16 K-Chief 700

16.23.02 RCU501

Ref:
Document name: **RCU501 Hardware Module Description**
Document nr: **300991A**

DMS no:

Objectives

- Be familiar with the connection points on the RCU501
- How to change and set up a new unit
- How to do fault finding on the unit

Process Station (PS)

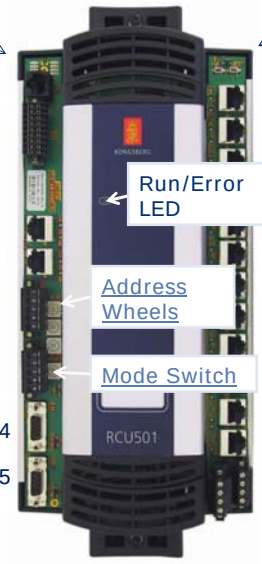
Remote Controller Unit (RCU) is a real-time single board computer and remote IO bus driver.

RCU 501 is based on PowerPC Host Processor MPC 8245 running at 400MHz.

64 MB RAM

16 MB Flash memory.

RCU501 Layout



Status LEDs

NMI / Reset

Console Connection P6

Onboard IO (DI,DO,WD) X3

P11

P10 RedNet

P28

Run/Error LED

Net A/B- ethernet P8

P9

CANBUS 1,2 X4

Address Wheels

X5

Mode Switch

P21 Serial Link Connections

P20

PROFIBUS1,2 P14

P19 RBUS A, B

P15

X2 Power 24VDC

RCU501 Mode Setting

MODE

S7: MAC1

S6: MAC2

S5: MAC3

S4: MODE

The hexadecimal MODE switch set SW-mode and is used only for advanced servicing and debugging purposes.

The switch **has to be set to 0** (Zero) for normal operation

RCU501 Address Setting

MAC1

MAC2

MAC3

S7: MAC1

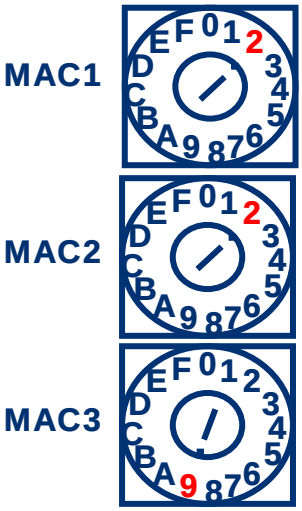
S6: MAC2

S5: MAC3

S4: MODE

Set correct PS address using the three address wheels

RCU501 Address Setting



Network A and B IP addresses (SW address)

Example of IP address of RCU1:

172.21.101.41 net A

172.22.101.41 net B

Network A and B MAC addresses (HW address)

Example of MAC address RCU1:

02:41:4c:42:1**2:29** for net A

02:41:4c:42:2**2:29** for net B

RCU501 Connectors (P6, P8, P9)

RS232 serial line for console connection

Dual female RJ45 8 pin socket for 10Base-T/100Base-TX

Net A

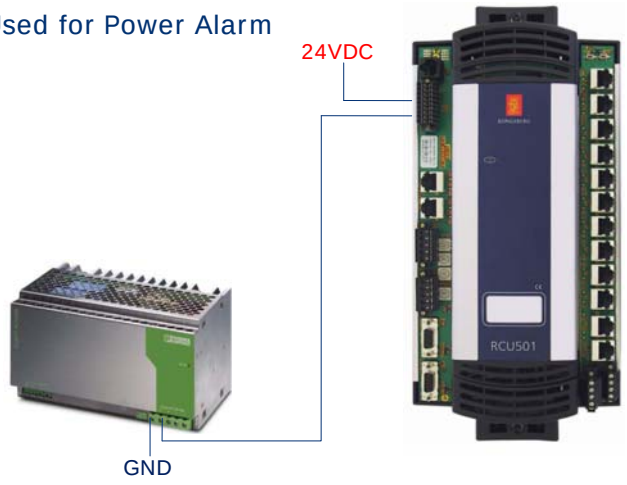
Net B

RCU501 Connectors (X2, X3)

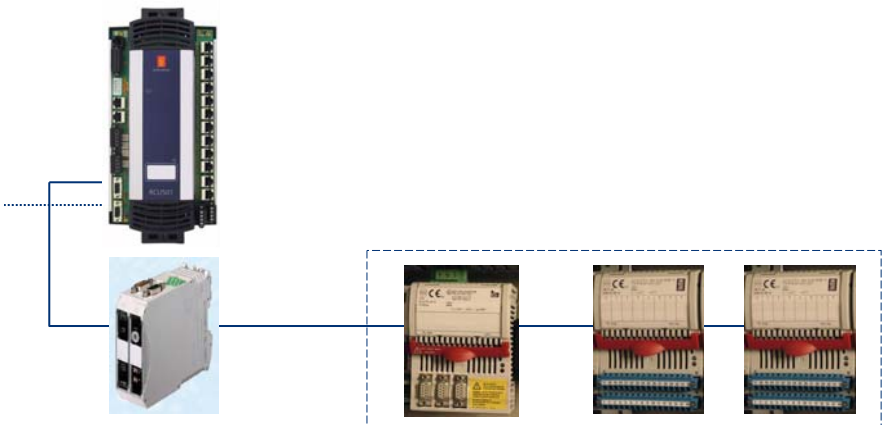
9 Onboard isolated digital IO
- 4 DI opto-isolated
- 4 DO opto-isolated
- Watchdog

Onboard IO – an Example

Used for Power Alarm



RCU501 Connectors (P14 and P15 Profibus)

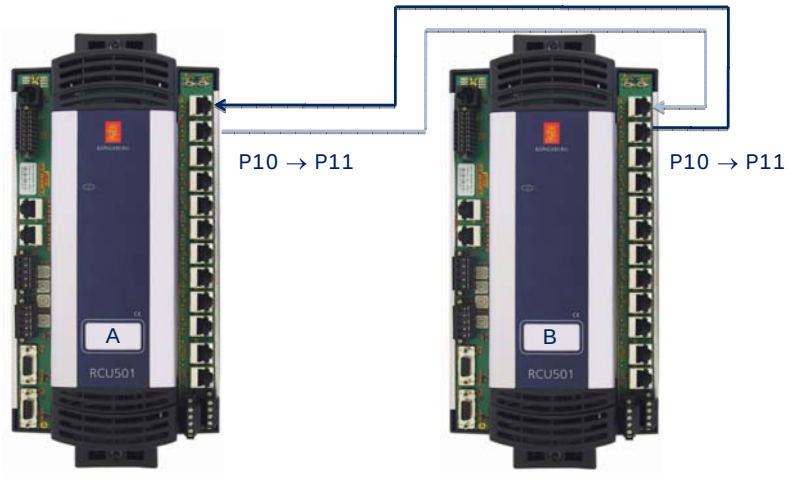


NMI/Reset Buttons

- NMI
  - Non-Maskable Interrupt
- Reset
  - Restarts controller

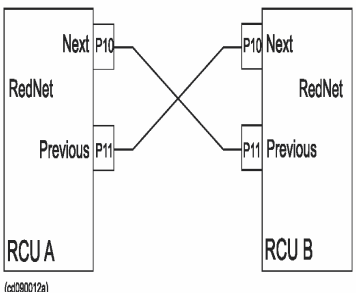
RCU501 Connectors (RedNet)

Note: crossed cables

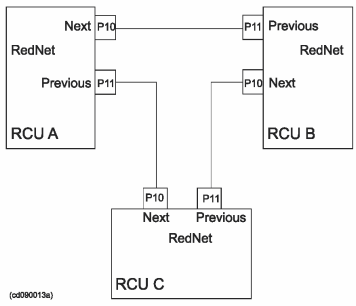


RCU Redundancy

Dual RCU Redundancy

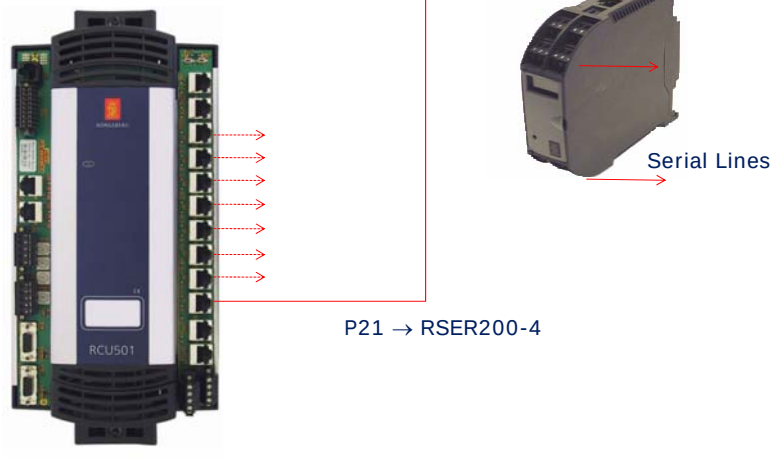


Triple RCU Redundancy

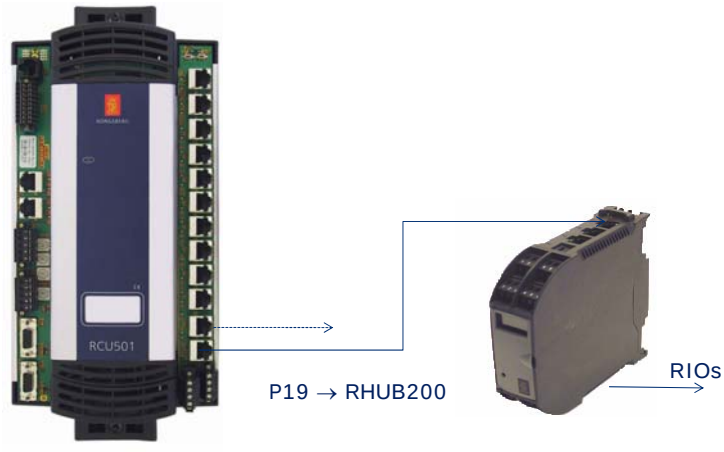


Note: crossed cables

Serial Link Connectors P21 → P28



RBUS Link Connectors P19 → P20



RCU501 Start-up Sequence

- ST0
- ST1
- ST2
- ST3

Status LEDs

Phase	ST3-ST0	Task running
HW Testing	0001	Test of bootPROM checksum
	0010	Test of RAM
	0011	Test of timer 1
	0100	Test of FLASH
	0101	Test of Ethernet interface HW
	0110	Test of timer 2
	0111	Test of serial line HW
SW Booting	1000	Entered boot monitor
	1001	Getting bootp on net A
	1001 flashing	Booting on net A
	1010	Getting bootp on net B
	1010 flashing	Booting on net B
	1011 flashing	Started initialising the basic SW
Application running	0000	Calling initApplication and starting the application code

RCU501 Start-up Sequence

Step	Description	Status LED ST3-ST0	Status LED In front	System Status (OS)
1	HW Selftest	0001 | | 0111	Red	Not Communicating
2	Loading Systemfiles	1000 | | 1011	Red Green	Not Communicating Not Communicating
3	Loading “workingfiles”	ST4 Lit (Master)	Green Green	Booting Operational

Exercise: RCU501

Summary

- RCU – Remote Controller Unit
- Hardware module description MAN: 300991A
- Connections
  - Power
  - Ethernet
  - RedNet
  - RBUS Link connection
  - Serial Link connection
- NMI/Reset
- Address and mode settings