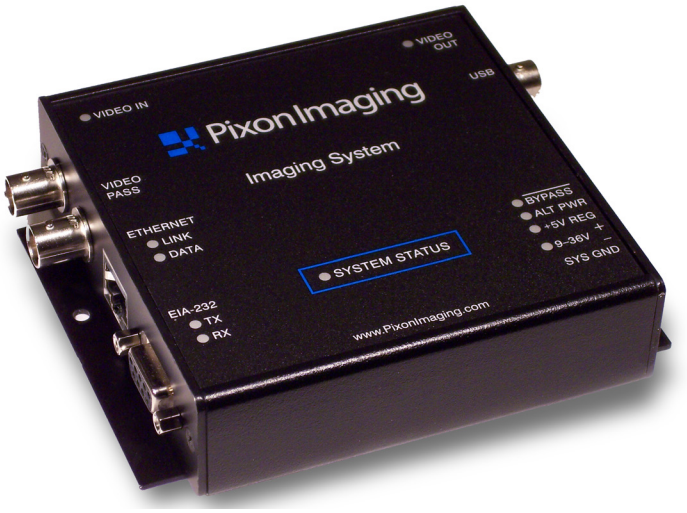
Pixon Imaging

Discovery 40 and Discovery 60 Imaging Systems

Product Data Sheet

Breakthrough imaging technology in a compact, rugged, package

This data sheet applies to the following model designations:
Discovery 40, Discovery 60



The Discovery 40 employs multi-core processor technology to provide a powerful DSP platform capable of a wide range of real-time video image-processing functions, along with an ARM9 general-purpose microprocessor running embedded Linux for robust user-interface, control, and peripheral implementations.

The Discovery 60 adds an FPGA-based processor for even greater real-time computational power.

When combined with applications firmware from Pixon Imaging's *Discovery Algorithm Suite*, the Discovery 40 and Discovery 60 provide turn-key video image-processing solutions for systems integrators in military, homeland security, surveillance, scientific, and other high-end imaging applications.

These compact units can be used on a bench or surface-mounted using the optional mounting plate, and accept a wide range of power-supply voltages.

Features and Specifications

Video inputs and outputs	
Functions	• **VIDEO IN** — Video to be processed (from camera or other source). • **VIDEO OUT** — Video output (to monitor, analytics application, or DVR). Normally this is processed video, unless one of the "bypass" modes is selected. • **VIDEO PASS** — A buffered duplicate (pass-through) of the input video signal.
Connector type	BNC jacks
Video standards	NTSC or PAL (Input format is automatically detected. Output format follows input.)
Video signal format	Composite (CVBS or RS-170), 1 V p-p, 75 ohms
Fail-safe video bypass	Relay contacts connect video input to video output if no power is available or if processor has detected a failure state.

Processors	Discovery 40	Discovery 60
General-purpose	ARM9	ARM9
Image processing	DSP	DSP + FPGA
Supervisory	MSP430	MSP430

Communications and control	
Serial data interface	
Protocol	RS-232 compatible (3-wire)
Connector	DE-9 female
Ethernet	
Standard	10/100BASE-T
Connector	8P8C modular jack (“RJ45” jack)
USB	
Standard	USB 2.0 (1.1 compatible), device mode only
Connector	Mini-B USB jack
PX Bus	
Standard	Pixon Imaging proprietary peripheral-device expansion bus
Functions	Interfaces to future add-on devices for PTZ control, sensor inputs, relay outputs, and other applications
Connector	4P4C modular jack (“RJ22” jack)
Video signal switching	
Transparent mode	This is a software-controlled (API command) mode that sets all image-processing parameters to “null” values. Video still passes through the entire analog and digital signal path (ADC, DSP, and DAC), but the video data are not mathematically altered.
Bypass	The video signal-processor is bypassed by a solid-state switch, effectively changing **VIDEO OUT** into an additional **VIDEO PASS** output. This function can be invoked via an API command or by grounding an external control line. Certain system faults also can invoke this mode. The **VIDEO PASS** output remains available.
Fail Safe	A power failure, a massive system fault, or a watchdog failure invokes this bypass mode. Normally-closed relay contacts connect **VIDEO IN** directly to **VIDEO OUT**. The **VIDEO PASS** (video loop-through) signal is not available. Also available as an API command. The **VIDEO PASS** output is *not* available.

Power-supply Options		
CAUTION: Except as noted, only *one* power-supply option can be used at a time — unused power inputs must be left *open*.		
+5 VDC regulated		
Voltage	+4.5 to +6.0 VDC	
Load regulation	±5.0%	
Ripple and noise	50 mV p-p	
Transient response	2.0 ms for 50% load change	
Line regulation	±5.0%	
Current	**Discovery 40**	**Discovery 60**
	450 mA	750 mA

+7.5 to +36 VDC unregulated		
Voltage	+9 to +36 VDC	
Load regulation	input must not drop below +9 VDC	
Ripple and noise	1.0% of input voltage level, peak-to-peak	
Current	**Discovery 40**	**Discovery 60**
	100 to 400 mA	130 to 650 mA

Alternate power	
An alternative power input that allows the active-bypass and loop-through amplifiers to maintain operation if the main power source fails.	
Voltage	+3.5 to +9.5 VDC
Current	75 mA maximum
Noise	5% of input voltage level, peak-to-peak (assumes some visible noise effects)

Environmental

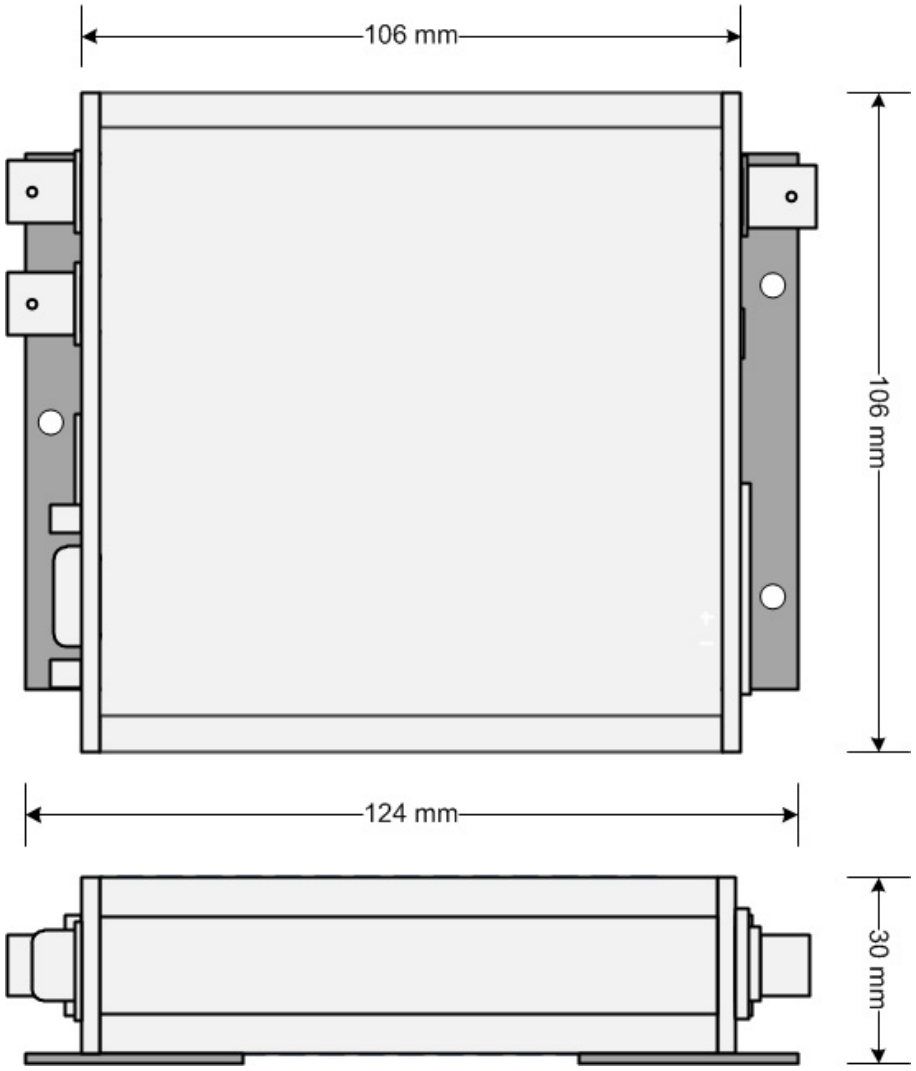
Ambient temperature range, operating	0 to +70 ºC
Ambient temperature range, storage	–60 to +85 ºC
Humidity	3% – 90%, non-condensing
Altitude	4,500 m

Dimensions

H x W x D (overall, with surface-mount brackets)	30 x 124 x 106.0 mm
Weight (with surface-mount brackets)	375 g

Software	Discovery 40	Discovery 60
Region of interest - Selects region of video to be processed	X	X
Brightness control - Dynamic range control for adjusting the balance between dark and light areas	X	X
Power contrast - Sharpens features in low contrast areas and increases the difference between the light and dark portions for each feature		X
Dehazing - Color recovery and haze (rain, fog, smoke, dust, murky water) removal	X	X
Noise reduction - Removes noise by frame averaging.	X	
Motion adaptive noise reduction - Removes noise in stationary features and leaves moving features unprocessed so they don't disappear		X
Gamma correction - Controls brightness, similar to the brightness function on a TV or computer monitor		X

Mechanical drawing



Shown with surface-mount brackets installed.

Drawing not to scale.

For more information

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