RCU501 is a high performance, general purpose, real-time process control computer for use in a wide variety of system applications in both on- and offshore installations. The processor core is an embedded Power PC™ architecture and the module is approved for Ex Zone 2 applications.

**Application types**
- Dynamic Positioning Systems
- Thruster Control / Steering Systems
- Navigation Sensor Integrator
- Integrated Process Control Systems
- Alarm and monitoring Systems
- Safety Systems

**Function**
- Dual ethernet LAN process networks
- Dual RedundancyNet interface for redundant RCU configuration
- Dual Remote IO process BUS (RBUS)
- 4 general purpose Digital Input channels
- 4 general purpose Digital Output channels
- 32 serial lines for 3rd party interface
- 2 PROFIBUS channels for 3rd party interface
- 2 CANBUS channels for 3rd party interface

**Feature**
- Single unit topology: SIL 1 compliant
- Dual unit topology: SIL 2 and SIL 3 compliant
- Triple unit topology
- Ex Zone 2 approved
- Compliant to the following protocols:
  1. Modbus (Serial and TCP)
  2. NMEA 0183
  3. PROFIBUS/PROFIsafe
  4. CAN/DeviceNet
- 3rd party vendor specific protocols are available upon request
- Power:
  1. Redundant power input with power alarm monitoring
  2. Inrush current and over-voltage protection
  3. Enhanced watchdog with fail-safe function and system status output

**Benefits**
The following built-in functions minimize system downtime:
- Extended Built-in Self-Test (BIST) for computer diagnostics and fault identification during start-up and runtime
- Prepared for online remote diagnostics
- Prepared for online firmware upgrade
- Bootable from file server or local flash memory
- Easy installation and replacement
  1. DIN Rail mounting
  2. All connections are pluggable
  3. 3 digit address switches
- Hot swap in redundant applications, dual and triple Hot-Standby redundancy, 1oo2 redundancy
- Status LED indication (Normal/Error)
- RoHS compliant

**Computer performance**
- RCU501 performance is application dependant and governed by process complexity, updating frequency and number of interfaced I/O. Maximum updating frequency is 50 Hz.
- Configuration guidelines:
  1. ESD/PSD: max. 800 I/O, F&G: max. 700 I/O both at scan rate: 1 Hz
  2. Process/ Automation:
     max. 2000 I/O, design advice: 1280 I/O both at scan rate: 1 Hz
  3. Anti-surge: 3 loops, Scan rate: 50 Hz
  4. Dynamic Positioning: Triple redundant DP system combined with Position Mooring. (Scan rate is adapted to signal processing and varies from 1 to 10 Hz).
<table>
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<tr>
<th><strong>Technical Specifications</strong></th>
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### KM article number
RCU501: 603439

### Standards
RCU501 complies with the following:
- IACS E10
- IEC 60533
- IEC 60945
- IEC 61508
- IEC 62061

### Type approval
RCU501 is type approved by:
- Det Norske Veritas (DNV)
- The American Bureau of Shipping (ABS)
- TÜV Rheinland
- Wurldtech™, Achilles level 1 certified

### CE marking
CE mark compliant, confirm to:
- 2004/108/EC (EMC directive)
- 94/9/EC (Atex directive)

### Ex certification
Ex na II T4 (Zone 2)

### Environmental specifications
Ambient temperatures and humidity:
- Temp. Operation: -15°C to 70°C
- Temp. Storage: -25°C to 70°C
- Humidity Operation: Up to 98% RH
- Humidity Storage: Up to 98% RH
Protection Standards: IP 20

### Dimensions
Height: 355 mm
Width: 158 mm
Depth: 87 mm
Weight: 1.35 kg
Cross point screw lock on DIN Rail T35 7.5/15 according to EN 50022

### Electrical
- Input supply voltage: 24 VDC (+30%, -25%)
- Nominal current consumption: ≈ 0.8 A
- Start-up current: Max. 2.7 A
- Power consumption: Max. 20 W
- Heat dissipation: Max. 20 W
- Power connectors:
  - Screw terminals (slotted)
  - Cable cross section: 2.5 mm²

### Processor and memory
- Processor:
  - Type: Power PC™ host processor MPC8245
  - Clock frequency: 400 MHz
- Memory:
  - RAM size and speed: 64 MB @ 133 MHz
  - PROM: 16 MB application flash-file

### Serial line
Channels: 32 insulated serial lines, distributed on 8 RJ45 connectors
- Physical layer: RS232, RS422 and RS485 Multidrop via RSER200
- Bit rate: Max. 115 kb/s

### General purpose I/O channels
- Digital Output (DO):
  - 4 x opto-isolated outputs
  - 1 x opto-isolated watchdog (for external interface)
- Digital Input (DI): 4 x opto-isolated inputs
- I/O connectors:
  - Cage clamps
  - Cable cross section: 1 mm²

### LAN interface
Process network & RedundancyNet:
- 2 x RJ45 Ethernet IEEE 802.3 type 10BASE-T/100BASE-TX

### RBUS interface
- Connector: 2 x RJ45
- Bit-rate: 2 Mb/s
- Signal code: Manchester encoded (Self-clocked)
- Copper wire topology:
  - Insulation: 500 V (Optocoupler)
  - Physical layer: RS485 Multidrop
  - Cable attenuation: < 6.5 db/100m @ 10 MHz (CAT 5)
  - Cable length: Max. 200 m between repeaters. Max. 3 repeaters
  - Fibre optical topology (w/ additional fibre media converter):
    - Fibre cable: 62.5/125 μm. Multimodus
    - Connector: ST
    - Cable length: Max. 1000 m (point to point). 500 m if used in patch-panel topology

### Field interface
CAN interface:
- 2 x CANopen/DeviceNet @ 5 pole cage clamp terminals. 2.5 mm² cable
- Bit rate: Max. 1 Mb/s. (DeviceNet not defined above 500 kb/s)

PROFIBUS interface:
- 2 x opto-isolated 9 Pin female D-Sub connectors
- Bit rate: Max. 12 Mb/s

### Life cycle prediction
Predicted failure rate @ GB 25°C (60% confident, based on chip suppliers data): 24.2 Years
Predicted failure rate @ NS 35°C (Environmental de-rating based on Rome Laboratory toolkit): 6.5 Years

*KM reserves the right to make changes to the material or product described, at any time without notice.*