Leading in Environmental Radiation Protection

MONA-DRONE

MONA-DRONE is the solution for short-range airborne radiation detection with unmanned aerial systems (UAS). MONA-DRONE is based on the well-established SARA-platform for environmental monitoring and can detect even minor changes of the composition of the nuclear spectra. The two scintillation detector options use state-of-the-art rugged SiPM technology: NaI(Tl) for a larger dynamic dose rate range, and CsI for higher sensitivity and additional stress resistance. For both, the spectroscopic range can be extended to 100 mSv/h using an optional $CeBr_3$ high dose rate scintillator, or to 1 Sv/h using an additional Geiger-Müller-Tube.

The detection unit is tightly integrated with the de-facto industry standard drone, DJI Matrice 350 RTK. The detection unit sends its data via the drone's communication infrastructure to the remote, and from there via WiFi to an optional operator laptop with the NMC software, which can show the tracks on a map, exchange data and can perform offline spectrum re-analysis. The current dose rate, as well as the identified isotopes, are displayed directly on the remote.

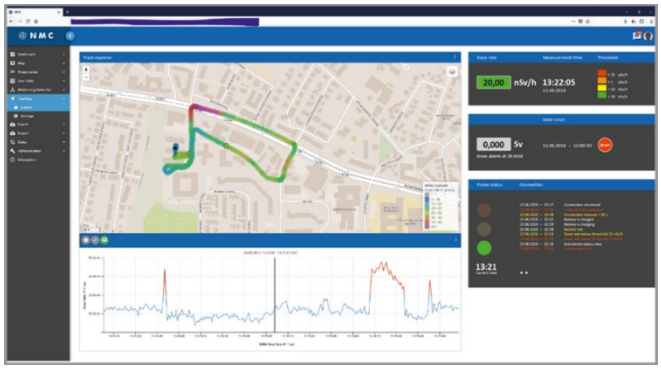
MONA-DRONE perfectly integrates with the MONA-Family and the whole Scienta Envinet product spectrum. Therefore, MONA-DRONE can optionally transmit the measured data automatically to the monitoring center in real time via LTE, such that all data is available in one place for coordinators.

FEATURES

- Fast detection of very low artificial radiation
- Online spectrum analysis and isotope identification
- Communication with local operator through the remote – no additional communication equipment necessary
- Display of analysis results on the remote
- Integrated FPV camera in the drone
- Operation under harsh environmental conditions
- Easy and quick set up
- Integrated GNSS (GPS, GLONASS, BeiDou, Galileo)
- LIDAR-based height measurement
- Optional integrated LTE communication for direct data transmission to the monitoring center

FUNCTIONS

- Track plotting capability with optional tablet / notebook
- Easy to use Web-UI for field teams (fire-brigade, police)
- Nuclide specific and total dose rate evaluation
- Nuclide identification
- Extended dose rate range with additional GM detector
- Height correction integrated
- Real time monitoring in NMC monitoring center



RADIOLOGICAL PERFORMANCE SPECIFICATION

	MONA-D02-xxx	MONA-D42-xxx
Detector	NaI(Tl) with SiPM, 2.0" x 2.0"	CsI with SiPM, 2.0" x 2.0"
Dose rate range[1]	0.001...350 µSv/h	TBM µSv/h
Sensitivity[1]	100100 (total) / 21700 (photopeak) cpm/µSv/h	TBM
Accuracy[1]	+/-10%	+/-10%
FWHM[1] (guar.)	typ. 6.5 % (<7.8 %)	typ. <8%
Energy range	30...3000 keV, in 1024 channels	

OPTIONAL RADIOLOGICAL RANGE EXTENSIONS:

	Geiger-Müller-Tube (MONA-500-T)	HD-Spectroscopy $CeBr_3$ with SiPM (MONA-500-H)
Dose rate range[1]	0.04...1000 mSv/h	0.05...100 mSv/h
Accuracy[1]	+/-15%	+/-15%
Sensitivity[1]	7.15 cpm / µSv/h	1650 (total) / 125 (photopeak) cpm / µSv/h
Intrinsic background	< 270 nSv/h	Negligible
Energy range	50…1250 keV	30...1500 keV, typ. 7% resolution

DRONE PERFORMANCE SPECIFICATION

	DJI Matrice 350 RTK (MONA-800-D501) [3]
Flight time[2]	Approx. 55 min (without detector) / 40 min (with detector)
Flight parameters[2]	Max. distance: 8 km, max. flight height 5000m above sea level
Height measurement	LIDAR, up to 100m (optional 300m)
Speed	Top speed 23 m/s, vertical speed max. 6 m/s (up) / 5 m/s (down)
FPV Camera	1080p, 30 fps, 142°
Weight	3.77 kg (without battery) / 6.47 kg (with battery) / ~7.5 kg (with detector) / 9.2 kg (max takeoff)
Class	C3 (EU)
Remote	7.02" LCD touchscreen, 1.920 × 1.200 px, 1.200 cd/m², Bluetooth, WiFi

ENVIRONMENTAL SPECIFICATION

	Detector	Drone
Operation temperature	-40…+60 °C / -40…+140 °F	-20 … +50 °C / -4 … +122 °F
Protection class	IP55	IP55 (Drone), IP54 (Remote)
Humidity	0…95%	0…95%
Wind speed	-	Up to 12 m/s

ACCESSORIES

For drone:

Battery set (2 pc.):	MONA-800-D550
Battery charging station:	MONA-800-D555
Remote strap kit:	MONA-800-D561
Spare propellers:	MONA-800-D570

For detection unit:

Test-set (Cs-137, ~300 kBq):	MONA-800-D100
LTE:	MONA-400-4

Optional operation unit with NMC:

Laptop (rugged):	MONA-200-R
Tablet (rugged):	MONA-200-TR

[1] Cs-137
[2] Dependent on local condition and setup
[3] User is responsible for insurance and flight permit according to local regulations.

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