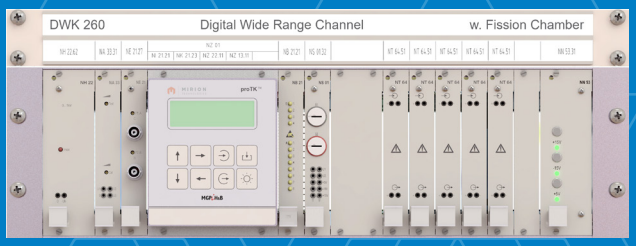
MIRION
TECHNOLOGIES

PROTK™ DIGITAL SIGNAL PROCESSING UNITS

DWK 260™



Digital Wide Range Channel

Neutron flux monitoring over the full range with one wide range fission chamber.

DESCRIPTION

The DWK 260 digital wide range channel forms part of the proTK™ product line. It has been designed for continuous neutron flux monitoring during all reactor operation modes.

The DWK 260 monitor provides information on the neutron flux, the reactor power and the rate of change of the neutron flux. In addition, it provides binary alarm and reactor trip signals based on the measured neutron flux and user adjustable thresholds. Analog and binary output signals of the highest safety class are available and can be used at the level of the reactor protection system.

FEATURES

- Modular design, highly customizable
- 10+ decades of neutron flux range coverage with one fission chamber
- Calibration of signal into units of neutron flux (nv) or reactor power (%FP, W,...)
- Seamless calculation of the relative flux change rate (reciprocal of the reactor period) over the full neutron flux range
- Signal filtering with adaptive filter parameters
- Generation of analog output signals with linear or logarithmic scaling
- Generation of binary alarm, trip and status indication signals
- Integrated test-signal generators and simulation capabilities
- Secured serial interface
- Qualified for Category A functions (Class 1 system) acc. IEC 61226

DWK 260™ WIDE RANGE NEUTRON FLUX MONITORING CHANNEL

DIGITAL SIGNAL PROCESSING
Multi-processor system
Protected program memory
Non-volatile parameter memory
RS-232 and/or RS-485 serial interface for: measurement data, status information and parameter setting
Internal LC-display: 2 x 16 characters

OUTPUT SIGNALS	
Pulse count rate (logarithmic)	0.5 … 5e+5 cps
Campbell (AC/MSV) signal	> 7 decades
Wide range signal (logarithmic power)	1 … 1e+10 nv, 1.5e-8 … 150 %FP
Relative flux change rate (log rate = 1 / reactor period)	−3.33 ... 0 ... +33.3 %/s (equiv. period −30 ... ∞ ... +3 s)
Linear DC signal (linear power)	0 to 150 %FP
Linear rate signal	-10 ... 0 ... +10 %FP/s
Analog outputs	0/4 ... 20 mA / 600 Ω, isolated
Binary outputs (isolated relay change overs)	60 V / 0.5 A or 125 V / 1 A

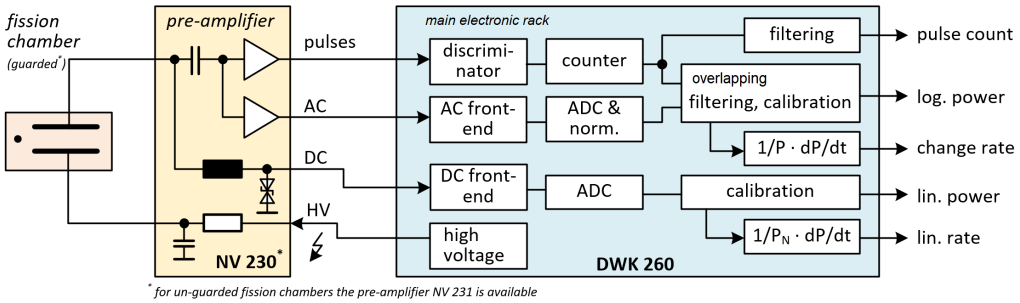
The shown scaling of the output signals are examples and can be configured according to the application requirements.

PRE-AMPLIFIERS	
Type	Available for guarded or un-guarded fission chambers
Processing	Pulses, MSV (Campbell) and DC signals
Integrated test signal generators (pulses, AC and DC)	Activation via HMI or through serial interface.

DETECTORS	
Wide-range fission chamber	In- / ex-core Fission Chambers (guarded or un-guarded)
Integral cables / connectors **mineral insulated cables** **connectors**	Coaxial or triaxial design Optional, up to 20 m / 66 ft HN-type (others on request)
Extension cables / connectors **organic cables** **connectors**	Coaxial or triaxial design Up to 100 m / 328 ft HN-type (others on request)
High voltage supply **from HV module in DWK 260**	e.g. 0 ... 0.5 or 1 kV
Thermal neutron sensitivity **pulse mode** **DC mode**	On request e.g. 1e-3 cps/nv, 0.7 cps/nv e.g. 1e-17 A/nv, 1e-14 A/nv

OTHER CHARACTERISTICS	
AC / DC power supply **230 VAC or 115 VAC** **18 ... 33 VDC**	+10% / −15%, approx. 30 VA
Characteristic impedance of pre-amplifier I/Os	Matched to the cable typ. 50 or 75 Ω
Operating temperature **open rack** **recommended long-term op.**	 0 ... 70 °C / 32 ... 158 °F 10 ... 40 °C / 50 ... 104 °F
Mechanical vibrations	max. 5 g, 5 ... 100 Hz (or acc. custom requirements)
Dimensions (mm / inch) **Rack (W×H×D)** **Plug-in modules**	19” system acc. IEC 60297 483 × 133 × 280 / 19 x 5.2 x 11 100 × 160 / 3.9 x 6.3

QUALIFICATION / DESIGN STANDARDS (SELECTION)	
Design **Software** **Qualification**	IEC 61513 / IEEE 603 IEC 60880 / IEEE 7.4.3.2 IEC/IEEE 60780-323 IEC/IEEE 60980-344



* for un-guarded fission chambers the pre-amplifier NV 231 is available

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