Kick-off for ASi-5

This year, it is well worth visiting the AS-International Association e.V. booth in Hall 3A: The user organization responsible for the sensor/actuator communication system is presenting the all-new ASi-5 generation for the first time.

Since its market launch in 1994, AS-Interface has firmly established itself as a bus linking the sensor/actuator level to the higher-level control environment in machine and installation engineering: To date, more than 37 million ASi nodes have been installed worldwide and around 7 million safety-oriented switching devices have been connected via AS-Interface Safety-at-Work. According to Rolf Becker, Managing Director of the AS-International Association, there is no sign of the success story coming to an end: In his words, ASi is still growing at a rate of fifteen to eighteen percent each year. Nevertheless, the time had come to bring the ASi-3 generation, which has been in existence since 1999 and continuously developed in small steps ever since, successfully into the digital age. Since 2013, a group of development partners, consisting of automation technology providers Bihl+Wiedemann, Pepperl+Fuchs, Phoenix Contact, Siemens, and chip manufacturer Renesas, has been working on a completely new generation of ASi aimed at achieving higher data bandwidths and faster transmission speeds, among other things. At last, after five years of joint development which according to Becker have cost tens of millions of euros in total, the outcome of the project – the forthcoming ASi-5 – will be presented to the public for the very first time here in Nuremberg.

Higher Data Bandwidth Combined With Reduced Cycle Time

What has changed in ASi-5 over the previous ASi-3 solution? The number of nodes was expanded from 62 to 96 with a 4 times higher data bandwidth. At the same time, the cycle time has been reduced from 5 ms to 1.2 ms with 24 nodes at a data bandwidth scalable from 16 bits to 32 bytes. In addition, the network length doubles to 200 m per line. As far as safety is concerned, it will soon be possible to connect 96x16 safe I/Os instead of the previous 31x1. Becker comments on this: "We have resolved that in future the maximum number of nodes that can be connected, should no longer be affected by whether they are standard or safe I/Os." Last but not least, ASi-5 offers significantly enhanced diagnostics compared to the previous generation. This means: Acyclical services are available along with an additional diagnostic channel parallel to the process data, thus enabling channel-specific diagnostics. In short: ASi thus becomes predictive maintenance-capable.

Rolf Becker, AS-International Association:
"ASi-5 is our shuttle to digitalization!"

With these features, Becker believes that the AS-Interface is ideally equipped for the transition into the digital age and for integration into various connection scenarios, such as IO-Link downwards and higher-level, Ethernet-based fieldbus systems or OPC UA: "ASi will be completely consistent in this respect from now on!" When asked why the development took rather long to happen, the Managing Director of AS-International replies: "A major challenge in the project was that the new ASi-5 chip could not be any larger or more expensive than the previous one. This means that we had to fit an extremely large amount of new functionality into the same space. The second major challenge was to ensure that we retained compatibility. In other words, the infrastructure – i.e., the familiar yellow cable with the simple piercing technology without connectors and costly switches – had to be preserved 1:1. Consequently, this means that: ASi-3 and ASi-5 can run in mixed operation!"

The Work on ASi-5 will largely been completed by the time it will be presented at SPS IPC Drives in 2018. The next step will be the release of the specification for all AS-International members. Becker does not want to commit to an exact date in this regard – except to say this much: "The final steps are about to be completed." Regardless of this, Becker assumes that meanwhile, the aforementioned development partners will take advantage of their time lead and present the first ASi-5 products at the upcoming Hannover Messe.

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