TP-10

PROGRAMMING TERMINAL

Version 1.0 - 1997/9

Barcelona, September 1997

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1. INTRODUCTION

Machinery used in industry nowadays can be programmed in many different ways. However, because they are portable, hand-held programming units are by now one of the most popular ways to programme industrial machinery.

The **TP-10** Programming Terminal is ergonomic, robust, reliable and easy to use. It has been designed for all types of industrial environments and allows for quick and simple communication with the Serra range of welding control units (series 7000 and subsequent series). Using the **TP-10** Programming Terminal the user can modify and view data and receive information about possible errors.

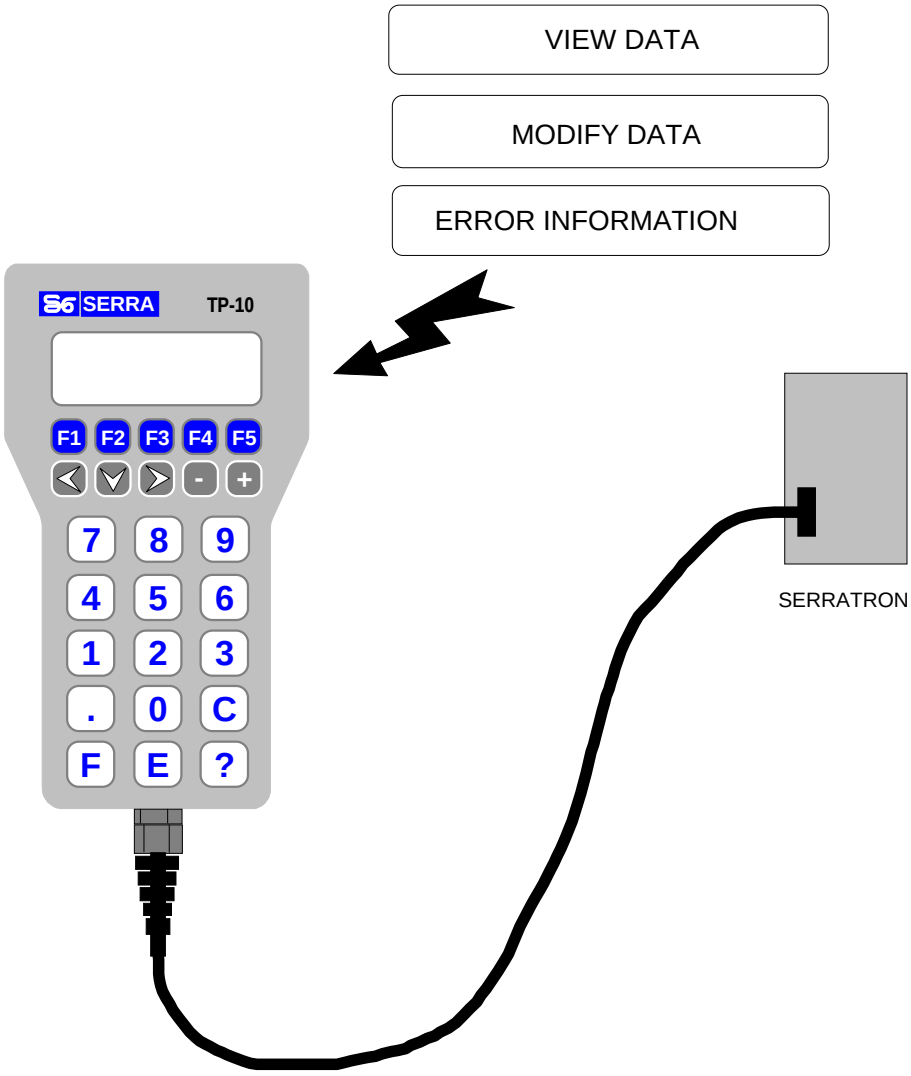

Figure 1-1 Man/machine interaction via the TP-10

The fact that the TP-10 terminal is lightweight and ergonomically sized means that it is 100% portable. It comes with a special support which enables it to be mounted on a welding control unit. This accessory is called the **TP-10 Panel Support** and can be used when the programming unit needs to be permanently located in the vicinity of the machine.

The TP-10 electronic system is not affected by electromagnetic interferences as it meets with all the requirements of the European Directive concerning Electromagnetic Compatibility. It also complies with the generic emissions standard EN 50081-2 and the generic immunity standard EN 50082-2, both specifications with applications to industry.

2. TECHNICAL SPECIFICATIONS

2.1 Dimensions

The dimensions of the TP-10 Programming Terminal are as follows: :

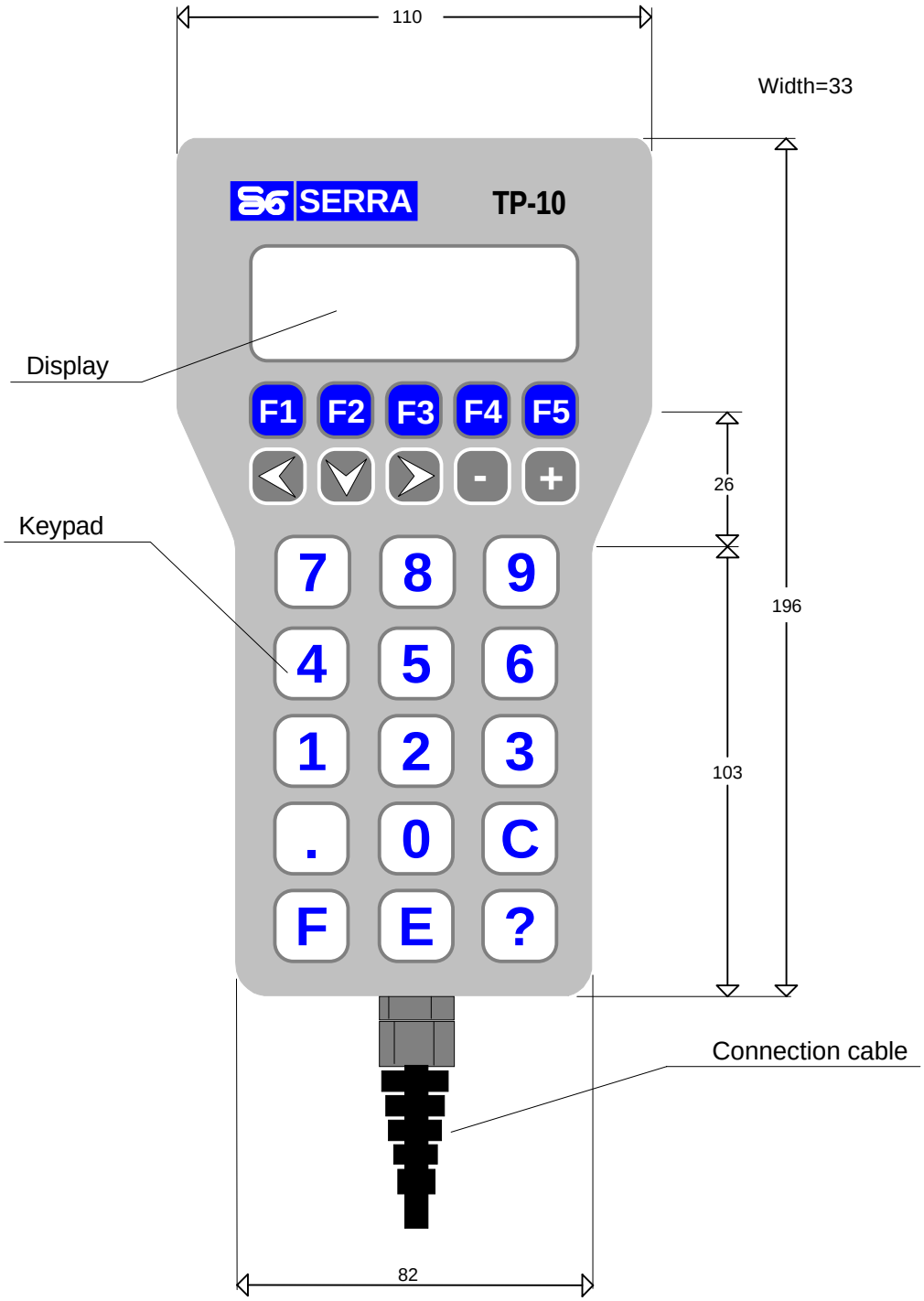

Figure 2-1. TP-10 dimensions (mm)

2.2 Ambient Working Conditions

- Minimum temperature: -5ºC
- Maximum temperature: 60ºC
- Maximum humidity: 90% (without condensation)
- Maximum height: 1000 m. When operating at higher altitudes, lower temperature and lower humidity values are necessary.

2.3 Weight

- TP-10 Programming Terminal: ..... 400 g
- TP-10 Panel Support: ..... 100 g

2.4 Electrical Characteristics

- Power supply: ..... 24 VDC +25% -60%
- Power consumption: ..... 6 VA

2.5 Keypad

- Type: ..... Membrane

2.6 SERRA References and Codes

- TP-10 Programming Terminal: 92000035
- TP-10 Panel Support: 39927550

3. GENERAL DESCRIPTION

3.1 General Information

The TP-10 portable programming terminal includes a 4-line, 20-character alphanumeric display and a keypad for entering data.

It communicates with the welding control unit via an RS-232 serial port. The terminal and the control unit are joined via an interconnecting tube which contains the serial port cables and the 24VDC power cables leading from the control unit.

The control data can be saved and stored in the TP-10 for up to one year and can be downloaded to any control unit in the same series.

In order for the terminal to interact correctly with any SERRA control unit (series 7000 and subsequent series), it is first necessary to programme it with the control-specific data, as explained below.

The terminal incorporates a key-activated sound function and a function to automatically deactivate illumination after a set period of time.

3.2 Panel Mounting

The TP-10 Panel Support is a special accessory designed for mounting the TP-10 terminal on the panel of a machine or console when this is more convenient.

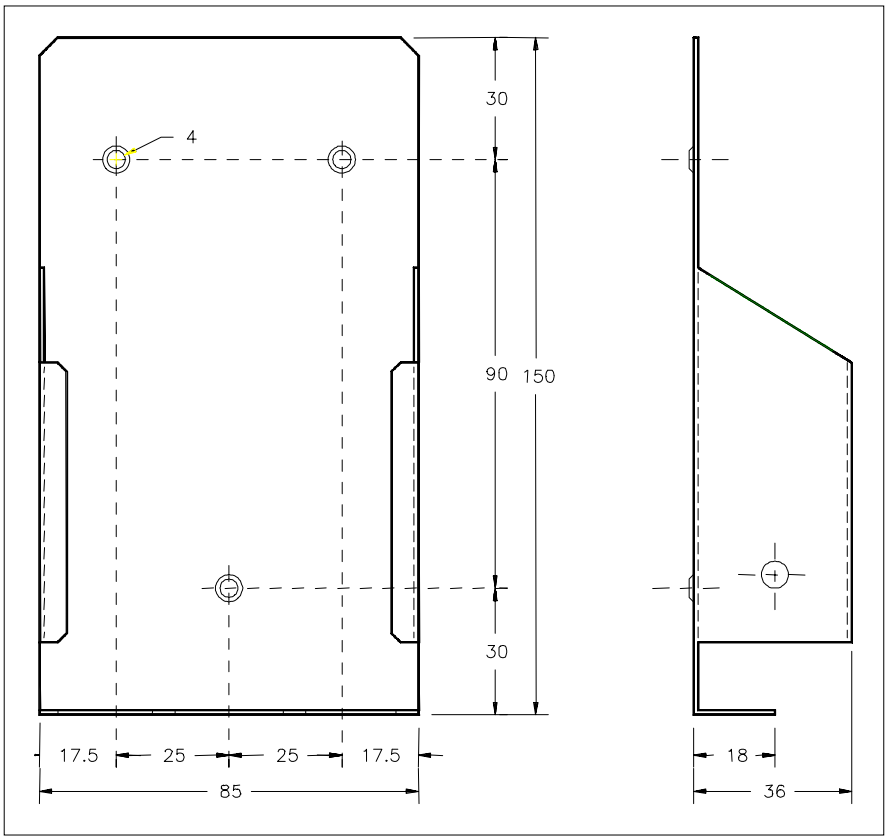

Figure 3-1. TP-10 panel support

To mount the support on the machine panel or console, drill three mounting holes (for M4 screws) as illustrated in the above figure.

Once the support has been correctly mounted, it can be used to hold the TP-10 terminal. Should you wish to hold the terminal in your hand while programming, just remove it from its support by gently pulling it upwards. To replace the terminal, push it back down into the support.

3.3 Saving Parameters in the TP-10

The TP-10 programming terminal has an internal memory capable of storing welding control parameters and transferring them to any other control unit that functions with identical or similar parameters. This saves time as it eliminates the need for programming a second control unit with these same parameters.

The information is stored in a RAM-type memory, which is continuously fed by a battery incorporated into the electronic circuitry. The parameters are stored by the TP-10 for up to one year.

Consult the instructions manual for each welding control unit for the exact procedure to follow in each case.

3.4 V24 Connector Signals

The sub-D connector signals are communication signals of the RS-232 type. Two cables leading from the welding control unit will provide the programming terminal with the voltage it requires. The V24 connector jumpers are used to connect the terminal to welding control units from different series.

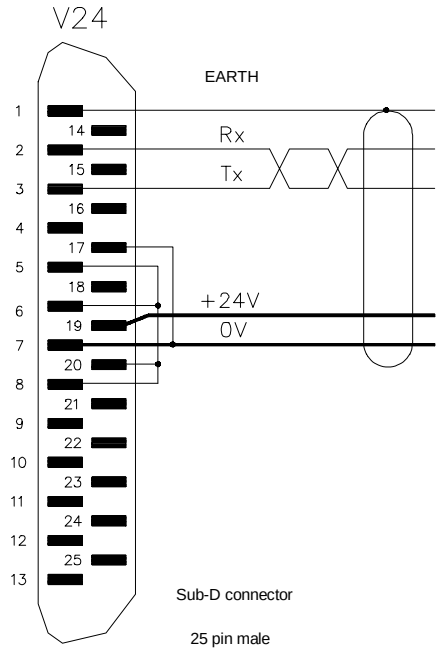

Figure 3-2. V24 Connector

4. PROGRAMMING

Programming is the term given to the series of operations used to edit and store in the internal memory of a control unit all the parameters it needs to correctly control welding processes.

4.1 Display

TP-10 programming units have a 4-line alphanumeric display with 20 characters per line. The picture below shows what the screen looks like when it is connected to a power supply:

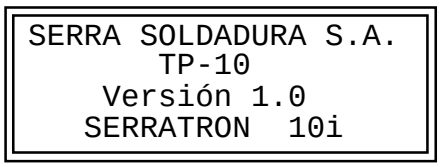

Figure 4-1. Initial Menu

The main screen appears about 4 seconds later. When the control unit is in **programming mode** (explained in the next section) the flashing parameter (cursor) indicates which parameter can be changed.

4.2 Keypad

The TP-10 programming unit keypad has 25 different keys. The following is a description of the key functions:

⇒ The **F1, F2, F3, F4** and **F5** function keys give you access to various functions which vary according to the control unit in question.

⇒ The **Up** and **Down arrow keys** allow you to move the cursor within a menu.

⇒ The **+** (plus) and **-** (minus) keys increase/decrease the value indicated by the cursor by one.

⇒ The numeric keys **0**...**9** modify the value of the numeric field indicated by the cursor when this option is permitted (**programming**).

⇒ The **C** key sets the cursor at zero.

⇒ The **E** key is used to accept the numeric value indicated by the cursor when working in **programming** mode. The edited value is stored permanently in the control memory. Always remember to press **E** to accept the parameter you have edited or modified.

⇒ The **F** key is for special functions and is always used in combination with other keys. These are:

- **F-?** ..... Resets the TP-10 programming unit
- **F-F5** ..... Calls up the **utility menu**
- **F-5, 6** ... Activates **programming**
- **F-5, 5** ... Deactivates **programming**

NB!:

- **F-5** means that you have to press and release the **5** key while holding down the **F** key.
- Do not confuse the **F-5** command with the **F5** key function.

4.3 Utility Menu

Use the **F-F5** key combination to call up the **utility menu**.

```
F1:TEST TECLADO
F2:CONFIGURACION
F3:TP-10
```

Figure 4-2. Utility Menu

- **F1: KEYPAD TEST**

  Press **F1** to call up the **keypad test menu**. This menu is used to test that the keys are in perfect working order:

```
  TECLADO/KEYBOARD
0 1 2 3 4 5 6 7 8 9
C E ? . < | > - +
F1  F2  F3  F4  F5
```

Figure 4-3. Keypad Test Menu

Each time you press a key, the corresponding symbol will disappear from the screen and a beep will be heard.

The only key which cannot be tested using this menu is the **F** key. To test this key, type in the combination **F-?,** which will reset the programming unit.

- **F2: CONFIGURATION**

  Press **F2** to call up the **configuration menu**, which has the following appearance:

```
Terminal:          1A
Sonido:            SI
Luz panel (min):    5
```

Figure 4-4. Configuration Menu

Use the **Down arrow** key to move through the different fields located underneath the selected field.

∗ Terminal: This refers to the type of control unit to which the terminal is connected. The different control units are:

SERIES	CONTROL UNIT
7000	SERRATRON-7000
8000	SERRATRON-8000
8000-NF	SERRATRON-8000-NF
10i	SERRATRON-10i
10-PLC	SERRATRON-10*plc*
1A	SERRATRON 1A

The **+** and **-** or **Right arrow** and **Left arrow** keys allow the cyclical editing of each value.

* Sound: The **YES** option activates the audible beep to be heard when a key is pressed and the **NO** option deactivates it.
* Panel Light (min): This is the time during which the display stays illuminated after a button has been pressed or when there is a blocking error in the welding control unit. The values are programmed in minutes and range from 1 minute to 15 minutes. The **+** and **-** keys or the **Right arrow** and **Left arrow** keys allow you to increase or decrease each of these values.

To validate the data you have entered press **E.** To exit the configuration menu without saving any modifications press **F-F5.**

• **F3: TP-10**.

Press **F3** to exit the **utility menu**. When you do this, the screen goes blank and the light goes out for a period of 2 seconds, after which you will be returned to the initial menu.

4.4 Automatic Cursor Positioning (ACP)

Pressing **E** while the control unit is in **programming mode** and the cursor is in certain numeric fields initiates a process called **Automatic Cursor Positioning (ACP)**. This allows you to move through all the parameters required for programming the control unit using just the numeric keys and the enter key **E**.

The **ACP** function is immediately interrupted by pressing any of the arrow keys.

The numeric keys used to initiate the ACP process and the order they take varies in accordance with the unit in question. Refer to the instructions manual for each control unit for further details.

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