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TIME PORT  MODULE                        ASSY # 12-10062-XX

FEATURES:

.  Battery backed-up Calendar/Clock
.  Parallel printer port
.  Up to 2 asynchronous communication ports
.  User's EPROM/CMOS static RAM (Z2 and Z3)
.  Software Lock (Z12)


CONFIGURATION

SWITCH 1:  8 Positions
SWITCH 2:  4 positions


[1] SERIAL PORTS

SW2-1 SW2-2   DESCRIPTION
-----------   ------------------------------------------
  ON    ON    No serial ports installed
  ON    OFF   First serial port address is COM1 (3F8 Hex)
 OFF    ON    First serial port address is COM2 (2F8 Hex)
 OFF    OFF   First serial port address is COM1
              Second serial port address is COM2


INTERRUPT LEVELS SELECTION FOR THE SERIAL PORTS


INT LEVEL     COM1                      COM2
-----------   ------------------------------------------
  IRQ2        E50-E51             | E53-E54
  IRQ3        E45-E46             | E48-E49 (Standard)
  IRQ4        E46-E47 (Standard)  | E47-E48
  IRQ5        E51-E52             | E52-E53

[2] PARALLEL PRINTER PORT

SW2-4         ON  = Parallel Port address is 378 Hex (LPT1)
SW2-4         OFF = Parallel Port address is 278 Hex (LPT2)

PARALLEL PORT DIRECTIONAL CONTROL

E69-E71       Selects one-way communication from the PC to the parallel
E29-E32       printer port and the standard Centronics interface (factory
              setting)

E27-E30       Selects internal bidirectional control

E28-E31       Selects external bidirectional control

INTERRUPT LEVELS SELECTION FOR THE PARALLEL PORT

  IRQ2        E42-E43
  IRQ3        E39-E40
  IRQ5        E40-E41
  IRQ7        E43-E44 (Standard)

[3] CALENDAR/CLOCK

SW2-3         ON  = Clock address is 350 Hex
SW2-3         OFF = CLock address is 250 Hex


INTERRUPT LEVELS SELECTION FOR THE CALENDAR/CLOCK

  IRQ2        E36-E37
  IRQ3        E33-E34
  IRQ4        E34-E35
  IRQ5        E37-E38
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NOTE: The calendar/clock can operate with interrupt levels; however,
            interrupts occur ONLY if enabled by a user-supplied program. The
            Persyst CLOCK.COM program does not use any hardware interrupts.

[4] EPROM/CMOS STATIC RAM

The Time Port module offers support for user-installed EPROM or CMOS static
RAM. Up to 16 Kbytes can be added to the module using the popular 2716, 2732,
2764, or equivalent EPROMS. Alternatively, TC5516/TC5564 or equivalent CMOS
static RAMs may be used by selecting the appropriate jumper configuration.

You may add either the EPROM or CMOS static RAM - BUT not both. The two types
of devices may not be mixed on the module. If both sockets (Z2 and Z3) are
to be used, the same device type must be used in each socket. If only one
socket is used, the device MUST be installed in socket Z2. DO NOT INSTALL A
DEVICE IN SOCKET Z3 ONLY.

DEVICE SIZES: Although the sockets on the module are 28-pin sockets, both 28
and 24-pin devices may be used. However, inserting a 24-pin device requires
special attention to the placement of the pin 1 end of device. That is, pin 1
of the 24-pin device must be inserted in pin 3 of the 28-pin socket.

JUMPER CONFIGURATION FOR DIFFERENT DEVICE TYPES

E15-E16   TC5516, 2K x 8 CMOS static RAM
 E4-E8   Supplies (1) READ/WRITE signal to pin 21 of device and (2)
            battery supply to pin 24 of device

 E2-E6   TC5564, 8K x 8 CMOS static RAM
 E9-E11   Supplies (1)READ/WRITE signal to pin 27 of device; (2) Address
E17-E18   bit A11 to pin 23 of device and (3) battery supply to pin 28 of
            device

 E3-E7   2716, 2K x 8 EPROM
E13-E14   Supplies +5V to pin 24 and chip enable to pin 21 of device

 E3-E7   2732, 4K x 8 EPROM
E17-E18   Supplies +5V to pin 24 and address bit A11 to pin 21 of device

 E1-E5   2764, 8K x 8 EPROM
E10-E12   Supplies (1) +5V to pin 28 of device; (2) Chip enable to pin 27
E17-E18   and (3) address bit A11 to pin 23 of device

JUMPER CONFIGURATION FOR DIFFERENT DEVICE SIZES

E21-E24   2K x 8
E20-E23   4K x 8
E19-E22   8K x 8

EPROM/CMOS SWITCH CONFIGURATION

SW1-1	SW1-2	SW1-3	TOTAL SIZE OF EPROM/CMOS
ON	ON	ON	2 Kbytes
ON	ON	OFF	4 Kbytes
ON	OFF	OFF	8 Kbytes
OFF	OFF	OFF	16 Kbytes

SW1-4	SW1-5	SW1-6	SW1-7	SW1-8	START ADDRESS	ADDRESS SPACE	TOTAL SIZE
ON	ON	OFF	OFF	OFF	C0000H	C0000H-C3FFFH	16 Kbytes
ON	OFF	OFF	OFF	OFF	D0000H	D0000H-D3FFFH	16 Kbytes
OFF	ON	OFF	OFF	OFF	E0000H	E0000H-E3FFFH	16 Kbytes
ON	ON	ON	OFF	OFF	C0000H	C0000H-C1FFFH	8 Kbytes
ON	ON	OFF	OFF	OFF	C2000H	C2000H-C3FFFH	8 Kbytes
ON	OFF	ON	OFF	OFF	D0000H	D0000H-D1FFFH	8 Kbytes

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 ON    OFF   OFF   OFF   OFF      D2000H       D2000H-D3FFFH    8 Kbytes
 OFF   ON    ON    OFF   OFF      E0000H       E0000H-E1FFFH    8 Kbytes
 OFF   ON    OFF   OFF   OFF      E2000H       E2000H-E3FFFH    8 Kbytes

 ON    ON    ON    ON    OFF      C0000H       C0000H-C0FFFH    4 Kbytes
 ON    ON    ON    OFF   OFF      C1000H       C1000H-C1FFFH    4 Kbytes
 ON    ON    OFF   ON    OFF      C2000H       C2000H-C2FFFH    4 Kbytes
 ON    ON    OFF   OFF   OFF      C3000H       C3000H-C3FFFH    4 Kbytes
 ON    OFF   ON    ON    OFF      D0000H       D0000H-D0FFFH    4 Kbytes
 ON    OFF   ON    OFF   OFF      D1000H       D1000H-D1FFFH    4 Kbytes
 ON    OFF   OFF   ON    OFF      D2000H       D2000H-D2FFFH    4 Kbytes
 ON    OFF   OFF   OFF   OFF      D3000H       D3000H-D3FFFH    4 Kbytes
 OFF   ON    ON    ON    OFF      E0000H       E0000H-E0FFFH    4 Kbytes
 OFF   ON    ON    OFF   OFF      E1000H       E1000H-E1FFFH    4 Kbytes
 OFF   ON    OFF   ON    OFF      E2000H       E2000H-E2FFFH    4 Kbytes
 OFF   ON    OFF   OFF   OFF      E3000H       E3000H-E3FFFH    4 Kbytes

 ON    ON    ON    ON    ON       C0000H       C0000H-C07FFH    2 Kbytes
 ON    ON    ON    ON    OFF      C0800H       C0800H-C0FFFH    2 Kbytes
 ON    ON    ON    OFF   ON       C1000H       C1000H-C17FFH    2 Kbytes
 ON    ON    ON    OFF   OFF      C1800H       C1800H-C1FFFH    2 Kbytes
 ON    ON    OFF   ON    ON       C2000H       C2000H-C27FFH    2 Kbytes
 ON    ON    OFF   ON    OFF      C2800H       C2800H-C2FFFH    2 Kbytes
 ON    ON    OFF   OFF   ON       C3000H       C3000H-C37FFH    2 Kbytes
 ON    ON    OFF   OFF   OFF      C3800H       C3800H-C3FFFH    2 Kbytes
 ON    OFF   ON    ON    ON       D0000H       D0000H-D07FFH    2 Kbytes
 ON    OFF   ON    ON    OFF      D0800H       D0800H-D0FFFH    2 Kbytes
 ON    OFF   ON    OFF   ON       D1000H       D1000H-D17FFH    2 Kbytes
 ON    OFF   ON    OFF   OFF      D1800H       D1800H-D1FFFH    2 Kbytes
 ON    OFF   OFF   ON    ON       D2000H       D2000H-D27FFH    2 Kbytes
 ON    OFF   OFF   ON    OFF      D2800H       D2800H-D2FFFH    2 Kbytes
 ON    OFF   OFF   OFF   ON       D3000H       D3000H-D37FFH    2 Kbytes
 ON    OFF   OFF   OFF   OFF      D3800H       D3800H-D3FFFH    2 Kbytes
 OFF   ON    ON    ON    ON       E0000H       E0000H-E07FFH    2 Kbytes
 OFF   ON    ON    ON    OFF      E0800H       E0800H-E0FFFH    2 Kbytes
 OFF   ON    ON    OFF   ON       E1000H       E1000H-E17FFH    2 Kbytes
 OFF   ON    ON    OFF   OFF      E1800H       E1800H-E1FFFH    2 Kbytes
 OFF   ON    OFF   ON    ON       E2000H       E2000H-E27FFH    2 Kbytes
 OFF   ON    OFF   ON    OFF      E2800H       E2800H-E2FFFH    2 Kbytes
 OFF   ON    OFF   OFF   ON       E3000H       E3000H-E37FFH    2 Kbytes
 OFF   ON    OFF   OFF   OFF      E3800H       E3800H-E3FFFH    2 Kbytes
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[5] SOFTWARE LOCK

The software lock is a mechanism that you may use to protect your software by
requiring the presence of a "software key" in any program. That is, certain
data may be encoded in a PROM and installed in the TP module. For any program
to successfully execute, that program must contain a "software key" that
matches the data encoded in the software lock PROM.

When the user-supplied PROM is installed in the 16-pin socket at location
Z12 on the TP module, the second EPROM/CMOS static RAM socket Z3 MAY NOT BE
USED. However, the first EPROM/CMOS static RAM socket Z2 supports up to 8 KB
of EPROM or battery backed-up CMOS RAM.

The software lock address space is dependent on the start address chosen for
the EPROM/CMOS RAM support as well as the part size used. You must set the
jumpers and switches to specify TWICE the amount of EPROM/CMOS RAM actually
installed in order to use the software lock. That is, the software lock uses
the upper part of the address space chosen for the EPROM/CMOS static RAM. The
amount of space needed for the software lock must be added to that of the
actual part installed for the EPROM?CMOS static RAM capability.

EPROM/CMOS RAM AND SOFTWARE LOCK SWICTH CONFIGURATION

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                              EPROM/CMOS     SOFTWARE LOCK
SW1-4 SW1-5 SW1-6 SW1-7 SW1-8 ADDRESS SPACE  ADDRESS SPACE  TOTAL SIZE
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   ON     ON    OFF    OFF    OFF      C0000H-C1FFFH   C2000H-C201FH    16 Kbytes
   ON    OFF    OFF    OFF    OFF      D0000H-D1FFFH   D2000H-D201FH    16 Kbytes
  OFF     ON    OFF    OFF    OFF      E0000H-E1FFFH   E2000H-E201FH    16 Kbytes

   ON     ON     ON    OFF    OFF      C0000H-C0FFFH   C1000H-C101FH     8 Kbytes
   ON     ON    OFF    OFF    OFF      C2000H-C2FFFH   C3000H-C301FH     8 Kbytes
   ON    OFF     ON    OFF    OFF      D0000H-D0FFFH   D1000H-D101FH     8 Kbytes
   ON    OFF    OFF    OFF    OFF      D2000H-D2FFFH   D3000H-D301FH     8 Kbytes
  OFF     ON     ON    OFF    OFF      E0000H-E0FFFH   E1000H-E101FH     8 Kbytes
  OFF     ON    OFF    OFF    OFF      E2000H-E2FFFH   E3000H-E301FH     8 Kbytes

   ON     ON     ON     ON    OFF      C0000H-C07FFH   C0800H-C081FH     2 Kbytes
   ON     ON     ON    OFF    OFF      C1000H-C17FFH   C1800H-C181FH     2 Kbytes
   ON     ON    OFF     ON    OFF      C2000H-C27FFH   C2800H-C281FH     2 Kbytes
   ON     ON    OFF    OFF    OFF      C3000H-C37FFH   C3800H-C381FH     2 Kbytes
   ON    OFF     ON     ON    OFF      D0000H-D07FFH   D0800H-D081FH     2 Kbytes
   ON    OFF     ON    OFF    OFF      D1000H-D17FFH   D1800H-D181FH     2 Kbytes
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