chalynx

AI-supported solution for identifying plants and their condition directly in the field in real time.

Summary

The **chalynx** computer vision system enables the detection and tracking of trained objects under consistent conditions, almost regardless of the time of day.

Powerful light synchronization and light sources with various spectra, uniform images can be produced.

The system can be equipped with various 2D and 3D cameras.

Description

The modular **chalynx** computer vision system allows you to respond to the specific requirements of the application thanks to its modular design.

Thanks to the easy scalability of the flash lighting, it can allow extreme light outputs (up to 2 kW, ~100,000 lx) to be called up within a short notice, synchronized with the respective camera with microsecond precision.

With up to four GMSL cameras, objects can be precisely detected and spatially located in two- and three-dimensional space.

The various interfaces enable easy integration into existing systems. With Gbit Ethernet (M12) and CAN, multiple devices can communicate with each other.

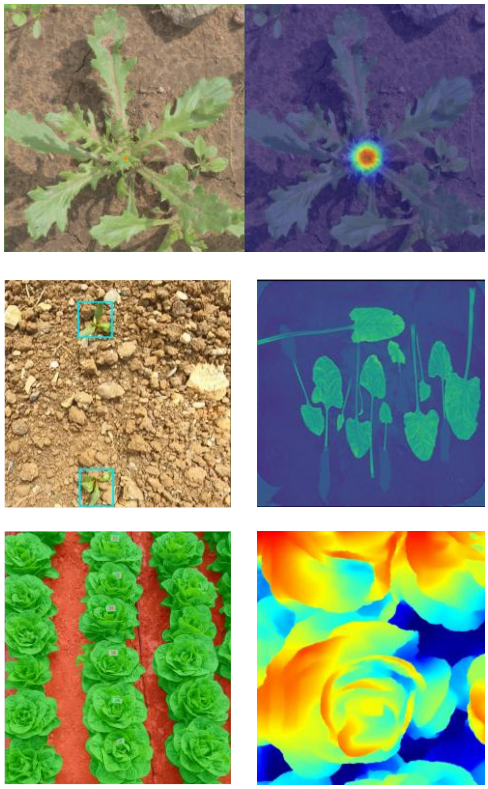
The internal processor is based on an NVIDIA Orin NX.

Up to six valve controls are also available. Additional analogue and digital inputs/outputs expand the range of functions.

Thanks to its design, the **chalynx** system continues to run reliably even under adverse conditions, such as a cold start or a load dump.

Typical areas of application:

- In-row hacking systems
- Laser weeding
- Crop sorting
- Plant row detection in the field
- Phenotyping



Technical data

Environmental conditions	-40 °C — +70 °C
Power supply (V_{IN})	9 — 36 V_{DC} (computing, camera) / 48V_{DC} (flash)
Power consumption	< 15 A @ 12V
Protection class	IP69K
Camera	1 – 4 x GMSL-camera (2 – 5 MP)
Light output	Up to 2 kW per light controller (max. 100 Hz, exposure time max. 500 µs)
Light modules	Integrated module for series application / customised
Processor	NVIDIA Orin NX 8 GB / 16 GB with up to 40 W (MAXN SUPER Modus)
Main plug	Molex CMC 5600834801 48p

Interfaces

CAN	Classic-CAN, CAN-FD (up to 1 Mbit / s)
Valve outputs	6 x (up to 1.8 A per channel)
Inputs	6 x (tolerant up to V_{IN})
Outputs	6 x (Low Side up to V_{IN}, max. 240 mA)
Wake	Sleep mode via ignition input, power management
RS232 / RS485	1200 – 460800 Baud (adjustable)
Ethernet	2 x 10 / 100 / 1000 Mbit/s (M12 X-Coded)
Display	1 x status LED (red / green) 2 x ethernet status
Add-ons	Video output (DisplayPort, GMSL), mobile telephony via FAKRA
Analogue inputs/outputs	4 x (0-10 V / 0-20 mA [configurable])
Protection features	Load Dump (ISO 16750-2) Reverse Polarity (ISO 16750-2) Cold Cranking (ISO 7637-2,)

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