

Application report:

Ingenious solutions

Finding the right photoelectric sensor for an application is not always easy: What is the appropriate detection technology, the proper housing size and form? Is it supposed to be a red light or laser version? What is the proper kind of connection? With the enhanced Series 14 photoelectric sensors, Baumer offers a sensor family, which provides adequate solutions to all of these questions. Equipped with many new, innovative attributes and canny accessories, the sensors are even more diverse and therefore open to more applications.

A broad range of sensors is already available. From the simple red light diffuse sensors with intensity difference to models with background or foreground suppression and laser retro-reflective sensors for detecting transparent objects, the Series 14 leaves nothing to be desired.

Flexible connector versions – make your choice!

The current available photoelectric sensors may be diverse, but the newly offered connector expands the possibilities. The 4-pin M8 connector is now made in a robust metal version.



Figure 1: Sensors of the new Series 14 with different connector versions

Thanks to the new housing design, other connector versions could also be realized. Therefore, Baumer has decided to offer all Series 14 sensors as cable and S14 connector versions, corresponding to the customer's preferences.



Figure 2: Patented cable output and easily-visible LEDs

The cable output's flexibility allows the cable to be laid flush with the sensor housing. Therefore, the sensor can be installed in a very space-saving way. This constitutes a real advantage, compared to versions with both angulated and straight connector cables, which need more space. If the sensor has to be mounted upright on a surface or in a corner, the cable output can be fixed at the back or the side of the sensor. As a result, no additional space is needed. Hence, the Series 14 cable version proves to be an ideal solution for applications in which space is a critical factor.

The Series 14 gives you more choices: Whether M8, M12, cable or (optional) cable connector version – your connection concept can be realized!

Watch what's happening

The new housing design offers even more useful features. The completely refashioned design surprises with a semi-transparent rear housing section. The advantage is obvious: The status LEDs can be viewed from practically every angle. Users are constantly and reliably informed about

the functions of the sensor at the times of installation, commissioning, and operation.

Retro-reflective sensors even take it one step further: When aligning the sensor with the reflector, the user can also view the reception LEDs from the front, through the screen of the sensor. Sometimes the distance between sensor and reflector accounts for several meters. Thanks to the visible reception LEDs, the installation is facilitated significantly and becomes more time-saving.

The right accessories – a crucial point!

However, only the optimal accessories for the sensor make its application really efficient. Therefore, it is beneficial to have a choice from a whole range of “little helpers,” whether it is a simple angular mounting bracket or the well-proven Sensofix. These accessories, allow the stable installation of the sensor in practically every position through the integrated ball pin.



Figure 3: Available accessories including the new frame adapter

Often, metal walls and steel sheets are used on large scale in different applications. These materials can be processed rather easily with today’s tools and a piece can be cut out quickly. Then, the new frame adapter is applied. The sensor can easily be snapped into the frame adapter. Afterwards, the sensor-adapter unit is inserted into the cut-out. Two plastic clamps secure the adapter in the cut-out without the use of screws, which makes the installation very time-saving.

There are also small finesses, which help to save time and money at the removal of the sensor. Using a rated break point in the front of the adapter, a small section can be levered out and the sensor can be removed through the hole with a screwdriver. The adapter continues to be fully operational.

When using a through beam sensor that detects very small objects or operates through holes and notches, a special slot aperture sticker supports the reliable detection. It is affixed onto the sender and receiver and limits the active coverage range to a minimum size. The range of accessories is complemented with a great number of reflectors and reflective foils.

Applications solved economically

As important as the product features described above are, in daily business something else is even more important: the reliable detection technology that is customized to the application. A reliable technology has to be robust against contamination as well as to changes of the ambient conditions and of the objects to be detected. In this case, being able to choose any technology from only one housing family is essential – especially when the user is still unsure about the right technology.

The Series 14 sensors provide just this possibility. The customer benefits from the broad selection of technologies and accessories, which makes solving many applications economical.



Figure 4a: A diffuse sensor with intensity difference detects print marks on strip advertising

Print marks, such as those used for strip advertising, have to be detected securely, precisely, and quickly as the strip rotates and one advertising space changes to another. Diffuse sensors with intensity difference qualify for detecting black/white differences on a surface. Particularly subtle black/white structures can alternatively be detected with a laser version.



Figure 4b: A diffuse sensor with intensity difference detects print marks on strip advertising (detailed view)

For the majority of photoelectric sensors it is a huge challenge to detect objects in front of a reflective background, because the background is much lighter than the object itself. A diffuse sensor with background suppression is a dependable solution to this problem. Thanks to the principle of integrated triangulation, it detects objects reliably – irrespective their color and surface. A (reflective) background is suppressed efficiently and therefore has no influence on the object recognition.

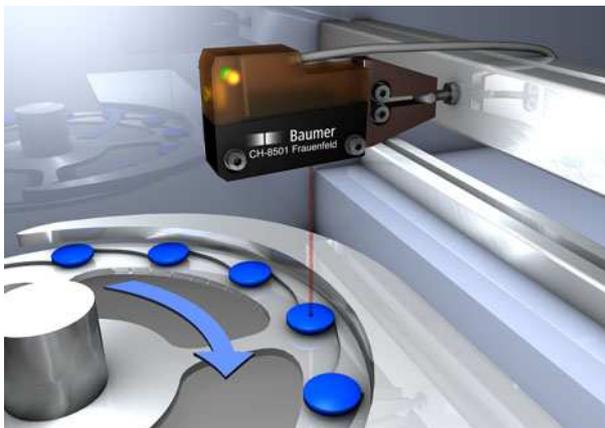


Figure 5: The diffuse sensor with background suppression precisely detects objects against a reflective background

Another extreme difficulty comes from dealing with transparent objects. The difference in the light emitted and received through the object is normally minimal. Therefore, standard sensors often cannot cope with this task. At the same time, possible light reflexions on the glass surface are so bright that the sensor switches rapidly.

Retro-reflective sensors that are optimized for transparent objects can remedy this problem. These sensors detect foils, glasses, and other transparent objects securely and reproducibly.

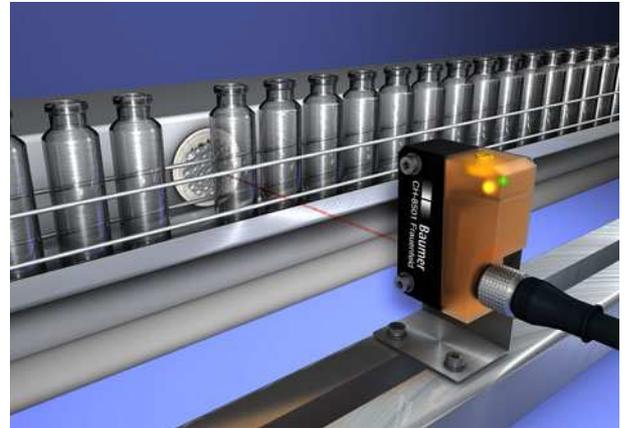


Figure 6: For transparent objects such as glassy drug vials, retro-reflective sensors offer the right solution

Well-prepared for the future

With its broad product range, diverse connector options, and its clever accessories, the new Series 14 offers the most economical solution for your application. And you can look forward to interesting new developments in the near future!