FIAMA since 1913

COMPANY WITH
QUALITY SYSTEM
CERTIFIED BY DNV GL
= ISO 9001:2015 =

USER'S MANUAL AND MAINTENANCE

MICROPROCESSOR DISPLAY F1X5_

Manual purpose
This manual has been designed by the Manufacturer to provide the necessary information regarding the instrument to those who are authorized to carry out safely its installation, maintenance, dismantling and disposal. All the necessary information for the buyers and planners can be found in the “Sales catalogue”.
Besides than adopting good technical construction methods, the information should be read carefull yand strictly applied.Inobservance of this information could cause risks for the health and safety of people and economical damage. This infor-mation, provided by the Manufacturer in the original language(Italian) is also available in other languages to satisfy legislative and/or commercial needs.
This manual must be kept in a good condition by a responsible person in an ideal place so that it is always available for consultation. In case of loss or deterioriorаation of the manual, a replacement should be requested directly from the manu-facturer quoting the manual’s code.
This manual reflects the state of skill of the instrument at the time of input on the market: however the manufacturer reserves the right to make changes , add or improve the manual without giving any reason to hold the present manual inade-quate.

Identification of the equipment
The identification plate represented is applied to the instrument. To find the identification code of the instrument, consult the sales catalogue.

Environmental conditions
Temperature setting: min. 0°C, max. + 50°C.
It is forbidden to use the instrument other than its specific use and in potentially explosive conditions or where anti-explosive elements are used.

Storage
Here below are some references to be followed for the storage of the instrument
Avoid environments with excessive humidity and those exposed to bad weather (avoid open areas). Avoid putting the instrument directly on the ground. Store the instrument in its original packing.

Conformity declaration and EC marking
The instrument answers to the following Communitarian Directives:
2014/30/EU Electromagnetic compatibility, 2014/35/EU Low voltage, 2011/65/EU RoHS.

Maintenance
Reparations should be done only and exclusively at the FIAMA technical assistance centre.
Turn off the power before touching the internal parts. Clean the external plastic parts using a soft, damp cloth with ethylic alcohol or water.
Do not use hydrocarbon solvents (petrols, diluants): using these products could affect the proper mechanical functioning of the instrument.

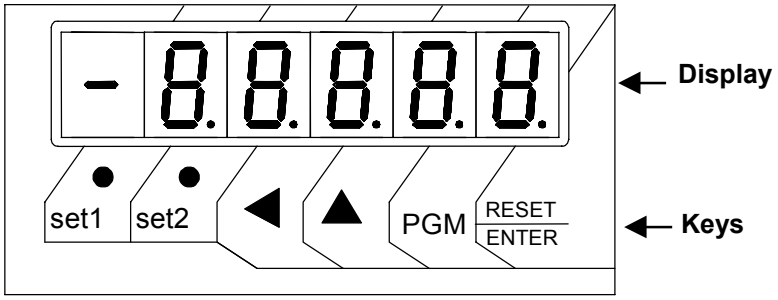
Calibrations and tests
It is advisable to calibrate the instrument periodically, once every working year. To do the calibration , follow the calibration procedure indicated in the present manual .
For any kind of technical assistance request, contact the sales department of the Manufacturer directly indicating the information given on the identification plate, the number of hours used and the type of defect.

Manufacturer’s responsibility
The manufacturer declines any responsibility in case of :
• Using the instrument contrary to the national safety and accident-prevention laws.
• Wrong installation, inobservnace or wrong procedures of the instructions provided in the present manual.
• Defective electrical power supply.
• Modifications or tamperings.
• Operations carried out by untrained or unqualified personnel.
The safety of the instrument also depends on the strict observance of the procedures indicated in the manual: always operate the instument in its functioning capacity and carry out a careful routine maintenance.
• All phases of inspection and maintenance should be done by qualified personnel.
• The configurations provided in the manual are the only ones permitted.
• Do not try to use them anyway contrary to the indications provided.
• The instructions in this manual do not substitute but accomplish the obligations of the current legislation regarding the safety laws.

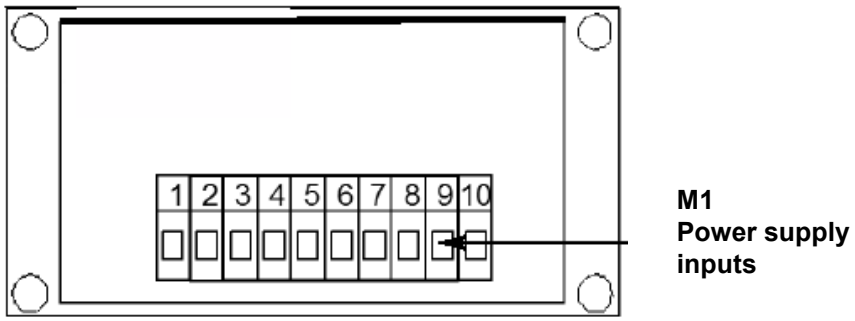
Description

The F1X5_ is a mono-bidirectional microprocessor multiple keyboard counter, that processes signals supplied by incremental transducers (encoders, optical lines, etc…) on a 5 digit display (reading scale –99999 +99999). The programming of this microprocessor is carried out by means of four keys on the frontal panel, after introducing a password. The microprocessor allows the operator to set the input pulse correction factors, and to multiply these factors by a 6 digit coefficient. This instrument can keep its data in memory also when the machine is switched off thanks to a not volatile Eeprom memory. The Reset-Enter digit is employed to input a Preset quote too. By means of the input located on the terminal-board you can switch on the Reset or Preset functions. This instrument is set inside a 48 x 96 panel case according to DIN 43700.

Front view



Rear view



Installation

Before installing the instrument, read the following warnings:

a) Connect the instrument strictly following the instructions of the manual.

b) Carry out the connections using the correct wires within the limits of the tension and power supply as indicated in
the technical data.

c) The instrument does not have an ON/OFF switch, hence it comes on when connected to the power supply. For safety reasons, the equipment connected permanently to the power supply requires a bi-phasal selector switch which should be within easy reach of the operator.

d) If the instrument is connected to any apparatus not isolated electrically, carry out an earth connection to avoid it being connected directly through the structure of the machine.

d) It is the responsibility of the user to check, before using, the correct settings of the parameters of the instrument to avoid damage to persons or things.

e) The instrument cannot function in a dangerous environment (inflammable or explosive). It can be connected to elements that operate in the same atmosphere only through appropriate interfaces, according to the current safety regulations.

g) Avoid dust, humidity, corrosive gases, heat sources.

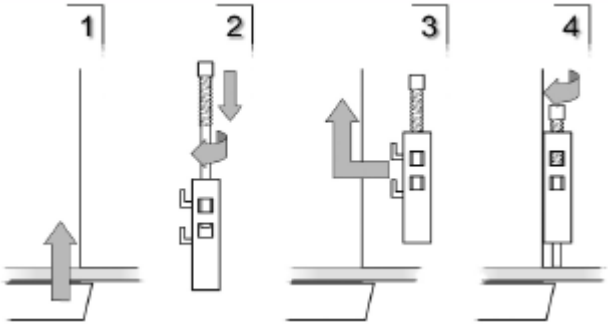
h) Do not block air vents, the work temperature should be maintained between 0 ÷ 50°C.

Power supply
a) Before connecting the instrument, check that the the power supply tension is within the permitted limits and that it corresponds to the one indicated on the tag.
b) Carry out the electrical connections with the instrument disconnected.
c) For the power line to instruments and sensors, a power supply line separate from that of the power is required : it is necessary to use an isolating transformer.
d) The power line should forsee a device that separates the set fuses of the instruments and should not be used to regulate, meters, etc.
e) If the network tension is very disordered (eg. from the change-over of the power units, motors, inverters, welders,
etc.), use the appropriate filters of the network.
f) If an earth connection is needed, ensure that the plant has a good earth system: tension between neutral and earth <1V and the resistance <6 Ohm.

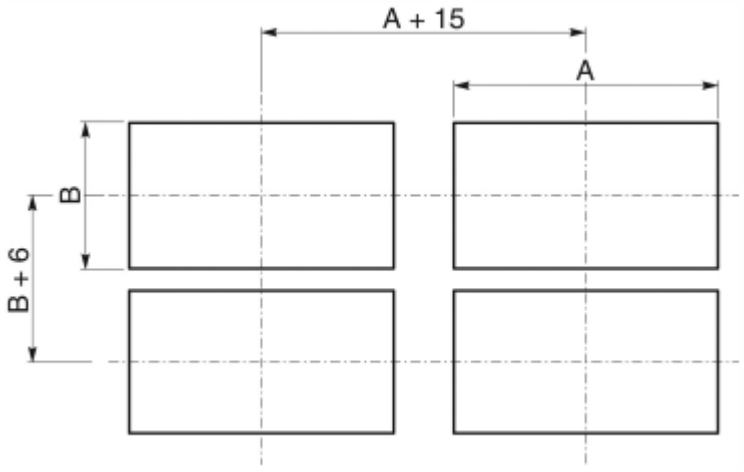
Connections entries and exits
a) Physically separate the entry wires from those of the power supply, the exits and the power connections; use twined and shielded wires with the display connected to the earth only at one point.
b) Connect the exits of adjustments, alarms (meters, electrovalves, motors, ventilators, etc.) assembling units RC (resistance and condenser in series) parallel to the charged inductives that work alternatively.

Assembly of the instrument
To carry out the correct installation of the instrument, it is necessary to follow the shown procedure:

1. Insert the instrument in the opening provided.
2. Screw the screw on the fixing block.
3. Hook the block to the instrument through the joints.
4. Block the instrument by screwing the screws of the two blocks.
5. Then carry out the electrical connections.



To assemble several instruments placed side by side, it is necessary to follow the interaxes as shown in the design.
The articles A and B can be read under space dimensions found in the present manual.



PROGRAMMING

In the scheme below you can find the programming digits associated to their peculiar functions:

PGM	To start the programming
▲	To increase the number, which is being modified. To select the constant to modify
◄	To proceed from one numeral to the following one. To leave the constant programming sections
RESET/ENTER	To confirm the data you have just inserted

Press	**PGM**	To start the programming section: the number *"000"* , whose first numeral on the right flashes, is displayed. At this point you are requested to insert the number **273** in the following way:
press	▲	to increase the flashing number
Press	◄	to select the flashing number

After introducing **273** pls. confirm by means of **RESET/ENTER** . For some seconds you will read the word "Set1" followed by its own value.

N.B.: If you input a false password, the instrument will immediately leave the programming phase.

Press	**RESET/ENTER**	and modify the constant value by means of the digits ▲ ◄
Press	**RESET/ENTER**	again to confirm your choice
Press	▲	to start working with other constants or
Press	◄	to leave the programming section

The constants, which have to be programmed, and can be run over by the digit ▲ are the following ones:

SEt 1	Threshold for relay 1, not used in version without relay
SEt 2	Threshold for relay 1, not used in version without relay
uISUAL	The display shows a value after 1 encoder revolution
InPULS	Impulse number after one encoder revolution
ndEC	Decimal numbers
PrESEt	Preset quote
nASS	Zero setting
InPUt	Input selection (encoder or proximity sensor)
FILtr0	Debounce of the count inputs
rELE	Start of the output relay , not used in version without relay
nodSEt	Thresholds for the relays, not used in version without relay

Constants

SEt 1 Threshold for Relay 1

Not used in version without relay.

SEt 2 Threshold for Relay 2

Not used in version without relay.

uISUAL Value which Corresponds to 1 Encoder Revolution

This instrument can correct the impulses, and multiply them by a coefficient, which corresponds to the ratio between constant uISUAL and InPULS. If you programme these two constants correctly the display will visualize the value you need with a certain number of impulses (they are reckoned in the inputs). The programmed value of this parameter represents the value visualized on the display.
The interval value of this count is programmable between 0 ÷ 999999.

InPULS Number of Impulses for every Encoder Revolution

The value, which should programmed in this section, represents the number of impulses for every encoder revolution, this is to say the division factor of input impulses.
The interval of the allowed values is 0 ÷ 999999.

Example 1:
If you have a 100 impulse/rev. Encoder, and for every revolution you need to visualize 123,4567 pls. follow the next description: VISUAL=1234 and IMPULS=100 . If you need to input a decimal number in the second position too, pls. insert N.DEC=1.
N.B: In order to reduce the approximation error we suggest you to multiply VISUAL and IMPULS by 10 or 100 or 1000 . With reference to the above mentioned values you will get :123.4567 x 100 =123456 and IMPULS=10000.
The value will be composed by 6 numerals (instead of 4) for every visualization.

Example 2:
If you have a proximity sensor, and after 10 impulses you need to see the value 7, pls. programme in the following way: VISUAL=7 and IMPULS=10.

ndEC Decimal Numbers

This constant shows the decimal point position : programme 0 if you have not any decimal number, 1 for 1 decimal number, ecc… Accepted values: from 0 to 4.

PrESEt Preset

This instrument allows you to programme a value which will be shown after pressing RESET/ENTER or after activating the Reset input in the key-board according to the scheme M.Azz. “Zero setting” .
The allowed values are included between –999999 and 999999.

nASS Zero setting

By means of the zero-setting programming you can select the function of the instrument after choosing the RESET/ENTER digit or after starting the RESET in the terminal board.
The Reset function zeros the visualized quote on the display, while the Preset shows the value, which has been programmed in the constant PrESEt before hand**.**
According to the following scheme, please choose your preferred type of zero setting :

nASS	PRESET Input	RESET/ENTER Digit
0	Reset	Disabled Digit
1	Preset	Disabled Digit
2	Reset	Reset
3	Reset	Preset
4	Preset	Reset
5	Preset	Preset
6	Disabled Input	Reset
7	Disabled Input	Preset
8	Disabled Input	Disabled Digit
9	Disabled Input	Delayed Reset (press for about 3 sec)

InPUt Inputs

By means of this constant you can programme the input types, and count according to the following scheme:

InPUt	Input
0	Bidirectional count from an encoder with 2 quadrate channels
1	Monodirectional count with input coming from a sensor or a mechanical contact : A = count impulses (from open to closed) B = count direction: when B is open, the count increases, when B is closed the count decreases *
2	Monodirectional count with input coming from a sensor or a mechanical contact: A = Count impulses (from open to closed) B = count direction: when B is open the count increases, when B is closed the count decreases
3	Bidirectional count with inputs coming from sensors or mechanical contacts : A = Increasing count impulses from open to closed phase B = Decreasing count impulses from open to closed phase
4	Bidirectional count with inputs coming from sensors or mechanical contacts : A = Increasing count impulses from closed to open phase B = Decreasing count impulses from closed to open phase

* B has to be connected to GND if the sensor is NPN; to +12V if the sensor is PNP (see connection scheme)

FILtr0 Debounce Filter for Count Inputs

If you use an input coming from a mechanical contact in order to avoid debounce impulses you have to programme this constant “1”. In this case you can start a filtre of 10Hz in the count inputs, which avoids interferences in the opening or in the mechanical connection of the instrument.
This constant can have only a 0 value (except for the filtre), and 1 (working filtre).[It does not matter if you chose a bidirectional encoder with quadrature channels in the opening phase! (INPUT CONSTANT = 0)].

rELE Output Relays

Not used in version without relay.

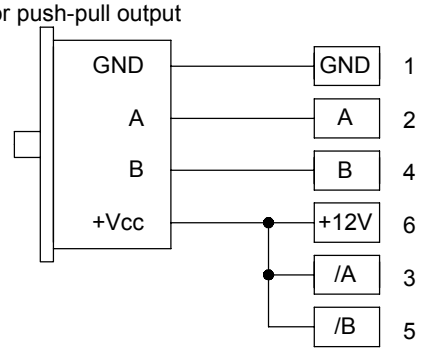
ModSEt Relay Thresholds Outside the Password Section

Not used in version without relay.

Transducers connection scheme

Bi-directional encoder connection

open collector or push-pull output



NPN

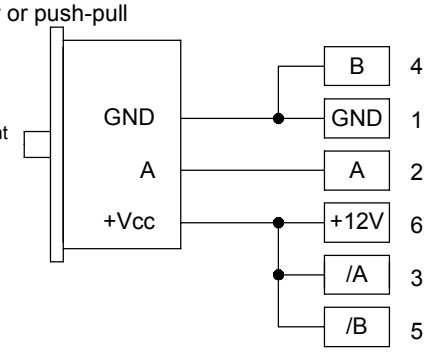
Mono-directional or proximity transducer connection

Open collector or push-pull

NB

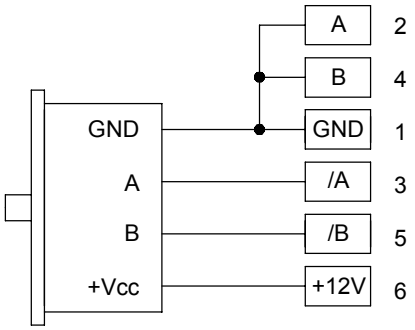
With jumper B-GND Decreasing count

Without jumper B-GND Increasing count



NPN

Bi-directional encoder connection
Open collector or push-pull



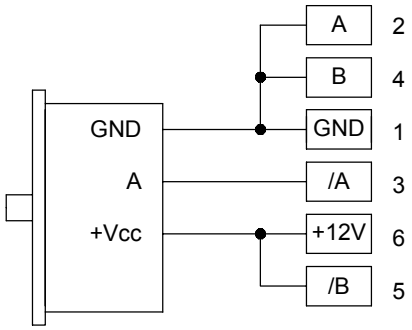
PNP

Mono-directional or proximity encoder connection
Open collector or push-pull

NB

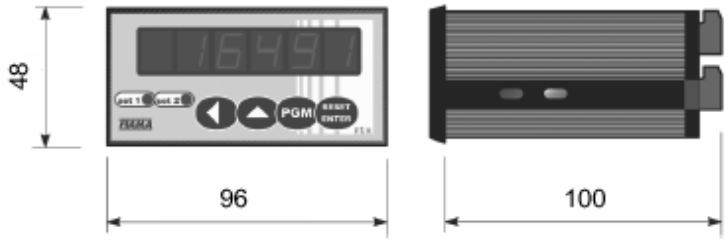
With jumper /B +12V Decreasing count

Without any jumper /B +12V increasing Count

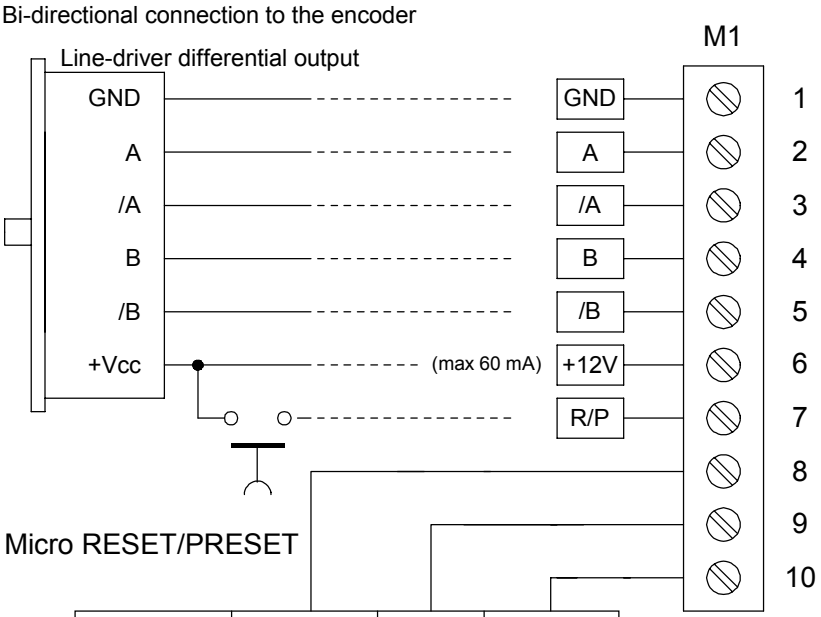


PNP

Overall dimensions



Connections scheme



F1X50	115Vac	⏚	0
F1X51	230Vac	⏚	0
F1X52	24Vac	⏚	0
F1X53	15-30Vdc	⏚	GND

Technical Features

Power supply	115Vac, 230Vac, 24Vac, 15÷30Vdc ±10%
Line frequency	50/60 Hz
Power absorbtion	3 VA
Display	–99999; 999999
Inputs type	Optoisolated
Encoder power supply	12Vdc (max 60mA)
Count input	Open collector NPN/PNP
	Push-pull
	Differential Line driver
	Mechanical contact
Input maximum frequency	10 KHz
Count possibility	Bi-directional
	Monodirectional (counting up)
	Monodirectional (counting down)
Working temperature	0-50°C
Relative humidity	10-90%
Size (with terminal box)	48x96x100 mm
Drilling template	45x92 mm
Front case protection	IP54
Electromagnetic compatibility	2014/30/EU
Low voltage	2014/35/EU
RoHS	2011/65/EU

Manufacturer

All communications to the manufacturer should be addressed to:
FIAMA s.r.l., Via G. Di Vittorio, 5/A - 43016 San Pancrazio (Parma) - Italy
Tel. (+39) 0521.672.341 - Fax. (+39) 0521.672.537 – e-mail: info@fiama.it - www.fiama.**it**

FIAMA srl is not responsible for any damage to persons or things caused by tamperings and wrong use and in any case that are not consistent with the features of the instrument.