RTC 300

4189350071B

sCAN

Installation instructions

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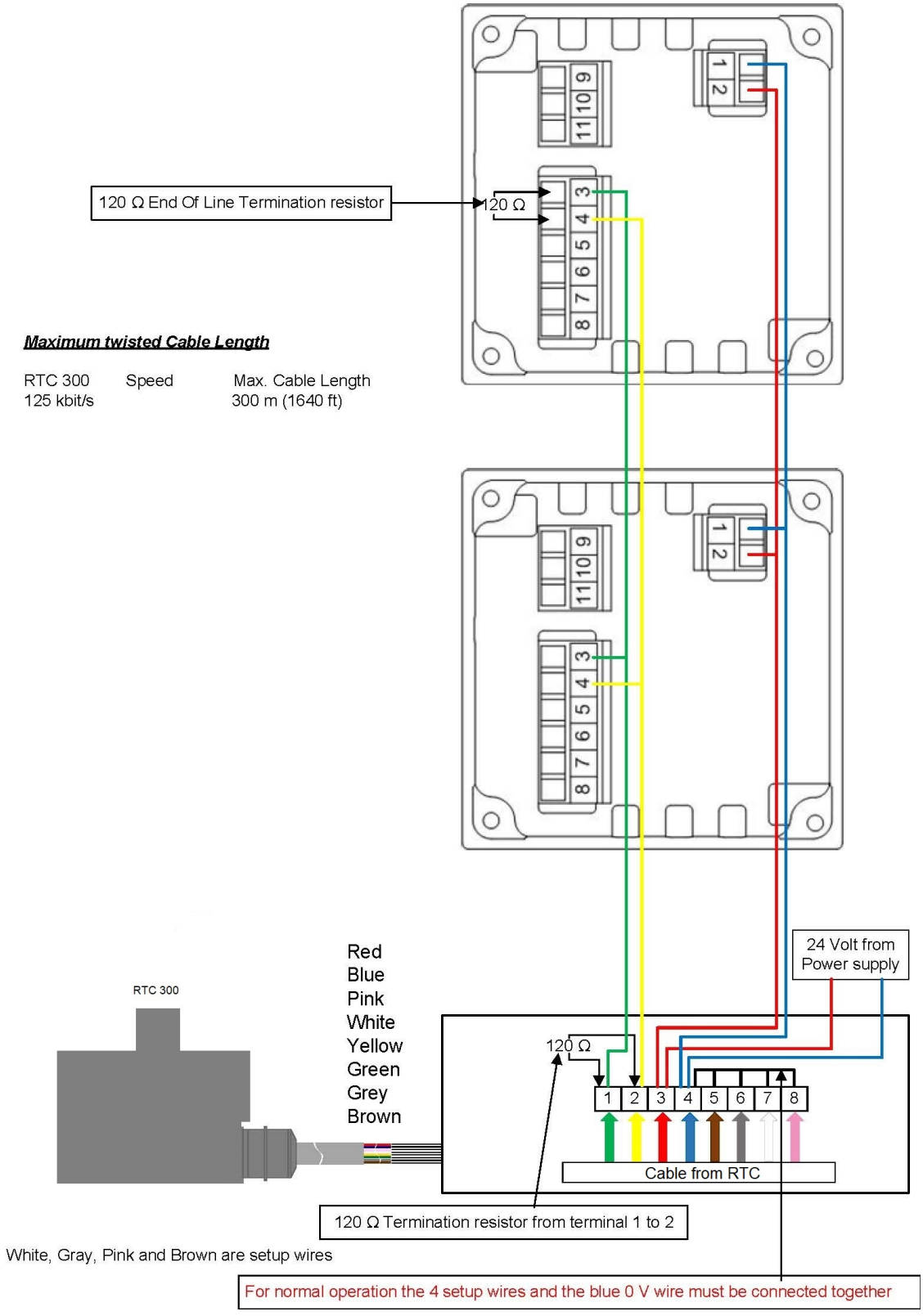
1. sCAN

1. sCAN

1.1 Introduction

The RTC 300 is 16-bit angle transmitter with CAN bus interface, supporting CANopen.

Connection diagram of 2 XL sCAN (16-bit) indicators and one RTC 300.



1.2 Set up and adjust the RTC

The RTC is a 360° measuring device (encoder). It measures the full ±180° represented by a 16-bit signed value transmitted on the CAN bus. The 16-bit data value is placed in bytes of 0 and 1 in TPDO1 of the selected CAN node ID (COB-ID: 0×180+NodeID).

Default settings:

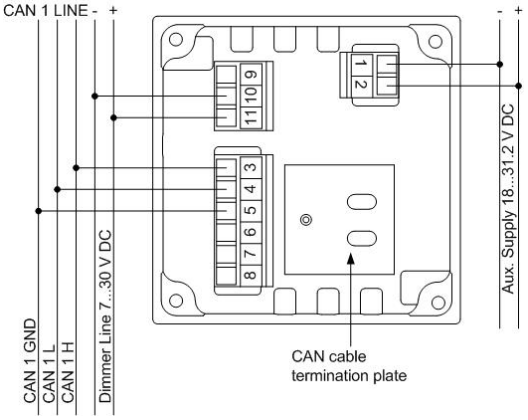
1. Node ID 1 = angle data is transmitted in TPDO with COBID 0×181.
2. The direction is clockwise (CW). To increase the measured angle value, turn the shaft to the right. To decrease the measured value, turn the shaft to the left.

XL sCAN indicator connection

Pin number	Function		Note
1	Supply voltage	0 V	Consumption max 150 mA.
2	Supply voltage	24 V	Consumption max 150 mA.
3*	CAN connection	CAN 1 H input	CAN 1 line (sCAN line).
4*	CAN connection	CAN 1 L input	CAN 1 line (sCAN line).
5*	CAN connection	CAN 1 GND	CAN 1 line (sCAN line).
6	CAN connection	Not used	
7	CAN connection	Switch/button	Used for setting of min/ zero/max with external switch.
8	CAN connection	GND	Used for setting of min/ zero/max with external switch.
9	Illumination, analogue, dimmer	NC	Dimmer input. Dimmer range 7 to 30 V DC. Consumption max. 30 mA.
10	Illumination, analogue, dimmer	Illumination GND	Dimmer input. Dimmer range 7 to 30 V DC. Consumption max. 30 mA.
11	Illumination, analogue, dimmer	Illumination +	Dimmer input. Dimmer range 7 to 30 V DC. Consumption max. 30 mA.

NOTE * CAN 1 GND is a common wire specified in CANopen. It is not a cable shield. If the CAN bus cable does not contain a CAN common wire, then do not connect the CAN 1 GND.

XL wiring



NOTE You can only install two terminations at a time on a CAN bus network.

1.3 RTC 300 wiring

Wire	Marking	Signal	Remark
Blue	0 V	Supply voltage	18 to 32 V DC at max. 60 mA.
Red	24 V DC	Supply voltage	18 to 32 V DC at max. 60 mA.
Green	CAN high	CAN bus	Remember to terminate the CAN bus.
Yellow	CAN low	CAN bus	Remember to terminate the CAN bus.
White	S1	Setup	Setup wires. Normal operation: All four setup wires must be connected to 0 V (blue).
Grey	S2	Setup	
Pink	S3	Setup	
Brown	S4	Setup	

1.4 Change the node ID with wires

You can change the CAN node ID using the four setup wires in the cable. You can change the ID to a number between 1 and 8.

How to change the CAN node ID

1. Remove the 24 V power supply.
2. Use the **Node ID** table below for how to connect the wires for each node ID.
3. Make sure that S4 (brown) is open (not connected).
4. Apply 24 V power to the RTC and wait 5 seconds (3 to 30 sec).
5. Connect S4 (brown) to 0 V (blue) for 5 seconds (3 to 10 sec).
6. Disconnect S4 (brown) for more than 1 second. The new CAN node ID is now selected and stored.
7. Connect all four setup wires to 0 V (blue). The RTC runs in normal operation mode.

Node ID	S1 White	S2 Grey	S3 Pink	S4 Brown	0 V Blue
1	●	-	-	-	●
2	-	●	-	-	●
3	●	●	-	-	●
4	-	-	●	-	●
5	●	-	●	-	●
6	-	●	●	-	●
7	●	●	●	-	●
8	-	-	-	-	●
Normal operation	●	●	●	●	●

Example

To change the CAN node ID to ID 3, connect S1, S2, and 0 V.

NOTE Make sure that the 24 V supply is not interrupted during the last steps in the setup procedure when data is stored. This might damage the RTC.

1.5 Set a new zero value with wires

During normal operation, it is possible to change the angular zero position to be the new angle of the shaft.

1. Set the rudder or azimuth transmitter in the physical zero position.
2. Disconnect all four setup wires, S1 (white), S2 (grey), S3 (pink), and S4 (brown) from 0 V (blue).
3. Connect S1 (white) and S4 (brown) to 0 V (blue) for 5 seconds (3 to 10 sec).
4. When both S1 (white) and S4 (brown) are released, the new zero is set.
5. Connect all four setup wires to 0 V (blue) and the RTC runs run in normal operation mode.

NOTE Make sure that the 24 V supply is not interrupted during the last steps in the setup procedure when data is stored. This might damage the RTC.

1.6 Changing direction CW/CCW with wires

During normal operation, it is possible to change the measuring direction from CW clockwise (default) to CCW counterclockwise.

CCW counterclockwise

1. Disconnect all four setup wires from 0 V (blue).
2. Connect S3 (pink) and S4 (brown) to 0 V (blue) for 5 seconds (3 to 10 sec).
3. When both S3 (pink) and S4 (brown) are released, the encoder is in CCW mode.
4. Connect all four setup wires to 0 V (blue), and the RTC runs in normal operation mode.

CW clockwise

1. Disconnect all four setup wires from 0 V (blue).
2. Connect S2 (grey) and S4 (brown) to 0 V (blue) for 5 seconds (3 to 10 sec).
3. When both S2 (grey) and S4 (brown) are released, the encoder is in CW mode.
4. Connect all four setup wires to 0 V (blue), and the RTC runs run in normal operation mode.

NOTE Make sure that the 24 V supply is not interrupted during the last steps in the setup procedure when data is stored. This might damage the RTC.