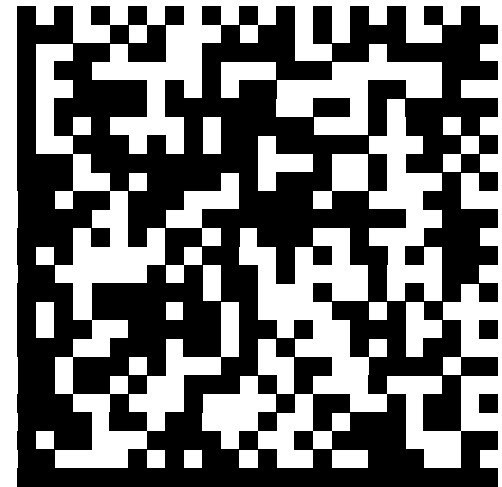




SICK AG Auto Ident

Data Matrix Basics



Brief Description



- ✓ **Symbol definition**
 - 1989 Data Matrix ECC 000-140**
 - 1995 Data Matrix ECC200**
- ✓ **Error Checking and Correcting**
 - Reed Solomon algorithm**

Standards



- ✓ **AIM International
IST/96-001**

- ✓ **ISO/IEC 16022**

Characteristics



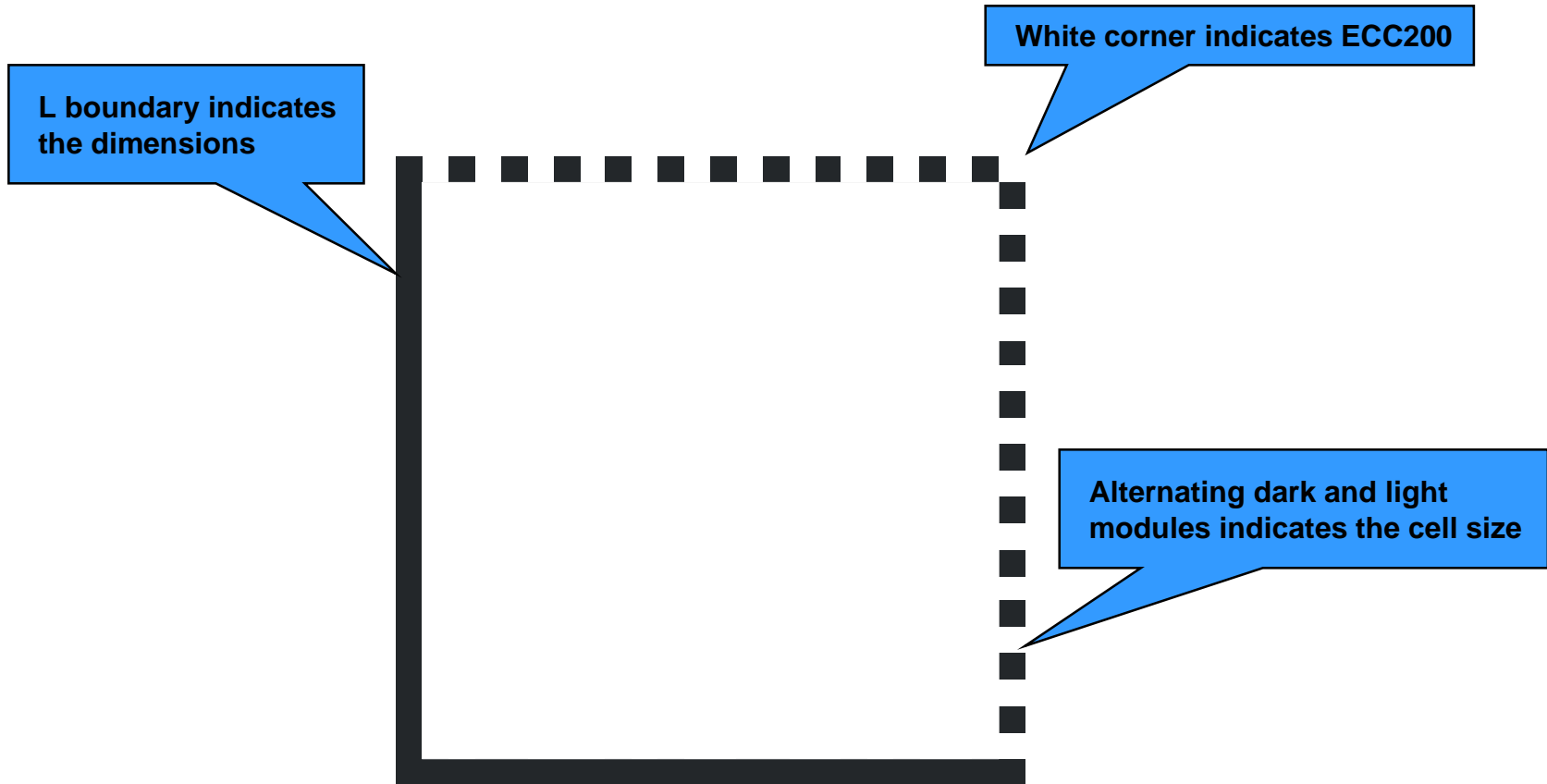
- ✓ **Several character sets**
- ✓ **Symbol size: data dependent**
- ✓ **Element size: variable**
- ✓ **Cell form: square pixels**

Capacity



- ✓ **alphanumeric: 2335 char**
- ✓ **numeric data: 3116 digits**
- ✓ **8-bit byte data: 1556 char**

Finder Pattern



Squared Matrices

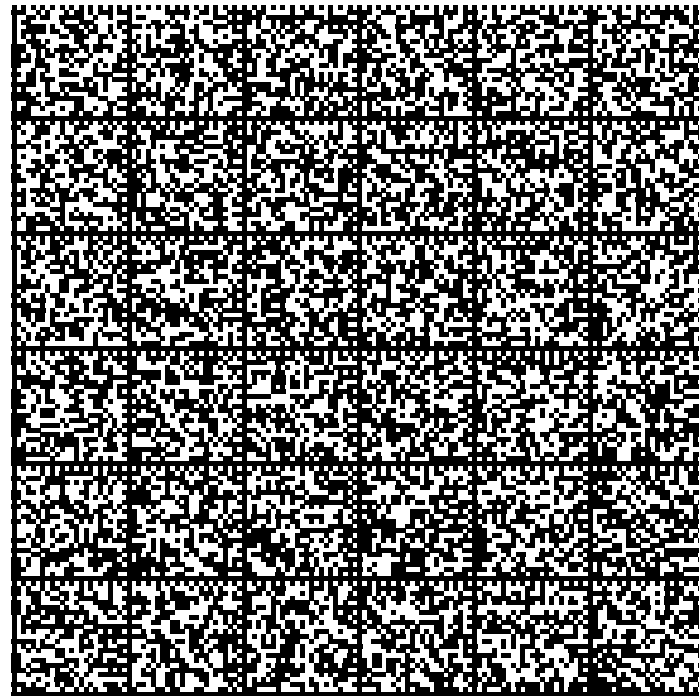


- ✓ **24 squared symbols**
from 10x10 to 144x144
even number of rows and columns

Squared Matrices



10 x 10



144 x 144

Rectangular Matrices



✓ **6 rectangular symbols**

8x18 / 8x32 /

12x26 / 12x36 / 16x36 / 16x48

Rectangular Matrices



8 x 18



12 x 26



16 x 36



8 x 32



12 x 36



16 x 48

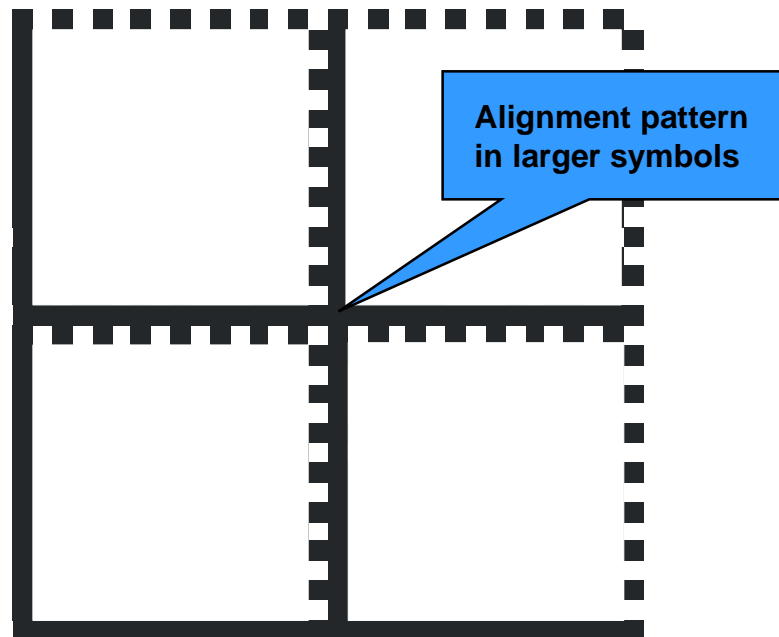
Additional Alignments



- ✓ **In square symbols
even or greater than 32 x 32 cells**
- ✓ **In four rectangular symbols
12x26 / 12x36 / 16x36 / 16x48**

Alignment Pattern

i.e. 32 X 32 cell matrix



Symbol Dimensions



- ✓ **X-Dimension:** not specified
- ✓ **Finder pattern:** once the X-Dimension
- ✓ **Alignment:** twice the X-Dimension
- ✓ **Quiet zone:** once of X-Dimension

Capacities Examples

row	column	Cap. num	Cap. alphanum	ECC overhead
10	10	6	3	62,5 %
16	16	24	16	50 %
26	26	88	64	38.9 %
52	52	408	304	29,2 %
80	80	912	682	29,6 %
144	144	3116	2335	28,5 %

Code Verifier Criteria

- ✓ **Symbol Contrast**
- ✓ **Print Growth**
- ✓ **Axial Nonuniformity**
- ✓ **Unused Error Correction**

Code Verifier Parameter Values

Grade	Contrast	Print Growth	Ax. Nonunif.	UEC
A	SC \geq 70%	$-0,5 \leq D \leq 0,5$	AN \leq 0,06	UEC \geq 0,62
B	SC \geq 55%	$-0,7 \leq D \leq 0,7$	AN \leq 0,08	UEC \geq 0,5
C	SC \geq 40%	$-0,85 \leq D \leq 0,85$	AN \leq 0,10	UEC \geq 0,37
D	SC \geq 20%	$-1,00 \leq D \leq 1,00$	AN \leq 0,12	UEC \geq 0,25
F	SC \geq 20%	D < -1 or D > 1	AN > 0,12	UEC < 0,25

Specials



- ✓ **Structured Append**
 - Append up to 16 ECC 200 Symbols**
- ✓ **Extended Channel Interpretation**
 - * **international character sets**
 - * **encrypted and compacted character sets**
 - * **user defined character sets**
 - * **control information**

**Thanks for
Your
Attention**

