

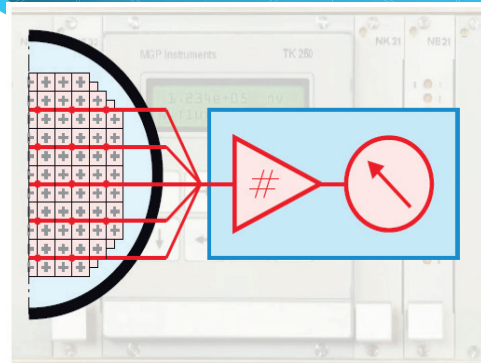


PROTK

DSK/DMK 250™

Digital Power Range Channels

Local and average power range channels for BWR reactors with average flux and flow-related flux, including stability monitoring.



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

DESCRIPTION

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 and DMK 250 are designed and qualified for applications at the level of the reactor protection system.

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 μ A adjustable to full scale
- Input signal for coolant flow: 0/4 ... 20mA

DIGITAL SIGNAL PROCESSING

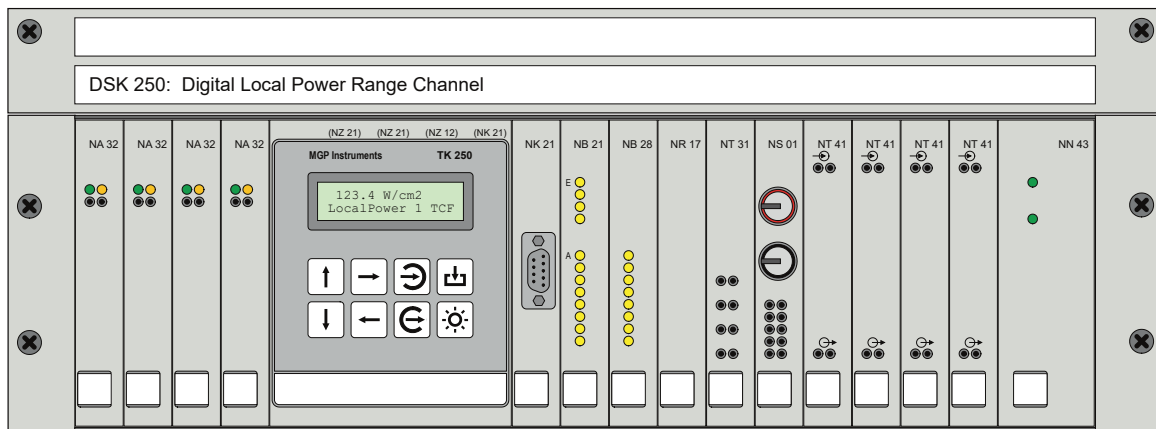
- 80C31 multi-processor system
- Program memory: EPROM
- Parameter memory: CMOS-RAM with integrated Li-battery
- Data interface: RS232 and/or RS485
- Internal LC-display: 2 x 16 characters
- **DSK 250 processes four detector signals in four individual signal paths:**
 - Calibration of detector signal 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 Ω , 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 IEC60297
- Rack size (W×H×D): 483 mm × 133 mm × 280 mm (19 in x 5.2 in x 11 in)
- Plug-in boards: 100 mm × 160 mm (3.9 in x 6.3 in)



Featuring:

