DATASHEET

ETHERNET & POE OVER COAX

HIG**HW**IRE™
ENCODER
REPLACEMENT KIT

Replace legacy cameras and the encoder with IP cameras and this kit.

Four-Channel Ethernet and POE over coax kit designed for video encoder replacement

HIGHWIRE Powerstar Base 4 replaces existing analogue video encoders and enables easy replacement of analogue cameras with high-resolution IP cameras

| Re-use existing coax currently used for analogue cameras

| Replace typical 4-channel video encoders with a full IP system

| Reliably power new IP cameras with POE over coax

| Fully automatic installation - no set-up of EOC adaptor required

| Simple fast, cost-effective installation, less time on site

| Compatible with HIGHWIRE Powerstar Camera EOC adaptors

| Gigabit Ethernet network uplink and optional SFP port
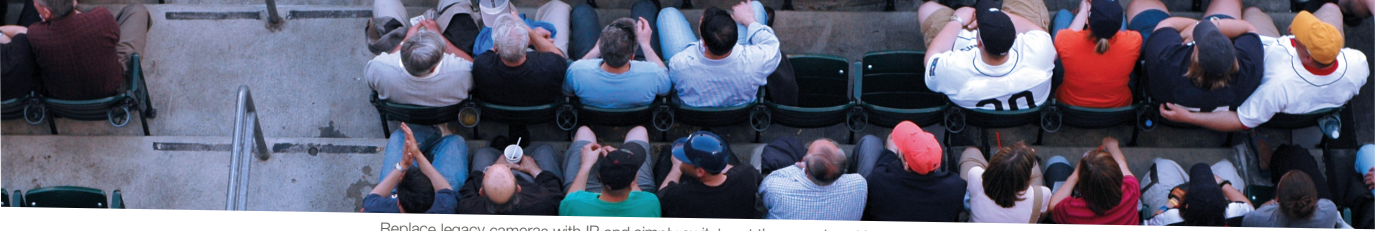
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A true plug-and-play solution for connecting and powering IP cameras over legacy coaxial cabling

The HIGHWIRE Powerstar product family offers reliable power delivery and long-range extension even over low-grade coaxial cable and now enables direct replacement of existing analogue video encoders to allow cost-effective upgrade to IP cameras.

Existing Video Encoders

Many CCTV installations made the first step to IP video by using analogue video encoders to digitise their existing analogue cameras and stream IP video onto their network. This allowed the analogue cameras running over existing coaxial cables to be used with modern network video recorders (NVRs) and to be streamed anywhere on the network (to a video wall, operator screen or display monitor for example). Video encoders were frequently used to get the video onto a network at the most convenient point thus avoiding having to run coax cable very long distances all the way to the equipment room end. Digitising and networking the video also added some flexibility to the system in terms of how the video data was routed and used, and indeed this is part of the power of IP Video systems.

Legacy Video Encoders

Existing video encoders come in many forms, but by far the most common is the stand-alone four-channel encoder, as manufactured by hundreds of different companies around the world. All have very similar characteristics: Four BNC connections for the coax cables, a network connection and a power connection.

PTZ Control/Audio

Some video encoders also had RS232 or RS485 ports for controlling analogue PTZ cameras. Of course, such serial connections are not required for IP PTZ cameras, as all control signals go through the Ethernet network connection along with the digital video. Likewise, some analogue encoders had audio I/O, but again, separate audio connections are not required for IP cameras, as the signals are incorporated into the network data and recorded by the NVR.

HIGHWIRE Powerstar Base 4 directly replaces the analogue encoder unit.
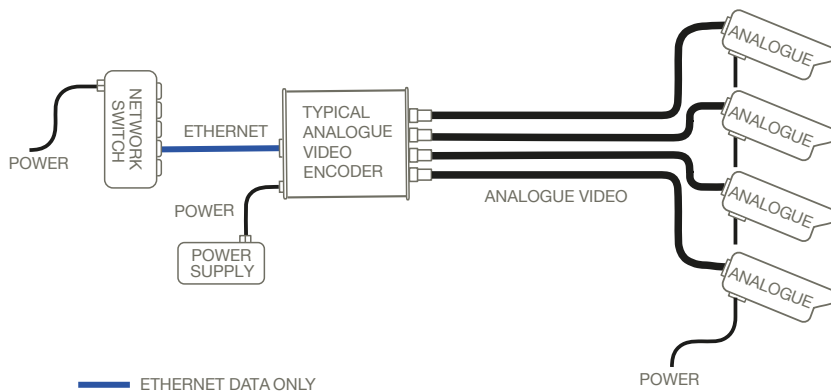
EXAMPLE OF A TYPICAL ANALOGUE ENCODER INSTALLATION

Diagram 1. A typical four-channel analogue video encoder installation is illustrated here

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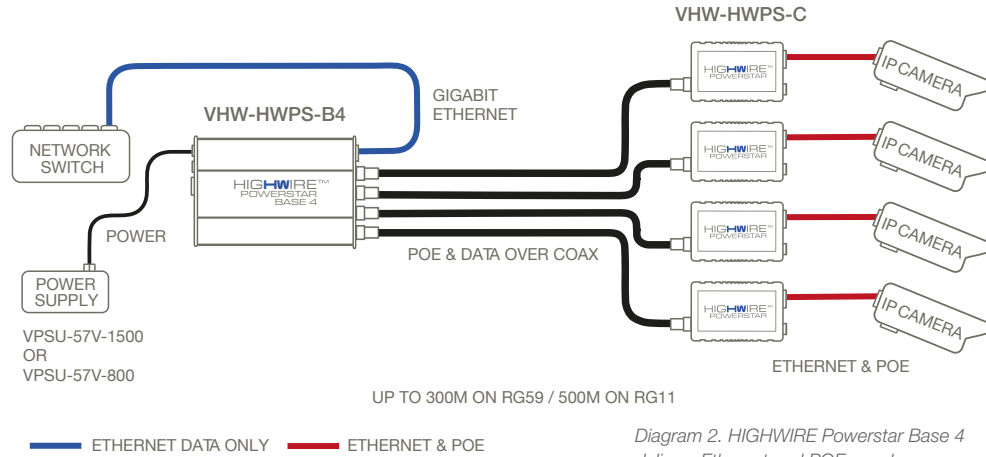## ETHERNET AND POWER OVER COAX INSTALLATION DIAGRAM

Diagram 2. HIGHWIRE Powerstar Base 4 delivers Ethernet and POE over legacy coax, for maximum reliability and with no rewiring.

Direct Encoder Replacement
HIGHWIRE Powerstar Base 4 builds on the market-leading HIGHWIRE range of Ethernet-over-coax (EOC) adaptors from Veracity, and is designed as a direct replacement for legacy analogue video encoders.

EOC Base and Camera Units
In Diagram 2 above, the legacy analogue encoder is replaced by a HIGHWIRE Base 4 unit and the coax cables are connected to four separate single-channel HIGHWIRE Powerstar Camera adaptors. Note that Duo and Quad Camera adaptors are also available. The low-resolution, locally powered analogue cameras are replaced by high-resolution POE powered IP cameras. A Gigabit Ethernet uplink connection on the HIGHWIRE Base 4 ensures there is no network bandwidth limit on available image quality and resolution.

Automatic connection
As soon as the power is supplied to the Base 4 unit, a connection is established automatically with the Camera units, the IP cameras are powered up and the camera IP addresses will be available on the network. The HIGHWIRE units require no configuration, do not require IP address settings and are completely transparent to the network.

Power Supply Included
The Encoder Replacement Kit includes a 57V DC, 1500mA power supply for the 4-channel HIGHWIRE Powerstar Base unit. This provides a total power budget of 80W for the Base unit, 4 camera units and powered devices (IP cameras). This power is sufficient to run four full POE 802.3af IP camera devices, or to provide a total POE output budget across the four HIGHWIRE Powerstar Camera devices of 70W, with an individual maximum of 25W per Camera unit.

POE-OVER-COAX RANGE TABLE

RANGE TABLE	CAMERA POWER (watts)				
Cable Type	**5W**	**10W**	**15W**	**20W**	**25W**
RG-11 (14AWG core) *Copper Core*	500m 1640ft	500m 1640ft	500m 1640ft	500m 1640ft	500m 1640ft
RG-59 (22/20AWG core) *Copper Core*	300m 1000ft	300m 1000ft	300m 1000ft	300m 1000ft	300m 1000ft
RG-59 (22AWG CCS) *Copper coated steel*	270m 880ft	265m 870ft	185m 610ft	140m 460ft	110m 360ft

POE-over-Coax™ Range
HIGHWIRE Powerstar delivers reliable power at long range, even over low grade CCS cable. No set-up is required and the coax connection is automatically established on power-up.

The table shows the range achievable by cable type and camera wattage.

TECHNICAL **SPECIFICATION**

HIG**HW**IRE™
ENCODER
REPLACEMENT KIT

HIGHWIRE INTERFACE

Connector type	HW BASE 4: BNC 75 Ohm x 4 HW CAMERA: BNC 75 Ohm x 1
Cable type	Any 75 Ohm coaxial (other impedances supported)
Range	Up to 300m [1000ft] on RG59 or 500 metres [1640 feet] on RG11 at full rate
Bandwidth	200 Mbps (total up + down) x 4

ETHERNET INTERFACE

Connector type	RJ45
Cable type	Patch or cross-over, autodetected
Rate	Gigabit Ethernet, (BASE unit); 100Based-TX (CAMERA unit)

LEDS - HW BASE 4 UNIT

Status indicators	HIGHWIRE coax link, Ethernet link/activity (BASE), POE-over-coax,
	See Quickstart Guide for LED indicator table and diagnostics

LEDS - HW CAMERA UNITS (4)

Status indicators	HIGHWIRE coax link, Ethernet link/activity (BASE), Ethernet link/activity (CAMERA),
	POE-over-coax, POE to camera, Power available (5/10/15/20/25W),
Colours	Off - Disabled. Green - Enabled. Red - Fault.

POWER - HW BASE 4 UNIT

Power input	57V DC, 1500mA PSU (supplied) via 2-pin detachable screw terminal
Unit power consumption	4.5 watts
POE output	IEEE 802.3af (POE) or IEEE 802.3at (POE Plus) up to 30W per channel

POWER - HW CAMERA UNIT (4)

Power input	POE over coax from BASE unit
Unit power consumption	1.5 watts (each)
POE output	IEEE 802.3af (POE) or IEEE 802.3at (POE Plus) up to 25W per unit

POWER SUPPLY

Specification	57V DC, 1500mA, regulated, wires stripped and tinned, (supplied in kit)
Dimensions	L 143mm W 64mm H 36mm
Weight	350g, 12.34oz,

PHYSICAL/ENVIRONMENTAL

Dimensions	HW BASE 4: L 173mm (including BNC connectors) W 110mm H 22mm
	HW CAMERA: L 104mm (including BNC connectors) W 54mm H 24mm
Weight	HW BASE 4: 356mm [5oz] HW CAMERA: 90g [3.2oz]
Operating temperature	HW BASE 4: 0ºC to 40ºC [32ºF to 104ºF]
	HW CAMERA: -10ºC to 50ºC [14ºF to 122ºF] delivering POE < 15W
Relative humidity	85% non-condensing
Compliance	FCC, CE, RoHS, REACH

PRODUCT CODES

VHW-HWPS-ERK4-UK	HIGHWIRE Powerstar encoder replacement kit with UK power cable
VHW-HWPS-ERK4-EU	HIGHWIRE Powerstar encoder replacement kit with EU power cable
VHW-HWPS-ERK4-US	HIGHWIRE Powerstar encoder replacement kit with US power cable
Product bundle consists of	1 x VHW-HWPS-B4 and 4 x VHW-HWPS-C 1 and 1 x VPSU-57V-1500

Surge Protection
All Veracity products have been independently tested to verify their resilience to the stringent immunity levels of international standards. Users should note that no electronic equipment can be guaranteed to be completely protected at levels beyond the defined standard; therefore product warranty cannot include damage to products which has been caused by surges exceeding those of the standards specified, for example lightning strike activity.

It is the user's responsibility to implement relevant surge protection measures, as appropriate to the installation. This may include the fitting of additional surge protection devices where required.

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