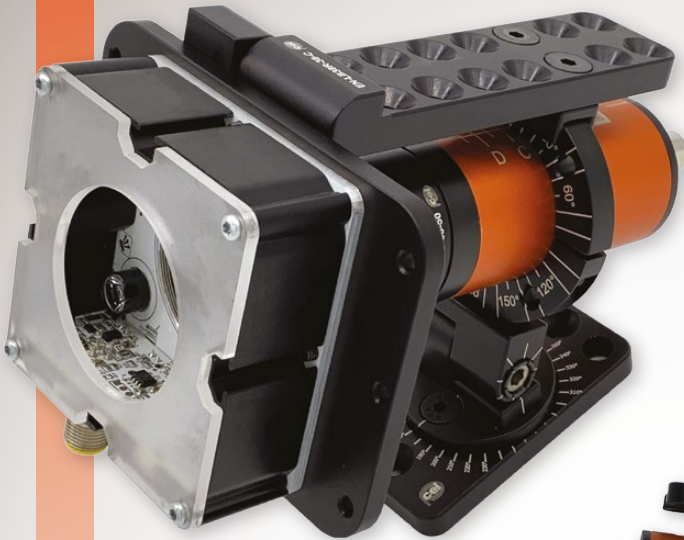


INDUSTRIAL CAMERA ENCLOSURES & ACCESSORIES



38mm-IP67 Series Round

Shown with:

- Adjustable Mount
- Swing Light Bracket

IP67 Round Series Camera Enclosure Key Features:

- Available in 3 sizes: 38mm, 55mm, and 88mm
- Type 2 Anodizing and IP67 Protection
- CEI Integrated Connector Design (no cord grips)
- Lightweight Low-profile Design
- Provides Excellent Heat Dissipation
- *Options:* Mounts, Air Curtains, Windows and Filters, Cables, Custom Sizes, and Focusing Solutions



55mm-IP67 Series Round



88mm-IP67 Series Round



COMPONENTS EXPRESS, INC.
INDUSTRY LEADING PERFORMANCE • COMPONENTSEXPRESS.COM

MAKING A "CASE" FOR A CASE

CEI managing director Ray Berst shares his anecdotes and the trials and tribulations of developing camera cases for the machine vision industry.

Components Express, Inc. (CEI) is in its 27th year of trading. The company had attained a position as the largest manufacturer of Machine Vision Cables in the industry. In 2008 amidst the World financial collapse, CEI in a concerted effort to improve its business made a bold move. CEI decided that it would strive be the best in the world at producing machine vision cabling, but that was over 10 years ago. It was time for another great product.

We decided that we either had to make cabling for markets other than machine vision or expand our offering by developing a brand new product line for the vision industry. CEI would have to assess both its manufacturing capabilities, and technical abilities. CEI had a small machine shop for making its tools and modifying moulding tools. The shop had become a playground for engineering and upper management (all gear heads at heart). This combined with what management believed was a lack lustre product offering for industrial camera enclosures "Cases" led to the development of CEI first camera case.

The design input for the first unit was limited. It was:

- Robust
- Small
- IP67 / IP69
- Versatile mounting
- NO CORD GRIP

Why no cord grips?

To put it plainly, cord grips suck...

We are a cable manufacturer and I cringe every time I

found out one of my customers put a "cord grip" on one of my cables.

Cord grips do exactly what they say. They "Grip" a cable, very tightly. This is very bad for twisted, pairs, or any sort of high-speed data cabling. I could go on for hours here talking about reflection, signal degradation or outright cable breakage.

They leak!

Just like installing a skylight in your new house. It looks cool, but eventually, it's going to leak and cause the need for a major repair or in our industry, the camera will be destroyed. Try getting that camera replaced after you drown it.

It's a pain in the butt to install!

The customer has to ideally mill, or realistically drill the cord grip and install the grip on the cable, then they can pray that it doesn't leak. Also, its time consuming for the customer to replace the failed cable when it finally succumbs to the forces of the cord grip.

The only thing truly unique about this first enclosure was the cable integrated as a part of the case. The problem was that it was too complicated as tooling would have to be built for every camera model and that was expensive and time consuming. We showed it to our first customer and they weren't impressed. They wanted a case that was small, inexpensive and IP67. Our last two months of work was met with a yawn and a sigh. Fortunately, I had a couple of other prototypes in my bag that I honestly wasn't excited about but engineering was. I presented them with a small square and a small round enclosure. My dreams were yet to be shattered as my customer was impressed with a very small simple round enclosure that I had in my briefcase. I hadn't presented it because it was engineering's idea for a good case and not mine.

My customer thought the case that I hated was really cool. What was so cool about it?

It weighs almost nothing: 120g and just 320g assembled with mount/camera.

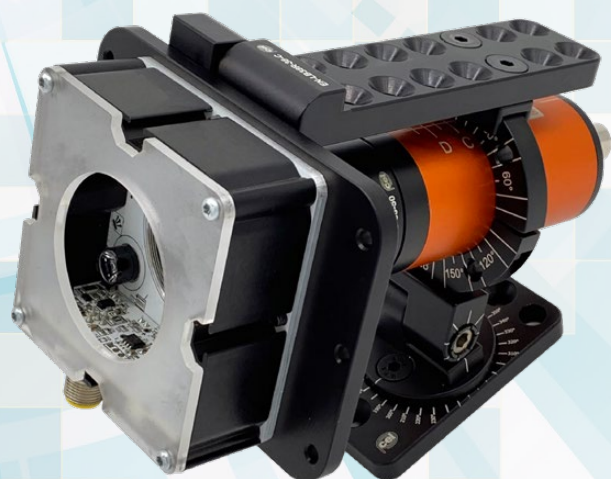
- It had a built-in connector (no cord grip)
- It was half the size of the competitors' case
- It was half the price of their current solution.
- The customer could mount it any direction he wanted

All that was great and I rudely asked my customer for a commitment based on the prototype rolling around in my sample case. Fortunately, our customer turned out to be more business consultant than customer. I think the man felt bad for me which was my luck... Here was the next list of features that the customer wanted us to add:

- Needs an easy way to mount a light to it.
- Needs an alignment mark because it's round!
- Needs a QR code so that his technicians could find technical data on the product...

With this I said, "no problem for me" which is code for "this is a big problem for engineering". Within a week, our engineering team had developed a unique mounting system for a variety of lights, added the QR code and the alignment marks. Voila, we had a finished product!

Or so I thought. My good customer had another great idea. They needed to mount the camera onto a collaborative robot. Currently, they would go to their own garages or design pieces to send to their own machinist. My customer wanted an "end effector erector



set". Fortunately, I am 50 years old and having grown up with erector sets and bleeding over their sharp edges, I understood what he wanted. My 26-year-old engineer had never seen an erector set, so this time it was good that I was there.



Engineering quickly modelled up an erector set and emailed me the kit

about five minutes before my meeting started. I'm not sure who was

more amazed, my customer or me, but either way,

we were about to build another accessory and possibly another business division.

Because of our relationship with our customers, we were quickly realising that every enclosure opportunity is different. The only thing that customers have in common is their need for a one stop shop for a complete solution and we were ready to deliver on multiple front.



After months of development, it was time to visit the system integrators.

The integrators needed a repeatable way to mount the cameras on a production line. They needed a 4-axis mount with precision alignment markings. Time for another new product, the M4 mount:

They also wanted a way to mount their lights, they also wanted to be able to remove the light easily, they also didn't always want the light to be mounted at a 90-degree angle to the object.

In parallel to the efforts to make a small case for a 29mm camera, we had largely ignored a very popular camera that almost all of our distributors worldwide were selling. The Genie Nano made by Teledyne Dalsa.

The problem: The Nano is built to accept a larger sensor than typically found in its 29mm square predecessor. In short, we were designing enclosures for square cameras but our customers want an enclosure for a rectangle.



Fortunately engineering had a solution. We went back to our original extruded design and made it our platform for the Nano. But the customers wanted more. More options:

- A mounting bracket
- Air curtain
- Retractable wash down flap
- NO CORD GRIP
- IP 67 / 69
- Lightweight
- Small form factor

THIS ENCLOSURE NEEDED TO BE THE SWISS ARMY KNIFE OF THE ENCLOSURE INDUSTRY

The variety of lenses in the industry has put customers in some very large enclosures in the past since that's all that was offered. Our enclosures had to have another key difference, which was every enclosure must be built to the exact requirements of the customer. In short, just as my customers don't want a three-metre cable for a one-metre application, they also don't want a 300mm enclosure for a 100mm application. We decided to let the customer's camera and lens selection dictate the length so that we could provide the smallest possible.

Not genius ideas by any stretch, but that was the state of our industry.

By this time, the development was in high gear and the small machine shop had become a CNC operation with fully automated multi axis machines and the staff to run them.

As our customers' saw our willingness to adapt to them instead of having them adapt to us, we found more opportunity, the next was the Matrox GT-R. The Matrox GT-R is a complete vision system in itself, but you still have to mount a lens and perhaps a light. We wanted to make it easy for our customers and created multiple models to fit all of their light mounting needs and we coined it a "light box".

Seems like once the word is out that you're willing to take on the odd project that brought another camera in our hands. The Imperx Bobcat:

We needed to find a way to house the Bobcat for the food and beverage industry. One small problem. The camera is powerful and as all cameras do, it generates heat. We developed a stainless enclosure around the original Bobcat design which included adaptation to the Bobcat's cooling fins. This was a very time-consuming machining process, so with the help of the OEM, Imperx, they offered us the same camera in a different frame, without the fins. This made it much easier for use to transmit the heat from the camera and out of the case. A set of movable shims were installed that have two purposes, they mount the camera, and they transmit the heat from the camera to the outside of the case.

After only a short time of flying around the Midwest United States and having great success with the cases, it occurred to me that I was showing off our cases without our cables. In all of my effort to be a good case salesman, I had not shown our own cases with our own custom cables. With CEI's ability to produce custom right angle cables in any orientation, we are able to reduce the overall profile of the case / cable combination solving many of our customer's biggest headaches in one package.

Look for more product innovation from Components Express, Inc. and visit us online at www.componentsexpress.com 



CONTACT DETAILS

T: 1-630-257-0605 **W:** www.componentsexpress.com

E: email@componentsexpress.com

USB3 LONG DISTANCE CABLES FOR MACHINE VISION



BIT MAXX™

Active USB3 Long distance cables for USB3 Vision.

CEI's USB3 BitMaxx cables offers the Industry's First STABLE Plug & Play active cable solution for USB Vision, supporting full 5 gig USB3 throughput and power delivery up to 20 meters in length with full USB2 backward compatibility.



1-630-257-0605

www.componentsexpress.com

sales@componentsexpress.com