

LARGE  
DISPLAYS  
Serie ASCII

# Series BDF Serial ASCII

## LARGE DISPLAYS for Serial ASCII

BDF-xx-S repeater for Serial ASCII



IDEAL SOLUTION for reading ASCII messages at long distances, addressable units controlled through standard protocols RS232, RS485, R422, ... Very strong housing and electrically protected units, designed for all type of industrial applications.



FEMA ELECTRÓNICA, S.A.

**USER'S MANUAL**  
(HT3298-r140207)

FEMA ELECTRÓNICA

# Model BDF Serial ASCII

## LARGE DISPLAYS for Serial ASCII

The BDF series of large displays for Serial ASCII signals is a standard ASCII code repeater, accepting messages in the most common protocols in industry (RS232, RS485, RS422, TTL, ...). The transmission baudrate is selectable and the units can be addressed independently.

It allows display of numerical characters with and without decimal point, and a selection of other characters («A», «b», «C», ...) easily displayed and recognized within a 7 segment led.

Several units can be connected to the same data bus and be controlled independently. Up to 32 different addresses can be configured and address «0» allows the instrument to read and display all the data transmitted on the bus.

The mechanical of the BDF instruments is a very strong and sturdy aluminium housing anodized in black color, for panel mount, and for wall mount as an option. The front lens is antirreflexive and is firmly inserted on the aluminium profile with a rubber gasket around, providing IP65 protection on the front.

The signal wires are connected to plug-in screw clamps for higher security of the connections, accesible at the rear side of the instrument. The power is connected to a 3 terminal plug (2 power connections and 1 earth) containing an integrated protection fuse and an additional fuse as spare part.

### 0.-ORDERING REFERENCE

	Size	Model	Power	Color	Protocol
<b>BDF</b>	24 26 44 46	S	230 Vac 115 Vac 24 Vdc	R - Red	RS485 RS232 RS422 TTL ...

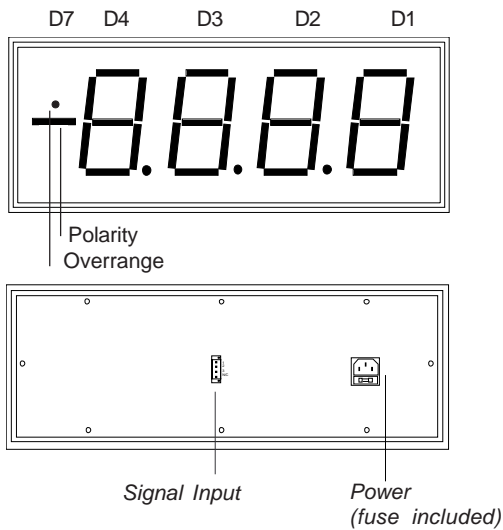
### 1.-SIZES

<b>SIZE BDF-24 .-</b>	Instrument with 4 digits 57mm (2,3") digit height	<b>SIZE BDF-26 .-</b>	Instrument with 6 digits 57mm (2,3") digit height
<b>SIZE BDF-44 .-</b>	Instrument with 4 digits 100 mm (4,0") digit height	<b>SIZE BDF-46 .-</b>	Instrument with 6 digits 100 mm (4,0") digit height

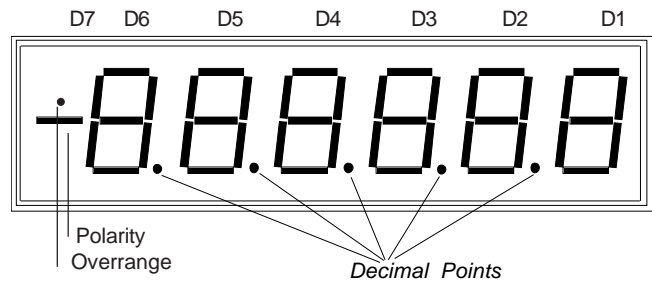
### 2.-GENERAL CHARACTERISTICS

DISPLAY	4 or 6 digits 7 segment led red color digit of 57mm height (2,3") or digit of 100mm height (4,0")	FRONT	antirreflexive filter IP65 front protection
READING	from «-9999» to «9999» or from «-999999» to «999999» decimal point selectable	POWER	230 Vac 50/60 Hz optional 115 Vac 50/60 Hz optional 24 Vdc isolated
HOUSING	extruded aluminium anodized in black color panel mount (optional wall mount)	CONSUMPTION	6 VA (BDF-24 and BDF-26) 12 VA (BDF-44 and BDF-46)
		Working Temp.	from 0 to +50°C (32 to 122 °F)
		Storage Temp.	from -20 to +85°C (-4 to 185°F)
		Relative Hum.	from 0 to 85% non condensated

### 3.- FRONT AND REAR VIEW



The instruments from the BDF Series are available in 4 and 6 digit format. All digits are led 7segment type, with decimal point selectable.



#### POLARITY AND OVERRANGE SYMBOLS

Digit «D7» controls the polarity segment («-») and the overrange point («.»). The polarity segment activates when «D7» is a character with central segment active («H», «4», «6», ...). The overrange point activates when «D7» is a character with upper segment active («0», «7», ...). If «D7» contains both central and upper segments («8», «P», ...) both the overrange and the polarity will light.

**Note.** - Units with 4 digits must receive also digits «D5», «D6» and «D7» to activate Polarity and/or Overrange.

### 4.- WORKING MODE (SHIFT, STROBE) AND ADDRESSING THE INSTRUMENT

**GENERAL WORKING MODE** .- the character received is placed in the internal buffer, at the least significant position («D1») and moves all existing characters in the buffer to the left. Character «D7» is lost, and is substituted by character at «D6». New characters arriving will be placed on «D1» and all other existing characters will be moved to the left.

**MODE «STROBE»** .- The characters stored in the buffer are loaded on display when a «CR» character is received.

**MODE «SHIFT»** .- The characters stored in the buffer are always being displayed.

**Note.** - if working on «SHIFT» mode a «CR» character is received, the next character received will clean both the buffer and the display and will place the character received on display «D1»

**Note.** - Characters which can not be ASCII displayed, will not be displayed on the instrument. Instruments with 4 digits still have «D5» and «D6» in the internal buffer, although only «D1», «D2», «D3», «D4» and «D7» are displayed.

**ADDRESS.**- Address for instruments BDF Serial are selected with internal minidips (see section 8). Possible addresses are 1 to 31 (total of 31 different addresses). The instrument will receive all data transmitted on the line, but will only display data which has the byte address the same as his address. Address «0» is a SNIFFER function, which will make the instrument to display all data from all addresses which are transmitted on the line.

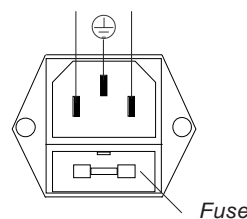
**Note.** - The instrument with address 0 will display the address byte as a standard ASCII code.

### 5.- CONNECTIONS FOR POWER SUPPLY

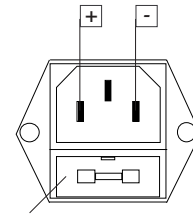
The power connector allows one terminal for earth and two power terminals. Internal fuse is integrated on the connector and an additional fuse is available as a spare part. The value of the fuses depends on the power supply, and is according to rule IEC127/2

- 230 Vac - 200 mA fuse time-lag
- 115 Vac - 400mA fuse time-lag
- 24 Vdc - 350 mA fuse fast

Powered  
230 Vac (115 Vac optional)



Powered  
24 Vdc Isolated



**6.- INPUT SIGNALS - CONNECTIONS AND CHARACTERISTICS**

**INPUT SIGNAL**

The input signal type is selected with internal jumpers (see section 8). If not otherwise indicated, the default configuration is

**Note** .- the instrument does not need HANDSHAKE and will accept data in continuous mode

RS232  
mode STROBE  
1200 BAUDS  
8 BITS NO PARITY  
ADDRESS «0»

**SIGNAL RS232 (Bipolar ±15 Vdc)**

Input Impedance >12 KOhms  
Logical level «1» >3 Vdc (Bit Start)  
Logical level «0» <-3 Vdc (Bit Stop)  
Levels reversible by internal jumpers  
Open line on wait  
Maximum levels ±15 Vdc

**SIGNAL RS422 / RS485 (differential)**

Input Impedance >12 KOhms  
Trigger level < ±0,2 Vdc (internal load)  
Hysteresis 70mV typical  
Maximum differential input ±12Vdc  
Maximum levels from +12 to -7 Vdc (common referenced)  
Terminator 121 Ohms (selectable)

**SIGNAL TTL**

Input Impedance >12 KOhms  
Logical level «1» >2Vdc (Bit Stop)  
Logical level «0» <0,8 Vdc (Bit Start)  
Maximum levels from +12 to -7 Vdc

**SIGNAL RS423 (Bipolar ±5 Vdc)**

Input Impedance >12 KOhms  
Logical level «1» >0,5 Vdc (Bit Start)  
Logical level «0» <0 Vdc (Bit Stop)  
Levels reversible by internal jumpers  
Open line on wait  
Maximum levels ±7 Vdc

**SIGNAL LOOP 2mA**

Logical level «1» >1,6 mA (Bit Start)  
Logical level «0» <0,2 mA (Bit Stop)  
Levels reversible by internal jumpers  
Voltage drop max. 1 Vdc a 2mA  
Maximum current on the loop 0,5 A

**SIGNAL LOOP 20 mA**

Logical level «1» >16 mA (Bit Start)  
Logical level «0» <2 mA (Bit Stop)  
Levels reversible by internal jumpers  
Voltage drop max. 1 Vdc at 2mA  
Maximum current on the loop 0,5 A

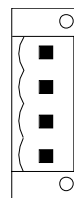
**LOOP RECEIVER 2mA or 20 mA ±20%**

Input Impedance >12 KOhms  
Power 5V open circuit voltage  
Conformity 3V at 2mA or 20 mA

**CONNECTIONS**

	Pin1	Pin2	Pin3
RS-232 ±15 V	Input	+5 V	GND
RS-422/RS-485	Signal B	Signal A	GND
RS-423 ±5 V	Input	+5 V	GND
2 mA y 20 mA Loop			
Internal powered	Loop -	Loop +	NC
External powered	Loop +	NC	Loop
TTL levels	+5 V	Input	GND

Connections for Input Signal

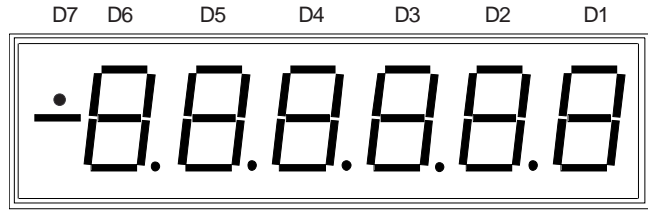


Pin 1 Signal B  
Pin 2 Signal A  
Pin 3 Common  
Pin 4 Not Connected (NC)

**Note** .- Pin3 can be connected to the ground of the system

7.- START-UP MESSAGE AND DATA FORMAT

**CONNECTING THE POWER SUPPLY** .- When connecting the power supply to the instrument, the first message to appear on display is information on the current configuration of the unit. This message will disappear in 3 seconds, and the display will read «-----». The instrument remains «hearing» for new data coming through the line.



- D7 Without information
- D6 Number of bits «7» or «8»
- D5 Parity
  - «E» parity even
  - «O» parity odd
  - «n» without parity
  - «l» parity ignored
- D4 Modo
  - «F» mode shift
  - «r» mode strobe
- D3 Reception
  - «L» rec. state correct
  - «H» rec. state not-correct

**Note.**- take into consideration that a RS485 type can be tested as correct reception status although the polarity of the cables being inverted.

- D2 Address character from «1» to «O»  
(see sections 8 and 9)
- D1 Speed number from «0» to «7»  
(see section 8)

**DATA STRUCTURE** .- The structure of the data to receive once the unit is «hearing», is the following :

- 1.- Reception of character «ETX»  
(or character «XOFF»)
- 2.- Reception of character «STX»  
(or character «XON»)
- 3.- Reception of address of the instrument  
(address from «0» to «31»)
- 4.- Reception of DATA characters
- 5.- Reception of character «ETX»  
(or character «XOFF»)

**Note** .- An «ETX» character (or «XOFF» character) is sent before starting the first message in order to clean the internal buffer. (The «ETX» character first loads the buffer values on display and then cleans the buffer)

**Note** .- If working on STX/ETX mode, the «ETX» character already includes the «CR» character and its functionality is the same in «SHIFT» mode and in «STROBE» mode.

**Note** .- If working on XON/XOFF mode, the «XOFF» character does not include the «CR» character. If working in «STROBE» mode a «CR» character is needed to load on display the buffer data.

**MESSAGE FORMAT**

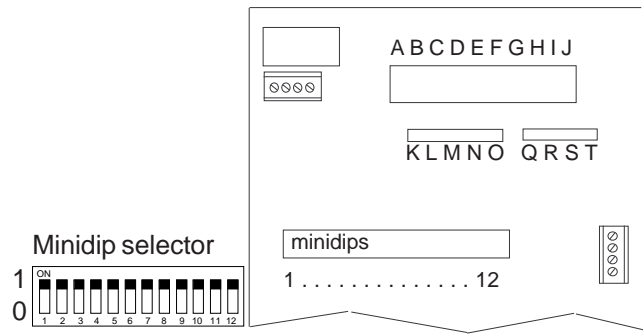
STX	Address	Data	ETX
1 byte	1 byte	n bytes	1 byte

XON	Address	Data	CR	XOFF
1 byte	1 byte	n bytes	1 byte	1 byte

8.-INTERNAL JUMPERS AND SWITCHES - CONFIGURATION

On the «Control Board» (accesible through the rear side cover) are placed the jumpers and minidips to configure the instrument (parity, signal type, ...)

«Control Board»



Parity and Number of Bits (Jumpers R,S,T)

Num. bits 7	Jumper R	Open
Num. bits 8	Jumper R	Closed
Parity Even	Jumper S	Closed
	Jumper T	Open
Parity Odd	Jumper S	Open
	Jumper T	Closed
Parity Ignored	Jumper S	Closed
	Jumper T	Closed

**Note** .- Setting Jumpers R, S and T to open configures «8 BITS WITHOUT Parity»

Luminosity Control

(dip1,dip2)

Brightness 100%	1 1
Brightness 75%	1 0
Brightness 50%	0 1
Brightness 25%	0 0

**Note** .- Dip 3 always set to «0»

Watchdog Function (Jumper Q)

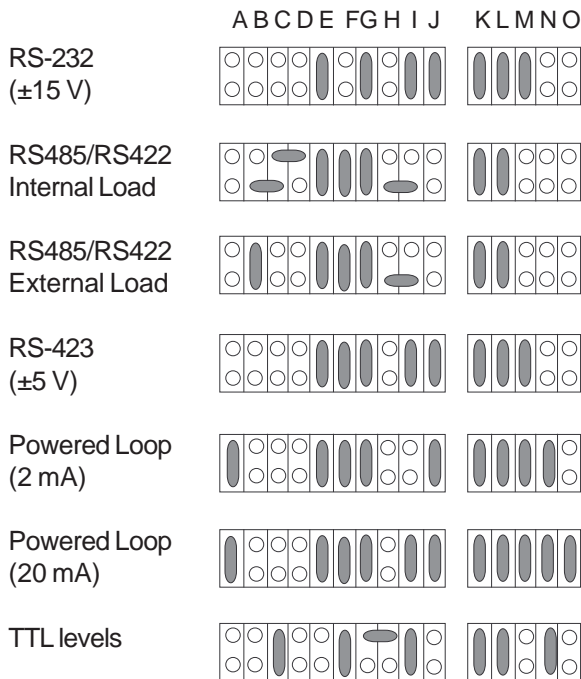
Watchdog Active	Jumper Q	Open
Watchdog Inact.	Jumper Q	Closed

Working Mode

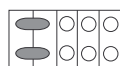
(dip4)

SHITF	0
STROBE	1

Input Signal (Jumpers A...J y K...O)



**Note** .- The logical levels for signals 2 mA, 20 mA, RS-423 and RS 232 can be inverted by placing jumpers K and L in horizontal position



Speed

(dip5, dip6, dip7)

19200 bps	1 1 1
9600 bps	1 1 0
4800 bps	1 0 1
2400 bps	1 0 0
1200 bps	0 1 1
600 bps	0 1 0
300 bps	0 0 1
150 bps	0 0 0

Address

(Dips 8, 9, 10, 11, 12)

D8..D12	@	HEX	D8..D12	@	HEX
0 0 0 0	0	30H	1 0 0 0	16	40H
0 0 0 1	1	31H	1 0 0 1	17	41H
0 0 1 0	2	32H	1 0 0 1 0	18	42H
0 0 1 1	3	33H	1 0 0 1 1	19	43H
0 0 1 0 0	4	34H	1 0 1 0 0	20	44H
0 0 1 0 1	5	35H	1 0 1 0 1	21	45H
0 0 1 1 0	6	36H	1 0 1 1 0	22	46H
0 0 1 1 1	7	37H	1 0 1 1 1	23	47H
0 1 0 0 0	8	38H	1 1 0 0 0	24	48H
0 1 0 0 1	9	39H	1 1 0 0 1	25	49H
0 1 0 1 0	10	3AH	1 1 0 1 0	26	4AH
0 1 0 1 1	11	3BH	1 1 0 1 1	27	4BH
0 1 1 0 0	12	3CH	1 1 1 0 0	28	4CH
0 1 1 0 1	13	3DH	1 1 1 0 1	29	4DH
0 1 1 1 0	14	3EH	1 1 1 1 0	30	4EH
0 1 1 1 1	15	3FH	1 1 1 1 1	31	4FH

9.-RECOGNIZED ASCII CODES

ASCII	HEX	(Keyboard)	ASCII	HEX	Display
«STX»	02H	(Ctrl B)	0	30H	0
		Activates the «Hearing» state in the instrument. Next character will be the instrument address (if not, the unit will be set to «Not-Hearing» state)	1	31H	1
			2	32H	2
			3	33H	3
			4	34H	4
			5	35H	5
«ETX»	03H	(Ctrl C)	6	36H	6
		Activates the «Not-Hearing» state in the instrument. Loads on display the buffer data and cleans the buffer	7	37H	7
			8	38H	8
			9	39H	9
			:	3AH	.
«EOT»	04H	(Ctrl D)	;	3BH	;
		Activates the BS4505 ASCII mode	<	3CH	<
			=	3DH	=
«ACK»	06H	(Ctrl M)	>	3EH	>
		Last character displays in flashing mode (2 flash per second)	?	3FH	?
			@	40H	BLANK
			A	41H	A
«FF»	0CH	(Ctrl L)	B	42H	B
		Cleans the display and the internal buffer	C	43H	C
			D	44H	D
«CR»	0DH	(Ctrl M)	E	45H	E
		Carriage Return	F	46H	F
			G	47H	G
«XON»	11H	(Ctrl Q)	H	48H	H
		Same as «STX»	I	49H	I
			J	4AH	J
«DC2»	12H	(Ctrl R)	K	4BH	K
		Display brightness at 25%	L	4CH	L
			M	4DH	M
«XOFF»	13H	(Ctrl S)	N	4EH	N
		Activates the «Not-Hearing» state of the instrument and cleans the buffer (without loading on display)	O	4FH	O
			P	50H	P
			Q	51H	Q
			R	52H	R
«DC4»	14H	(Ctrl T)	S	53H	S
		Display brightness at 100%	T	54H	T
			U	55H	U
«CAN»	18H	(Ctrl X)	V	56H	V
		Display brightness at 50%	W	57H	W
			X	58H	X
«ESC»	1BH	(Esc)	Y	59H	Y
		Restarts the instrument	Z	5AH	Z
			[	5BH	[
«SPACE»	20H	(Espacio)	\	5CH	\
		Inserts blank space	]	5DH	]
			^	5EH	^
«+»	2BH	(+)	-	5FH	-
		Inserts character «+»			
«-»	2DH	(-)			
		Inserts character «-»			
«.»	2EH	(.)			
		Activates the decimal point of the last received character			

**Note.** - instrument in «Not Hearing» state can only be reactivated to «Hearing» state with codes 02 («STX»), 11 («XON»), 04 («EOT») and 1B («ESC»)

**10.-FUNCTION «WATCHDOG»**

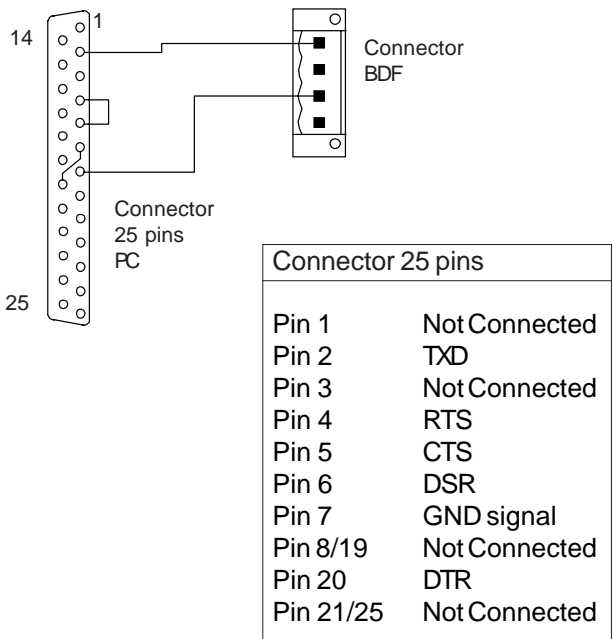
Function «WATCHDOG» lights the «-----» midle bars on display, when detects that not valid messages are being received.

In «STROBE» mode, the «WATCHDOG» function activates the «-----» when 5 seconds have passed since the last correct message received. A message is correct when the last characters are Ctrl-C («ETX»), Ctrl-M («CR») or Ctrl-L («FF»).

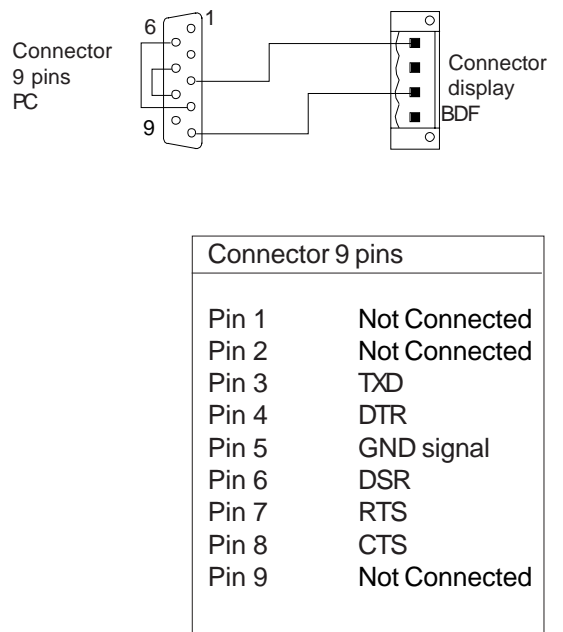
In «SHIFT» mode, the «WATCHDOG» function activates the «-----» when 5 seconds have passed since the last correct character received. Correct characters are: Ctrl-C («ETX»), Ctrl-M («CR»), Ctrl-L Decimal Point («2E»), Flash («06»), " - " («2D»), " + " («2B»), Space («20») and any other character with HEX code from «30H» up to «5FH».

**11.-EXAMPLE TO CONNECT TO A PC**

Connecting a BDF-xx-S as a remote display receiving data from a PC with 25 pins SUB-D connector.



Connecting a BDF-xx-S as a remote display receiving data from a PC with 9 pins SUB-D connector.





## 12.- PROGRAM EXAMPLES

## STROBE con STX/ETX

```

/* FEMA ELECTRONICA, S.A
/* Demo program for
/* BDF-XX-S connected TO PC*/
/* Strobe mode with STX/ETX*/
/* For Turbo C++ Borland V1.01*/
#include<bios.h> /*
#include<conio.h>
#include<stdio.h>
#define COM1 0 /*
#define COM2 1 /*
#define TRUE 1
#define FALSE 0
#define EVEN 0x18
#define ODD 0x10
#define NONE 0x0
#define BIT7 0x2
#define BIT8 0x3
#define STOP1 0x0
#define STOP2 0x4
#define BAUD300 0x40
#define BAUD600 0x60
#define BAUD1200 0x80
#define BAUD2400 0xA0
#define BAUD4800 0xC0
#define BAUD9600 0xE0
int main(void)
{
int count,DONE=FALSE;
/*counter&end loop condition
char dat1,men1[25];
/*temporary data and string*/
ciscr();
/*Clear Screen*/
/*Initializing Host port*/
bioscomp(0,(BAUD9600 | BIT8 | NONE | STOP1),COM2);
/*open COM2 port*/
/*Initializing instrument*/
bioscom(1,'x3',COM1);
/*Start addressing (ETX, also XOFF)*/
/*Main loop of the program*/
while(!DONE){ /*start transmission loop*/
/*Read message introduced using the keyboard*/
count=0
/*reading the string introduced using the keyboard*/
gotoxy(10,3);
printf("enter the message (0-7 characters)");
/*Until press Enter key*/
do{
dat1=getche();
Men1[count]=dat1;
count++;
}while (dat1!='\x0d');
men1[count]='\r';
/*Send the message and present it on the screen*/
ciscr();
{
bioscom(1,'x2',COM2); /*Send STX*/
gotoxy(12,10);
printf("STX");
bioscom(1,'0',COM2); /* Send address*/
printf("0");
count=0
/*Message Loop Transmission*/
while (men1[count]!='\r'){
/*Covert to capital letters to see the small letters*/
if (men1[count]<123&men1[count]>96) men1[count]
=men1[count]-32;
/*Print on screen. Send character to port until carriage return*/
printf("%c",men1[count]);
bioscom(1,men1[count],COM2);
count++;
};
bioscom(1,'x3',COM2); /*Send ETX, End of message*/
printf("ETX");
}
}
return 0;
}

```

## STROBE con XON/XOFF

```

/* FEMA ELECTRONICA, S.A
/* Demo program for
/* BDF-XX-S connected to PC*/
/* Strobe mode with XON/XOFF */
/* Turbo "C++", Borland Version 1.01*/
#include<bios.h> /*
#include<conio.h>
#include<stdio.h>
#define COM1 0 /*
#define COM2 1 /*
#define TRUE 1
#define FALSE 0
#define EVEN 0x18
#define ODD 0x10
#define NONE 0x0
#define BIT7 0x2
#define BIT8 0x3
#define STOP1 0x0
#define STOP2 0x4
#define BAUD300 0x40
#define BAUD600 0x60
#define BAUD1200 0x80
#define BAUD2400 0xA0
#define BAUD4800 0xC0
#define BAUD9600 0xE0
int main(void)
{
int count,DONE=FALSE; /*counter & end loop condition
char dat1,men1[25]; /*temporary data and string*/
ciscr(); /*Clear Screen*/
/*Initializing Host port*/
bioscomp(0,(BAUD9600 | BIT8 | NONE | STOP1),COM2);
/*open COM2 port*/
/*Initializing instrument*/
bioscom(1,'x19',COM1); /*Start addressing (XOFF)*/
/*Main loop of the program*/
while(!DONE){ /*start transmission loop*/
/*Read message introduced using the keyboard*/
count=0
/*reading the string introduced using the keyboard*/
gotoxy(10,3);
printf("enter the message (0-7 characters)");
/*Until press Enter key*/
do{
dat1=getche();
Men1[count]=dat1;
count++;
}while (dat1!='\x0d');
men1[count]='\r';
/*Send the message and present it on the screen*/
ciscr();
{
bioscom(1,'x11',COM2); /*Send XON*/
gotoxy(12,10);
printf("XON");
bioscom(1,'0',COM2); /* Send address*/
printf("0");
count=0
/*Message Loop Transmission*/
while (men1[count]!='\r'){
/*Covert to capital letters to see the small letters*/
if (men1[count]<123 & men1[count]>96) men1[count]
=men1[count]-32;
/*Print on screen. Send character to port until carriage
return*/
printf("%c",men1[count]);
bioscom(1,men1[count],COM2);
count++;
};
bioscom(1,'x0D',COM2);
/*Send 0D hex STROBE*/
printf("STROBE");
bioscom(1,'x13',COM2);
/*Send XON, end of message*/
printf(XOFF);
}
}
return 0;
}

```

## SHIFT con XON/XOFF

```

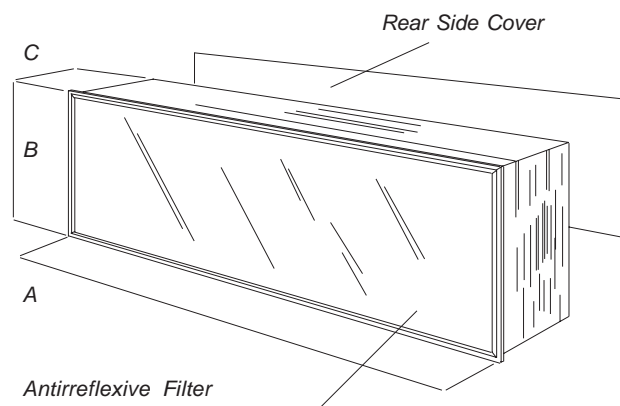
/* FEMA ELECTRONICA, S.A
/* Demo program
/* for BDF-XX-S connected to PC*/
/* Shift mode with XON/XOFF */
/* For Turbo C++ Borland V1.01 */
#include<bios.h> /*
#include<conio.h>
#include<stdio.h>
#define COM1 0 /*
#define COM2 1 /*
#define TRUE 1
#define FALSE 0
#define EVEN 0x18
#define ODD 0x10
#define NONE 0x0
#define BIT7 0x2
#define BIT8 0x3
#define STOP1 0x0
#define STOP2 0x4
#define BAUD300 0x40
#define BAUD600 0x60
#define BAUD1200 0x80
#define BAUD2400 0xA0
#define BAUD4800 0xC0
#define BAUD9600 0xE0
int main(void)
{
int count,DONE=FALSE;
/*counter & end loop condition
char dat1,men1[25];
/*temporary data and string*/
/*Initializing Host port*/
bioscomp(0,(BAUD9600 | BIT8 | NONE |
STOP1),COM2);
/*open COM2 port*/
/*Initializing instrument*/
bioscom(1,'x13',COM1); /*Start addressing (XOFF)*/
/*Main loop of the program*/
ciscr(); /*Clear Screen*/
while(!DONE){ /*start transmission loop*/
/*Read message introduced using the keyboard*/
count=0
/*reading the string introduced using the keyboard*/
gotoxy(10,3);
printf("enter the message (0-7 characters)");
/*Until press Enter key*/
do{
dat1=getche();
Men1[count]=dat1;
count++;
}while (dat1!='\x0d');
men1[count]='\r';
/*Send the message and present it on the screen*/
ciscr();
bioscom(1,'x11',COM2); /*Send XON*/
gotoxy(12,10);
printf("XON");
bioscom(1,'0',COM2); /* Send address*/
printf("0");
count=0
/*Message Loop Transmission*/
while (men1[count]!='\r'){
/*Covert to capital letters to see the small letters*/
if (men1[count]<123 & men1[count]>96) men1[count]
=men1[count]-32;
/*Print on screen. Send character to port until carriage
return*/
printf("%c",men1[count]);
bioscom(1,men1[count],COM2);
count++;
};
bioscom(1,'x13',COM2); /*Send XOFF; End of
message*/
printf("XOFF");
}
return 0;
}

```

**13.- SIZES AND DIMENSIONS**

<b>Size 24/26</b>	<b>A</b>	<b>B</b>	<b>C</b>
4 digits 57mm (2")	264mm (10,40")	120mm (4,75")	112mm (4,41")
6 digits 57mm (2")	384mm (15,12")	120mm (4,75")	112mm (4,41")

<b>Size 44/46</b>	<b>A</b>	<b>B</b>	<b>C</b>
4 digits 100mm (4")	480mm (18,90")	180mm (7,09")	112mm (4,41")
6 digits 100mm (4")	668mm (27,10")	180mm (7,09")	112mm (4,41")

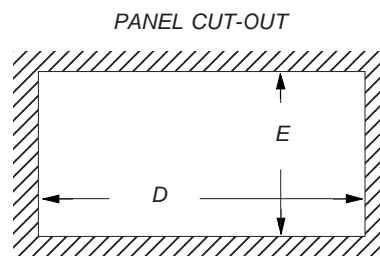


**Note** .- add 27mm to the «C» dimension for the power supply plug

**14.- PANEL CUT-OUT AND WEIGHT**

<b>Size 24/26</b>	<b>D</b>	<b>E</b>	<b>Weight</b>
4 digits 57mm (2")	256mm (10,07")	112mm (4,40")	2.3 Kg (5 lbs)
6 digits 57mm (4")	376mm (14,80")	112mm (4,40")	2.7 Kg (6 lbs)

<b>Size 44/46</b>	<b>D</b>	<b>E</b>	<b>Weight</b>
4 digits 100mm (4")	472mm (18,58")	172mm (6,77")	5.0 Kg (11,0 lbs)
6 digits 100mm (4")	680mm (36,77")	172mm (6,77")	5.7 Kg (12,5 lbs)

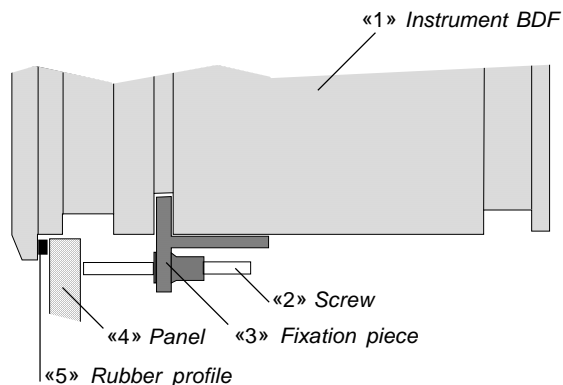


Panel width  
Max. 14 mm (0,55")  
Min. 2,5mm (0,10")

**15.- PANEL INSTALLATION**

Introduce the instrument «1» into the panel cut-out and place a fixation piece «3» on each side. Place the screw «2» through the fixation piece «3» until it presses the panel «4» and is firmly fixed.

**Note** .- The front of the instrument is sealed with a protection level IP65. To have the same level of protection between the panel and the instrument, place a rubber profile (squared or round) as indicated «5».



16.-SECURITY PRESCRIPTIONS



**INSTALLATION PRECAUTIONS.**- The installation and operation of this instrument must be done by qualified operators. This instrument DOES NOT have power switch and will start to operate as soon as the power supply is connected. The instrument has an internal protection fuse, according to IEC-127/2, and is located inside the power-supply connector. The values are

- Fuse 200 mA Time Lag (for 230 Vac power)
- Fuse 400 mA Time Lag (for 115 Vac power)
- Fuse 350 mA Fast (for 24 Vdc power)

When the instrument is used to control machines or processes where the personnel or the process can be damaged, the appropriate security elements must be added to the system in order to protect the operator and / or the system.



**SAFETY PRESCRIPTIONS.**- This instrument has been designed and verified according to the UNE-20553 rules and is delivered in perfect conditions of operation. This manual contains the adequate information for the electrical installation. Before starting operations for connections, readjustment, substitution, maintenance, repair, etc, the instrument must be unplugged from the power supply. The instrument must be installed in places with good ventilation to avoid excessive heating, and far from sources of electrical noise or magnetic field generators, such as power relays, electrical motors, speed controls, etc... The instrument can not be installed in open places. Do not use until the installation is finished. The instrument is designed to be mounted on a metallic panel with the adequate protections. DO NOT clean the front lens with abrasive products (such as solvents, alcohol, etc) use a clean and water humid rag. Do not expose the instrument to excessive moisture. DO NOT operate the unit in the presence of flammable gases or fumes.

**EXCITATION VOLTAGE Vexc.-**

Instruments BDF-xx-32 and BDF-xx-36 supply an excitation voltage of 10 to 24 Vdc (50mA) to power transducers, available between terminals A and C. Do NOT connect these terminals to an external power supply, permanent damages may result on both instruments.

17.-WARRANTY

**FEMA ELECTRÓNICA, S.A.** warrants this instrument free of defects for a period of 24 MONTHS from the date of shipment. This warranty covers both the materials of the instrument and the processes used for manufacturing.

**POWER SUPPLY** .- Connect the Power Supply to the terminals indicated in this manual. Verify that the voltage and frequency of the power supply is according to the voltage and frequency values indicated in the label attached to the unit. DO NOT connect the instrument to power lines which are overloaded, or power lines with loads working in ON/OFF cycles, or with inductive loads.



**SIGNAL WIRING** .- Information to consider relating the wiring of the sensors, probes, transducers, etc. The wires can act as antennas and introduce electrical noise from the environment into the signal wires, specially if the wires are close to noise sources or electromagnetic sources. There are several rules generally known which should be taken into consideration for the wiring :

- a.- DO NOT install impulse, control or signal wires together in the same conduits as the wires connected to power lines, connected to CC or AC engines, electromagnets, ...
- b.- When using shielded wires, connect the shield to the common of the instrument, and leave not-connected the probe side
- c.- The wires of impulse, control and signal should be placed in places far away from switches, transformers, control relays, etc...

**IN CASE OF FIRE**



- 1.- Disconnect the unit from the power supply.
- 2.- Give the alarm according to the local rules.
- 3.- Switch off all the air conditioning devices.
- 4.- Attack the fire with carbonic snow, do not use

water in any case.

**WARNING : In closed areas do not use systems with vaporized liquids.**

This warranty is excluded and does not apply if the instrument is damaged due to misuse, improper application, accident, or if the instrument has been manipulated or repaired by unauthorized personnel or companies.

18.-DECLARATION OF CONFORMITY

**CE DECLARATION OF CONFORMITY**

Manufacturer.- **FEMA ELECTRÓNICA, S.A.**  
 Address.- Pol. Ind. Santiga - Altimira 14 (T14 - N2)  
 E-08210 Barberà - BARCELONA  
 ESPAÑA - SPAIN

DIRECTIVES

**EUROPEAN DIRECTIVE FOR LOW VOLTAGE D73/23/CEE AMMENDED BY D93/68/CEE.** Equipments powered from 50 to 1000 Vac and/or from 75 to 1500 Vdc.

Conforming Products  
 Series.- BDF-24, BDF-26, BDF-44 and BDF-46  
 Models.- S

**EUROPEAN DIRECTIVE FOR ELECTROMAGNETIC COMPATIBILITY D89/336/ CEE AMMENDED BY D93/68/CEE**

STANDARDS

We hereby declare that the above products conform to the essential protection requirements of Directives and Harmonized standards indicated below.

- IMMUNITY **UNE EN 50082-1 (1998)**
- EMMISSIONS **UNE EN 50081-2 (1994)**
- ELECTRICAL SAFETY **UNE EN 61010-1 (1997)**
- UNE EN 60204-1 (1998)**

Signed.- D. Juncà  
 Position.- Quality Manager  
 Place .- Barberà, 2005

*NOTE .- During an electromagnetic disturbance (10V/m) it is permitted a worst case error of 1% of the A/D range. The instrument will recover automatically its functionality when the disturbance stops, without need of the operator to reset or restart.*

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