

eRoCX

DATASHEET

(Version 2025)

Product Synopsis

eRoCX – experimental Raman for Characterization of eXcavation - is a Raman spectroscopy instrument developed for the mineralogic inspection of tunnel excavation material.

The system provides non-destructive, real-time analysis of geological materials, supporting industrial excavation processes with actionable mineral composition data.

eRoCX comes in a much-improved robust enclosure, equipped with new operational safety and control facilities enabling the deployment in IP65 underground mining environments.

Intended Use : It addresses a need from subsurface engineering research labs and mining OEM manufacturers.



Main Features

A key innovation of **eRoCX** is its ability to operate at a fast-scanning rate of 30frames per second. This high temporal resolution enables the instrument to monitor materials continuously as they pass along the conveyor belt, effectively transforming a traditionally lab-bound technique into a robust, field-deployable system

The unit is equipped with a GigE Vision interface and can be easily connected to state-of-the-art hyperspectral imaging software packages for further data evaluation and modelling. Laser feedback is provided to the PC visualization via a MODBUS TCP connection.

A dongle protected **eRoCX** (Windows-based) program is provided for basic functionality like image data sets recording and analysis, spectral data parametrization and live classification.

Specifications

Weight / Dimensions:	40 kg with transport case / 800x600x440 mm eRoCX : 27,5 kg / 600x400x250 mm Safety Box : 3kg, 4m cable / 150x150x150 mm
Enclosure	SR2-SRN6425K / ABB 17kg / 600x400x250mm
Power supply:	48VDC / 2 Amps
Working distance:	recommended up to 400mm from front glass
Operating temperature:	10 – 40 °C non-condensing 25% - 85% RH
Storage conditions:	-10° - 65°C non-condensing 25% - 85% RH
Laser :	532nm +/- 0.1nm FWHM max. 1pm, TEM00 / max. 400mW, CLASS 3B, with electronic adjustment via RS485/232 interface via umbilical corded Safety Box
Laser Safety:	Manual Emergency Stop, ON/OFF/CLEAR Remote Interlock, System status LEDs, Belt ON
Spectrograph:	transmissive, prismatic, 100u slit, 10mm (alternatives 20u/50u, 10mm)
Spectral range:	Stokes shift 150 – 3450 cm-1 @ up to 1060 spectral pixels
Spectral resolution:	8 – 10 cm-1 (0.25 – 0.5 nm) @ 20u slit
Line of Detection:	dia. 1 mm fixed laser scanning spot; 928 spatial pixels on dia. 50mm scenery customizable optics possible
SpectralView Camera:	CMOS 3 um pixels binning 2 x 2 eff. 6 um 1060 spectral x 928 spatial effective pixels; up to 30 fps @ ca. 33ms exposure time
SideView Camera:	CMOS 9 um pixels up to 90 FPS at 512 x 512 px.
PC Interfaces:	Dual Cameras GigE Vision 2 x Gigabit Ethernet Laser Controller MODBUS-TCP
Production:	Austria / European Union

Recommended list price

80.000,- EURO, net

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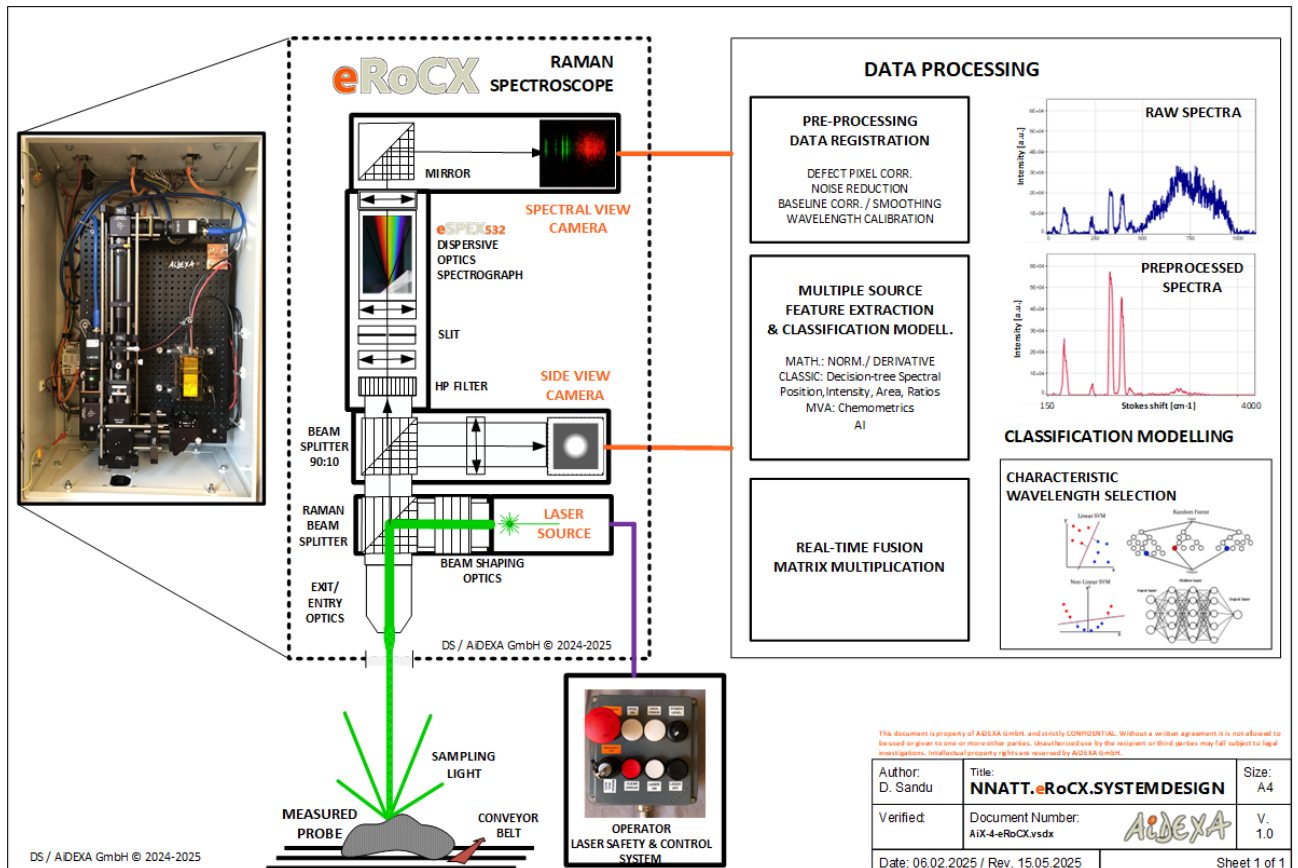
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Document: AiX-4-252001-eRoCX_DataSheet.docx
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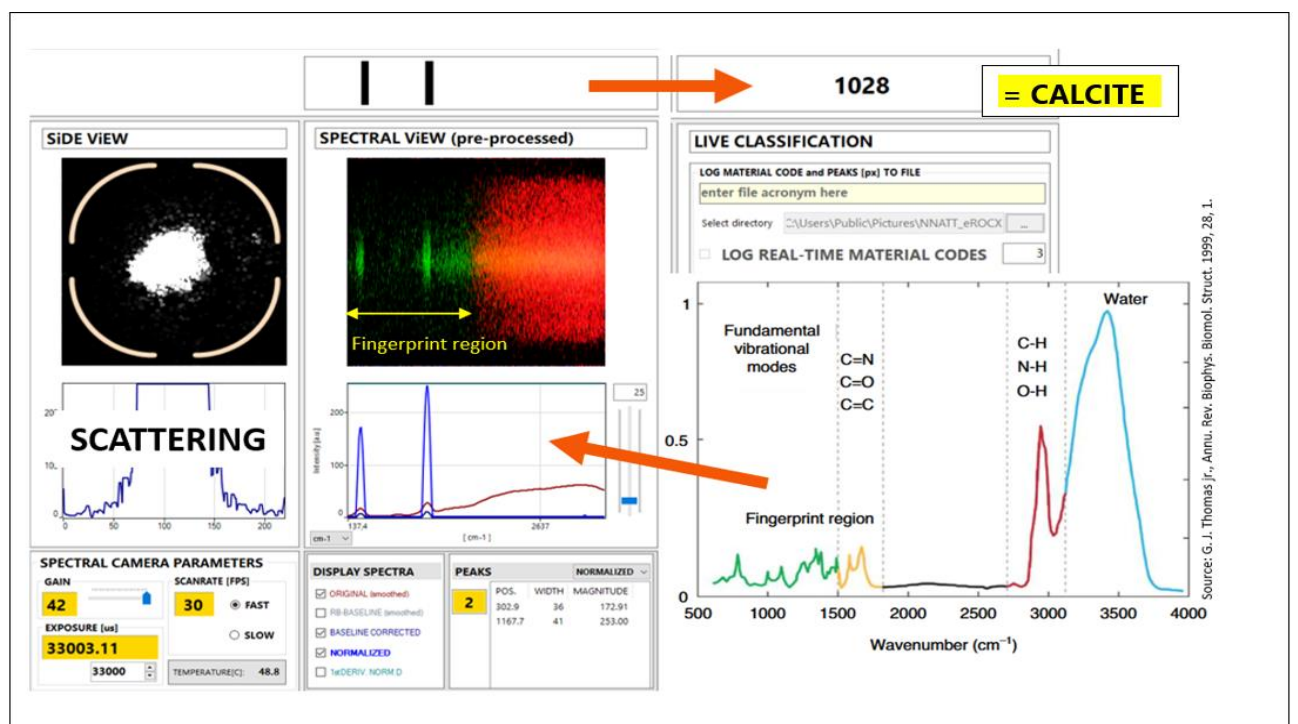
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eRoCX comes in a robust IP65 metallic enclosure containing the Raman spectroscopy, the 532nm laser source and its controller unit connected to an external Operator Laser Safety & Control Box via an umbilical cord. An additional monochromatic camera provides a supplementary image of the 5cm diameter scenery.

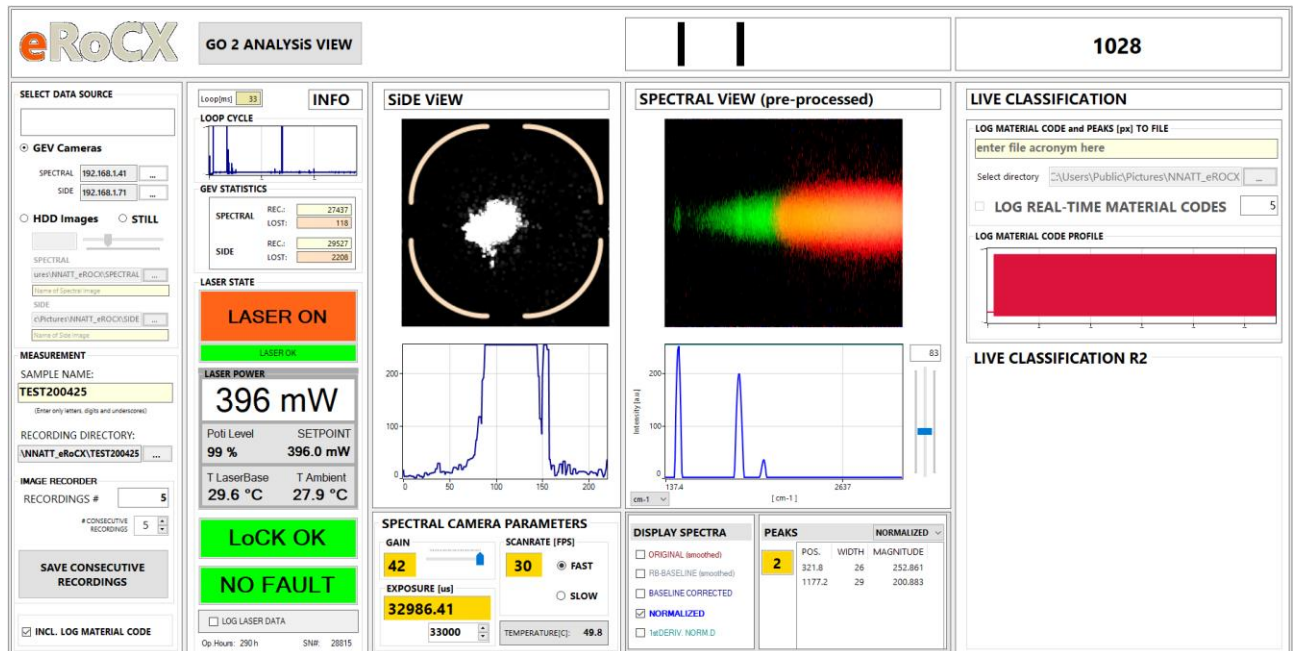


Part of the **eRoCX** instrument, a 532 nm laser continuously illuminates solids transported on a conveyor belt from the tunnel face. The scattered light from the surface of the material is collected and spectroscopically resolved to obtain high-fidelity Raman spectra that enables identification and mineralogic characterization on the fly.



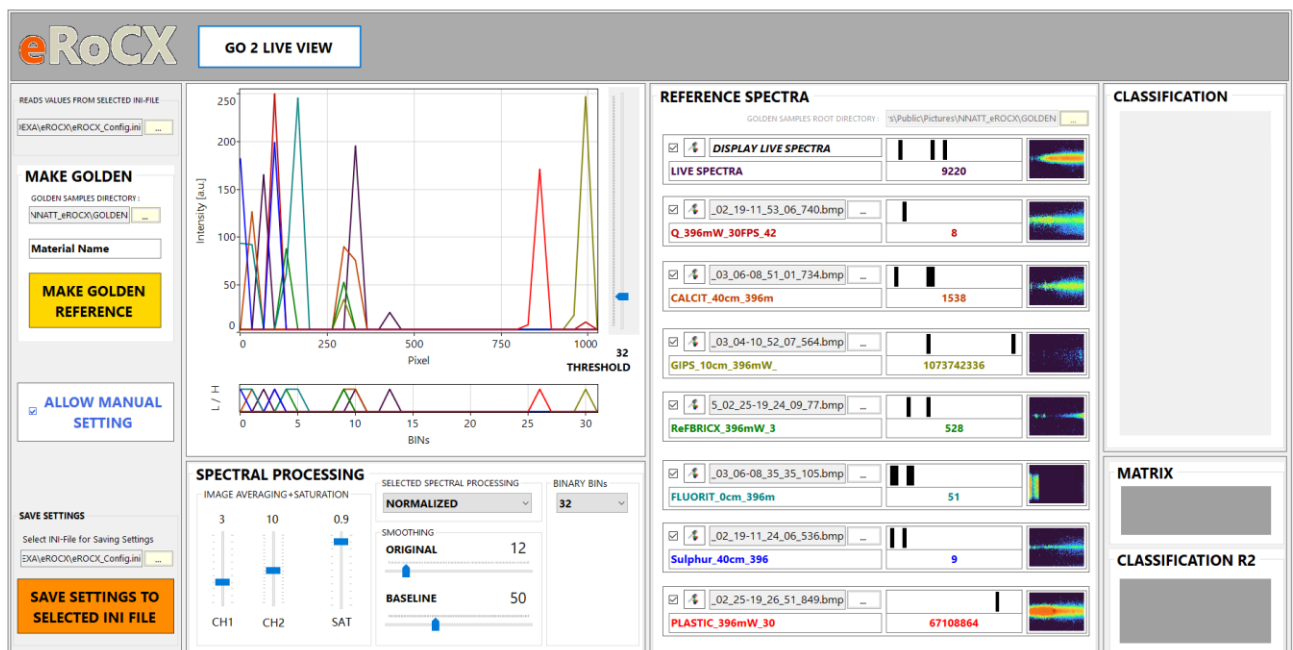
The provided **eRoCX** application software (Windows-based) consists of two menu screens:

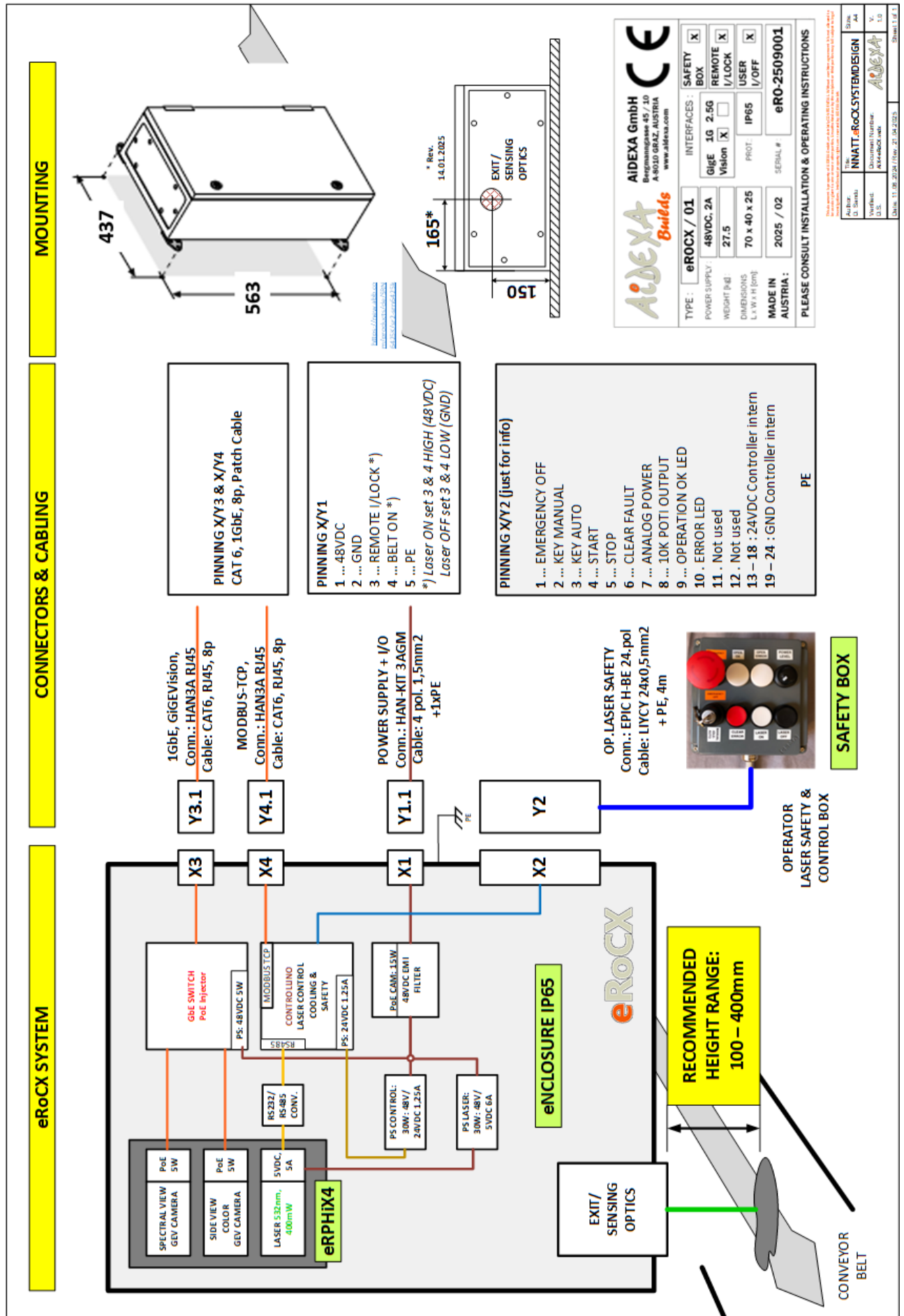
The Main Screen – LIVE ViEW



and

the Secondary Screen – ANALYSIS ViEW





AiDEXA Builds AiDEXA GmbH Bergmannsgasse 45 / 10 A-8010 GRAZ, AUSTRIA www.aidexa.com		CE	
TYPE : eRoCX / 01	INTERFACES :	SAFETY BOX <input checked="" type="checkbox"/>	
POWER SUPPLY : 48VDC, 2A	GigE 1G 2.5G <input checked="" type="checkbox"/>	REMOTE I/LOCK <input checked="" type="checkbox"/>	
WEIGHT (kg) : 27,5	Vision <input checked="" type="checkbox"/>	USER I/OFF <input checked="" type="checkbox"/>	
DIMENSIONS L x W x H (mm) : 70 x 40 x 25	PROT. : IP65	SERIAL # : eRo-2509001	
MADE IN AUSTRIA :	2025 / 02	PLEASE CONSULT INSTALLATION & OPERATING INSTRUCTIONS	

Author : D. Sandu	Drawn : NNATT-RoCX SYSTEM DESIGN	Sheet : A4
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