16 K-Chief 700

16.25 RIO

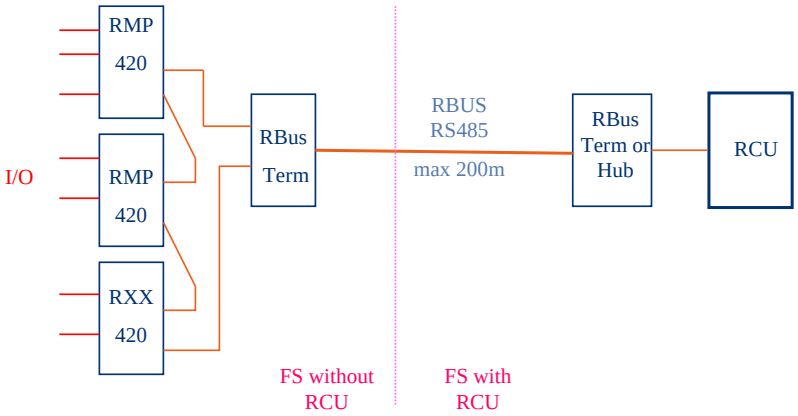
Ref:
Document name: **Standard RIO Loop Typical**
Document nr: **177699F**

Sub modules: **RMP420**
RDIOR420

Objectives

- How a RIO module looks like
- How the RIO works and communicate in the system
- How to set up a RIO
- Understand the loop typicals
- Specific knowledge about each product thru the sub modules

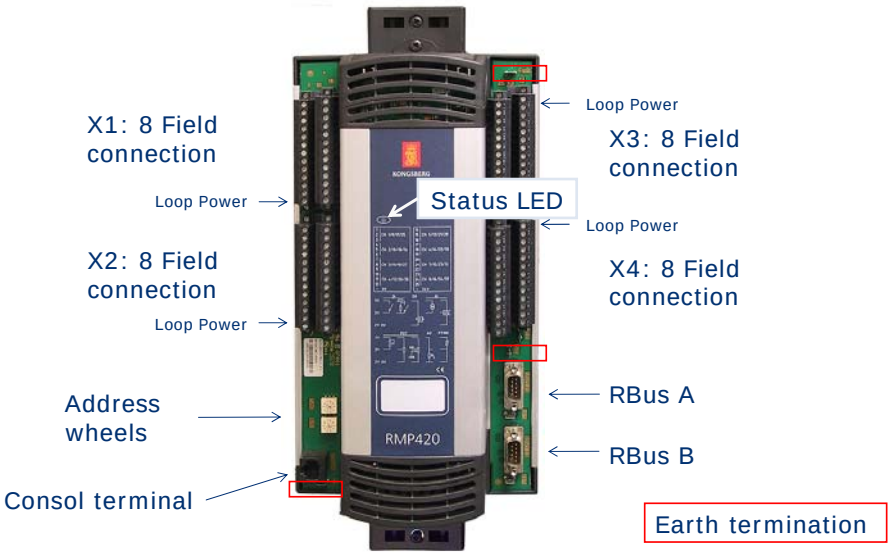
Typical RIO configuration



RIO 420 modules

- 2 RBus galvanic isolated from other circuits
- 32 channels grouped in 4 x 8 channels
- 24 Vdc power
- Fail-safe function for output channels
- Build In Test for self-diagnostic includes:
  - Check of module temperature
  - Check of voltage levels (used internal and loop voltage)
  - Test of memory, CPU and registers
- Monitoring of:
  - Earth fault
  - Short circuit
  - Open circuit

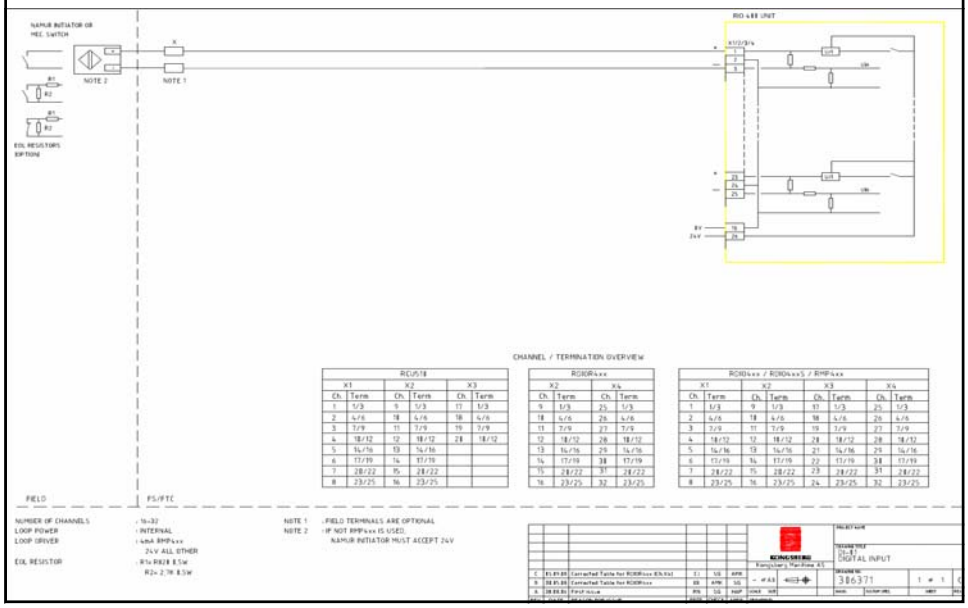
Component Layout



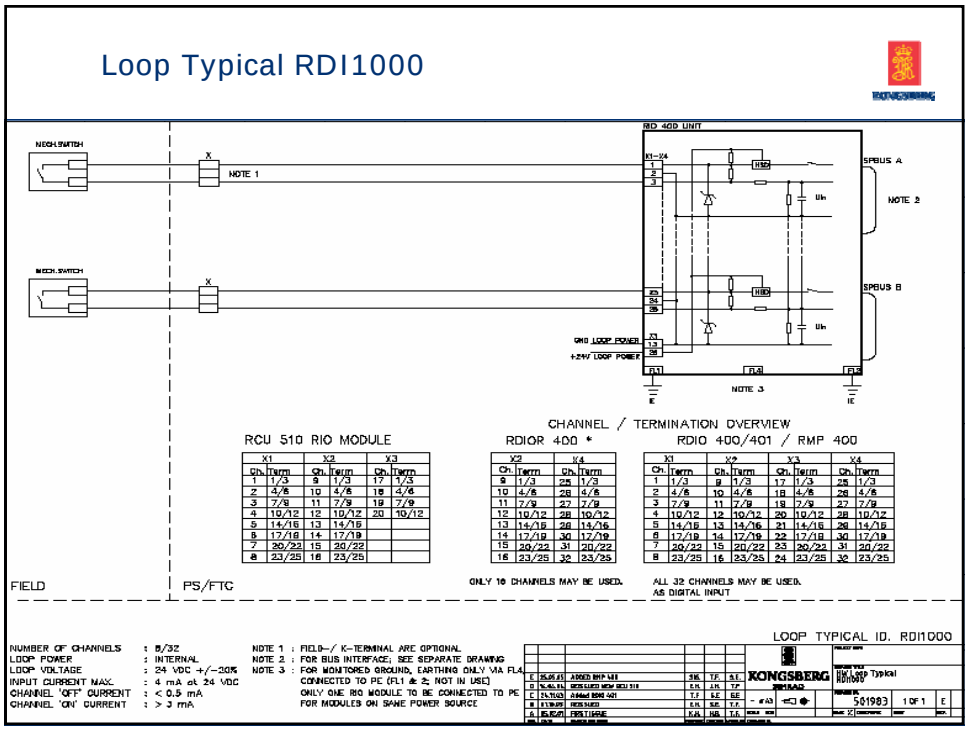
Most used RIO moduls:

RIO Module	Specifications	
	Channel Configuration	**Channel Capability**
RMP 420	Channel 1- 32: individually defined as input/ output.	Voltage input: 0-4V, 0- 10V Current input/output: 0- 20mA Voltage output: 0- 10V Digital output: 1A Short-circuit proof high side driver (HSD), Max 30 V
RDIOR 420	16 channels individually defined as input or output 16 channels NO/NC contacts	Digital input: 24V loop voltage, max 4mA at 24V loop voltage Digital output (V): 1A Short-circuit proof high side driver (HSD) Digital output (Relay): Max 1A continuous current on contact sets
RDIO 420S	32 channels individually defined as input or output Special designed for safety systems	Digital input: 24V loop voltage, max 4mA at 24V loop voltage Digital output (V): 0.5 A Short-circuit proof high side driver (HSD)
RMP 420 S	Channel 1 – 32: current inputs, 4-20mA	1A Short-circuit proof high side driver (HSD), Max 30 V

Loop Typical DI-01



Loop Typical RDI1000



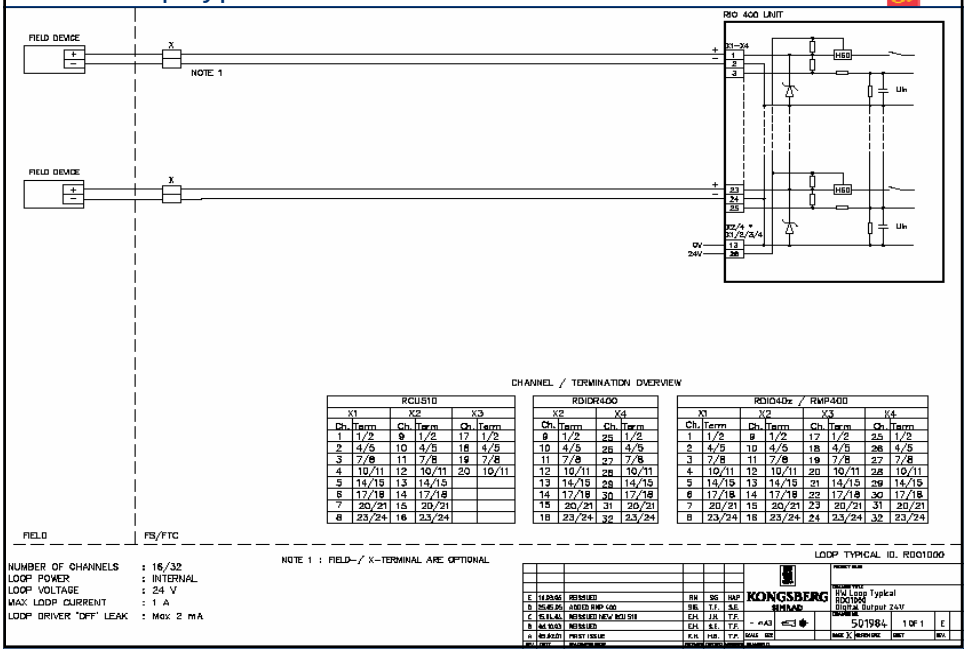
Loop Typicals

Loop Typical	Description
AI-01	Analog input, current, 2 wires. Loop powered from RIO module
AI-02	Analog input, current, 2 wires External loop powering
AI-12	Analog input, current, 3 wires. Loop powered from RIO module
RAIV1000	Analog input, volt. Voltage generated from field instrument
AI-15	Analog input, Pt100 sensor
AO-01	Analog output, current. Loop powered from RIO module
RAOV1000	Analog output, volt. Voltage generated from RIO module
DI-01	Digital input, Loop powered from RIO module
RDI1001	Digital input, Loop monitored, Loop powered from RIO module
DO-01	Digital output, Loop powered from RIO module
DO-02	Relay output, normally open (NO)

Loop Typicals (“old” names)

Loop Typical	Description
RAIC1000	Analog input, current. Loop powered from RIO module
RAIC1000_3	Analog input, current. External loop powering
RAIC1001	Analog input, current. Field instrument and loop powered from RIO module
RAIV1000	Analog input, volt. Voltage generated from field instrument
RAIPT1000	Analog input, Pt100 sensor
RAOC1000	Analog output, current. Loop powered from RIO module
RAOV1000	Analog output, volt. Voltage generated from RIO module
RDI 1000	Digital input, Loop powered from RIO module
RDI1001	Digital input, Loop monitored, Loop powered from RIO module
RDO1000	Digital output, Loop powered from RDIO 400
RDO1001	Digital output, Potential free contacts

Loop typical RDO1000



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RMP420

Ref:

Document name: **RMP420 HW Module Description**

Document nr: **311165A**

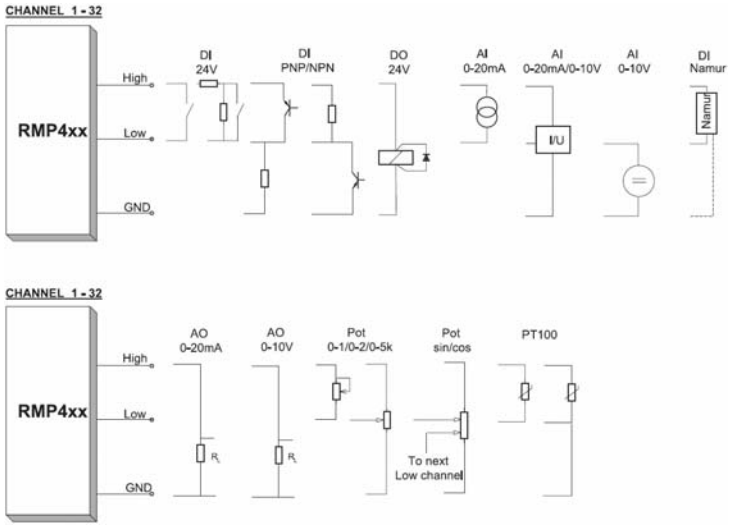
Objectives

- Know what kind of signals/equipment that can be connected to this module.
- Know the limitation of the module.

RMP420

- 32 solid-state combined analog/digital input/output individually configured
- Two out of the 32 IO-points can also be configured as pulse/frequency inputs

RMP420 Connections



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RDIOR420

Ref:

Document name: **RDIOR420 HW Module description**

Document nr: **311163A**

Objectives

- Know what kind of signals/equipment that can be connected to this module.
- Know the limitation of the module.

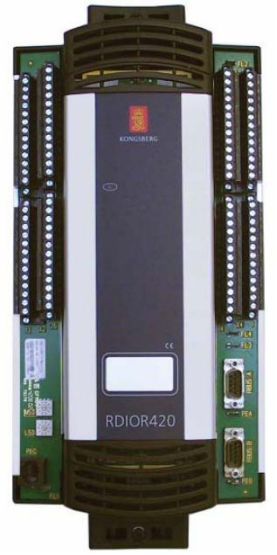
RDIOR 420

Channel use on RDIOR 420:

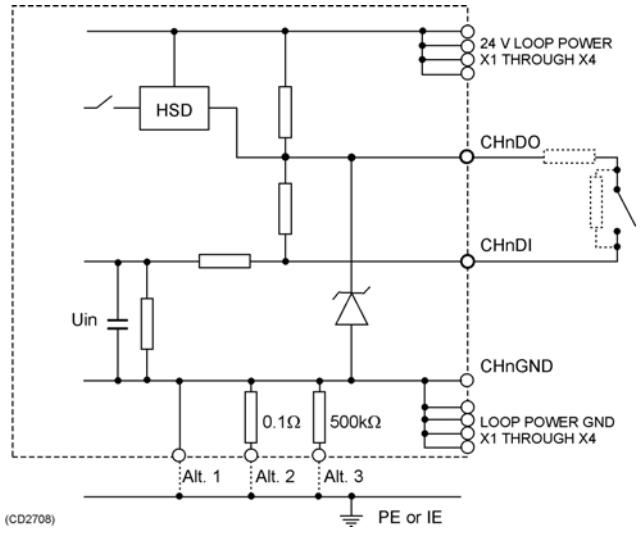
- 16 digital inputs or 16 digital outputs, individually set on every channel (ch. 9-16(X2) and 25-32(X4))
- 16 digital relay output (ch.1-8(X1) and 17-24(X3))
- Relay output: Relay driver controls relay output

RDIOR420

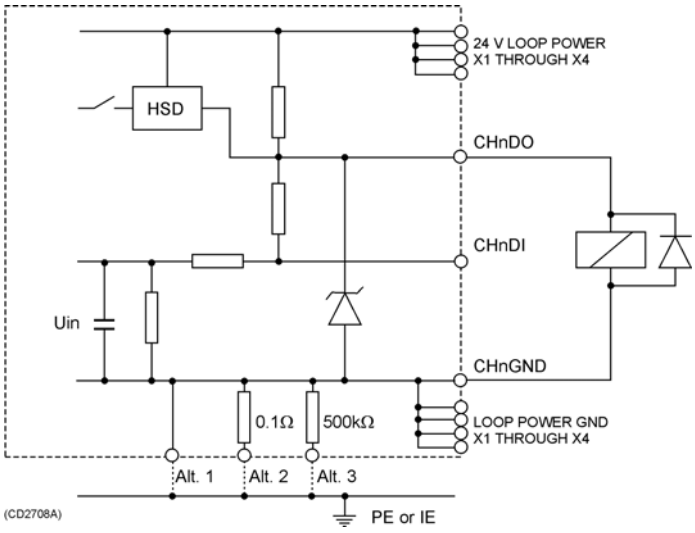
- Channel 9-16 and 25-32: DI/DO solid-state free configured to work as DI or DO
- Channel 1-8 and 17-24: DO relays with NO, NC contacts. Field loop power for relay contacts 15-200 Vdc or 15-250 Vac. Max 5 A switching current, min. 100 mA.
- Provided check of relay coil function by use of relay driver circuitry.
- Build-in-diode for draining the induced current from the relay coil when turning off the driver.



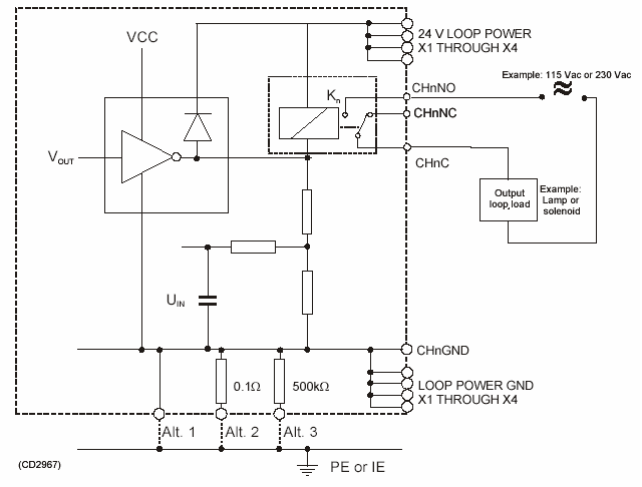
RDIOR 420 Digital Input



RDIOR 420 Digital Output



RDIOR 420 Relay Output



Exercises

- RIO Units General
- RMP420
- RDIOR420

Summary RIO

- RIO modules layout
- Connections
- Grounding
- Most used RIO models
- Loop typical

Summary

RMP420

- RMP420 – Remote Multi Purpose
- 32 channels
- Individually configured, input/output, analogue/digital
- Channel 31 and 32 can be pulse/frequency inputs

RDIOR420

- 16 channels individual configurable to DI/DO
- 16 channels NO/NC Relay contact set