

**Commodore**

***MPS 1250***

Supplement to 1200/P

**Service Manual**

10/88



**Commodore**

# PARALLEL AND SERIAL BIP

(SPECIFICATIONS FOR EUROPE)

# PARALLEL AND SERIAL BIP

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## 1. Control Circuit Block Diagram

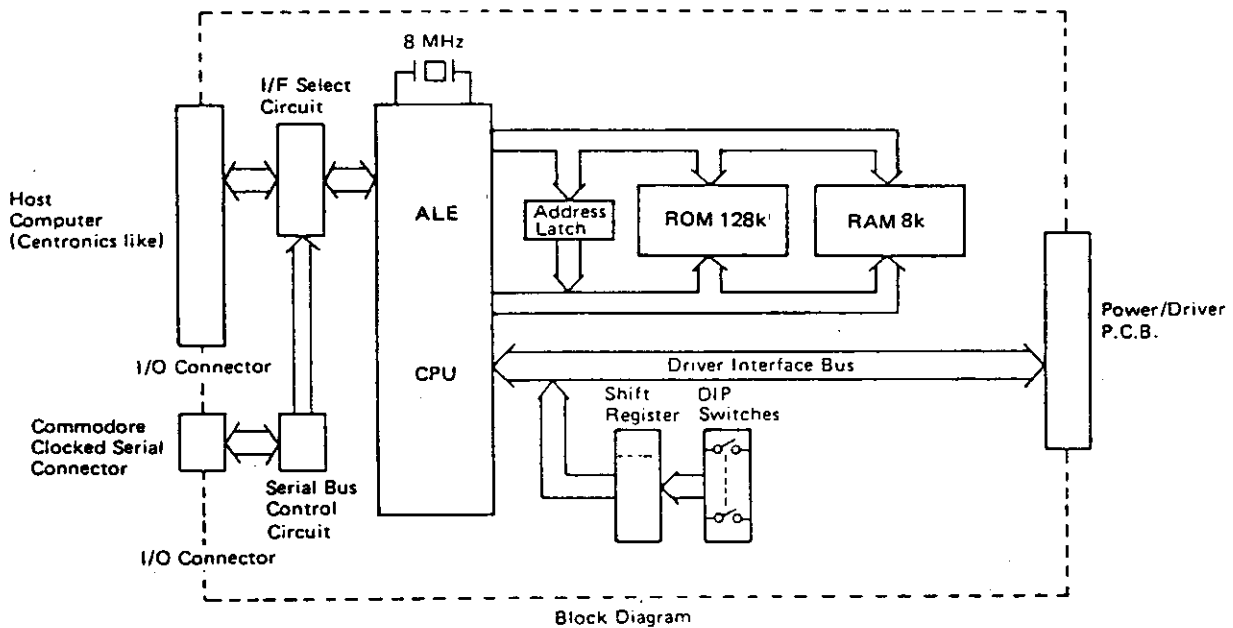


Fig. 1

A block diagram for the parallel and serial BIP is shown in Fig. 1. For interface, either Centronics parallel or Commodore serial can be selected by the DIP switches on the Interface Board. Parallel data of 8 bits (\*DATA1 to \*DATA8) is input via the I/O connector. Strobe signal (\*DSTB) is also input together with the data.

At input of the strobe signal, BUSY signal becomes HIGH and \*DATA1 to \*DATA8 will be stored inside. When CPU finishes processing the data, BUSY signal becomes LOW again and inputting of data is enabled.

Serial data from the host computer is input through TTL level and converted to parallel data in the serial bus control circuit.

The CPU takes in the data when transferring of 1 byte is completed.

Printing is started if the data input reaches one line or print start command code such as LF code, CR code, etc. is received.

This unit is controlled by an 8-bit one-chip microcomputer. The clock of CPU is 8 MHz and instructions will be executed with a minimum unit of 1  $\mu$ S. The CPU has 36 I/O ports and they are assigned to interface lines for host CPU and interface bus with Power/DriverPCB.

In addition, the CPU has six independent timers and each of them is used to control printing timing, stepping motor driving timing, print head current flowing time, etc.

As the memory, ROM of 128 kilobytes and RAM of 8 kilobytes are provided as standard and the lower 8 bits of address bus are the ones which are generated by latching the multiplexed data bus with ALE signal.

o Connection to Power/Driver PCB will be done by the driver interface bus and this bus consists of the following control lines:

- Clocked serial data bus
- Stepping motor voltage control line
- Operation panel control line
- Sensors input signal line
- Master reset signal line

Phase data of stepping motor and printing data of print head are transmitted to Power/Driver PCB at high speed via the above-mentioned clocked serial data bus. Moreover, the data of DIP switches becomes serial data by means of a shift register and it is taken to CPU by the clocked serial data bus.

## 2. Parallel Interface Specifications

### (1) Specifications

Data Transmitting Type : 8 bit Parallel  
 Synchronizing Method : By externally supplied strobe  
 Handshake : By \*ACK or BUSY  
 Logic Level : TTL compatible

### (2) Pin No. and signal name

- Parallel Specifications (CN12)

PIN No.	RETURN PIN No.	Signal name	PIN No.	RETURN PIN No.	Signal name
1	19	*DSTB	16	—	0 V
2	20	*DATA1	17	—	FRAME GND
3	21	*DATA2			
4	22	*DATA3	18	—	+5 V
5	23	*DATA4	19 ~ 30	—	TWIST PAIR GND
6	24	*DATA5			
7	25	*DATA6			
8	26	*DATA7	31	—	*PRIME
9	27	*DATA8			
10	28	*ACK	32	—	*FAULT
11	29	BUSY	33	—	GND
12	30	PE	34	—	NC
13	—	SLECT	35	—	*FUSE (Note 1)
14	—	*AFXT	36	—	*SLCT IN
15	—	NC			

(Note 1) \*FUSE is connected to +5 V via a 3.3 K $\Omega$  resistor.

### (3) Description about interface signals of CN12

- \*DSTB: Synchronized pulse of parallel data. The pulse width of this signal must be more than  $0.5\mu\text{S}$  at the receiving end.
- \*DATA1 to \*DATA8: The parallel 8-bit data sent from the host CPU. High level for a logical 1 and LOW level for a logical 0.
- \*ACK: Data demanding signal sent from the printer to the host CPU. The pulse width is approximately  $5\mu\text{S}$ . This is a strobe sent out when the printer goes to READY state.
- BUSY: HIGH level indicates a "printer busy" status to the host CPU. Data sent during BUSY state may not be guaranteed. When this signal goes to LOW level, the printer is in READY condition.  
BUSY conditions are as follows:
  - a. During data receive time
  - b. OFF LINE
  - c. In an alarm condition
- PE: Goes to HIGH level when paper runs out. In paper out status, the printer is automatically set to OFF LINE. It cannot be reset to ON LINE status until new paper is inserted.
- SLECT: Connected to +5V via a  $3.3\text{K}\Omega$  resistor.
- \*AFXT (\*AUTO FEED XT): When this signal is set to LOW level, one line is automatically fed after printed by CR code.
- \*PRIME (\*INIT): Printer initializing signal. When this signal is set to LOW level, that indicates the printer is in the same condition as power on. The contents of the print buffer are cleared. The pulse width of this signal must be more than  $50\mu\text{S}$  at the receiving end.
- \*FAULT (ERROR): When this signal is in LOW level, the printer is in one of the following three conditions:
  - a. Paper Out
  - b. OFF LINE
  - c. Printer ErrorPrinter error conditions are as follows:
  - Home position sensor cannot be detected by moving the print head at power on.
  - During printing, collation of the current address and the home position sensor did not match.
- \*SLCT IN: When this signal is in LOW level, the printer is selected.

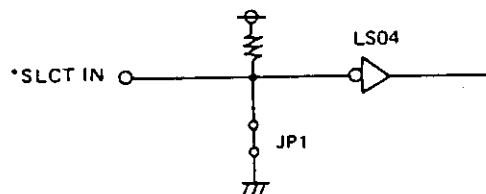


Fig. 2

Since the signal \*SLCT IN has the circuitry shown in Fig. 2, caution should be paid to the connection on the HOST side. Driving with TTC IC may cause damage.

- +5 V: Power supply of +5 V. This line must not be used at the HOST side. If used, the printer may be damaged.

The timing chart for data-input is shown in Fig.3.

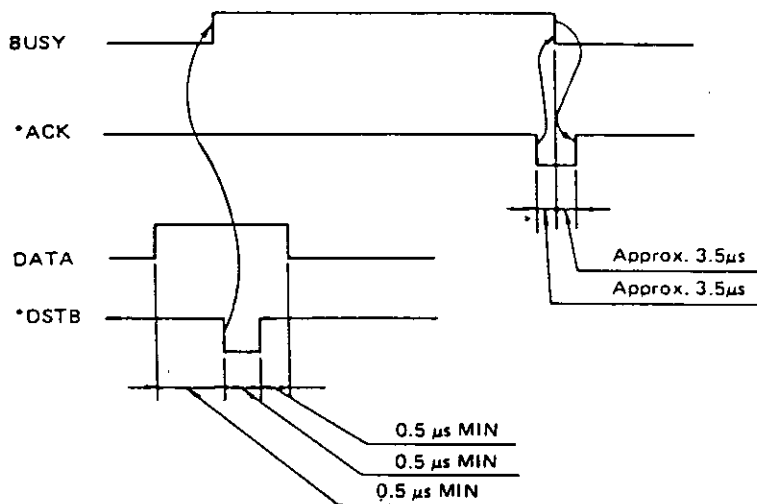


Fig. 3. Timing Chart



### 3. Serial Interface Specifications

#### (1) Specifications

Interface : Commodore Serial Bus (Clocked serial)  
Word Length : 8-bit fixed  
Signal Level : TTL

#### (2) Pin No. and signal name

- Serial Specifications (CN13)

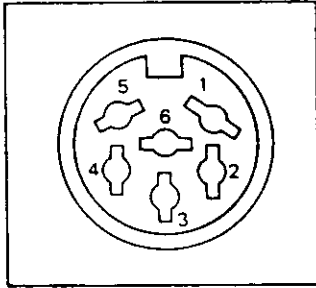


Fig. 2

Table 1

Pin No.	Signal	In/Out
1	SERIAL *SRQ	—
2	GND	—
3	SERIAL ATN	In
4	SERIAL CLK	In
5	SERIAL DATA	In/Out
6	*RESET	In

Note 1: Pin No. 1 SERIAL \*SRQ is not connected to this unit.

Note 2: The signal marked with an asterisk \* is designated as Active-Low.

Note 3: The column "In/Out" refers to the direction of signal flow as viewed from the printer.

#### (3) Description about interface signals of CN13

- SERIAL \*RSQ (SERIAL Service Request): Interrupt request to the host computer. Not used for this unit.
- SERIAL ATN (SERIAL Attention): When this signal is in LOW level, the transferred data is designated as device function (device address or secondary address command) and when it is in HIGH level, the data is designated as a normal one.
- SERIAL CLK: A clock signal for data transfer. All the data are transferred with synchronization of this clock.  
Moreover, prior to transferring data, this signal line becomes HIGH level to indicate that the unit is ready for transmission.

- SERIAL DATA: The data is transmitted onto this signal line with syhchronization of SERIAL CLK. The data is established at the rise edge of SERIAL CLK. Moreover, after data transfer, the receiving side sets this signal line to LOW level to indicate that the data is received. This goes to HIGH level when the data is taken in.
- \*RESET: When this signal becomes LOW level, master reset is performed on the printer.

(4) Data transfer sequence

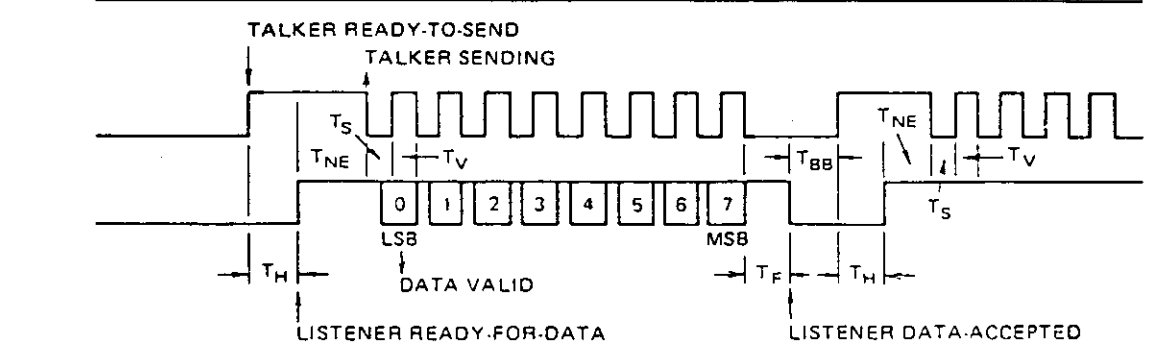
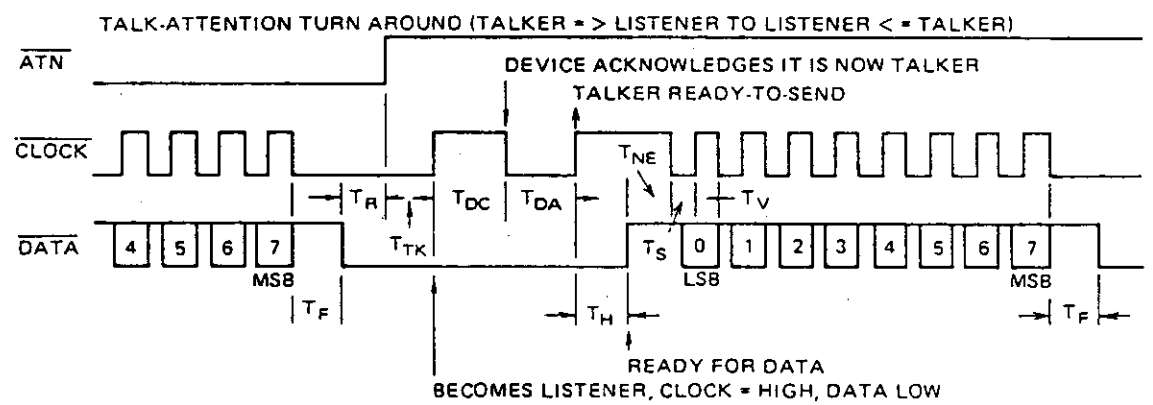
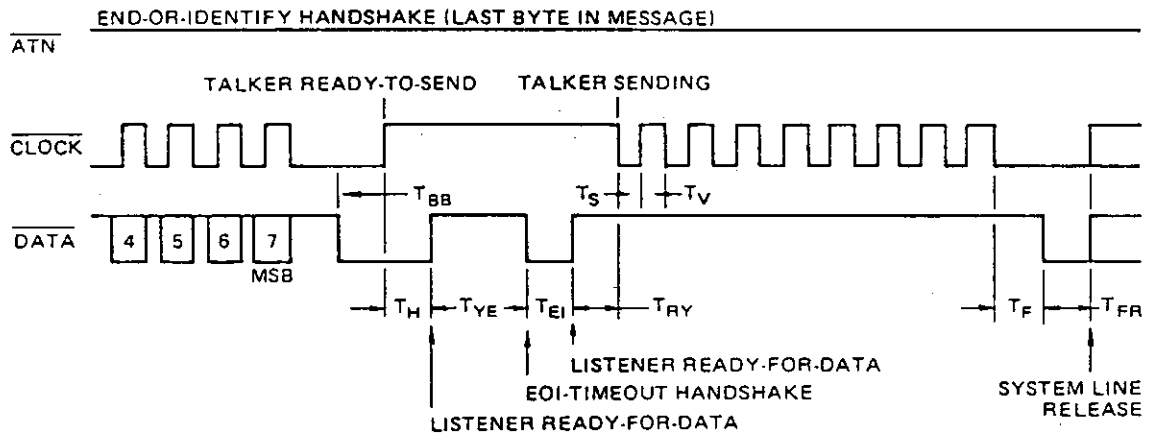
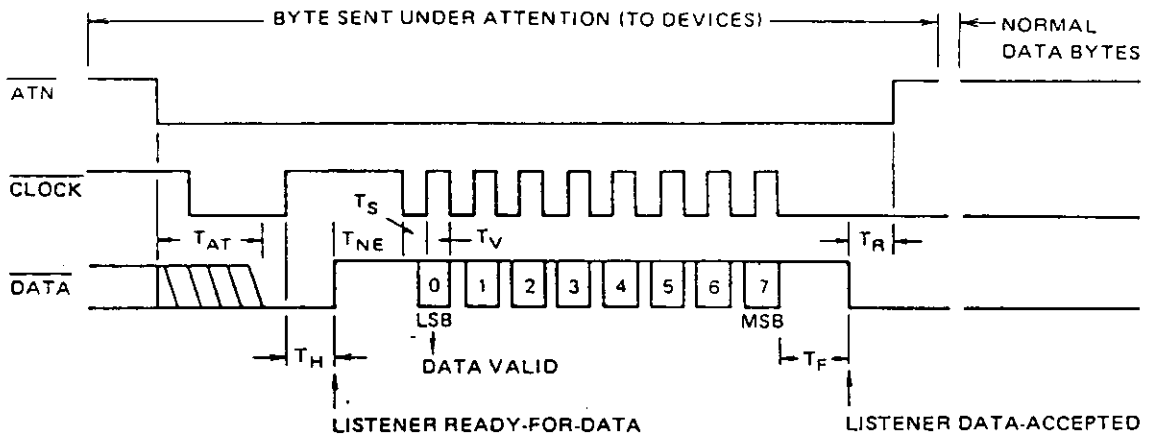


Table 2. Serial Bus Timing

Description	Symbol	Min.	Typ.	Max.
ATN RESPONSE (REQUIRED) <sup>1</sup>	T <sub>AT</sub>	—	—	1000 $\mu$ s
LISTENER HOLD OFF	T <sub>H</sub>	0	—	$\infty$
NON-EOI RESPONSE TO RFD <sup>2</sup>	T <sub>NE</sub>	—	40 $\mu$ s	200 $\mu$ s
BIT SET-UP TALKER <sup>4</sup>	T <sub>S</sub>	20 $\mu$ s	70 $\mu$ s	—
DATA VALID	T <sub>V</sub>	20 $\mu$ s	20 $\mu$ s	—
FRAME HANDSHAKE <sup>3</sup>	T <sub>F</sub>	0	20 $\mu$ s	1000 $\mu$ s
FRAME TO RELEASE OF ATN	T <sub>R</sub>	20 $\mu$ s	—	—
BETWEEN BYTES TIME	T <sub>BB</sub>	—	—	—
EOI RESPONSE TIME	T <sub>YE</sub>	—	256 $\mu$ s	—
EOI RESPONSE HOLD TIME	T <sub>EI</sub>	60 $\mu$ s	—	—
TALKER RESPONSE LIMIT	T <sub>RY</sub>	0	30 $\mu$ s	60 $\mu$ s
BYTE-ACKNOWLEDGE <sup>4</sup>	T <sub>PR</sub>	20 $\mu$ s	30 $\mu$ s	—

## Notes:

1. If maximum time exceeded, device not present error.
2. If maximum time exceeded, EOI response required
3. If maximum time exceeded, frame error.
4. T<sub>Y</sub> and T<sub>PR</sub> minimum must be 60  $\mu$ s for external device to be a talker.

## 4. Specification Setting DIP Switches

### 4-1. Serial Interface Mode (SW1-1 OFF)

#### 4-1-1. Setting of SW1

SW No.	Function	OFF	ON	Factory Setting
1-1	Interface Select	Serial	Parallel	OFF
1-2	ASCII Translation	PET ASCII	ASCII	OFF
1-3	Control Code Mode	Commodore	Epson	OFF
1-4	NLQ/Draft	Draft	NLQ	OFF
1-5	Device Select	4	5	OFF
1-6	Paper End Detector	Enable	Disable	OFF
1-7	Auto Line Feed*	Disable	Enable	OFF
1-8	Normal/Compressed	Normal	Compressed	OFF

\* Valid only when SW1-3 is "ON" Ignore if SW1-3 is "OFF".

#### 4-1-2. Setting of SW2

Switch	Function	OFF	ON	Factory Setting
2-1	} Select } International } Character Set	See Below		OFF
2-2				OFF
2-3				OFF
2-4	Unused	-	-	OFF

COUNTRY	SW2-1	SW2-2	SW2-3
USA/UK/Netherlands	OFF	OFF	OFF
Denmark/Norway	OFF	OFF	ON
Sweden/Finland	OFF	ON	OFF
Germany	OFF	ON	ON
France/Belgium	ON	OFF	OFF
Italy	ON	OFF	ON
Switzerland	ON	ON	OFF
Spain	ON	ON	ON

4-2. Parallel Interface Mode (SW1-1 ON)

Note) Setting of SW2-1 through SW2-4 is unavailable.

4-3. Switches SW1-1, 2 means the following:

SW No.	Function	ON	OFF
SW-1-1	Interface Select	Parallel	Serial
SW-1-2	Adds line feed to CR code	Enabled	Disabled

4-4. Switches SW1-3, 4 indicates the four operation modes according to its status:

SW1-4	SW1-3	Operation mode	Control Code
OFF	OFF	mode I	ESC/P
OFF	ON	mode II	
ON	OFF	mode III	AMIGA
ON	ON	mode IV	IBM-PC

4-5. SW1-5, 6, 7, 8 means the following according to the abovementioned operation mode:

4-5-1. mode I

SW No.	Function	ON	OFF
SW1-5	Codes in columns 8th and 9th	Graphic character	Control character
SW1-6	Font of zero	Zero and slash	Normal
SW1-7	Print style	Correspondence quality	Draft
SW1-8	Condensed mode	17 CPI	10 CPI

4-5-2. mode II

SW No.	Function	ON	OFF
SW1-5	Selection of international character (Refer to 4-4-5.)	/	/
SW1-6			
SW1-7			
SW1-8	Page length	12 inches	11 inches

4-5-3. mode III

SW No.	Function	ON	OFF
SW1-5	6/8 LPI	8 LPI	6 LPI
SW1-6	FONT of ZERO	Zero and Slash	Zero
SW1-7	Print Style	NLQ	Draft
SW1-8	Condensed mode	17 CPI	10 CPI

4-5-4. mode IV

SW No.	Function	ON	OFF
SW1-5	IBM character set	SET 2	SET 1
SW1-6	6/8 LPI	8 LPI	6 LPI
SW1-7	IBM Denmark/ Norway Version Character Set	Enable	Disable
SW1-8	Buffer-full process	No printing	Printing

4-5-5. Selection of international character set

mode II			Nation
SW7	SW6	SW5	
OFF	OFF	OFF	USA
OFF	OFF	ON	FRANCE
OFF	ON	OFF	GERMANY
OFF	ON	ON	ENGLAND
ON	OFF	OFF	DENMARK
ON	OFF	ON	SWEDEN
ON	ON	OFF	ITALY
ON	ON	ON	SPAIN

MPS 1250 (EU)

PARTS LIST & LOCATION  
for INTERFACE PACK (PARALLEL/SERIAL)

(Y8033 SA)



TITLE: Interface Pack (Parallel / Serial)

REV. NO. A

ITEM NO	LOCATION	COMMODORE PARTS NO	VENDOR PARTS NO	PARTS NAME	TYPE	QTY	COMMENT	MANUFACTURER	@#
1			Y8033-8***	Interface Pack		1		CPC	
2			Y8308-***	PCB SA		1		CPC	
3			Y8208-***	PWB		1		Eastern	
4	IC7	601211-47	Y2410-102	IC	M50734SP-L	1		Mitsubishi	
5	IC5	601211-48	Y2102-373	IC	M74LS373	1		Mitsubishi Only	
6	IC1,17	601211-49	Y2102-165	IC	74LS165	2			
7	IC4	601211-50	Y2102-368	IC	74LS368	1			
8	IC6	601211-51	Y2102-008	IC	74LS08	1			
9	IC2	601211-52	Y2101-006	IC	M53206 (7406)	1			
10	IC3	601211-53	Y2102-004	IC	74LS04	1			
11	IC10	601211-54	Y2102-161	IC	74LS161A	1			
12	IC11	601211-15	Y2201-094	IC	M4094B	1		Mitsubishi	
13	IC12	601211-55	Y2201-040	IC	M4040B	1		Mitsubishi	
14	IC13	601211-56	Y2102-014	IC	74LS14	1			
15	IC14	601211-57	Y2102-244	IC	74LS244	1			
16	IC15	601211-58	Y2102-157	IC	74LS157	1			
17	IC16	601211-59	Y2102-027	IC	74LS27	1			
18	IC18	601211-60	Y2102-000	IC	74LS00	1			
19	IC9	601211-18	Y2310-312	RAM	M5M5165P-12 or Equivalent	1		Mitsubishi	
20	IC8		Y1190-***R	ROM (Program / C.G.)		1			

TITLE: Interface Pack (Parallel / Serial)

REV. NO. A

ITEM NO	LOCATION	COMMODORE PARTSNO	VENDOR PARTSNO	PARTS NAME	TYPE	QTY	COMMENT	MANUFACTURER	@ ¥
1	(IC8)	601211-61	Y2304-720	EP-ROM (Blank)	µPD27C1000(200ns) HN27C301	1		NEC	
2	(IC8)	601211-62	Y7100-132	ROM Socket	MBM27C1000 DILB32P-8J	1		Hitachi Fujitsu Burndy	
3	SW1	601211-63	Y7211-008	DIP SW	C8828-41 6418743-5	1		Texas AMP	
4	SW2	601211-64	Y7211-004	DIP SW	KSS08-1 SCS08A	1		New Ohto Mitsumi	
5	KN1	601211-65	Y4400-332	Res. Array 1/8W 3.3KΩ×10 5%	KSS04 SCS04A RGLD10X332J RGSD10X332J	1		New Ohto Mitsumi Murata Murata	
6	IN2, 3	601211-66	Y4408-332	Res. Array 1/8W 3.3KΩ×8 5%	SE10332J MRNSA-11P-332J RMLS9332J RGLD8X332J RGSD8X332J	2		Fukushima Futaba Kyocera Rohm Murata Murata	
					SE8332J RMLS8332J MRNSA-9P-332J			Fukushima Futaba Rohm Kyocera	

TITLE: Interface Pack (Parallel / Serial)

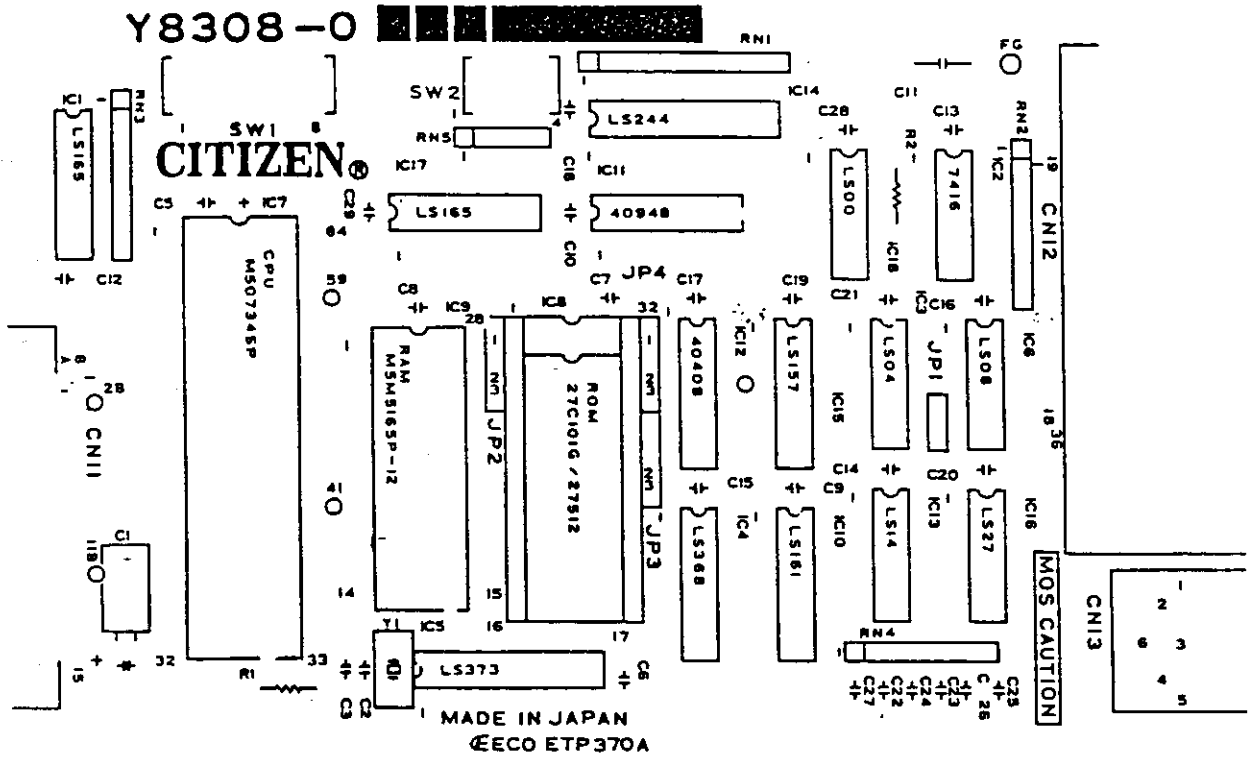
REV. NO. A

ITEM NO	LOCATION	COMMODORE PARTS NO	VENDOR PARTS NO	PARTS NAME	TYPE	QTY	COMMENT	MANUFACTURER	@¥
1	C1	601211-67	Y7403-805	Oscillator element.	KBR8.0M	1		Kyocera	
2		601211-68	Y8501-31*	Earth Plate	RGLD7X102J	1		Kousaka	
3	CN4	601211-69	Y4407-102	Res. Array 1/8W 1KΩ×7 5%	RGSD7X102J SE7102J MRNSA-8P-102J	1		Murata Murata Fukushima Futaba	
4	RN5	601211-70	Y4404-332	Res. Array 1/8W 3.3KΩ×4 5%	RMLS7102J RGLD4X332J RGSD4X332J SE4332J MRNSA-4P-332J RMLS4332J	1		Kyocera Rohm Murata Murata Fukushima Futaba	
5	R1	601211-71	Y4114-105	Res. Carbon 1/4W 1MΩ 5%		1		Kyocera	
6	R2	601211-72	Y4114-332	Res. Carbon 1/4W 3.3KΩ 5%		1		Rohm	
7	C1	601211-73	Y5101-101	Cap. Electrolytic 47μF 10WV	ECEA1AU101	1		Matsushita	
8	C11	601211-74	Y5802-103	Cap. Film 0.01μF 630V	MDD22J103K	1		Nittsuko	
9	C2,3	601211-75	Y5216-330	Cap. Ceramic 33pF 50V	RT-HE50TK-CH330J CC45CH1H330JYR DD105-989CH330J50	2		KCK TDK Murata	

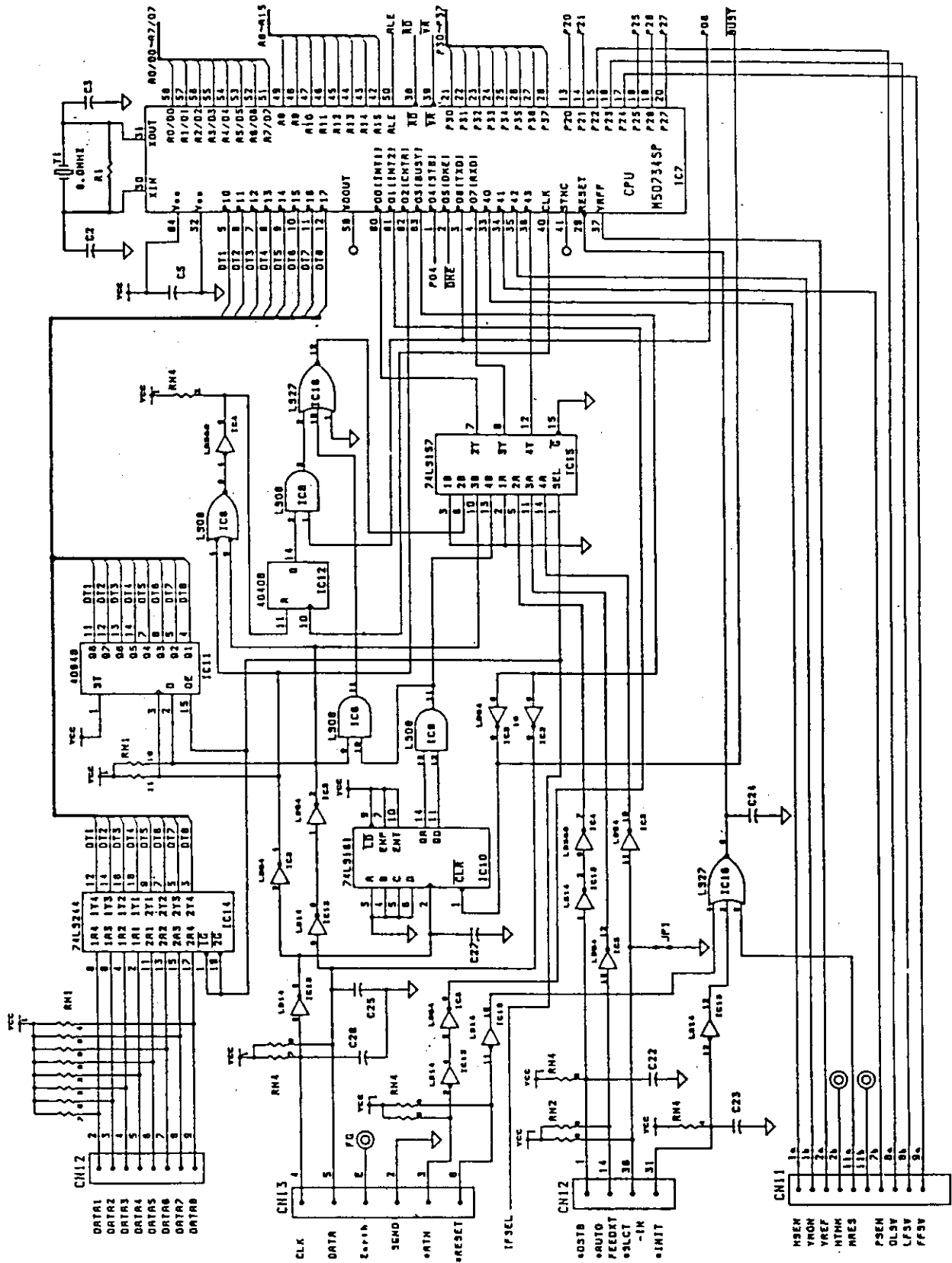
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REV. NO. A

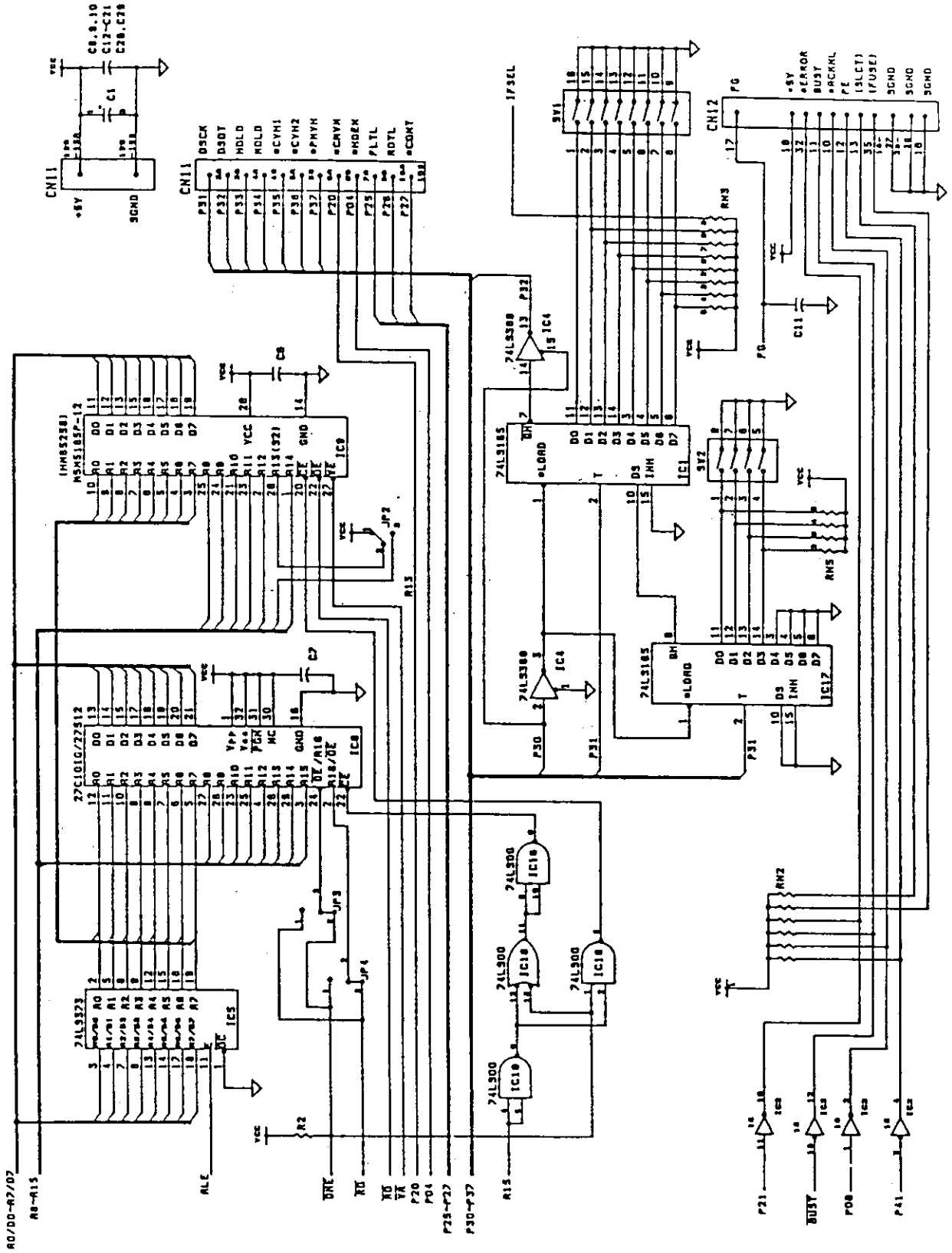
EM NO	LOCATION	COMMODORE PARTSNO	VENDOR PARTSNO	PARTS NAME	TYPE	QTY	COMMENT	MANUFACTURER	@¥
1	C5~10,12~21, 23,28,29	601211-76	Y5234-103	Cap. Ceramic 0.01µF 25V	RT-DSSC50TK- Y5R103M SS45X1E103MYR	19		KCK TDK Murata	
2	C22, 23	601211-77	Y5216-102	Cap. Ceramic 1000pF 50V	RT-HE50TK-YB102K CK45B1H102KYR	2		KCK TDK Murata	
3	C25,26	601211-78	Y5216-101	Cap. Ceramic 100pF 50V	DD104-989B102K50 RT-HE50TK-SL101J CC45SL1H101JYR	2		KCK TDK Murata	
4	CN11	601211-79	Y6147-130	Connector	DD105-989SL101J50 128D-030S2B-L14N	1		DDK DDK	
5	CN12	601211-80	Y6140-136	Connector	57LE-40360-7700 (D3)	1		Hoshi Elec.	
6	CN13	601211-81	Y6191-506	Connector	TCS-5040-16-4051 150-06-30-644	1		Mitsumi	
7		601211-82	Y8503-41*	ROM Case U		1		T.K.K	
8		601211-83	Y8504-41*	ROM Case L		1		T.K.K	
9		601211-84	E90530-10B	(+)PH Screw (PW+SW)	M3×10 (BS-Ni)	2			



Mounting Diagram (Basic Interface Pack)



Basic Interface Pack  
 MPS1250 (EUROPE)  
 I/F PACK (1 of 2)



Basic Interface Pack  
 MPS1250 (EUROPE)  
 1/F PACK (2 of 2)

DRAWING NO. 1-3

REV. NO. A

ITEM NO	LOCATION	COMMODORE PARTS NO	VENDOR PARTS NO	PARTS NAME	TYPE	QTY	COMMENT	MANUFACTURER	@*
1		601210-00E	Y053-1006	MPS 1200 PRINTER (UL)		1			
2		601210-00D	Y053-1006	MPS 1200 PRINTER (CSA)		1			
3		601210-00A	Y063-2007	MPS 1200 PRINTER (VDE)		1			
4		601210-00B	Y063-7007	MPS 1200 PRINTER (BSI)		1			
5		601210-00F	Y063-6007	MPS 1200 PRINTER (SEV)		1			
6		601210-00C	Y063-8007	MPS 1200 PRINTER (AUST)		1			
7		601220-00A	Y063-2009	MPS 1200P PRINTER (VDE)		1			
8		601220-00B	Y063-7009	MPS 1200P PRINTER (BSI)		1			
9		601220-00F	Y063-6009	MPS 1200P PRINTER (SEV)		1			
10		601220-00C	Y063-8009	MPS 1200P PRINTER (AUST)		1			
		601210-00J	Y093-100C	MPS 1250 PRINTER (UL)		1			
			Y0A3-200C	MPS 1250 PRINTER (EU)					
			Y0A3-300C	MPS 1250 PRINTER (UK)					
11		<del>601211-21</del> →	Y0610-21*	Master Carton		1			
		601211-21	Y0610-41*	Master Carton (MPS 1250)		1			
		601211-22	Y0612-21*	Individual Box (USA)		1			
12		<del>601211-23</del> →	Y0612-22*S	Individual Box (Europe & UK)		1			
		601211-23	Y0612-22*S	Individual Box (Europe & UK)		1			
13		<del>601220-01</del> →	Y0612-22*P	Individual Box (1200P & UK)		1			
		601211-24	Y0612-22*P	Individual Box (1200P & UK)		1			
14		601211-25	Y0612-41*	Individual Box (MPS 1250 USA)		1			
		601211-26	Y0612-42*	Individual Box (MPS1250EU&UK)		1			



ITEM NO	LOCATION	COMMODORE PARTS NO	VENDOR PARTS NO	PARTS NAME	TYPE	QTY	COMMENT	MANUFACTURER	@#
5	601211-27	<del>XXXXXXXX4</del>	Y0630-21*	Sleeve		1			
6	601211-28	<del>XXXXXXXX05</del>	Y0623-01*	Lower Pad		1			
7	601211-29	<del>XXXXXXXX06</del>	Y0624-01*	Upper Pad		1			
8	601211-30	<del>XXXXXXXX07</del>	Y0629-01*	Poly Bag (for Unit)		1			
9	601211-31	<del>XXXXXXXX08</del>	Y0627-01*	Poly Bag (for Tractor Unit)		1			
10	601210-92	<del>XXXXXXXX09</del>	Y0815-21*	Tractor Unit		1			
11	601211-11	<del>XXXXXXXX00</del>	Y0810-01*	Ribbon Cartridge SA		1			
12	601211-34	<del>XXXXXXXX01</del>	Y0627-01*	Poly Bag (for Power Cord)		1			
13	601210-77	<del>XXXXXXXX02</del>	Y6002-01*	Power Cord (UL/CSA)		1			
14	601210-78	<del>XXXXXXXX03</del>	Y6002-21*	Power Cord (VDE)		1			
15	601211-36	<del>XXXXXXXX04</del>	Y8110-31*	Power Cord (BSI)		1			
16	601211-37	<del>XXXXXXXX05</del>	Y6002-61*	Power Cord (SEV)		1			
17	601210-80	<del>XXXXXXXX06</del>	Y6002-41*	Power Cord (AUST)		1			
18	601211-35	<del>XXXXXXXX07</del>	Y0625-01*	Poly Bag (for Insertion Plate)		1			
19	601211-38	<del>XXXXXXXX08</del>	Y0813-01*	Insertion Plate		1			
20	601211-40	<del>XXXXXXXXXX</del>	Y99760-15*	User's Manual (USA)		1			
21	601211-41	<del>XXXXXXXXXX</del>	Y99760-17*	User's Manual (Europe)		1			
22		601220-02		User's Manual (1200P)		1			
23	601211-39		Y99760-20*	User's Manual (MPS 1250)		1			
24	601211-42	<del>XXXXXXXXXX</del>	Y99651-13*	Warranty Card (USA)		1			

ITEM NO	LOCATION	COMMODORE PARTS NO	VENDOR PARTS NO	PARTS NAME	TYPE	QTY	COMMENT	MANUFACTURER	@ ¥
34	601211-43	<del>XXXXXXXXXX</del>	Y99651-15*	Read This First Sheet		1			
35	601211-44	<del>XXXXXXXXXX</del>	Y99651-14*	Service Center List		1			
36	601211-45	<del>XXXXXXXXXX</del>		Warranty Pack (UK)		1			
37	601211-46	<del>XXXXXXXXXX</del>		Warranty Card (Australia)		1			



**Technical Training**  
Friedrich-Seele-Straße 10  
3300 Braunschweig

Tel.: (05 31) 89 50 63 · Fax: (05 31) 8 57 74