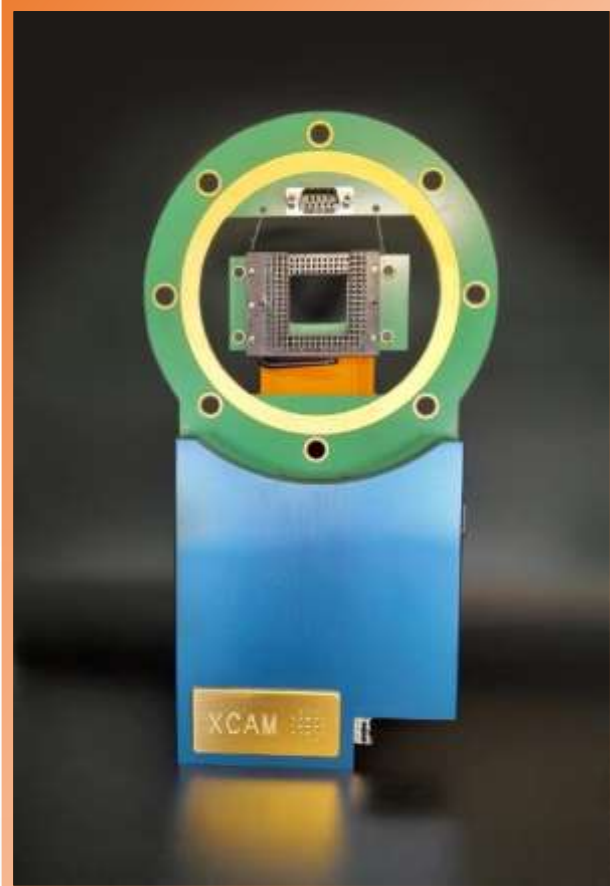




# CIS120 Imager Control System

*A multi-functional imager test and characterisation system for the Teledyne e2v 'Capella' CIS120 sensor*



Photograph of the CIS120 ICS main board showing the vacuum interface ring

## Introduction

The XCAM CIS120 Imager Control System (ICS) is an imager test and characterisation system which enables 'plug and play' operation of the Teledyne e2v 'Capella' CIS120 sensor with a noise performance of  $3 e^-$  rms achieved in use. It offers the ability to test CIS120 devices in-air or inside a vacuum system, and provides good flexibility and a wide range of test conditions.

The system comprises of a main board which can be used either in-air or inside a vacuum chamber. The latter operation is achieved through the clever design of a low-outgassing section of the board which can be clamped between vacuum components inside a vacuum chamber. Command, control and data transfer via optical fibre and fibre optic converter (FGA box), converting the optical signals to Camera Link format for input into a National Instruments (NI) data acquisition card in the PC.

## CIS120 Imager Control System (ICS) Key Features

Dual use in-air or in-vacuum design

Connectivity for temperature sensing and thermal control

Diagnostics information available

Command, control and data transfer via multimode duplex fibre optic cables

Camera Link data transfer via National Instruments data acquisition card (user supplied)

GPIO interface (TTL) to system enabling output control and status signals and input hardware trigger

Supplied with DLLs for easy interfacing to customer software

Supplied with Python code for plug and play operation

Requires 2 x +5V power supplies

Additional power supply needed to power backbias analog circuitry (if required)

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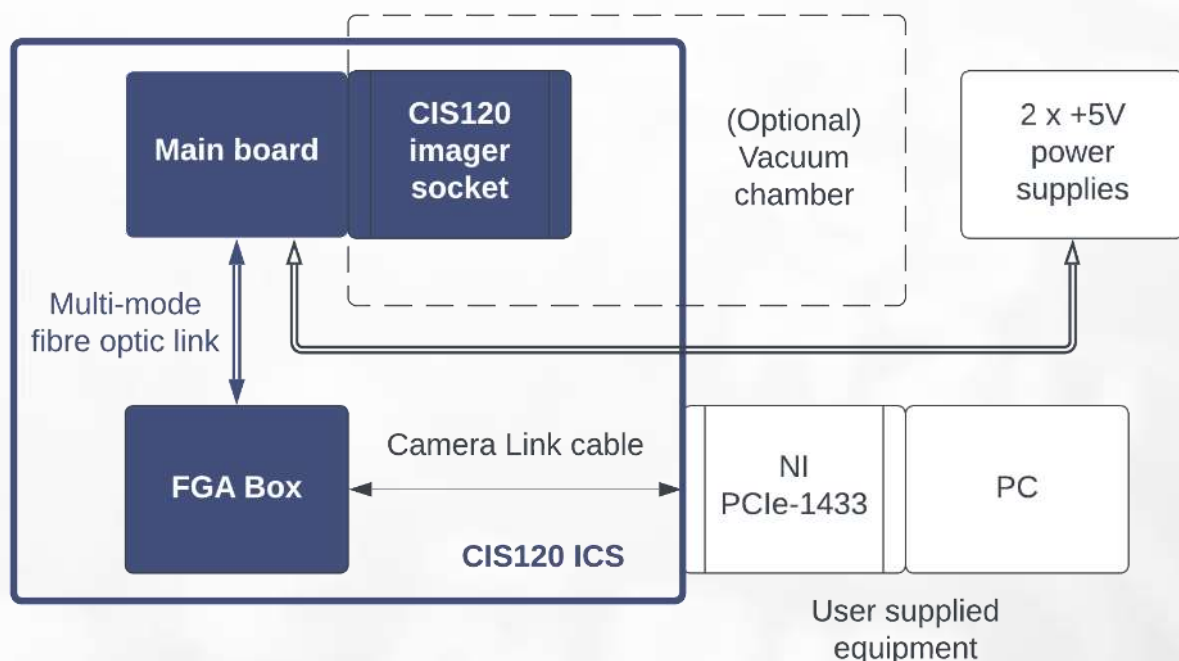


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## CIS120 ICS Interfaces

The block diagram below shows how the system is connected together. The CIS120 ICS (comprising the main board, FGA box, fibre optic cable and Camera Link cable) is integrated with a user supplied PC (with NI PCIe-1427 or 1433 data acquisition card), optional vacuum chamber, power supplies and the CIS120 imager. The main board also has additional connectors (not included in diagram below) to access the CIS120 temperature sensor, enable thermal control and GPIO for output control/status signals and input hardware trigger. The CIS120 ICS is also supplied with a flexible software suite (including a software developer's pack) necessary to operate the system.



Block diagram illustrating how the CIS120 ICS (in blue) interfaces with user supplied equipment (in white)

### CIS120 ICS Main Board Connectors

Sensor socket	ZIF socket for CIS120 Rev.B sensor
J3 Power connector	8-way 2.54mm header to supply power
PL1 Temperature control connector	9-way SUB-D for in-vacuum use
PL2 Temperature control connector	9-way SUB-D for in-air use
J7 CIS120 Temperature sensor connector	4-way JST connector for CIS120 TS1 & TS2
J9 Diagnostics connector	10-way 2.54mm header for diagnostics
J14 PLL connector	4-way interface to the on-board PLL
Fibre Optic connector	to CIS120 ICS FGA box

### CIS120 ICS Fibre Optic Converter (FGA Box) Connectors

Fibre optics connector	to CIS120 ICS Main Board
GPIO connector	9-way SUB-D 5V TTL
Camera Link cable	to National Instruments data acquisition card in PC



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CIS120 ICS Main Board Mechanical Schematic

