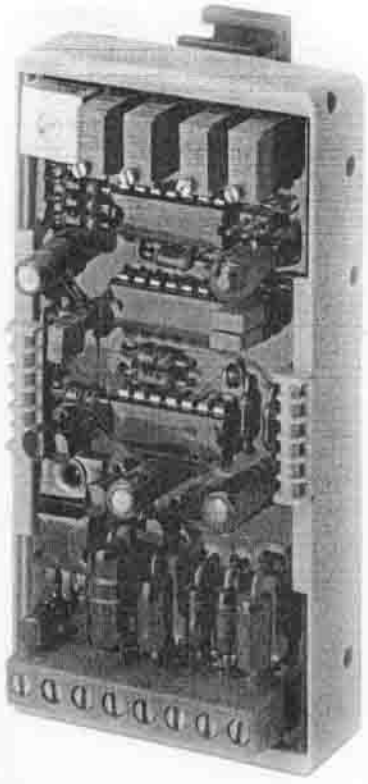
Type EV1M2-12/24 and EV1M2-24/48 Electronic Amplifier

for controlling proportional valves,
modular version to be connected to bolt-type terminals



1. General

1.1. Brief description and block diagram

The amplifier has a very high control accuracy and can be used to control a proportional solenoid. EV1M2-12/24 from 12VDC to 24VCD and an EV1M2-24/48 from 24VDC to 48VDC.

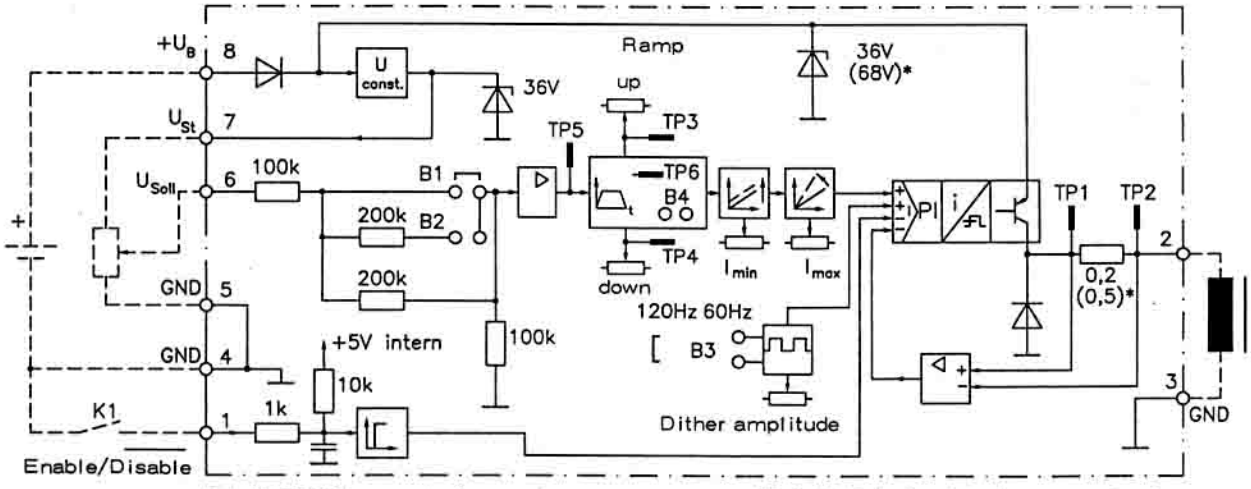
Most important components:
Permanent voltage regulator for generating 5VDC stabilzed voltage
Linear ramp generator (integrator) with separate adjustment of rise and fall times
Dither oscillator
Current-controlled, chopped terminal stage

Most important features:
I_{min} and I_{max} standard and maximum current may be precisely adjusted by multi-gear potentiometer.
Dither amplitude adjustable, dither frequency either 60 or 110Hz.
Power supply secured against incorrect pole connection
Output protected against short cut and ground
Dither signal superimposed on current output

Enable/disable input
PIN compatible with previous model EV1M1-12/24
improved EMC (electromagnetic compatibility)

In conjunction with the card holder available as an accessory, this printed circuit with its compact dimensions fits conveniently on to 35mm or 32mm support rails in electric cabinets. Thanks to the modular design the connections on an 8-piece pin bar are clearly arranged and easily accessible from the front.

Block diagram



B 4, TP 3-TP6 are only in use when a coarse adjustment of the ramp times "rise" and/or "fall" on the multi-range-potentiometers is carried out by measuring the voltage

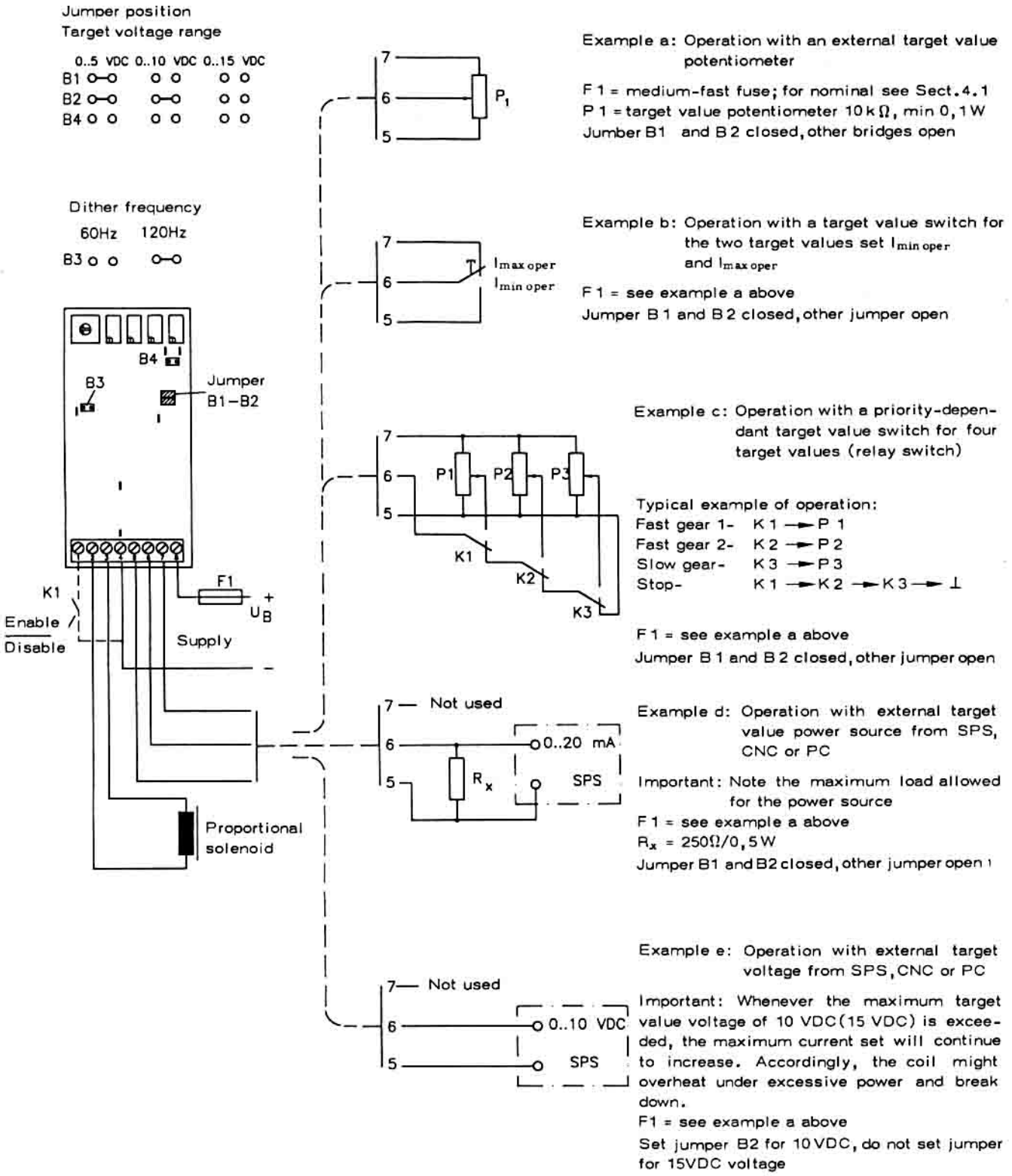
TP 1, TP 2 test points for measuring the coil (inductive) current 100 mV ≙ 0,5A (100 mV ≙ 0,2A)

*Values in brackets valid for EV 1M2-24/48

This amplifier may be used for all HAWE proportional valves, see selection table in D 7810 (survey). With electrohydraulic remote control of PSL(V) directional valves as specified in D 7700-3 and -5, always make sure due to the twin proportional solenoids used for switch positions A and B that, depending on the direction of control and activation, there is an automatic, electric switchover to the respective solenoid, for example by a directional switch (micro-switch) in the remote control hand lever potentiometer, see typical circuit diagram in Sect.5.2.

5. Typical circuits

5.1. Use of a proportional solenoid to control hydraulic valves



Example a: Operation with an external target value potentiometer

F 1 = medium-fast fuse; for nominal see Sect. 4.1
P 1 = target value potentiometer 10 kΩ, min 0,1 W
Jumber B1 and B 2 closed, other bridges open

Example b: Operation with a target value switch for the two target values set $I_{min\ oper}$ and $I_{max\ oper}$

F 1 = see example a above
Jumper B 1 and B 2 closed, other jumper open

Example c: Operation with a priority-dependant target value switch for four target values (relay switch)

Typical example of operation:
Fast gear 1- K 1 → P 1
Fast gear 2- K 2 → P 2
Slow gear- K 3 → P 3
Stop- K 1 → K 2 → K 3 → ⊥

F 1 = see example a above
Jumper B 1 and B 2 closed, other jumper open

Example d: Operation with external target value power source from SPS, CNC or PC

Important: Note the maximum load allowed for the power source
F 1 = see example a above
R_x = 250Ω/0,5 W
Jumper B1 and B2 closed, other jumper open

Example e: Operation with external target voltage from SPS, CNC or PC

Important: Whenever the maximum target value voltage of 10 VDC (15 VDC) is exceeded, the maximum current set will continue to increase. Accordingly, the coil might overheat under excessive power and break down.
F1 = see example a above
Set jumper B2 for 10 VDC, do not set jumper for 15VDC voltage