

Router Controllers & Panels Features List – January 2014

Nucleus2 (2463), Nucleus (2450) and Nebula controllers, plus Legacy and RollCall Mode Panel Features

Nebula 244x fitted in all Halo, Freeway and Sirius 600 routers, plus early Cygnus and Pyxis to approx 2009
 Nucleus 2450 fitted in Pyxis and Cygnus routers, and Sirius 800 routers with video only (up to May 2013)
 Nucleus2 2463 fitted in Sirius 800 routers with Audio routing or Advanced Hybrid Processing (AHP) modules, and all Sirius 800 from May 2013.

The features listed below are a quick guide to the different functionality available on each controller. Note that some features are dependent on the router type.

	Nucleus2 - 2463	Nucleus - 2450	Nebula
Configuration	Workbench is used for configuration. Ethernet connection to PC	Workbench is used for configuration. Ethernet connection to PC	Dedicated Nebula editor software. Serial RS232 connection to editor PC
Controller Configuration Features *1 = Legacy Panel Mode Only			
Logical to Physical Source & Destination Mapping	Allows source and destinations addressed by external controllers to be mapped to different physical sources and destinations on the frame.	Allows source and destinations addressed by external controllers to be mapped to different physical sources and destinations on the frame.	No logical mapping available
Level mapping (source and destination offset)	Not available (logical mapping replaces this)	Not available (logical mapping replaces this)	Yes
Source / Destination numbering and expansion	Non-contiguous source and destination numbering on one level. Allows easier expansion without moving existing modules using the mapping capabilities	Non-contiguous source and destination numbering on one level. Allows easier expansion without moving existing modules using the mapping capabilities	All sources and destinations for one level must be in a block, sequentially numbered
Number of Matrices	8 (recommended that external controllers are used above 2 Matrices) ^{*1}	1 ^{*1}	1 ^{*1}
Number of controllable levels	Unlimited – see condition below ^{*1}	Unlimited – see condition below ^{*1}	8 maximum ^{*1}
Level sizes	Maximum video level size 1152x1432 Maximum audio level size 18,432 x 18,432	There is a limit for the physical port mapping of a total of 2208 input ports and 2208 output ports when using the router expansion bus. The first level is mapped as 576x576 (even on a 17x17 Pyxis), subsequent levels occupy an additional 544 input ports and 544 output ports. Contact UK support for valid combinations and guidance. This results in a current maximum of 4 complete levels. Expansion using serial ports does not have this limitation. Router levels can be configured to any size within the protocol limits when slaved via SW-P-02 or SW-P-08 out.	Level sizes increment in 8s or 16s determined by switches on the router. Maximum size 576 x 576

Expansion / Slaving	Commands received via any IN protocol can control all frames and levels of a multi level system. This uses serial or IP connections to slaved routers (e.g. S800 to Pyxis). This does not include audio modify commands – these are not supported on 2463 controllers. S800 frames do not have an RJ45 expansion output, so slaving via the internal bus is not possible but other routers can be slaved via serial/IP connections. Cygnus and Pyxis routers are not currently supported using this controller.	Commands received via SW-P-02 can control up to 4 levels on a multi level system if levels are slaved using the RJ45 expansion link (e.g. Pyxis to Pyxis). i.e. local bus control Commands received via SW-P-02 cannot control any router slaved using any serial protocol (e.g. SW-P-02 / SW-P-08) out (e.g. a Freeway slaved from a Pyxis). Commands (incl. audio modify) via SW-P-08, GVG ES-Control, Barco Rosa and Harris Passthrough in can control all frames and levels of a multi level system. This applies to slaving using the RJ45 expansion (Pyxis to Pyxis) or SW-P-02 out on RS422 (e.g. Pyxis to Freeway). Cygnus and S800 frames do not have an RJ45 expansion output, so slaving via the internal bus is not possible but other routers can be slaved via serial connections	Serial control of the master router uses SW-P-02 or SW-P-08 in. Expansion to slave router frames is via P-Bus (37 way D type cable) on Sirius 600, Freeway, Halo, & Axis. Where the routers are <128 Inputs or outputs the position of the master router does not matter. However, when >128 the master router must be the largest router (e.g. you can slave a Halo from a Sirius 600, but cannot slave a Sirius 600 from a Halo)
Audio capability	Mono, Stereo or Dolby 'grouped' routing on a per channel basis. Sirius 800 only - Mono split, Left→ both, right→ both, combine Sirius 800 only - Routing between mono, stereo and Dolby types possible based on priority set in the Workbench configuration	Mono, Stereo or Dolby 'grouped' routing on a per channel basis. Mono split, Left→ both, right→ both, combine Routing between mono, stereo and Dolby types possible based on fixed rules	All routing assumed stereo. Mono split, Left→ both, right→ both, combine available
Control Ports & References			
Serial Ports	4 RS485 serial ports (Sirius 800)	Up to 4 RS485 serial ports (dependent on the router capability) RS232 port for debug only	2 x RS485 serial ports, 1 x RS232 port available for router control
Ethernet	One per controller, 10/100Base-T	One per controller, 10/100Base-T	One per controller, 10/100Base-T
Video References	Up to 4 video references (all multi standard) Internally derived references of any format can be set up from any physical reference (e.g. 625 Black & Burst can be used to derive 1080i/50 and 720p/50 internally).	Up to 4 video references (all multi standard)	Up to 2 x 525/625 references and 1 x HD tri-level reference
Audio references	1 x AES	1 x AES	1 x AES, 32-48kHz

Protocols Supported				
NOTE - Protocols & Serial Ports		Each serial port on Nucleus and Nucleus2 controllers can be independently assigned as any protocol listed below. There are no restrictions on the combination of protocols.		Serial ports on Nebula controllers have limitations on the number and combination of serial & Ethernet ports and protocols. Refer to Nebula Controller Sales Information on the Intranet
Web		RollCall Java app – XY routing control (single matrix, single level only), processing control, controller software updates (from 3.14.2)	RollCall Java app – XY routing control (single matrix, single level only), processing control, controller software updates (from 3.14.2)	SW-P-02 over IP – crosspoint control SNMP – routing control, PSU and fan monitoring
SW-P-02 in (serial)		Yes	Yes	Yes – controlled device only
SW-P-02 out (serial)		Yes – to control a slaved Router (e.g. slaving a Pyxis from an S800) <i>NOTE - see 'Expansion / Slaving' section above for restrictions on slaving.</i>	Yes – to control a slaved Router (e.g. slaving a Halo from a Pyxis) <i>NOTE - see 'Expansion / Slaving' section above for restrictions on slaving.</i>	No
SW-P-02 in (IP)		Yes (maximum 16 connections in)	Yes (maximum 16 connections in)	Yes (maximum 8 connections in) On Halo, reduces the number of serial ports to 1
SW-P-02 Out (IP)		Yes – to control slaved routers as a second level (also supports dual controllers in slaved routers)	No	No
SW-P-02 Time stamped commands in		No	Yes –for set crosspoint only	No
Group	From SW-P-02	No	Max 128	Max 32 active of 128
Salvos	From SW-P-08	No	Max 128	Max 32 active of 128
SW-P-08 In (serial)		Yes	Yes	Yes
SW-P-08 Out (Serial)		Yes	Yes	No
SW-P-08 in Over IP		Yes	No	No
SW-P-08 Out Over IP		No	No	No
RollCall		Yes	Yes	No
SNMP control		Routing (including monitoring outputs)	SNMP available from 1.1.7 onwards	For basic routing. On Halo, SNMP reduces the number of serial ports to 1.
SNMP Monitoring		PSU, fan, controller, fault, module present, signal present (S800), names, protect state. Ability to chose groupings of status to report so not all status is sent if it isn't wanted	SNMP available from 1.1.7 onwards PSU and fan status for S800 from 1.1.9 Ability to chose groupings of status to report so not all status is sent if it isn't wanted	SNMP status and alarms for PSUs and controllers. On Halo, SNMP reduces the number of serial ports to 1.
Tandberg Gen. Switcher		No	No	Yes - Over RS485 and IP
Barco Rosa (Harmonic)		No	Yes	Yes
Sandar Prosan		No	No	Yes
Sony S-Bus		No	No	Yes (IP)
GVG ES-Control IN		No	Yes	No
GVG ES-Switch		No	No	No
Harris Passthrough		Yes	Yes	Yes
Harris Passthrough over IP (Telnet)		Yes - Special for Ericsson. Harris do not support Passthrough over IP	No	No
DCCP OUT (IP)		Yes	No	No
ETL Matrix OUT (Serial)		Yes	No	No
Kramer OUT (Serial)		Yes	No	No

Control Panels				
Panel Support	6026 Series 2RU Dial Up XY & Multibus 6026-RC 2RU Series LCD button 6028 Series 1RU BPX and XY 6028-RC series 1RU BPX, XY and LCD button 6700 series 1RU BPX and XY panels ^{*2} 6276 2RU XY dialup panel ^{*2} 6276 2RU one / two bus dialup panel ^{*2} 6277-xx 2RU multibus panel ^{*2} 628x 1RU series panels ^{*2}	6026 Series 2RU Dial Up XY & Multibus 6026-RC Series 2RU LCD button 6028 Series 1RU BPX and XY 6028-RC series 1RU BPX, XY and LCD button 6700 series 1RU BPX and XY panels ^{*2} 6276 2RU XY dialup panel ^{*2} 6276 2RU one / two bus dialup panel ^{*2} 6277-xx 2RU multibus panel ^{*2} 628x 1RU series panels ^{*2}	6026 Series 2RU Dial Up XY & Multibus 6028 Series 1RU BPX and XY 6700 series 1RU BPX and XY panels ^{*2} 6276 2RU XY dialup panel ^{*2} 6276 2RU one / two bus dialup panel ^{*2} 6277-xx 2RU multibus panel ^{*2} 6276 2RU Monitoring panel ^{*2} 628x 1RU series panels ^{*2}	
*2 = Panel no longer manufactured				
*3 = Legacy mode panel operation only				
Panel lock	Yes	Yes	Yes, except 6776 & 6777	
Master panel	Yes ^{*3} - only X-Y panels	Yes ^{*3} - only X-Y panels	Yes ^{*3} - only X-Y panels	
Protects	Yes ^{*3}	Yes ^{*3}	Yes ^{*3}	
Database Salvos	Yes ^{*3}	Yes ^{*3}	Yes - max 32 ^{*3}	
Inhibits	No	No	Yes	
Monitor row panel	No	No	6276 ^{*2} / 6026776	
Status reporting				
Fans & PSUs	Yes – SNMP, Relay Contacts. Workbench. Rollcall (S800 only)	Yes –SW-P-02, SNMP, Relay Contacts. To Workbench and RollCall	Yes – swp-02 over IP and relay and SNMP	
Signal present	Yes (Sirius 800 only) SNMP, Workbench or Rollcall	Yes. Pyxis (AES input), Sirius 800 (video) SNMP, Workbench. RollCall (Sirius 800 only)	No	
Signal standard	Yes (Sirius 800 only) SNMP, Workbench or Rollcall	Yes (Sirius 800) SNMP, Workbench or RollCall	No	
Audio / Dolby detect & report	No	Yes (Pyxis) SNMP or Workbench	No	
Asynchronous AES input detect	No	Yes (Pyxis) SNMP or Workbench	No	
Router Support – control and references				
Pyxis	N/A – not used in Pyxis	3 serial ports - RS485. 3 video references, multi std 1 AES reference Ethernet 10/100Base-T	1 port Editor, Panel or Remote control port 1 port Panel or Remote control port 1 port Remote Control or Tandberg protocol 3 video references, fixed 525, 625 and Tri-level 1 AES reference Ethernet 10/100Base-T	
Cygnus	N/A – not used in Cygnus	4 serial ports – RS485 4 video references, multi std Ethernet 10/100Base-T	2 serial ports (RS485), 1 editor port (RS232) 3 video references, fixed 525, 625 and Tri-level Ethernet 10Base-T	
Sirius 800	4 serial ports – RS485 4 video references, multi std. Internally derived references of different formats from a single input 1 AES reference Ethernet 10/100Base-T	4 serial ports – RS485 4 video references, multi std. 1 AES reference Ethernet 10/100Base-T	N/A – Sirius 800 must use Nucleus control	

Panel Features Comparison Features available on panels currently shipping		Nucleus2 - 2463								Nucleus - 2450								Nebula			
Panels operating in:		RollCall Mode				Legacy Mode				RollCall Mode				Legacy Mode				Legacy Mode			
Key: Y = available - = not available C = configurable N/A = not applicable *4 = protect LED on if protected by panel, flashing if protected by other device *5 = Pyxis only *6 = previous / next page		1RU 6028 series (BPX & XY)	2RU 6026 series Dial up XY	2RU 6026 series Multibus	1 & 2 RU LCD button panels					1RU 6028 series (BPX & XY)	2RU 6026 series Dial up XY	2RU 6026 series Multibus	1 & 2 RU LCD button panels					1RU 6028 series (BPX & XY)	2RU 6026 series Dial up XY	2RU 6026 series Multibus	1 & 2 RU LCD button panels
Matrices		1	1	1	1			C	C	C	-	-	-	-				1	1	1	-
Levels		1	1	1	1			4/C	16/C	16/C	-	-	-	-				4	8	8	-
Level Breakaway		-	-	-	-			Y	Y	Y	-	-	-	-				Y	Y	Y	-
Association Names – 8 character		N/A	-	-	Y			N/A	Y	Y	-	-	-	Y				N/A	Y	Y	-
Association Names – 16 character		N/A	-	-	-			N/A	-	-	-	-	-	-				N/A	-	-	-
Association Names – 32 character		N/A	-	-	-			N/A	-	-	-	-	-	-				N/A	-	-	-
Level Names – 8 character		N/A	-	-	N/A			N/A	-	-	-	-	N/A	-				N/A	-	-	-
Level Names – 16 character		N/A	-	-	N/A			N/A	-	-	-	-	N/A	-				N/A	-	-	-
Level Names – 32 character		N/A	-	-	N/A			N/A	-	-	-	-	N/A	-				N/A	-	-	-
Unmarried Indication		-	-	-	-			-	Y	Y	-	-	-	-				-	Y	Y	-
Higher / Lower level indicator		-	-	-	-			-	Y	Y	-	-	-	-				-	Y	Y	-
Take Button		C	-	-	C			-	Y	Y	-	-	-	C				-	Y	Y	-
Immediate Take		C	N/A	N/A	C			Y	N/A	N/A	-	-	-	C				Y	N/A	N/A	-
Gang Take		-	-	-	-			-	-	-	-	-	-	-				-	-	-	-
Clear Preset Source		-	-	-	-			-	Y	Y	-	-	-	-				-	Y	Y	-
Database Salvos		-	-	-	-			Y	Y	Y	-	-	-	-				Y	Y	Y	-
Panel lock		Y	-	-	Y			Y	Y	Y	-	-	-	Y				Y	Y	Y	-
Master panel		-	-	-	-			Y	Y	Y	-	-	-	-				Y	Y	Y	-
Individual / Multi Level Protects		-	-	-	-			Y	Y	Y	-	-	-	-				Y	Y	Y	-
Protecting Panel Ident / Name		-	-	-	-			*4	Y	Y	-	-	-	-				*4	Y	Y	-
Audio stereo routing		-	-	-	-			Y	Y	Y	-	-	-	-				*5	*5	*5	-

Panel Features Comparison Features available on panels currently shipping	Nucleus2 - 2463										Nucleus - 2450										Nebula				
Panels operating in:	RollCall Mode					Legacy Mode					RollCall Mode					Legacy Mode					Legacy Mode				
Key: Y = available - = not available C = configurable N/A = not applicable *4 = protect LED on if protected by panel, flashing if protected by other device *5 = Pyxis only *6 = previous / next page	1RU 6028 series (BPX & XY)	2RU 6026 series Dial up XY	2RU 6026 series Multibus	1 & 2 RU LCD button panels		1RU 6028 series (BPX & XY)	2RU 6026 series Dial up XY	2RU 6026 series Multibus	1 & 2 RU LCD button panels		1RU 6028 series (BPX & XY)	2RU 6026 series Dial up XY	2RU 6026 series Multibus	1 & 2 RU LCD button panels		1RU 6028 series (BPX & XY)	2RU 6026 series Dial up XY	2RU 6026 series Multibus	1 & 2 RU LCD button panels		1RU 6028 series (BPX & XY)	2RU 6026 series Dial up XY	2RU 6026 series Multibus	1 & 2 RU LCD button panels	
Audio Modify	-	-	-	-		-	-	-	-		-	-	-	-		-	*5	*5	-		-	Y	Y	-	
Mnemonic Dial Up Keypad	N/A	-	-	-		N/A	Y	Y	-		N/A	-	-	-		N/A	Y	Y	-		N/A	Y	Y	-	
Source / Dest Name Grouping	Y	-	-	Y		-	-	-	-		Y	-	-	Y		-	-	-	-		-	-	-	-	
Prev/Next Keys	N/A	-	-	*6		N/A	Y	Y	-		N/A	-	-	*6		N/A	Y	Y	-		N/A	Y	Y	-	
Key Colour Selectable	Y	-	-	Y		-	-	-	-		Y	-	-	Y		-	-	-	-		-	-	-	-	
Brightness adjust	Y	-	-	Y		-	Y	Y	-		Y	-	-	Y		-	Y	Y	-		-	Y	Y	-	
Line Up Mode	?	-	-	?		-	Y	Y	-		?	-	-	?		-	Y	Y	-		-	Y	Y	-	
GPI Override mode	-	-	-	-		Y	Y	Y	-		-	-	-	-		Y	Y	Y	-		Y	Y	Y	-	
Button mimic GPI mode	-	-	-	-		Y	Y	Y	-		-	-	-	-		Y	Y	Y	-		Y	Y	Y	-	
Set Crosspoint from Panel GPI	Y	Y	Y	Y		-	-	-	-		Y	Y	Y	Y		-	-	-	-		-	-	-	-	
Set Salvo from Panel GPI	Y	Y	Y	Y		-	-	-	-		Y	Y	Y	Y		-	-	-	-		-	-	-	-	
Alternative-Destination	-	-	-	-		-	Y	Y	-		-	-	-	-		-	Y	Y	-		-	Y	Y	-	
Preset/Program Swap (Toggle)	N/A	-	-	-		N/A	-	-	-		N/A	-	-	-		N/A	Y	Y	-		N/A	Y	Y	-	
Tieline Routing	-	-	-	-		Y	Y	Y	-		-	-	-	-		-	-	-	-		-	-	-	-	
Live Panel Key updates	?	-	-	?		-	-	-	-		?	-	-	?		-	-	-	-		Y	Y	Y	-	
RS422 Routing 1 to 1	-	-	-	-		-	-	-	-		-	-	-	-		Y	Y	Y	-		Y	Y	Y	-	
RS422 Routing Broadcast Mode	-	-	-	-		-	-	-	-		-	-	-	-		Y	Y	Y	-		Y	Y	Y	-	
RS422 Park Source	-	-	-	-		-	-	-	-		-	-	-	-		Y	Y	Y	-		Y	Y	Y	-	

The table below lists the Nucleus code releases and the compatible workbench version.

Workbench version	2330 / Nucleus2 Release	Nucleus release	Release Date
3.5		V1.0.0	Jul 2009
3.7		V1.1.1 V1.1.2 V1.1.3	Sept 2009 Sept 2009 Oct 2009
3.8		V1.1.4	Nov 2009
3.8.5		V1.1.5	Feb 2010
3.9		V1.1.6	April 2010
3.10		V1.1.7	May 2010
3.10.1			Sept 2010
3.10.2		V1.1.8	Dec 2010
3.10.3		V1.1.9	Jan 2011
3.10.4		V1.1.10	Feb 2011
3.11		V1.1.11	14 Mar 2011
3.11.1		V1.1.12	21 Mar 2011
3.11.2		V1.1.13	4 Apr 2011
3.12	1.7.0.2252	V1.1.14	28th July 2011
3.12.1	1.7.0.2386	V1.1.14.3286	4 Aug 2011
3.12.2	1.7.0.2556	V1.1.14.2556	14 Oct 2011
3.12.3	1.7.2.2637	V1.1.14.2637	2 Nov 2011
3.12.4	1.7.4.2874	V1.1.15.2874	25 Apr 2012
3.12.5	1.7.4.2874	V1.1.15.2874	10 Jan 2012
3.12.6	1.7.5.2894	V1.1.16.2874	13 Jan 2012
3.12.7	1.7.6.3324	V1.1.16.3324	1 May 2012
3.13.0	1.7.0.2359	V1.1.14.2359	29 Nov 2012
3.13.1	1.8.1.2931	V1.2.0.2931	26 Jan 2012
3.13.2	1.8.2.3493	V1.2.0.3493	6 July 2012
3.13.3	1.8.3.3555	V1.2.2.3555	17 July 2012
3.13.4	1.8.4.3653	V1.2.4.3653	18 Sep 2012
3.13.5	1.8.5.3707	V1.2.4.3707	16 Jan 2013
3.14.0	2.0.1	N/A	8 Feb 2013
3.14.1	2.0.4.3918	N/A	13 Feb 2013
3.14.2	2.0.5.4196	V1.3.1.4196	
3.14.3	2.0.6.4225	V1.3.2.4225	5 June 2013
3.14.4	2.0.7.4281	1.3.3.4821	19 June 2013
3.14.5	2.0.8.4292	1.3.4.4292	25 June 2013
3.14.6			29 July 2013
3.14.7			22 Aug 2013
3.14.8			30 Sep 2013
3.14.9	2.0.14.4528	1.3.8.4528	21 Oct 2103
3.14.10	2.0.16.4594	1.3.9.4594	4 Nov 2013
3.14.11	2.0.17.4667	1.3.10.4667	22 Nov 2013
3.14.12	2.0.18.4710	1.3.11.4710	19 Dec 2013
3.15.2	3.0.2.4761	3.0.2.4761	16 Dec 2013

For Workbench versions up to and including V1.1.13, controller code and Workbench code MUST be in step (i.e. from the same rows grouped in the table opposite). Earlier or later versions of workbench cannot be used to configure controllers.

Workbench 3.12 and 3.13 can both be used to configure both Nucleus V1.1.xx and V1.2.xx