BECOM
it's possible.

PRODUCTS

WE MAKE IT POSSIBLE

BECOM has been a reliable electronics engineering, manufacturing and service partner for its clients in industry since 1984. From the first creative concept through the development and validation stages, right up to series production, its clients can obtain everything from a single source. Thanks to international business locations and partners, today's clients around the world benefit from the high-quality solutions, services and know-how provided by our experts.

The Time-of-Flight specialist Bluetechnix became part of the BECOM Group in 2016 and operates now as BECOM Systems. BECOM thereby expanded its business area with innovative sensor solutions and has subsequently been able to offer its clients the decades of experience of this domestic time-of-flight pioneer.

BECOM remains a family-run business to this day. With roots in the Burgenland state of Austria, over the years the corporation has developed world-class solutions and quality. Healthy but consistent growth and an instinct for innovative developments make BECOM the go-to choice for clients working in every sector.

Turnover
€106 million

R&D quota
5 %

Employees
546

A RELIABLE PARTNER

From the first idea to a successful product and a perfect market entry – BECOM is the one-stop-shop for innovative and client-specific Time-of-Flight solutions. Specialists guide our clients every step of the way, from solution development and production services up to testing and product certification. BECOM strives to be a long-term partner, offering innovation, experience and reliability to meet every need. Clients profit from decades of expertise, innovative ideas and extensive manufacturing capabilities. A well thought-out project and process management system and backstage services such as obsolescence management, logistics and after-sales make BECOM a partner to rely on through the whole product lifecycle.

Development

As a solution provider, BECOM not only delivers off-the-shelf cameras, but also fully optimized embedded 3D ToF cameras based on client requirements – even for seemingly impossible ideas and challenges.

Validation

Tests are conducted in BECOM's own ISO accredited EMC and environmental testing laboratories. EMC experts offer customized services from initial planning to measurement, problem solutions and validation.

Production

BECOM pairs high tech innovation with extensive manufacturing capabilities in facilities around the globe. Flexible scaling and optimized production through the use of industry 4.0 solutions ensure just-in-time delivery for each and every order.

FROM IDEA TO SOLUTION

RESEARCH & DEVELOPMENT

- System development
- Hardware development
- Software development
- Mechanical development
- PCB design
- Process development
- Development of test methods
- Embedded systems
- Time-of-Flight (ToF) technology

VALIDATION

- Accredited EMC laboratory
- Environmental testing
- Electrical testing
- Thermography measurements
- Authorized calibration body for ISO/IEC 17025

PRODUCTION

- SMT production
- THT production
- Robotics
- Coating
- Potting
- LED centering
- Assembling/Box build
- Traceability
- Digitalization

BACKSTAGE SERVICES

- Project management
- Product lifecycle
- New product introduction/NPI
- Obsolescence management
- Product changes
- Risk management
- Logistics
- After sales services
- Feasibility evaluation

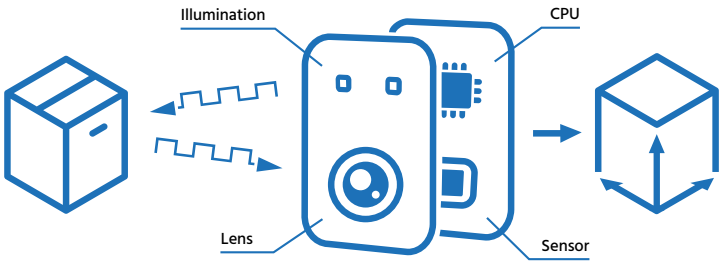
THE WORLD IN 3D

BECOM can look back at over a decade of experience in design and production of embedded sensors and cameras based on ToF technology. As a partner of leading sensor technology suppliers BECOM is always one step ahead when it comes to next-generation sensor solutions. 3D ToF cameras are active sensors that use infrared light to measure the distance for a huge number of pixels simultanaeously and provide a point cloud of the monitored scene.

ToF cameras are used for a broad spectrum of different applications in various industries. Put simply, they can be used in any situation where distance information is needed for several pixels at the same time. This ranges from mobile robots detecting free space to move over objects being tracked and measured to gesture control.

BECOM offers off-the-shelf products as well as custom specific cameras designed according to client requirements, validated and certified in in-house test facilities and manufactured, tested and calibrated for low and high volume.

TIME-OF-FLIGHT TECHNOLOGY



3D cameras based on Time-of-Flight technology provide depth information and intensity data for each pixel (grey value).

The active illumination module emits modulated infrared light (IR) in the near-infrared. The object that is located in the field of view reflects light which is projected via the lens onto the 3D camera IC. The distance data from the ToF IC to the object is calculated individually for each pixel while taking into account the angular phase shift. The result of one measuring cycle is a 3D point cloud which includes intensity data for each pixel. Our products complete up to 160 measuring cycles per second.

Time-of-Flight Solutions from BECOM let machines perceive their environment like never before.

BECOM 3D Time-of-Flight Cameras

- Efficient – Direct distance data allows direct analysis of position, distance and significance
- Independent – Active infrared illumination makes Time-of-Flight independent from ambient light, color and patterns
- No moving parts in contrast to mirrors of laser scanners
- Fast – Up to 160 frames per second, each pixel is captured simultanously and individually
- Compact – Lens and illumination are closer together than in stereo- and triangular systems
- The compact setup without moving parts give BECOM Time-of-Flight sensors longlevity and makes them ideal for use in challenging environments.

CAMERAS

Under the Argos^{3D} and Sentis^{3D} brands BECOM offers a range of 3D cameras with maximum flexibility in mind unlocking a broad range of applications.

MODULAR TOF

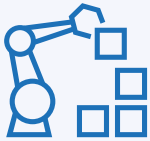
With its own set of different Time-of-Flight building blocks BECOM accelerates the development of customer specific camera solutions.

BECOM's extensive experience in embedded systems and the unique modular approach allow Time-of-Flight technology to be integrated seamlessly into new and existing products. This facilitates robust and efficient sensor solutions with the shortest possible time to market.

CLIENT SPECIFIC SOLUTIONS

As a system solution provider BECOM's portfolio is completed by fully optimized 3D Time-of-Flight camera solutions based on client requirements, complete with integrated application software and customer assistance services. Innovative ideas and highest quality have made BECOM a trusted partner for all businesses. As such BECOM delivers customer specific solutions and products that can perform even in challenging environments. With specialists for industries such as the automotive and medical sectors, BECOM meets even demanding standards and regulations.

USE CASES



Logistics – handling and measurement

Handling of packets and pallets, detection of volume and shape in sorting plants. Fill-level control for shelves.

Medical patient position and fall detection

Tracking and monitoring of patients for medical robotics. Fall detection in hospitals and retirement homes.

Autonomous robots

Navigation and obstacle detection for automated transport systems. Material handling and support functions for forklifts or heavy machineries.

Tracking of people and vehicles

Counting and tracking of people for public transport and buildings, security gates, and much more.

Automotive

Driver monitoring, gesture control and context aware user-interface for next generation mobility. Near field obstacle detection.

GETTING TIME-OF-FLIGHT RIGHT

1 Sensor Integration
Multiple Vendors

2 Embedded Processing
FPGA, ARM, DSP, Host SDK/API

3 Connectivity
ETH, USB, MIPI Synchronisation

4 Optics
Lens Concepts, Field-of-View

5 Illumination
LED/Laser, Eye Safety

6 Mechanical Integration
Miniaturization, Housings, Cooling

ARGOS^{3D} CAMERAS

BECOM offers a range of different off-the-shelf cameras dedicated for a variety of applications. The Argos^{3D} cameras are fully certified, built into a housing, and ready for immediate use.

SENTIS^{3D} CAMERAS

The Sentis^{3D} cameras are OEM cameras without housing and are designed for integration in customer products. They contain all the necessary individual components for a depth sensor.

MULTI-TOF-PLATFORM

The multi-ToF-platform is an ecosystem for multiple sensors ToF and 2D working in parallel. It consists of two parts. The ToF Hub incorporates the processing platform and enables the connection of several different camera Front Ends.

MODULAR TOF

The modular ToF is a building block system that guarantees maximum flexibility as well as cost efficiency and serves as a basis for customer based ToF solutions. BECOM's many years of experience in the modules sector means that ToF based depth sensors can be divided into individual components. Its main components are the TIM (ToF sensor) and the LIM (illumination light) modules.

ARGOS3D – P100

The Argos3D - P100 ToF camera is based on the PMD PhotonICs® 19k-S3 Time-of-Flight IC. The camera is able to capture a resolution of 160 x 120 pixels and thanks to its very high-performance CPU up to 160 frames per second (fps). This smart camera delivers depth- and amplitude information simultaneously for each of the 160 x 120 pixels. This adds up to 19.200 independent measuring points of each measurement. The 3D scatter plot is dispensed by USB 2.0.

With a range of more than 2 m, a field view of 90° and a size of only 75 x 57 x 26 mm, this smart camera is ideal for evaluation or integration into existing systems.

The ToF camera can be also ordered individually, without equipment (bare camera) starting with orders of 100 units or more. The electronic circuit of the Argos3D – P 100 can be ordered without the casing – see Sentis3D-M100. The ToF camera can be delivered with different ToF ICs.

SPECIFICATIONS

Dimensions	27 x 75 x 57 mm
Weight	140 g
Temperature	0 to 60 °C
Application Range	0.1 to 2 m
FoV	90°
Resolution	160 x 120 px
FPS	up to 160 fps
Illumination	850 nm LED

OPERATING SYSTEMS

Linux, ROS, Windows XP/7/8/10 32-64 bit

ENVIRONMENTS

ADAF, LabVIEW, MATLAB®, MetriCam, Halcon

INTERFACES

1 x External Sync Interface, 1 x USB 2.0

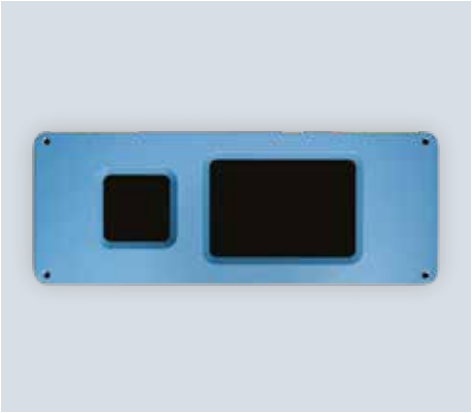
SCOPE OF SUPPLY

CAMERA

PON: 150-2004-1
Argos3D – P100

CAMERA KIT

PON: 150-2001-2
Argos3D – P100
USB Cable
SW / Support CD
Tripod
Power Supply
Documentation



ARGOS3D – P220

The Argos3D - P220 is a new ToF camera operating on the Time-of-Flight (ToF) principle. The P220 is equipped with a PMD PhotonICs® 19k-S3 Time-of-Flight 3D IC.

Using active IR illumination, the camera is able to capture 3D information. With a range of 3.5 m indoors, a field-of-view of 90° and a size of only 173 x 65 x 46 mm, this fast Ethernet connected camera can be used for next generation camera systems in various applications.

The small form factor and flush mount option in combination with the new ToF technology makes this camera a perfect choice for people counting and security applications as well as kiosk systems.

SPECIFICATIONS

Dimensions	173 x 65 x 46 mm (without cover panel)
Temperature	-20 to 65 °C
Application Range	up to 3.5 m indoors up to 2 m outdoors
FoV	90°
Resolution	160 x 120 px
FPS	up to 40 fps
Illumination	850 nm LED
Protection Class	IP 65

OPERATING SYSTEMS

Linux, ROS, Windows XP/7/8/10 32-64 bit

FRAMEWORKS

LabVIEW, MATLAB®, MetriCam, Halcon

INTERFACES

1 x 10/100 Mbit/s-Ethernet, 1 x Trigger In,
1 x GPIO (galvanic isolated)

SCOPE OF SUPPLY

CAMERA

PON: 150-2049-1
Argos3D – P220

CAMERA KIT

PON: 150-2050-1
Argos3D – P220
ETH Cable
SW / Support CD
Power Supply
Documentation

ARGOS3D – P230

The Argos3D - P230 is a new ToF camera operating on the Time-of-Flight (ToF) principle.

Using active IR illumination, the camera is able to capture 3D information. With a range of 5 m indoors, a field-of-view of 80° and a size of only 173 x 65 x 46 mm, this fast Ethernet connected camera can be used for next generation camera systems in various application.

The small form factor and flush mount option in combination with the new ToF technology makes this camera a perfect choice for people counting and security applications as well as kiosk systems.

SPECIFICATIONS

Dimensions	173 x 65 x 46 mm (without cover panel)
Temperature	-20 to 65 °C
Application Range	5 m indoors 3 m outdoors
FoV	80°
Resolution	352 x 287 px
FPS	up to 40 fps
Illumination	850 nm LASER
Protection Class	IP 65

OPERATING SYSTEMS

Linux, ROS, Windows XP/7/8/10 32-64 bit

FRAMEWORKS

LabVIEW, MATLAB®, MetriCam, Halcon

INTERFACES

1 x 10/100 Mbit/s-Ethernet, 1 x Trigger In,
1 x GPIO (galvanic isolated)

SCOPE OF SUPPLY

CAMERA

PON: 150-3053-1
Argos3D – P230

CAMERA KIT

PON: 150-3054-1
Argos3D – P230
ETH Cable
SW / Support CD
Power Supply
Documentation

ARGOS3D – P320

The Argos3D – P320 is a camera combined with 2D CMOS sensor developed for use in very harsh environments. The smart camera IC delivers depth information and gray value image data for each pixel simultaneously.

An integrated 2D CMOS imager captures scenes with a resolution of up to 720p. Therefore, it´s possible to analyze scenes based on 3D depth data only or in combination with 2D data. The actual coverage is more than 5 m indoors and up to 3 m outdoors with a field of view of 90°.

A solid 2D and 3D data stream is provided by a very fast Gigabit Ethernet interface.

SPECIFICATIONS

Dimensions	200 x 200 x 62 mm
Temperature	-20 to 60 °C
Application Range	0.1 to 5 m indoors
	0.1 to 3 m outdoors
FoV	90°
Resolution 3D	160 x 120 px
Resolution 2D	up to 720p
FPS	up to 160 fps
Illumination	850 nm LED
PoE++	up to 60 W
Protection Class	IP 42

OPERATING SYSTEMS

Linux, ROS, Windows XP/7/8/10 32-64 bit

FRAMEWORKS

LabVIEW, MATLAB®, MetriCam, Halcon

INTERFACES

1 x Gbit/s-Ethernet, 2 x 2 Galvanic Isolated,
1 x Trigger In, 1 x Trigger Out

SCOPE OF SUPPLY

CAMERA
PON: 150-2033-1
Argos3D – P320

CAMERA KIT
PON: 150-2032-1
Argos3D – P320
ETH Cable
SW / Support Online Link
Power Supply
Documentation

ARGOS3D – P320		PON	2D	POE++
Standard	Argos3D-P320	150-2033-1	+	+
	Argos3D-P321	150-2038-1	N/A	+
	Argos3D-P323	150-2051-1	+	N/A

ARGOS3D – P330

The Argos3D – P330 is a high resolution camera combined with a 2D CMOS sensor. The smart camera IC delivers depth information and gray value image data for over 100,000 pixels simultaneously.

An additional integrated 2D CMOS imager captures scenes with a resolution of up to 720p. Therefore, it is possible to analyze scenes based on 3D depth data only or in combination with 2D data. The actual coverage is more than 10 m indoors and up to 3 m outdoors with a field of view of 80°.

A 2D and 3D data stream is provided by a Gigabit Ethernet interface which also has a PoE functionality.

SPECIFICATIONS

Dimensions	200 x 200 x 62 mm
Temperature	0 to 50 °C
Application Range	0.1 to 10 m indoors
FoV	80°
Resolution 3D	352 x 287 px
Resolution 2D	up to 720p
FPS	up to 40 fps
Illumination	850 nm LASER
PoE++	up to 90 W
Protection Class	IP 42

OPERATING SYSTEMS

Linux, ROS, Windows XP/7/8/10 32-64 bit

FRAMEWORKS

LabVIEW, MATLAB®, MetriCam, Halcon

INTERFACES

1 x Gbit/s-Ethernet, 1 x GPIO (galvanic isolated), 1 x Trigger In, 1 x Trigger Out

SCOPE OF SUPPLY

CAMERA

PON: 150-2037-1
Argos3D – P330

CAMERA KIT

PON: 150-2036-1
Argos3D – P330
ETH Cable
SW / Support Online Link
Power Supply
Documentation

ARGOS3D – P330		PON	2D	POE++
Standard	Argos3D-P330	150-2037-1	+	+
	Argos3D-P331	150-2042-1	N/A	+
	Argos3D-P332	150-2052-1	+	N/A

SENTIS3D – M100

The Sentis3D – M100 is a new camera, designed to be incorporated into your system. Based on the 160 x 120 pixels ToF IC PMD PhotonICs® 19k-S3 and a Dual Core DSP which is freely programmable, this camera provides reliable 3D point cloud via Ethernet or through serial interfaces.

With a range of 2 m, a field of view of 90° and a size of only 50 x 55 x 36 mm, this Ethernet connected camera is an ideal basis for your projects in various application fields like automation, robotics, gesture recognition or people counting.

This camera is also available as a package with extensive equipment (please see scope of supply).

SPECIFICATIONS

Dimensions	50 x 55 x 42 mm
Weight	97 g
Temperature	-40 to 85 °C*
Application Range	0.1 to 2 m
Resolution	160 x 120 px
FoV	90°
FPS	up to 40 fps
Illumination	850 nm LED

*depends on cooling mechanism

OPERATING SYSTEMS

Linux, ROS, Windows XP/7/8/10 32-64 bit

FRAMEWORKS

ADAF, LabVIEW, MATLAB®, MetriCam

INTERFACES

1 x 10/100 Mbit/s-Ethernet, 1 x Trigger In,
1 x Trigger Out, 4 x GPIO, 1 x RS232, 1 x RS485

ACCESSORIES

External ToF Flash (see Sensor Accessories)

SCOPE OF SUPPLY

CAMERA

PON: 150-3001-1
Sentis3D – M100

CAMERA KIT

PON: 150-3002-1
Sentis3D – M100
ETH Cable
JTAG Adapter
Power Supply
Tripod
Documentation

SENTIS3D – M421

The Sentis3D – M421 is a new camera, operating on the Time-of-Flight (ToF) principle. The M421 is equipped with a PMD PhotonICs® 19k-S3 Time-of-Flight 3D IC sensor.

The camera module has a powerful illumination system enabling it to achieve ranges up to 7 m with a 90° field-of-view. The point cloud data is streamed over Ethernet. The camera can be accessed through our Windows and Linux API.

Using active IR illumination, the camera is able to capture 3D information. With a range of 7 m indoors, a field of view of 90° and a size of only 205 x 125 x 85 mm, this Ethernet connected camera can be used for next generation camera systems in various application fields like robotics, automation and people counting supply.

SPECIFICATIONS

Dimensions	205 x 125 x 85 mm
Temperature	-20 to 60 °C
Application Range	up to 7 m
Resolution	160 x 120 px
FoV	90°
FPS	up to 40 fps
Illumination	850 nm LED

OPERATING SYSTEMS

Linux, ROS, Windows XP/7/8/10 32-64 bit

FRAMEWORKS

LabVIEW, MATLAB®, MetriCam, Halcon

INTERFACES

1 x 10/100 Mbit/s-Ethernet (M421), 1 x Trigger In, 1 x Trigger Out, 1 x GPIO, 1 x RS232, 1 x RS485

SCOPE OF SUPPLY

CAMERA

PON: 150-2225-1
Sentis3D – M421

CAMERA KIT

PON: 150-2217-1
Sentis3D – M421
ETH Cable
JTAG Adapter
Power Supply
Tripod
Documentation

SENTIS3D – M520

The Sentis3D - M520 is a new camera, operating on the Time-of-Flight (ToF) principle. The M520 is equipped with a PMD PhotonICs® 19k-S3 Time-of-Flight 3D IC and a high resolution 2D CMOS sensor.

The smart camera IC delivers depth information and gray value image data for each pixel simultaneously. An integrated 2D CMOS imager captures scenes with a resolution of up to 720p. Therefore, it is possible to analyze scenes based on 3D depth data only or in combination with 2D data.

Using active IR illumination, the sensor is able to capture 3D and 2D information. With a range of 5 m indoors, a field of view of 90° and a size of only 130 x 95 x 40 mm, this Gigabit Ethernet connected sensor can be used for next generation sensor systems in various application fields like robotics, automation and people counting.

SPECIFICATIONS

Dimensions	130 x 95 x 40 mm
Temperature	-20 to 60 °C
Application Range	up to 5 m
Resolution	160 x 120 px
FoV	90°
FPS	up to 140 fps
Illumination	850 nm LED
PoE++	up to 60 W

OPERATING SYSTEMS

Linux, ROS, Windows XP/7/8/10 32-64 bit

FRAMEWORKS

ADAF, LabVIEW, MATLAB®, MetriCam, Halcon

INTERFACES

1 x Gbit/s-Ethernet, 1 x External Trigger,
1 x Trigger In, 1 x Trigger Out, 1 x GPIO,
1 x RS232, 1 x RS485

SCOPE OF SUPPLY

CAMERA

PON: 150-3041-1
Sentis3D – M520

CAMERA KIT

PON: 150-3040-1
Sentis3D – M520
ETH Cable JTAG Adapter
Power Supply
Tripod
Documentation

MLX-EVK75123

This evaluation kit is a complete camera built around the MELEXIS Time-of-Flight chipset. It is possible to connect directly to a PC for visualization and recording of depth map data.

BECOM develops and produces the evaluation kit for MELEXIS. It is available with 60° or 110° field of view. We accept orders of 20 units or more. Small orders can be placed with selected distributors or directly at Melexis.

The new kit enables real-time 3D imaging at full QVGA resolution and features:

- MLX75023 and MLX75123 ToF chipset
- 120 klux sunlight rejection
- VCSEL illumination
- Modulation frequency up to 40MHz

SPECIFICATIONS

Dimensions	80 x 50 x 38 mm
Temperature	-20 to 85 °C*
Application Range	0.1 to 5 m**
Resolution	320 x 240 px
FoV	60° or 110°
FPS	up to 60 fps
ToF Chip	MLX75023
Illumination	850 nm LASER

* depends on cooling mechanism
** depends on camera setup and FoV

OPERATING SYSTEMS
Linux, ROS, Windows 7/8/10 32-64 bit

FRAMEWORKS
Matlab, MetriCam, Halcon

INTERFACES
1 x Gbit/s Ethernet, 3x GPIO, 1x Trigger In

SCOPE OF SUPPLY

CAMERA
PON: 150-2057-1 (60°)
PON: 150-2058-1 (110°)

ACCESSORIES KIT
PON: 150-2059-1
ETH Cable
Power Supply
Documentation
SW/Support and Documentation Online Link

MLX-EVK75024

This evaluation kit is a complete camera built around the second-generation automotive Time-of-Flight chipset by MELEXIS. It is possible to connect directly to a PC for visualization and recording of depth map data.

BECOM develops and produces the evaluation kit for MELEXIS. It is available with 80° or 110° field of view. We accept orders of 20 units or more. Small orders can be placed with selected distributors or directly at Melexis.

The new kit enables real-time 3D imaging at full QVGA resolution and features:

- MLX75024 and MLX75123BA ToF chipset
- 120 klux sunlight rejection
- VCSEL / LED illumination
- Modulation frequency up to 40MHz

SPECIFICATIONS

Dimensions	80 x 50 x 38 mm
Temperature	-20 to 85 °C*
Application Range	0.1 to 5 m**
Resolution	320 x 240 px
FoV	80° or 110°
FPS	up to 60 fps
ToF Chip	MLX75024
Illumination	940 nm LASER / LED

* depends on cooling mechanism
** depends on camera setup and FoV

OPERATING SYSTEMS
Linux, ROS, Windows 7/8/10 32-64 bit

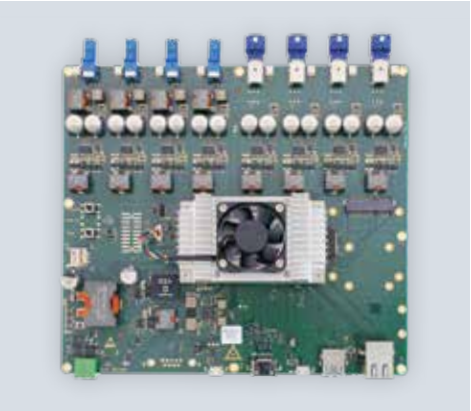
FRAMEWORKS
Matlab, MetriCam, Halcon

INTERFACES
1 x Gbit/s Ethernet, 3x GPIO, 1x Trigger In

SCOPE OF SUPPLY

CAMERA
PON: 150-2064-1 (80°)
PON: 150-2065-1 (110°)

ACCESSORIES KIT
PON: 150-2059-1
ETH Cable
Power Supply
Documentation
SW/Support and Documentation Online Link



MULTI-TOF PLATFORM

The BECOM Systems multi-ToF platform is an ecosystem for multiple sensors working in parallel. The platform allows us to integrate different sensors in an easy way.

It gives software developers an environment close to their final target platform for developing, testing and deploying their application.

The multi-ToF platform consists of two parts, the ToF Hub and the ToF Front End. The ToF Hub incorporates an NVIDIA Tegra Processor and hosts connectors for 4 ToF sensor Front Ends.

SPECIFICATIONS HUB

Dimensions	205 x 210 x 69 mm Including heat sink and fan

OPERATING SYSTEMS

Linux, ROS, Windows 7/8/10 32-64 bit

FRAMEWORKS

Matlab, MetriCam, Halcon

INTERFACE HUB

1 x Gbit/s Ethernet, 1 x Power Supply Input,
4 x FPD-III Link over STP, 4 x FPD-III Link over COAX (FAKRA), 1 x PCIe, 1 x OBD-II (Can), 1 x USB OTG,
1 x HDMI, 1 x µSD-Card, 1 x Debug USB to UART,

PROCESSOR PLATFORM

NVIDIA Jetson TX2 module

SCOPE OF MULTI-TOF-PLATFORM

PON: 150-3050-1
multi-ToF platform HUB
multi-ToF platform FRONT END (1x)
ETH Cable
SW/Support and Documentation Online Link

MULTI-TOF ADDITIONAL FRONT END

The ToF Front End hosts the illumination and the sensor chip. The two parts are connected via a two wire serial connection which provides the power supply as well.

Target Applications
Driver monitoring
Gesture control
Obstacle detection
Sensor fusion

Target Customers
OEMs
Tier 1
Chip manufacturers
Software application developers
Predevelopment groups
Automotive start-ups

SPECIFICATIONS FRONT END

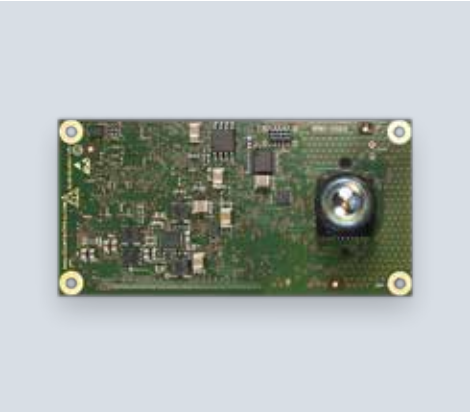
TOF chip	MLX75023
Dimensions	56 x 57 x 30 mm Including cooling plate
Temperature	-20 to 85 °C*
Application Range	0.1 to 2,5 m**
Resolution	304 x 240 px
FoV	110°
FPS	up to 40 fps
Illumination	850 nm LASER

* depends on cooling mechanism
** depends on camera setup and FoV

Technical specifications are subject to change without prior notice.

INTERFACE TOF FRONT END
1 x Phantom powered FPD-III Link over STP,
1 x Auxiliary Power Supply Input

MULTI-TOF ADDITIONAL FRONT END
multi-ToF platform FRONT END PON: 150-3051-1



TIM-UP-19K-S3 USB 2.0 PVI

The TIM-UP-19k-S3 USB 2.0 PVI is based on PMD 19k-S3 ToF IC. It has a FoV of 90° and achieves thanks to the Spartan 6 FPGA up to 160 FPS.

A variety of lenses is available for this product – for details see Sensor Accessories on page 29.

Further interfaces like Ethernet can be realized in combination with an interface board and a processor module.

SPECIFICATIONS

Dimensions	40 x 80 mm
Temperature	-40 to 85 °C
FoV	90° (default)
Resolution	160 x 120 px
FPS	up to 160 fps

INTERFACES

1 x USB 2.0, 1 x Parallel Video Interface (8 bit), 2 x I^2C, 1 x SPI, 1 x UART

SCOPE OF SUPPLY

PON: 150-2201-2
TIM-UP-19k-S3 USB 2.0 PVI

TIM-UP-19K-S3 ETHERNET

The TIM-UP-19k-S3 Ethernet features 3D point cloud streaming via Ethernet. It has a standard field of view of 90° and provides a 3D point cloud data via UDP stream.

A variety of lenses is available for this product – for details see Sensor Accessories on page 29.

SPECIFICATIONS

Dimensions	40 x 80 mm
Temperature	-40 to 85 °C
FoV	90° (default)
Resolution	160 x 120 px
FPS	up to 40 fps

INTERFACES

1 x ETH 10/100 Mbit/s, 1 x CAN, 1 x GPIO, 2 x I^2C, 1 x UART

SCOPE OF SUPPLY

PON: 150-2206-1
TIM-UP-19k-S3 Ethernet

TIM-UP-IRS1125-P*

The TIM-UP-IRS1125-P* features 3D point cloud streaming via Ethernet, USB or Parallel Video Interface. It has a standard field of view of 80° and provides a 3D point cloud data via UDP stream.

A variety of lenses is available for this product – for details see Sensor Accessories on page 29.

SPECIFICATIONS

Dimensions	40 x 80 mm
Temperature	-40 to 85 °C
FoV	80° (default)
Resolution	352 x 287 px
FPS	up to 40+ fps

INTERFACES

1 x ETH 10/100 Mbit/s, 2 x I^2C, 1 x UART
1 x Parallel Video Interface (8 bit), 1 x USB

SCOPE OF SUPPLY

Scope of supply
PON: 150-3055-1
TIM-UP-IRS1125-P*

* 90° rotated sensor orientation on request

LIM-U-LED-850-6

The LIM-U-LED-850-6 light module offers 6 high power IR LEDs on a surface of 40 x 80 mm. The default FoV is 90° and can be modified with other lenses (see Sensor Accessories).

This product can be ordered in quantities of 100 or more, also with only 3 LEDs equipped.

SPECIFICATIONS

Dimensions	40 x 80 mm
Temperature	-40 to 85 °C*
FoV	90° (default)
VIN	12 to 30 VDC
Illumination	850 nm LED
Total optical peak output power	8 W

*depends on cooling mechanism

INTERFACES

1 x External Sync Interface

SCOPE OF SUPPLY

PON: 150-2301-2
LIM-U-LED-850-6

LIM-U-LASER-850-8

The LIM-U-LASER 850-8 light module offers 8 high power IR laser diodes on a surface of 40 x 80 mm. The default FoV is 110°. Other FoVs are available on request.

This product can be ordered starting with 100 pieces, also equipped with only 4 diodes.

SPECIFICATIONS

Dimensions	80 x 40 mm
Temperature	-40 to 85 °C*
FoV	110° (default)
VIN	12 to 30 VDC
Illumination	850 nm LASER
Total optical peak output power	24 W

*depends on cooling mechanism

Onboard overcurrent and over temperature protection

INTERFACES

1 x External Sync Interface,
1 x OWIRE,
1 x I2C,
Adress selection

SCOPE OF SUPPLY

PON: 170-2304-1
LIM-U-LASER-850-8 110

SENSOR ACCESSORIES

LENSES FOR TIME OF FLIGHT MODULES – TIM

TIM-UP-19K-S3

Lens 30°	PON: 530-0012
Lens 60°	PON: 530-0011
Lens 90°	PON: 530-0010 (default lens)
Lens 120°	PON: 530-0013

SUPPORTED TIM TIM-UP-19k-S3 USB2.0 PVI
TIM-UP-19k-S3 Ethernet
TIM-UP-IRS1125-P*

*Field of view differs from nominal value - see manual for details

LENSES FOR LIGHT MODULES - LIM

LIM-U-LED-850

Lens 30°	PON: 530-0022
Lens 60°	PON: 530-0021
Lens 90°	PON: 530-0020 (default lens)
Lens 120°	no lens required

SUPPORTED LIM LIM-U-LED-850 6

LOCATIONS

EUROPE

BECOM Electronics GmbH
Hochstraß, Austria

BECOM Systems GmbH
BLUETECHNIX Lab GmbH
Wien, Austria

BECOM Electronics Hungary Kft.
Környe, Hungary

IVP Group Germany GmbH
Buchenbach, Germany

Distribution office
Hamburg, Germany

ASIA

BECOM Electronics
Representative Office China
Dongguan, China

IVP Electronics Ltd.
Shenzhen, China

IVP Ltd. Hong Kong
Hongkong, China

NORTH AMERICA

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