OEM Spectrometer RU40/90

300 … 1000 nm

RU40/90 is a compact spectrometer with many modern communication features. It includes a flat field spectrograph and a powerful processing electronics and is available in three versions:

RU40/90 basic	BlueSpecCube	LanSpecCube

RU40/90 basic offers the following electronic features:

- USB and TTL UART/ SPI interfaces
- RTCC

And can be equipped optionally with:

- SD card slot
- Battery
- Laser diode controller
- Display control

BlueSpecCube is a complete self-sustaining spectrometer solution with:

- Bluetooth interface
- Inbuild Li polymer battery
- Switches for start and measurement

LanSpecCube is a complete self-sustaining spectrometer solution with:

- LAN interface
- Measurement switch

BlueSpecCube and LanSpecCube can easily be used for own application specific systems.

All versions include the same grating spectrograph RU40/90. It is characterized by the following properties:

- High quality image with low aberrations over the whole spectral range
- High dynamic range with CMOS sensor S11639
- Compact design
- Fast mechanical shutter (piezoelectrically driven)

Applications:

- Mobile spectrometric measurement equipment
- Colorimeter
- Spectroradiometer
- Analytical instrumentation
- Multichannel spectrometric systems
- Online spectral analyzer
- Remote sensing

Advantages:

- Compact solutions with high optical quality and various electronics functions
- Easy realizable stand alone solutions
- SCPI compatible control syntax
- Easy and precise baseline correction due to mechanical shutter

Specifications

Optical parameters

Spectral range	300 nm ... 1000 nm
Optical bandwidth	≤ 4.5 nm FWHM (50 µm slit, other slit widths on request)
Optical input	F-SMA connector for a 200 µm fiber
Max. wavelength error	± 0.5 nm (HgAr line source)
Wavelength repeatability	± 0.02 nm (HgAr line source)
Stray light	< 0.1 % (ASTM E387, GG495, λ = 420 nm/ 600 nm)
Spectrometer	Holographic grating, flat field
Detector	Hamamatsu S11639
Shutter	Piezo-electric, opening/ closing time < 20 ms

Electronic parameters

Digital resolution	16 bit
Dynamics	10000 : 1 (dark signal)
Typical sensitivity	50 µm slit, 200 µm fiber, pixel binning 2, gain 3:
	$5*10^{16}$ counts/ Ws @ 300 nm
	$1.5*10^{17}$ counts/ Ws @ 600 nm
	$1.5*10^{15}$ counts/ Ws @ 1000 nm
Sampling speed	up to 4 MS/ s
Transfer speed	up to 3 Mb/ s (via Full Speed USB virtuell COM Port)
Integration time	0.01 ... 65 535 ms
Power supply	USB powered or Li battery (BlueSpecCube) or 5 V (LanSpecCube)
Interfaces	
RU40/90 basic	USB (Full Speed), TTL UART (up to 3 MBaud),
	3 programmable I/O, 2 analog inputs 10 bit (0 ... 3.3 V),
BlueSpecCube	Bluetooth, USB, Laser diode controller
LanSpecCube	10/100 Mbps Ethernet LAN

Mechanical parameters

RU40/90 basic	54 mm x 58 mm x 33 mm; 115 g
BlueSpecCube	54 mm x 58 mm x 53 mm; 200 g (with battery)
LanSpecCube	54 mm x 58 mm x 55 mm; 170 g

Scope of delivery

Spectrometer, PC software VersaSpec,
JETI SDK, operation manual, power supply (LanSpecCube)

Controller functions:

- Internal storage of wavelength-pixel relation
- Preprocessing of data, dark signal correction, absolute calibration
- Internal calculations like averaging, interpolation, transmission, reflexion, absorption, color coordinates
- Dedicated control syntax (SCPI compliant)

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