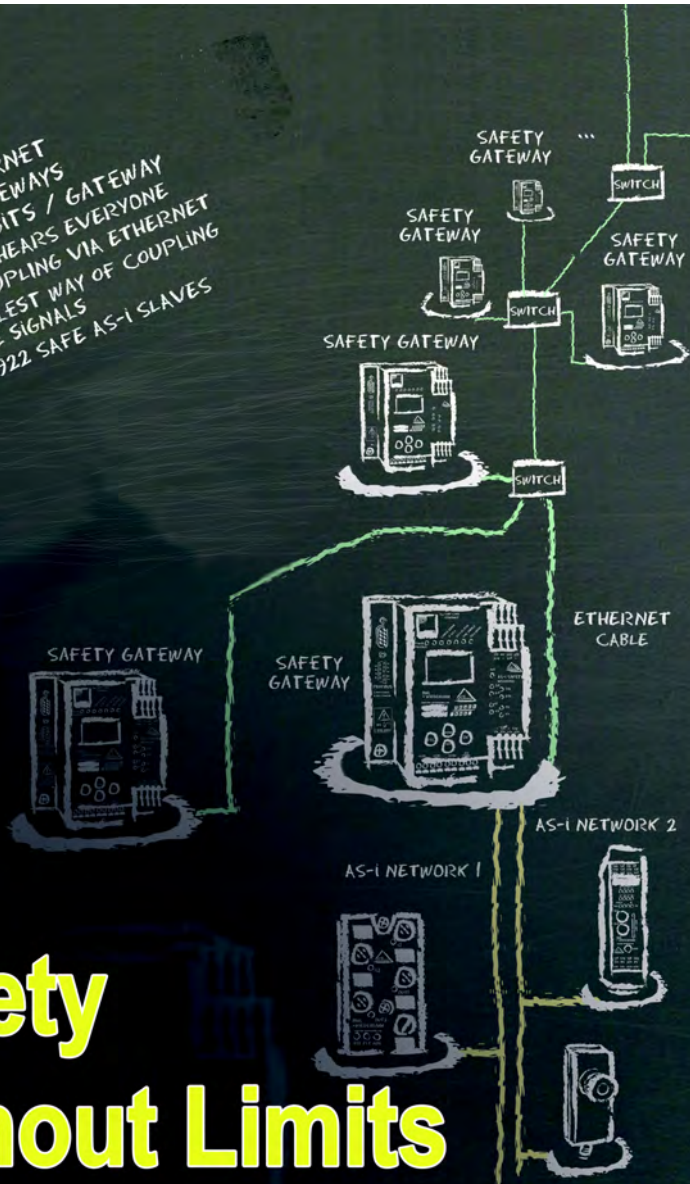


- SAFETY ETHERNET
- MAX. 31 GATEWAYS
- 31 SAFETY BITS / GATEWAY
- EVERYONE HEARS EVERYONE
- SAFE COUPLING VIA ETHERNET
- THE SIMPLEST WAY OF COUPLING
- MANY SAFE SIGNALS
- UP TO 1922 SAFE AS-I SLAVES



# Safety without Limits

UP TO 62 SAFETY SLAVES PER GATEWAY

Safe cross-communication over an Ethernet diagnostics interface

# Safety without Limits

**Thanks to its peerless efficiency, AS-Interface Safety at Work is the first choice for more and more users who need to implement large, decentralized applications. It used to be that the number of components required was a significant cost barrier. But now the new Gateways from Bihl+Wiedemann allow multiple AS-i segments to be safety networked via Ethernet with no additional expense.**

62 was something like a magic number for the simplest safety bus in the world: this is exactly how many safe devices were able to be handled by an AS-i double master with integrated Safety Monitor. As soon as just one more slave needed to be connected, the pivotal question immediately arose: what is the most efficient way to implement this in our particular application?

Of course there were answers out there already. The simplest of these was to couple safe signals through potential-free contacts. The advantages for the user are obvious: he can implement the coupling using existing hardware anytime and anywhere. But the other side of the coin is equally obvious: since this approach invariably requires a kind of parallel wiring, it really only makes sense when the number of signals to be coupled can be counted on the fingers of one hand. When more safe signals need to be coupled, connecting multiple safe networks directly over AS-Interface was a solution. But this unfortunately meant that one AS-i segment per gateway was lost to achieve coupling.

**Safe cross-communication is the AS-i typically simple response to**

**the trend towards larger and larger systems**

Still, until recently this range of solutions was sufficient for most of the major requirements set by the market. Now we are seeing though a clear trend, both in factory and process automation, towards larger, decentralized systems. Specifically: what used to be considered an exception rather than the rule has now become the rule and confronts more and more users with the old cost barrier of 62 safe devices.

And so one thing has been clear for some time already to the AS-Interface specialists at Bihl+Wiedemann: given the way the market is heading, the number 62 should no longer play such a large role in the future for AS-i Safety users. And this was exactly the mandate to their own development department, which is presenting – just in time for SPS/IPC/DRIVES 2011 in Nuremberg – a typically simple and cost-effective solution: safe cross-communication through the integrated Ethernet diagnostics interface of the new Gateways with built-in Safety Monitor.

Thanks to this innovative technologi-

cal advance the numerical bar has been raised so high that its exact coordinates hardly play a role any longer in reality. Because the new multi-talents from Bihl+Wiedemann permit safe communication from up to 1922 slaves across and through any connected AS-i networks. There is now direct access to the input and outputs data for all the machines in the system. The devices automatically exchange data with each other and make it available to the respective program. In this way up to 31 of the new Gateways with integrated Safety Monitor can be coupled together – without losing performance at any point and without the use of additional hardware.

**All the modules hear all the signals, even from the other AS-i segments, and can respond directly to new information**

This is made possible by using a newly designed Ethernet interface on the devices. This feature used to be there “only” for passing the diagnostics information gathered in the entire network and for enabling access for remote maintenance via web servers. These features will of course be retained, but now in addition this interface can provide up to 31 safe bits per gateway for the other modules. In other words: all modules in the AS-i segments networked to each other hear all the safe signals and are then able to respond directly to new information – all without the use of a failsafe controller.

In short: the safety application becomes even simpler, more flexible, clear and of course more economical.

This new option is highly interesting mainly for two groups of users. On one hand, customers for example in machine building who use AS-i

Safety at Work in ever larger pure safety applications because of its peerless price-performance ratio. The other group includes those who make use of one of the key systematic advantages of AS-Interface: the ability to send safe and non-safe signals over one and the same cable. Because in the already unbeatably economical combination of AS-i Safety at Work and the standard version of AS-Interface, the limit of 62 slaves is of course increasingly exceeded.

**The new Gateway generation means AS-i Safety becomes the efficiency leader in systems of all sizes and kinds**

With the new gateway generation for safe cross-communication Bihl+Wiedemann has turned AS-Interface Safety at Work into the world's champion in safety for systems of all sizes and types: in any system of two or more safe signals the Safety Basis Monitor easily wins the cost duel against parallel wiring, and in the common mid-sized safety application the combination of Safety Monitor and gateways, for PROFIBUS and PROFINET for example, completely eliminates the formerly used safe compact controllers. Even in the configuration found in some applications where a failsafe controller is needed, the technological concepts offered by Bihl+Wiedemann have already proven themselves functionally and economically impressive.

Now the final gap has been closed: the convenient and economically unbeatable coupling of safe networks. In fact greatest problem of the future will likely be finding an appropriate verbal superlative for the phrase “uniquely efficient“.