

# SPECIFICATION

## MODEL NAME

MCR-530N-2R , MCR-535N-2R

MCR-510N-2R , MCR-515N-2R

Manual Swipe Type

Magnetic Stripe Card Reader

( Lower Consumption Version )

NEURON CORPORATION

(This specification is subject to change without any prior notice.)

(Rev. 1.11)

September 27,1994

1. Product Name

Manual Swipe Type Magnetic Stripe Card Reader

2. Model Name

Color	Track	Without Case Version	With Case Version
STANDARD	1&2	MCR-530N-2R-0101	MCR-530N-2R-0201
	2&3	MCR-510N-2R-0101	MCR-510N-2R-0201
IVORY	1&2	MCR-535N-2R-0101	MCR-535N-2R-0201
	2&3	MCR-515N-2R-0101	MCR-515N-2R-0201

3. Function

3.1. Card Operation

Manual Swipe

3.2. Read or Write

Read only

4. Card Standard

4.1. Magnetic Card

Magnetic stripe card conforming to ISO7810, 7811/1, 7811/2, 7811/3, 7811/4, 7811/5 (ID-1)

5. Connector

IL-10S-S3L-(N) manufactured by JAE.

6. Appearance & Transport

6.1. Appearance

Please refer to Appendix drawing.

6.2. Weight

Approx. 50 g      Without case version  
Approx. 70 g      With case version

6.3. Size

27×99×28.6 (W×L×Hmm)      Without case version  
31×99×32 (W×L×Hmm)      With case version

6.4. Power supply

DC + 5V ± 5%, Ripple within 50mVpp  
Current consumption approx. 3.2mA (Max. 4.0mA)

7. Basic Operation

Block Diagram

Fig. 1

Timing Chart

Fig. 2

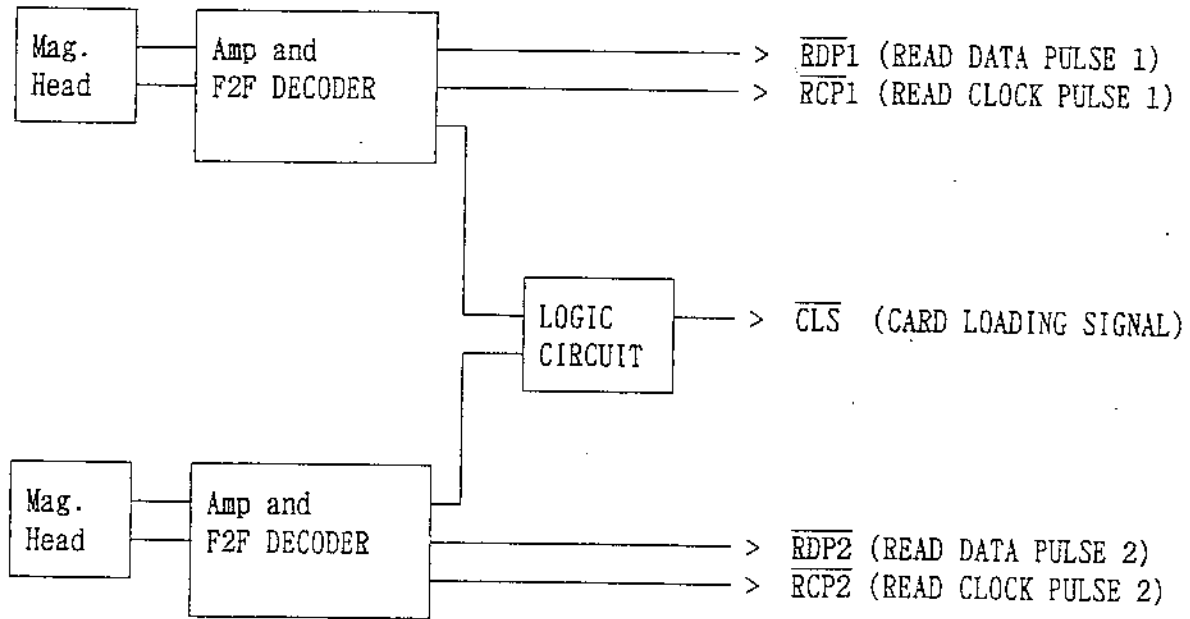


Fig. 1

## 8. Basic Characteristics

8.1. Card Operating Speed      10cm/sec. to 120cm/sec.

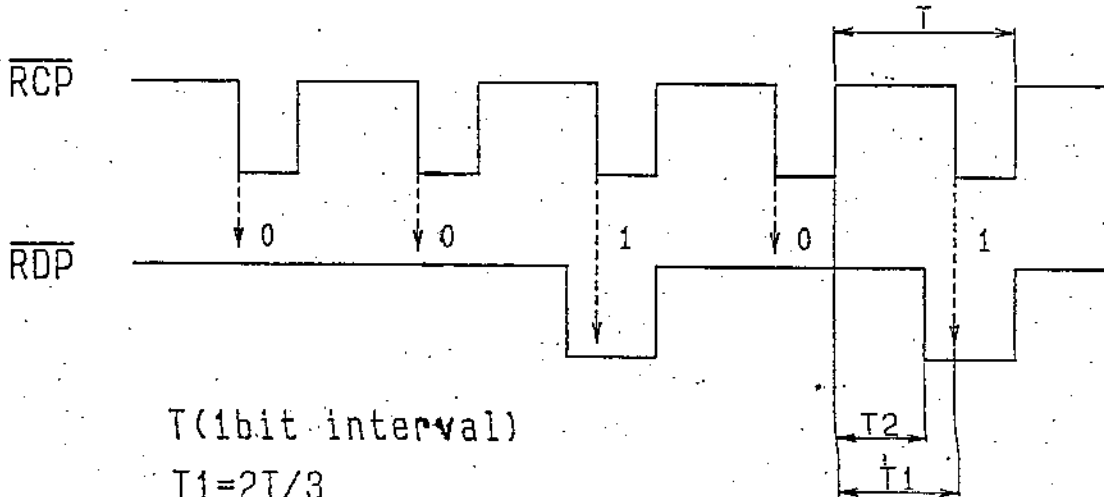
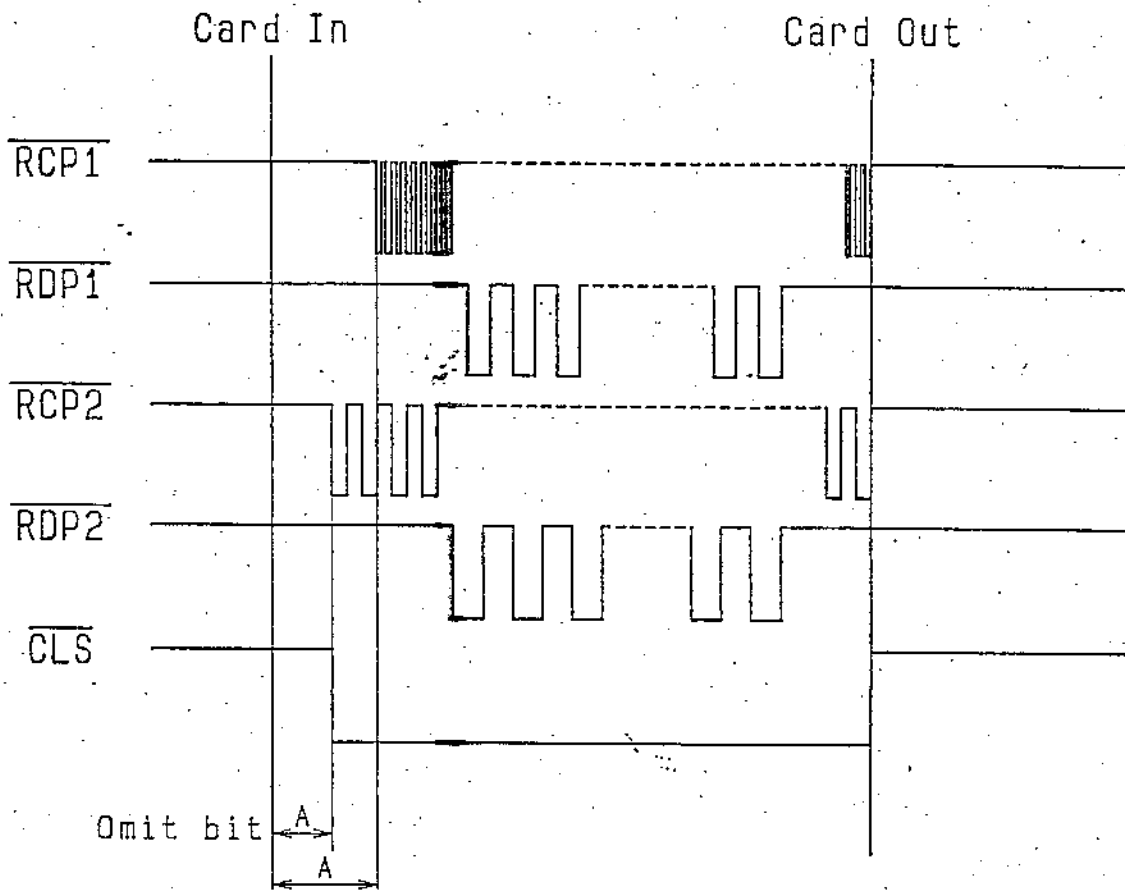
8.2.

MODEL		MCR-530N-2R		MCR-535N-2R			
				MCR-510N-2R		MCR-515N-2R	
Readable Track		Track 1		Track 2		Track 3	
Recording Density		210 BPI		75 BPI		210 BPI	
Read-out Bit Interval	at 10cm/s	1.21 msec.		3.39 msec.		1.21 msec.	
	at 120cm/s	101 $\mu$ sec.		282 $\mu$ sec.		101 $\mu$ sec.	
Magnetic head							
Track Width		1.45mm		1.45mm		1.45mm	
Center Position		7.0 $\pm$ 0.2mm		10.4 $\pm$ 0.2mm		13.7 $\pm$ 0.2mm	

8.3. Dielectric Tolerance      DC 500V for one minute  
(Between circuit ground and frame guide plate)

8.4. Insulation Resistance      10M $\Omega$  and over. (at DC500V)

Fig.2 Timing Chart



T(1bit interval)

$$T1=2T/3$$

$$T2=T/2$$

MODEL	MCR-530N-2R	MCR-535N-2R	
			MCR-510N-2R
	1	2	3
A	16bit(TYP.)	8bit(TYP.)	16bit(TYP.)

## 9. Output Signals

### 9.1. Output Level

		Condition	Standard
$\overline{RDP1}$ , $\overline{RCP1}$ $\overline{RDP2}$ , $\overline{RCP2}$	High Level Low Level	$I_{OH}=-4mA$ $I_{OL}=8mA$	3.5V and over 0.4V or less
$\overline{CLS}$	High Level LOW Level	$I_{OH}=-0.4mA$ $I_{OL}=0.4mA$	4.6V and over 0.4V or less

### 9.2. Signals

	Signal	Contents
GND	Ground	Ground for +5V and Signal Ground
$\overline{RDP1}$	Read Data Pulse 1	Output Read Data. (Negative Logic) This signal is demodulated by F2F decoder and sampling for this signal is performed by the falling edge of signal $\overline{RCP1}$ . Level "High" indicates data as "0" and Level "Low" indicates data as "1".
$\overline{RCP1}$	Read Clock Pulse 1	This signal is used for Read Data Sampling. (Negative Logic) This signal performs sampling for signal $\overline{RDP1}$ at the falling edge.
$\overline{CLS}$	Card Loading Signal	This signal indicates that a card is running on Mag. Head. Level is "Low" while a card is running on Mag. Head, and level becomes "High" when a card stops or is not on Mag. Head.
$\overline{RDP2}$	Read Data Pulse 2	Output Read Data. (Negative Logic) This signal is demodulated by F2F decoder and sampling for this signal is performed by the falling edge of signal $\overline{RCP2}$ . Level "High" indicates data as "0" and Level "Low" indicates data as "1".
$\overline{RCP2}$	Read Clock Pulse 2	This signal is used for Read Data Sampling. (Negative Logic) This signal performs sampling for signal $\overline{RDP2}$ at the falling edge.
+5V	+5V DC	Supply Power

## 10. Environmental Characteristics

- |   |   |
|---|---|
| 10.1. Operation Temperature<br>and Humidity | 0°C to 50°C (32° F to 122° F)<br>20% to 80% R.H. (Non condensation)   |
| 10.2. Storage Temperature<br>and Humidity   | -20°C to 70°C (-4° F to 158° F)<br>20% to 80% R.H. (Non condensation) |

## 11. Environmental Test

- |  |  |
|--|--|
| 11.1. Temperature and<br>Humidity Rating | +40°C ± 3°C<br>90% to 95% R.H.<br>96 hours |
|--|--|

There will be no functional failure in 12 hours  
after returning to standard conditions.  
(Non condensation)

- |                        |   |
|------------------------|---|
| 11.2. Vibration Rating | Full Amplitude 2mm (0.08 inch)<br>Vibration sweep 10 to 50Hz/min.<br>x,y,z each direction for 15 min. |
|------------------------|---|

There will be no functional failure after returning  
to standard conditions.

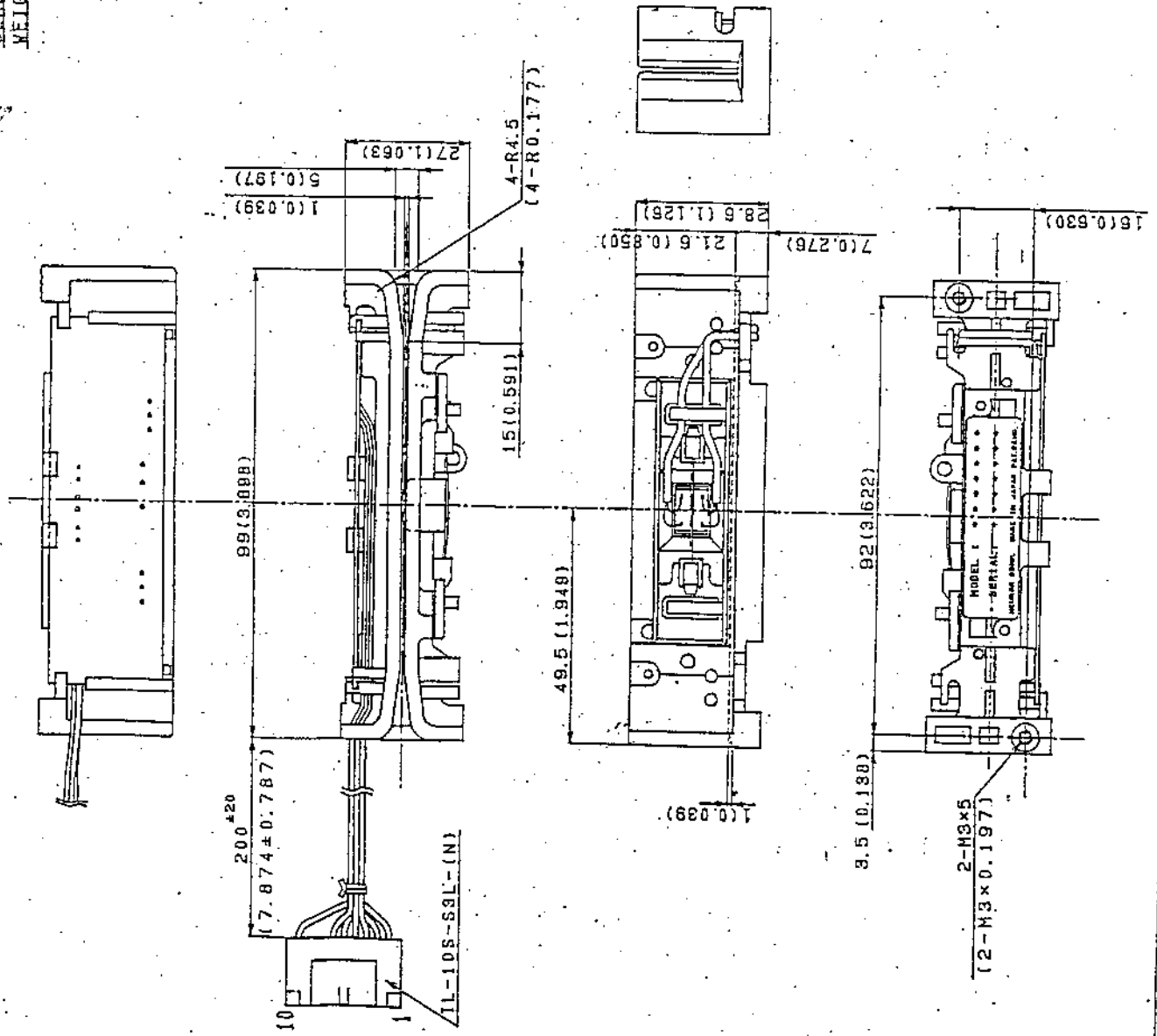
- |                    |   |
|--------------------|---|
| 11.3. Shock Rating | 30G 11msec<br>Once each x,y,z Direction |
|--------------------|---|

There will be no functional failure after returning  
to standard conditions.

- |                        |                              |
|------------------------|------------------------------|
| 12. Magnetic Head Life | 300,000 card passes Minimum. |
|------------------------|------------------------------|

Note: Standard conditions: Temperature 20°C ± 5°C,  
Humidity 35% to 60% R.H.

DIMENSION IN MILLIMETER (IN INCHES)  
 GENERAL TOLERANCE  $\pm 0.5 (\pm 0.02)$   
 WEIGHT: 70g



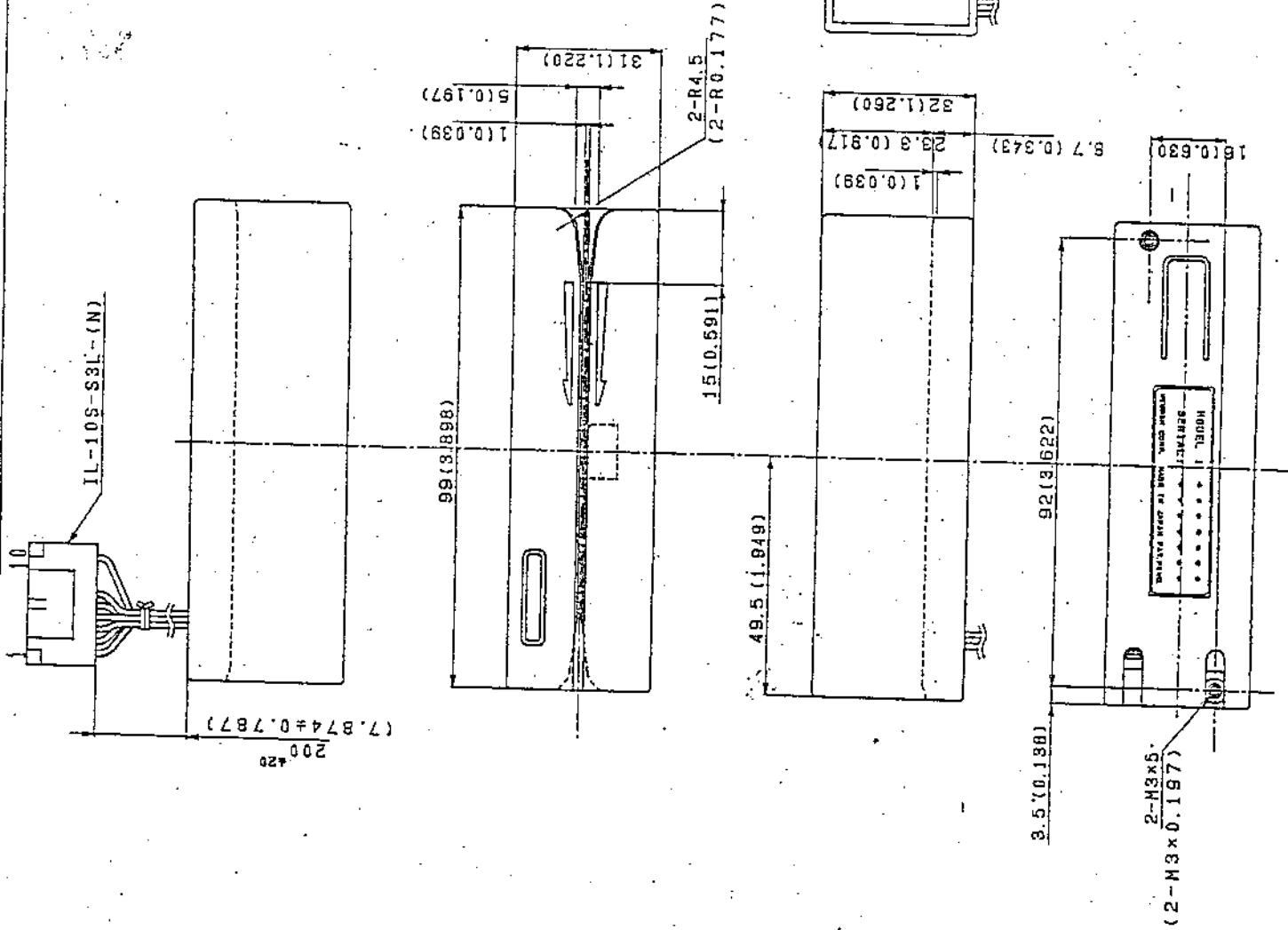
CONNECTOR PIN No. & SIGNAL

No.	SIGNAL	COLOR
1	GND	BLACK
2	CLS	BROWN
3	RDP1	ORANGE
4	RCP1	YELLOW
5	RDP2	GREEN
6	RCP2	BLUE
7	NC	
8	NC	
9	NC	
10	+5V	RED

Model Name :  
 MCR-530N-2R-0101  
 MCR-510N-2R-0101  
 MCR-535N-2R-0101  
 MCR-515N-2R-0101

APPEARANCE  
 NEURON CO., LTD.

DIMENSION IN MILLIMETER (IN INCH)  
 GENERAL TOLERANCE  $\pm 0.5 (\pm 0.02)$   
 WEIGHT: 90g



CONNECTOR PIN No. & SIGNAL

No.	SIGNAL	COLOR
1	GND	BLACK
2	CLS	BROWN
3	RDP1	ORANGE
4	RCPI	YELLOW
5	RDP2	GREEN
6	RCP2	BLUE
7	NC	
8	NC	
9	NC	
10	+5V	RED

Model Name :  
 MCR-530N-2R-0201  
 MCR-510N-2R-0201  
 MCR-535N-2R-0201  
 MCR-515N-2R-0201

APPEARANCE  
 NEURON CO., LTD.



Figure 2. THE 64-CHARACTER ANSI SET FOR ENCODING TRACK 1

BITS				CHARACTER SET			
$b_4$	$b_3$	$b_2$	$b_1$	$b_6$	$b_5$	$b_4$	$b_3$
0	0	0	0	0	0	1	1
0	0	0	1	0	1	0	1
0	0	1	0	0	0	1	1
0	0	1	1	0	1	0	1
0	1	0	0	0	0	1	1
0	1	0	1	0	1	0	1
0	1	1	0	0	0	1	1
0	1	1	1	0	1	0	1
1	0	0	0	0	0	1	1
1	0	0	1	0	1	0	1
1	0	1	0	0	0	1	1
1	0	1	1	0	1	0	1
1	1	0	0	0	0	1	1
1	1	0	1	0	1	0	1
1	1	1	0	0	0	1	1
1	1	1	1	0	1	0	1
1	1	1	1	0	0	1	1
1	1	1	1	1	0	0	1

Notes:  $b_7$  is an odd parity bit.  
 $b_1$  is the LSB, encoded first.

6 bits  
 + 1 parity bit  
 -----  
 7 bit characters