

Basics of Absolute Encoders ACURO

INTERBUS

GENERAL INFORMATION

INTERBUS is a real-time bus for the sensor-actor-level which is able to transfer data with a small overhead in a range of up to 4 bytes per subscriber for a maximum of 256 subscribers.

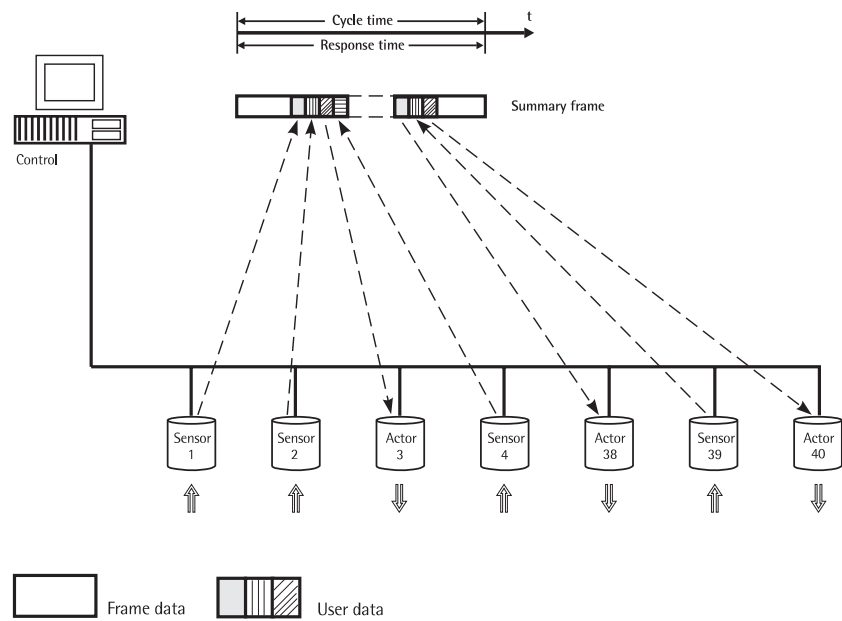
It is characterized by a circular transmission with a fixed message frame and a central master (e.g. SPC switching-in assembly).

TRANSFER SEQUENCE

A summary message frame; only one message frame for all subscribers

Header	Data	Data	Data	Data	Data	//	Data	Data	FCS	End
	Device 1	Device 2	Device 3	Device 4		//	Device n-1	Device n		

→ optimized for cyclic process data



WHAT ARE THE BENEFITS OF INTERBUS COMPARED WITH A CONVENTIONAL SYSTEM WIRING?

- Lower costs for cables and wiring
- Lower noise sensitivity
- Many control signals which were analog before are now available as digital signals and directly transferable by INTERBUS
- Simple layout, installation and starting procedure
- High efficiency (net data rate): the percental share of the message header and of the terminating sequence decreases with a growing number of subscribers
- Data of all subscribers are stored at the same time and transferred sub-sequently
- Reaction time can easily be determined. It only depends on the system's total extension; this is important for controlling tasks
- Constant sampling rate for reference inputs and actual values; both are transferred in one bus cycle
- Considerations of priority are unnecessary since all subscribers have the same priority

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- No system-parameter definition before starting procedure
- Data integrity is secured by 16-bit-CRC (according to CCITT polynomial) done for each transmission
- Sophisticated diagnostic software for the central bus controller: a point of error can specifically be isolated; in each case of malfunction there is a possibility to close the circular system in every single bus clip.

Encoder manufacturers are joined together in the ENCOM user group; drive manufacturers in DRIVECOM.

The user groups shall maximize the benefit for the customer by standardization of data transmission.

There is a high availability of devices with INTERBUS interface, and the bus mode has already been successful in industrial use.

Devices with an INTERBUS interface for process control are now available from more than 200 manufacturers.

ENCOM USER GROUP

The following device classes defined by ENCOM are used for absolute shaft encoders:

Class 2 (K2):

- 32-bit process data
- Binary
- Right-justified
- Readable only
- No control bits or status bits

Class 3 (K3):

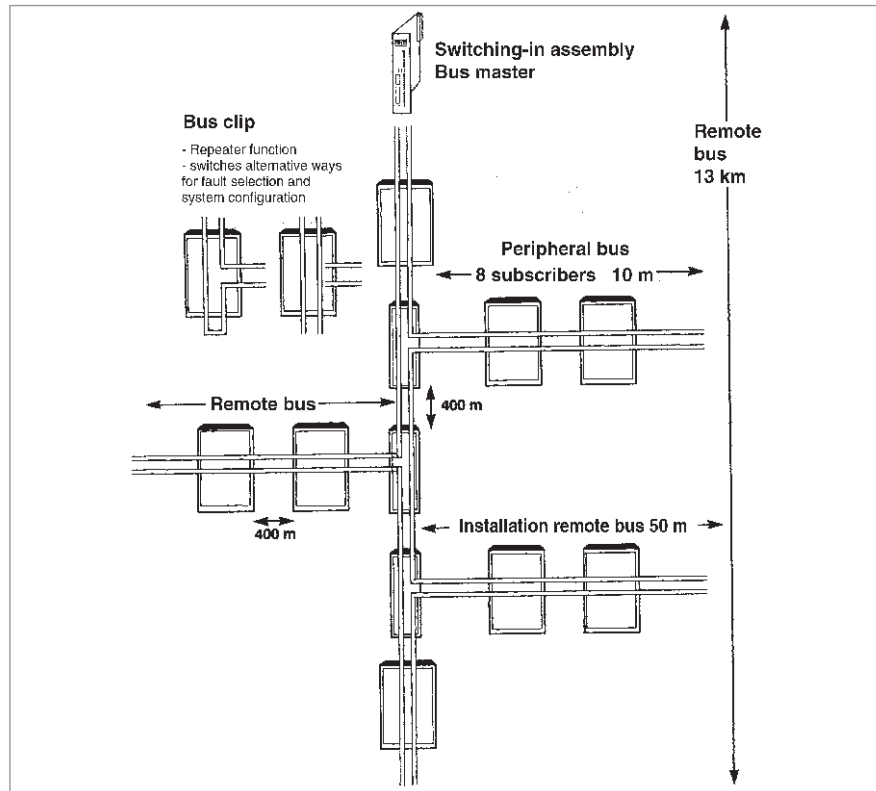
- 32-bit process data
- Coded according to manufacturer specifications
- Right-justified
- 7 status bits and control bits

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TECHNICAL DATA



INTERBUS is physically divided into:

Remote bus

- Voltage difference transmission RS 485
- Max. cable length between two bus clips: 400 m
- Max. overall cable length of remote bus: 13 km
- A maximum of 64 bus clips/modules may be directly connected to the remote bus

Peripheral bus

- 5 V voltage interface
- Max. overall cable length of peripheral bus: 10 m
- A maximum of 8 modules may be connected

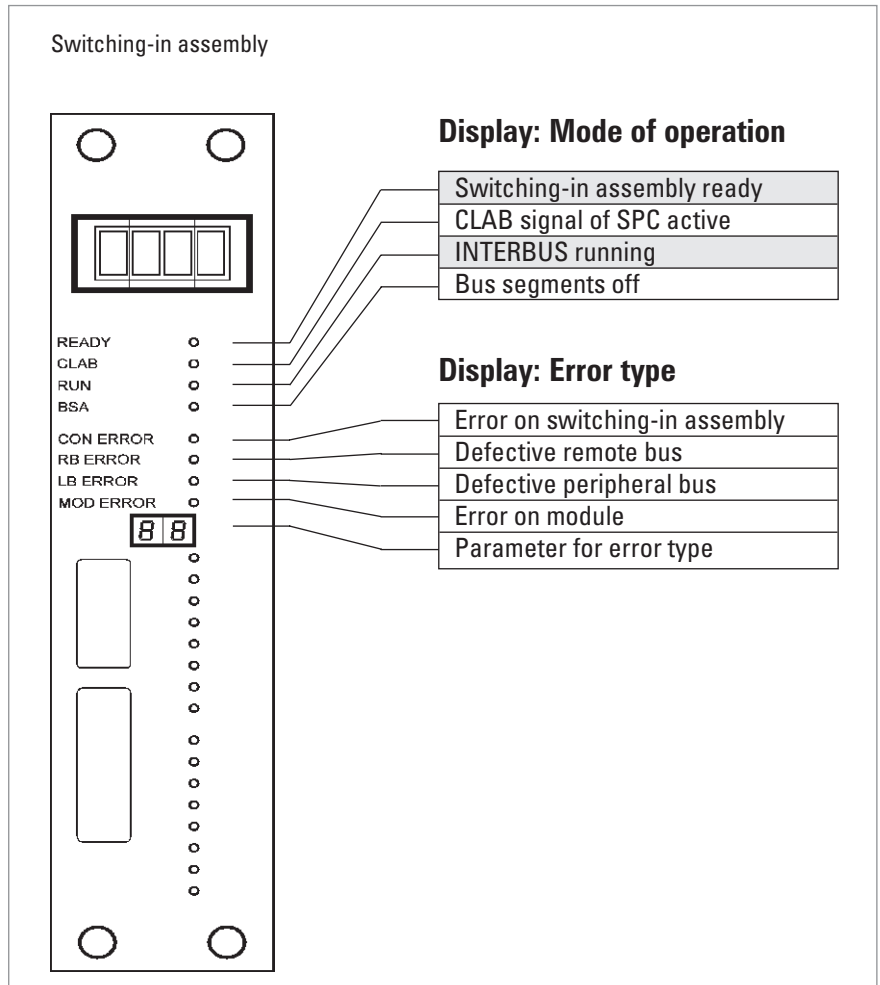
Installation remote bus

- For modules with enclosure class IP65 (e.g. HENGSTLER absolute shaft encoders)
- Voltage difference transmission RS 485
- Max. overall cable length: 50 m
- Connection via bus clip or passive T-manifold
- Each subscriber has an electrically isolated voltage transformer
- 24 V supply may be led via the bus line or be connected to the T-manifold
- 8 modules may be connected.

The transmission speed is **500 kBit/s**.

INTERBUS

INTERBUS DIAGNOSTIC CONCEPT



The diagnostic system is able to indicate peripheral and controller errors beside the selection of faults. Due to a row of LEDs comprising 16 bits, available on most switching-in assemblies, decentralized process states can be displayed centrally.

- Status display on control system for inputs and outputs without hand programming unit

- Self-acting fault detection and display with point and type of error without user programming
- Usual diagnosis by hand programming unit can be kept
- Diagnostic representation is always the same regardless of the control system.