

USER'S MANUAL

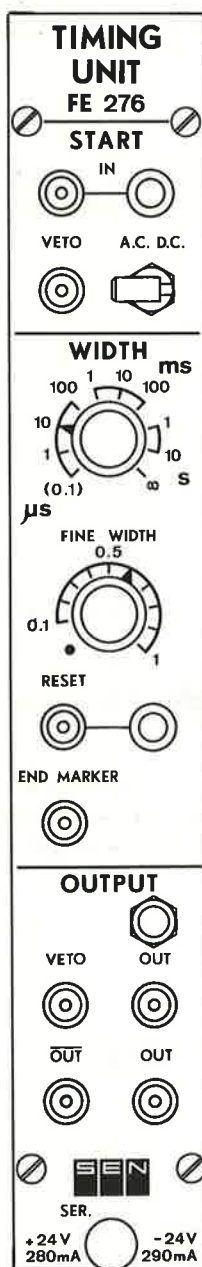
FE 276 TIMING UNIT

Valid for Serial No 001...



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FE 276 TIMING UNIT CERN TYPE N 2251



The Timing Unit FE 276 is a triggered pulse generator, producing signals that are from 40 ns to 10 s wide. It has various reset and veto facilities and is completely dead-time free. A short output pulse at the end of the timing cycle permits the cascading of several units.

SPECIFICATIONS

START

In : -600 mV/50 ohms

Push-Button : Gives a single output pulse of any selected width.

Veto : -600 mV/50 ohms. Prevents the start pulse from triggering, but has no influence once the timing cycle is started.

Switch AC/DC :
 AC : The leading edge of the start pulse is differentiated. The output may be shorter than the start pulse without double-pulsing.
 DC : The output is held on for the duration of the start pulse (no time limit) plus a time proportional to the width selected.

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WIDTH

Swichable in 9 steps from 0,1 μ s to 10 s and continuously variable with the FINE WIDTH control. Accuracy of the reading is $\cong \pm 20\%$. The selected value on the switch corresponds to full scale on the time control. (Note that on the 0,1 μ s range, these tolerances are not valid). In position " ∞ " the output remains on until the unit is reset externally.

Reset : -600 mV/50 ohms. A short reset pulse will stop the timing cycle and reset the unit. When a reset signal is applied, the start signal cannot trigger.

Push-Button : Has the same action as "Reset".

End Marker : This output pulse indicates the end of the timing cycle and is used when several units are connected in series. Note that the End Marker pulse is unaffected by the Output Veto (see below).
Ampl. : $-16 \text{ mA} \pm \text{mA}$.
Width : $13 \pm 3 \text{ ns}$.
Rise— and fall-time : typ. 1.2 ns.
Delay from Start of End Marker to end of Out : $9 \text{ ns} \pm 10\%$.

OUTPUT

Out and Out : Two independent normal outputs and one complementary output.
Ampl. : $-16 \pm 2 \text{ mA}$.
Rise-time : typ. 0,8 ns.
Fall-time : typ. 1.4 ns.

Propagation Delay : (as measured when the Start signal is 6 dB above trigger threshold). $17 \text{ ns} \pm 10\%$. Difference in delay between outputs on the same unit : max. 0.3 ns.

Veto : -600 mV/50 ohms. Inhibits the outputs for the duration of the veto signal. This Veto input has no influence on the operation of the timing circuit or the End Marker.

Lamp : Indicates the presence of an output. The lamp remains lit as long as there is an output but is always held on long enough for even a short pulse to be seen. The flashing rate of the lamp does *not* correspond to the trigger rate on the duty cycle, it merely indicates that the output consists of separate pulses.

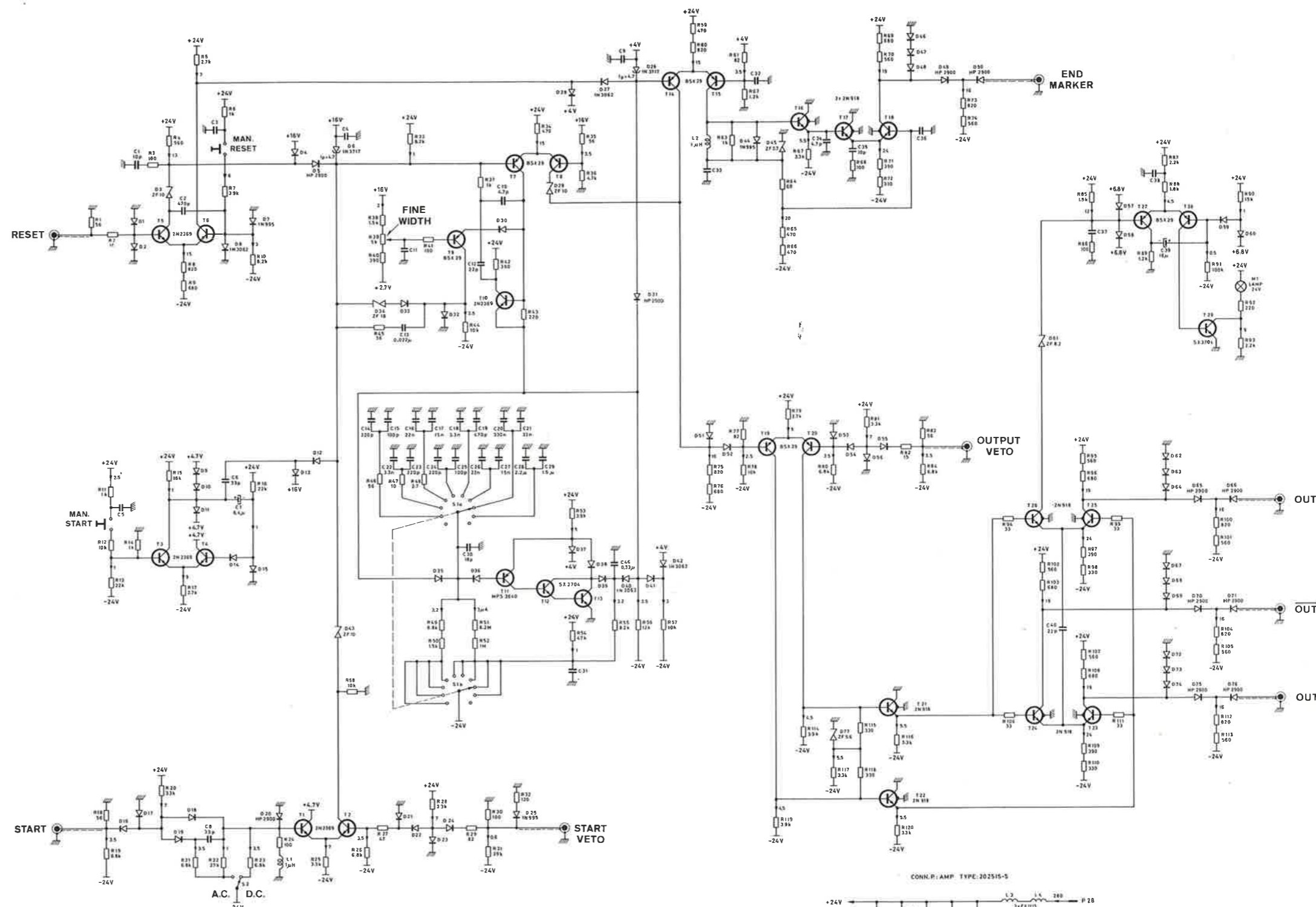
Power Consumption : + 24 : 280 mA (max.)
- 24 : 290 mA (max.)

- N.B. 1) All inputs and outputs conform to NIM standard and are direct coupled, except START AC.
2) Unused outputs need not be terminated.
3) Rise— and fall-times are measured at 10-90%, widths and delays at half maximum.

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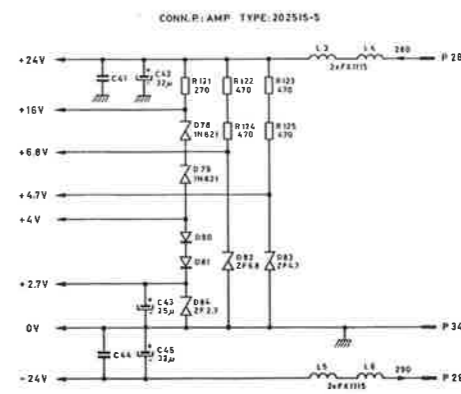
Electronics



WIDTH
51a-51b



NOTE: ALL CAPACITORS ARE 0.1μF UNLESS SPECIFIED
ALL DIODES ARE 1N914-A
C47-C58: 47 nF DECOUPLING OF ±24V SUPPLIES
NOT SHOWN ON CIRCUIT DIAGRAM.



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