

# CitiX Panoramic

## Local situation awareness camera

Built for Armoured Vehicles



### Features

- Panoramic 170° horizontal Field of View
- Distortion-free, no fish-eye effect
- Real-time for drivers
- Wide temperature range, -40°C to +70°C
- Day / Extended Night Mode options
- Fog penetration
- Digital Noise Reduction, DNR
- Heated protective window



Fibrenetix CITIX Panoramic armoured vehicle camera, enables an unobstructed 360° view of the surrounding area to be attained with the hatches closed, providing safety for all personnel, the vehicle and other assets.

The CITIX CI-P170 is a panoramic camera system that combines images from two 85.5° FOV cameras providing a completely seamless 170° FOV viewing system, which can be mounted on a wide variety of vehicles, such as armoured personnel carriers (APCs), light armoured vehicles (LAVs), tanks and other wheeled or tracked vehicles.

Fibrenetix CITIX CI-P170 is designed to deliver high-performance images, even under the harshest conditions, in temperatures ranging from -40°C to +70°C.

### Distortion-free images

The CITIX CI-P170 is designed around the latest generation of 1/3" CCD image sensors, with custom design optics to provide a seamless, distortion-free panoramic 170° horizontal FOV image, without fish-eye effect, under a wide range of viewing conditions.

The camera design offers several viewing modes:

- Full 170° Field of View, with both cameras stitched together
- Separate 85.5° Field of View from either the left or right side camera
- 85.5° Field of View from the centre of both cameras

### Ready for tough action

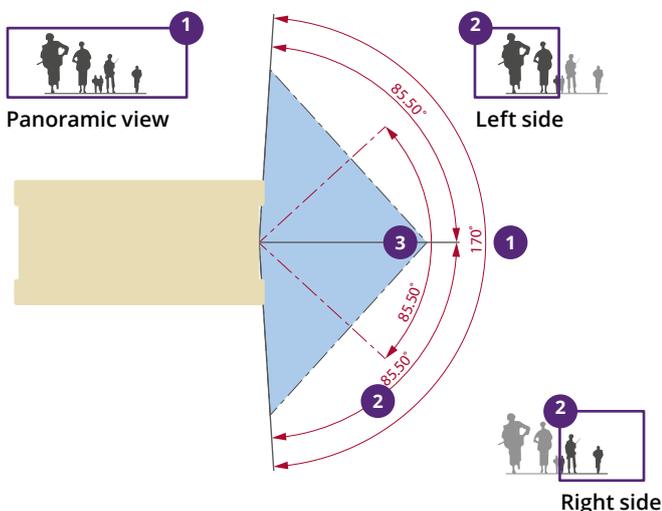
The CITIX CI-P170 is encased in a rugged IP-65 housing, designed to withstand vibration in accordance with MIL-STD 810F (metal track vehicles). It is also robust enough to easily withstand the impact of soldiers' boots treading on the housing. In addition, its low profile (78 mm), makes it a difficult target for enemy snipers. The camera protection windows are heated for condensation-free operation. In case of damage from scratching or cracking, a replacement window can be easily fitted in the field.

### Graphic overlays

The CITIX CI-P170 provides configuration of several graphic overlays in the form of distance markers and text strings.



Panoramic image with example of distance marker overlays



# Citix Panoramic Local Situational Awareness Camera

## Conductive cooling

Conductive cooling is used to remove heat from the CCD sensors. This reduces random noise in the CCD sensors, resulting in improved image quality, particularly in low-light conditions.

## Expanded Hi-Dynamic Range (XDR)

XDR is useful in conditions where there are large variations in brightness of the picture. For example, when there are very dark and very bright areas in the picture, the XDR amplifies the signal level in dark areas and reduces it in very bright areas, improving visibility of the picture.

## Fog penetration

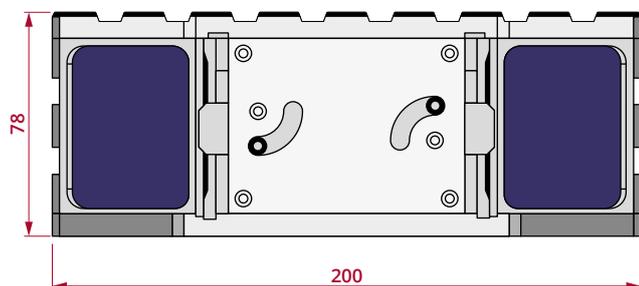
The fog penetration function is designed to automatically increase visibility in conditions such as fog, haze and fire smoke. The camera continuously analyses the picture and once it detects a low-contrast condition, it will automatically enhance the contrast.

## Digital Noise Reduction (DNR)

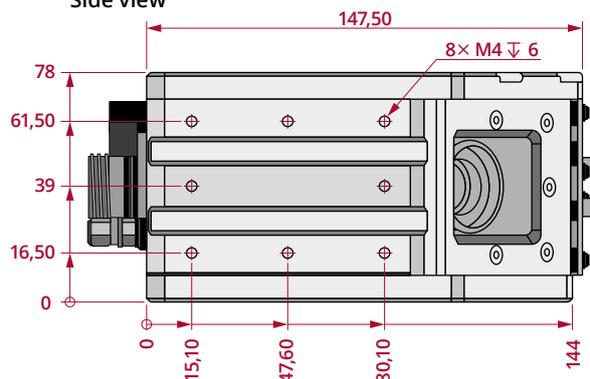
The Digital Noise Reduction function in the CITIX CI-P170 analyses the video image and reduces noise, particularly in low-light conditions. The analysis is based on a 3-dimensional algorithm.

## Mechanical outline and dimensions

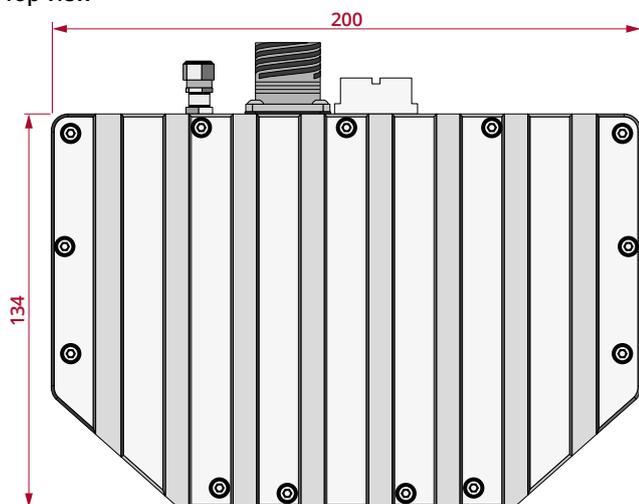
Front view



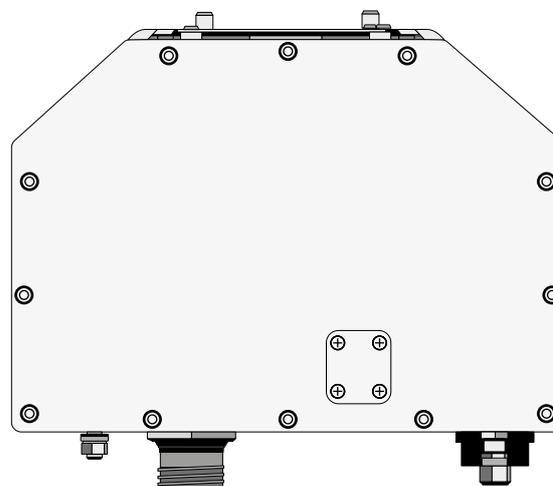
Side view



Top view



Bottom view



## Citix Family

Comparison of key parameters for the CITIX family of local situational awareness cameras, built for armoured vehicles

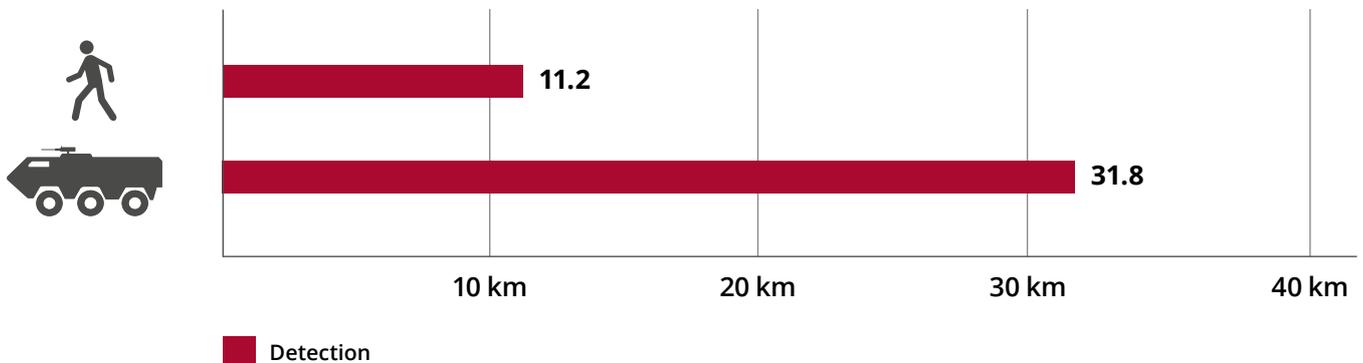


Parameter	CI-C60 Citix Compact	CI-T90 Citix Thermal	CI-P170 Citix Panoramic	Citadel Dual Rotation	Citadel Dual Camera
Horizontal FOV	47° to 95°, fixed (Factory default setting 60°)	44° or 90°	170°	57.3° (180° with rotation function)	57.3°
Resolution (effective pixels in PAL)	976 × 582	640 × 480	976 × 582 (×2 sensors)	CCD: 976 × 582 Thermal: 640 × 480	
Image sensor	CCD, 1/3" colour	Uncooled VOx micro bolometer	CCD, 1/3" colour	CCD, 1/3" colour and thermal uncooled VOx	
Video output	Composite video	Composite video	Composite video	Composite video	
Sensitivity	0.007 lux (25% video @ f/1.6, AGC on)	NETD <50mK	0.007 lux (25% video @ f/1.6, AGC on)	0.007 lux (25% video @ f/1.6, AGC on) and 50 mK	
Spectral response	Visible (400-700nm. Optional is 400-950nm)	Thermal / LWIR (8-14 μm)	Visible (400-700nm)	Visible and Thermal / LWIR (400-700nm and 8-14 μm)	
Setup and control	RS-422 or CAN-BUS serial interface (Fibrenetix protocol)	RS-422 serial interface (Fibrenetix protocol)	RS-422 or CAN-BUS serial interface (Fibrenetix protocol)	RS-422 serial interface (Fibrenetix protocol)	
Dimensions –mm (W×H×L) excluding connectors	77 × 63.4 × 139 (excluding mounting bracket)	77 × 63.4 × 139 (excluding mounting bracket)	200 × 78 × 134	256 × 185 × 250	256 × 137 × 250

### Common features:

- Designed for use on wheeled and tracked vehicles
- Dusk-to-dawn operation, with colour video output (except the CITIX Thermal cameras)
- Extended night-mode imaging, with full moon illumination
- Low profile, rugged design
- -40°C to +70°C operating temperature range

### Visual Range Performance



Conditions for SSIP CAM program: Visual band 400-1000nm, Contrast 30%,  
Over cast daylight, Sky ratio 3, Visibility 3km, 50% probability  
Dimensions Man: 0.45m × 1.7m. Vehicle dimensions NATO target 2.3m × 2.3m

# Citix Panoramic Local Situational Awareness Camera

## Technical Specifications

	PAL	NTSC
<b>Image system</b>		
Sensor	2× high sensitivity 1/3" colour CCD sensors with complementary mosaic	
Lens	2× focal length 2.6 mm, f/1.6, <1% distortion	
Effective pixels (H×V), per camera	976×582	976×494
Horizontal FOV	170° (two images with each 85.5° stitched together with minor overlap)	
Vertical FOV	70°	
Scanning system	2:1 Interlace	
Horizontal frequency	15.625 kHz	15.734 kHz
Vertical frequency	50 Hz	59.94 Hz
<b>Electrical specifications and functions</b>		
Video output	Composite VBS, 1 Vpp, 75 ohm	
Output formats (user selectable)	Panoramic 170° FOV fitting 16:9 monitor, Panoramic 170° FOV horizontally compressed to fit 4:3 monitor, Left and right side image, plus central portion of panoramic image fitting 4:3 monitor	
Horizontal resolution	Left and right separate image: 425 TVL; Stitched panoramic image: 240 TVL	
Sensitivity	0.007 lx, 25% video @ f/1.6, AGC on	
Spectral response	Visible – NIR light available upon request ( <b>Note 1</b> )	
Signal to noise ratio	> 52 dB, AGC Off	
Electronic shutter, fixed	1/50 to 1/10,000 sec.	1/60 to 1/10,000 sec.
Gamma correction	0.45 / 1.0	
Automatic gain control range	0 to +36 dB 6 DB DGC	
Frame integration	Extended night mode, 4×	
Day/Extended night mode switching	Via serial RS-422 interface	
Fog penetration	Image contrast enhancement 3 Levels	
White balance	Auto tracking white balance (ATW)	
Noise reduction	2D and 3D digital noise reduction 3 Levels	
Graphical overlays	Distance markers, 5-character text strings	
Configuration, serial interface	Fibrenetix Control Panel Applet and serial RS-422, with CAN-BUS option ( <b>Note 2</b> )	
<b>Mechanical</b>		
Overall dimensions – mm (W×H×L)	200×78×134 (excluding connectors)	
Net weight	<2100g	
Housing material	Aluminium with protective anti-corrosion coating	
Protective housing integrity	IP-65 (NEMA 4) rating, back-filled with dry nitrogen	
Camera windows	Chemically strengthened, AR-coated BK7 glass. Heated to prevent ice ( <b>Note 3</b> )	
Connector (power, data, control)	22-pin circular - In accordance with MIL 38999 (optional bottom mounting)	
<b>Environmental</b>		
Operating voltage	18 to 36VDC (1275B protection filter)	
Current consumption	Camera system with heater: 24W, with thermostat control ( <b>Note 4</b> )	
Operating temperature	-40°C to +70°C	
Storage temperature	-40°C to +70°C	
Vibration / shock	MIL-STD 810F, tracked vehicle 5.7G-rms, 3 hours each direction MIL-STD 810F, method 514.5, procedure 6	
EMC	Tested in accordance with MIL-STD 461F	
MTBF	30,000 hours	

**Note 1:** Order with IR-cut filter for 400-700nm spectral response, or order without IR-cut filter for 400-950nm spectral response.

**Note 2:** Request CAN-BUS when placing order, if required.

**Note 3:** Please inform Fibrenetix if the de-icing heater is not required and the price will be adjusted accordingly.

**Note 4:** If ordered without heater, power consumption is 12W.

\*Specifications are subject to change, without prior notice.

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