

# HENGSTLER NEWS.

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## Single Cable Solution

Single-cable solutions – new possibilities opened up by high-quality components and an open protocol.

» 03

## sps ipc drives

27<sup>th</sup> International Exhibition  
for Electric Automation  
Systems and Components  
Nuremberg, Germany, 22–24 November 2016



## ACURO® AX73

ACURO® AX73 completes Hengstler's range of ATEX-rated absolute rotary encoders.

» 05

SPS IPC DRIVES - NUREMBERG, NOVEMBER 22<sup>nd</sup>-24<sup>th</sup> 2016

# A warm welcome to the SPS IPC Drives 2016



The SPS IPC Drives will open its doors in Nuremberg from 22 to 24 November 2016. At our booth (Hall 4A Booth 525), we will present a well-founded overview of our current encoder portfolio, which is setting industry standards. We also show

our Single Cable Solution in action and you will learn everything about the advantages of our unique protocol ACURO®link. At our new screen pillar you can inform yourself on a short notice about all current topics.

## BREAKING NEWS

### ACURO®link partnership

► First open protocol for a real Single Cable Solution: ACURO®link.

ACURO®  
link

ACURO®link is available as an open protocol on the market. Hengstler, as protocol developer, is in close contact with future licensees. ACURO®link is designed for machine and motor manufacturers who rely on single-cable technology and also for sensor manufacturers who wish to adapt the interface to complete their portfolio. An independent test laboratory will ensure that all products with ACURO®link interface are thoroughly tested before they are launched. This ensures that different vendors with different products are compatible with each other.

HENGSTLER

Baumer

Kübler

Rexroth  
Bosch Group

SEW  
EURODRIVE

Existing and potential licensees who position ACURO®link together with Hengstler as an open protocol on the market for servo motors.

## HENGSTLER

Hengstler rotary encoders deliver relevant and evaluable data at the right time.

INDUSTRIE  
4.0  
ENABLER

## Hengstler encoders will also speak BiSS Safety

In 2015, the Safety Communication Layer of BiSS Safety was confirmed by TÜV Rheinland for suitability for safety-relevant communication up to and including SIL3. In the future, Hengstler will offer this protocol for its rotary encoder portfolio in order to meet the steady growth in safety applications.

Since 2007, Hengstler has been offering encoders which use the open communication standard BiSS C. A continuous data connection to the bus participants, high transmission rates and free licenses are to be mentioned as clear advantages. According to iC-Haus, the newly introduced BiSS Safety Protocol is 100% based on BiSS C.

Hengstler GmbH, based in Aldingen (southwest Germany) has an enormous experience of countless successful applications in which their encoders play a reliable role.

Hengstler sees enormous potential in the field of functional safety in combination with ever-increasing machine guidelines, increasing number of safety applications. For this purpose, the internal system structure of the encoder is expanded by a combination of available blocks. The Safety Communication Layer of BiSS Safety has been certified according to DIN EN 61784-3: 2010-02. It is therefore suitable for safety-relevant communication up to SIL3.

This means that BiSS Safety, combined with Hengstler rotary encoders, will combine positive effects from two worlds. As a customer, one can be sure that Hengstler will successfully extend the encoder portfolio with BiSS Safety, thanks to its decades-long BiSS experience. On the other hand, users benefit from different providers, which offer a manufacturer-independent protocol for secure data transmission.

BiSS  
SAFETY

# Servo Motor Feedback

# Digital Single cable Solution for servo motors

## Hengstler redefines the digital single cable solution for servo motors.

The Single Cable Solution from Hengstler sets new standards for efficiency, safety and performance. By offering a true Single Cable Solution with high performance, Hengstler meets the latest requirements of today's motor feedback systems.

An examination of what are the respective requirements of machinery manufacturers, machine users and end customers, reveals a clear trend. The focus is on maximum machine availability and cost reduction at the same while securing investment to some degree by the use of future-oriented technologies. Machine and system manufacturers increasingly strive for cost and space reductions and implementation simplicity, with no compromises on performance. With its Single Cable Solution, Hengstler has provided a fitting response to the needs of the market.

From the machine manufacturer's point of view, maximum machine availability is absolutely mandatory and a real competitive advantage. Safety has to be primordial when considering the aspects of man/machine interaction, but not at the price of having to stop the machine. The single cable solution with its ACURO®link interface is designed to ensure a high level of functional safety in

servo motor control systems. The data protocol of the electrical interface meets the requirements of SIL3 according to IEC 61508 and Cat. 3 PLe EN\_IOS 13849, while the ACURO®AD37 encoder itself, and the IP core in the control, can meet all requirements from non-SIL to SIL3 depending on the application scenario. Because of the safety function that can be implemented in the drive, the machine can keep running thanks to the single cable solution, even if someone is directly in the potentially hazardous zone. A mandatory prerequisite to enable maximum machine availability.

Safety however is only one part of the equation of safety, efficiency and performance. An operating temperature of up to +115°C, an operating speed of up to 12,000 rpm and a low mounting depth of 28mm make the AD37 the most compact absolute multi-turn encoder in its class. In the SIL3 configuration, the high performance encoder known as AD37E sets new standards. Its extra efficiency and performance give a decisive competitive advantage to the drive system. The AD37 series make this possible with its high accuracy and resolution. An "electronic datasheet" in the encoder stores specific encoder data, which can be read out at any time. In the encoder itself, the motor and drive data are stored in an internal OEM memory. This is primarily of interest for end users, but also for machine manufacturers. Using this data, solutions for preventive maintenance, minimum down-time and significantly increased productivity can be implemented. The electronic product identification pro-

Engine power and motor feedback signals delivered in a single cable.

Think again.  
Discover Hengstler's  
Single Cable Solution.

ACURO®  
link

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vides motor characteristics, its product code and serial number which make it possible to adjust automatically to each motor's parameters. Diagnostic and monitoring functions provide important information on the operating

status of the machine. This is a significant contribution to implementing Industry 4.0 scenarios and translates into security of investment for the customers who buy the machines, because the Single Cable Solution fulfils all the

requirements for supporting future technologies in the best way.

Particularly in today's market, motor manufacturers are focussing on designing motors that are smaller than

ever before and with higher performance. Energy, space and resource savings are given the highest priority. By enabling motor output and motor feedback signals to pass through a single cable, efficiency is significantly increased. Especially in large systems, the gain in space becomes notable and considerable weight is saved in the motors. There are other important advantages that are gained from faster installation and lower cost of material for system cabling.

With the Single Cable Solution, Hengstler offers a well-balanced overall concept and a product portfolio that continues to be expanded now and in the future. Customers are convinced that the digital approach with a true Single Cable Solution is the right choice. The advantages in terms of investment security, cost and performance are evident.

Our solution

- 50% less cables
  - Less weight
  - Smaller cable terminals
  - Reduced mounting space
- Multiple cable supplier
- Up to 100m cable length
- Transparent license model
- Conditions perfectly monitored.
  - Preventive maintenance
  - Minimal downtime
  - Increased productivity

Encoder family

Performance vs. Application (size, feature, accuracy)

Basic | Standard | Advanced

Application (size, feature, accuracy)

ACURO® link

Your benefits

- Functional safety (SIL2 PLd, SIL3 PLe)
- Maximum flexibility
- Highly scalable
- Industry 4.0/IIoT enabler
- Transparent license model
- Open protocol
- High performance and efficiency

4-Wire vs. 2-Wire comparison diagram

HENGSTLER

# Servo Motor Feedback

## Single Cable Solution

Single-cable solutions – new possibilities opened up by high-quality components and an open protocol.

Single-cable solutions are increasingly gaining traction in the field of servo drive technology. In addition to the growing number of drive manufacturers offering single-cable solutions, this trend is fuelled by the increasing number of manufacturers of rotary encoders that allow the implementation of such solutions in the first place. They differ not only in the protocol used, but also in technical details such as resolution and stability. Helukabel GmbH and Hengstler GmbH are two well-established companies that tackle this topic from different vantages. However, they are united in their common mission of providing customers with high-quality components that are innovative, effective and safe and that harness the tremendous potential offered by the single-cable technology.

In single-cable solutions, the cores for the encoder's signal transmission are integrated into the servo cable, which means that two cables are thereby combined to form a hybrid cable. This solution's success is down to the benefits of space and weight optimisation, and in particular to the reasonable price and reduced connection technology. In areas with limited space, this translates into additional advantages for machinery, control cabinets and drag chains, for example.

Basic requirement for the set-up of a single-cable solution between a servo motor and a servo controller is a digital encoder that is specifically developed for this type of communication. The encoder is permanently connected to the servo motor. For this reason, the manufacturer of the servo motor needs to provide its customers with an end-to-end solution: Not only the servo motor needs to be equipped with a rotary encoder, the controller needs to be adapted to the concept of a single-cable solution as well – as communication is always established between two units. Hengstler offers special rotary encoders in its new product range that use the ACURO®link interface, an open protocol, creating the ideal symbiosis to meet the high requirements of single-cable solutions. "The ACURO®link interface was



Drag chain test systems at Helukabel's research and development center.

specifically designed to support two- and four-wire applications," explains Johann Bücher, Director of Encoder Strategy at Hengstler.

Helukabel's challenge as cable manufacturer consists in securing a sustainably stable and fail-safe data transmission. The two-cable solution uses up to three shields to protect the signal pairs from the disruptive influences of the power cores in the traditional set-up. In addition, it is generally recommended that the maximum possible distance between the servo and encoder cables is considered when laying the cables. However, the feedback cores of a hybrid cable are routed into the servo cable directly. It reduces the physical distance almost entirely and the requirements for EMC shielding attain a new quality level.

Whether the motor rotates or not is based on the signal's quality that arrives at the receiver. The fewer external disruptions that penetrate

the signal element, the better the data quality is that arrives at the receiver. The shielding of the data cores accounts for the protection from EMC emissions. The longer the shielding remains intact while in use, the longer the protection will be maintained. The service life of the shielding can be nearly "infinite" if the hybrid cable is installed in a stationary application. The service life only starts to shorten when mechanical load is placed on the cable in a dynamic application, such as a drag chain. The reliability and fail-safe quality of data transmission is a product of the individual disruptions, which means that the longer a cable, the more critical the application. Hengstler's research & development team tests two- and four-wire versions of their encoder using a 100-m cable in each case under load. Based on the acquired practical experience, these tests provide adequate assurance that the cables can withstand even future challenges arising in increasingly

complex applications. It is now possible to have high-performance multi-turn control thanks to the Hengstler AD37 rotary encoder. It sets new standards with a 10-Mbaud transfer speed and data exchange rates reaching 32 kHz, while combined with the transfer of entire positioning data providing an extremely high electromagnetic compatibility (EMC). In addition, the data protocol of the electrical interface fulfils the requirements of SIL3 in accordance with IEC 61508 and Cat. 3PLe, in compliance with EN ISO 13489, while the AD37 rotary encoder itself and the IP core in the control can meet all requirements from non-SIL, SIL1, SIL2 to SIL3, depending on the customer's specific application.

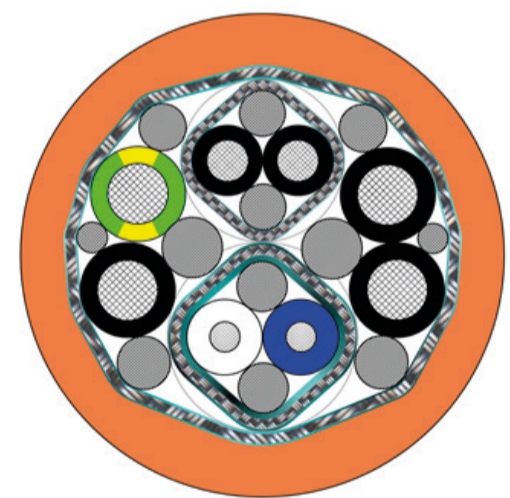
The loads that cables are subjected to in the field are growing as the market requirements of the manufacturers of machinery and plants increase. Machine designs are smaller than ever before, as the axes in the field of traditional machine tools become more dynamic and faster. These developments reduce the available space to a minimum, and the bending radii of the drag chains become tighter. Cables and wires need to be tailored to the specific application in order to provide with high stability in drag chain applications while maintaining competitive prices, which means that the design team at Helukabel GmbH selects different designs for specific requirements. They depend on parameters such as movement distance, minimum bending radius, speed, acceleration and minimum number of cycles. In addition to the design, the choice of materials also plays a decisive role. They primarily depend on external factors such as ambient temperatures and/

or the required durability of the materials (aggressive coolants and lubricants, for example). In addition, there are other properties that need to be taken into consideration such as flame-resistance and halogen-free design.

The different performance requirements of the motors translate in different cross-sections for the supply cables. The larger the cross-section, the thicker the cable.

quality and stability of data transmission.

Helukabel was the first cable manufacturer who confirmed the durability of its hybrid cables with a system test involving more than five million cycles. In the meantime, several hundreds of kilometres of these hybrid cables have been installed and are in use in different applications around the world.



The Helukabel Topserv Hybrid has become established as the standard for the two-wire solution.

It is necessary that the tests include different bending radii in order to draw conclusions for all other cross-sections, as it is not enough to test one cross-section and cable construction in a drag chain. The Helukabel Group tests cables on nine different testing systems that can differentiate between the lengths and the acceleration and speed parameters when testing. These tests are very intricate and require constant monitoring and supervision. However, they are also necessary in order to ensure the

"We are the cable manufacturer with the greatest advantage in terms of experience. We invested a great deal of time in this solution from a very early stage and have gathered vast experience in the field to be able to develop working, reliable solutions for drive specialists. Our Topserv Hybrid has become established as the standard for the two-wire solution", says Thomas Pikkemaat, Product Manager for Drive Technology at HELUKABEL® GmbH.



Hengstler AD37S Encoder, designed for a real single cable solution.

# Counter Sensors

## SPC – Self-Powered Counter

► Hengstler SPC counter is self-powered and fraud-proof.

When Hengstler set about developing a new counter for commercial gas and water metering applications, the company had two main objectives: to make it self-powered to overcome the limitations of both power supply availability and battery-operated devices; and to make it resistant to tampering using magnets that interfere with the mechanical meter register found in conventional counters. The fruit of Hengstler's research has seen the company introduce its SPC (Self-Powered Counter) to the global market. Simple, innovative and cost effective, SPC comes with ATEX certification and offers class-leading shock and vibration resistance.

Measuring the rate or volume of gas/fluid flow is obviously essential for utility companies to determine how much gas or water has been consumed by commercial customers and thus determine billing information. Here, utilities turn to the expertise of flow meter suppliers, which in turn rely on accurate providers of counter technologies.

However, where conventional electronics or other circuitry is provided for performing various functions related to gas/fluid measurement, a power supply is required. In some applications, an independent power source may be readily available, but this isn't always the case, particularly in areas where gas pipelines cross huge expanses of remote terrain, for example. In such locations, a power supply is often impractical or too costly to install. Mains-powered devices also struggle in locations subject to frequent power cuts, or unregulated voltage. The



alternative, battery-operated devices, only offer a limited solution due to limitations such as battery life, cost and reliability in harsh environments. Furthermore, in contrast with devices that have stopped due to battery failure or battery removal, the SPC continues counting.

With this in mind, Hengstler developed a fluid meter capable of performing precise and reliable gas/fluid measurements, while also providing the power necessary for those measurements. The compact (38mm diameter housing) SPC makes use of 'pulse wire' technology whereby kinetic energy is generated by a moving fluid to provide electrical pulses – the first counter of its type to offer this advantage.

This innovative, self-powered

ing feature also ensures that the meter can be replaced at any time without any loss of metering data, thanks to an in-built memory. The metering value will be displayed automatically when the new register is attached, thus allowing for continuous billing. This is the only likely maintenance task as the Hengstler SPC features only one moving part, the shaft, thus offering near-zero wear and saving on both costs and downtime.

From an anti-fraud perspective, the device makes use of a non-volatile FRAM memory and strong shielding magnets to prevent fraudsters from evading what they owe. In addition, meter volumes can be compared and alarmed at set intervals.

Importantly, each SPC can be configured according to customer communication protocol preferences, including, NAMUR, UART, M BUS, I<sup>2</sup>C or wireless, for example. Further advantages include ATEX certification, 300g shock resistance, 20g vibration resistance, IP20 protection rating, easy and fast installation, and suitability for all gas/fluid types. Ultimately, the new Hengstler SPC provides the freedom of counting whenever, wherever and whatever, without external power.

**The new SPC fluid meter counter from Hengstler is not only self-powered, but is resistant to fraudulent tampering.**

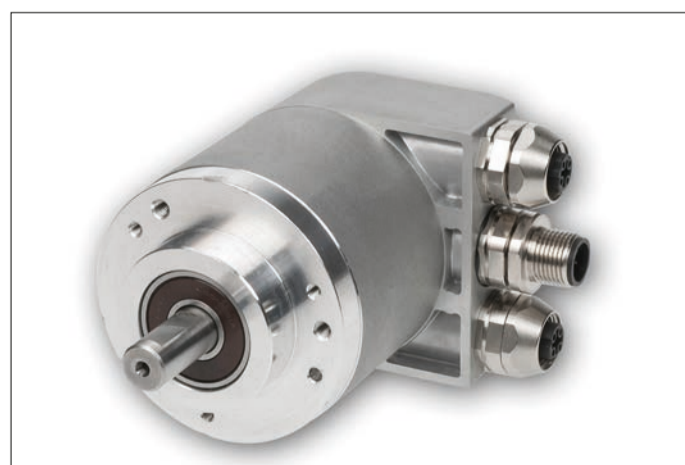


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## Encoder performance from Hengstler

► Encoder performance from Hengstler that exceeds the industry standard - now available with the popular EtherCAT interface.

Hengstler extends the ACURO® AC58 product line with the widely-used EtherCAT interface. The number of systems using this open, powerful, Ethernet-based system continues to grow at a rapid pace. With the availability of the ACURO® AC58, incorporating an EtherCAT interface, users can integrate one of the foremost absolute encoders on the market, into virtually any system that uses EtherCAT technology. This simplifies the design process and guarantees reliable communication. Hengstler's ACURO® AC58



**ACURO AC58 is one of the most versatile and robust encoders on the market**

EtherCAT encoder is naturally attested by an official compliance certificate issued by the EtherCAT Technology Group (ETG).

Extended temperature range, protection rating up to IP67, and extremely high shock and vibration specifications are just some of the outstanding characteristics of the AC58 EtherCAT. This flexibility makes the Hengstler ACURO® AC58 one of the most versatile encoders on the market. Its robustness specifications are particularly impressive. A stainless steel version is

also available as an ordering option. This makes it suitable for use even in the harshest environmental conditions.

Values are updated with a cycle time down to 62.5 µs, making it one of the fastest encoders on the market, and allowing customers to implement highly dynamic processes. Device configurations like a residual value function for rotary indexing machines add to the range of application capabilities.

# Oil & Gas Sensors

## ACURO® Xproof AX73

**ACURO® AX73 completes Hengstler's range of ATEX-rated absolute rotary encoders.**

The new Hengstler ACURO® AX73 is a class-leading optical encoder offering attributes such as ease of installation, high precision and compact dimensions. In addition, the introduction of the AX73 completes the company's comprehensive family of ATEX-rated absolute rotary encoders, both optical and magnetic. Equipment designers now have an unprecedented choice for a host of hazardous environment components.

In the development of equipment for use in hazardous environments, selecting the right encoder is vital. Here, explosion protection is the first consideration, which is why the Hengstler ACURO-AX73 carries ATEX and IECEx certification for gas and dust explosion proof requirements. However, this advanced optical encoder offers many more features of specific benefit in applications such as winches, cranes, drills and other oil and gas industry equipment, as well as at paint plants, petrochemical facilities, bottling plants and grain mills, for example.



The introduction of the AX73 completes the family of ATEX-rated absolute rotary encoders from Hengstler

Among the principal advantages is the connection concept of the AX73, which allows the routing of cabling and the final encoder installation to be done in separate steps. This provides significant cost and time savings during installation, as cabling

can be done in advance. Emergency servicing can also be completed more quickly, resulting from the ability to simply unplug the cable and connect it to the replacement encoder. Since many oil and gas platforms use heavy and cumbersome cables measur-

ing 40m in length or more, the design of the AX73 represents an attractive proposition for customers looking to lower their total cost of ownership (TCO).

Another ease-of-maintenance innovation is the

use of just two screws for the connection hood. Many comparable encoders use six or even eight screws, while insufficient corrosion protection makes such units very difficult to uninstall. Instead, special patented screws are deployed on the AX73 to pro-

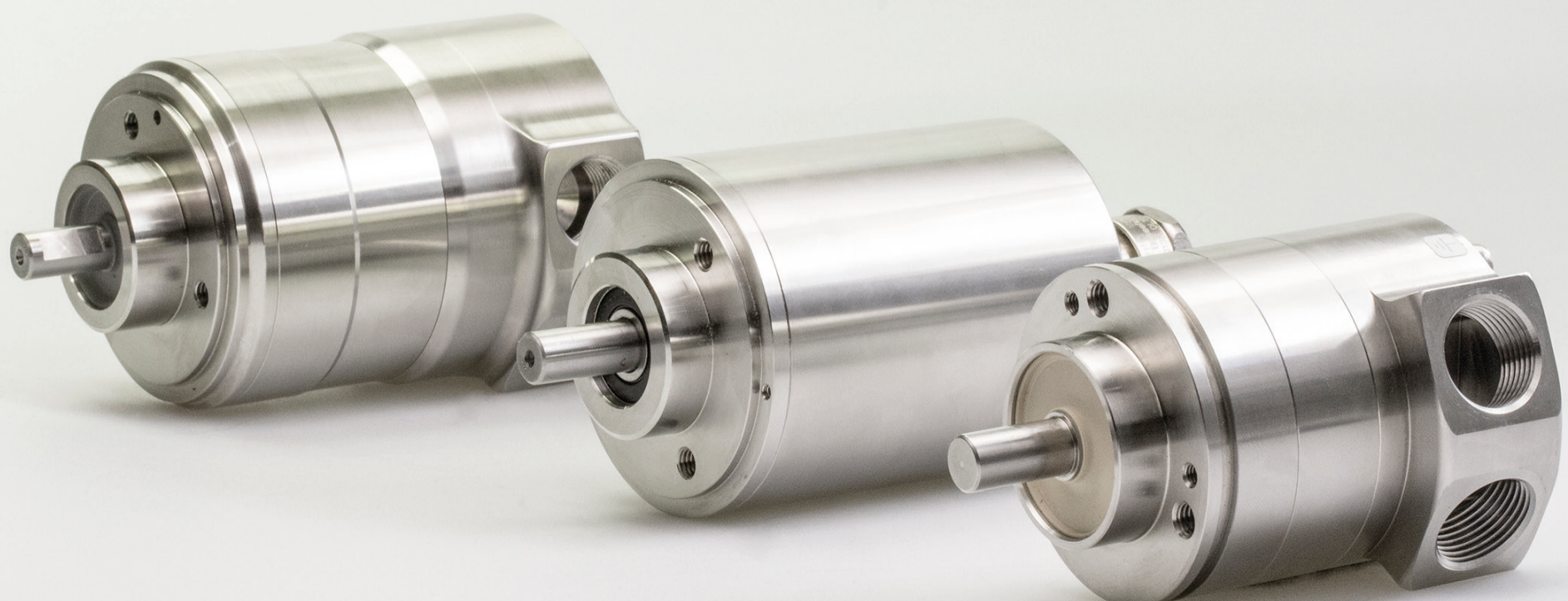
tect against dust, water and corrosion.

Inherent precision is a further beneficial characteristic of the ACURO® AX73. The optical scanning system provides a highly accurate, 22-bit resolution sensor signal for wherever precision or smooth speed regulation is necessary. However, despite its accuracy, the encoder is of robust design, with impressive resistance to shock, vibration and external magnetic fields. In addition, the unit provides users with IP67 protection class rating for the stainless steel housing, and offers an Ex-related ambient temperature range of -40 to +70°C.

Although the AX73 is seen as the 'big brother' of the AX65 introduced by Hengstler last year, with a housing diameter of 76 mm it is still smaller than comparable competitor products. This will prove extremely valuable to system designers seeking space-saving solutions. Available immediately, the AX73 can be ordered with SSI, BiSS-B, BiSS-C and Profibus interfaces.

The introduction of the AX73 now completes Hengstler's ACURO®-Xproof absolute shaft encoder line. The new AX73 and AX65 offer the special mounting system, while also available are the AX70 and AX71 absolute encoders, as well as the RX70 and RX71 incremental variants, with integrated cable.

**ACURO® - AX Series**  
Xproof



# Printers

## eXtendo receipt-type printers

### Hengstler eXtendo receipt-type printers now offer Chinese font set.

With China proving to be one of the world's fastest growing economies in recent years, Hengstler has added a comprehensive Chinese font set to the firmware of its popular eXtendo range of receipt-type printers. Designated eXtendo XF, which comprises the X-56 and X-80 models – both of which feature a larger memory – Hengstler receipt-type printers are now ready to meet the demands of ticket vending machine OEMs serving Chinese-speaking markets.

The Chinese language is the world's most widely spoken, dwarfing the next most popular language, Spanish, by a

factor of nearly three. Beyond China, the language is spoken in Taiwan, Hong Kong, Macau and Singapore, and is present extensively in countries such as Malaysia and Indonesia, not to mention sizable Chinese communities in almost all Western economies. With this in mind, incorporating the Chinese language into tickets machines found at locations such as car parks, outdoor kiosks, railway/metro stations, betting shops and ATMs, for example, can now be facilitated with Hengstler's eXtendo XF.

To store the large GB18030 national standard master font set, which contains more than 27,000 Chinese characters, Hengstler has doubled the memory within its eXtendo XF family printers to 4 MB. In fact, both the X-56 and X-80 (the numerals represent the receipt width in millimetres) now offer larger flash and RAM. Furthermore, due to the required Unicode addressing scheme and the larger number of characters that must

be stored, hardware and firmware redesigns were also implemented.

A further benefit of the increased memory means that there is no longer any limitation on the size of customer font and bitmap images that can be uploaded, thus delivering greater product functionality.

With the integral font manager, customers can upload any type of font desired (up to 10 fonts) using the upload tool that is included in the printer's driver package. Font manager selects and matches all the characters of the font type as defined in the code page. It is also possible to select and/or deselect single characters. Hengstler only uses the font manager for licensed fonts but customers can use it to upload their own licensed or open source fonts.

As a point of note, the expanded memory also means that Hengstler is able to service languages such as

Japanese, Korean, Hebrew or any other language containing proprietary character sets. Importantly, however, to avoid burdening OEM customers that do not require special character sets with the cost of expanded memory, the basic versions remain available.

The original eXtendo family of receipt type printers has been in worldwide circulation for over a decade. The successful X-56 and X-80 models enjoy a market reputation as highly reliable direct thermal print mechanisms capable of operating in environments where there are wide variations in temperature and humidity, while further benefits include compact design, accurate cutting and an extensive feature set. The need to print and cut thick paper, handle large paper rolls and detect jams are among additional capabilities ensuring the ongoing popularity of these advanced printers.



## Delivery reliability

### Delivery reliability at Hengstler reaches all-time high – continuous improvement since 2012

One crucial success factor in achieving customer satisfaction is a high standard of delivery reliability. Hengstler GmbH in Aldingen, Germany, can proudly claim a success story in this field. The story starts in 2012 when a specially adapted kanban system was introduced.

Delivery time is considered, in most cases, to be a decisive factor in providing perfect delivery service. However, in practice, it is delivery reliability that is of even more significant importance. It is not necessarily the actual time required before delivery takes place that is crucial, but far more the supplier's ability to adhere to the agreed delivery date. Hengstler GmbH, whose head office is in Aldingen, Germany, took the principle one step further than this some time ago. What really counts here is not the delivery date confirmed by the manufacturer, but the customer's preferred delivery date. In this way, planning activities are improved, in particular in connection with project business, and customers can rely on dependable deliveries. Where emergencies occur and a fast delivery is required, for example if an encoder needs replacing at short notice, Hengstler GmbH

has, for more than 20 years, provided a "turbo deliveries" system that ensures receipt within 12 hours, depending on the model and assuming express dispatch.

The key figure measured at Hengstler is termed the OTD rate (on-time delivery), which indicates the number of orders supplied on time on the date given by the customer as the preferred delivery date. In 2010, the OTD rate was between 80% and 84%, which in itself is not at all bad, but not in the realms of peak performance. After implementing the specially tailored kanban system, the company was able to increase this rate continuously since 2012 across the complete range of products manufactured by Hengstler. Delivery reliability today is at a stable figure in excess of 94%. This impressive rate is also reflected in numerous feedback responses from customers on vendor rating. Hengstler's delivery reliability is classified in these surveys across the board as excellent.

Since there is no let-up in the tendency to insist on just-in-time production, it is essential for component manufacturers like Hengstler GmbH to make every effort to adhere to agreed delivery times. Many customers now maintain far lower contingency stocks and, instead, rely on dependable deliveries for their production planning. At the customer end of the chain, this vastly reduces warehousing costs but relies completely on corresponding reliability and flexibility on the part of suppliers.



**eXtendo**® XF

## „South Asia Channel Conference”, Mumbai Growth through Partnership

### „South Asia Channel Conference”, Mumbai

Mumbai, India's commercial center was the venue for the first Hengstler South Asia Channel Conference. On October 6th, 2016, the Hengstler partners from India, Singapore, Malaysia, Thailand and Indonesia met, to tune in on the common market

strategies and objectives of Hengstler and Fortive.

Our business partners ensure an increased level of service and are provided with all the tools they need for the autonomous development of their markets and the distribution of Hengstler products according to a common, agreed strategy.

## Hengstler ACURO®-AX65 is market's most compact explosion-proof absolute encoder

Offering dimensions of 70 mm depth and 59 mm diameter – typically half the size of conventional explosion-proof encoders – the new ACURO®-AX65 encoder from Hengstler will prove extremely valuable to system designers seeking space-saving solutions (image 1). Furthermore, the fact that the device can be replaced separately from the cable, the presence of fewer hood screws, and the potential for ring network configuration (less wiring), makes

the AX65 an attractive proposition for customers looking to lower their total cost of ownership (TCO).

**ACURO**®  
Xproof

