DATABOARD 4680 Operator Panel Interface



#### DESCRIPTION

The module 4090 - the Key Multiplexer - is an I/O interface module to interconnect the computer system with low-cost and dedicated operator communication terminals. The 4090 enables simultaneously interfacing to:

- Keyboard with closing keys, capacity = 128 keys (16 \* 8 matrix). A character PROM converts the key to ASCII code or a user definable code. Contact bounce elimination is included.
- <u>Alphanumeric display arrays</u> through strobed parallell 8 and 4 +(4\*) complement buffered digital output lines.
- Lamps or relays, capacity = 7 high powered buffered drivers.
- Digital sense (status input), capacity = 6 lines.

The "display interface" interfaces directly to display systems like Burroughs Self Scan, the Hewlett Packard HsDP-2000 LED dot matrix display and Litronix DL-1416 16 segment array.

These display systems have built-in memory for display and operating which makes programming simple. The display can be treated almost like an output device. New data are displayed simply by writing over the old data.

CO AB DALVAEGEN 10 S-171 36 SOLNA SWEDEN PHONE 08/730 57 30 TLX S-11

### SPECIFICATION

Power su	pply:	+5V <sup>+</sup> 10%,	mA,	without	power	outputs.		
External	signal interfac	e:						
	Keyboard interf	ace:						

A simple keyboard with closing keys in a matrix (max 16 \* 8) can be used. The 16 rows are continuouly scanned, one row each 350 microsec. The 8 columns is compared with half the voltage input on the SCAN\* pin. When a closed key is detected, the scanning stops and an interrupt is generated if enabled. The STAT input command indicates both when a new key has been depressed and if the same key is held depressed for contact bounce elimination. A character PROM converts the key closure (Row,Column) to a character code, which are read with the INP command.

Technique:	Matrix scanning
Select lines:	16 open collector
Scanner lines:	8 ·
Supply voltage=	5 - 30 V, nominal 24 V
Character set:	128 characters
Optional character set=	128 characters, user supplied in the same PROM, selectable by jumper S1.
PROM-type:	7611

Digital input:

TTL, 6 lines

High-power\_driving\_outputs: 7 lines, buffered 5v

High-voltage, high-current Darlington Transistors using standard ULN 2003.

Max total dissipation = 1 W The 8:th line of the port is normal TTL.

Digital data outputs:

Buffered, normal TTL-signalling comprising:

Data "A" = 8 lines

Data "B" = 4 lines plus complement.

<u>"STROBE</u>": TTL-output to be used in connection with Data "A"/"B".

BUS CONNECTION I/O-side of the 4680.

CONNECTORS

B64 pin two-row (DIN 41612) Europe connector on both the I/O- and bus-sides.

Note. A code strip mounted on the I/O-connector protects the module from being plugged with the wrong end into the backplane. It permits also the user to code the I/O-cables to be keyed in for the right cards.

SIZE

Standard Europe card, 100 x 160 mm.

BUS PIN NUMBERING

Refer to System Manual. Note. Includes the CSB\*-signal (for bus expansion).

NOV 81 2 4

### I/O PIN NUMBERING

# Keyboard select lines

bit	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Pin	23A	24B	24A	25B	25A	ЗA	26A	2.3B	19A	20B	20A	21B	22A	22B	21A	19B

## Scanner input lines

bit 0\* 1\* 2\* 3\* 4\* 5\* 6\* 7\* Ground Pin 9B 9A 8B 8A 17A 18A 18B 17B 2A, 2B Connect the matrix - voltage supply (5 - 30V) to SCAN\*, pin 32A, 32B.

# Digital inputs ("INP STAT")

STAT	:D2	:D3	:D4	:D5	:D6	:D7
Pin	14A	14B	16A	16B	15A	15B

# Driving outputs ("OUT POW")

bit		0*	1*	2*	3*	4*	5*	6*	Grou	Ind
Pin		28B	29A	27A	28A	30B	27B	29B	2A,	2B
Bit	7	(note.	, po	sitive	logic)	is	output	on pin	30A.	

### Digital data output

Port "Data A"	bit	0	1	2	3	4	5	6	7
	Pin	10B	10A	11B	11A	13A	13B	12A	12B
Port "Data B"	bit	0	0*	1	1*	2	2*	3	3*
	Pin	7 A	6B	5B	6A	5A	4B	3B	4A

STROB\* Pin 7B.

Information in this document is subject to change without notice.

I/O COMMANDS

INP	DATA	Reads character input from keyboard. Starts the scanning again and resets DO in STAT.
INP	STAT	"1" = for active state. Bit assignment follows:
	DO	NEW KEY READY, Cleared by the INP DATA command.
	D1	Character is ready for input. Initiates the interrupt signal. KEY DEPRES:SED
		On/off status of the selected key.
	D2-D7	Status of the 6 lines of "Digital input".
OUT	DATA	Outputs 8 bits of data on port "Data A"
	C1	Outputs 4 bits of data plus complement on port "Data B"
	C2	Generates a negative strobe, denoted STROB*.
		Pulse duration is the same as for the C2-command on the bus.
	C3	Outputs 7 bits of data on the high-power port "OUT POW". Bit 7 is output as normal TTL.
	C 4	Keyboard interrupt enable/disable. Bit 7 = 1 enables interrupt.
	RST	Resets all outputs to HIGH state (Power outputs are inverted to low!) Interrupt is disabled. The card is disselected.

### CARD SELECTION

The card is identified at channel selections, done with the command OUT CS, with a code plug, located in position 1A.  $\$ .

### JUMPERS

S1

Selects the character set

- not installed: Swedish character set.

- installed: User own choice of code.

NOV 81 4 4