Fast Ethernet and PoE over Multi-Pair UTP with up to 2,000ft (610m) Reach

FLEX-Base Extender Solution

The NVT Phybridge FLEX-Base Extender Solution is designed to supercharge the downlink ports of a standard Ethernet switch delivering 10/100Mbps symmetrical (full duplex) and PoE over Multi-Pair UTP infrastructure with distances up to 2,000ft (610m). **That's 6X the reach of standard Ethernet switches**, thus removing the costs and disruptions associated with multiple IDF closet requirements.

With the FLEX-Base Extender Solution, IP IoT devices can be connected to the existing Multi-Pair UTP cabling infrastructure, delivering optimal performance while saving cost, time, and environmental e-waste. Furthermore, the cost savings realized by using the FLEX Extender Solution can enable system designers to transfer budget and resources towards higher-quality applications and IEEE-compliant IoT devices, including IP-enabled phones, cameras, access control, speakers and even facility lighting.

Extend the reach of standard PoE switches with the FLEX Extender Solution

FLEX-Base Paired with the FLEX-C Enable 1 IP endpoint from a single long run Multi-Pair UTP cable with up to 30W of power per port

*FLEX-Base Paired with the FLEX-Link Enables 1 IP endpoint from a single long run Multi-Pair UTP cable with up to 50W of power per port
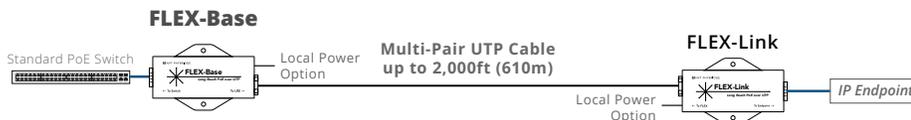
*FLEX-Base Paired with the FLEX4 Enables 4 IP endpoints from a single long run Multi-Pair UTP cable with up to 30W of power per port
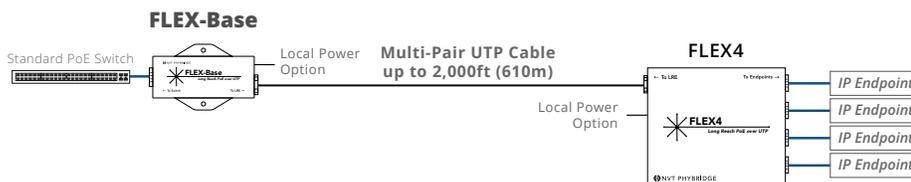
*Pairing options available in conveniently packaged FLEX Extender Kits

AT A GLANCE

(NV-FLXLK-BSE)

· Base unit for 1-port long reach PoE Extender
· Negotiates with PoE switch
· When paired with FLEX-Link (50W), FLEX4 (30W) or FLEX-C (30W) Adapters, delivers PoE over 2 or 4 pair UTP with up to 2,000ft (610m) reach
· Can be locally powered
· EN 50121-4 Standard for Railway/ Subway environments
· 802.1x port-based authentication

FLEX-EXTENDER KITS

Each FLEX Extender Kit is conveniently packaged and includes a FLEX-Link or FLEX4 Adapter, a FLEX-Base Extender, and an external power supply.

1-Port FLEX Extender Kit
(NV-FLXLK-XKIT)

· Extend reach of standard PoE switch
· Single port extender solution enabling 1 IP endpoint from a single 2 or 4 pair long run UTP cable
· 10/100Mbps symmetrical (full duplex) and PoE++ (50W) over 4-pair UTP or PoE+ (30W) over 2-pair UTP with 2,000ft (610m) reach
· Up to 50W of power available for the endpoint
· Adapters can be locally powered
· Includes: FLEX-Base Extender, FLEX-Link Adapter, and a 60W, 55V external power supply
· 802.1x port-based authentication

4-Port FLEX Extender Kit
(NV-FLX-04-XKIT)

· Extend reach of standard PoE switch
· Single port extender solution enabling 4 IP endpoints from a single 2 or 4 pair long run UTP cable
· 10/100Mbps symmetrical (full duplex) and PoE++ (50W) over 4-pair UTP or PoE+ (30W) over 2-pair UTP with 2,000ft (610m) reach
· Delivers up to 30W of power per downlink port
· Adapters can be locally powered
· Includes: FLEX-Base Extender, FLEX4 Adapter, and a 110W, 55V external power supply

CHARIOT
by NVT Phybridge

FLEX-Base Technical Specifications

Model	FLEX-Base
Part Number	NV-FLXLK-BSE
802.1x Support	Supported
Dimensions	• 8.8cm x 5.0cm x 2.5cm (LxWxH); • 3.46" x 1.97" x 0.98" (LxWxH)
Weight	106g (3.74oz.)
Interface: Network Infrastructure side (FLEX)	1 RJ45 port: 10/100 Base-T auto-sensing, independent speed selection, Ethernet IEEE 802.3, CAT5e/6 copper cable
Interface: IEEE Side (IP Device)	(For General/PoE Switch) 1 RJ45 port: supports negotiation with IEEE 802.3 af/at switches
Power Supply	PoE from standard PoE switch, or external power supply; maximum 50W (over 4-pairs) or 30W (over 2-pairs)

Power Consumption	1.5W
Operating temperature	-40ºC to 70ºC Tests conducted against international safety standard at maximum ambient temperatures of 60ºC at 30W and 50ºC at 50W
Mean Time Before Failure (MTBF)	20+ years
Humidity	10% to 95% (non-condensing) at 35° C
Ambient Temperature	Minimum ambient temperature for cold start-up is 32°F (0°C)
Rack Mount	Model NV-RMEXT

FLEX-Base Compliance and Agency Approval

EMC	Emissions: FCC Part 15, ICES-003, EN 55032:2015, EN 50121-4:2015 Class B Immunity: EN 55035:2017, EN 50121-4:2015
Safety	UL 60950-1 2nd Ed 2014-10-14, CAN/CSA C22.2 No. 60950-1-07 2nd Ed 2014-10 IEC 62368-1:2014, EN 62368-1:2014, AS/NZS 62368.1:2018
Environment	RoHS Directives 2011/65 and 2015/863

Power & Distance Table

FLEX-Base used with FLEX-Link									
	20ft (6m)	250ft (76m)	500ft (152m)	750ft (228m)	1,000ft (305m)	1,250ft (381m)	1,500ft (457m)	1,750ft (533m)	2,000ft (610m)
Cat6 4-Pairs	47W	45	43	41	39	37	35	33	30
Cat6 2-Pairs	31W	29	28	26	24	22	20	18	16
Cat5e 4- Pairs	47W	44	41	39	36	33	30	27	24
Cat5e 2-Pairs	31W	29	26	24	21	18	16	13	11
FLEX-Base used with FLEX-C									
Cat6 4-Pairs	31W	30	29	29	28	27	26	25	24
Cat6 2-Pairs	31W	29	28	26	24	22	20	18	16
Cat5e 4- Pairs	31W	30	29	27	26	25	24	22	21
Cat5e 2-Pairs	31W	29	26	24	21	18	16	13	11
FLEX-Base used with FLEX4									
Cat6 4-Pairs	47W	45	43	41	39	37	35	33	30
Cat6 2-Pairs	31W	29	28	26	24	22	20	18	16
Cat5e 4- Pairs	47W	44	41	39	36	33	30	27	24
Cat5e 2-Pairs	31W	29	26	24	21	18	16	13	11

▮ **100Mbit**   ▯ **10Mbit**

FLEX FAMILY ADAPTER OPTIONS

FLEX Adapter Options

There are three media converter options available to pair with the FLEX family of switches and extend PoE over Multi-Pair UTP. The FLEX-C and FLEX-Link are single endpoint solutions and the FLEX4 enables 4 IP endpoints from a single long run Multi-Pair UTP cable.

FLEX-C

FLEX-Link

FLEX4

	FLEX-C	FLEX-Link	FLEX4
Power	• Maximum 30W, delivered on 2-pairs (spare pairs) • No local power option available • Does not negotiate power requirements with IP device • Device should be IEEE compliant	• Maximum 50W, delivered on 4-pairs • Local power option to support greater power delivery to IP device • Adapter is IEEE-compliant and will negotiate power requirements with IP device	• Maximum 30W, delivered on 2-pairs • Local power option to support greater power delivery to IP device • Adapter is IEEE-compliant and will negotiate power requirements with IP device
Casing	Plastic	Metal	Metal
Single-pair Supported	No	Yes (needs local power)	Yes (needs local power)
EN 50121-4 Standard	Yes – approved to operate in a railway/subway environment		

FLEX Adapters Technical Specifications

Model	FLEX -C	FLEX -Link	FLEX4
Part Number	NV-FLXLK-C	NV-FLXLK	NV-FLX-04
802.1x Support	Supported	Supported	Not Supported
Dimensions	8.1cm x 3.8cm x 2.3cm (LxWxH); 3.19" x 1.50" x 0.90" (LxWxH)	8.8cm x 5.0cm x 2.5cm (LxWxH); 3.46" x 1.97" x 0.98" (LxWxH)	9.8cm x 9.6cm x 2.5cm (LxWxH); 3.86" x 3.78" x 0.98" (LxWxH)
Weight	44g (1.5oz.)	106g (3.74oz.)	214 g (7.6 oz.)
Interface: Network Infrastructure Side (FLEX)	1 RJ45 port: UTP/STP cable (2-pair or 4-pair)	1 RJ45 port: UTP/STP cable (1-pair, 2-pair or 4-pair)	1 RJ45 port: UTP/STP cable (1-pair, 2-pair or 4-pair)
Line Speed	10/100Mbps full duplex	10/100Mbps full duplex	10/100Mbps full duplex
Interface: IEEE Side (IP Device)	1 RJ45 port; device must be IEEE 802.3af/at compliant, 10/100Mbps connection to IP end device	1 RJ45 port; device must be IEEE 802.3af/at compliant, 10/100Mbps connection to IP end device	4 RJ45 ports: device must be IEEE 802.3af/at compliant, 10/100Mbps connection to IP end device
Power Supply	PoE from the FLEX switch or from FLEX-Base; maximum 30W (over 2-pairs)	PoE from the FLEX switch or external power supply; maximum 50W (over 4 pairs) or 30W (over 2-pairs)	PoE from the FLEX switch or external power supply; maximum 30W (over 2-pairs) each port
DC IN (Barrel Connector)		Optional (sold separately) 48V – 58VDC via an external AC/DC Power Adapter (IEC Class II isolated only) NOTE 1: Local power supply used must have its output isolated from Earth potential. NOTE 2: If voltage of local power supply is lower than the power voltage provided from the PoE switch, then power on the PoE switch should be turned off.	Optional (sold separately) 48V – 58VDC via an external AC/DC Power Adapter (IEC Class II isolated only) NOTE 1: Local power supply used must have its output isolated from Earth potential. NOTE 2: If voltage of local power supply is lower than the power voltage provided from the PoE switch, then power on the PoE switch should be turned off.
Power Consumption	1.3W	1.5W	1.5W
Operating Temperature	-40ºC to 70ºC *Tests conducted against international safety standard at maximum ambient temperatures of 60ºC at 15W and 50ºC at 30W*	-40ºC to 70ºC *Tests conducted against international safety standard at maximum ambient temperatures of 60ºC at 30W and 50ºC at 50W*	-40ºC to 70ºC *Tests conducted against international safety standard at maximum ambient temperatures of 60ºC at 64W and 55ºC at 120W*
MTBF	20+ years	20+ years	20+ years
Humidity	10% to 95% (non-condensing) at 35° C	10% to 95% (non-condensing) at 35° C	10% to 95% (non-condensing) at 35° C
Ambient Temperature	Minimum ambient temperature for cold startup is 32°F (0°C)	Minimum ambient temperature for cold startup is 32°F (0°C)	Minimum ambient temperature for cold startup is 32°F (0°C)

FLEX Adapters Compliance and Agency Approval

EMC	Emissions: FCC Part 15, ICES-003, EN 55032:2015, EN 50121-4:2015 Class A (FLEX4), Class B (FLEX-C and FLEX-Link) Immunity: EN 55035:2017, EN 50121-4:2015
Safety	UL 60950-1 2nd Ed 2014-10-14, CAN/CSA C22.2 No. 60950-1-07 2nd Ed 2014-10 IEC 62368-1:2014, EN 62368-1:2014, AS/NZS 62368.1:2018
Environment	RoHS Directives 2011/65 and 2015/863