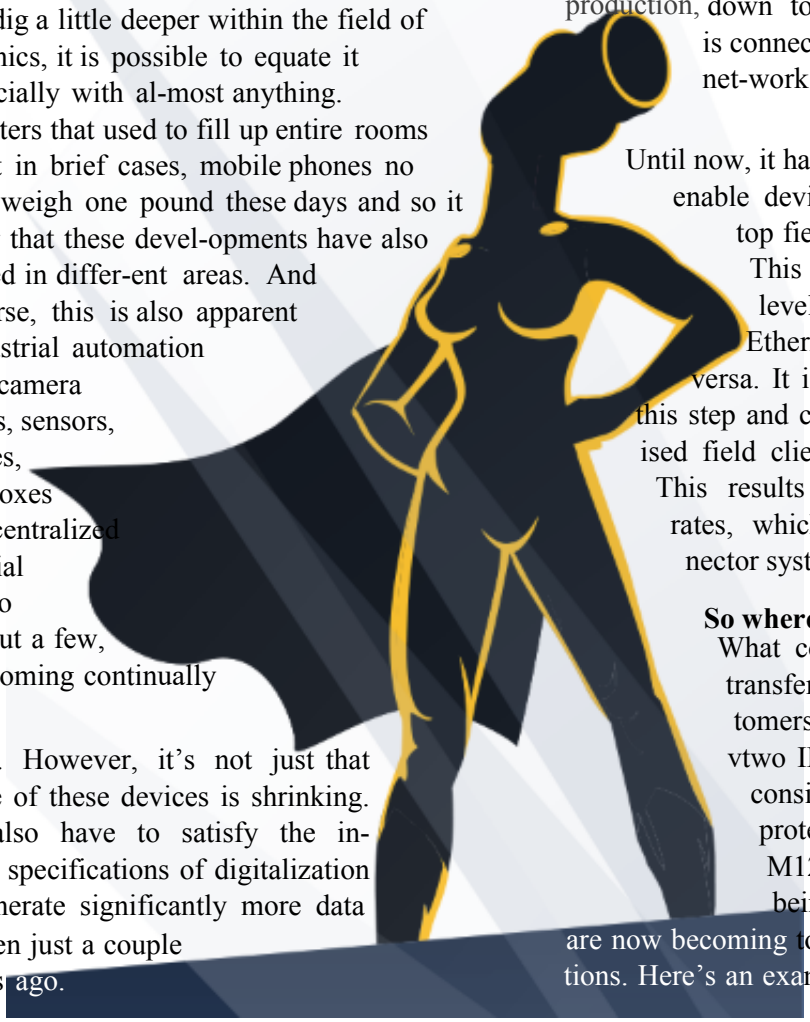
HARTINGS's M8 D-code

M8 D-Code Big Data vs. Bottlenecks

Ethernet is becoming increasingly common as a communications standard within industrial automation. Where once, until relatively recently, it was reserved for the top levels of monitoring and control units, increasing numbers of sensor, camera and other industrial device manufacturers are looking to connect their products via Ethernet at the top field level. At the same time, field clients are becoming increasingly smaller, whilst being required to achieve even higher data transfer rates. In order to keep pace with changes within the connection technology arena, HARTING recognized this trend in miniaturization and has launched the new M8 D-code connector in response.

Initially miniaturization comes across as rather an abstract term. Something is made smaller, well that much is obvious. However, if you dig a little deeper within the field of electronics, it is possible to equate it superficially with al-most anything. Computers that used to fill up entire rooms now fit in brief cases, mobile phones no longer weigh one pound these days and so it is clear that these devel-opments have also occurred in differ-ent areas. And of course, this is also apparent in industrial automation where camera systems, sensors, switches, I/O boxes and decentralized industrial PCs, to name but a few, are becoming continually smaller. However, it's not just that the size of these devices is shrinking. They also have to satisfy the increased specifications of digitalization and generate significantly more data than even just a couple of years ago.



This new connector has a mission to ensure that the entire spectrum of industrial production, down to the very last machine, is connected to a suitable Ethernet net-work.

Until now, it has been standard practice to enable device communication at the top field level via BUS systems. This required translating field level signals into control level Ethernet protocols and vice-versa. It is now possible to cut out this step and connect the new, miniaturised field clients directly via Ethernet. This results in higher data transfer rates, which require modified connector systems.

So where's the problem?

What connector options for data transfer are actually open to customers? There are really only vtwo IP67 protected solutions to consider: an additional RJ45 protected in an enclosure, or a M12 pin connector. Despite being small, these connectors are now becoming too large for many applications. Here's an example: some modern indus-

trial cameras used for identification and positioning have grown so small that the power and data connectors are restricting miniaturization of their enclosures and actually take up most of the space in the application.

The M8 D-Coded connector faces this challenge head on.

M8 connectors are used in many applications at the field level, at least for signal forwarding. The new M8 D-code connector features a strong metal enclosure with continuous shield-ing and 0.8 mm diameter contacts, which ena-ble end devices to be supplied with 100 Mbit fast Ethernet. To avoid having to find extra space for the additional power ports, the M8 D-code connector supports Power over Ethernet (PoE) and can feed field clients with power and data simulta-neously.

M8 D-Code: 30 % smaller

HMI, which is also the starting signal for mass production, will be the showcase for a universal solution consisting of extruded cables and circuit board connectors. This offers device manufacturers the right connector system to make the next steps in miniaturizations a reali-ty. On the circuit board, the M8 D-Code solution is about 30 % smaller than the M12 solution. Although that doesn't sound like much, combining different M8 ports on an I/O box, the sum of the reduced modular spacing leads to dramatic space savings. On the device-side, users can choose between two flange sockets in heights of 9mm and 13mm. This allows other connectors of different heights to be used, eliminating the problems of differing distances.

During the first stages, the M8 D-code connector will receive the familiar threading used by pin connectors. However, as HARTING has added an option for a push-pull locking mechanism used on its larger M12 counterpart, the M8 will feature this fast and easy mecha-nism in the not too distant future. In particular, this solution offers easy access when connect-ors are arranged next to each other within a very confined space. The cable components of connector systems must also be modified. Therefore, HARTING will release its own ad-hoc field assembly connector in the form of a displacement termination under the name HARAX.

The M8 D-Code plays by the rules

To ensure backward compatibility of the new version of the M8 as a universal solution, the D-code version is also standardised. A uni-versal standard with a protocol in accordance with IEEE 802.3, and a connector designed according to the specifications of PAS IEC 61076-2-114, offers customers investment security and allow it to be used with existing active and passive infrastructure. This applies equally to the automation and transportation markets.

From cloud to sensor

Now take a step back and consider the entire system of industrial cabling from the outside. HARTING's M8 D-Code is leading a new front in development, which was still completely unthinkable just a few years ago. Ethernet communication no longer just takes place be-tween the top level of a company and field dis-tributors. High-performance and appropriate miniaturization mean that connector systems can expand networks both upwards and down-wards. There is no more uncharted territory on the digital world map. Everything can, and will, be talking to each other in the near future. Serv-ers, internal company networks, individual workstation PCs, network nodes, switches, ma-chine modules, tools, even products will be communicating with their environment via RFID. And its miniaturized ports such as the M8 D-code connector are making this possible.