Copier accounting systems COPYTRON®
Contactless Mifare® cards

The latest generation of our smart card systems uses the contactless Mifare® card. These card is usable for all future applications. It eliminates many problems and disadvantages of smart cards with contacts (e.g. contamination of the contacts, destruction by external voltage). It is perfect for outdoor use and using in moist rooms. The Mifare® smart card has a flexible segmentation with separate access codes for the different memory blocks.

There are 5 different card types for smart card systems of HÖR electronic:

a)	Debit card with money (G-)	Reloadable copier card for students/regular customers - *the card must be loaded first with a money value* - *the available money value can be used to make copies*
b)	Debit card with points (P-)	Reloadable copier card for students/ regular customers - *the card must be loaded first with points* - *the available points can be used to make copies*
c)	Access card with money (G+)	Copier card for copy shops with walk-in customers - *the money value of the card is incremented by every copy / transaction* - *after billing the card can be reset to 0 easily* - *unlimited use for copies possible*
d)	Access card with points (P+)	Copier card for copy shops with walk-in customers - *the number of points of the card is incremented by every copy / transaction* - *after billing the card can be reset to 0 easily* - *unlimited use for copies possible*
e)	Cost centre card (K)	Copy card for employees - *each card can be assigned to a cost centre independently from the card number* - *copies / transactions are counted in this cost centre* - *unlimited or limited use for copies possible*

The most used card is the debit card with money (G-). It offers the possibility to adjust copy prices in smallest steps (steps of smallest coin divided by ten) and is also usable for all other applications (e.g. cafeteria, library fees). The cards with points are the best solution to assign copy capacities (e.g. for teachers). Cost centre cards are also working with points.

Advantages

- No failure caused by contact-problems (soiling, grease etc.)
- Pluggable in all four directions
- Secure against manipulation by 48-bit access-code
- No destruction by external voltage
- Unlimited read-cycles
- 100.000 write-cycles
- 10 years data preservation

- Last 6 sales will be recorded
- Last 3 valorisations will be recorded
- Compatible with MAD
- Usage as student identity card possible, also in association with HIS
- Several purses possible
- Another applications:
  access control, staff-restaurant system, time registration etc.

Security features

- Fast anti-collision protocol
- Individual access codes for each sector (2x48 bit each)
- Individual access rights for each record

- Interacting authentication
- Data encryption while transfer
- CRC checksum

System properties of the Mifare® standard 1k card

Transmission of signals:	contactless	Life of the chip:	100.000 write-cycles, 10 years data preservation
Frequency:	13,56 MHz		
Total storage capacity:	1024 Bytes x 8 Bit (1 kByte) EEPROM	Rate of transmission at read / write:	2,5 µs / 25 µs
		Transaction period:	< 100 ms
Usable storage capacity:	768 Bytes	Range:	up to 100 mm write/read distance (depends on antenna geometry)
Storage capacity segmentation:	16 sectors, 4 records á 16 bytes each	Dimensions (ISO 7816):	85,6 mm × 53,98 mm x 0,76 mm