IDCRAFT
RFID & NFC EXPERTS

NFC Encoding Station
IDSCOUT Encode

- Plain-language job entry — no RFID expertise required
- Every value backed by a literal quote from your text
- Mandatory first-piece release before every batch
- Full read-back and UID-bound report on every label
- Runs entirely on the device — no cloud, no account

The AI never writes.
From the job sheet to a verified label.

Encoding NFC is easy. Setting it up is not. Memory banks, NDEF record structure, lock modes, block addresses — labelling software puts all of it into dialogues built for specialists. For a label converter whose team comes from print production, that is where NFC jobs stall.

IDSCOUT Encode turns the workflow around. The operator describes the job the way it reads on the job sheet. A language model running on the device recognises the job pattern and pulls the values out of the text — every value backed by a literal quote from the operator's own words. A form shows where each value came from: green means backed verbatim, orange means the model suggested it, red means it is missing.

What actually goes onto the chip is built by deterministic, tested software from the confirmed form — never by the model. Every label is fully read back after writing and bound to its chip UID. The first label of every job halts the batch: the station reads it back and shows the content in plain text, with the target domain rendered large. Only after the operator releases it does the batch run.

Developed and assembled by IDCRAFT in Germany. The station works offline; customer data never leaves the device.

100 %
slot accuracy in the pre-registered acceptance run — 298 of 298 job fields, every measurement repeated three times

14/14
deliberately planted safety traps caught and stopped

0
phantom values, build errors and determinism deviations

0
incorrect AI values that ever reached a label — across all ten acceptance runs, more than 6,600 slot measurements

Pre-registered acceptance runs of the language layer, as of 16 August 2026; thresholds fixed in advance and never moved. Scope: recipe catalogue v8 (NDEF link/text, CSV series, vCard, Wi-Fi, Smart Poster, URI presets, raw fixed/counting, FK0E, GateSense). Field test under production conditions: 4 of 4 chip contents byte-identical, verified three ways.

Common Applications

- Label converters and label printers
- Product authentication and anti-counterfeiting tags
- Laundry and textile services (house formats)
- Print shops adding NFC as a service
- Digital product passport labels
- Smart packaging and NFC marketing campaigns

idscout.de

www.idcraft.com sales@idcraft.com +49.6236.4494.685

IDCRAFT
RFID & NFC EXPERTS

IDSCOUT Encode
NFC Encoding Station

TECHNICAL SPECIFICATIONS

Hardware

Computer	Raspberry Pi 5, 16 GB RAM
Storage	NVMe SSD 256 GB (microSD boot only)
Display	7" capacitive touch (Raspberry Pi Touch Display 2), 1280 × 720
Cooling	Active; 46 °C under bench load, no throttling
Enclosure	Textured black housing, front-mounted screw-lock connectors
Power supply	USB-C, 27 W (supplied)
Interfaces	1 × USB-C (power) · 1 × USB-A (reader) · 1 × RJ45 Ethernet
Operating system	Raspberry Pi OS Lite, 64-bit

Reader

Model	ACS ACR1552U, USB, CCID / PC-SC
Frequency	13.56 MHz
Standards	ISO/IEC 14443 A + B · ISO/IEC 15693 · ISO/IEC 18092
Data rate	up to 26 kbit/s (ISO 15693) · up to 848 kbit/s (ISO 14443)
Read range	up to 70 mm, tag-dependent
Feedback	Buzzer and LEDs, driven per label

Supported chips

Chip	Standard / NFC type	Usable NDEF	Address range
NXP NTAG213	ISO/IEC 14443-A · NFC Forum Type 2	**144 bytes**	pages 4–39
NXP ICODE SLI	ISO/IEC 15693 · NFC Forum Type 5	**108 bytes**	blocks 0–27
NXP ICODE SLIX	ISO/IEC 15693 · NFC Forum Type 5	**108 bytes**	blocks 0–27
NXP ICODE SLIX2	ISO/IEC 15693 · NFC Forum Type 5	**312 bytes**	blocks 0–78

Usable NDEF capacity. The byte-exact preview in the job card is always authoritative. Further chip types on request.

Operation

- Access from any browser on the LAN — nothing to install
- Three network modes: isolated mini-network, separate VLAN, corporate LAN
- Operator PIN, device-specific; first-piece release forces fresh entry
- One job at a time
- Updates by IDCRAFT as signed USB bundles; no auto-updates in the field
- Optional remote maintenance, corporate-LAN mode only, per engagement
- Operator roles: operator and admin; no desktop, no shell

Content formats

- NDEF link or text — fixed or with a running number
- NDEF link per label from a CSV column
- Digital business card (vCard 3.0)
- Wi-Fi access credential (WPS/WSC, WPA2 or open)
- Smart Poster (link plus display title)
- URI presets: phone, e-mail, geo location
- Raw block/page write — fixed value or running number
- Customer house formats configured by IDCRAFT

Job data sources

- Fixed content on every label
- Running number: prefix, start, step, zero padding
- CSV file, one value per row, any column as placeholder
- CSV: header row, ; or , separator, UTF-8 (no XLSX)

Verification and traceability

- Full read-back and comparison after every write
- Result bound to the chip UID
- Tag-swap guard: UID re-checked after writing
- Mandatory first-piece release, cannot be disabled
- Duplicate UIDs detected, skipped, not counted
- Failed label: same serial repeats — no gap in numbering
- Resumes at the last logged label after power loss
- CSV report: index, serial, UID, result, cycle time, timestamp, spec checksum, software and recipe version

On-device AI

- Local language model, open weights, Apache 2.0
- Model-agnostic architecture — models remain replaceable
- Two tasks only: classify the job, extract values with a verbatim quote
- Never builds the job, never writes a byte, never names a CSV column
- Technical Q&A answered from local knowledge cards, with source
- No internet, no cloud, no account, no telemetry

Performance

Job analysis, deterministic	8–13 s
Job analysis with AI extraction	65–105 s
Write cycle incl. full verify, NTAG213	0.3–0.5 s
Write cycle incl. full verify, SLIX2 full memory	approx. 2 s
Throughput limited by	mechanical feed, not the reader
Labels per job	up to 10,000
CSV limits	5 MB, 20,000 data rows

Scope of this release

One job at a time · no XLSX import (CSV supported) · no NTAG password or lock functions · no SLIX EAS, SLIX2 privacy or destroy commands · user interface German (English planned) · operator documentation in German and English.

www.idcraft.com sales@idcraft.com +49.6236.4494.685

IDCRAFT
RFID & NFC EXPERTS

IDSCOUT Encode
NFC Encoding Station

HOW IT WORKS

AI LANE — RECOGNISES AND PROPOSES

Job text
in plain language

→ **Language model · runs on device**
recognises the job pattern
extracts values + literal quote

⛔ **The AI never writes a byte and never builds the job.**

values + evidence

HUMAN — DECIDES AND RELEASES

Form with evidence
traffic light

→ **Byte-exact payload**
preview

→ **Operator PIN**
fresh entry

→ **FIRST-PIECE RELEASE**
label 1 read back
and confirmed

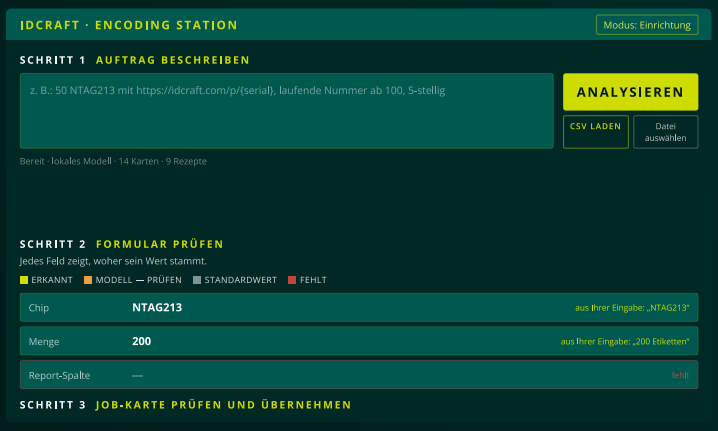
● green backed ● orange proposed ● red missing

confirmed job

DATA LANE — NO LANGUAGE MODEL EXISTS HERE

Chip database → **NDEF / raw builder** → **Write label** → **FULL READ-BACK + compare** → **UID bind + log** → **Report CSV + audit**

mismatch → defined error, label marked



Setup screen — every adopted value shows where it came from.

First-piece check — the batch does not start until a human confirms what is physically on the chip.

Every label carries its own proof: chip UID, spec checksum, software and recipe version — in a report that goes back into the order.

IDSCOUT Encode is an AI-enabled system within the meaning of Art. 50(1) of Regulation (EU) 2024/1689; the notice is also shown in the device UI. Article no. CT-IDS-ENC · Edition 09/2026 · IDCRAFT GmbH, Siemensstrasse 5b, 67141 Neuhofen, Germany

www.idcraft.com sales@idcraft.com +49.6236.4494.685