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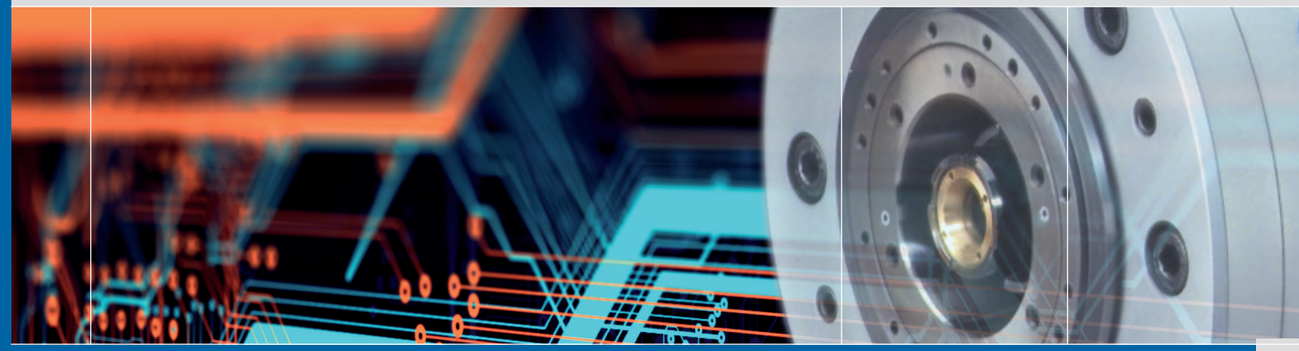
0923 ENG

GMN



IDEA-4S

Integrated Data Evaluation and Acquisition for Spindles

0923 ENG

GMN IDEA-4S

Features

GMN IDEA-4S is equipped with a stadardized digital interface

The data processing is compatible with all common control and drive devices (independent of manufacturer).

The built-in software and hardware enables integration into Industry I4.0 concepts.

Significantly simplified cabling and plug-in connection facilitate installation and maintenance.

The optimized cabling ensures reliable data flow and reduces connection-related breakdowns.

The straightforward “Plug & Play” connection (automatic ID of the spindle) ensures intuitive installation.

The broad data transfer requires fewer IO ports (AD converters) in the machine controller.

GMN IDEA-4S provides additional information and optimizes ...

... Spindle monitoring
(supports early damage protection)

... Process monitoring
(avoids undesirable operating conditions)

... Diagnosis when service is required
(extensive data recording)

... Analysis of possible causes of failure
(reliable data evaluation)

... Warranty models

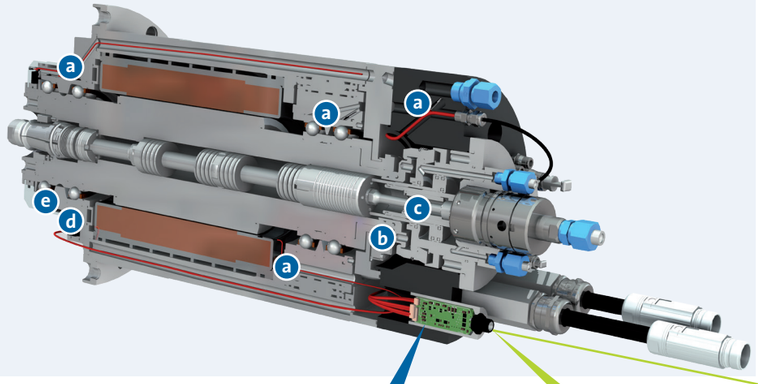
GMN IDEA-4S stores all relevant operating data and supports rapid repair when service is required.

The intelligent spindle solution from GMN

IDEA-4S (Integrated Data Evaluation and Acquisition for Spindles) is an electronic system developed by GMN and integrated into spindles for acquiring and evaluating data.
The digital management-system is available for GMN spindles and compatible to makes of any other manufacturer.

Conventional spindles only allow a unidirectional data flow from the spindle sensors to the machine controller. Furthermore, the increasing amount of different measurement data requires complex cable routings, which makes installation as well as maintenance difficult.

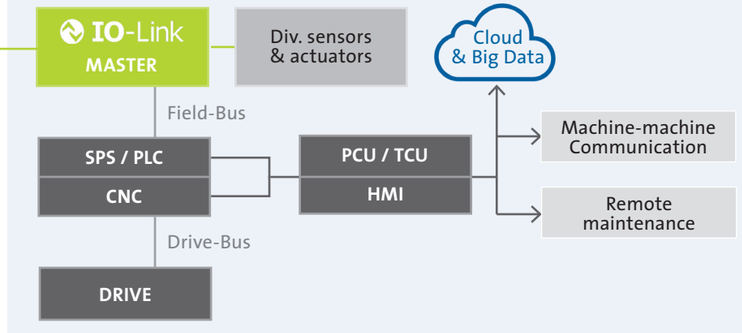
The GMN electronic system IDEA-4S with IO-Link interface significantly simplifies the required cable architecture and supports reciprocal communication between the spindle and all machine controllers.



Sensors	GMN IDEA-4S	IO-Link
a Temperature · Bearing · Cooling	Measurement data	
b Speed	· Acquisition	
c Tool clamping	· Recording	
d Vibration	· Evaluation & monitoring	
e Axial displacement	· Transmission	

Individual and IIoT Ready

With the digital spindle technology IDEA-4S, GMN offers a modular data management-system for optimizing almost all machining processes.
The recording and evaluation of the acquired spindle data during the machine operation ensure the greatest possible performance under changing conditions.
The effective basic solution (GMN IDEA-4S BASIC) comes with a digital type plate, vibration data and is extendable: GMN IDEA-4S STANDARD additionally evaluates external temperature and speed signals, while GMN IDEA-4S ADVANCED is able to further integrate sensor systems, e.g. for evaluating the tool clamping condition.
By use of the IO-Link Interface, IDEA-4S is independent from the field-bus used and therefore can be universally utilized with all control systems. In addition, modern IO-Link Masters allow for a seamless connection to IIoT-infrastructures without loading the performance of the controller.



BASIC	**Digital type plate** **Application data** **Error-Memory** **Vibration**	Status	Statistics	Histogramm
STANDARD **= Basic + ...**	**Temperature** **Speed signal**	Status Status	Statistics Statistics	Histogramm Histogramm
ADVANCED **= Standard + ...**	**Tool clamping** **Shaft displacement**	Status Status	Statistics Statistics	Histogramm Histogramm

Configurations

GMN IDEA-4S BASIC

Communication spindle > machine with IO-Link (standard acc. to IEC 61131 9)

Multi-sensor IO: All information via a single IO-Link connection

Acylcic information:
· Digital type plate
· Application data
· Error-Memory
· Histograms
· Statistics

Cyclic information with integrated monitoring:
- Internal sensors:
  · Vibration in three axes

GMN IDEA-4S STANDARD

Like BASIC but additionally with:

Cyclic information with integrated monitoring:
- External sensors:
  · 5 temperature signals, e.g. bearing, cooling
  · Speed signal

GMN IDEA-4S ADVANCED

Like STANDARD but additionally with:

Cyclic information with integrated monitoring:
- External sensors:
  · Tool clamping
  · Axial shaft displacement
  · ...