

MVG-MTDL

Multisensor Traffic Data Logger

The MTDL (Multisensor Traffic Data Logger) is a battery powered compact set of sensors and readout electronics for traffic dataset acquisition. It offers a discrete and portable solution for data logging in real environment.

MVG-MTDL	
OVERALL DIMENSIONS	(335 x 230 x 105) mm
OVERALL WEIGHT	Approx. 2.5kg (depending on configuration)
SENSING WINDOW SIZE	(140 x 70) mm
ON-BOARD COMPUTING UNIT	Raspberry Pi 4B
OPERATING SYSTEM	Linux
INTERNAL MEMORY	microSD 128GB (USB expandable)
BATTERY	Commercially available Li-ion, 20V, 4Ah
BATTERY LIFE	At least 3h (depending on configuration)
BATTERY CHARGING	External, rapid swap possible

Table 1. MVG-MTDL specifications

It consists of a metal carrier case with internal rail mounting system to which all equipment can be efficiently attached. The forward-facing sensing window allows unobstructed view for any kind of optical or RF sensor.



Fig. 1 Detail of the sensing window

Internal power system is made up of a commercially available Li-ion battery pack powering the 20V bus (up to 4A peak current) and individual power convertors for the electronics and sensors, depending on the configuration. Charging of the battery is performed outside of the logger and the batteries can be rapidly swapped. Running from an external (12V – 24V) power source is also possible if longer measurement periods are required.

The on-board computing unit then reads out the individual sensors via Ethernet (1x), USB 3 (2x), USB 2 (2x) or USB C (1x) and logs the data either onto the internal memory (128GB in the current configuration), or on an external memory unit (USB). The computing unit SW allows for automatic operation with a pre-set configuration after power up, and can be also connected to via WiFi for configuration while running.

Sensors

In the current form the MVG-MTDL includes a Livox MID-70 LiDAR sensor and a Raspberry Pi HQ RGB camera, see tables 2 and 3 below for further specifications:

LiDAR SENSOR LIVOX MID-70

FIELD OF VIEW	±70.4° (cone)
RANGE	Up to 260m, usable 130m
WAVELENGTH	905nm
RANGE PRECISION (1σ)	at 20m ≤ 0.02m
ANGULAR PRECISION (1σ)	< 0.1°
POINT RATE	100k point/s
INTERFACE	Ethernet

Table 2. LiDAR sensor specifications

RASPBERRY Pi HQ Camera

SENSOR	Sony IMX 477 family
SENSOR TYPE	RGB
SENSOR FORMAT	1/3"
RESOLUTION	12.3MPx
LENS MOUNT	C/CS mount
FILTER	IR cutoff
INTERFACE	50p, 0.5mm, XF3M FPC/FFC

Table 3. Camera specifications

Due to the modular nature of the logger, installation of additional sensors, or replacement of the current sensors is possible. Individual power converters for new sensors must be installed if the sensor can't run from the 20V bus.



Fig. 1 Internal configuration of the logger unit