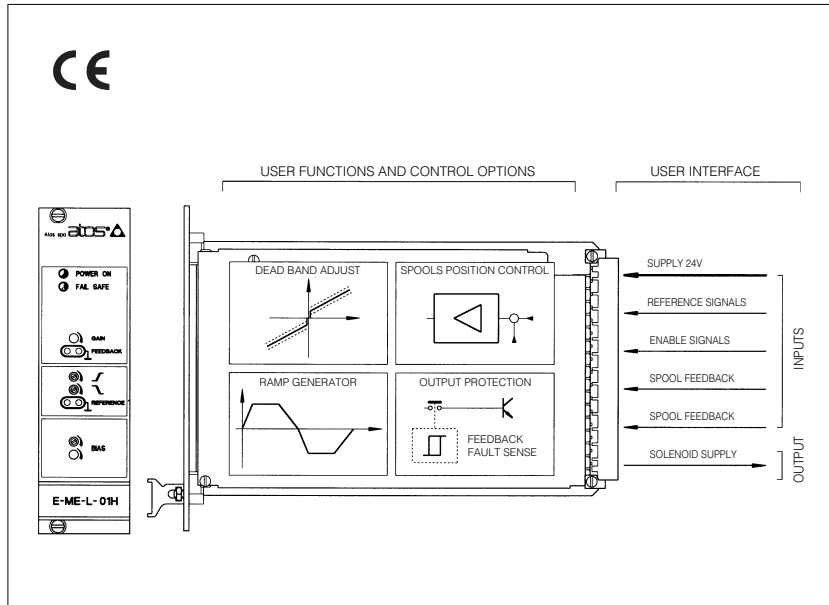


Electronic drivers type E-ME-L

Eurocard format, for single solenoid proportional valves with two transducers



E-ME-L electronic drivers supply single solenoid proportional valves type ZO-L 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 generators type E-ME-Y-0FG are also available for flexible applications of the E-ME-L drivers to allow simple work cycles. In closed loop systems, E-ME-L driver can be coupled with commercial axis cards according to the block diagram 2.

The driver operates the control of the two position spools, proportionally to the input reference signal (voltage or current) supplying a proper switching current to the solenoid.

Bias and dissymmetrical ramps adjustments, for accurate valve regulations, are available.

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.

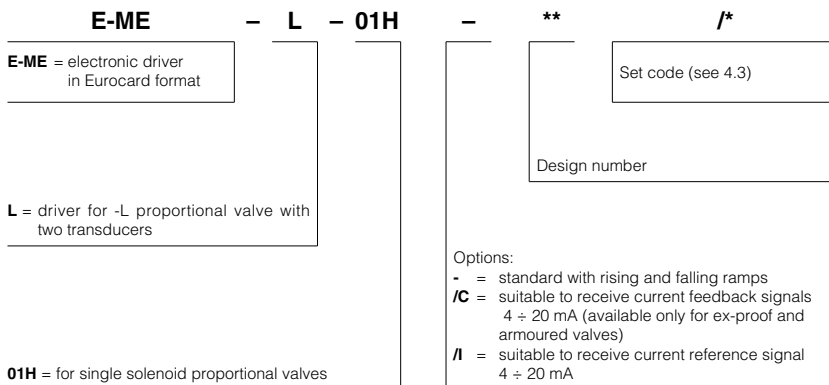
This driver is supplied already set, coupled with the suitable proportional valve, optimising its performances.

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

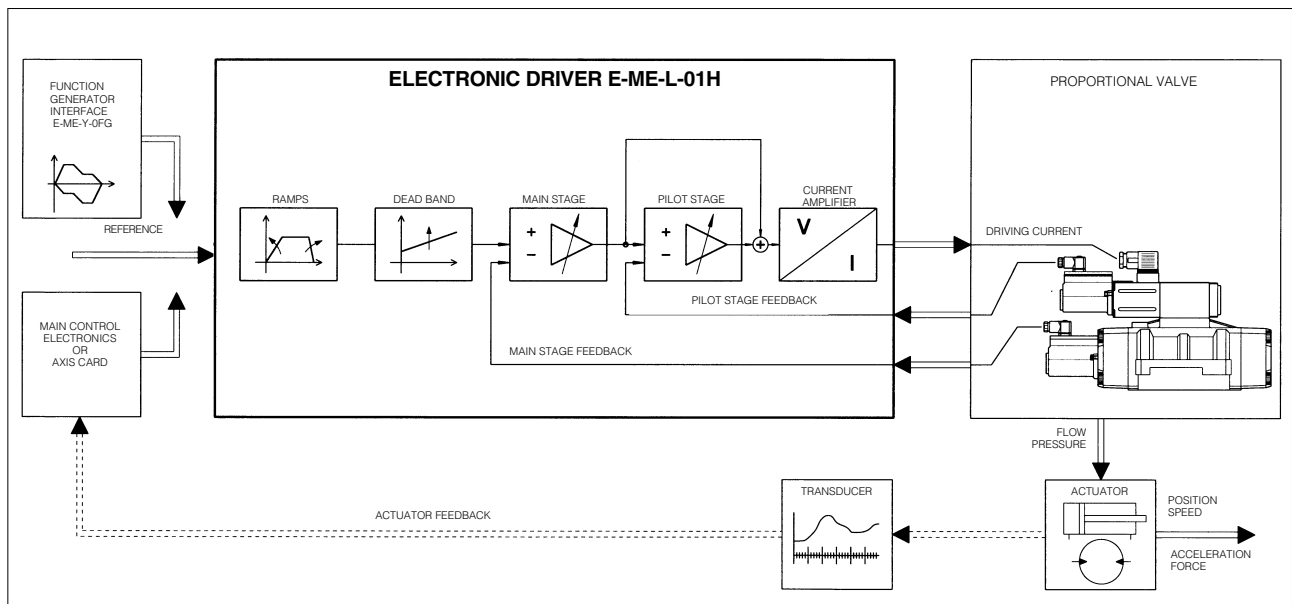
This new version includes the following improved features:

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

1 MODEL CODE



2 BLOCK DIAGRAM



3 MAIN CHARACTERISTICS OF E-ME-L ELECTRONIC DRIVERS

Power supply (positive at contacts 2a, 2c) (negative at contacts 4a, 4c)	Nominal : 24 V _{DC} Rectified & filtered : V _{RMS} = 21 ÷ 33 (max ripple = 2V _{pp})
Max power consumption	50 W
Current supplied to solenoid	I _{max} = 3.3A square wave PWM type
Nominal reference signal, factory preset	E-ME-L-01H : 0 ÷ 10 V at contact 12c (GND on 16ac) (± 10 V option see 4.2) for /I option : 4 ÷ 20 mA at contact 12c (+) and 8a (-)
Reference signal variation range, (internal scale adjust option)	± 10 V (SW pos. 1) and ± 5V (SW pos.2) 0 ÷ 10 V (0 ÷ 5 V) for valves with one external position (DPZO-L-*5, LIQZO-L-**2)
Input signal impedance	Voltage R _i > 50 KOhm - (/I option R _i = 316 Ohm)
Potentiometers supply	+10 V / 10 mA at contact 10c and -10 V / 10 mA at contact 14c
Ramp time	14 sec. max (0 ÷ 100% of reference signal)
Enabling signal	V = 5 ÷ 24 V _{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	Europe 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 gr.
Features	Position control by PID action - Rapid solenoid excitation and switching off - Outputs to solenoids protected against accidental short circuits - Feedback cable break produces an inhibit of the driver, zeroing the current and creating a fail-safe position in 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 [10] Wirings block diagram). It is always recommended to use shielded cables with earthed shield for connections to the reference generators and feedback transducers.

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 20mA. For single solenoid valves with two external positions (*60), the reference signal is symmetrical ± 10V (±5V).

4.3 Set code

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

DL15SA = DPZO-L-15*	LQ12SA = LIQZO-L-162L4	PCNNSA = PVPC-SL*-3029
DL15SA = DPZO-L-15*/B	LQ22SB = LIQZO-L-252L4	PCNNSA = PVPC-SL*-4046
DL17SA = DPZO-L-17*	LQ23SB = LIQZO-L-253L4	PCNNSA = PVPC-SL*-5073
DL17SA = DPZO-L-17*/B	LQ32SA = LIQZO-L-322L4	
DL25SB = DPZO-L-25*	LQ33SA = LIQZO-L-323L4	
DL25SB = DPZO-L-25*/B	LQ42SB = LIQZO-L-402L4	
DL26SB = DPZO-L-260*	LQ43SA = LIQZO-L-403L4	
DL26SB = DPZO-L-270*	LQ52SA = LIQZO-L-502L4	
DL26SB = DPZO-L-260*/B	LQ53SB = LIQZO-L-503L4	
DL26SB = DPZO-L-270*/B	LQ62SB = LIQZO-L-632L4	
DL27SB = DPZO-L-27*	LQ63SB = LIQZO-L-633L4	
DL27SB = DPZO-L-27*/B	LQ82SB = LIQZO-L-802L4	
DL35SB = DPZO-L-35*	LQ83SB = LIQZO-L-803L4	
DL35SB = DPZO-L-35*/B		
DL36SB = DPZO-L-360*		
DL36SB = DPZO-L-370*		
DL36SB = DPZO-L-360*/B		
DL36SB = DPZO-L-370*/B		
DL37SB = DPZO-L-37*		
DL37SB = DPZO-L-37*/B		

For **ex-proof valves**, insert an "A" in the fifth digit of the code adjustment; for example, the code adjustment for DPZA-L-15* is DL15AA: see table E120.

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

- Scale



The relation between driving current and reference signal is set by the scale selector (see [7]-A).

Two different scale regulations are also available for positive and negative reference signals (potentiometers P5 and P6, fig. [7]-C). It could be necessary to set these potentiometers to make symmetrical the forward speed and the back speed of cylinders having area ratio different from 1:1.

- Bias (dead band)

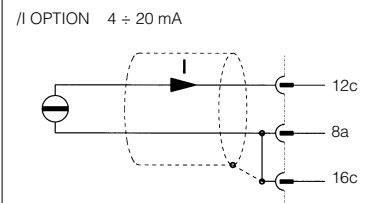
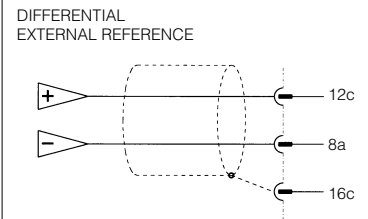
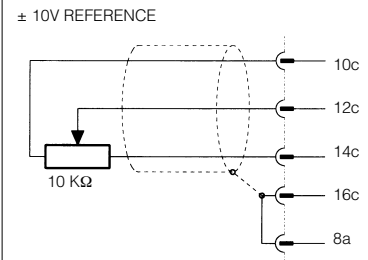
Regulation of dead band adjusts the hydraulic zero of the valve (adjustment of starting position) to the corresponding electrical zero and it is executed via potentiometer P1 on front panel. The electronic card is factory preset for the valve to be coupled with according to the set code (see section 4.3).

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

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-L-01H driver provides dissymmetrical 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 exclusion. To eliminate that circuit in some phases of the machine cycle only, connect contacts 6c and 6a (see [11] - general connections).

5 EXTERNAL REFERENCE SIGNALS

EXTERNAL POTENTIOMETER CONNECTIONS



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 16ac).
- Refer to [8] to identify components mentioned in calibration procedures.

6.2 Start-up

Factory preset adjustments 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.

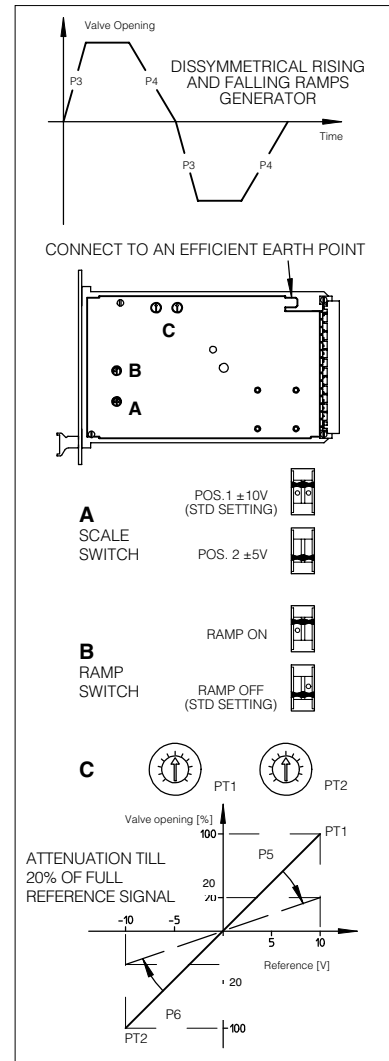
- Connect the electronic driver according to the desired connection diagram (see [10],[11])
- **Enabling signal**, see [11].
The electronic driver operate when the contact 8c is supplied with an enabling signal (usually 24 V_{DC}). It could be useful in emergency conditions to inhibit the driver by zeroing this signal
- **Bias adjustment** (dead band compensation), see [8],[9],[10].
- Supply a reference signal voltage = 0V_{DC}.
- Gradually turn bias potentiometer P1 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 ± 10V (selector in position 1). If a 0 ÷ 5V (± 5V) reference signal is available, set selector in position 2 (see [7]-A).

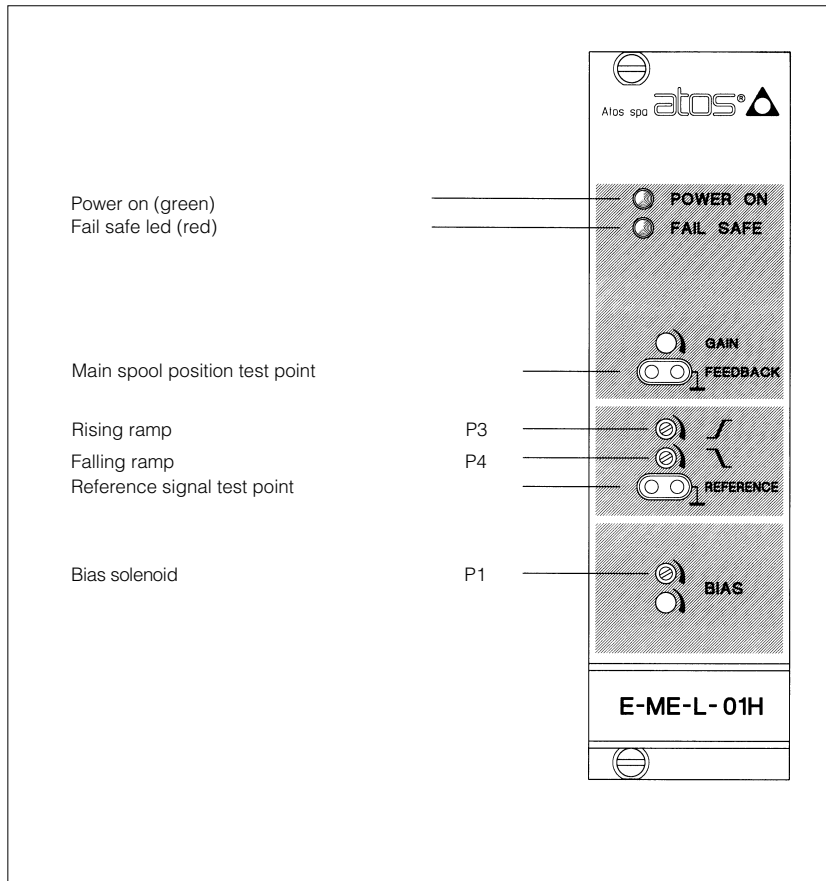
- Only in particular cases when a non standard reference signal is available it is possible to adjust maximum valve opening with scale regulation proceeding as follow :
 - supply max reference signal voltage (repeat for max negative voltage) in the specified range and turn counterclockwise internal scale potentiometers PT1 and PT2 (factory preset to 100%) to reduce valve opening (see [7]-C).
 - **Ramps** (see [7],[8]).

If the card is being used in an open loop system push the switch from position ramp off (standard) to 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).

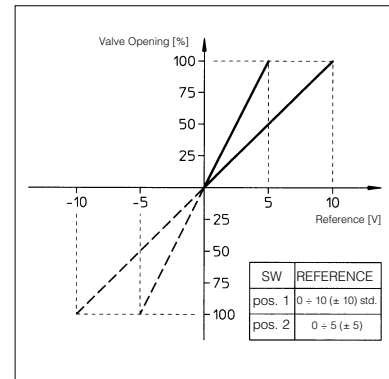
7 RAMPS AND SETTINGS



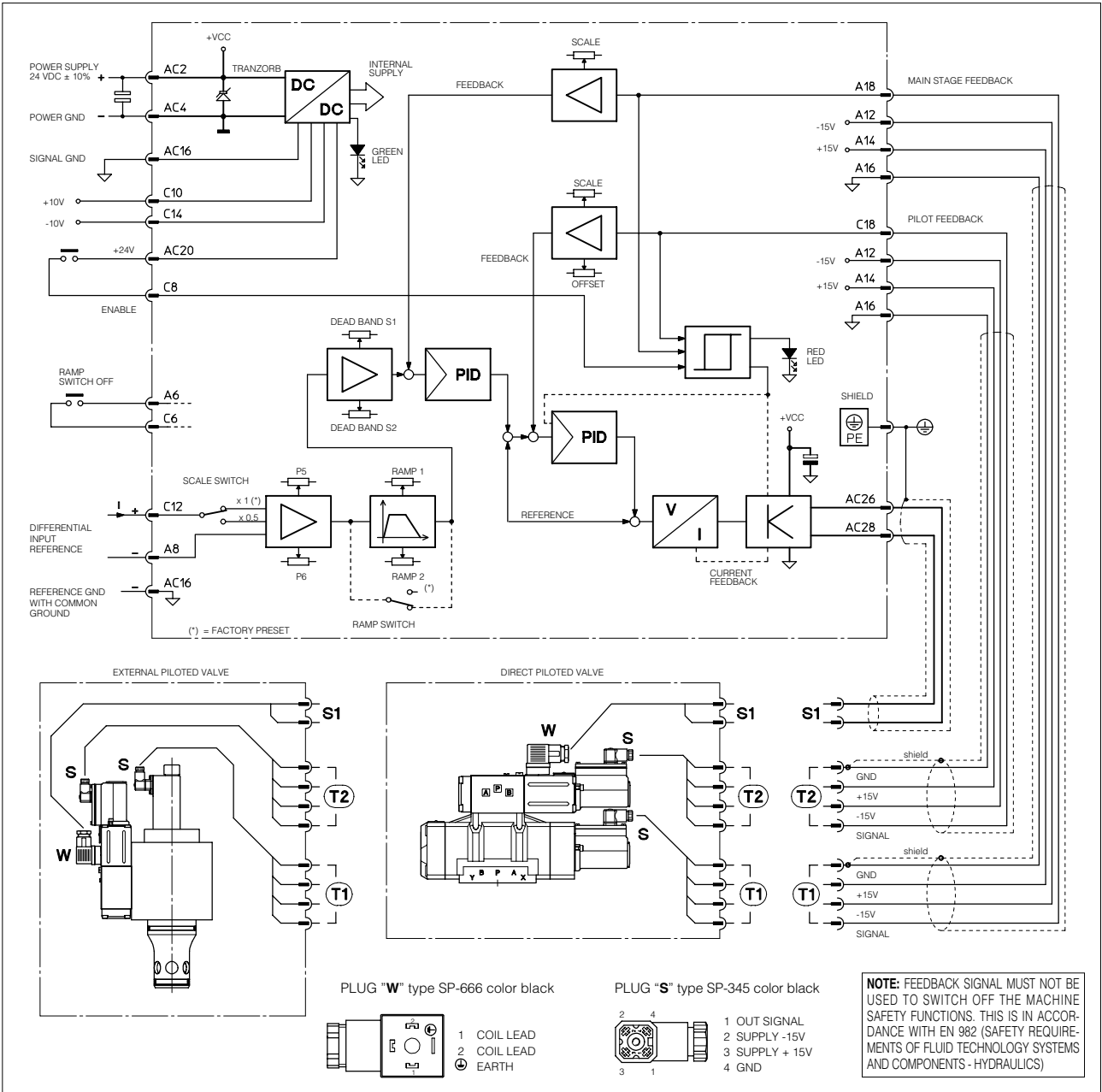
8 E-ME-L-01H TOPOGRAPHICAL VIEW OF REGULATIONS



9 E-ME-L-01H DIAGRAM



10 WIRING BLOCK DIAGRAM



11 GENERAL CONNECTIONS

