



Service Manual

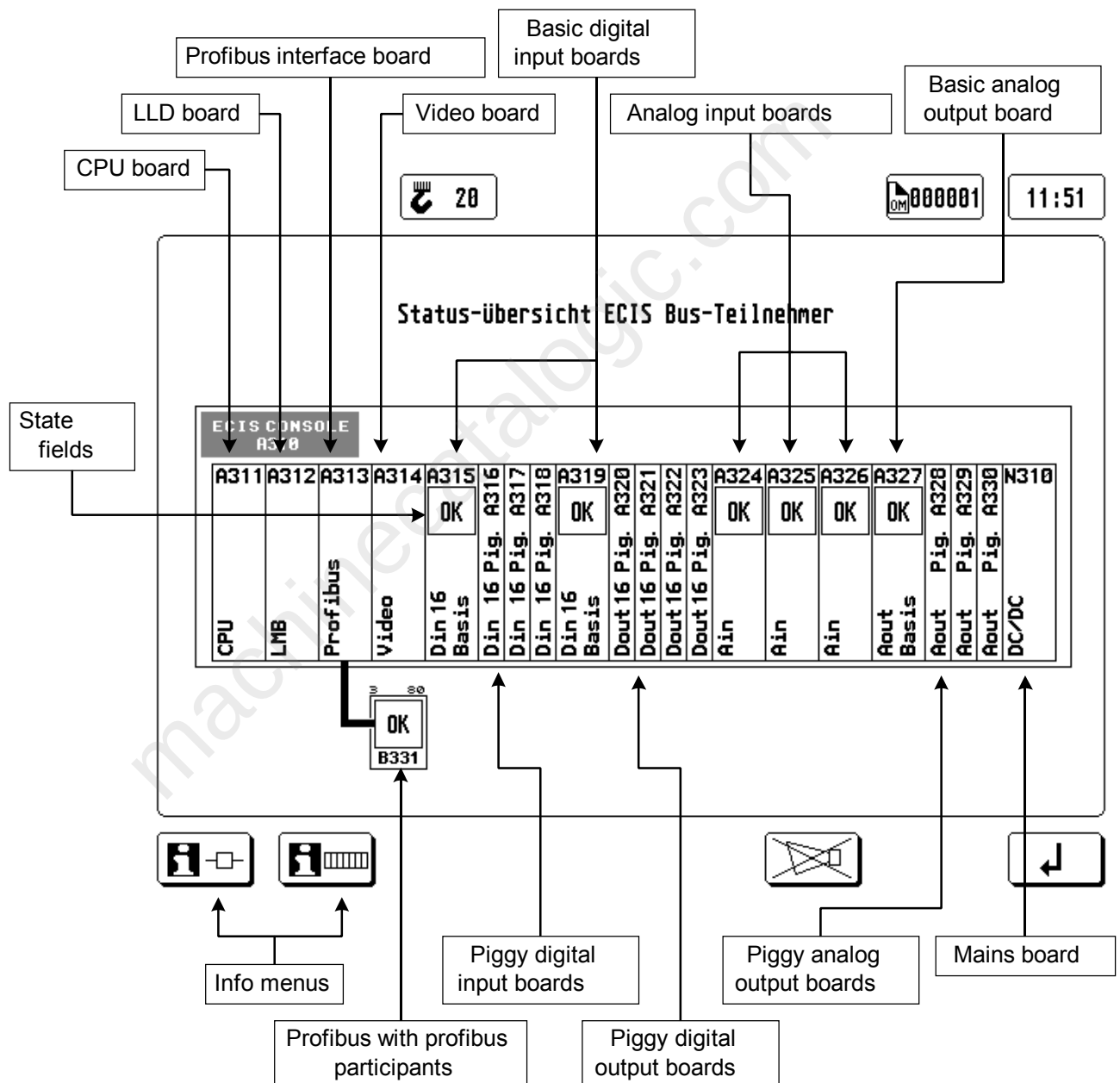
PAT- ***modular PDC***

Version 1.4a

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2. Assignment of the plug-in boards in the computer

The plug-in boards described in the following chapters can exist in various places and in different numbers, depending on the type of machine and the technical equipment. You can have the current configuration of the PDC, i.e. the type and position of the plug-in boards, displayed by the operating console. The following figure shows the screen display as **an example for a CC crane**.



The CPU, LLD, Profibus and video boards are **always** in the first four positions (as shown here).

The digital input and output boards are in the following plug-in positions; the basic board is always plugged in first and then the piggy boards.

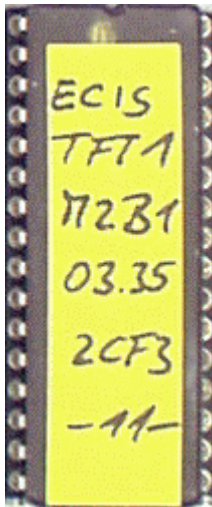
After that are the analog input and output boards. First the basic boards and then the piggy boards are plugged in here as well.

The plug-in board with mains supply for the entire computer is **always** in the outer right-hand position.

The state fields (in this example:) give information on the status of the basic plug-in boards and / or bus participants. But in this case "OK" only means that the relevant component group is functioning and that the connection to the connected piggy boards and / or bus participants is in order. However, "OK" does **not** mean that all piggy boards are also supplying correct input and output values or that all input and outputs of a bus participant are functioning correctly!

The indicated symbols are explained by selecting the info menus.

machinecatalogic.com



ECIS TFT1 General description for the operating system E-PROM

M2 Not relating to the machine, system E-PROM

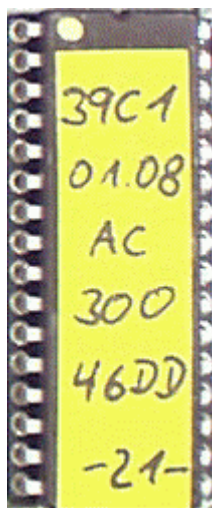
B1 System E-PROM no. -11-

B2 System E-PROM no. -12-

03.35 Running index, continuous with each new program version

2CF3 4-digit HEX number, inspection sum

-11- Plug-in station number



39 Machine recognition, here e.g. AC 300

C1 Application software, E-PROM no. -21-

C2 Application software, E-PROM no. -22-

01.08 Running index, continuous with each new program version

AC 300 Machine description in plain English

46DD 4-digit HEX number, inspection sum

-21- Plug-in station number

The 4-digit HEX number represents the last 4 digits of the inspection sum of the entire binary content of the E-PROM. When creating a new E-PROM or when duplicating make sure the inspection sum is correct!

3.4 Layout of the analog basic output board

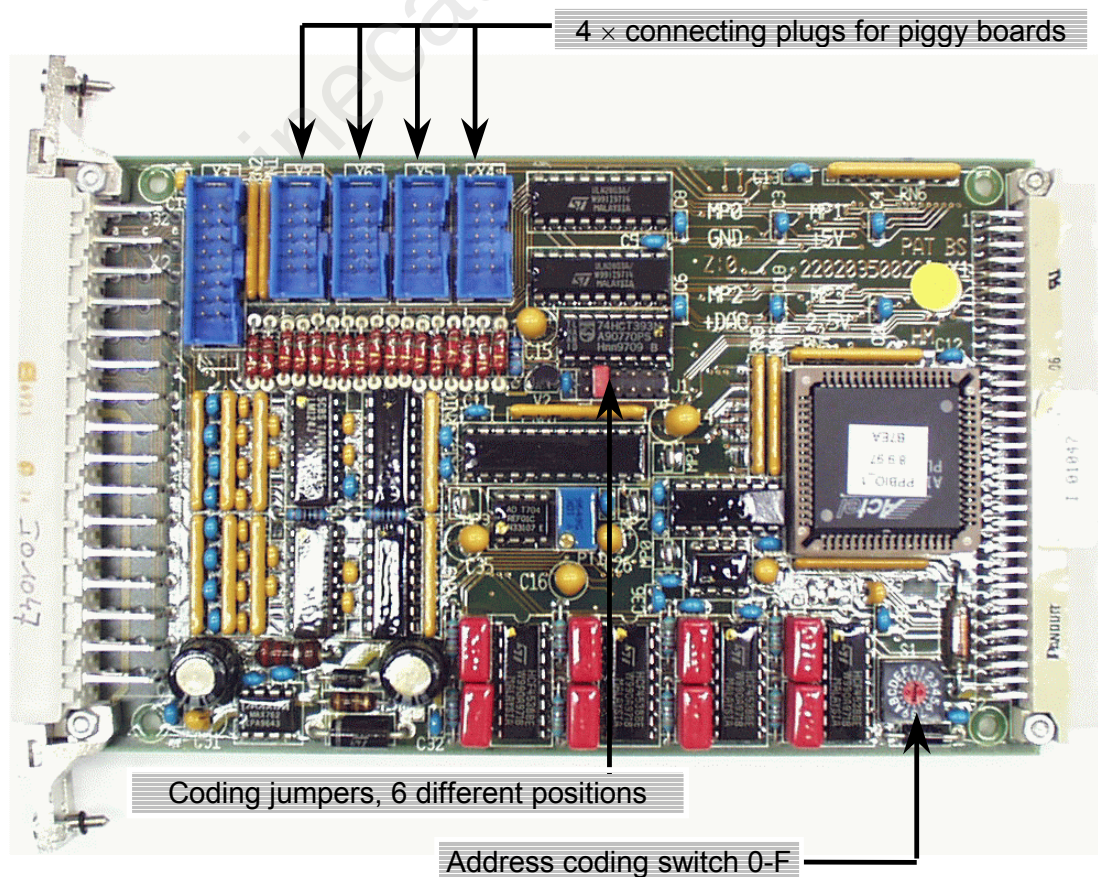
The analog basic board creates variable electric control signals, which are distributed via so-called piggy boards. In the basic board, a maximum of eight signals are created for this purpose, which are then passed on to a maximum of four piggy boards; i.e. each piggy board has two channels. The analog signals are passed on to the piggy boards via four connecting plugs and via ribbon cables.

As is the case with the analog input board, each analog basic output board contains an address coding switch with which each board receives an address, which in turn may be in the system only once for this type of board. When exchanging a defective board in this unit the same address must be set on the substitute board as on the defective board as well. If two boards are exchanged (e.g. for testing), the addresses of the boards must be exchanged, too.

The address coding switch must be rotated carefully (!) using a suitable screwdriver.

If the correct address is not known for a board, the details for the address and plug-in station can be obtained from the documents of the company Dematic. Usually the address is "0", as there is only one analog basic output board in the system.

Furthermore, there is a coding jumper on the analog basic output board which can be plugged into six different positions. This jumper sets the ripple frequency which is superimposed over the control signal of the proportional hydraulic valves. The six positions correspond to the following frequencies, from left to right: 160 Hz, 80 Hz, 40 Hz, 20 Hz, 10 Hz, 5 Hz. The ripple frequency is set to 80 Hz in the following figure.

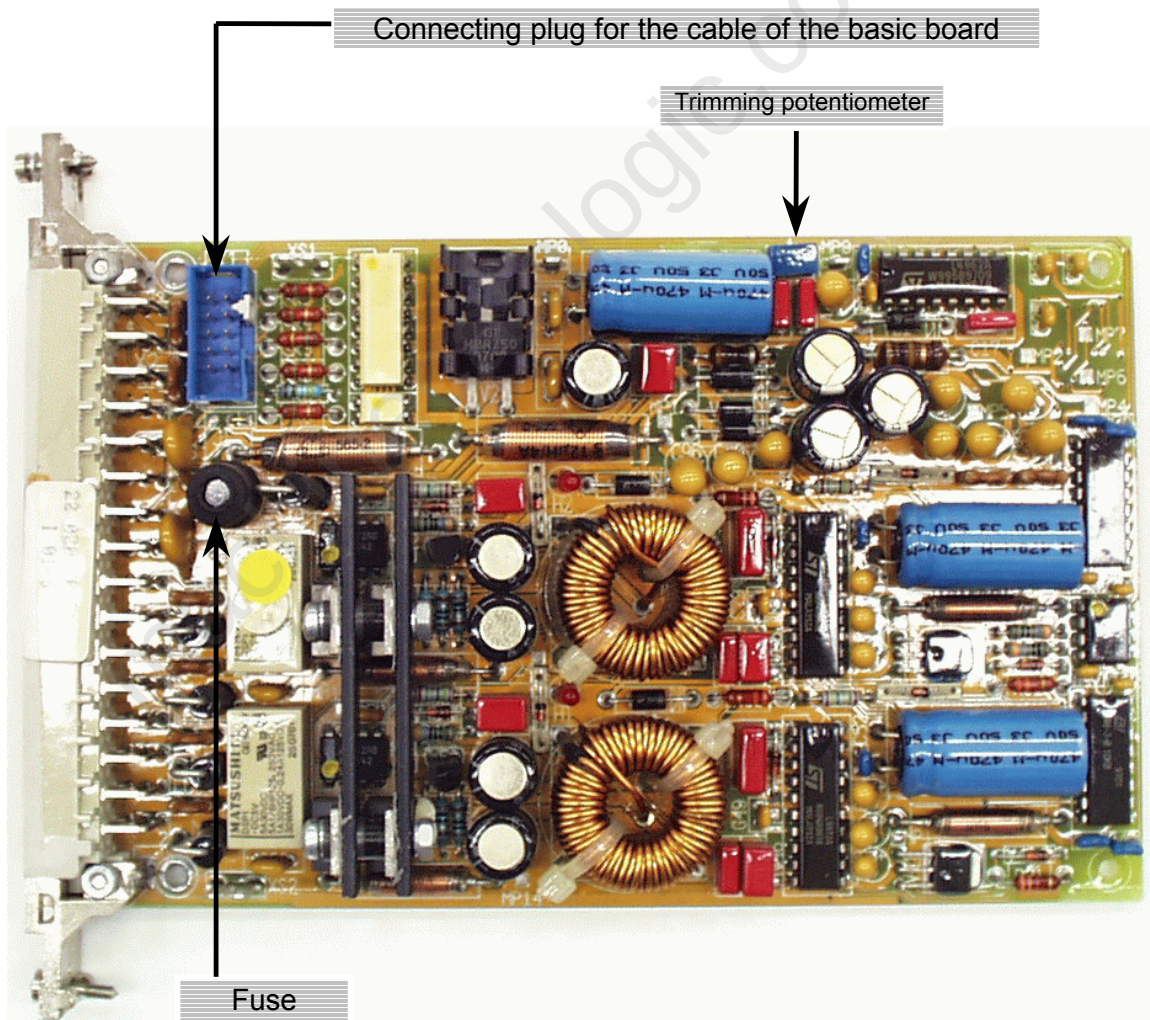


3.5 Layout of the analog piggy output board

The analog piggy board receives two input signals from the basic board using a ribbon cable; the piggy board reinforces the signals and passes them on to two consumers (e.g. proportional valves). The ribbon cable is connected to a relevant connecting plug. The maximum output current is 1 Ampere for each channel.

There is no address coding switch on the analog piggy output board. The address is determined by the fact that each board receives its signals from the analog basic output board via its own output or its own ribbon cable. This means that when the ribbon cables of the piggy boards are exchanged the connecting leads must be exchanged, too.

Furthermore, there is a fuse on the board which protects the output levels against short circuiting. There is also a trimming potentiometer which sets the ripple amplitude of the output board. This potentiometer always remains in the central position if not expressly fixed otherwise.



4.0 Changing the software

The software in the modular PDC is linked in various memory media.

- E-PROM area
- EE-PROM area
- battery-buffered RAM
- operating RAM (no buffer)

In the E-PROM area there are:

- operating system software (separate E-PROMs)
- control programs (SPS programs)
- control data components (for first operation)
- graphics
- applications (rapid calculations, keyboard entries, optional functions, etc.)
- telescoping help
- system configuration (definition of hoists in the PDC)
- I/O configuration (definition of hoists outside of PDC)

In the EE-PROM area there are:

- control data components (works settings)
- application data (operating modes, state variables, etc.)

In the buffered RAM there are:

- possibly control programs (test and intermediate versions)
- control data components (individual settings)
- application data, retentive flags, etc.

In the operating RAM there are:

- the currently processed control program
- all volatile flags
- all other volatile data

When creating the software setting it was determined that all data required for crane control is stored in the E-PROM. This means that to change the software only means to change the E-PROMs. The appendix offers software help for transmitting relevant information from the E-PROM into the corresponding memory areas.

The software helps are implemented in the PDC-Tool of the operating system software.

(02) Show workhours:

This shows the time during which the system is switched on. At the moment, other times are only used in the AC 120.

(03) Show crane calibration parameter:

The current CCPs are listed here.

(04) Show logged messages:

Any stored fault messages can be indicated here.

(05) Dump memory:

This is where memory contents can be shown in the console by entering the HEX address in its HEX form and in its ASCII form at the same time.

(06) Activate/deactivate messages:

The output of internal faults in the serial interface is selected here.

These functions must always be switched off so as not to waste computer capacity unnecessarily.

The functions must be switched off in CC cranes!!

PDC-TOOL PDC 350
PAT DYNAMICS CONTROL

Activate/deactivate messages

Messages on terminal? yes ☐ no ☒

I/O-Messages on terminal? yes ☐ no ☒

(c) to select (↑/↓) to toggle selection (←/→) to toggle item

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