Fieldbus Features

for digital proportionals in -BC (CANopen) or -BP (PROFIBUS DP) execution

DLKZOR-TES-BC

Master

Fieldbus Network
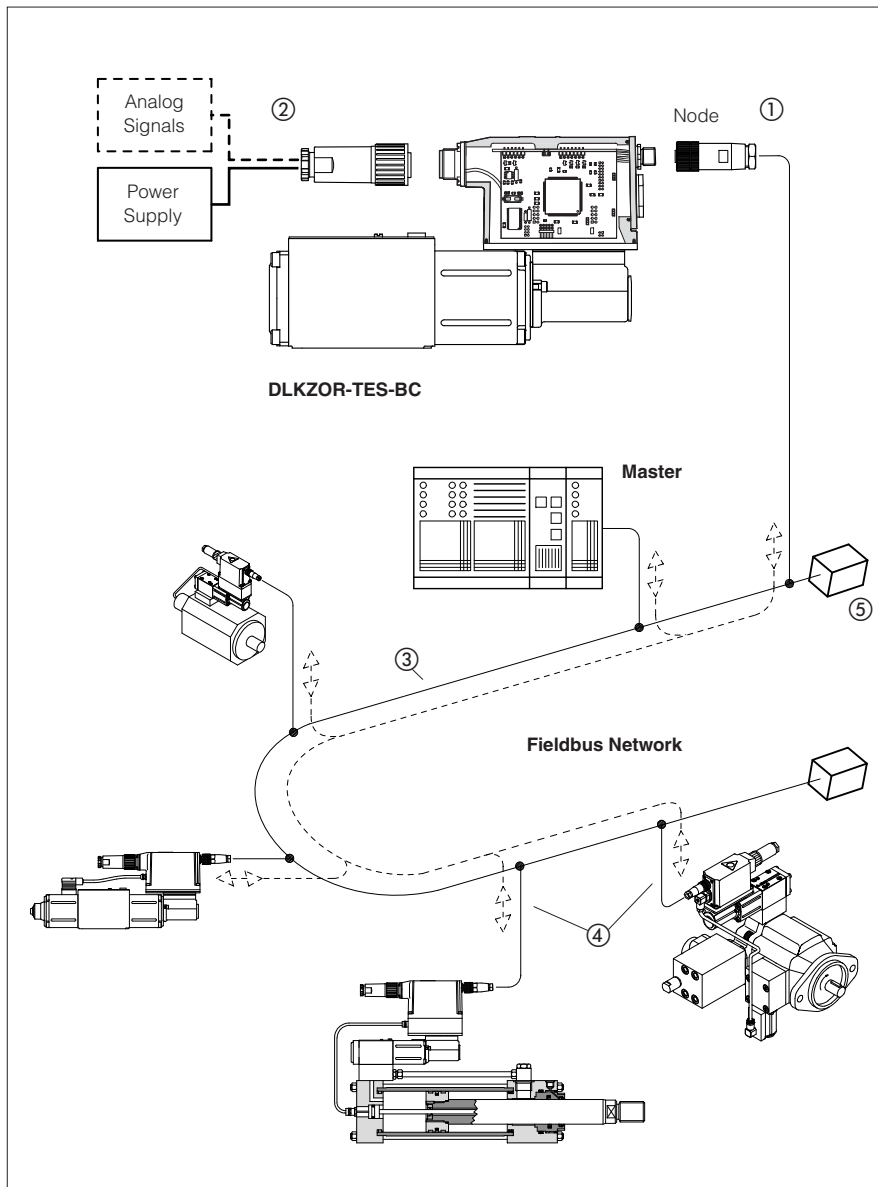
Atos proportional valves and pumps with digital integral-to-valve drivers are also available in -BC and -BP executions with fieldbus communication interface ①.

These executions can be completely operated as other Atos proportionals, using the analog signals available on main connector ②.

However the available fieldbus communication interface allows a direct connection to machine's communication network, thus granting several plus:

• more information available for machine operation to enhance its best performances

• improved accuracy and robustness of digital transmitted information

• costs reduction due to simpler and standardized wiring solutions

• costs reduction due to fast and simple installation and maintenance

Fieldbus distributed-control

The advantages of fieldbus communication allow to completely operate these components in digital way and to share all the available driver's information (internal parameters, monitor and reference signals).

This distributed-control concept allows to implement new and more powerfull machines functionalities for tuning, diagnostic, maintenance, etc.

Besides all the exchanged data, transmitted over a common communication cable, are available for all the other connected devices.

Fieldbus structure

The fieldbus network consists in a common cable (2 twisted wire, ③) for digital communication: several devices (nodes) can be connected to this main cable by means of short cable branches ④.

The two endpoints of the main cable must be terminated with specific devices (terminator, ⑤) to dissipate or absorb the communication signal's energy thus preventing interferences and degradations of fieldbus transmission.

Programming tools

Atos PC software ⑥, cable ⑦ and USB adapter ⑧ are available for both -BC and -BP communication interface (see table G500): these tools are designed to simplify R&D, install and startup operations.

A fieldbus machine central control unit (Master) is then commonly used for normal operations.

E-SW-BC / E-SW-BP

DLKZOR-TES-BC
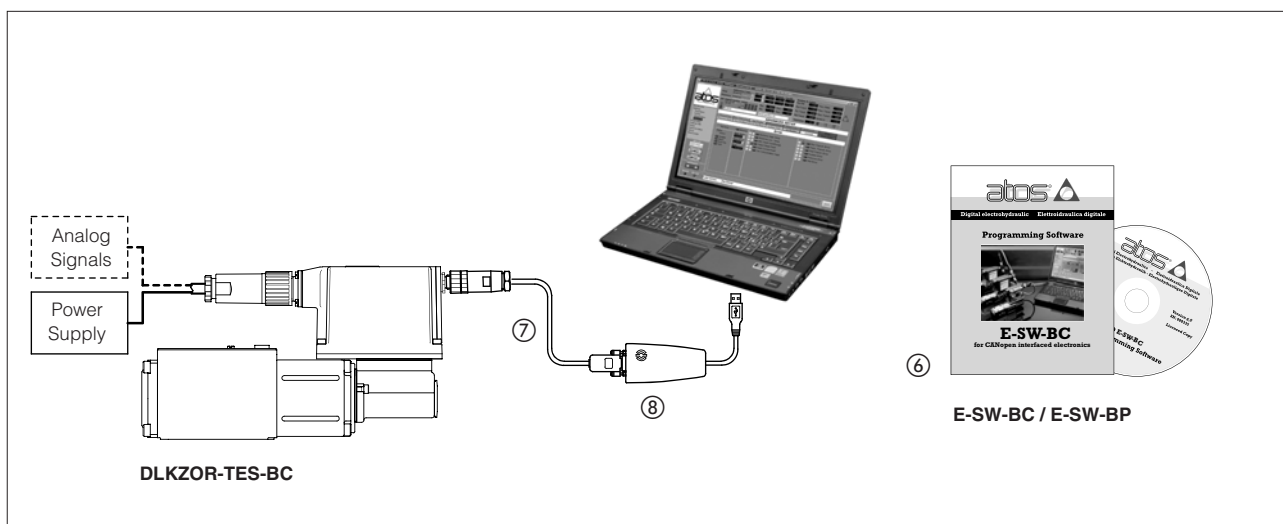
1 CANopen features for digital drivers in -BC execution

Physical

Serial input format	Industrial field-bus with optical insulation type CAN-Bus ISO11898
Transmission rate	Transmission rates from 10 Kbit/s to 1 Mbit/s
Max node	32 per segment without repeater; 127 per segment with repeater

Communication Protocol

Data Link Layer	CANopen DS301 V4.02 - based on CAN standard frame with 11-bit identifier
Device Profile	DSP408 - Fluid Power Technology (EN50325-4)
Device type	Slave

Startup and configuration (as per DS301+DS305)

Boot up process	Minimum boot-up
Node setting	Setting with LSS (Layer Setting Services), SDO or dip-switches
Baudrate setting	Setting with LSS (Layer Setting Services), SDO
Baudrate	10 and 20 (only for AES driver) / 50 (default) / 125 / 250 / 500 / 800 and 1000Kbit/s

Fieldbus communication diagnostic (as per DS301)

Network Error	Node Guarding
Device Error	Emergency

Real-time communication (as per DS301 + DS408)

RPDO	Two PDOs messages to the driver	[for AES drivers]
	Four mappaple PDOs to the driver	[for T(L)ES/T(A)ERS/PES drivers]
TPDO	Two PDOs messages from the driver	[for AES drivers]
	Four mappaple PDOs from the driver	[for T(L)ES/T(A)ERS/PES drivers]
R(T)PDO types	Event Triggered, Remotely requested, Sync(cyclic) and Sync(acyclic)	

Non real-time communication (as per DS301 + DS408)

SDO	One SDO (1 Server + 1 Client)

Standard references

ISO 11898

Road Vehicles – Interchange of digital information controller area network (CAN) for High-speed communication

EN50325-4

Industrial communication subsystem based on ISO 11898 (CAN) for controller device interfaces

CiA DS301

CANopen – Application Layer and Communication Profile for Industrial Systems

CiA DRP 303-1

Cabling and connector pin assignment

CiA DSP305

CANopen – Layer Setting Services and Protocol

CiA DSP408

CANopen – Device Profile for Proportional Hydraulic Valves v 1.5.1

Programming interface

E-SW-BC PC software and E-A-BC-USB/DB9 (USB adapter- see G500) or CANopen master device

Configuration file

EDS (Electronic Device Data Sheet), enclosed in the E-SW-BC

Manual

E-MAN-S-BC/E, enclosed in the E-SW-BC

2 PROFIBUS DP features for digital drivers in -BP execution

Physical

Serial input format	Industrial field-bus with optical insulation type PROFIBUS-DP RS485 European fieldbus standard (lev.1 – EN50170-part 2)
Transmission rate	Transmission rates from 9,6 Kbit/s to 12 Mbit/s
Max node	32 per segment without repeater; 126 node with repeater

Communication Protocol

Data Link Layer	PROFIBUS DPV0
Device Profile	PROFIBUS Profile: Fluid Power Technology
Device type	Slave

Startup and configuration

Boot up process	SAP 61 for sending parameter setting data, SAP 62 for checking configuration data
Node setting	Setting with SAP 55 or dip-switches
Baudrate setting	Automatic
Baudrate	9,6 / 19,2 / 45,45 / 93,75 / 187,5 / 500/ 1500 / 3000 / 6000 / 12000 Kbit/s

Fieldbus communication diagnostic

Device error	SAP 60

Real-time communication

PZD	Process data area of PPO telegram (by Data Exchange, default SAP: cyclic transmission of standard Profibus frame). PPO type 3 [for AES driver] Mappable PPO type 3 and type 5 [T(L)ES/T(A)ERS/PES drivers]
Cyclic mode	standard, sync and freeze

Non real-time communication

PKW	Parameter data area of PPO telegram (by Data Exchange, default SAP: cyclic transmission of standard Profibus frame)

Standard references

PROFIBUS profile

PROFIBUS Profile, Fluid Power Technology, Edition Oct. 2001

VDMA profile

Fluid Power Technology, Proportional Valves and Hydrostatic Transmissions, ver 1.1

Programming interface

E-SW-BP PC software and E-A-BP-USB/DB9 (USB adapter- see G500) or CANopen master device

Configuration file

GSD (Electronic Device Data Sheet) enclosed in the E-SW-BP

Manual

E-MAN-S-BP/E, enclosed in the E-SW-BP