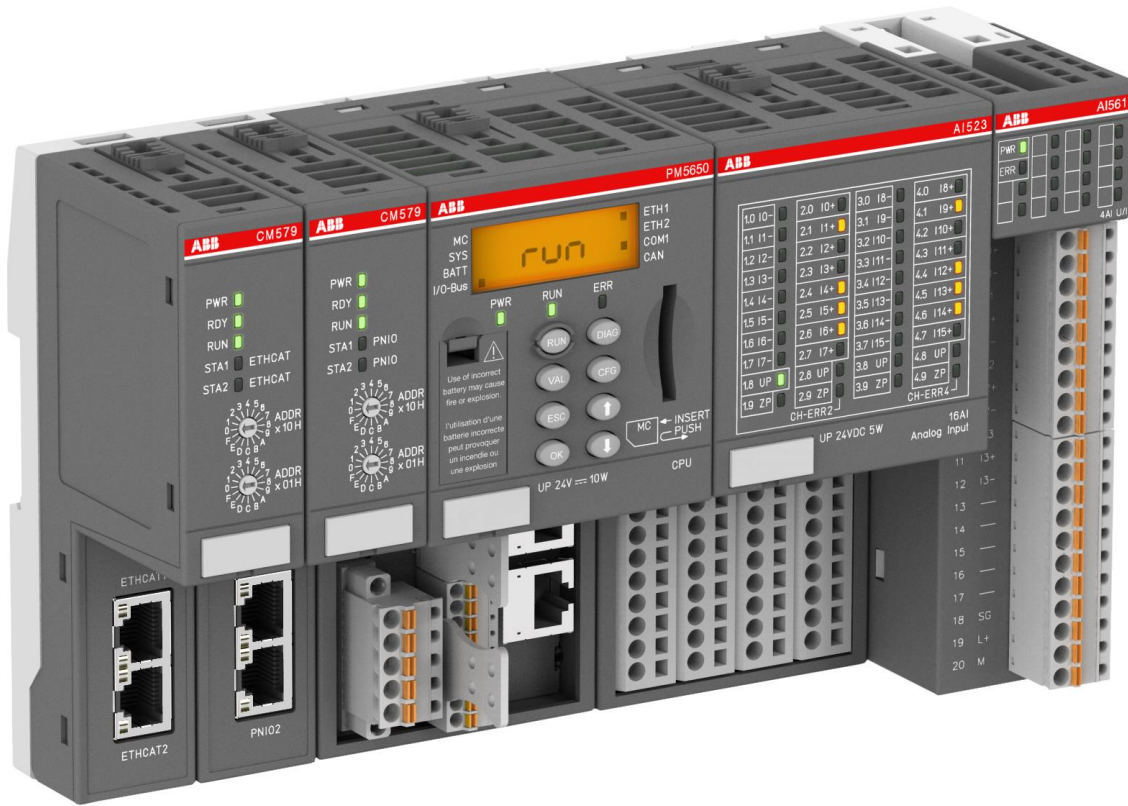




2022-11

CAN / CANopen in AC500 V3

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CAN / CANopen in AC500 V3

Agenda



Fieldbus structure



Hardware



Wiring & implementation



Error handling

CAN / CANopen in AC500 V3

Agenda



Fieldbus structure



Hardware



Wiring & implementation

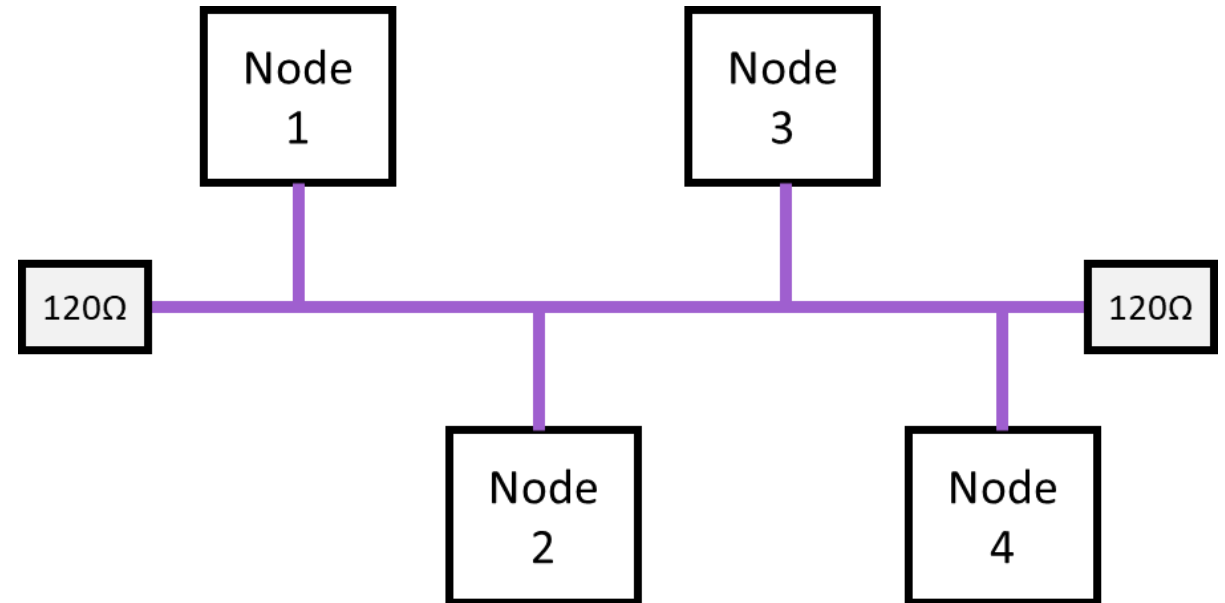


Error handling

CAN / CANopen architecture

– Overall

- Serial bus system
- Realtime system
- Master / slave architecture
- Producer / consumer architecture
- String / Star / Ring topology
- EDS file for device description



CAN / CANopen in AC500 V3

Agenda



Fieldbus structure



Hardware



Wiring & implementation



Error handling

AC500 connectivity

Function support

	CAN 2.0A /CAN2.0B	CANopen
PM5630 onboard	✓	
PM5650 onboard	✓	
PM5670 onboard	✓	
PM5675 onboard	✓	
CI581 /CI582		✓
CM598	✓	

Devices



AC500 with remote I/O via CANopen

Communication interface modules CI581 and CI582

- Configure node ID via rotary switch on the front of the module
- CANopen client only
- CI581: 8DI + 8DO + 4AI + 2AO
- CI582: 8DC + 8DI + 8DO
- Easy to implement in Automation Builder



CAN / CANopen in AC500 V3

Agenda



Fieldbus structure



Hardware



Wiring & implementation



Error handling

CAN / CANopen in AC500 V3

Wiring

- Twisted pair of cable
- Important: Use also GND and shield
- Topologies are
 - String
 - Star
 - Ring
- CAN 2.0 A: 11 Bit identifier – standard
- CAN 2.0 B: 29 Bit identifier – extended

Distance (m)	Baudrate (KBaud)
< 25	1000
< 50	800
< 100	500
< 250	250
< 500	100
< 1000	50
< 2500	20
< 5000	10

CAN in AC500 V3

Implementation

- Can be used as master or slave
- ID set in software
- CAN bus state LEDs
- Can also be started with a faulty coupler conig

The screenshot displays the ABB AC500 CAN configuration interface. On the left is a project tree for 'AC500_CM598Can = CM598Can, 1.3.1.3 (ABB)'. The tree includes folders for 'history', 'Enums', 'Function Blocks', 'CAN2A/CAN2B', 'Control', 'Data', 'Diagnosis', and 'Internal'. Under 'CAN2A/CAN2B' are files like 'Cm598CanInfo', 'Cm598CanMsgRec', 'Cm598CanMsgRecEvt', and 'Cm598CanMsgSend'. Under 'Control' is 'Cm598CanopenNmt'. Under 'Data' are 'Cm598CanopenSdoRead' and 'Cm598CanopenSdoWrite'. Under 'Diagnosis' is 'Cm598CanopenState'. Under 'Internal' is 'Cm598Base'.

On the right, there are three configuration panels:

- Bus parameters:** Baudrate is set to 250 kBit/s.
- Node settings:** Two checkboxes are present: 'Stop in case of monitoring error' (unchecked) and 'Send "Global Start Node"' (unchecked).
- 29 Bit COB-ID:** The 'Enable 29 bit COB-ID' checkbox is checked. Below it, the 'Acceptance mask' and 'Acceptance code' are shown in a 4x4 grid. The mask is 1F FF FF FF (Bit 28... to ... Bit 0) and the code is 00 00 00 00.

CANopen in AC500 V3

Implementation

- Nodeguarding
- Heartbeat
- Sync Messages
- Time messages
- See help file for more details

General

Node-ID

7

SDO Channels (1/1 Active)



☒ Enable expert settings

☐ Optional device

☐ Enable SYNC producing

☐ No initialization

☐ Reset node

Guarding

☐ Enable nodeguarding

☒ Enable heartbeat producing

Guard time (ms)

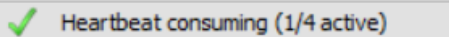
0

Producer time (ms)

200

Life time factor

0



Emergency (EMCY)

☒ Enable emergency (EMCY)

COB-ID

\$NODEID+16#80

TIME

☐ Enable TIME producing

COB-ID (Hex) 16#

100

☐ Enable TIME consuming

Checks at Startup

☒ Check vendor ID

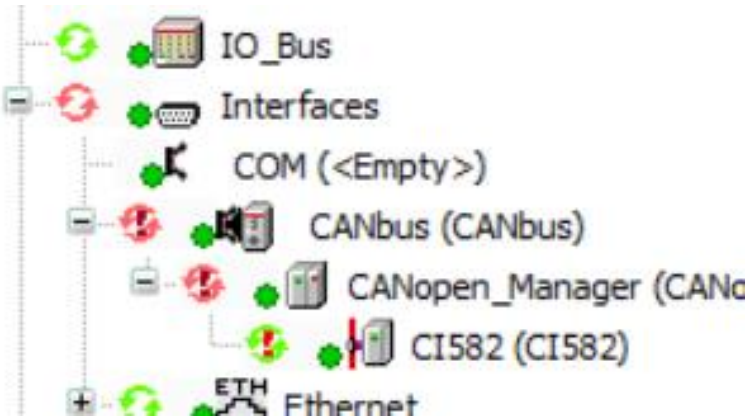
☐ Check product number

☐ Check revision number

CAN / CANopen in AC500 V3

Error handling

- Error detecting:
 - Messages
 - Nodes
- Messages in plain text
- Node error behavior:
 - Passive bus state
 - Bus off state
- Master can clear errors



! 0 ✖ 1 E 0 i 1 D 0 UTC Time		
Severity	Time Stamp	Description
i	10.01.1970 04:44:21	NetID 0: No more bus error.
✖	10.01.1970 04:44:21	NetID 0: Bus State: PASSIVE

ABB