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INSTRUMENT DATA SHEET

PSI ASC DK Imaging Unit

Enclosure Hardware	The ASC DK imaging units' outer enclosure comprises of an anodised aluminium tubular housing supported by an optional circular anodised aluminium mounting base or wall mount bracket.
Internal Components	The ASC DK imaging system employs:- • Two bespoke NIR application specific cameras each having a resolution of 752x468 pixels, operating in global shutter mode, and fitted with optical filtering to minimise ambient lighting effects. • Two bespoke NIR application specific illumination systems each controlled by its associated camera. • An advanced state of the art illumination system which operates with dual illumination technology NIR LED and Xenon discharge. • Application specific optical filtering designed to remove virtually all visible light and resulting in a peak operational wavelength of 850nm.
ASC DK Operation	Although comprising of two imaging systems, each system is essentially independent with each having a USB2 high-speed interface providing control, image data, and power i.e., two USB2 interfaces per unit. All camera functions and illumination control are performed via the USB2 high-speed interface. A single 12V DC supply powers both illumination systems, and both the LED and Xenon technologies. The unit has four status LEDs, two located below each of the camera lenses, controlled over the USB2 interface. Using appropriate commands over the USB2 interface each LED is independently set to be either off, red or green.

Perception Sensors & Instrumentation Ltd
Tower Close Green Lane
Doncaster DN5 7UP England

tel: +44 (0) 1320 729 126
email: sales@perception-si.com
www.perception-si.com

Operating Modes	The ASC DK unit has tw0 operating modes: As a norm, sunlight and tungsten lighting provide sufficient NIR light for successful camera operation. This is not so in low energy artificial lighting environments as insufficient light is available or in instances where the target is positioned such that the target is in silhouette with the light source behind it. The following two modes alleviate this problem:- LED LED mode is used for capturing normal images in environments with low levels of lighting. In this mode the camera controls the duration of the high intensity LEDs such that they are illuminated only when the global electronic shutter is open. This results in low power operation whilst capturing a clear, well defined image. *Note, in ambient lighting environments with moderate to high levels of NIR, image quality may suffer and in such instances the third mode of operation, Xenon, should be employed.* Xenon Xenon mode of operation is used to capture images that are immune from external lighting conditions and motion blur. With the high intensity, extremely short duration NIR flash the camera exposure time is very short, thus rejecting ambient lighting whilst maintaining a low average level of light output from the imaging system.
Light Output	Average light output from the system when in both LED and Xenon modes is significantly lower than that of the average tungsten reading lamp. This low average power, together with the NIR operation, results in the ASC unit being non intrusive and almost invisible in operation to the end user. This provides an imaging system which discards the need for power hungry, high brightness, steady state lighting employed in other imaging systems.

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Camera	The ASC bespoke camera design is capable of operating over a wide dynamic range. Total control of exposure time, gain, linearisation etc., allows the camera to operate over an extremely diverse range of lighting conditions ranging from very low light environments to those of bright daylight. With the correct illumination mode of operation, the camera has the ability to capture high quality images in lighting conditions from total darkness to bright sunlight. The camera is able to operate in either automatic mode whereby the camera makes all adjustments to exposure, gain etc., when acquiring the image or in controlled mode whereby full control of camera settings are available on a frame-by-frame basis via the USB2 link.
Mounting	The unit's two independent imaging systems are installed within the single tubular enclosure. Each system is positioned accurately at a set calculated distance so as to allow some overlap of acquired images which facilitates the capture of full face images over a wide height range of targets. Some height adjustment of the unit is available by means of sliding the tubular enclosure inside the circular mounting base, where supplied. There are four locking screws at the rear of the unit by which to hold the unit in-situ once the desired height is set. Three M8 tapped holes, located in the circular mounting base, allow the stand to be securely bolted down onto an appropriate selected surface. Note – a hole, i.e., a cable entry hole, will be required in the mounting surface to allow the cables which exit at the bottom of the imaging unit to feed through. ***CAUTION: The ASC DK imaging unit must be securely bolted to a stable surface prior to operation. The ASC DK imaging unit has been specifically designed to operate as an in-situ bolted down instrument. Its height and small diameter make the instrument inherently unstable until securely bolted down. The unit must therefore not be left in a position where it is subject to being knocked over prior to being secured down. The unit is heavy and may cause injury if allowed to fall.***

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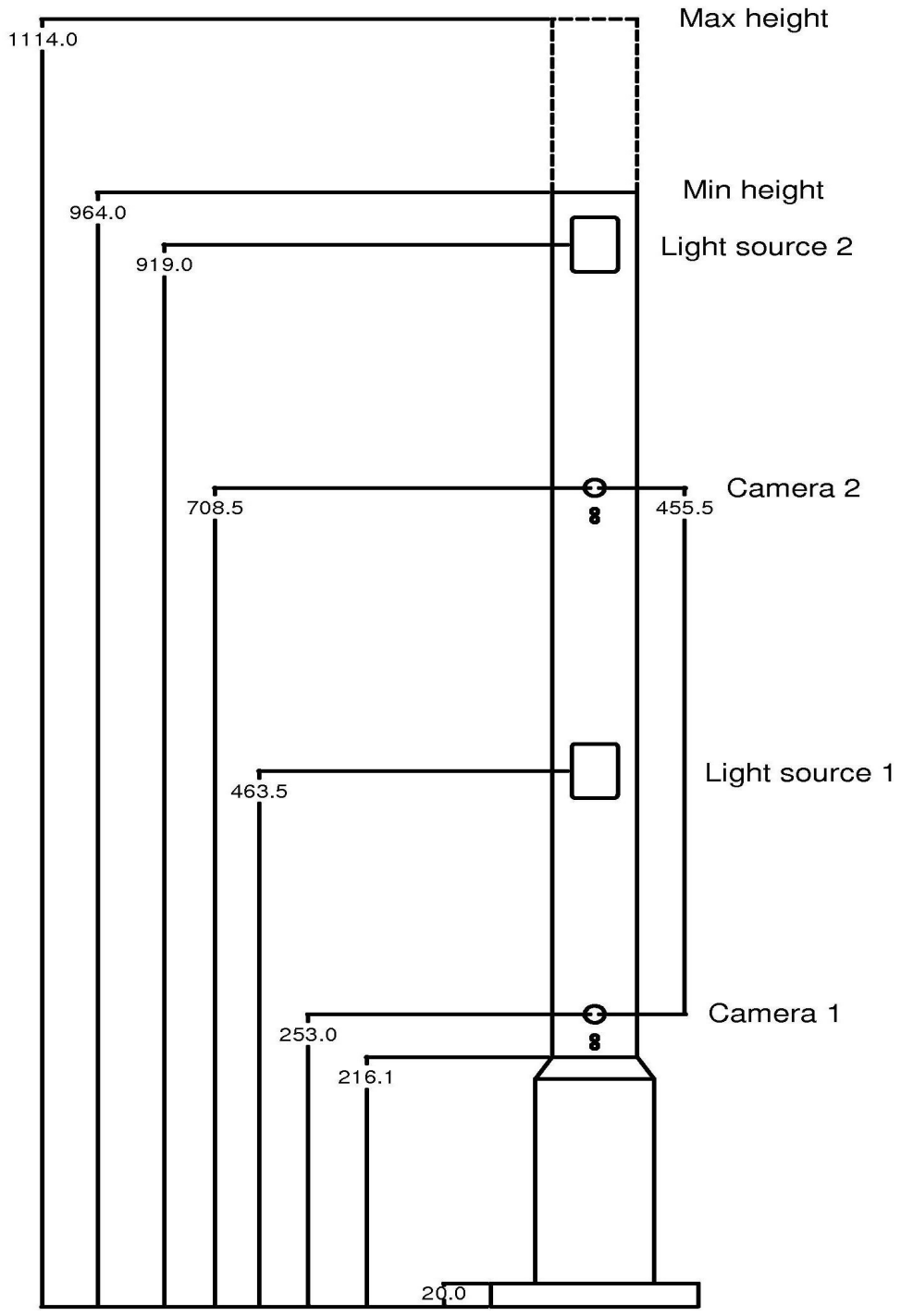

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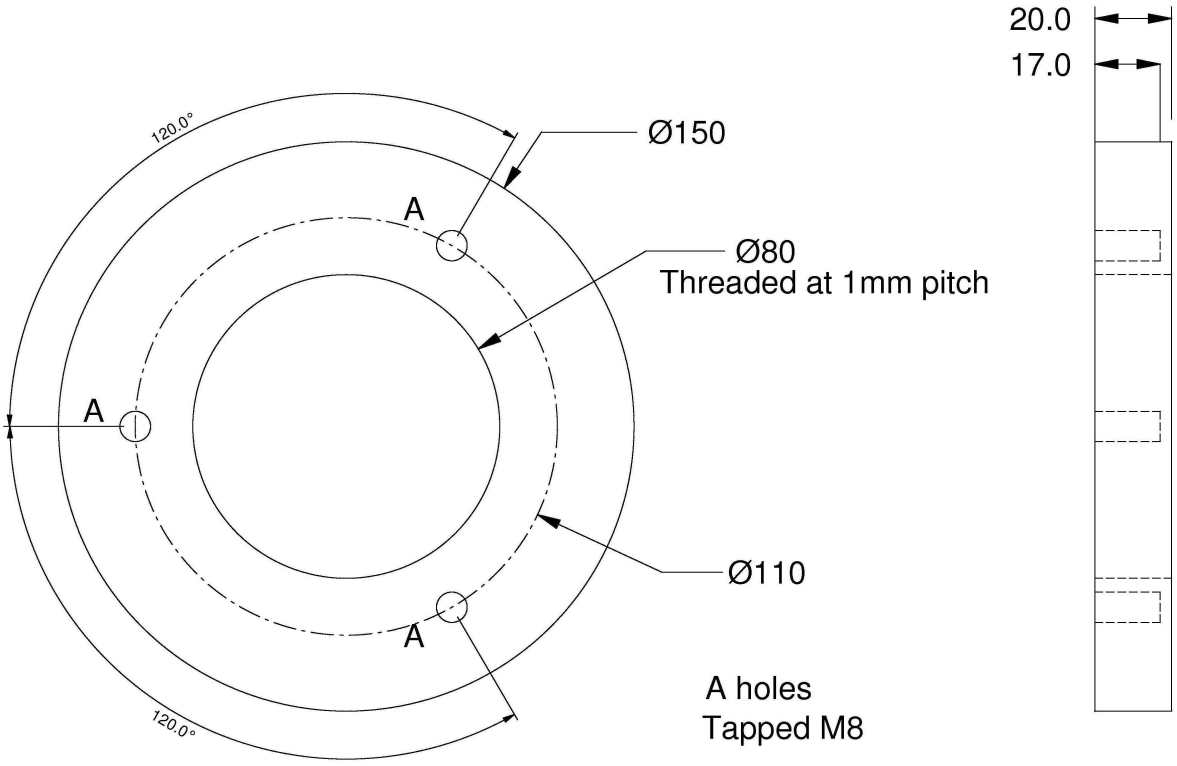

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Illumination system power requirements for systems without integrated screen. Systems without integrated screen are supplied for use with the Stontronics T2528ST PSU	The power requirement for the ASC DK is from a nominal 12DC source. When not illuminating, the current is generally less than 10mA, providing a standby power of around 0.12W. The DC supply range is 8 – 18V with a peak current draw of 2A. With a 12V supply and streaming video with either LED or Xenon mode the average current drawn is approximately 250mA, giving a running power of around 3W. However, the illumination system has been fully tested with the plug-top power supply provided. This power supply is fully approved for this application and has been EMC compliance tested when in combination with the ASC DK imaging unit. It is highly recommended that this power supply is used and PSI offer no warranty if alternate power supplies are employed. It is highly recommended that switch mode power supplies are not used in this application unless an external base load >200mA is present.
Illumination system power requirements for systems with integrated screen. Systems with integrated screen are supplied for use with the Ideal Power 25HK-HP30-A12 PSU	The power requirement for the ASC DK with screen is from a nominal 12DC source. When not illuminated but with screen active, the current is around 300mA providing a standby power of 3.6W. With the screen inactive the current is approximately 10mA providing a standby power of 0.12W. The DC supply range is 10-14V with a peak current draw of 2.3A. With a 12V supply and streaming video via either LED or Xenon mode the average current drawn is approximately 550mA giving a running power of 6.6W. However, the illumination system has been fully tested with the plug-top power supply provided. This power supply is fully approved for this application and has been EMC compliance tested when in combination with the ASC DK imaging unit. It is highly recommended that this power supply is used and PSI offer no warranty if alternate power supplies are employed. Due to the limited supply range of the display the supply voltage must be 10-14V. As the system provides a base load switch mode power supplies can be used in this configuration. However significant load variations take place and not all switch mode supplies will be suitable.
Optional Features	Screen options:- 1. Integrated touch screen with 800x480 resolution WVGA. Touch 4 wire with eGalax USB touch controller. 2. Integrated portrait VGA screen with 800x600 resolution. Customer specified lengths:- A limited range of customer specified lengths are available to accommodate various height desk mounts. Mounting:- The system is normally supplied with the desk mount stand, however tube clamps or wall brackets are available alternative mounting methods; please contact supplier for customer specific options.

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Software	The imaging units camera and illumination systems have been designed specifically to operate in tandem with custom software running on a PC or an equivalent system. Whilst employing the USB2 data transfer protocol, the ASC imaging unit has not been designed as a general purpose imaging system. Specific software drivers have been created and provide very specific optimised performance for specific applications. The ASC is therefore not compliant with standard plug and play imaging devices employed in operating systems such as Windows, and should not be considered as a standard imaging device.
Safety	Please note the aforementioned secure mounting prior to use of the ASC DK unit – see Mounting section. The ASC DK imaging unit is powered from a plug-top power supply which has been fully approved for operation with mains supplies in the UK, and EU for the EU option. All connections to the unit are very low voltage and do not present any risk of shock. Internally the illumination system stores energy for the short pulses required by the flash system. This energy is stored at 350V DC and is potentially a lethal shock hazard, however the design of the ASC DK unit is such that it fully encloses all high voltage components and therefore presents no shock risk in normal operation. Nonetheless, as is common with many electrical appliances, the system should not be opened by unauthorised personnel and all operation should cease should the outer enclosure become damaged. Access to all internal components requires the use of specialist tools and there are no user serviceable components within the unit. If access to internal components is required by service personnel, the unit must be disconnected from the external power supply prior to opening of the enclosure. A discharge path is provided across the storage components such that the high voltages are discharged to safe levels within ten minutes of the removal of the power. All access to the internal components should be avoided during this period between power removal and access to the internal components. During operation the instrument employs high brightness light sources which operate in pulsed mode, resulting in low average powers. The light sources are of a wide dispersal nature resulting in low average light levels at typical operating

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	distances. LEDs are almost a point source, therefore they produce high intensities at close proximity. The distance of the LEDs from the front of the optical window is such that the light intensity is within safe limits for short term exposure. It is inadvisable however to place the eye within a few millimetres of the optical window and look directly into the light source, just as would be avoided with a simple lamp or torch. There are no emissions of UV light or visible, other that that seen by the residual eye response to wavelengths around 800nM. The ASC imaging product has been designed to current legislation including the EU low voltage directive EMC (Electromagnetic Compatibility) directive and waste directives. All components are RoHS (Restriction of Hazardous Substances) compliant and require no special handling during the shipment or the disposal of the product. At the end of product life the equipment should be disposed of in-line with the legislation current at that time covering the disposal of RoHS compliant electrical systems.

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PSI ASC DK Specification

Camera

Quantity	2
Interface	USB2 High-speed (480Mbs)
Resolution	756x482 pixels
Frame speed	33fps maximum
Angle of view (vertical)	90º
Angle of view (horizontal)	56º
Wavelength	NIR with 850nm centre wavelength
Operating current	110mA
Maximum cable length	3 metres
Weight	5.5Kg

Illumination

Quantity	2
Light source 1	LED
Light source 2	Xenon discharge
LED peak power input	10W for 20mS
LED average power input	2.4W when streaming in normal conditions
LED wavelength	NIR with 850nm centre wavelength
Xenon average power	6 W input power when streaming at 5fps
Xenon wavelength	NIR 850nm peak wavelength *(visible light removed by filtering)*

Power inlet

2.1mm DC connector
Centre Pin +Ve

Power supply (no screen)

Stontronics T2528ST

Input voltage	230V 50Hz
Output	12V @1000mA
Type	Linear unregulated
Thermally protected	125°C
Insulation resistance	>100M ohm with 500VDC applied
Withstand voltage	3750VAC 50Hz for 1 minute
Approval	CE
Environment	Indoor use only

Power supply (with screen)

Ideal Power 25HK-HP30-A12

Input voltage	90-265 VAC 50Hz
Output	12V @ 2.5A
Type	Switch mode regulated
Insulation resistance	>50M ohm with 500VDC applied
Withstand voltage	3.0KV for 2 seconds
Approval	CE
Environment	Indoor use only
Protection	Short circuit and overload with auto recovery

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Landscape Screen

Visible area	223x134mm
Native resolution	800x480
Auto rescale	Inbuilt automatic rescale for non native image size
Display technology	LCD With LED back-light
Touch-screen	4-wire touch screen with USB interface
Interface	VGA

Portrait Screen

Visible area	113x86mm
Native resolution	800x600
Auto rescale	Inbuilt auto rescale for non native image size
Display technology	With LED back-light
Interface	VGA

Enclosure

Material	Anodised aluminium
Main body diameter	61.5mm
Stand body diameter	86mm
Circular mounting flange	150mm diameter
Enclosure height	964mm minimum top to bottom including stand 1114mm maximum top to bottom (actual heights dependent on height adjustment and range specified at time of order)
Flange mounting holes	3x8mm blind threaded holes on 110mm circle (see diagram)
Cable entry	1 cable entry hole to be provided by the client (entry through centre section of stand)
Approvals	CE compliant RoHS compliant EMC compliant (Class B conducted and radiated emissions and susceptibility)

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