
Exécute Sélection Forme Déplace Contrôle Transfert Quitte
SCO Lyrix
SCO Professional
SCO Professional calc
SCO Foxbase
SCO VP/ix
GEPSI WP-II-
GEPSI Adonix
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SCO Professional calc
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Worksheet Range Copy Move File Print Graph Data System Learn Transfer Quit
Global, Insert, Delete, Column-Width, Erase, Titles, Window, Status, Page
A B C D E F G H
1 Janvier Fevrier Mars Avril Mai Juin Juillet Aout
2 100000 25000 15000 555000 200000
3 300000.5 250000 35000 789500 3500000
AMSTRAD
HARD DISK 65
AMSTRAD 20MHz SYSTEM UNIT PC2386/65

system-cfg.com

Amstrad PC2386

Fabien Neck

1-2 minutes

Base de données - Amstrad PC2386

Constructeur :	Amstrad Consumer Electronics plc. (Essex, UK)
Date de sortie :	1988
Référence :	**PC2386**
Processeur :	i80386 à 20 MHz
Mémoire :	RAM 4096 Ko ROM 64 Ko
Affichage :	VGA
Stockage :	Lecteur de disquettes 3"1/4 de 1,44 Mo Disque dur de 65 Mo
Interfaces :	5 slots d'extension 16 bits Série et parallèle

Software :	Ms-Dos
Collection :	Cette machine ne fait pas partie de ma collection

Plan du site - Ordinateurs - Consoles - Goodies - Nouveautés - Liens - Me contacter

Mise à jour le 22/09/18


AMSTRAD
AMSTRAD
PC2386/65
2020020
ferrua


AMSTRAD
ATTENZIONE ALTA TENSIONE
ATTENZIONE ALTA TENSIONE
TESTED
ferrua
LL24 HP 2


ALIMENTAZ.
HARD DISK
65
AMSTRAD
20MHz SYSTEM UNIT
PC2386/65
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FREEWAY
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COLOR: BLU


UNITA'ESTERNA
ALIMENTAZIONE
INT.EST


AMSTRAD
PC2386/65


ATTENZIONE ALTA TENSIONE!
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SELETTORE VIDEO
USCITA VIDEO
STAMPANTE PARALLELA
INTERFACCIA SERIALE
AMSTRAD PLC
MODELLO PC2386/65
MATRICOLA N
MADE IN KOREA
532-9206015
ferrua
LL24 HP 2


POTERE
VOLUME
MOUSE
TASTIERA


PC2386.65


AMSTRAD
4 MB Personal Computer
PC2386
Esc
F1 F2 F3 F4
F5 F6 F7 F8
F9 F10 F11 F12
Druck
Rollen
Pause
Untbr
Einfg
Pos1
Bild
Entf
Ende
Bild
Num
Strg
Alt
Alt Gr
Strg
Enter


AMSTRAD PLC.
MODEL:
PC2386 KEYBOARD
INPUT VOLTAGE: DC5V
MADE IN KOREA
7220000503
SERIAL NO.
548-9418136


798


ALIMENTAZIONE
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UNITA'ESTERNA
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AVVISO IMPORTANTE


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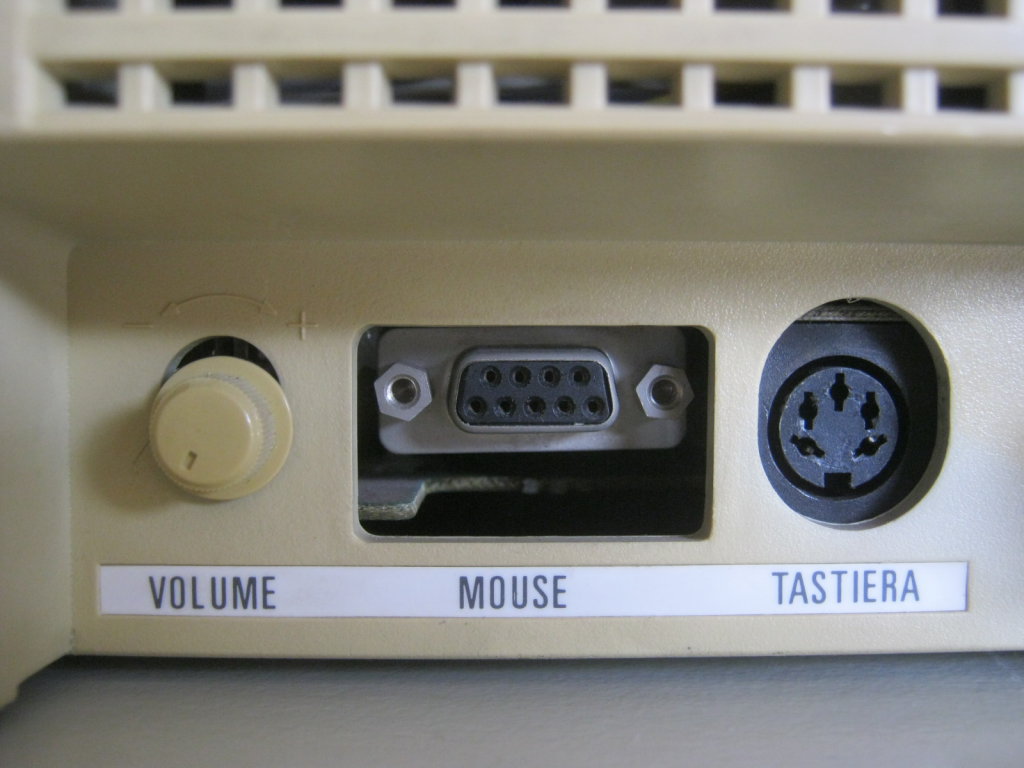
INTERFACCIA SERIALE


STAMPANTE PARALLELA


USCITA VIDEO


VOLUME
MOUSE
TASTIERA


SELETTORE VIDEO
ON


AMSTRAD
20MHz SYSTEM UNIT
PC2386/65


"ATTENZIONE"
7230002031
I
PRIMA DI SPOSTARE QUESTO SISTEMA
DOTATO DI DISCO RIGIDO
ASSICURARSI CHE LE TESTINE SIANO
IN PARCHEGGIO
(CONSULTARE IL MANUALE D'USO PER DETTAGLI)
HARD DISK
65
digital


POTERE
I
ACCESO
SPENTO


VOLUME


ENTAZ.
digi


ATTENZIONE ALTA TENSIONE!
PRIMA DI APRIRE IL PANNELLO POSTERIORE
SCOLLEGARE L'APPARECCHIO DALLA PRESA
DI ALIMENTAZIONE DI RETE. SPEGNERE
L'APPARECCHIO SE INCUSTODITO E
SCOLLEGARLO SE NON E'USATO.
ALIMENTAZIONE:220÷240V AC 50Hz 244W
CORRENTE NOMINALE:1.9A
INGRESSO VOLTAGGIO CC: +5V +12V
BATTERIE:4xUM-TIPO 3/R6/AA
USCITA CC SCHEDA ESPANSIONE:5V/1.6A MAX
AMSTRAD PLC.
MODELLO:PC2386/65
7220000641
MATRICOLA N'
MADE IN KOREA
532-9206015

AVVISO IMPORTANTE

Nella RAM alimentata a batterie sono memorizzate importanti informazioni riguardanti la configurazione del computer (incluse quelle concernenti il disco fisso).

Prima di poter usare il disco fisso può essere necessario usare il disco MS-DOS di "INSTALL/SETUP", che richiama automaticamente la procedura SETUP. Questo PC ha un drive di tipo 1.

Si devono usare solo i comandi SETUP e PARK forniti con questo PC e non quelli forniti con altri PC AMSTRAD.

PC2286/386IT200689

AMSTRAD
I MIGLIORI


CON I MONITOR VGA AMSTRAD
SI HANNO I RISULTATI MIGLIORI


CON I MONITOR
SI HANNO I RIS

Amstrad 2386 Keyboard – Old Crap Vintage Computing
https://oldcrap.org/2019/06/27/amstrad-2386-keyboard/

Old Crap Vintage Computing

From the Private Collection

June 27, 2019June 27, 2019 by Pawel Pieczul

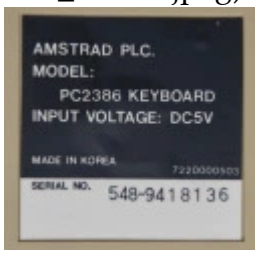
Amstrad 2386 Keyboard

(https://oldcraporg.files.wordpress.com/2019/06/dsc_0018-1.jpeg)

(https://oldcraporg.files.wordpress.com/2019/06/dsc_0019-1.jpeg)

(https://oldcraporg.files.wordpress.com/2019/06/dsc_0020-1.jpeg)


(https://oldcraporg.files.wordpress.com/2019/06
/dsc_0021-1.jpeg)



(https://oldcraporg.files.wordpress.com/2019/06/dsc_0022-1.jpeg)


(https://oldcraporg.files.wordpress.com/2019/06/dsc_0025-2.jpeg)

Resources

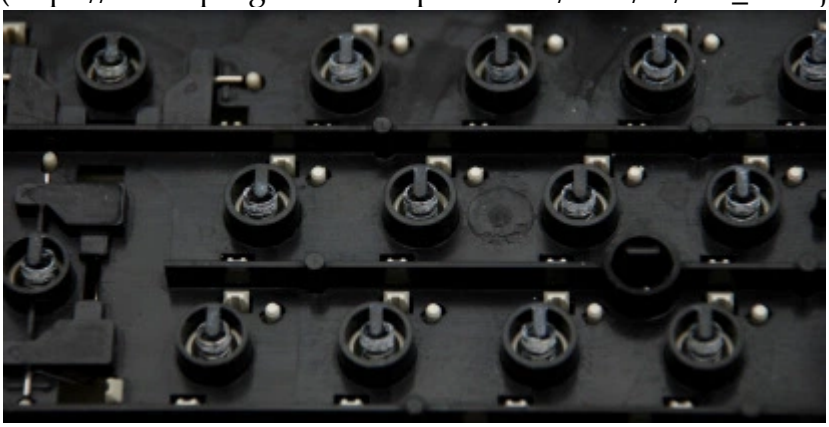
There are no resources about this keyboard and the protocol it uses to communicate with the PC. This

keyboard works with Amstrad 2386 and 3386 computers, also branded as Sinclair-Amstrad APC (https://oldcrap.org/2019/06/25/sinclair-amstrad-apc-386sx/) 286 and 386, respectively. This keyboard is pretty rare to get nowadays. Without it, it is impossible to change BIOS setting and effectively to make the PC boot, assuming the CMOS battery in a vintage machine is likely dead.

Internals

(https://oldcraporg.files.wordpress.com/2019/06/dsc_0008.jpeg)

(https://oldcraporg.files.wordpress.com/2019/06/dsc_0009.jpeg)



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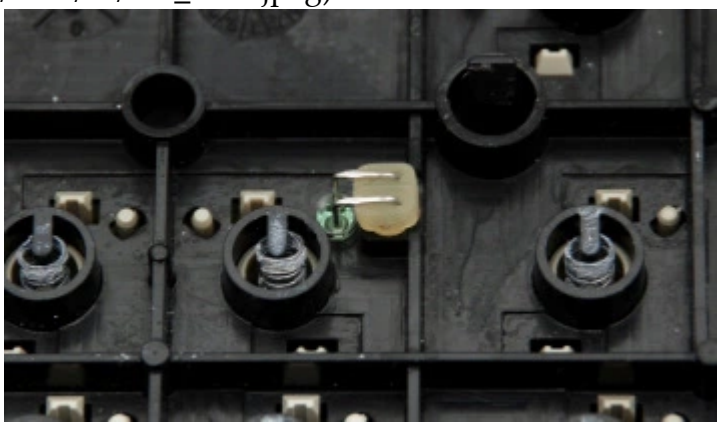

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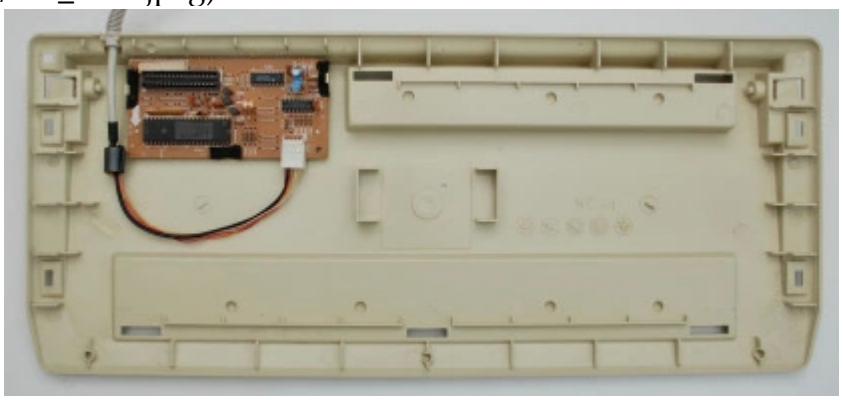
/dsc_0011.jpeg)



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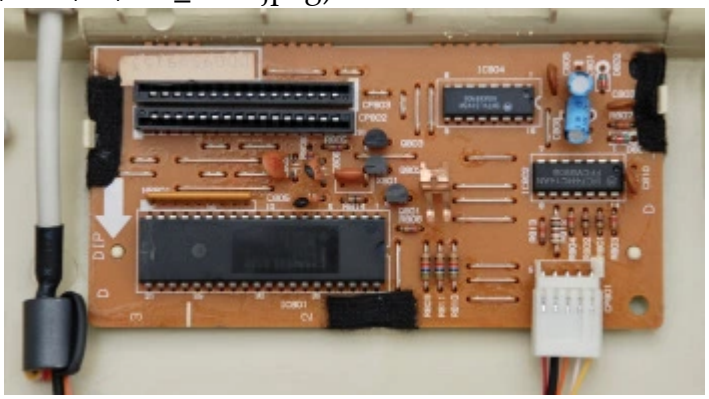

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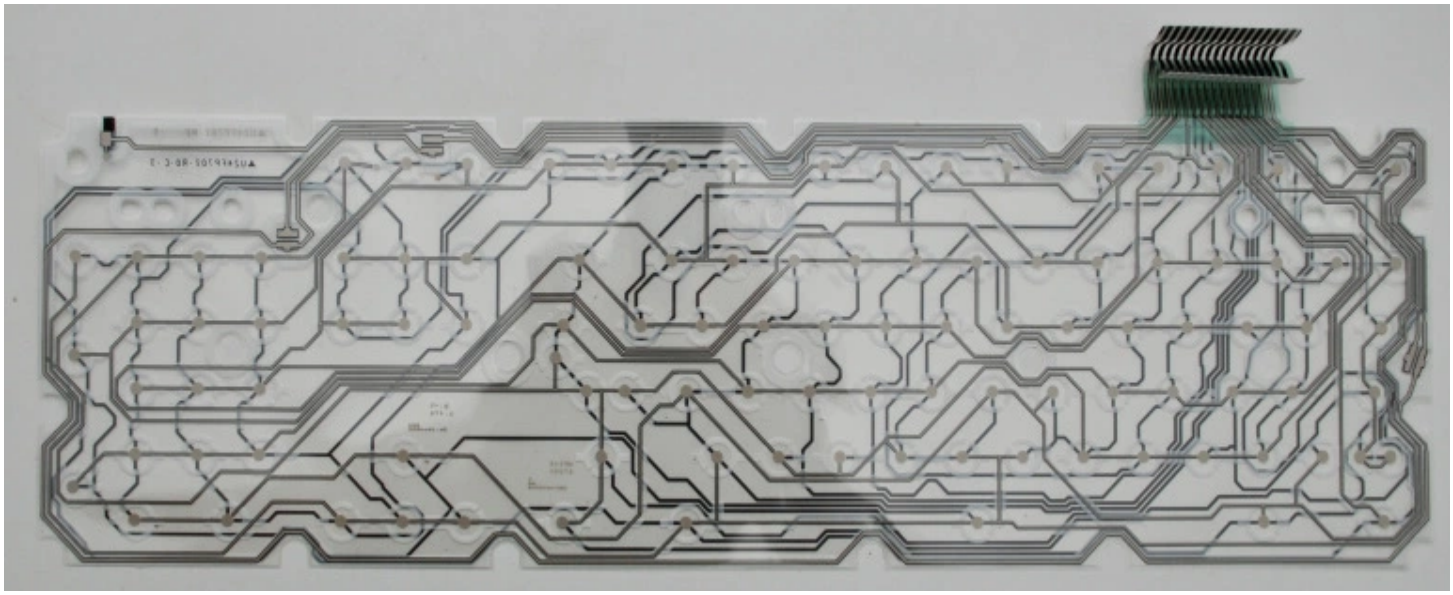
Membrane



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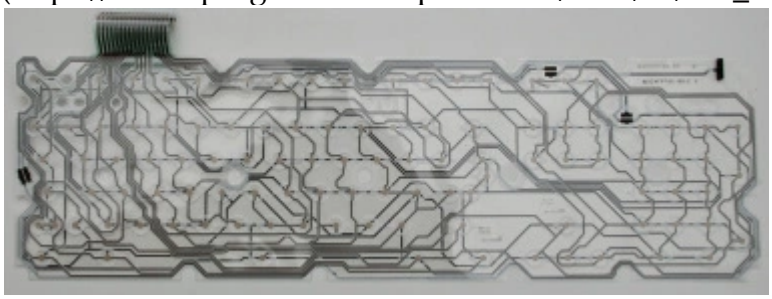

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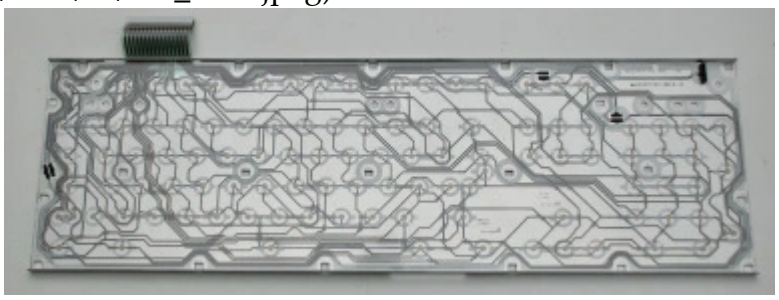
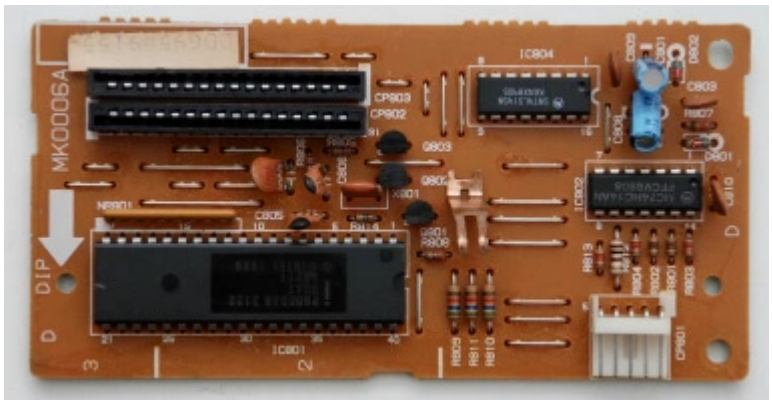


(https://oldcraporg.files.wordpress.com

/2019/06/dsc_0005.jpeg)

Encoder Board



(https://oldcraporg.files.wordpress.com

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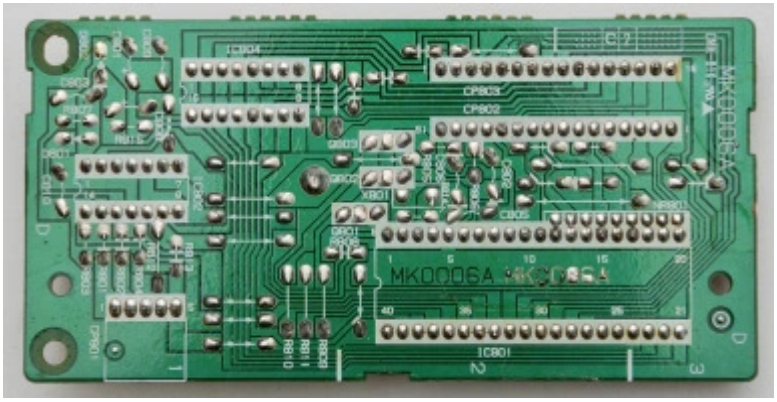
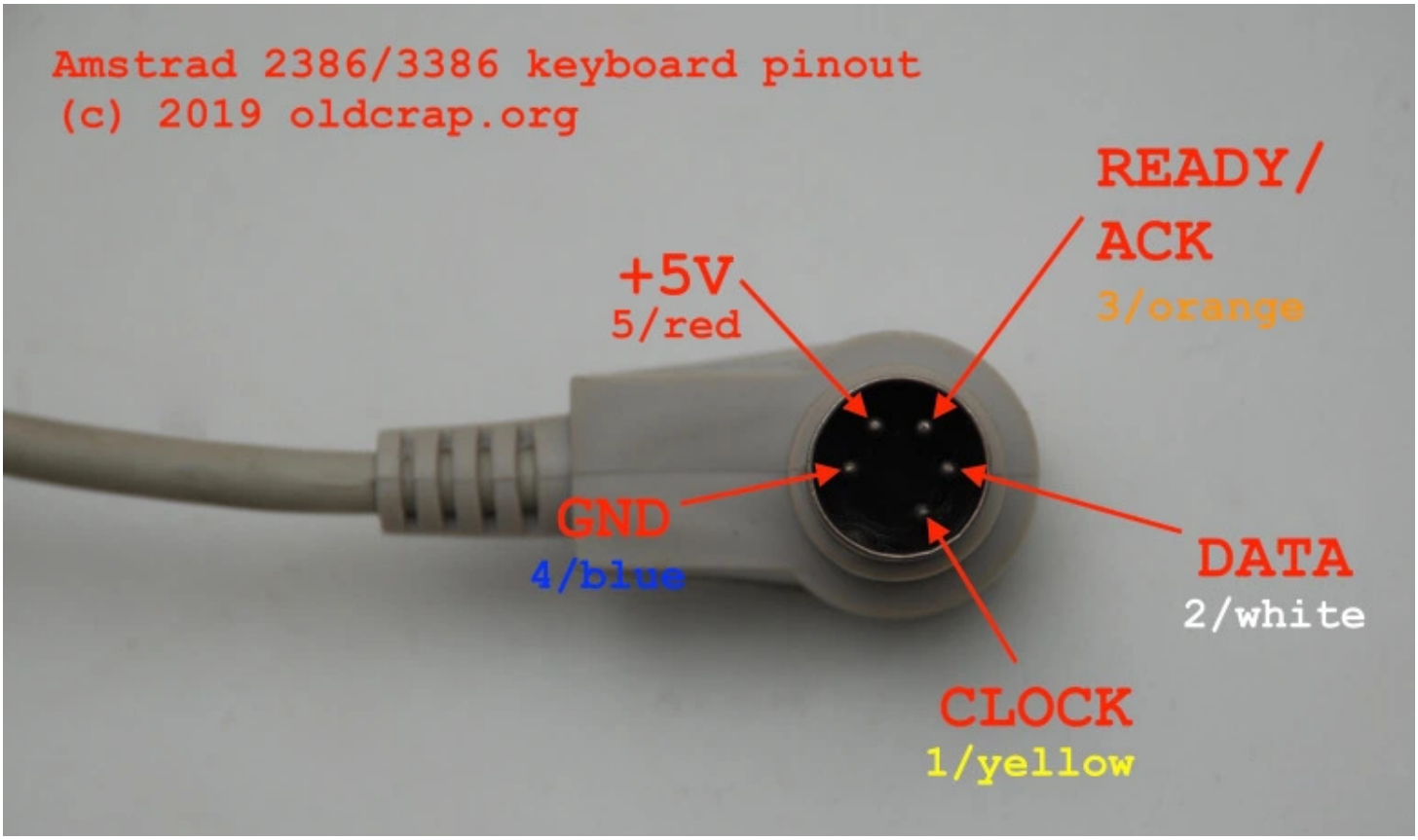


(https://oldcraporg.files.wordpress.com
/2019/06/dsc_0002-1.jpeg)
Communication Protocol

Unlike most of the other keyboards, including PC XT/AT and PS2, this keyboard has a keyboard encoder chip located inside the keyboard. Key presses are analysed and communicated to the PC, using Intel P8050AH (https://datasheetspdf.com/pdf/541969/Intel/P8050AH/1) micro-controller.

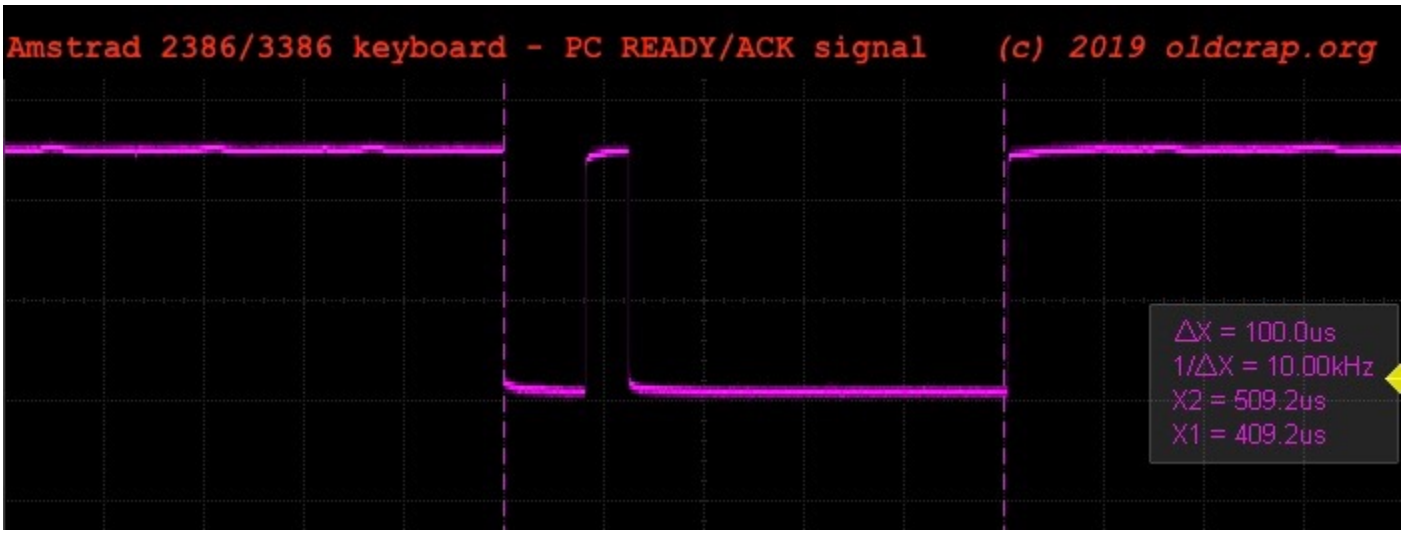
Pinout

Keyboard is connected to the PC using a 5-wire cable with a 5-pin 240-degree DIN connector. The pin numbers and colors relate to the encoder board connector, internal to the keyboard, on the other side of the cable.



Signals available on the connector:

- **GND –** ground.
- **+5V –** power.
- **CLOCK –** clock generated by the keyboard. Clock's falling edge indicates that the DATA signal contains a valid bit state.
- **DATA –** data bit transmitted by the keyboard.
- **READY/ACK –** signal set by the PC, when high, keyboard can send the data to the PC. Upon boot, this signal is initially low and goes high during BIOS initialisation. It is not clear whether PC can use this signal in any point in time, to indicate that it is not capable of receiving data and to stop the keyboard from sending it. PC seems to be using it in repeatable points in time, which looks like it acknowledges reception of data sequences from the keyboard. On the other hand, if we remove the signal from the keyboard, the keyboard still seems to operate correctly. It is also not clear why the signal has always the form as presented on the picture below. More investigation is needed.

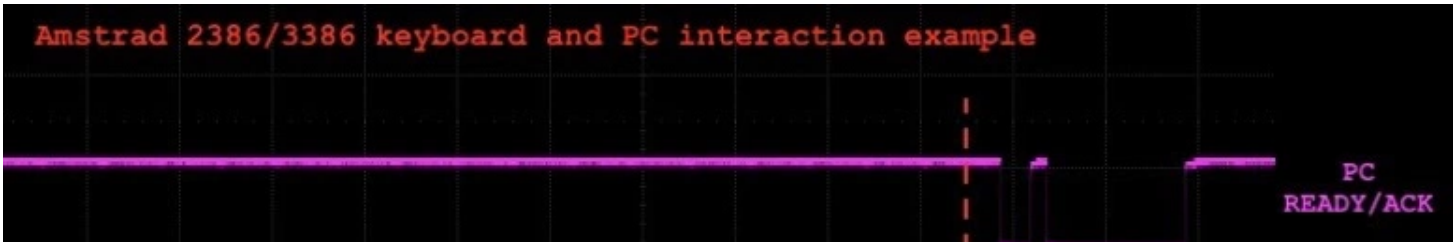


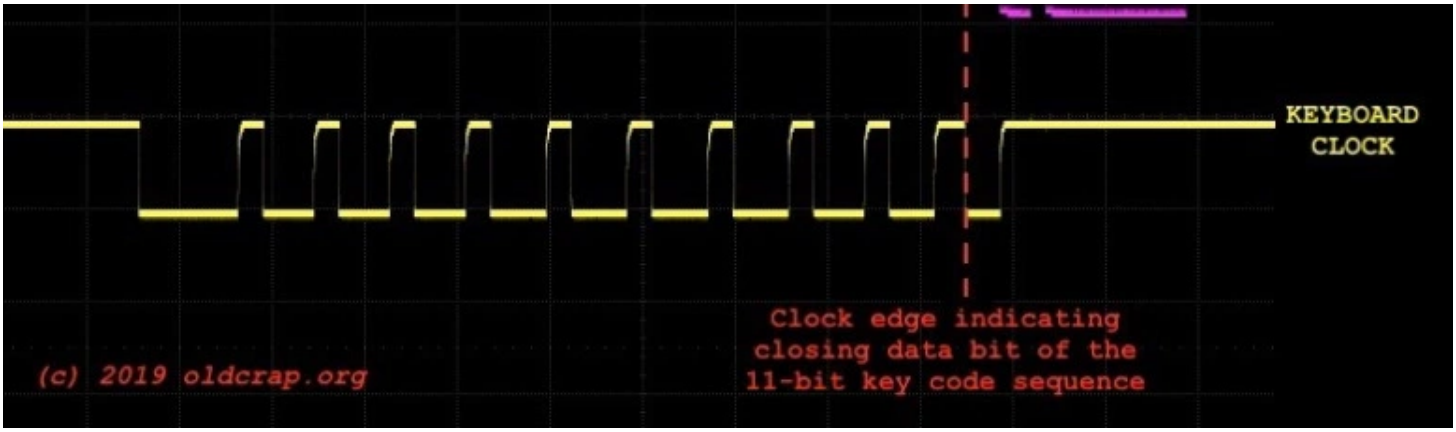
Communication

When **READY/ACK** signal from the PC is high, the keyboard can transmit data to the PC serially, using **DATA** signal and strobing the data with **CLOCK** signal (at its falling edge). The transmission speed is about **24450** bits per second. There are 3 different types of data sequences transmitted:

- **Initialisation sequence** – sent by the keyboard after boot
- **Scan code sequence** – for most of the keys there is 1 byte transmitted per key, but some keys transmit 2, 4 or 6 bytes at once. A single byte is transmitted using 11 bits of data.
- **LED status sequence** – sent following a scan code for a key that has a LED status.

After one byte of a scan code is transmitted, the PC sends a **READY/ACK** signal to the keyboard. When this signal is low, keyboard will not transmit subsequent data, waiting for it to become high.



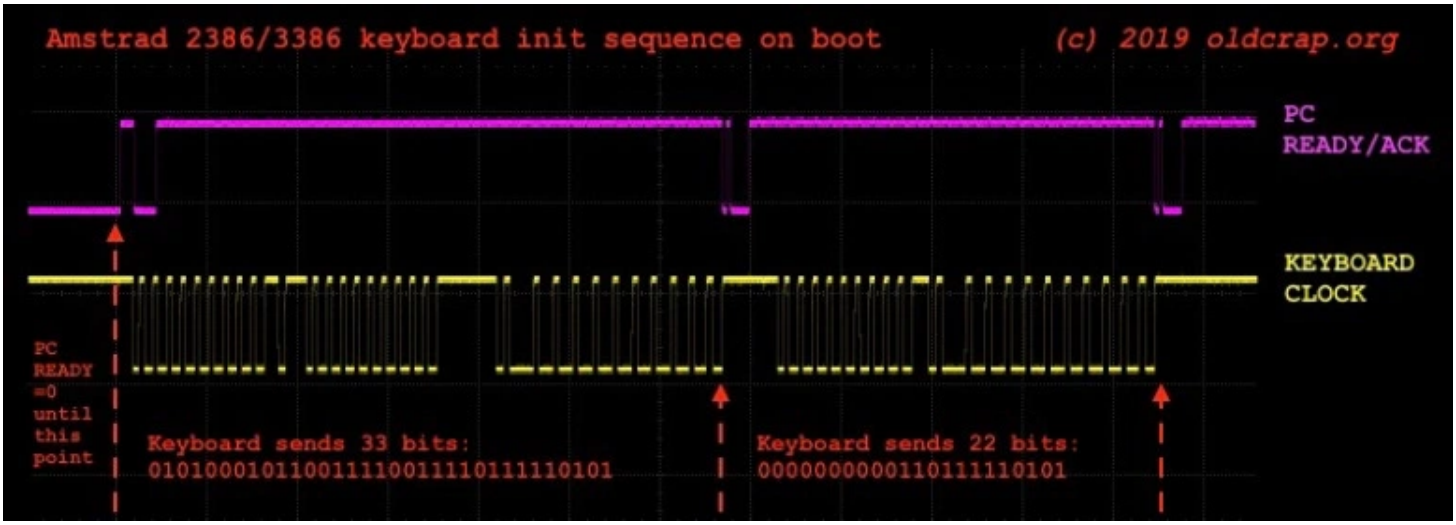


Initialisation sequence

After the PC and keyboard are powered on, **READY/ACK** signal is low. During **BIOS** initialisation, PC sets this signal high. As a response, the keyboard transmits two sequences of 33 and 22 bits to the PC:

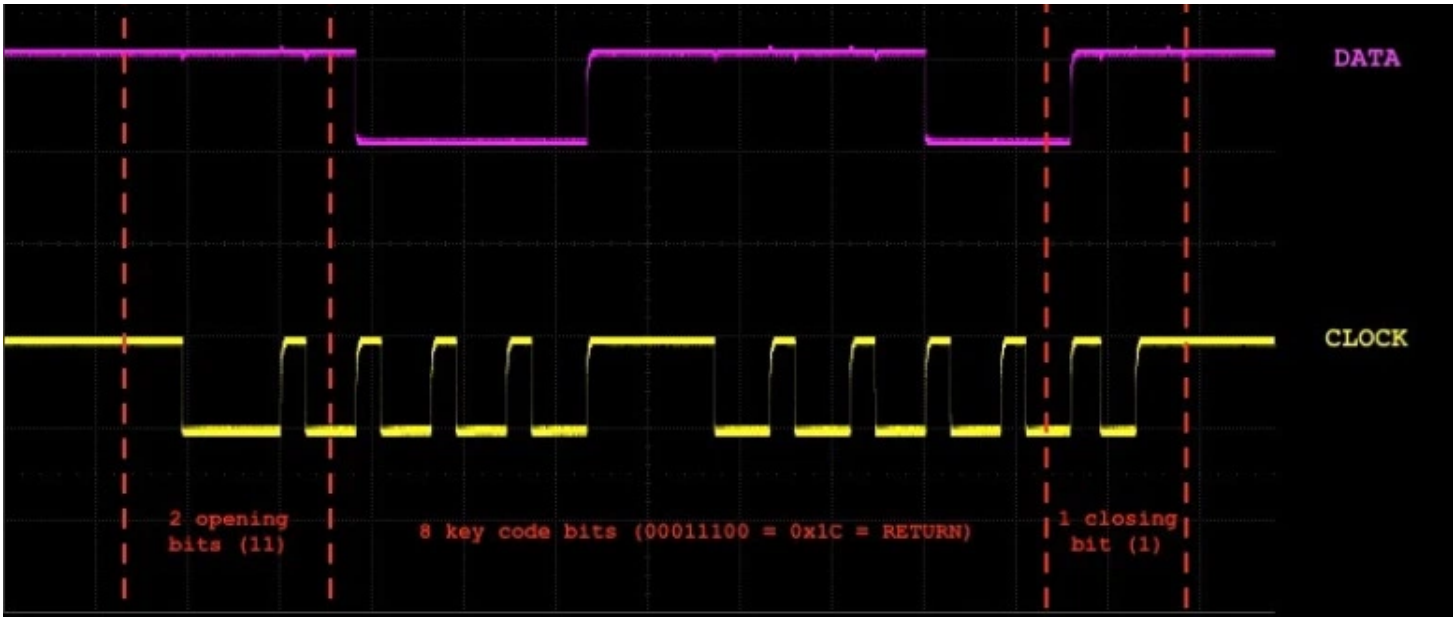
```
0101000101100111100111101111101010000000000110111110101
```

The meaning and purpose of these sequences are not known.

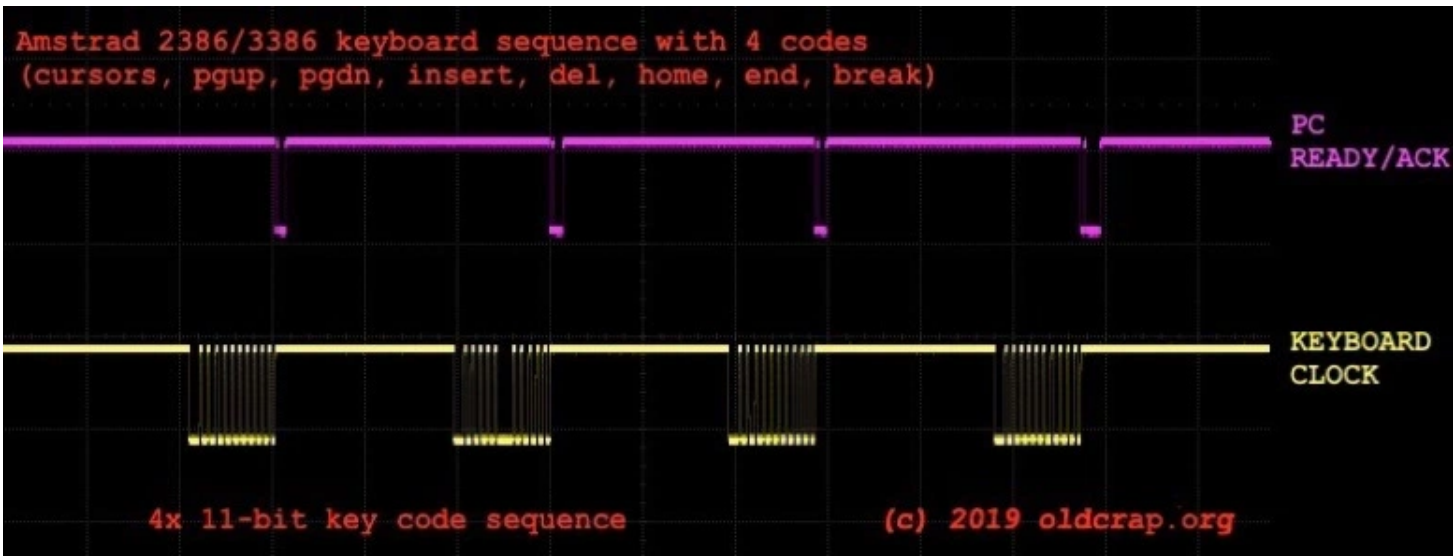


Scan code sequence

A key press on the keyboard results in sending a scan code sequence to the PC. Most of the keys generate 1 byte of code. A byte is transmitted as 2 opening bits (always 1), 8 bits of the code and 1 closing bit (always 1) – a total of 11 bits.



Some keys generate more than 1 byte of code. **ALT GR, right CTRL, keypad divide** and **keypad ENTER** generate 2 bytes. **Print screen**, **Break**, **Page Up/Down**, **Home**, **End**, **Insert**, **Delete** and **cursor keys** generate 4 bytes. **Pause** generates 6 bytes.

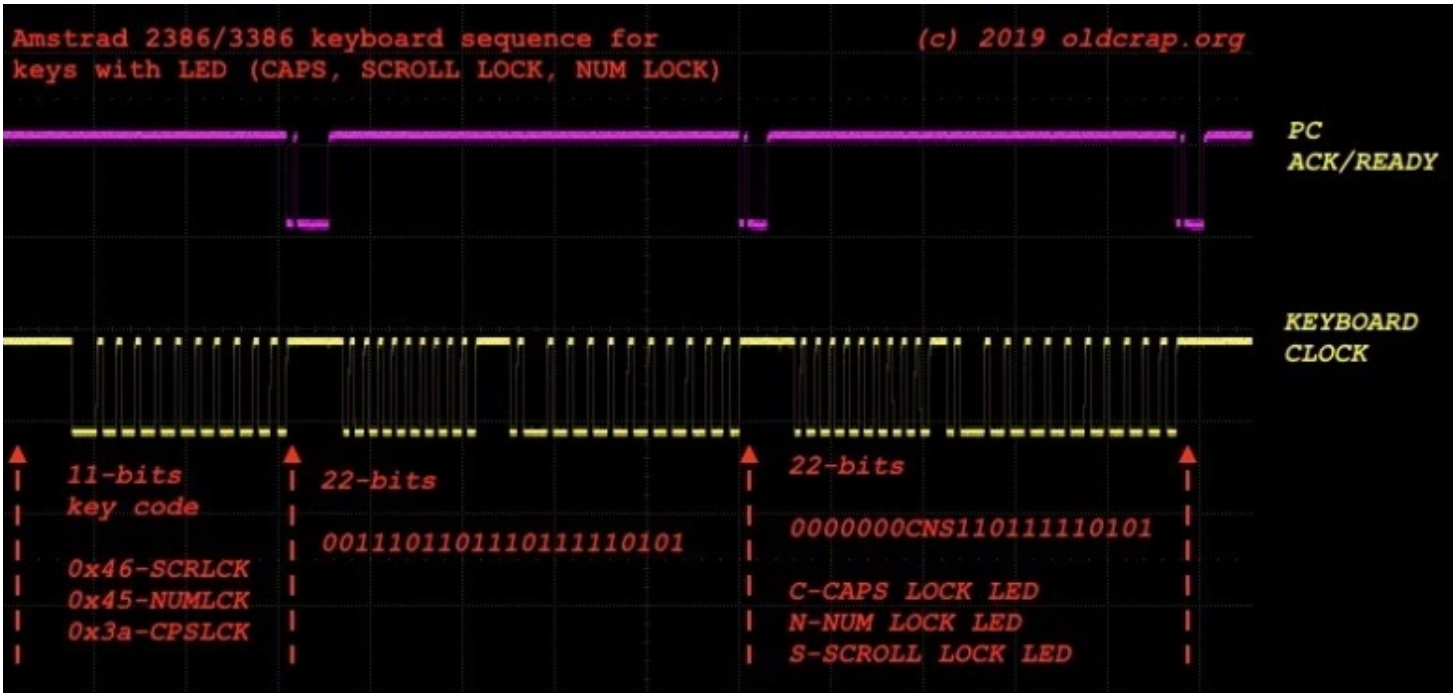


LED status sequence

A scan code for a key with LED (CAPS LOCK, NUM LOCK, SCROLL LOCK) is always immediately followed by the current status of all three LEDs. The status is encoded using two 22-bit sequences:

`0011101101110111100000000000CNS110111110101`

The status of LEDs is put into bits indicates as **C**,**N**,**S**. The purpose of all other bits is not clear.



All scan codes

AMSTRAD/SINCLAIR PC2386 KEYBOARD CODES

ESC 01		F1 3B	F2 3C	F3 3D	F4 3E	F5 3F	F6 40	F7 42	F8 42	F9 43	F10 44	F11 57	F12 58	DRUCK E02AE037	ROLLEN 46	PAUSE E11D45E19DC5				
^ 29	1 02	2 03	3 04	4 05	5 06	6 07	7 08	8 09	9 0A	0 0B	ß 0C	' 0D	BACKSPACE 0E			BREAK E046E0C6	NUMLOCK 45	/ E035	* 37	- 4A
TAB 0F	Q 10	W 11	E 12	R 13	T 14	Z 15	U 16	I 17	O 18	P 19	Ü 1A	+ 1B	RETURN 1C	EINF E02AE052	POS1 E02AE047	BILD ↑ E02AE049	7 47	8 48	9 49	+ 4E
CAPS 3A	A 1E	S 1F	D 20	F 21	G 22	H 23	J 24	K 25	L 26	Ö 27	Ä 28	# 2B		ENTF E02AE053	ENDE E02AE04F	BILD ↓ E02AE051	4 4B	5 4C	6 4D	
SHIFT← 2A	<> 56	Y 2C	X 2D	C 2E	V 2F	B 30	N 31	M 32	, 33	. 34	- 35		SHIFT → 36		CURSOR ↑ E02AE048		1 4F	2 50	3 51	ENTER E01C
STRG← 1D	ALT← 38	SPACE 39										ALTGR E038	STRG → E01D	CURSOR ← E02AE04B	CURSOR ↓ E02AE050	CURSOR → E02AE04D	0 52		. 53	

LED STATUS UPDATE SEQUENCE, IMMEDIATELY FOLLOWS C/N/S CODE

Part 1: 00111011011101111100000
Part 2: 0000000CNS110111110101

C - CAPS LOCK ON/OFF
N - NUM LOCK ON/OFF
S - SCROLL LOCK (ROLLEN) ON/OFF

Codes were reverse-engineered using APC386SX with PC2386 keyboard.
Please mind there can be mistakes / incompleteness. Use at own risk.

https://oldcrap.org

INIT SEQUENCE, ON BOOT

Part 1: 0101000101100111100111101111110101
Part 2: 00000000001101111110101

KEY CODE ENCODING (8 to 11 bit)

11<CODE-FROM-THE-TABLE>1

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One thought on “Amstrad 2386 Keyboard”

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