

Memory Programmer mp V2.01

- * Technical Description**
- * Service Manual**

Manual No. MPETC002

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Notice

Do not open the device. Risk of electric shock. No user servicable components inside.

General Description

The memory programmer mp V2.01 allows programming of the following memory devices:

EPROM	2716-27512, 27513
EEPROM	2816-28256
NOVRAM	2K, 8K, 32K

The maximum memory pincount is 28. Shortest programming pulse is 1ms, depending on device characteristics. Command and menu driven control software versions are available. The programmer can easily be integrated into user programs, the program source is also available.

Hardware requirements are:

- IBM-PC compatible personal computer with one parallel port, 512KB RAM and one floppy-disk drive
- IBM-PC compatible parallel printer cable

Using The Programmer

- 1). **Remove any device inserted in programmers ZIF-socket**
- 2). Connect the programmer to the PC parallel Port
- 3). Turn on power switch S2
- 4). The green LED now has to be on, the red LED may be on or off
- 5). Start the control program, the red LED now has to be off.
The red LED lights only in case of program overcurrent ($I_{PP} > 50\text{mA}$), in this state program current is automatically switched off. After reset of the electronic overcurrent fuse the red LED will be in the off state. Reset of the overcurrent fuse is completely software controlled.
- 6). The device is now ready to use, the memory to be handled can be inserted into the ZIF socket
- 7). The programming device is completely software controlled, description see software description
- 8). **Remove device from ZIF-socket before turning power-switch off**

In case of malfunction:

- Check connection PC <--> mp V2.01
- The length of the Centronics cable should be ≤ 2 meters
- Try another Centronics cable, cable specification see technical reference
- Connect to another PC-parallel port

Technical Reference

Technical Data

Universal memory programmer with integrated power supply

- For 26- or 28-pin memories
- Completely software controlled
- Controlled via parallel port
- Serial high speed data transfer
- Optimized for use with IBM compatible PC
- Program voltages: 12.5V, 21V, 25V, available on pin 1, 22, 23, 24(-0.7V)
- VCC voltages: 5.2V, 6.0V on pin 28
5.2V on pin 26
- Program current limited to max. 50 mA via electronic overcurrent fuse
- Components: 10 ICs, 13 transistors, 2 LEDs
- Power supply: primary voltage 220V/50Hz AC, 5 VA
- Size: 190x138x32mm
- Supported memorys: EPROM 2716-27512
EEPROM 2816-28256
NOVRAM 2K, 8K, 32K

Cable Connection PC-mp V2.01

The IBM PC parallel port normally uses a 25-pin female D-SUB connector.

The programmer mp V2.01 uses a 36-pin female connector, style Amphenol 850-57FE-403600-20 or equivalent.

The connections necessary are:







IBM-PC	DB25S	Centronics	mp V2.01
PE -----	Pin 12 -----	Pin 12 -----	Out
D2 -----	Pin 04 -----	Pin 04 -----	Strobe
D1 -----	Pin 03 -----	Pin 03 -----	Clock
D0 -----	Pin 02 -----	Pin 02 -----	In
Error -----	Pin 15 -----	Pin 32 -----	Alarm
GND -----	Pin 18-25 -----	Pin 16,19-30,33 ---	GND

Standard IBM-PC/Centronics printer cable can be used, cable length <= 2 meters.

Function Tables



- Writing data to 8-bit shift register:

Truth table 4094

Inputs				Parallel outputs		Serial outputs
Clock'	Output enable	Strobe	In	Q1	Qn	Qs
	L	X	X	OC	OC	Q7
	L	X	X	OC	OC	NC
	H	L	X	NC	NC	Q7
	H	H	L	L	Qn-1	Q7
	H	H	H	H	Qn-1	Q7
	H	H	H	NC	NC	NC

- Reading data from 8-bit shift register:

Truth table 4021

Inputs			Serial output
Clock'	Strobe	Pn	Out
	L		Q7
	L		Q8
X	H	Qn=Pn	Q8

$$\text{Clock}' = \overline{\text{Clock}}$$

L = Low
 H = High
 X = Don't Care
 NC = No Change
 OC = Open Circuit
 Qn = Ser. Register Data
 Pn = Parallel Data

- Control bytes:

Byte 1	Socket (28 Dip)		Byte 2	Socket (28 Dip)
Q1	Pin 19		Q1	Pin 03
Q2	Pin 18		Q2	Pin 04
Q3	Pin 17		Q3	Pin 05
Q4	Pin 16		Q4	Pin 06
Q5	Pin 15		Q5	Pin 07
Q6	Pin 13		Q6	Pin 08
Q7	Pin 12		Q7	Pin 09
Q8	Pin 11		Q8	Pin 10

Byte 3	Socket (28 Dip)	\$	Byte 4	Socket (28 Dip)
Q1	Pin 01	80	Q1	H:12.5V Vpp/L:21V Vpp
Q2	Pin 27	40	Q2	see below
Q3	Pin 26	20	Q3	see below
Q4	Pin 02	10	Q4	see below
Q5	Pin 23	8	Q5	see below
Q6	Pin 21	4	Q6	H:Write/L:Read
Q7	Pin 24	2	Q7	Pin 22
Q8	Pin 25	1	Q8	Pin 20

S1, Bit Q1/Q2/Q3/Q4/Q5 of Byte 4 control device mode:

	80	40	20	10	8	\$ (Hex)
S1	Q1	Q2	Q3	Q4	Q5	meaning
B	H	H	H	X	L	Chip Identifier Mode (12V Pin 24)
A	X	H	H	X	X	Vpp Pin 23
X	X	H	L	X	X	Vpp Pin 1
X	X	L	H	X	X	Vpp Pin 22
X	X	L	L	X	X	Vpp off
X	L	X	X	H	H	25V Vpp
X	X	X	X	H	L	5V Vcc Pin 28
X	X	X	X	L	H	6V Vcc Pin 28
X	X	X	X	L	L	Reset overcurrent fuse/0V Pin28

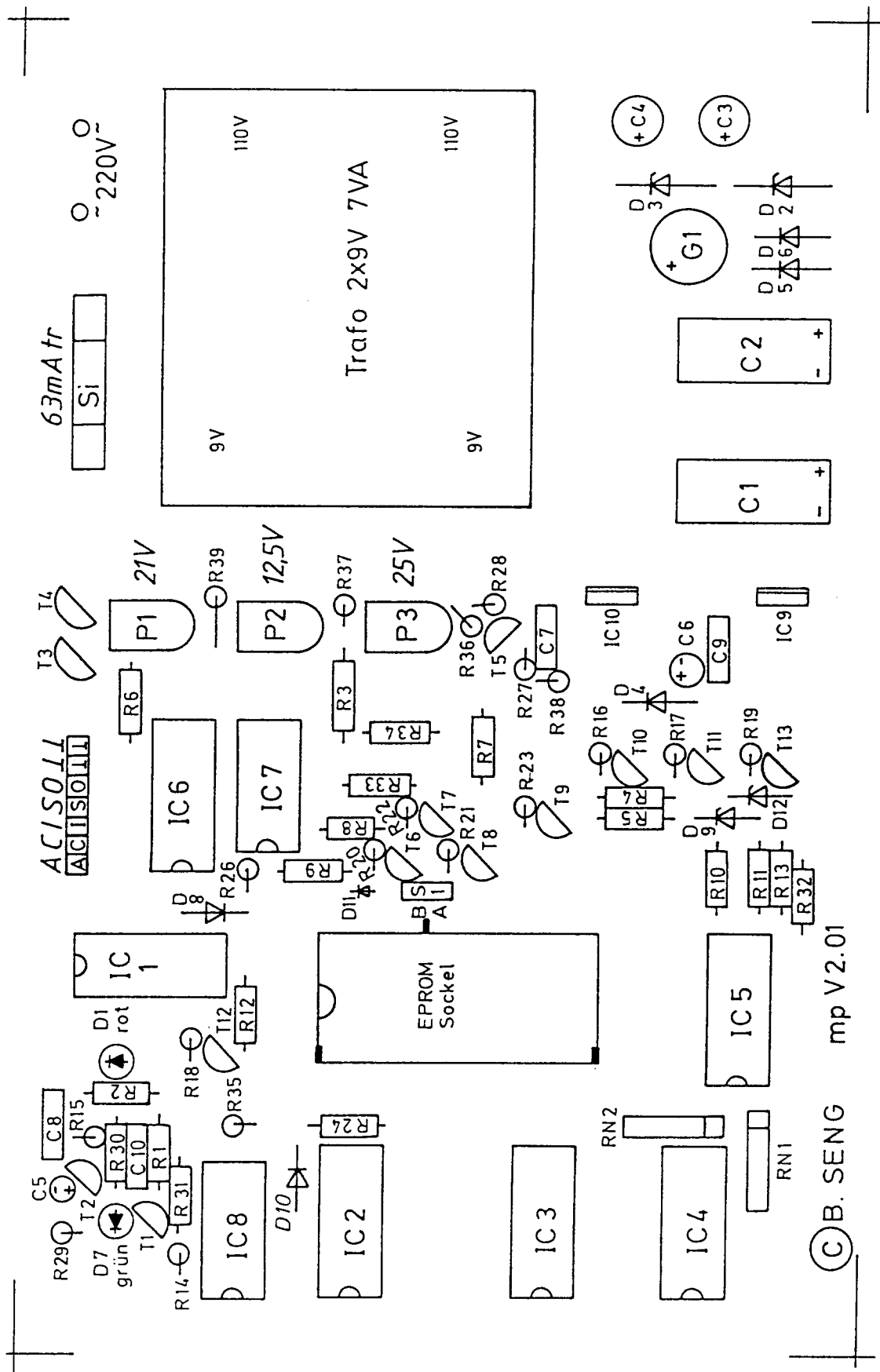
H = High L = Low X = High or Low

- Switch S1 controls device mode, may be soldered to setting A:

Setting A: 2716 programmable; no Chip Identifier Mode readable

Setting B: Chip Identifier Mode readable; 2716 readable, not programmable

PCB Plot



Part List

C1	1000 μ F/16V
C2	470 μ F/63V
C3,C4	220 μ F/16V
C5,C6	4,7 μ F/16V
C7...C10	100nF/Z5U
D1	LED red
D2,D3	ZPD 18V/5W, not connected
D4,D5,D6	1N 4002
D7	LED green
D8,D10,D11	1N 4148
D9,D12	ZPD 39V/0,3W
G1	B80 C1500
IC1...IC4	HEF(HCF) 4094
IC5	HEF(HCF) 4021
IC6	74LS139
IC7	7407
IC8	7406
IC9	7806
IC10	LM317
R1...R13	10K Ω
R14...R23	3,3K Ω
R24,R26	47K Ω
R27...R30	240 Ω
R31,R32	330 Ω
R33...R35	2,2K Ω
R36...R37	3,9K Ω
R38	8,2 Ω
R39	18K Ω
R50...R52	1K Ω
RN1,RN2	47K Ω
Si	63mA/Time delay
S1	subminiature switch or jumper
S2	power switch
T1...T4	BC546
T5...T13	BC327