

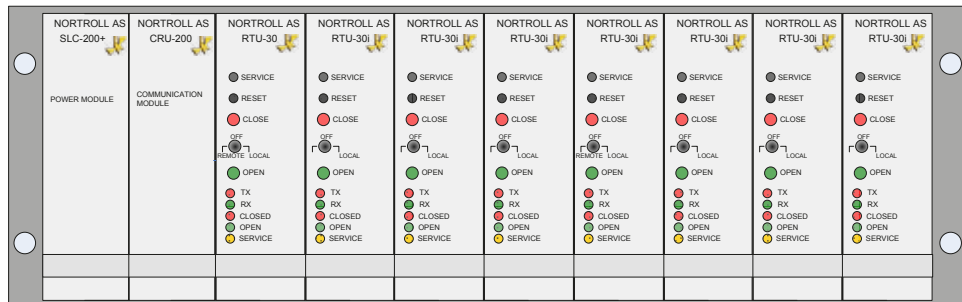


ComTroll[®] 230

ComTroll 230T
ComTroll 230S

User Manual

This document describes ComTroll 230, Remote Terminal Unit.
It also covers the –T and –S versions.



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ComTroll 230, Remote Terminal Unit

The ComTroll 230 is designed for a complete and modular functionality for monitoring and control of primary and secondary functions in the distribution network.

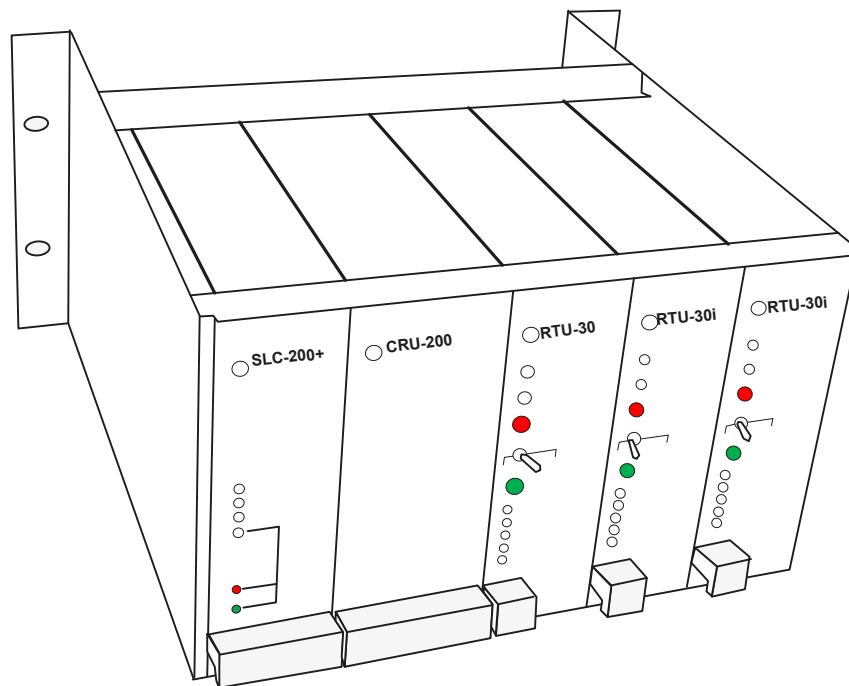
The rack-mounted system can control and monitor a wide range of objects such as pole-mounted sectionalizers, breakers, earthing switches, relay protection, fault indicators, tap-changers and more through its serial, digital and analog interface.

The analog inputs can be connected to different sensors reading values for power frequency, active/reactive power, bus-bar voltage, load current and more.

Based on the RTU-30 Controller unit, ComTroll 230 offers both local- and remote control of the connected equipment.

ComTroll 230 can be connected to a wide range of transceivers for different communication solutions:

- Radio
- Fibre optics
- Power Line
- Leased Lines
- Ethernet



With the extensible backplane solution, ComTroll 230 can be supplied in a 10.5" single frame rack where up to three RTU-30/RTU-30i cards can be fitted. It can also be supplied in a full 19" single frame rack with space for up to eight RTU-30/RTU-30i cards.

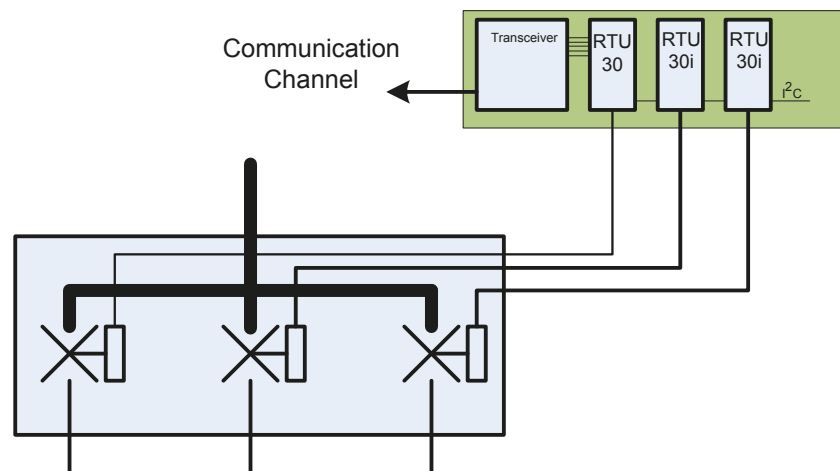
RTU-30 is acting as a master for the additional RTU-30i cards. One RTU-30 can communicate with 14 RTU-30i cards on the I²C-bus.

ComTroll 230 can be supplied as a –m version where the LED's for status messages, open/close button and the ModeSwitch (Remote/Off/Local) are removed.

Each RTU-30 /RTU-30i has dedicated OPEN and CLOSE outputs with accompanying open and closed limit-switch inputs to ensure reliable operation.

Details about the RTU-30 /RTU-30i functions and options can be found in separate document.

Communication



The ComTroll 230 Remote Terminal Unit can communicate with the central unit /SCADA on different communication media. The most commonly used is low power radio and fiber-optics, but the flexible communication platform can utilize almost any media using a specified Transceiver module for the actual media used.

CRU-200 is a module comprising a modem and radio. Nortroll offers both VHF and UHF radios with respectively frequency range 140-172 MHz and 406-460 MHz.

The ComTroll 230 with radio communication can be used as a repeater for other Nortroll devices in the network.

Where other communication media is used, the radio is not mounted in the CRU-200. The transceiver will in these cases normally be mounted outside the rack.

Power Supply

ComTroll 230 requires 12Vdc supply voltage with a battery backup. It can be solar charged in configurations with up to three RTU cards. (With radio communication only).

SLC-200+ is the standard DC/DC regulator where external 12Vdc is available. This is also a battery charger for the backup battery, both when external DC is connected and when a solar panel is connected.

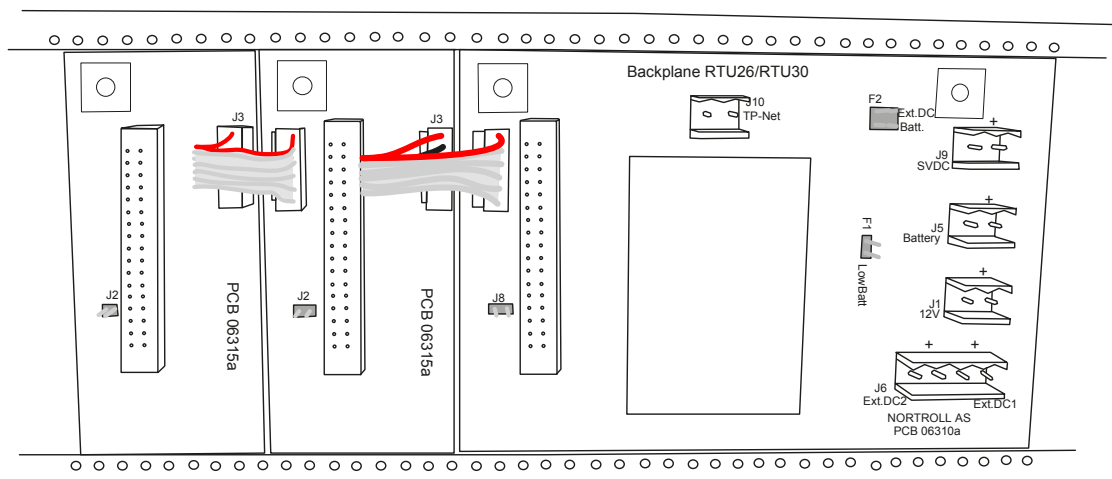
The SLC-200+ can be replaced with DC/DC-1, a regulator unit for input voltages between 18-36 Vdc and 36-72 Vdc.

Connections

ComTroll 230 uses two different backplanes, 06310a and 06315a.

06310a covers the SLC-200+ (or DC-DC-1), the CRU-200 and one RTU-30 card.

Each additional RTU-30i card in a rack needs a separate backplane. The RTU-cards are tied together on the Local Bus Bridge Cable, where also supply voltage is transferred to the next unit.



A ribbon cable connects between each RTU-30 and the RIM 1, Relay Interface Module. For details about the RIM 1, please refer to separate documentation.

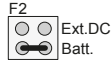
Main backplane, 06310a

- J1: 12Vdc OUTPUT, from the SLC-200+. J1 can also be used as a 12Vdc input when the SLC-200+ is not mounted.
- J5: 12V battery input
- J6: External DC input from solar panel or external DC source. Max voltage: 24Vdc
- J9: DC input only used when DC/DC-1 regulator is mounted.
- J10: Twisted Pair Bus. (TP/XF-78 or TP/FT-10)

Link Settings



F1: Connects the Low_Battery signal from SLC-200+ to Digital Input 1 on the NTM-20/25 Modem. Only used in repeaters. Default set open.

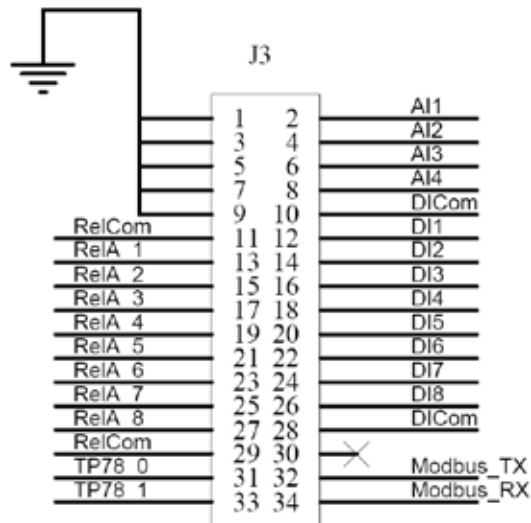


F2: Connects either External DC input or the Battery Input to the Analog Input 4 on the first RTU-30 card. Battery voltage is monitored as the default option. Ai_4 is setup to monitor voltages between 0V and 15Vdc.



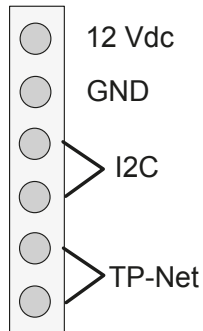
F8: Activate / deactivate the termination of the twisted pair bus. Not mounted as default.

J3 pin overview



Pin 1 is located in the upper left corner of J3.

J7 Bridge overview



The backplane for additional RTU-30 cards have the same connectors and pin-out as the main backplane.

ComTroll 230T



All events in a substation can be precisely time tagged by the use of GPS Time Synchronization Unit, TSU-25.

The TSU25 utilizes the accurate time signal broadcasts from the GPS satellite network.

The TSU-25 has an integrated GPS receiver that constantly tracks up to 8 satellites simultaneously to provide a highly accurate time reference. A software clock on the RTU-30t card will be calibrated every minute to time-stamp events that occur in the digital and analog inputs. The time information will be sent together with the alarm/message to the SCADA.

Up to 7 RTU-30t cards can be calibrated from one TSU-25.

The RTU-30t has the same functions and I/O package as RTU-30 and RTU-30i.

Installing the TSU-25

Before powering the TSU-25, connect the antenna to the connector located on the front panel. The GPS antenna needs to be located with a good clear 360 degree view of the sky. The ideal location for the antenna is a roof-top. However, in practice the TSU-25 antenna

generally works well on a window-ledge or positioned in a window or wall. As a rule of thumb, the better the view the antenna has of the sky, the better the signal locks and a good continuous uninterrupted time signal is provided.



Different types of antennas are available. The default antenna is a 3.3V active antenna, but other types of antennas can be used.'

IMPORTANT:

Do NOT change any antenna settings without consulting NORTROLL AS first.

Wrong setting can cause permanent damage to the GPS unit and the TSU-25.

TSU-25 can only be used together with RTU-30t. When more than one RTU-30t card is installed in the same rack, a Router Module (RTR-10) must be installed.

Running LED (green):

LED flash once every 10 seconds as long as the TSU-25 is powered and the software runs OK.

Sync-LED (yellow):

The LED flashes every second when the GPS-unit is active.

Status-LED (red):

When the TSU-25 does not have a valid time, the Status LED will flash once a second.

Normal operating condition:

The TSU will activate the GPS every 660s (11min) or 2500s (42min) dependent upon the measured temperature. When the interval expires the GPS will be activated and the Sync-LED will start flashing. The LED flashes until the clock is updated.

Independent of this update, the TSU-25 sends out a time-sync message on the backplane bus. The RTU-30T cards that are placed on the same bus will receive this accurate time information and update the software clock that runs constantly on each individual RTU-30t card.

This will give an accuracy of +/- 10ms on the time information sent from the RTU upon an event.

Faulty operating condition:

If the GPS receiver is not able to establish contact with the satellites, the TSU-25 will see that the attempt to download accurate time information failed.

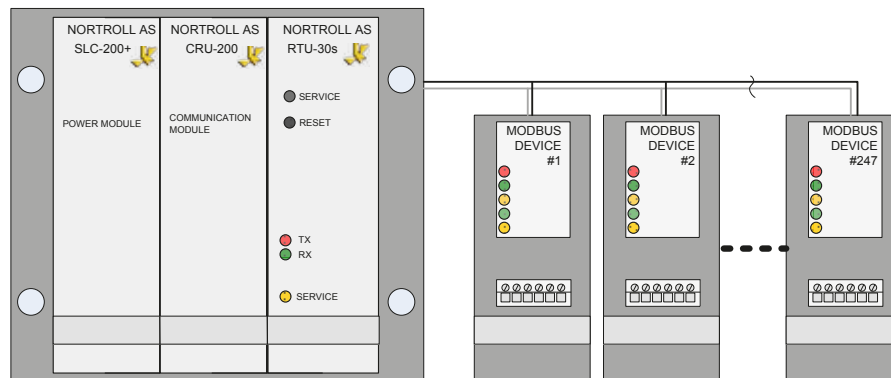
When the next sync period expires, the Status-LED will start flashing together with the Sync-LED. The Status-LED will stop flashing when the satellite contact is established again.

If for some reason the contact cannot be restored, or the TSU-25 is unable to update the software clock on the RTU-30t the time information sent will drift (note! worst case) +/-7 sec every 24-hour period.

ComTroll 230S

ComTroll 230S is a gateway that resides on the ComTroll Network and connects to Modbus devices over EIA-232 or EIA-485. The controller module RTU-30s supports up to 14 Modbus devices on a multi-drop EIA-485 network.

The RTU-30s can be installed in a ComTroll 230 rack where other RTU-30 versions (RTU-30/RTU-30i/RTU-30t) are installed, and support all media available in the ComTroll Network System.



Installing Modbus devices

For details about installation of Modbus devices, please contact NORTROLL AS.

Ordering information

Product nr: 03-0230-01 ComTroll 230
Product nr: 03-0230-22 ComTroll 230S
Product nr: 03-0230-30 ComTroll 230T

Related products:

Product nr: 03-0030-01 RTU30
Product nr: 03-0030-03 RTU30i
Product nr: 03-0030-05 RTU30s
Product nr: 03-0030-07 RTU30t

Product nr: 03-0200-01 CRU-200 SPM (Radio and modem without router module)
Product nr: 03-0200-02 CRU-200 DC (Radio and modem with router module)

Product nr: 03-0030-50 RTU 30 Additional Modbus Object (AMO)
Product nr: 03-0030-15 RTU 30 add-on incl. Backplane RTU 30 add-on
Product nr: 03-0030-10 RTU 30 i add-on incl. Backplane RTU 30 add-on
Product no: 7211 Steel Outdoor Cabinet [500x500x300]

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