

Haliplex Configuration rules (4.14)

This document is a configuration summary guide for the Haliplex 1600 family of products and fibre optic interfaces for the HPX-800 series.

Interface Module and Base Unit Slot Installation Configurations

Install low speed IM's in slots from the left and high speed IM's in the slots from the right



IM slot numbers	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16
HPX-1600-IA	All IM slots connect to DACS – maximum aggregate per IM = 2 x 2.048Mbps															

IM slot numbers	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16
HPX-1600-EV							Single Ethernet IM								DS3 IM	
							Dual T1 IM								Work /Prot	

IM slot numbers	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16
HPX-1600-SS			E3/DS3 IM connected to the ES/DS3-Mapper must use these slots Any slot (1:1) Protection can be software configured						Dual Ethernet IM connected to Ethernet-Mapper must use these slots						STM-1 OC-3	
	M13, HSF, Octal E1 and Octal T1 IM's must connect direct to E1/T1 mapper															
	Dual E1, Dual T1, MPS, and Single Ethernet IM's can optionally connect to DACS or direct to E1/T1 mapper												Slots 13-16 do not connect to the integrated DACS			
	LSF, COD, FXS, FXO, E&M, TPF All (nx 64Kbps) interface modules must connect to DACS															

Interface Modules (IM's) Permitted Use by HPX-1600 Family Base Unit

Interface Module types permitted by System Chassis				
Interface Modules	Description	IA	EV	SS
HPX-IM-1601	Dual E&M	✓		✓ *
HPX-IM-1610	Fibre optic trunk High Speed			✓
HPX-IM-1614	Fibre optic trunk Low Speed	✓		✓
HPX-IM-1620-E1	Dual E1	✓		✓
HPX-IM-1620-T1	Dual T1	✓	✓	✓
HPX-IM-1621	Dual 2 Wire foreign exchange FXS	✓		✓ *
HPX-IM-1623	Dual 2 Wire foreign exchange FXO	✓		✓ *
HPX-IM-1630-E3	Single E3			✓
HPX-IM-1630-T3	Single T3		✓ ^c	✓ ^c
HPX-IM-1632	Single M13 / C-bit parity Multiplexer			✓
HPX-IM-1633	Dual V.35/X.21/V.24 Data	✓ ^c		✓ ^c
HPX-IM-1634	Dual V.35/X.21/V.24 X.50 sub-rate Data	✓ ^c		✓ ^c
HPX-IM-1640-E1	Octal E1			✓ ^c
HPX-IM-1640-T1	Octal T1			✓ ^c
HPX-IM-1670	Single Ethernet 10/100Mbps interface	✓		✓
HPX-IM-1671	Single Ethernet 10/100Mbps interface		✓	
HPX-IM-1672	Dual Ethernet 10/100Mbps interface			✓ **
HPX-IM-1680	Fibre optic trunk STM-1 / OC-3			✓
HPX-IM-1680-EL	Electrical trunk STM-1 / STS-3			✓
HPX-IM-1690	Fibre optic trunk STM-1 / OC-3 Linear 1+1			✓
HPX-IM-1638	Co-Directional G.703 64Kbps	✓		✓
HPX-IM-1636	Tele Protection Fibre (IEEE C37.94)	✓		✓

Notes
<ul style="list-style-type: none"> Each IM slot connects a maximum of 2x 2.048Mbps or 64x 64Kbps timeslots to the DACS Interface Modules in slots 1 to 12 of the HPX-1600-SS can be optionally connected to the DACS or directly to a SDH/SONET Mapper HPX-IM-1630 connects to E3/DS3 Mapper HPX-IM-1632 connects to E1/T1 Mapper <p>Dual Ethernet HPX-IM-1672</p> <ul style="list-style-type: none"> Must only be installed with the Ethernet-Mapper or E-Line Switch Provides nx DS-1/E1 -or- Provides nx E3/DS-3/STS-1 <p>Single Ethernet HPX-IM-1670</p> <p>Can be connected to a choice of trunk bandwidth:</p> <ul style="list-style-type: none"> 1x DS-1/E1 or nx DS0 via the DACS

* Must be groomed by the DACCS into E1 or T1 before transmission over SDH/SONET trunk

** Dual Ethernet HPX-IM-1672 may only be installed with either of the Ethernet Mapper daughter cards:

- HPX-1600-MAP-8E Ethernet
- HPX-1600-MAP-8ELine

Single Ethernet HPX-IM-1670 operates without the Ethernet Mapper daughter card

^c Adapter cable is required for:

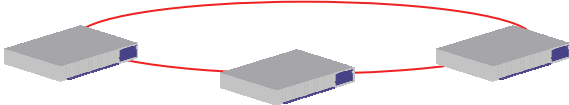
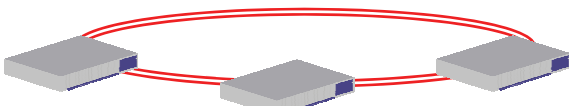


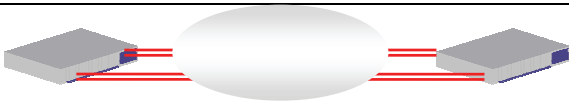



- 50 pin VHDCI used on Octal E1/T1, Serial Data,
- 1.6/5.6 Siemens to BNC for HPX-IM-1630-T3 (NOTE not required for HPX-IM-1632 which has BNC connectors)

Mappers Required By Tributary Totals for HPX-1600-SS Base Units

SDH/SONET Mapper requirements by tributary count						
Tributary total ports by type				Required HPX-1600-MAPPERS		
T1	E1	E3 & T3 (DS3)	VCAT / LCAS Ethernet	MAP E1T1	MAP DS3E3	MAP 8E/ELine
1 to 28				1		
29 to 56				2		
57 to 84				3		
1 to 28		1 to 2		1	1	
29 to 56		1		2	1	
1 to 28				1		
29 to 56			8	2		1
1 to 28		1	8	1	1	1
		1 to 3			1	
			8			1
	1 to 28			1		
	29 to 56			2		
	57 to 63			3		
	1 to 28	1 to 2		1	1	
	29 to 56	1		2	1	
	1 to 28			1		
	29 to 56		8	2		1
	1 to 28	1	8	1	1	1
1 to 28	1 to 28			2		
29 to 56	1 to 28			3		
1 to 28	29 to 56			3		

Mapper Notes
<ul style="list-style-type: none"> The maximum number of tributaries of a single type supported by STM-1 / OC-3 is: <ul style="list-style-type: none"> 63x E1 84x T1 3x E3 3x DS-3 E1 and T1 tributaries can share a single HPX-1600-MAP-E1T1 mapper. E1 and T1 output from the DACCS of groomed Tributaries should be included in the total ports count of E1 & T1 E1 and DS1 tributaries of the Transmux HPX-IM-1632 should be included in the total ports count of E1 & T1. The DACCS can output up to 8x groomed E1 & T1 streams The E3T3 Mapper is <u>not</u> required for the HPX-IM-1632 Transmux The Ethernet-Mapper/ELine Switch switches up to 8x 10/100 Ethernet tributaries over a scalable concatenated SDH/SONET trunk bandwidth using increments of E1/T1 or E3/DS-3

Selection Chart for HPX-1600-SS, SDH and SONET Trunk Interface Modules

Trunk Bandwidth (Mbps)	Network Topology	Trunk Protection	Topology Relative to adjacent network	Model	Install in Slot Number(s)
155	Ring	No		HPX-IM-1680	15
		UPSR/SNCP		HPX-IM-1680	15+16
	Terminal	No		HPX-IM-1680	15
		MSP/Line		HPX-IM-1680	15+16
				HPX-IM-1690	15 Connects to mid-span node
	Linear mid-span	No		HPX-IM-1680	15+16
				HPX-IM-1690	15+16
		MSP/Line		HPX-IM-1690	15+16

Ordering Options for HPX-1600:SS, SDH and SONET Trunk Interface Modules

Base Model	Mode	Connector	Wavelength					Model	
Number			Tx (dBm)	Rx (dBm)	Tx Pwr (dBm)	Rx Sensitivity (dBm)	Max Reach (Km)	Numbers	
HPX-IM-1690 STM-1 OC-3	Single Mode	LC	Refer to SFP specifications						
HPX-IM-1680 STM-1 OC-3	Single Mode	SC	1310	1310	0 to -5	-36	40	HPX-IM-1680-SM-SC-13	
			1550	1550	0 to -5	-36	80	HPX-IM-1680-SM-SC-15	
		FC	1310	1310	0 to -5	-36	40	HPX-IM-1680-SM-FC-13	
			1550	1550	0 to -5	-36	80	HPX-IM-1680-SM-FC-15	
	Electrical	BNC						HPX-IM-1680-EL	

Ordering Options for HPX-1600, PDH Optical Interface Modules

Base Model Number	Mode	Connector	Wavelength		Tx Pwr (dBm)	Rx Sensitivity (dBm)	Max Reach (Km)	Model
			Tx (dBm)	Rx (dBm)				Numbers
HPX-IM-1610 16x E1	Single Mode	SC	1310	1310	0 to -5	-36	40	HPX-IM-1610-SM-SC-13
			1550	1550	0 to -5	-36	80	HPX-IM-1610-SM-SC-15
		FC	1310	1310	0 to -5	-36	40	HPX-IM-1610-SM-FC-13
			1550	1550	0 to -5	-36	80	HPX-IM-1610-SM-FC-15
HPX-IM-1614 2x E1	Single Mode	SC	1310	1310	0 to -5	-36	40	HPX-IM-1614-SM-SC-13
			1550	1550	0 to -5	-36	80	HPX-IM-1614-SM-SC-15
		FC	1310	1310	0 to -5	-36	40	HPX-IM-1614-SM-FC-13
			1550	1550	0 to -5	-36	80	HPX-IM-1614-SM-FC-15
HPX-IM-1636 Tele-protection IEEE C37.94	Multi Mode	ST	850	850	-18	-25	2	HPX-IM-1636-MM-ST-08
	Single Mode	SC	1310	1310	0 to -5	-36	40	HPX-IM-1636-SM-SC-13

Ordering Options for SFP Fibre Optic Interface Modules for HPX-800 and HPX-IM-1690

Haliplex Part Number	Description	Standard	Bandwidth (Mbps)	Wavelength (nm)	Transmit Power (dBm)		Receive Sensitivity (dBm)		Distance	
					Min	Max	Min	Max	(Km)	(miles)
HPX-SFP-155-13S	155Mbps SM 1310nm SFP LC S-1.1 / IR-1 interface	S-1.1/IR-1	155	1310	-15	-8	-28	-8	15	9
HPX-SFP-155-13L	155Mbps SM 1310nm SFP LC L-1.1 / LR-1 interface	L-1.1/LR-1	155	1310	-5	0	-34	-10	40	25
HPX-SFP-155-15L	155Mbps SM 1550nm SFP LC L-1.2 / LR-2 interface	L-1.2/LR-2	155	1550	-5	0	-34	-10	80	50
HPX-SFP-155-E	155Mbps Electrical SFP 1.0/2.3 Mini-Coax interface		155	electrical						
HPX-SFP-622-13S	622Mbps SM 1310nm SFP LC S-4.1 / IR-1 interface	S-4.1/IR-1	622	1310	-15	-8	-28	-8	15	9
HPX-SFP-622-13L	622Mbps SM 1310nm SFP LC L-4.1 / LR-1 interface	L-4.1/LR-1	622	1310	-5	0	-34	-10	40	25
HPX-SFP-622-15L	622Mbps SM 1550nm SFP LC L-4.2 interface	L-4.2/LR-2	622	1550	-3	+2	-28	-8	80	50
HPX-SFP-GE-LX	1.25GBd SM 1310nm SFP LC interface	1000BaseT	1250	1310		-3		-20	2	
HPX-SFP-GE-SX	1.25GBd MM 850nm SFP LC interface	1000BaseT	1250	850		-3		-17	0.5	
HPX-SFP-GE-RJ45	1.25GBd Electrical SFP RJ45 interface	1000BaseT	1250	electrical					100cm	