The PS/2 Keyboard and Mouse Interface

CSEE W4840

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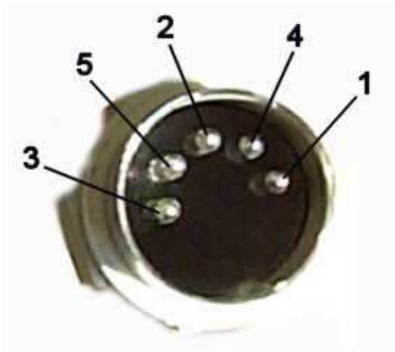
The IBM PC/XT and /AT Keyboards

IBM PC Enhanced (101-key) Keyboar

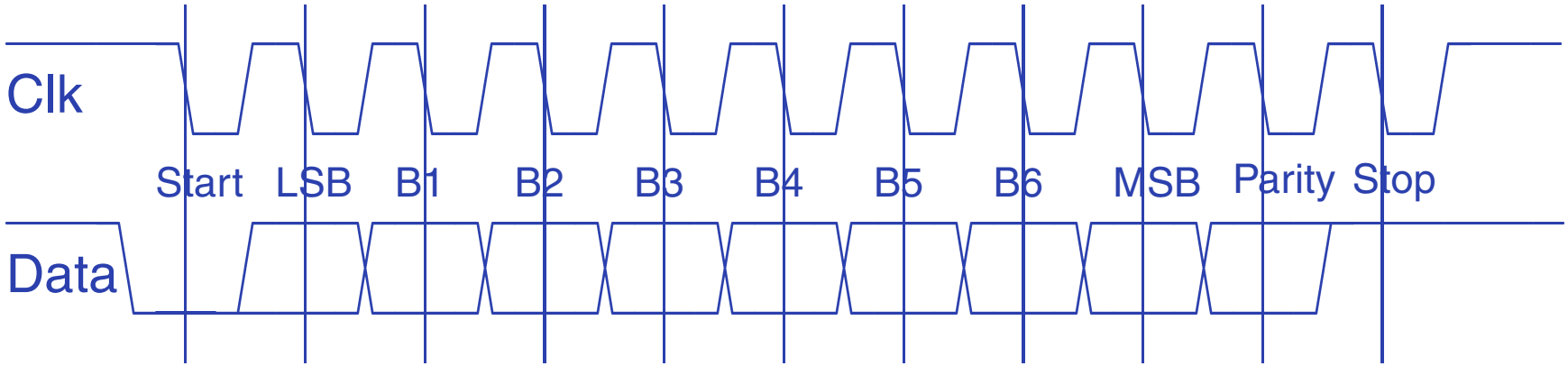
Original keyboard connector: DIN-5



The PS/2 Mini-DIN 6 Connector

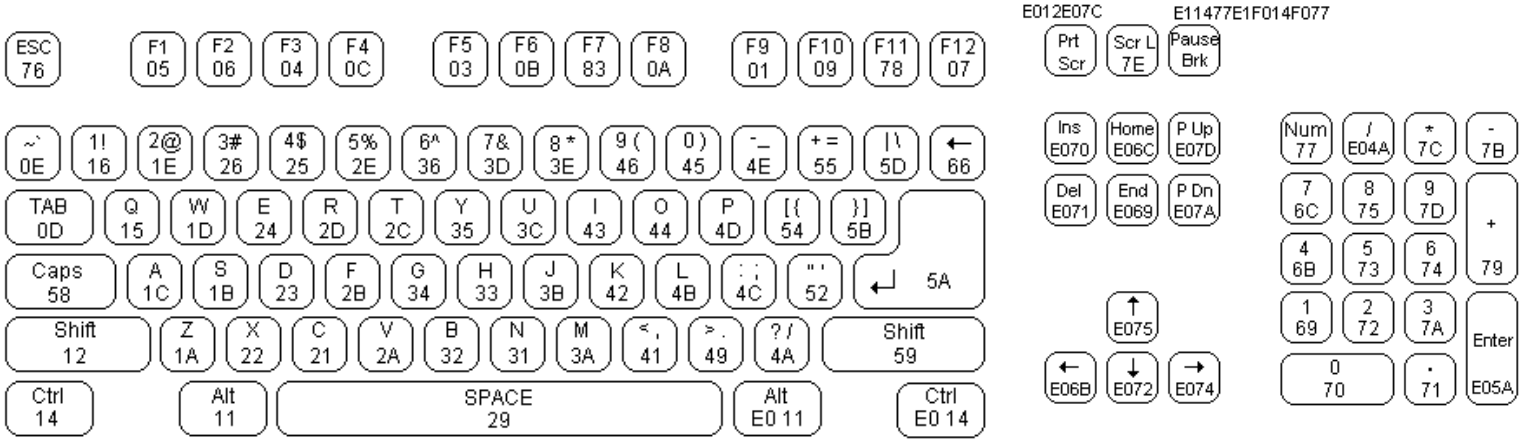
Female Socket

Synchronous Serial Interface



Like RS-232, but with a clock.
Odd parity, one start, one stop.
Keyboard-to-host shown: keyboard initiates everything.

Codes (Keyboard to Host)



00/FF Error or buffer overflow

F0 Key-up

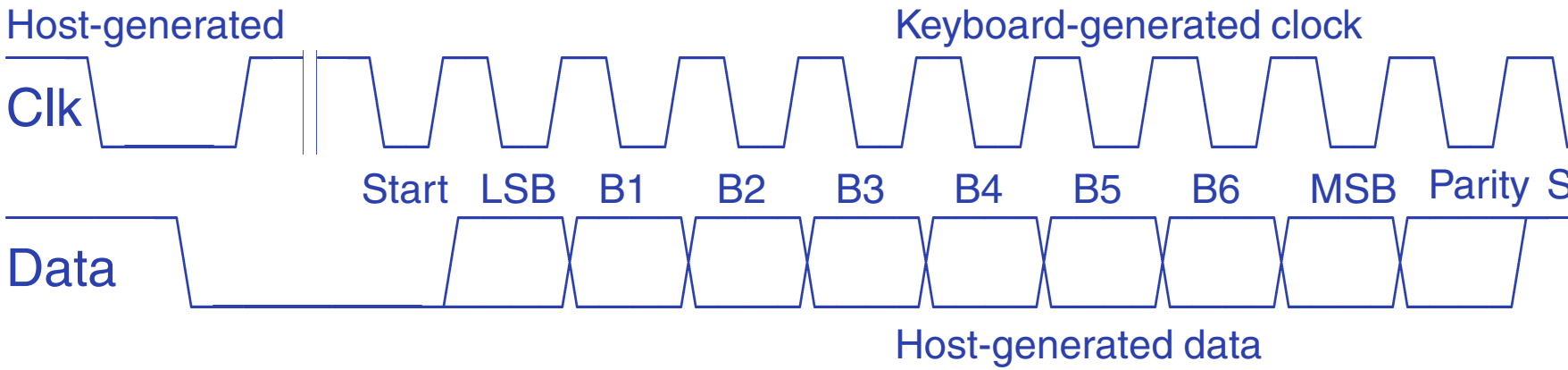
FA Acknowledge

EE Echo response

FE Resend

E0 Extended code coming

Communicating to the Keyboard



Host brings Clock low, then Data low to indicate transfer to keyboard, then releases Clock (rises).

Keyboard starts generating clock signals. Host supplies serial data, changing after each falling edge. After stop bit, host releases Data. Keyboard pulls Data low for one more clock signal to indicate it received the byte.

Commands (Host to Keyboard)

ED LED control

					Caps lock	Num lock	Scroll lock

EE Echo
Keyboard will respond with EE

F0 Set scan code set
Keyboard will respond with FA and wait for another byte 01–03. 00 leaves scan code unchanged.

F3 Set key repeat rate
Keyboard responds with FA and waits for second byte, indicating repeat rate.

Commands (Host to Keyboard)

F4 Enable keyboard
Responds with FA, clears buffer, enables scanning.

F5 Disable keyboard
Responds with FA, disables keyboard.

FE Resend
Retransmit the last byte.

FF Reset Keyboard

PS/2 Mouse Protocol

Three bytes sent every time mouse moves or button clicked:

MSB							LSB
Y Overflow	X Overflow	Y Sign	X Sign	1	Middle Buttons	Right Buttons	Left Buttons
X movement							
Y movement							

Movement values are since last transmission: 9-bit two's-complement (signed) numbers.

Many more variants, modes, and other junk.