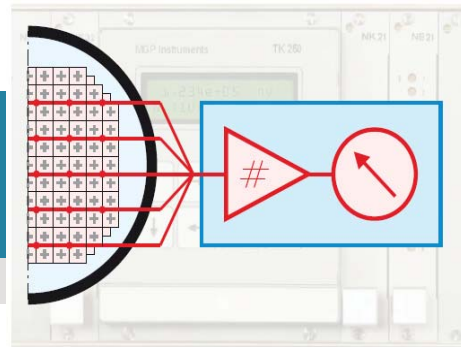




# DSK/DMK 250

Digital Power Range Channels



Nuclear  
Power



Healthcare



Homeland  
Security  
& Defense



Labs and  
Education



Industrial and  
Manufacturing

## OVERVIEW

The DSK 250 and DMK 250 digital power range channels form part of the proTK™ product line. They have been designed for local and average power range monitoring (LPRM and APRM) in the boiling water reactor (BWR). Four in-core fission chambers may be connected to one DSK 250. Hardware and software of the DSK & DMK 250 are designed and qualified for applications at the level of the reactor protection system.

## KEY FEATURES

### Up to four detectors per DSK 250 (LPRM):

- Individual detector supply
- Signal filtering and calibration
- Remote test signal generators
- RS232/485 data interface for test and calibration

### Up to 64 LPRM-signals (16 DSK) per DMK 250:

- Calculation of average value and flow related flux signal (APRM)
- Neutron flux oscillation monitoring
- Generation of analog and binary signals for the reactor protection system

## RELATED PRODUCTS

- In-core fission chambers: e.g. WL 23630 (IST)
- DWK 250: digital wide range channel

## DETECTORS AND INPUT SIGNALS

- Miniature in-core fission chambers, e.g. WL 23630 (IST), MNK/MBK 61 (Siemens-Areva)
- Cable to the DSK 250: coaxial cable, no limitation of length
- Detector supply: -50 ... -200 V individually adjustable for each detector
- Range of detector current: 32 ... 4000  $\mu$ A adjustable to full scale
- Input signal for coolant flow: 0/4 ... 20mA

## DIGITAL SIGNAL PROCESSING

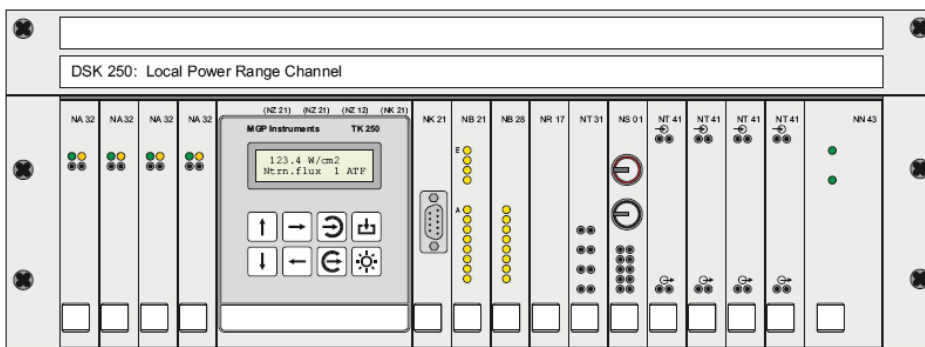
- 80C31 multi-processor system
- Program memory: EPROM
- Parameter memory: CMOS-RAM with integrated Li-battery
- Data interface: RS232 and/or RS485
- Internal LC-display: 2 x 16 characters
- **DSK 250 processes four detector signals in four individual signal paths:**
  - Calibration of detector signal to power density
  - Alarm threshold for local density in relation to coolant flow
- **DMK 250 accumulates up to 64 detector lines (16 DSK 250):**
  - Calculation and calibration of average reactor power
  - Calculation of flow related flux and margin to scram
  - Flux oscillation monitoring combining transient suppression and fast response

## OUTPUT SIGNALS

- DSK 250: flux density for each detector position
- DMK 250:
  - Average flux
  - Flow related flux
  - Magnitude of flux oscillations calibrated to reactor power, e.g. 0 ... 125 %Pn
- Analog outputs: 0/4 ... 20mA/600  $\Omega$ , insulated
- Binary outputs: insulated relay change overs, 60V/0.5A or 125V/1A

## OTHER CHARACTERISTICS

- DC power supply: 18 ... 33 VDC, approx. 1.6A at 24 V (each DSK and DMK)
- Optional: AC power supply: 230 VAC or 115 VAC +10%/-15%, approx. 40 VA
- Operating temperature: 0 ... 70°C (32 ... 158°F) for the main electronics
- Mechanical vibrations: < 5 g, 5 ... 100 Hz
- 19" modular system according to IEC 60297
- Rack size (W×H×D): 483 mm × 133 mm × 280 mm (19 in × 5.2 in × 11 in)
- Plug-in boards: 100 mm × 160 mm (3.9 in × 6.3 in)



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