supported.

Line module label	OCx/STMx ATM or OCx/STMx /DS3-ATM
I/O module label	OC12 STM4 I/O LONG HAUL
Number of I/O ports	■ 1
Software release	■ First supported: 2.0.0 ■ Final supported: 5.2.x
Description	■ 130 W ■ Unchannelized, concatenated OC12/STM4 for ATM
Type	■ ASIC
Capability	■ OC12/STM4 ■ ATM/AAL5
Software features	■ See <i>ERX Module Guide, Appendix A, Module Protocol Support</i> for information about the layer 2 and layer 3 protocols and applications that this module combination supports.
Model compatibility	■ ERX-7xx models ■ ERX-14xx models ■ ERX-310 router
SRP module compatibility	■ SRP-5G + ■ SRP-10G ■ SRP-40G ■ SRP-40G PLUS ■ SRP-SE10G
Module redundancy support	■ 1:N redundancy ■ NOTE: Line module redundancy is not supported on the ERX-310 router.

Cables and connectors	<ul style="list-style-type: none">■ SC full duplex■ Tx power:<ul style="list-style-type: none">■ min: -5.0 dBm■ max: 0 dBm■ Center wavelength: 1310 nm■ Rx input power:<ul style="list-style-type: none">■ min: -34 dBm■ max: -7 dBm■ Fiber type: 9-micron core■ Rated for 40 km (24.8 miles) of 9-micron core cable■ See <i>ERX Hardware Guide, Chapter 5, Cabling ERX Routers</i> for more information.
LEDs	<ul style="list-style-type: none">■ See <i>ERX Module Guide, Appendix B, Module LEDs</i>.
Alarms, errors, and events	<ul style="list-style-type: none">■ See <i>Monitoring SONET/SDH Interfaces</i> in the <i>Configuring Unchannelized OCx/STMx Interfaces</i> chapter of the <i>JUNOS Physical Layer Configuration Guide</i> for Release 8.0.x and earlier.

SRP-5G Module Combination (512 GB)

Line module label	SRP-5G
I/O module label	SRP I/O
Number of I/O ports	■ 7
Software release	<ul style="list-style-type: none"> ■ First supported: 1.0.0 ■ Final supported: 5.2.x
Description	<ul style="list-style-type: none"> ■ 100 W ■ Switch route processor (5 Gbps)
Type	■ Not applicable
Capability	<ul style="list-style-type: none"> ■ Ethernet (IEEE 802.3) ■ 10/100Base-T ■ RS-232
Software features	■ Not applicable
Model compatibility	■ ERX-705 router
SRP module compatibility	■ SRP-5G
Module redundancy support	■ 1:1 redundancy
Cables and connectors	<ul style="list-style-type: none"> ■ Terminal blocks ■ BNC, 75-ohm ■ Wire wrap posts ■ RJ-45 ■ RS-232 (DB-9) ■ See <i>ERX Hardware Guide, Chapter 5, Cabling ERX Routers</i> for more information.
LEDs	■ See <i>ERX Module Guide, Appendix B, Module LEDs</i> .
Alarms, errors, and events	■ See <i>Monitoring Modules</i> in <i>JUNOS System Basics Configuration Guide, Chapter 6, Managing Modules</i> .

SRP-5G+ Module Combination (512 MB)

Line module label	SRP-5G +
I/O module label	SRP I/O
Number of I/O ports	■ 7
Software release	<ul style="list-style-type: none"> ■ First supported: 3.0.2 ■ Final supported: 8.0.x
Description	<ul style="list-style-type: none"> ■ 125 W ■ Switch route processor (5 Gbps)
Type	■ Not applicable
Capability	<ul style="list-style-type: none"> ■ Ethernet (IEEE 802.3) ■ 10/100Base-T ■ RS-232
Software features	■ Not applicable
Model compatibility	■ ERX-705 router
SRP module compatibility	■ SRP-5G +
Module redundancy support	■ 1:1 redundancy
Cables and connectors	<ul style="list-style-type: none"> ■ Terminal blocks ■ BNC, 75-ohm ■ Wire wrap posts ■ RJ-45 ■ RS-232 (DB-9) ■ See <i>ERX Hardware Guide, Chapter 5, Cabling ERX Routers</i> for more information.
LEDs	■ See <i>ERX Module Guide, Appendix B, Module LEDs</i> .
Alarms, errors, and events	■ See <i>Monitoring Modules</i> in <i>JUNOS System Basics Configuration Guide, Chapter 6, Managing Modules</i> .

SRP-10G Module Combination (512 MB)

Line module label	SRP-10G
I/O module label	SRP I/O
Number of I/O ports	■ 7
Software release	<ul style="list-style-type: none"> ■ First supported: 1.1.0 ■ Final supported: 5.2.x
Description	<ul style="list-style-type: none"> ■ 125 W ■ Switch route processor (10 Gbps)
Type	■ Not applicable
Capability	<ul style="list-style-type: none"> ■ Ethernet (IEEE 802.3) ■ 10/100Base-T ■ RS-232
Software features	■ Not applicable
Model compatibility	<ul style="list-style-type: none"> ■ ERX-710 router ■ ERX-1410 router
SRP module compatibility	■ SRP-10G
Module redundancy support	■ 1:1 redundancy
Cables and connectors	<ul style="list-style-type: none"> ■ Terminal blocks ■ BNC, 75-ohm ■ Wire wrap posts ■ RJ-45 ■ RS-232 (DB-9) ■ See <i>ERX Hardware Guide, Chapter 5, Cabling ERX Routers</i> for more information.
LEDs	■ See <i>ERX Module Guide, Appendix B, Module LEDs</i> .
Alarms, errors, and events	■ See <i>Monitoring Modules</i> in <i>JUNOS System Basics Configuration Guide, Chapter 6, Managing Modules</i> .

SRP-10G Module Combination (1-GB Memory)

Line module label	SRP-10G
I/O module label	SRP I/O
Number of I/O ports	■ 7
Software release	<ul style="list-style-type: none"> ■ First supported: 4.1.3 or later 4.1.x release, 5.0.4 or later 5.0.x release, 5.1.2 or higher-numbered release, 5.2.0 ■ Final supported: 8.0.x
Description	<ul style="list-style-type: none"> ■ 125 W ■ Switch route processor (10 Gbps) ■ Has a minimum of 1 GB of error checking and correction (ECC) memory with a 1-GB nonvolatile storage (NVS) card.
Type	■ Not applicable
Capability	<ul style="list-style-type: none"> ■ Ethernet (IEEE 802.3) ■ 10/100Base-T ■ RS-232
Software features	■ Not applicable
Model compatibility	<ul style="list-style-type: none"> ■ ERX-710 router ■ ERX-1410 router
SRP module compatibility	■ SRP-10G
Module redundancy support	■ 1:1 redundancy
Cables and connectors	<ul style="list-style-type: none"> ■ Terminal blocks ■ BNC, 75-ohm ■ Wire wrap posts ■ RJ-45 ■ RS-232 (DB-9) ■ See <i>ERX Hardware Guide, Chapter 5, Cabling ERX Routers</i> for more information.
LEDs	■ See <i>ERX Module Guide, Appendix B, Module LEDs</i> .
Alarms, errors, and events	■ See <i>Monitoring Modules</i> in <i>JUNOS System Basics Configuration Guide, Chapter 6, Managing Modules</i> .

SRP-SE10G Module Combination (512 MB)

Line module label	SRP-SE10G
I/O module label	SRP-SE I/O
Number of I/O ports	■ 2
Software release	<ul style="list-style-type: none"> ■ First supported: 5.1.0 ■ Final supported: 7.1.x ■ Does not operate with JUNOS Release 5.3.0 or higher
Description	<ul style="list-style-type: none"> ■ 35 W ■ Switch route processor for ERX-310 router only (10 Gbps)
Type	■ Not applicable
Capability	<ul style="list-style-type: none"> ■ Ethernet (IEEE 802.3) ■ 10/100Base-T ■ RS-232
Software features	■ Not applicable
Model compatibility	■ ERX-310 router
SRP module compatibility	■ SRP-SE10G
Module redundancy support	■ Not applicable
Cables and connectors	<ul style="list-style-type: none"> ■ RJ-45 ■ RS-232 (DB-9) ■ See <i>ERX Hardware Guide, Chapter 5, Cabling ERX Routers</i> for more information.
LEDs	■ See <i>ERX Module Guide, Appendix B, Module LEDs</i> .
Alarms, errors, and events	■ See <i>Monitoring Modules</i> in <i>JUNOS System Basics Configuration Guide, Chapter 6, Managing Modules</i> .

SRP-40G Module Combination (512 MB)

Line module label	SRP-40G
I/O module label	SRP I/O
Number of I/O ports	■ 7
Software release	<ul style="list-style-type: none"> ■ First supported: 3.4.1 ■ Final supported: 5.2.x
Description	<ul style="list-style-type: none"> ■ 210 W ■ Switch route processor (40 Gbps)
Type	■ Not applicable
Capability	<ul style="list-style-type: none"> ■ Ethernet (IEEE 802.3) ■ 10/100Base-T ■ RS-232
Software features	■ Not applicable
Model compatibility	■ ERX-1440 router
SRP module compatibility	<ul style="list-style-type: none"> ■ SRP-40G ■ SRP-40G PLUS
Module redundancy support	■ 1:1 redundancy
Cables and connectors	<ul style="list-style-type: none"> ■ Terminal blocks ■ BNC, 75-ohm ■ Wire wrap posts ■ RJ-45 ■ RS-232 (DB-9) ■ See <i>ERX Hardware Guide, Chapter 5, Cabling ERX Routers</i> for more information.
LEDs	■ See <i>ERX Module Guide, Appendix B, Module LEDs</i> .
Alarms, errors, and events	■ See <i>Monitoring Modules</i> in <i>JUNOS System Basics Configuration Guide, Chapter 6, Managing Modules</i> .

SRP-40G PLUS Module Combination (1 GB)

Line module label	SRP-40G PLUS
I/O module label	SRP I/O
Number of I/O ports	■ 7
Software release	<ul style="list-style-type: none"> ■ First supported: 4.0.0 ■ Final supported: 7.1.x ■ Has a minimum of 1 GB of error checking and correction (ECC) memory with a 1-GB nonvolatile storage (NVS) card.
Description	<ul style="list-style-type: none"> ■ 210 W ■ Switch route processor (40 Gbps)
Type	■ Not applicable
Capability	<ul style="list-style-type: none"> ■ Ethernet (IEEE 802.3) ■ 10/100Base-T ■ RS-232
Software features	■ Not applicable
Model compatibility	■ ERX-1440 router
SRP module compatibility	<ul style="list-style-type: none"> ■ SRP-40G ■ SRP-40G PLUS
Module redundancy support	■ 1:1 redundancy
Cables and connectors	<ul style="list-style-type: none"> ■ Terminal blocks ■ BNC ■ BNC, 75-ohm ■ Wire wrap posts ■ RJ-45 ■ RS-232 (DB-9) ■ See <i>ERX Hardware Guide, Chapter 5, Cabling ERX Routers</i> for more information.
LEDs	■ See <i>ERX Module Guide, Appendix B, Module LEDs</i> .
Alarms, errors, and events	■ See <i>Monitoring Modules</i> in <i>JUNOS System Basics Configuration Guide, Chapter 6, Managing Modules</i> .

T3 ATM Module Combination (3 Ports)

Line module label	T3 ATM
I/O module label	CT3/T3 I/O
Number of I/O ports	■ 3
Software release	<ul style="list-style-type: none"> ■ First supported: 1.1.0 ■ Final supported: 7.0.x
Description	<ul style="list-style-type: none"> ■ 60 W ■ Unchannelized T3 for ATM
Type	■ Non-ASIC
Capability	■ ATM/AAL5
Software features	■ See <i>ERX Module Guide, Appendix A, Module Protocol Support</i> for information about the layer 2 and layer 3 protocols and applications that this module combination supports.
Model compatibility	<ul style="list-style-type: none"> ■ ERX-7xx models ■ ERX-1410 router
SRP module compatibility	<ul style="list-style-type: none"> ■ SRP-5G ■ SRP-5G + ■ SRP-10G
Module redundancy support	■ 1:N redundancy
Cables and connectors	<ul style="list-style-type: none"> ■ BNC 75-ohm connector ■ The line interface unit supports two line buildouts: <ul style="list-style-type: none"> ■ 0–68.5 m (0–225 feet) ■ 69–137 m (226–450 feet) ■ Signal strength is software controlled. ■ The transmitted signal complies with ANSI T1.102-1993 Digital Hierarchy - Electrical Interfaces (1999) for cable lengths up to 201 m (660 feet).
LEDs	■ See <i>ERX Module Guide, Appendix B, Module LEDs</i> .
Alarms, errors, and events	■ See <i>Monitoring Interfaces</i> in the <i>Configuring T3 and E3 Interfaces</i> chapter of the <i>JUNOS Physical Layer Configuration Guide</i> for Release 8.0.x and earlier.

T3 ATM Module Combination (4 Ports) (128 MB)

This module combination is no longer supported because the line module has reached end-of-life. However, the I/O module is still supported.

Line module label	OCx/STMx ATM or OCx/STMx /DS3-ATM
I/O module label	4xDS3 ATM I/O
Number of I/O ports	■ 4
Software release	<ul style="list-style-type: none"> ■ First supported: 4.1.0 ■ Final supported: 5.2.x
Description	<ul style="list-style-type: none"> ■ 130 W ■ Unchannelized T3 for ATM
Type	■ ASIC
Capability	■ ATM/AAL5
Software features	■ See <i>ERX Module Guide, Appendix A, Module Protocol Support</i> for information about the layer 2 and layer 3 protocols and applications that this module combination supports.
Model compatibility	<ul style="list-style-type: none"> ■ ERX-7xx models ■ ERX-14xx models ■ ERX-310 router
SRP module compatibility	<ul style="list-style-type: none"> ■ SRP-5G + ■ SRP-10G ■ SRP-40G ■ SRP-40G PLUS ■ SRP-SE10G
Module redundancy support	■ 1:N redundancy
Cables and connectors	<ul style="list-style-type: none"> ■ 75-ohm connector ■ The line interface unit supports two line buildouts: <ul style="list-style-type: none"> ■ 0–68.5 m (0–225 feet) ■ 69–137 m (226–450 feet) ■ Signal strength is software controlled. ■ The transmitted signal complies with ANSI T1.102-1993 Digital Hierarchy - Electrical Interfaces (1999) for cable lengths up to 201 m (660 feet).
LEDs	■ See <i>ERX Module Guide, Appendix B, Module LEDs</i> .
Alarms, errors, and events	■ See <i>Monitoring Interfaces</i> in the <i>Configuring T3 and E3 Interfaces</i> chapter of the <i>JUNOS Physical Layer Configuration Guide</i> for Release 8.0.x and earlier.

T3 Frame Module Combination (3 Ports)

Line module label	T3 FRAME
I/O module label	CT3/T3 I/O
Number of I/O ports	■ 3
Software release	<ul style="list-style-type: none"> ■ First supported: 1.1.0 ■ Final supported: 7.0.x
Description	<ul style="list-style-type: none"> ■ 60 W ■ Unchannelized T3 for Frame
Type	■ Non-ASIC
Capability	<ul style="list-style-type: none"> ■ DS3 ■ Subrate DS3 ■ HDLC framing
Software features	■ See <i>ERX Module Guide, Appendix A, Module Protocol Support</i> for information about the layer 2 and layer 3 protocols and applications that this module combination supports.
Model compatibility	<ul style="list-style-type: none"> ■ ERX-7xx models ■ ERX-1410 router
SRP module compatibility	<ul style="list-style-type: none"> ■ SRP-5G ■ SRP-5G + ■ SRP-10G
Module redundancy support	■ 1:N redundancy
Cables and connectors	<ul style="list-style-type: none"> ■ BNC 75-ohm connector ■ The line interface unit supports two line buildouts: <ul style="list-style-type: none"> ■ 0–68.5 m (0–225 feet) ■ 69–137 m (226–450 feet) ■ Signal strength is software controlled. ■ The transmitted signal complies with ANSI T1.102-1993 Digital Hierarchy - Electrical Interfaces (1999) for cable lengths up to 201 m (660 feet).
LEDs	■ See <i>ERX Module Guide, Appendix B, Module LEDs</i> .
Alarms, errors, and events	■ See <i>Monitoring Interfaces</i> in the <i>Configuring T3 and E3 Interfaces</i> chapter of the <i>JUNOS Physical Layer Configuration Guide</i> for Release 8.0.x and earlier.

Tunnel Service Module (TSM) Module Combination

Line module label	TUNNEL SERVICE
I/O module label	No I/O module
Number of I/O ports	■ Not applicable
Software release	<ul style="list-style-type: none"> ■ First supported: 3.0.2 ■ Final supported: 8.0.x
Description	<ul style="list-style-type: none"> ■ 130 W ■ Tunnel Service for IP tunnels and LNS termination
Type	■ ASIC
Capability	<ul style="list-style-type: none"> ■ IP tunnels ■ LNS termination ■ Network Address Translation ■ Stateful firewall
Software features	■ See <i>ERX Module Guide, Appendix A, Module Protocol Support</i> for information about the layer 2 and layer 3 protocols and applications that this module combination supports.
Model compatibility	<ul style="list-style-type: none"> ■ ERX-7xx models ■ ERX-14xx models ■ ERX-310 router
SRP module compatibility	<ul style="list-style-type: none"> ■ SRP-5G + ■ SRP-10G ■ SRP-40G ■ SRP-40G PLUS ■ SRP-SE10G
Module redundancy support	<ul style="list-style-type: none"> ■ Multiple TSMs provide redundancy. ■ See the <i>Managing Tunnel-Service and IPSec-Service</i> chapter of the <i>JUNOS Physical Layer Configuration Guide</i> for Release 8.0.x and earlier.
Cables and connectors	■ Not applicable
LEDs	■ See <i>ERX Module Guide, Appendix B, Module LEDs</i> .
Alarms, errors, and events	■ See <i>Monitoring Tunnel-Service Interfaces</i> in the <i>Managing Tunnel-Service and IPSec-Service Interfaces</i> chapter of the <i>JUNOS Physical Layer Configuration Guide</i> for Release 8.0.x and earlier.

X.21/V.35 Module Combination

Line module label	X.21/V.35
I/O module label	X.21/V.35 I/O
Number of I/O ports	■ 16
Software release	<ul style="list-style-type: none"> ■ First supported: 2.10.1, 3.3.2 ■ Final supported: 7.3.x
Description	<ul style="list-style-type: none"> ■ 60 W ■ X.21/V.35 synchronous serial interface
Type	■ Non-ASIC
Capability	■ HDLC framing
Software features	■ See <i>ERX Module Guide, Appendix A, Module Protocol Support</i> for information about the layer 2 and layer 3 protocols and applications that this module combination supports.
Model compatibility	<ul style="list-style-type: none"> ■ ERX-7xx models ■ ERX-1410 router
SRP module compatibility	<ul style="list-style-type: none"> ■ SRP-5G ■ SRP-5G + ■ SRP-10G
Module redundancy support	■ Not applicable
Cables and connectors	<ul style="list-style-type: none"> ■ 200-pin proprietary socket on I/O module ■ DB15 X.21 or DB34 V.35 at remote end ■ Serial signals can travel a limited distance without significant degradation. Slower serial signals can travel farther without degradation than faster serial signals. See “Cable Lengths” row for the maximum cable lengths you can use to prevent signal degradation at various transmission speeds.
Cable Lengths	
Transmission Speed (Hz)	Cable Length (Meters/Feet)
■ 2400	■ 1250/4100
■ 4800	■ 625/2050
■ 9600	■ 312/1025
■ 19200	■ 156/513
■ 38400	■ 78/256
■ 56000	■ 31/102
■ 2048000	■ 8/25
LEDs	■ See <i>ERX Module Guide, Appendix B, Module LEDs</i> .

Alarms, errors, and events

- See *Monitoring Interfaces* in the *Configuring X.21/V.35 Interfaces* chapter of the *JUNOS Physical Layer Configuration Guide* for Release 8.0.x and earlier.
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