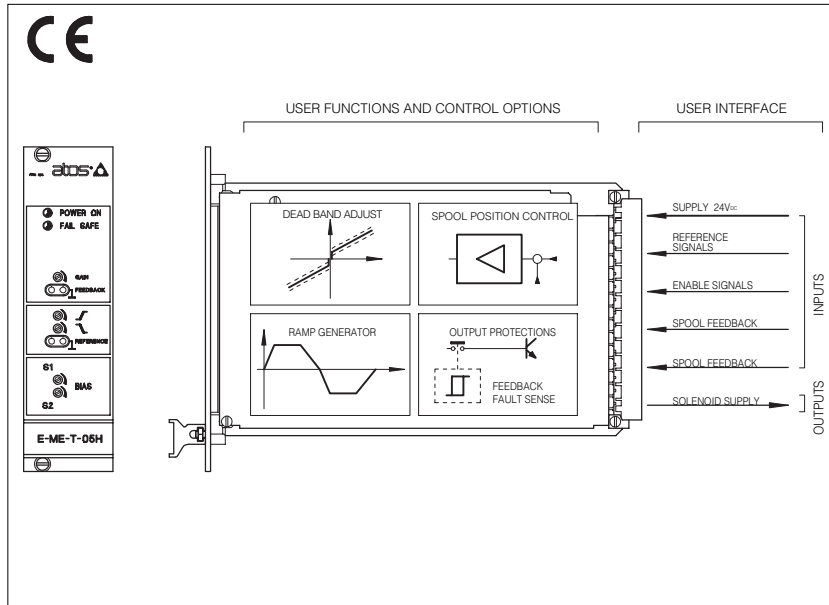


Electronic drivers type E-ME-T

Eurocard format, for single and double solenoid proportional valves with transducer



E-ME-T electronic drivers supply single and double solenoid proportional valves type ZO(R)-T with the correct current signal to align valve regulation to the error signal.

They are designed to work in open or closed-loop systems according to the block diagram 2. Cycle generator type E-ME-Y-0FG are also available for flexible applications to allow simple work cycles. In closed loop systems, E-ME-T driver can be coupled with commercial axis card according to the block diagram 2.

The driver operates the spool's position control proportionally to the input reference signal (voltage or current) supplying a proper switching current to the solenoid. Bias and dissymmetrical ramps adjustment are available for accurate valve regulations.

The driver is normally used with a reference signal supplied by an external set-point potentiometer or by PLC control unit and a dissymmetrical rising and falling ramp generator.

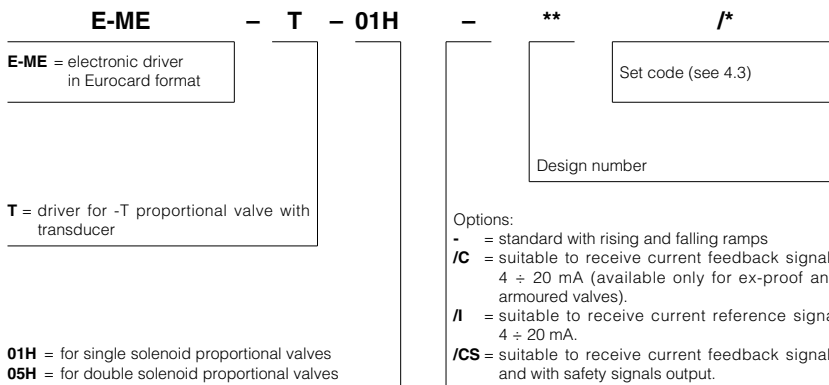
This driver is supplied already set, coupled with the suitable proportional valve, optimizing its performances.

The electronic card is in Eurocard format (DIN 41494 - Plug-in-units).

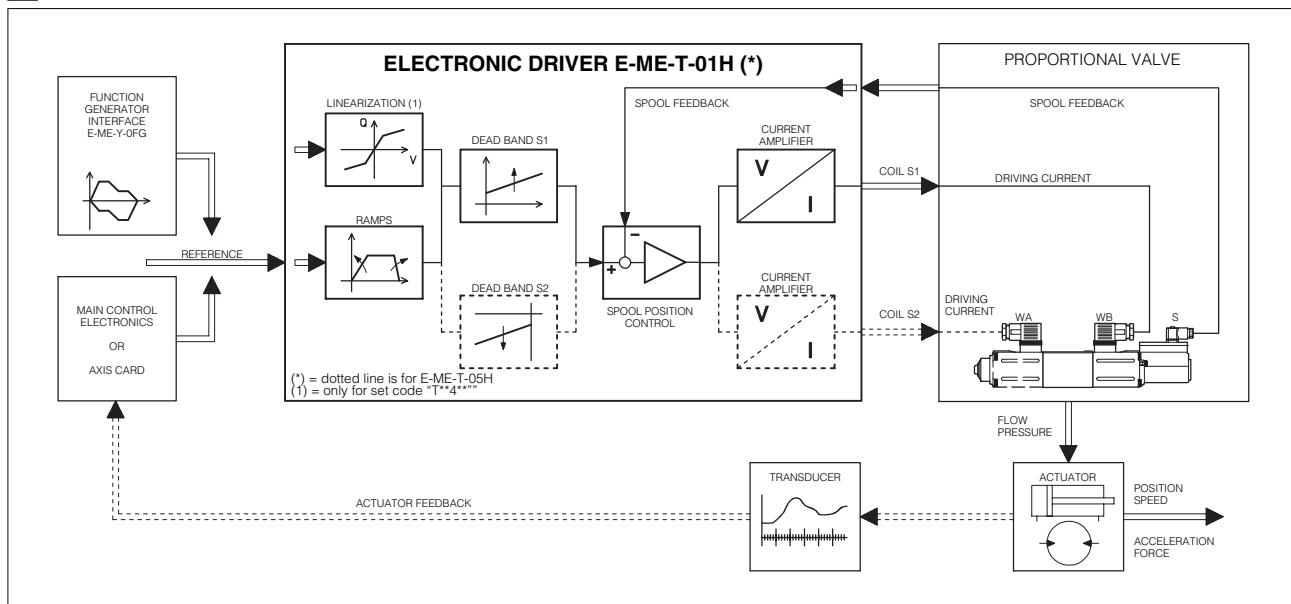
This new version includes the following improved features:

- electronic filters on input and output lines;
- CE marking granting the conformity to the EMC Directive (Electromagnetic Compatibility);
- both sides of the card with shielded cover with PE faston connector;
- test point for reference and feedback on front panel.

1 MODEL CODE



2 BLOCK DIAGRAM



3 MAIN CHARACTERISTICS OF E-ME-T ELECTRONIC DRIVERS

Power supply (positive at contacts 2a, 2c) (negative at contacts 4a, 4c)	Stabilized : 24V _{DC} Rectified and filtered : V _{RMS} = 21 ÷ 33V _{DC} (max ripple 2V _{pp})
Max power consumption	50 W
Current supplied to solenoids	I _{max} = 3,3 A square wave PWM type (for ex-proof valves I _{max} = 2,5 A)
Nominal reference signal, factory preset	E-ME-T-01H : 0 ÷ 10V at contact 12c (GND on 8a) (±10V option, see 4.4) E-ME-T-05H : ±10V at contact 12c (GND on 8a or 16c) for option /I : 4 ÷ 20 mA at contact 12c (+) and 18c (-)
Reference signal variation range (internal scale adjust option)	±10V (SW pos. 1) and ±5V (SW pos. 2)
Input signal impedance	Voltage R _i > 50KΩ - (/I option R _i = 316 Ω)
Potentiometer supply	+10V / 10 mA at contact 10c and -10V / 10mA at contact 14c
Ramp time	14 sec. max (0 ÷ 100% of reference signal)
Enabling signal	V = 5 ÷ 24V _{DC} on contact 8c with led indicator on panel
Electrical wiring	Coil: : 2 x 1 mm ² to 20 m 2 x 1,5 mm ² shielded to 40 m Transducer: : 4 x 0,25 mm ² to 20 m 4 x 0,5 mm ² shielded to 40 m
Card format	Europa 100x160 mm (Plug-in unit DIN 41494)
Card connector	Male DIN 41612/D
Connector elements available	Type E-K-32M frame snap connector (see table G800) to be ordered separately
Operating temperature	0 ÷ 50°C (storage -20 ÷ +70°C)
Front panel dimensions	128,4 x 35,3 mm
Weight	520 g
Features	Position control by PID action - Fast solenoid excitation and switching off. Outputs to solenoids protected against accidental short circuits. Feedback cable break produces an inhibition of the driver, zeroing the current and creating a fail-safe position in the valve. Only for set codes "T**4**": circuit to make linear the regulation characteristic of the valve.

4 GENERAL SPECIFICATIONS

4.1 Power supply and wirings

The power supply must be appropriately stabilized or rectified and filtered. If the power supply is generated by a single phase rectifier, use a 10000µF/40V capacitor; if pulse voltage is generated by a three phase rectifier connect a 4700µF/40V capacitor (see [11] Wirings block diagram). It is always recommended to use shielded cables with earthed shield for connections to the reference generators and feedback transducer.

4.2 Reference signal

The electronic driver is designed to receive external voltage or current reference signals according to [5] - External reference signals. Note that drivers suitable to receive current reference (option /I) have signal values in the range 4 to 20 mA.

4.3 Set code

Basic calibration of the electronic driver is factory preset according to the proportional valve it has to be coupled with. These pre-calibrations are identified by a standard number in the model code as follows:

DH05SA = DHZO-T-05*	DP15SC = DPZO-T-15*	TH04SA = DLHZO-T-0*
DH05SA = DHZO-T-05*/B	DP15SC = DPZO-T-15*/B	TH04SA = DLHZO-T-0*/T7
DK15SB = DKZOR-T-15*	DP25SC = DPZO-T-25*	TK14SC = DLKZOR-T-1*
DK15SB = DKZOR-T-15*/B	DP25SC = DPZO-T-25*/B	TK14SC = DLKZOR-T-1*/T
DH07SA = DHZO-T-07*	DP35SC = DPZO-T-35*	TH06SA = DLHZO-T
DH07BA = DHZO-T-07*/B	DP35SC = DPZO-T-35*/B	TH06SA = DLHZO-T/T51
DK17SB = DKZOR-T-17*	DP65SC = DPZO-T-65*	TQ16SA = LIQZO-T-16*
DK17BB = DKZOR-T-17*/B	DP17SC = DPZO-T-17*	TQ25SA = LIQZO-T-25*
	DP17BC = DPZO-T-17*/B	TQ32SA = LIQZO-T-32*
	DP27SC = DPZO-T-27*	TQ42SA = LIQZO-T-40*
	DP27BC = DPZO-T-27*/B	TQ52SA = LIQZO-T-50*
	DP37SC = DPZO-T-37*	QV0NSA = QVHZO-T-06/*
	DP37BC = DPZO-T-37*/B	QV1NSB = QVKZO-T-10/*
	DP67SA = DPZO-T-67*	
	DH04SA = DLHZO-T-0*	
	DH04SA = DLHZO-T-0*/B	
	DK14SC = DLKZOR-T-1*	
	DK14SC = DLKZOR-T-1*/B	

For **ex-proof valves**, insert an "A" in the fifth digit of the code adjustment; for example, the code adjustment for DLHZA-T is DH04AA: see table E120.

For **/CS option**, contact technical office to check the allowed precalibration codes.

4.4 Calibration/settings available to the user, see [7], [8], [9], [10].

- Scale

The relation between valve regulation and reference signal is set by the scale selector switch (see [7]-A). For single solenoid valves with two external operating positions (-*60, -*40), the reference signal is the same as double solenoid driver. Only for particular requirements a separate adjust for solenoid S1 and S2 is possible with internal scale potentiometers P5 and P6 to obtain differential hydraulic operations in particular working conditions (see [7]-C).

- Bias, (dead band).

Regulation of dead band adjusts the hydraulic zero of the valve (adjustment of starting position) to the corresponding electrical zero. The electronic card is factory preset for the valve it is coupled with according to the set code (see section 4.3). For double solenoid driver E-ME-T-05H/* a step function generator becomes active at an input reference voltage signal greater than ±200mV enabling start current set by front panel Bias potentiometers P1 and P2 for independent solenoid Dead Band regulation.

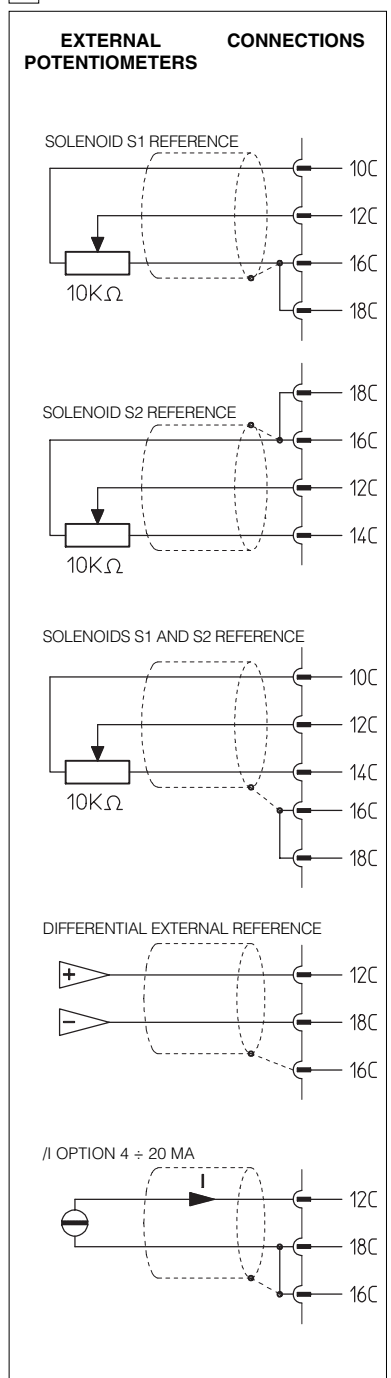
- Ramps, see [7], [11], [12].

The internal ramp generator circuit converts a step input signal into a slowly increasing output signal (solenoid current). The rise/fall time of the current is set via potentiometers on front panel, to a maximum time of 14 sec for 0 ÷ 100% of reference signal. The E-ME-T-0*H driver provides dyssymmetrical ramps regulation for different speeds of valve opening (rising ramp ↗) and closing (falling ramp ↘). To eliminate the ramp circuit in a continuous way see [7]-B, ramp switch. To eliminate that circuit in some phases of the machine cycle only, connect contacts 6c and 6a.

- Gain, see [8] (only for adjustments TH04S* and TK14S*).

Pressure gain adjustment around "zero" increases sensitivity and positioning accuracy of the axis and optimize the valve operation according to the stiffness of the system by increasing the hydraulic gain of the valve around the hydraulic zero.

5 EXTERNAL REFERENCE SIGNALS



6 INSTALLATION AND START-UP

It is advisable to perform calibration procedures in the order given below.

6.1 Warning:

- Never insert or remove the driver while the electronic system is powered on.
- Voltages must always be measured with reference to GND (connector contact [8] a).
- Refer to [8] to identify components mentioned in calibration procedures.

6.2 Start-up

Factory preset adjustment may not meet the desired requirements for the specific application and performances can be optimized by on-site re-adjustments of bias, scale and ramps potentiometers, in sequence.

- Connect the electronic driver according to the desired connection diagram (see [11], [12]).
- For E-ME-T-05H the channel enabled led (S1 or S2) shows the supplied coil.
- **Enabling signal**, see [11], [12].
The electronic driver operate when the contact 8c is supplied with an enabling signal (usually 24Vdc). It could be useful in emergency conditions to inhibit the driver by zeroing this signal.

- **Bias adjustment** (dead band compensation), see [8], [9], [10].

- Supply a reference signal voltage ($0 V_{dc}$ for E-ME-T-01H and $\pm 0,2 V_{dc}$ for E-ME-T-05H);
- Gradually turn potentiometer(s) (P1 for coil S1 and P2 for coil S2) until a movement of the controlled actuator is obtained.
- Turn slowly in the opposite sense until stop is obtained.

- **Scale adjustment**, see [7], [9], [10].

Factory preset reference signal is $0 \div +10V$ for E-ME-T-01H and $\pm 10V$ for E-ME-T-05H (selector into position 1). If a $0 \div 5V$ ($\pm 5V$) reference signal is available, set selector into position 2. Only in particular cases when a non standard reference signal is available it is possible to adjust maximum valve opening with scale regulation proceeding as follow:

- supply max reference signal (for E-ME-T-05H driver repeat for max negative voltage) in the specified range and turn counterclockwise internal scale potentiometers PT1 and PT2 (factory preset to 100%) to reduce valve opening (see [7]-C).

- **Gain** see [8], [9] (only for adjustment TH04S* and TK14S*).

Front panel potentiometer P7 could be rotated to increase sensitivity and positioning accuracy of the axis (clockwise rotation = increase in sensitivity). Factory preset completely counterclockwise).

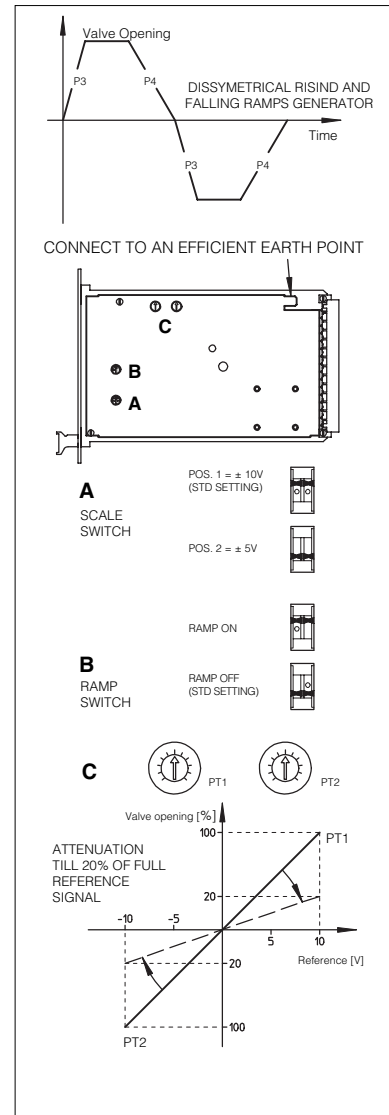
- **Ramps** (see [7], [8]).

If the card is being used in an open loop system push the switch from position ramp off (standard) to position ramp on, (see [7]-B). Calibrate the ramp settings only if dynamic impacts and tendencies towards instability persist after optimizations of the whole system. Adjust the ramp settings using the ramp potentiometers (P3 and P4) until the phenomenon has been eliminated (Clockwise rotation = increase in ramp time).

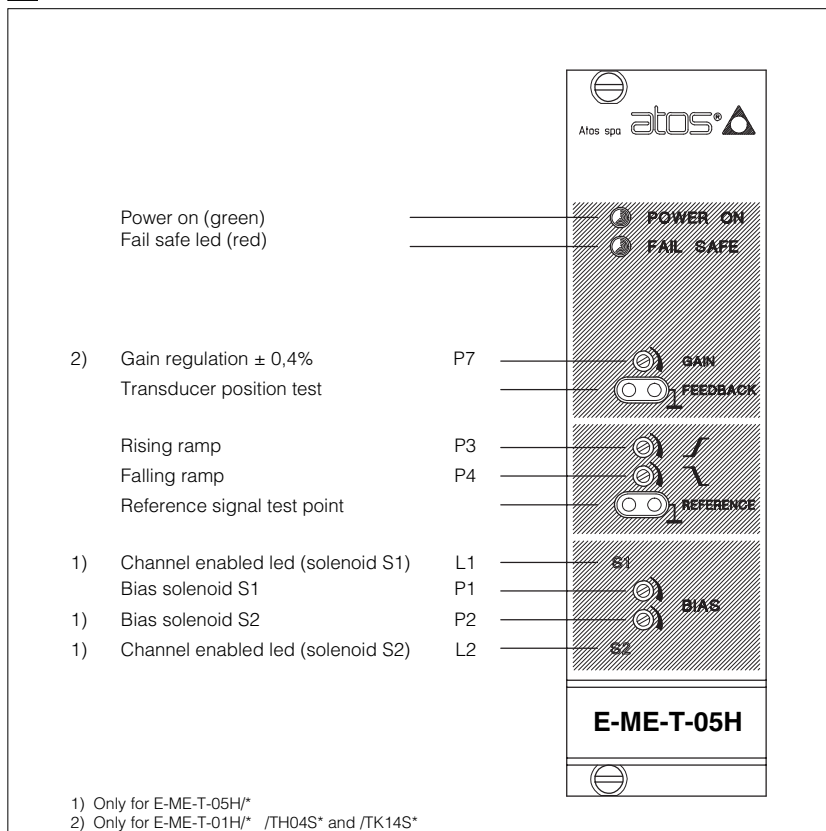
- **Safety signals** (only for E-ME-T-0*H with /CS option).

This function provides three output signals to check in real time the state of the valve spool position and to be useful to increase machine safety controls. The signal 0 (contact 22a) is active high (22V 20 mA) when the spool is in the center position; the other two signals (contacts 24a and 24c) are active high when the spool moves into the position range controlled by excitation of coil S1 and S2 respectively.

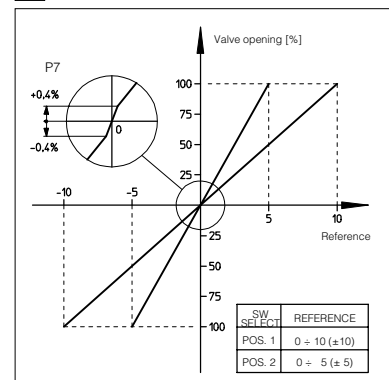
7 RAMPS AND SETTINGS



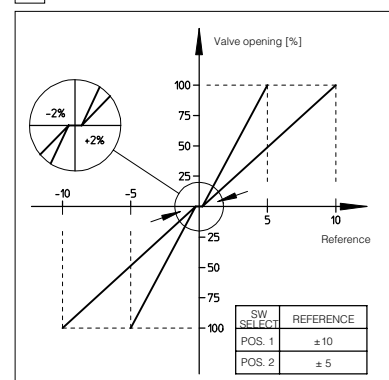
8 E-ME-T-05H TOPOGRAPHICAL VIEW OF REGULATIONS



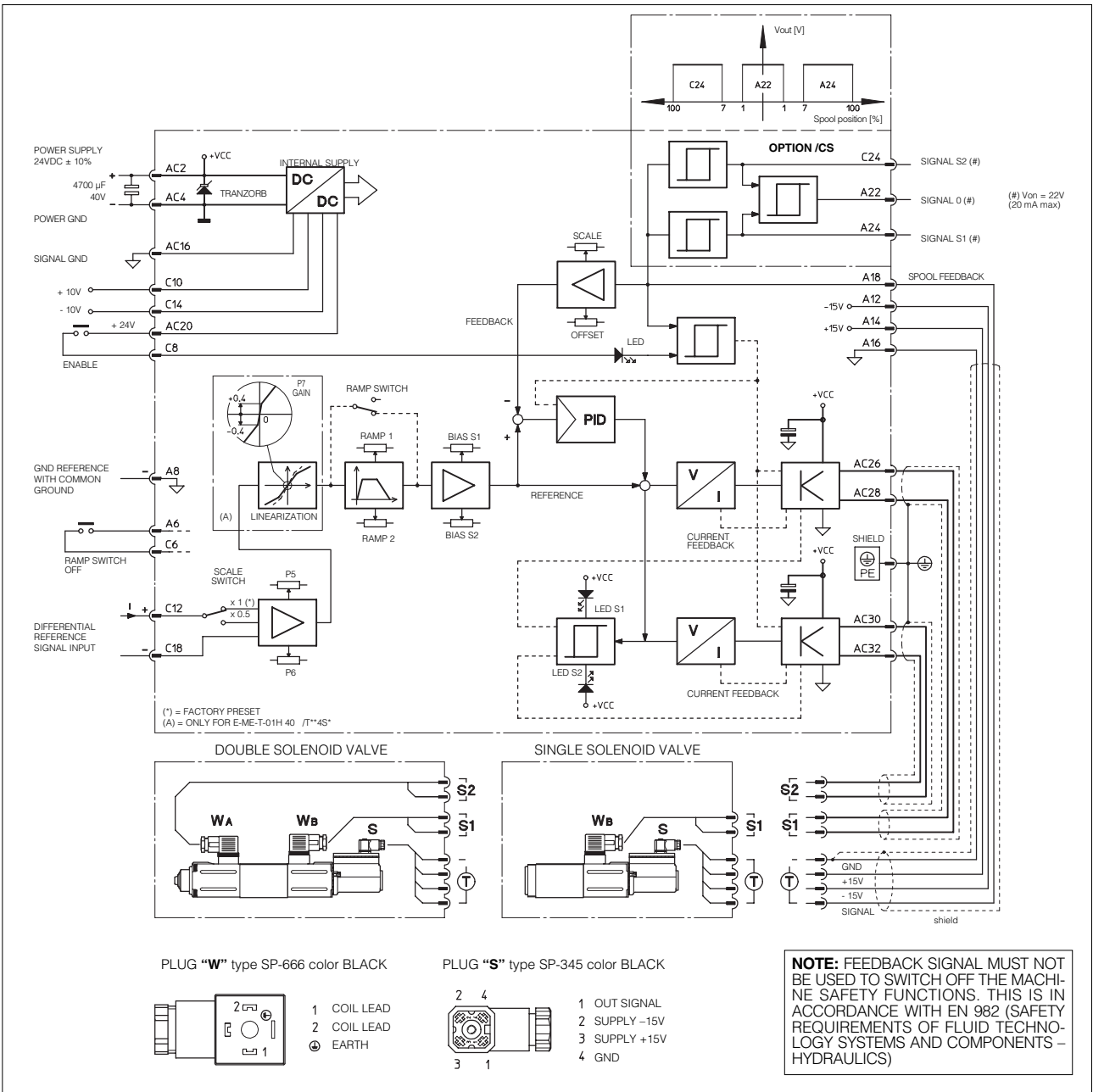
9 E-ME-T-01H DIAGRAM



10 E-ME-T-05H DIAGRAM



11 WIRING BLOCK DIAGRAM



12 GENERAL CONNECTIONS

