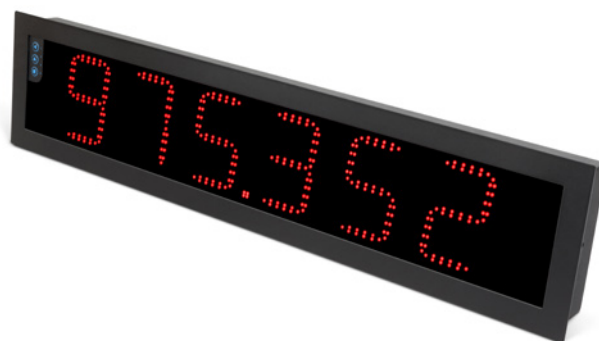


4423_B46-C1_datasheet_en	2
4431_B46-P_datasheet_en	6
4439_B46-CR_datasheet_en	10
4447_B46-RTU_datasheet_en	14
4455_B46-485_datasheet_en	18
4463_B46-232_datasheet_en	22
4633_B46-LC_datasheet_en	26

B46-C1 Impulse counter, Ratemeter



Large format meter with 6 digits and 100 mm digit height, for reading up to 50 meters for industrial applications. Impulse counter, ratemeter and periodmeter functions. Versatile and configurable instrument, accepts all type of impulse signals and encoders. Provides excitation voltage to power-up the sensor. Front keypad for easy access to the configuration menu and connection for remote keypad. Two universal high and low power supply options for AC and DC. Optional output and control modules for relay output, transistor output, SSR control, analog output retransmission and communications for Modbus RTU and RS-485 ASCII protocols. Sturdy metallic housing with full IP65 protection, for panel mount, wall mount or hanging mount.



Front view

Technical specifications

Reading	
Digits	6
Reading	999999 / -199999
Decimal point	configurable
Led color	red or green
Digit height	100 mm
Type of digit	7 segment
Angle of vision	120°
Input signal	
Signals accepted	NPN, PNP, Namur, pick-up, TTL, inductive, mechanical, quadrature, ...
Excitation voltage	+5 Vdc, +9 Vdc, +15 Vdc, +18 Vdc (max. 70 mA)
Maximum Vdc at input terminals	±30 Vdc
Quartz accuracy	±0.01 %
Thermal stability	20 ppm/°C
Display refresh	15 refresh / second
Maximum frequencies	counter up to 250 KHz ratemeter and periodmeter up to 500 KHz
Minimum frequencies	ratemeter and periodmeter down to 1 mHz (0.001 Hz)
Signal wire diameter	max. 0.5 mm ²
Outputs and configuration	
Output and control options	relays, analog output, serial communications, ...
Configuration	3 button front keypad (connection for remote keypad)
Power	
Power 'H'	85 to 265 Vac and 120 to 370 Vdc (isolated 2500 Vac)
Power 'L'	11 to 36 Vdc (isolated 1500 Vdc)
Consumption	<5.5 W (meter only) <7.0 W (meter with options)
Power wire diameter	max. 2.5 mm ²
Mechanical	
Housing	metallic (textured black painted iron)
Front filter	methacrylate
IP protection	full IP65 housing
Connections	cable gland output internal plug-in screw terminals
Weight	<4500 grams
Mounting	panel, wall, hanging
Front size	740 x 166 mm
Panel cut-out	722 x 148 mm
Deep	80 mm (including terminals)
Operating temperature	0 to 50 °C
Storage temperature	-20 to 70 °C

Order reference

Format	Model	Power	Color	Option 1	Option 2	Option 3	Custom
B46	C1	H	R				
		-H (85-265 Vac and 120-370Vdc) -L (11-36 Vdc)	-R (red led) -G (green led)	-R1 (1 relay output) -AO (analog output) -RTU (Modbus RTU) -S4 (RS-485) -S2 (RS-232) -T1 (1 transistor output) -SSR (1 SSR control output) -0 (empty)			



Rear view

Additional documentation

Bxx-C1 user's manual	www.fema.es/docs/4328_Bxx-C1_manual_en.pdf
Series B options	www.fema.es/docs/4326_SERIES-B_OPTIONS_manual_en.pdf
Series B web page	www.fema.es/Series_B

Output and control options

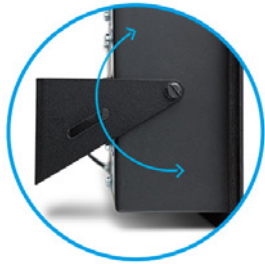
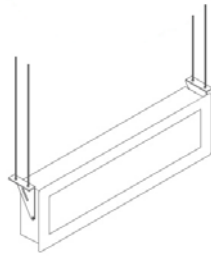
Format	Model	Power	Color	Option 1	Option 2	Option 3	Custom
B46	C1	H	R				

	Function	Installable options	Isolation
R1	1 relay output	2	yes
T1	1 transistor output	2	yes
SSR	1 control for SSR relay	2	yes
AO	1 analog output	2	yes
RTU	1 Modbus RTU port	2	yes
S4	1 RS-485 port	2	yes
S2	1 RS-232 port	2	yes

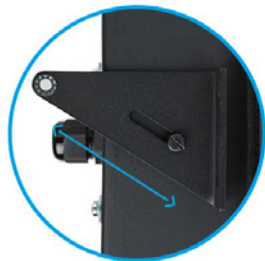
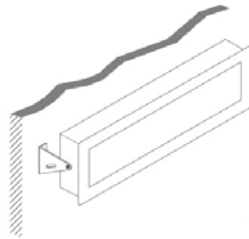
Mounting options



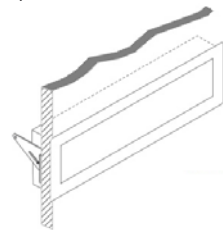
hanging



wall



panel

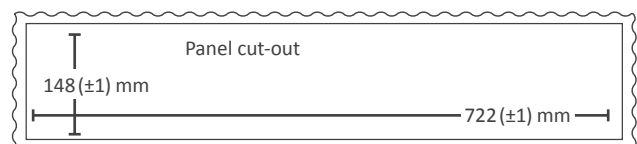
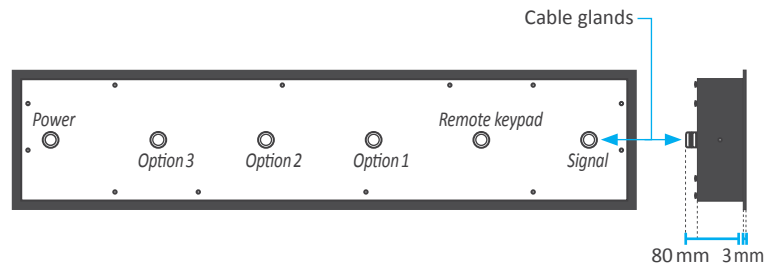
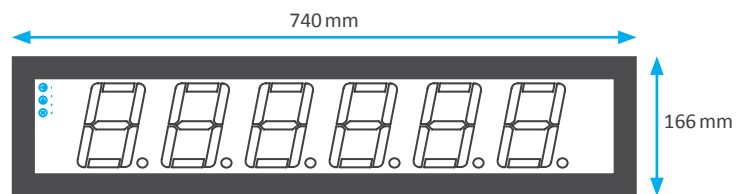


side fixations (included)

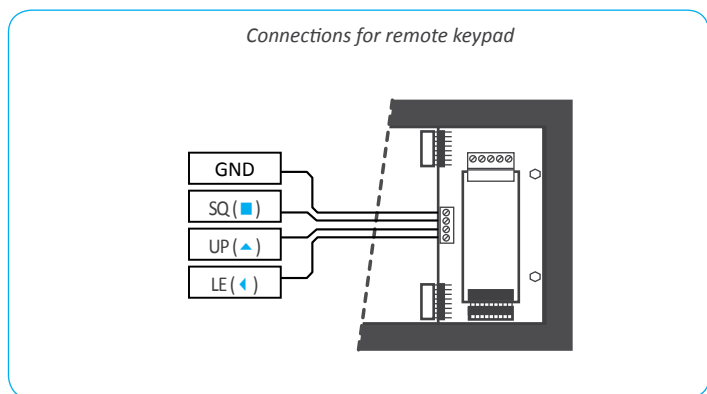
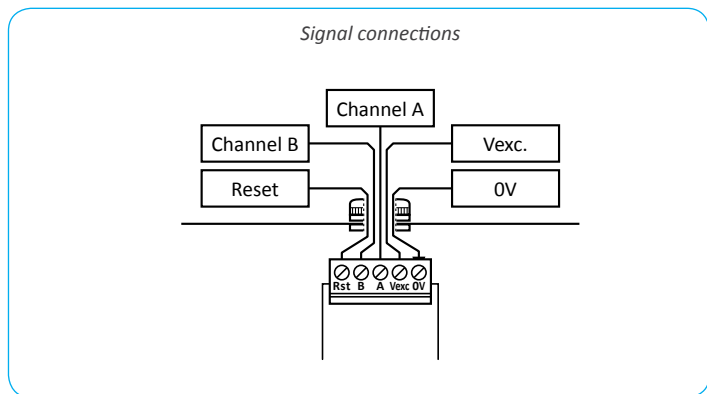
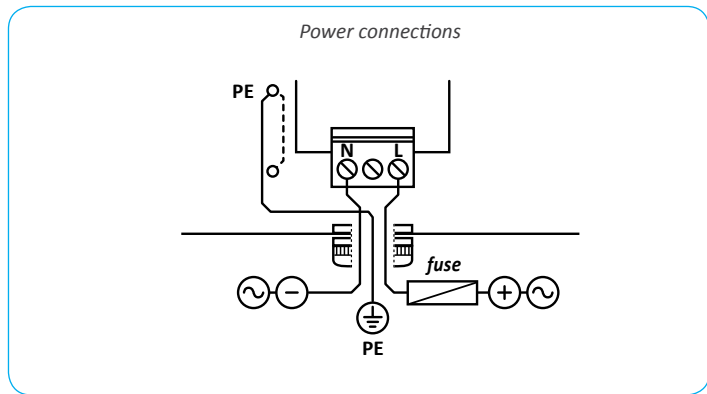
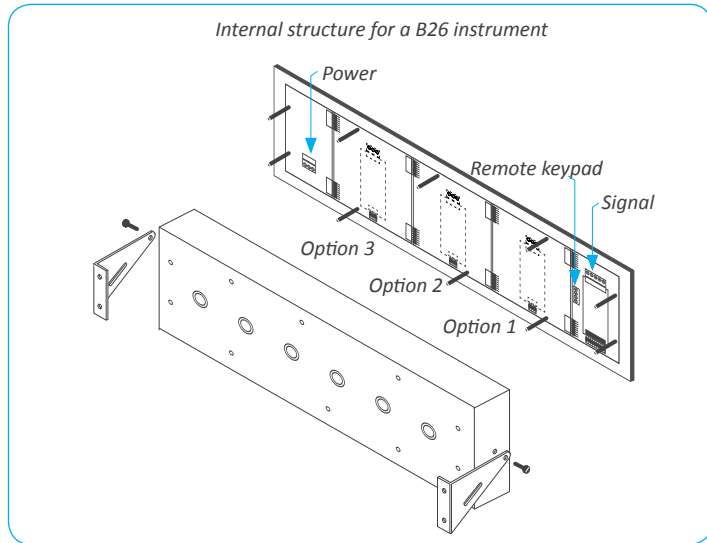
Functions included

- 'Fast access' menu a single press on the front keypad gives access to alarm setpoint modification, preset, memories, ...
- Function 'SLOW' special mode for low frequency ratemeter applications
- Function 'FAST' special mode for high frequency counter applications
- Scaling factor multiplier and divider from 1 to 999999
- Configurable reset remote, front and linked to alarm activation
- Preset configurable
- Trigger level configurable
- Function 'Trigger Sense' help on setting the correct trigger level
- Sensor selection by menu
- Cycle counter count of cycles defined by the 'on alarm reset' function
- Retention memory recovers the counting value in case of power loss
- 'On power-up' function protects systems at cold start-up.
- Alarms with one or two setpoints, independent activation and deactivation delays, hysteresis, optional manual deactivation of the relay.
- Inverted relay for security applications
- Display filters recursive filters for unstable signals
- Brightness 5 levels of brightness intensity.
- Memory maximum, minimum, cycles, ...
- Password blocks access to configuration menu.

Dimensions

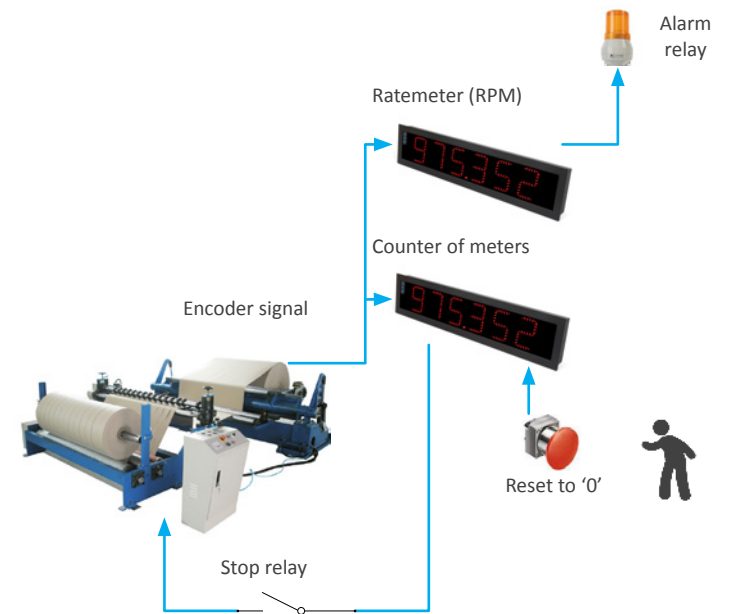


Connections



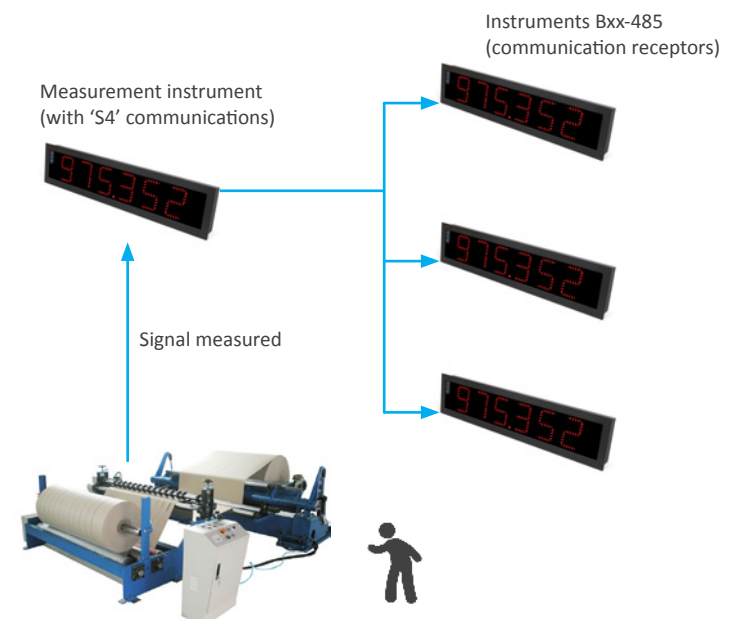
Example of application with control

Reading of the total meters of paper processed at a paper mill, from a bidirectional encoder signal. Operator has a manual reset control to set the counter to '0' at start. A relay output stops the mill when the total desired meters has been reached. A second meter, configured as ratemeter, reads the actual RPM speed of the roller. A relay output controls an alarm signal in case of excessive speed



One measure, multiple information points

The large format meters from Series B can measure a wide variety of signals, and can integrate multiple output and control options. Option 'S4' for communications can be configured to transmit the measure directly to remote information points.



Other options

Red color

JPG

Red leds

Green color

JPG

Green leds

White color

JPG

White leds


Cable output

JPG

Preinstalled cable, 2 meters

Accessories

RKB



Remote keypad

IPB24

JPG

IP65 protection for the B24 panel junction

IPB26

JPG

IP65 protection for the B26 panel junction

IPB44

JPG

IP65 protection for the B44 panel junction

IPB46

JPG

IP65 protection for the B46 panel junction

Others formats within the Series B



	Digit height	Digits	Reading distance
Format B24	60 mm	4	up to 25 meters
Format B26	60 mm	6	up to 25 meters
Format B44	100 mm	4	up to 50 meters
Format B46	100 mm	6	up to 50 meters

Other Counters and Ratemeters

Series M
 4, 5 and 6 digits
 digit height 14 mm
 color red, green
 vision 5 meters
 size 96 x 48 mm

DIGITAL PANEL METER
SERIES M
 Full Signal Ranges Available



45 YEARS

Series K
 Further view
 digit height 20 mm
 color red
 vision 8 meters
 size 96 x 48 mm

DIGITAL PANEL METERS
SERIES K
 20 mm Digit Size



45 YEARS

Series S
 Compact size
 digit height 14 mm
 color red, green
 vision 5 meters
 size 72 x 36 mm

DIGITAL PANEL METERS
SERIES S
 Compact Size 72x36 mm

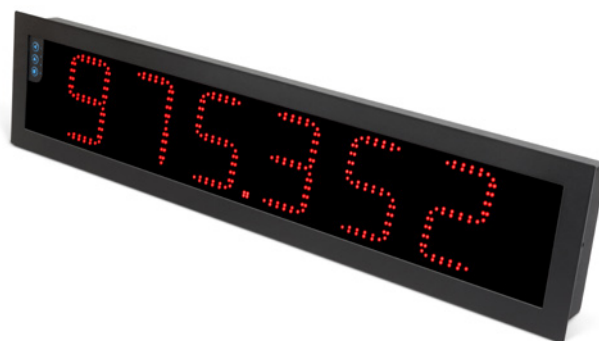


45 YEARS



B46-P for Process signals

Large format meter with 6 digits and 100 mm digit height, for reading up to 50 meters for industrial applications. To measure process signals in mA and Vdc. Versatile and configurable instrument. Provides excitation voltage to power-up the sensor. Front keypad for easy access to the configuration menu and connection for remote keypad. Two universal high and low power supply options for AC and DC. Optional output and control modules for relay output, transistor output, SSR control, analog output retransmission and communications for Modbus RTU and RS-485 ASCII protocols. Sturdy metallic housing with full IP65 protection, for panel mount, wall mount or hanging mount.



Front view

Technical specifications

Reading	
Digits	6
Reading	999999 / -199999
Decimal point	configurable
Led color	red or green
Digit height	100 mm
Type of digit	7 segment
Angle of vision	120°
Input signal	
Signal ranges	4/20 mA, 0/10 Vdc, ±20 mA, ±10 Vdc, ...
Excitation voltage	+20 Vdc, +15 Vdc, +10 Vdc, +5 Vdc (max. 35 mA)
Accuracy	0.05% F.S. ±1 digit
Offset drift	10 ppm/°C
Span drift*	25 ppm/°C
	<i>*span drift value includes offset drift</i>
Readings	15 readings / second
Refresh	15 refresh / second
Response time	<120 mSec. (0 % to 99 % signal)
Input impedance	11 Ohm in mA, 932 KOhm in Vdc
Signal wire diameter	max. 0.5 mm ²
Outputs and configuration	
Output and control options	relays, analog output, serial communications, ...
Configuration	3 button front keypad (connection for remote keypad)
Power	
Power 'H'	85 to 265 Vac and 120 to 370 Vdc (isolated 2500 Vac)
Power 'L'	11 to 36 Vdc (isolated 1500 Vdc)
Consumption	<5.5 W (meter only) <7.0 W (meter with options)
Power wire diameter	max. 2.5 mm ²
Mechanical	
Housing	metallic (textured black painted iron)
Front filter	methacrylate
IP protection	full IP65 housing
Connections	cable gland output internal plug-in screw terminals
Weight	<4500 grams
Mounting	panel, wall, hanging
Front size	740 x 166 mm
Panel cut-out	722 x 148 mm
Deep	80 mm (including terminals)
Operating temperature	0 to 50 °C
Storage temperature	-20 to 70 °C

Order reference

Format	Model	Power	Color	Option 1	Option 2	Option 3	Custom
B46	P	H	R				
		-H (85-265 Vac and 120-370Vdc) -L (11-36 Vdc)	-R (red led) -G (green led)	-R1 (1 relay output) -AO (analog output) -RTU (Modbus RTU) -S4 (RS-485) -S2 (RS-232) -T1 (1 transistor output) -SSR (1 SSR control output) -0 (empty)			



Rear view

Additional documentation

Bxx-P user's manual	www.fema.es/docs/4380_Bxx-P_manual_en.pdf
Series B options	www.fema.es/docs/4326_SERIES-B_OPTIONS_manual_en.pdf
Series B web page	www.fema.es/Series_B

Output and control options

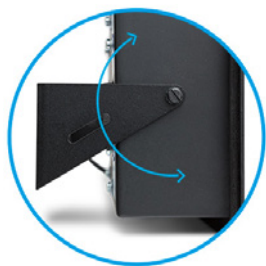
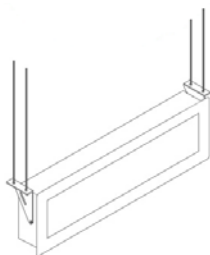
Format	Model	Power	Color	Option 1	Option 2	Option 3	Custom
B46	P	H	R				

	Function	Installable options	Isolation
R1	1 relay output	2	yes
T1	1 transistor output	2	yes
SSR	1 control for SSR relay	2	yes
AO	1 analog output	2	yes
RTU	1 Modbus RTU port	2	yes
S4	1 RS-485 port	2	yes
S2	1 RS-232 port	2	yes

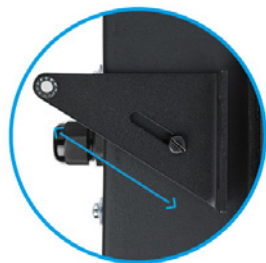
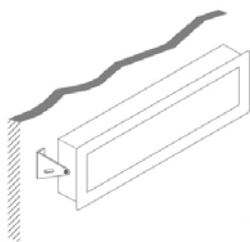
Mounting options



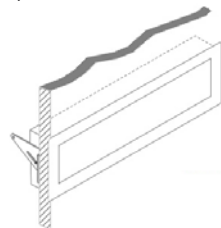
hanging



wall



panel

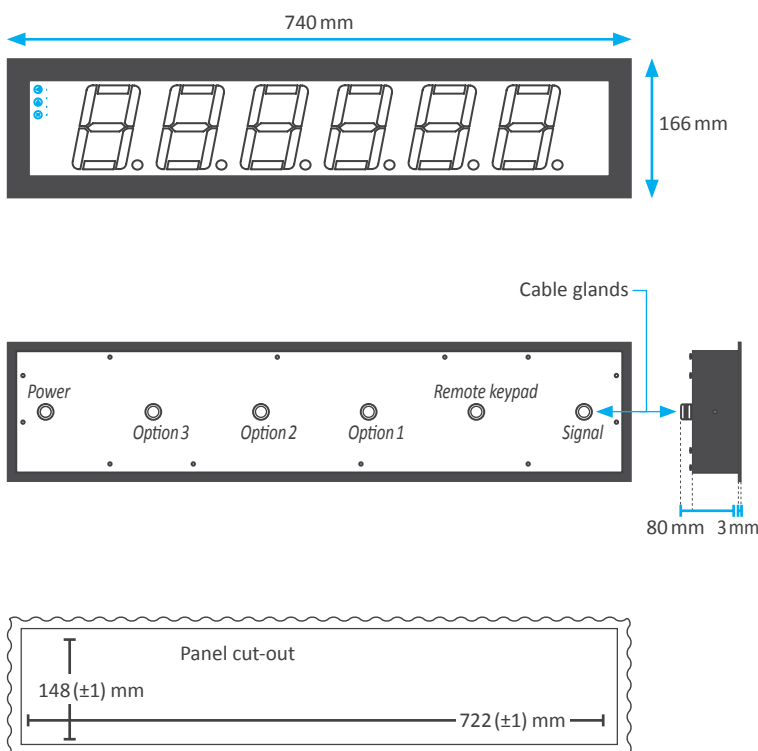


side fixations (included)

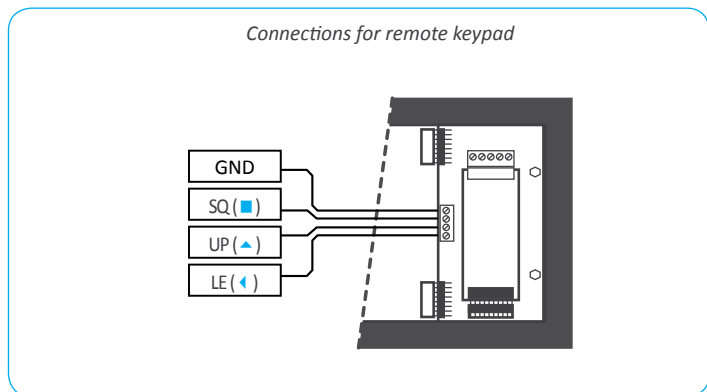
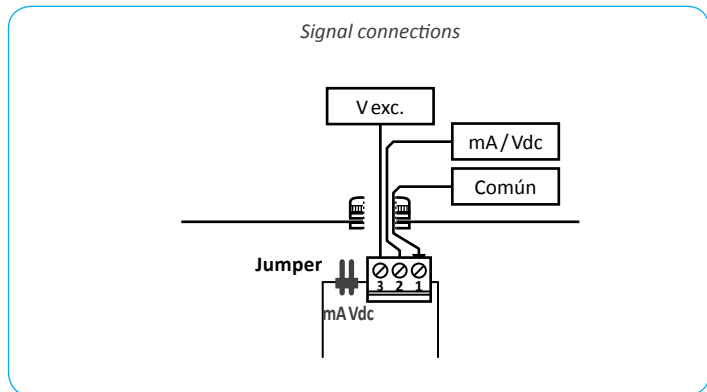
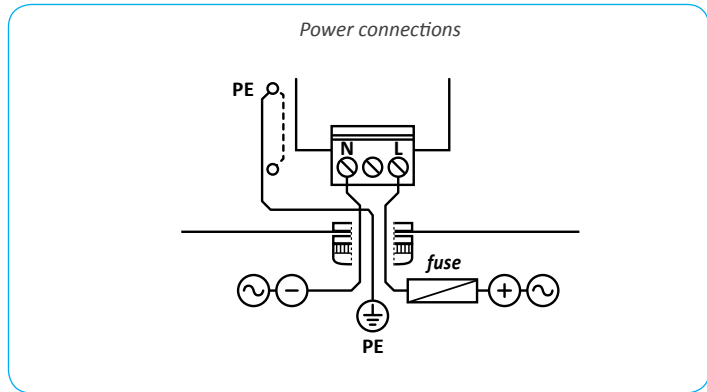
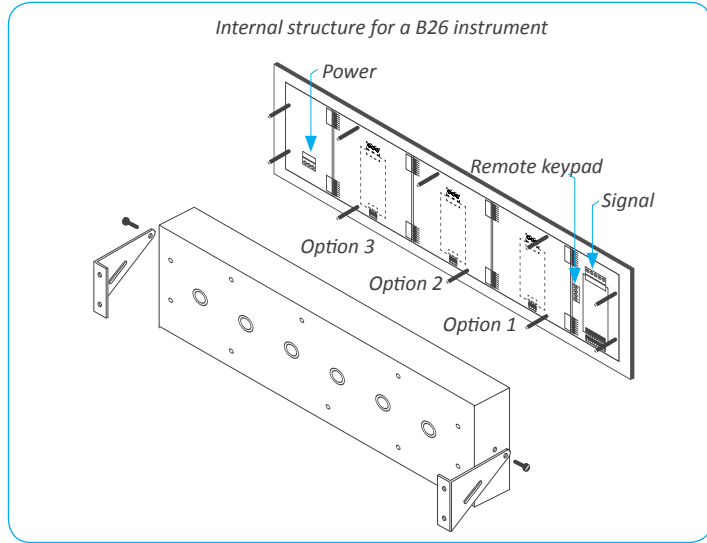
Functions included

- 'Fast access' menu a single press on the front keypad gives access to alarm setpoint modification, memories, ...
- Segment linearization. up to 20 segments for linearization of signals from irregular shaped volumes, tanker ships, ...
- Display filters. recursive filters for noisy signals, optional reading in predefined steps, configurable fixed digits, ...
- 'On power-up' function protects systems at cold start-up.
- Alarms with one or two setpoints, independent activation and deactivation delays, hysteresis, optional manual deactivation of the relay.
- Inverted relay for security applications
- 'Field correction' function for fast and easy offset corrections when installing on the field.
- 'Measure' function for troubleshooting purposes, it displays the actual signal at input terminals, directly in mA or Vdc, without scaling.
- 'Tare' function for weight applications.
- 'Peak & hold' function for test-break applications.
- Brightness 5 levels of brightness intensity.
- Memory maximum, minimum
- Password blocks access to configuration menu.

Dimensions

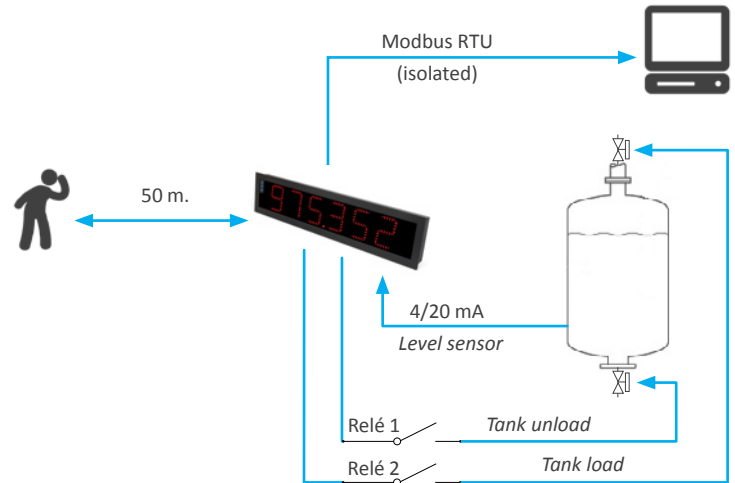


Connections



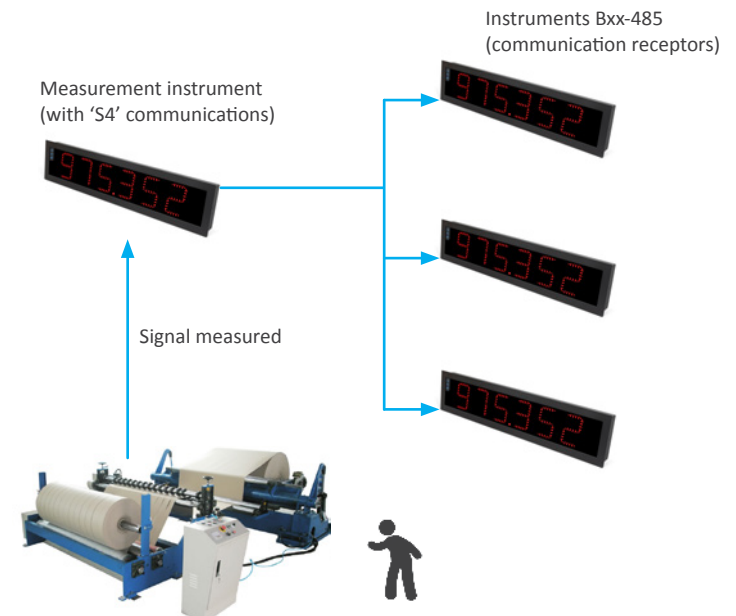
Example of application with control

Reading of the liquid level within a tank with irregular shape. Signal is taken from a pressure probe. Instrument provides two relay outputs to control the liquid load and unload electrovalves of the tank. Additionally, the measured values are retransmitted to a remote data storage center (SCADA or PLC) via Modbus RTU.



One measure, multiple information points

The large format meters from Series B can measure a wide variety of signals, and can integrate multiple output and control options. Option 'S4' for communications can be configured to transmit the measure directly to remote information points.



Other options

Red color

JPG

Red leds

Green color

JPG

Green leds

White color

JPG

White leds

Cable output

JPG

Preinstalled cable, 2 meters

Accessories

RKB

Remote keypad

IPB24

JPG

IP65 protection for the B24 panel junction

IPB26

JPG

IP65 protection for the B26 panel junction

IPB44

JPG

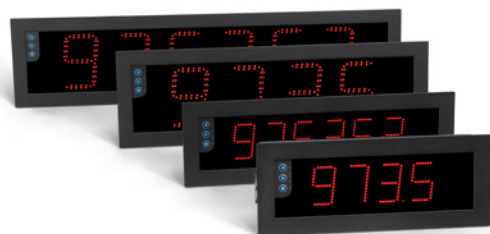
IP65 protection for the B44 panel junction

IPB46

JPG

IP65 protection for the B46 panel junction

Others formats within the Series B



	Digit height	Digits	Reading distance
Format B24	60 mm	4	up to 25 meters
Format B26	60 mm	6	up to 25 meters
Format B44	100 mm	4	up to 50 meters
Format B46	100 mm	6	up to 50 meters

Other process meters

Series M

4, 5 and 6 digits

digit height 14 mm
 color red, green
 vision 5 meters
 size 96 x 48 mm

DIGITAL PANEL METER
SERIES M
 Full Signal Ranges Available

45 YEARS



Series K

Further view

digit height 20 mm
 color red
 vision 8 meters
 size 96 x 48 mm

DIGITAL PANEL METERS
SERIES K
 20 mm Digit Size

45 YEARS



Series S

Compact size

digit height 14 mm
 color red, green
 vision 5 meters
 size 72 x 36 mm

DIGITAL PANEL METERS
SERIES S
 Compact Size 72x36 mm

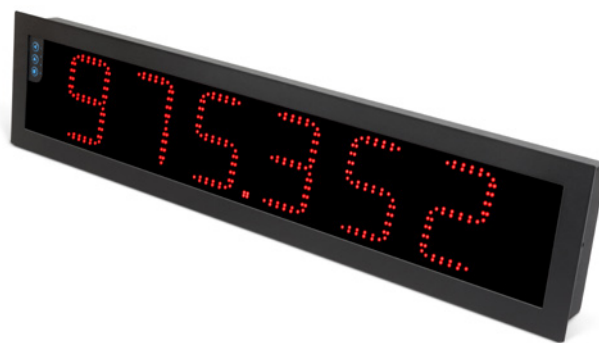
45 YEARS



B46-CR Chronometer



Large format meter with 6 digits and 100 mm digit height, for reading up to 50 meters for industrial applications. Chronometer and time counter functions. Versatile and configurable instrument, with controls for start, stop and reset, with up and down counting, and multiple reading formats. Front keypad for easy access to the configuration menu and connection for remote keypad. Two universal high and low power supply options for AC and DC. Optional output and control modules for relay output, transistor output, SSR control, analog output retransmission and communications for Modbus RTU and RS-485 ASCII protocols. Sturdy metallic housing with full IP65 protection, for panel mount, wall mount or hanging mount.



Front view

Technical specifications

Reading	
Digits	6
Reading	999999 / -199999
Decimal point	configurable
Led color	red or green
Digit height	100 mm
Type of digit	7 segment
Angle of vision	120°
Time counter	
Reading formats (<i>s=sec., m=min., h=hour, d=day</i>)	'mm.ss.cc' 'hh.mm.ss' 'dd.hh.mm' 'mmmm.ss' 'hhhh.mm' 'dddd.hh' 'sssss' 'sssss.s' 'ssss.ss' 'mmmmmm' 'mmmmm.m' 'mmmm.mm' 'hhhhh' 'hhhhh.h' 'hhhh.hh'
Counting direction	up, down
Controls	start, stop, reset
Control activation	free potential contact (by default) and configurable for push-pull, NPN, PNP, inductive, ...
Maximum Vdc at input terminals	±30 Vdc
Reset control	remote, front reset and linked to alarm
Accuracy	100 ppm
Display refresh	12 refresh / second
Reading memory	maintains in case of power loss
Signal wire diameter	max. 0.5 mm ²
Outputs and configuration	
Output and control options	relays, analog output, serial communications, ...
Configuration	3 button front keypad (connection for remote keypad)
Power	
Power 'H'	85 to 265 Vac and 120 to 370 Vdc (isolated 2500 Vac)
Power 'L'	11 to 36 Vdc (isolated 1500 Vdc)
Consumption	<5.5 W (meter only) <7.0 W (meter with options)
Power wire diameter	max. 2.5 mm ²
Mechanical	
Housing	metallic (textured black painted iron)
Front filter	methacrylate
IP protection	full IP65 housing
Connections	cable gland output internal plug-in screw terminals
Weight	<4500 grams
Mounting	panel, wall, hanging
Front size	740 x 166 mm
Panel cut-out	722 x 148 mm
Deep	80 mm (including terminals)
Operating temperature	0 to 50 °C
Storage temperature	-20 to 70 °C

Order reference

Format	Model	Power	Color	Option 1	Option 2	Option 3	Custom
B46	CR	H	R				
		-H (85-265 Vac and 120-370Vdc) -L (11-36 Vdc)	-R (red led) -G (green led)	-R1 (1 relay output) -AO (analog output) -RTU (Modbus RTU) -S4 (RS-485) -S2 (RS-232) -T1 (1 transistor output) -SSR (1 SSR control output) -0 (empty)			



Rear view

Additional documentation

Bxx-CR user's manual	www.fema.es/docs/4384_Bxx-CR_manual_en.pdf
Series B options	www.fema.es/docs/4326_SERIES-B_OPTIONS_manual_en.pdf
Series B web page	www.fema.es/Series_B

Output and control options

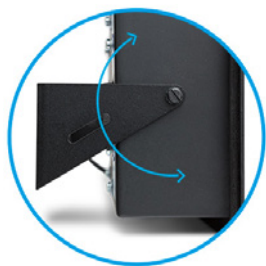
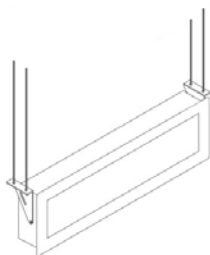
Format	Model	Power	Color	Option 1	Option 2	Option 3	Custom
B46	CR	H	R				

	Function	Installable options	Isolation
R1	1 relay output	2	yes
T1	1 transistor output	2	yes
SSR	1 control for SSR relay	2	yes
AO	1 analog output	2	yes
RTU	1 Modbus RTU port	2	yes
S4	1 RS-485 port	2	yes
S2	1 RS-232 port	2	yes

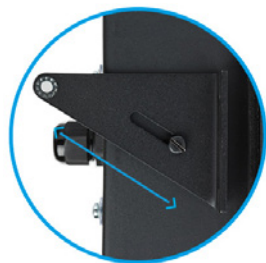
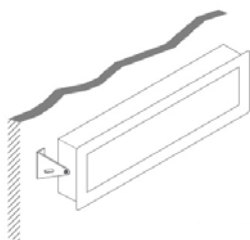
Mounting options



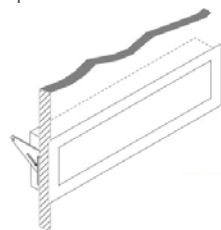
hanging



wall



panel

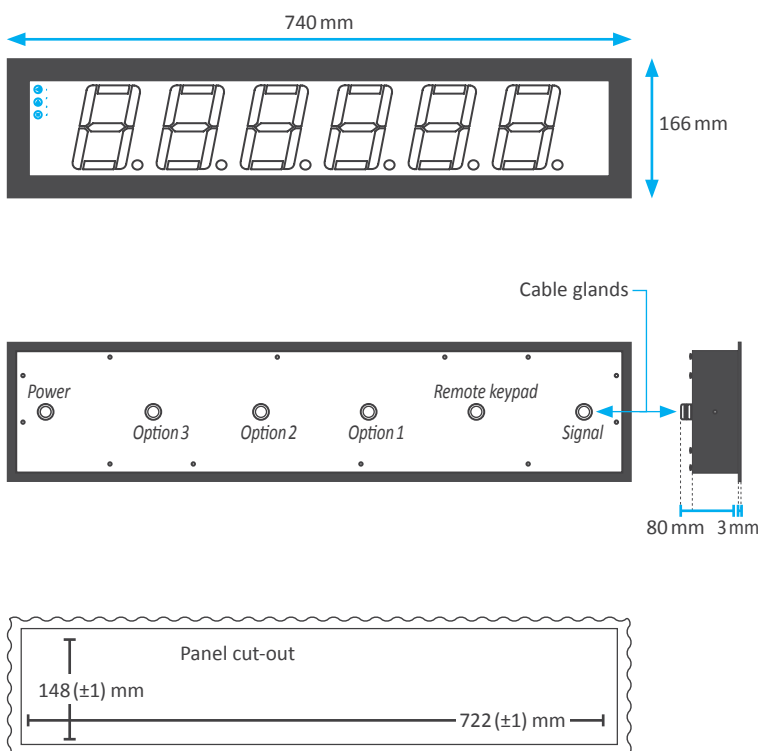


side fixations (included)

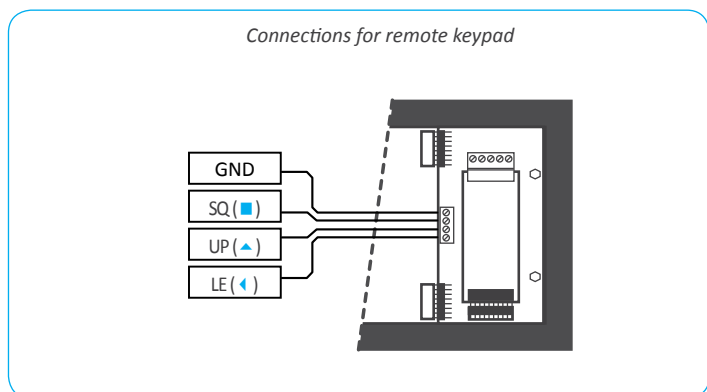
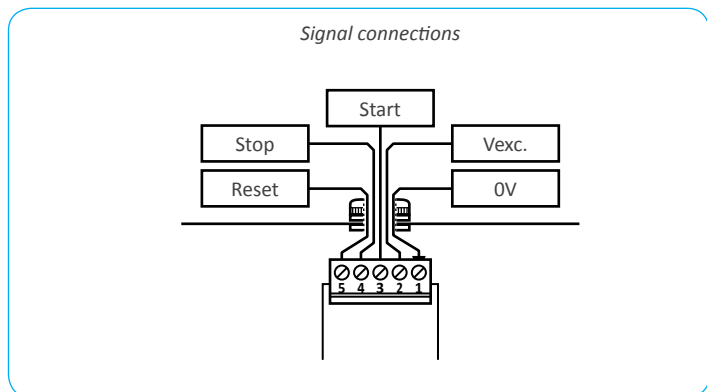
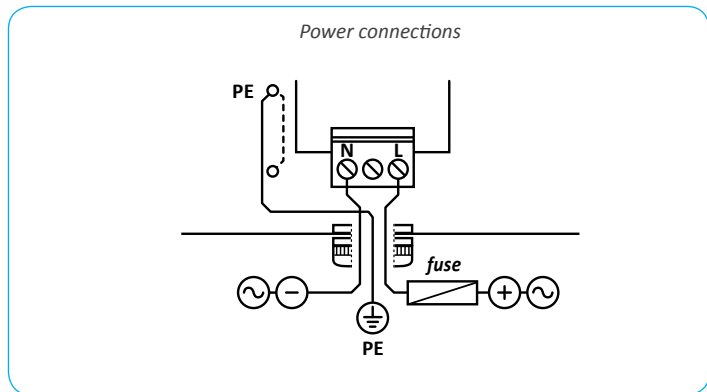
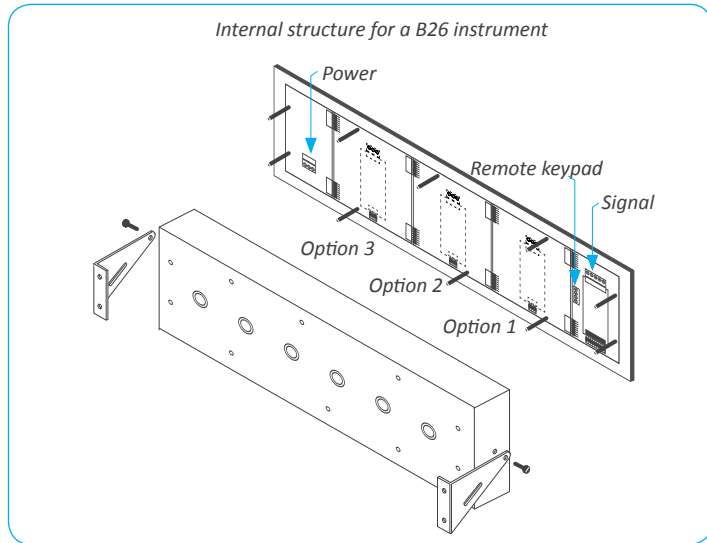
Functions included

- 'Fast access' menu a single press on the front keypad gives access to alarm setpoint modification, preset, memories, ...
- Reading 15 different reading modes
- Counting direction up, down
- Configurable reset front and rear reset, and reset linked to alarm activation
- Preset configurable
- Retention memory recovers the counting value in case of power loss
- Special modes control for 'up' or 'down' counting, control for 'hold' counting, second counter for cycles, second counter for total counting time, second counter for exceeded time counting, memory of longest and shortest cycles.
- 'On power-up' function protects systems at cold start-up.
- Alarms with one or two setpoints, independent activation and deactivation delays, hysteresis, optional manual deactivation of the relay.
- Inverted relay for security applications
- Brightness 5 levels of brightness intensity.
- Memory maximum, minimum, cycles, ...
- Password blocks access to configuration menu.

Dimensions

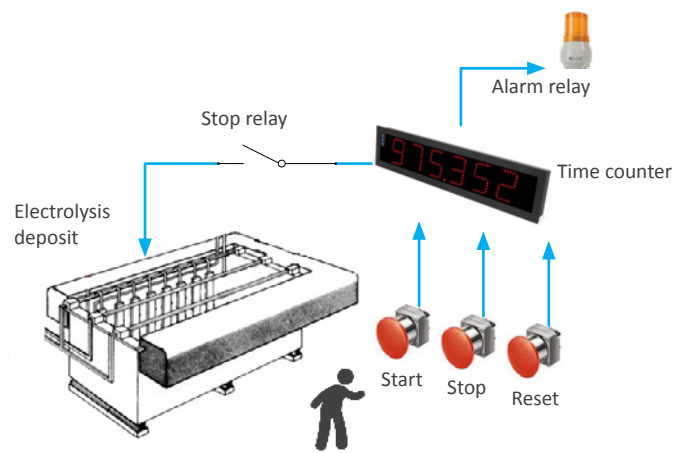


Connections



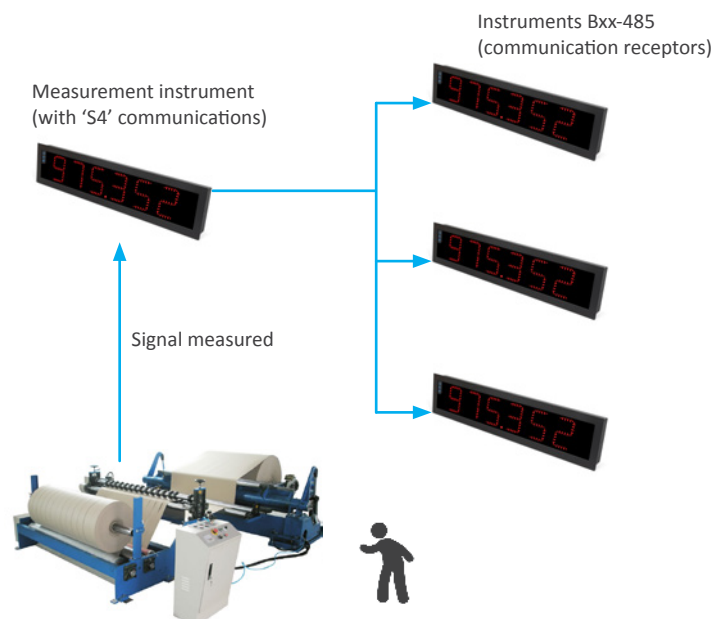
Example of application with control

Reading and control of the total electrolysis time applied to a chemical process. The operator configures the duration time for the treatment and the instrument activates a relay when the configured time is over. The operator controls the reset to '0' and the start of the counting. The special mode 'exceeded time' shows the accumulated time since the alarm was activated. The special mode 'total time' provides information on the total electrolysis times applied since last reset, useful to control the maintenance times for the electrolysis machine.



One measure, multiple information points

The large format meters from Series B can measure a wide variety of signals, and can integrate multiple output and control options. Option 'S4' for communications can be configured to transmit the measure directly to remote information points.



Other options

Red color

JPG

Red leds

Green color

JPG

Green leds

White color

JPG

White leds

Cable output

JPG

Preinstalled cable, 2 meters

Accessories

RKB

Remote keypad

IPB24

JPG

IP65 protection for the B24 panel junction

IPB26

JPG

IP65 protection for the B26 panel junction

IPB44

JPG

IP65 protection for the B44 panel junction

IPB46

JPG

IP65 protection for the B46 panel junction

Others formats within the Series B



	Digit height	Digits	Reading distance
Format B24	60 mm	4	up to 25 meters
Format B26	60 mm	6	up to 25 meters
Format B44	100 mm	4	up to 50 meters
Format B46	100 mm	6	up to 50 meters

Other chronometers and time counters

Series M

4, 5 and 6 digits

digit height 14 mm
 color red, green
 vision 5 meters
 size 96 x 48 mm

DIGITAL PANEL METER
SERIES M
 Full Signal Ranges Available



45 YEARS

Series K

Further view

digit height 20 mm
 color red
 vision 8 meters
 size 96 x 48 mm

DIGITAL PANEL METERS
SERIES K
 20 mm Digit Size



45 YEARS

Series S

Compact size

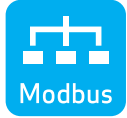
digit height 14 mm
 color red, green
 vision 5 meters
 size 72 x 36 mm

DIGITAL PANEL METERS
SERIES S
 Compact Size 72x36 mm

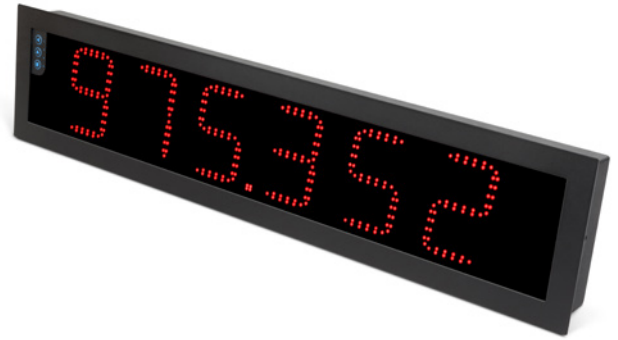


45 YEARS

B46-RTU Modbus RTU repeater



Large format meter with 6 digits and 100 mm digit height, for reading up to 50 meters for industrial applications. Repeater for Modbus RTU protocol. Versatile and configurable instrument, works with 16 and 32 bits registers, with local or remote alarm control, 'watchdog' and 'bus activity' functions. Front keypad for easy access to the configuration menu and connection for remote keypad. Two universal high and low power supply options for AC and DC. Optional output and control modules for relay output, transistor output, SSR control, analog output retransmission and communications for Modbus RTU and RS-485 ASCII protocols. Sturdy metallic housing with full IP65 protection, for panel mount, wall mount or hanging mount.



Front view

Technical specifications

Reading	
Digits	6
Reading	999999 / -199999
Decimal point	configurable
Led color	red or green
Digit height	100 mm
Type of digit	7 segment
Angle of vision	120°
Signal	
Protocol	Modbus RTU
Bus	RS-485
Function	'slave' for Modbus RTU protocol
Speed	38.400 bps to 600 bps
Data format	8n1, 8e1, 8o1, 8n2
Addresses	1 to 247
Bus terminator	not included
Watchdog	configurable from 1 to 120 seconds
Signal wire diameter	max. 0.5 mm ²
Outputs and configuration	
Output and control options	relays, analog output, serial communications, ...
Configuration	3 button front keypad (connection for remote keypad)
Power	
Power 'H'	85 to 265 Vac and 120 to 370 Vdc (isolated 2500 Vac)
Power 'L'	11 to 36 Vdc (isolated 1500 Vdc)
Consumption	<5.5 W (meter only) <7.0 W (meter with options)
Power wire diameter	max. 2.5 mm ²
Mechanical	
Housing	metallic (textured black painted iron)
Front filter	methacrylate
IP protection	full IP65 housing
Connections	cable gland output internal plug-in screw terminals
Weight	<4500 grams
Mounting	panel, wall, hanging
Front size	740 x 166 mm
Panel cut-out	722 x 148 mm
Deep	80 mm (including terminals)
Operating temperature	0 to 50 °C
Storage temperature	-20 to 70 °C

Order reference

Format	Model	Power	Color	Option 1	Option 2	Option 3	Custom
B46	RTU	H	R				
		-H (85-265 Vac and 120-370Vdc) -L (11-36 Vdc)	-R (red led) -G (green led)	-R1 (1 relay output) -AO (analog output) -RTU (Modbus RTU) -S4 (RS-485) -S2 (RS-232) -T1 (1 transistor output) -SSR (1 SSR control output) -0 (empty)			



Rear view

Additional documentation

Bxx-RTU user's manual	www.fema.es/docs/4381_Bxx-RTU.pdf
Series B options	www.fema.es/docs/4326_SERIES-B_OPTIONS_manual_en.pdf
Series B web page	www.fema.es/Series_B

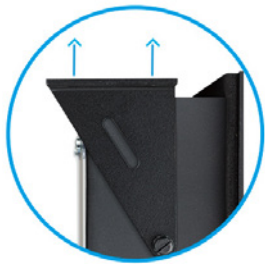
Output and control options

Format Model Power Color Option 1 Option 2 Option 3 Custom

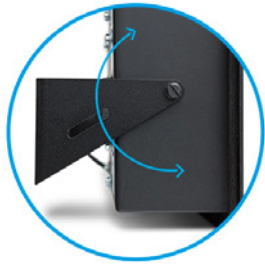
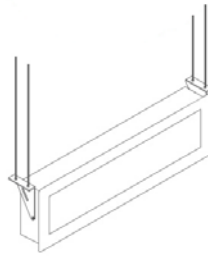
B46 - RTU - H - R - [] - [] - [] - []

	Function	Installable options	Isolation
R1	1 relay output	2	yes
T1	1 transistor output	2	yes
SSR	1 control for SSR relay	2	yes
AO	1 analog output	2	yes
RTU	1 Modbus RTU port	2	yes
S4	1 RS-485 port	2	yes
S2	1 RS-232 port	2	yes

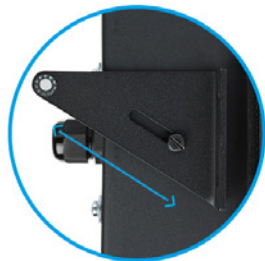
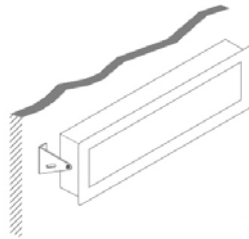
Mounting options



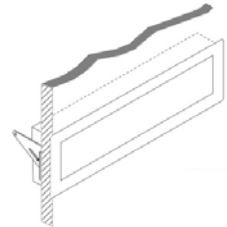
hanging



wall



panel

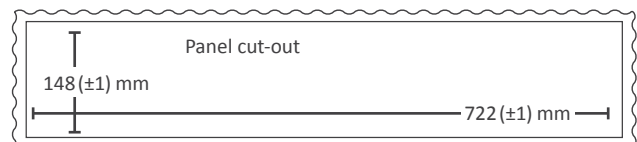
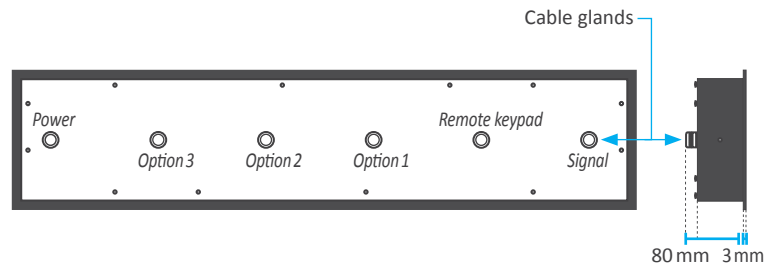
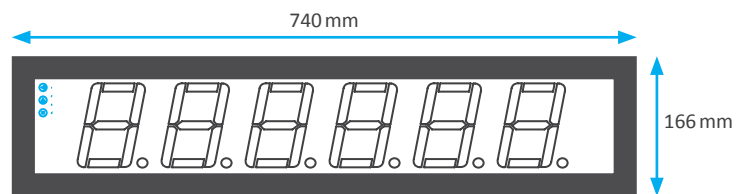


side fixations (included)

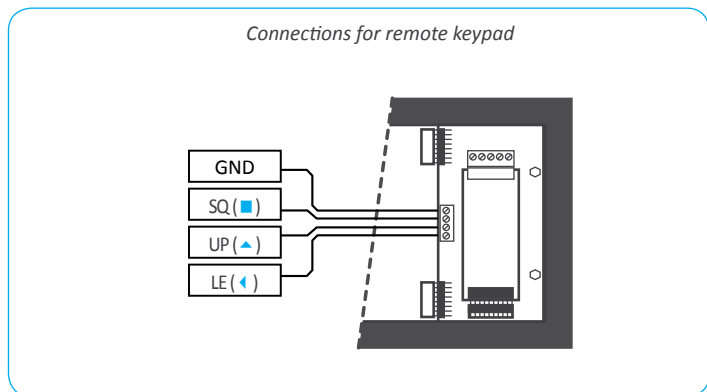
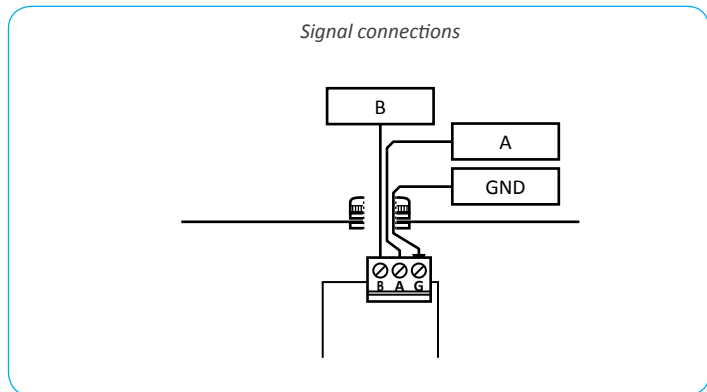
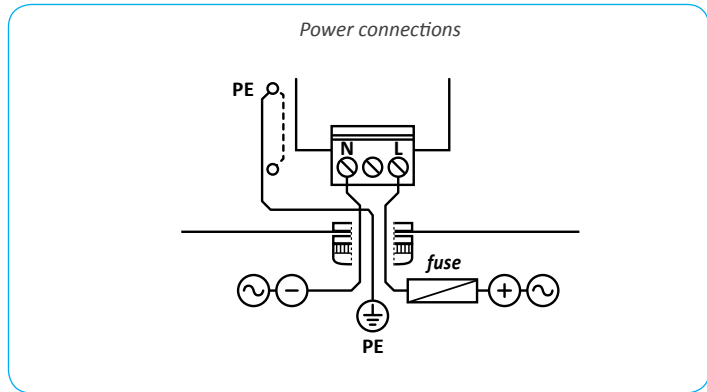
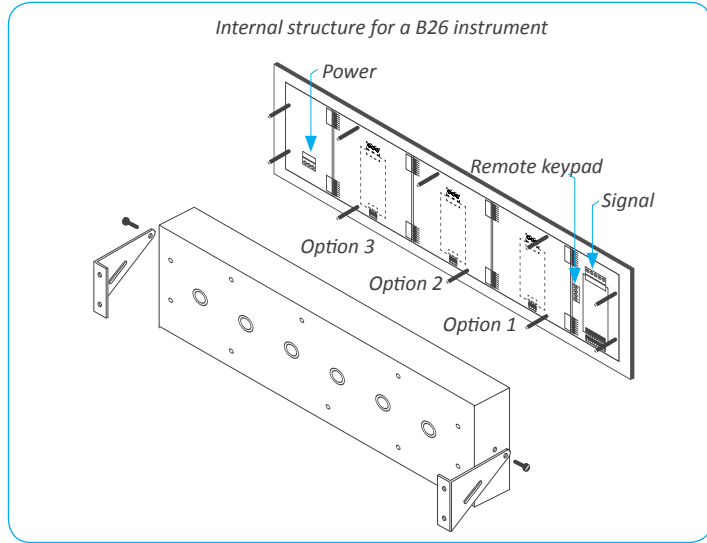
Functions included

- Remote or local alarms 'Full slave' mode allows for remote control of the alarms by writing to registers or coils. 'Process slave' mode allows for local control of alarms, based on local alarm configuration and actual display value.
- 'Watchdog' function generates error after predefined time without communication with the master. Alarm can be linked to the watchdog function.
- 'Bus activity' function detects electrical activity on the bus. Useful for troubleshooting.
- 'Fast access' menu a single press on the front keypad gives access to the instrument address or alarm setpoint.
- 'On power-up' function protects systems at cold start-up.
- Brightness 5 levels of brightness intensity.
- Password blocks access to configuration menu.

Dimensions

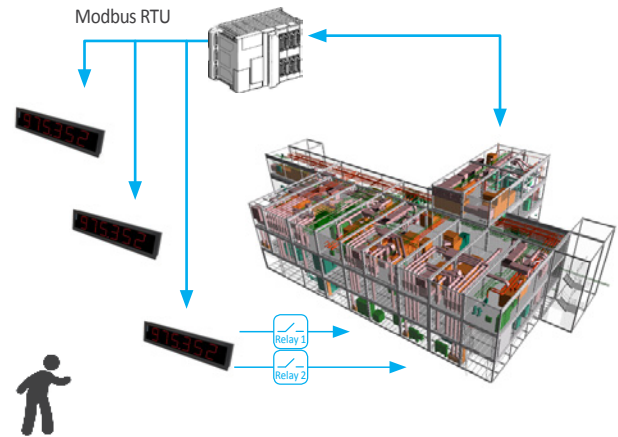


Connections



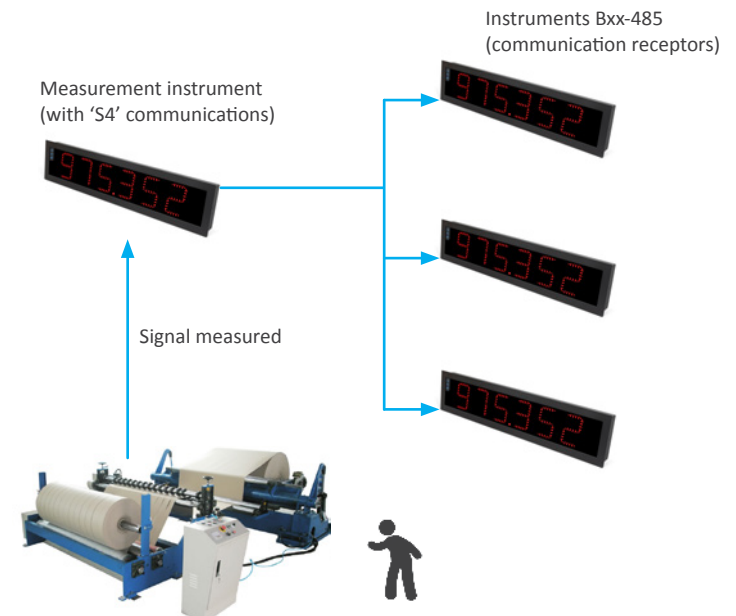
Example of application with control

A manufacturing line is controlled from a centralized PLC or SCADA. The PLC receives and manages all the information related to process control. Some information is critical to the local operators, and it is communicated in a numerical format through the Modbus RTU repeaters via the Modbus RTU protocol. Critical information depends on each application, for example, production rates, total stop times, trouble codes, etc.



One measure, multiple information points

The large format meters from Series B can measure a wide variety of signals, and can integrate multiple output and control options. Option 'S4' for communications can be configured to transmit the measure directly to remote information points.



Other options

Red color

JPG

Red leds

Green color

JPG

Green leds

White color

JPG

White leds

Cable output

JPG

Preinstalled cable, 2 meters

Accessories

RKB

Remote keypad

IPB24

JPG

IP65 protection for the B24 panel junction

IPB26

JPG

IP65 protection for the B26 panel junction

IPB44

JPG

IP65 protection for the B44 panel junction

IPB46

JPG

IP65 protection for the B46 panel junction

Others formats within the Series B



	Digit height	Digits	Reading distance
Format B24	60 mm	4	up to 25 meters
Format B26	60 mm	6	up to 25 meters
Format B44	100 mm	4	up to 50 meters
Format B46	100 mm	6	up to 50 meters

Other Modbus RTU repeaters

Series M

4, 5 and 6 digits

digit height 14 mm
 color red, green
 vision 5 meters
 size 96 x 48 mm

DIGITAL PANEL METER
SERIES M
 Full Signal Ranges Available



45 YEARS

Series K

Further view

digit height 20 mm
 color red
 vision 8 meters
 size 96 x 48 mm

DIGITAL PANEL METERS
SERIES K
 20 mm Digit Size



45 YEARS

Series S

Compact size

digit height 14 mm
 color red, green
 vision 5 meters
 size 72 x 36 mm

DIGITAL PANEL METERS
SERIES S
 Compact Size 72x36 mm

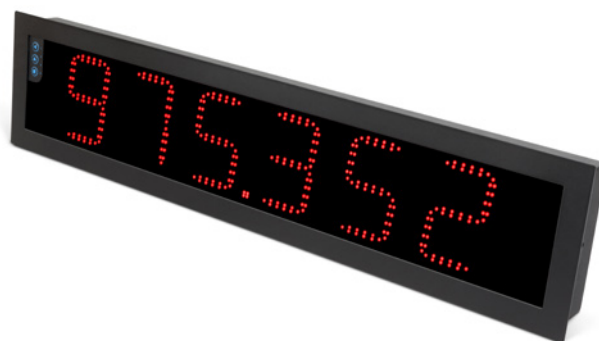


45 YEARS

B46-485 RS-485 ASCII repeater



Large format meter with 6 digits and 100 mm digit height, for reading up to 50 meters for industrial applications. Repeater for ASCII protocol over RS-485 bus. Versatile and configurable instrument, with local or remote alarm control, 'watchdog' and 'bus activity' functions. Front keypad for easy access to the configuration menu and connection for remote keypad. Two universal high and low power supply options for AC and DC. Optional output and control modules for relay output, transistor output, SSR control, analog output retransmission and communications for Modbus RTU and RS-485 ASCII protocols. Sturdy metallic housing with full IP65 protection, for panel mount, wall mount or hanging mount.



Front view

Technical specifications

Reading	
Digits	6
Reading	999999 / -199999
Decimal point	configurable
Led color	red or green
Digit height	100 mm
Type of digit	7 segment
Angle of vision	120°
Signal	
Protocol	ASCII
Bus	RS-485
Function	repeater for ASCII code
Speed	38.400 bps to 600 bps
Data format	8n1, 8e1, 8o1, 8n2
Addresses	1 to 31
Bus terminator	not included
Watchdog	configurable from 1 to 120 seconds
Signal wire diameter	max. 0.5 mm ²
Outputs and configuration	
Output and control options	relays, analog output, serial communications, ...
Configuration	3 button front keypad (connection for remote keypad)
Power	
Power 'H'	85 to 265 Vac and 120 to 370 Vdc (isolated 2500 Vac)
Power 'L'	11 to 36 Vdc (isolated 1500 Vdc)
Consumption	<5.5 W (meter only) <7.0 W (meter with options)
Power wire diameter	max. 2.5 mm ²
Mechanical	
Housing	metallic (textured black painted iron)
Front filter	methacrylate
IP protection	full IP65 housing
Connections	cable gland output internal plug-in screw terminals
Weight	<4500 grams
Mounting	panel, wall, hanging
Front size	740 x 166 mm
Panel cut-out	722 x 148 mm
Deep	80 mm (including terminals)
Operating temperature	0 to 50 °C
Storage temperature	-20 to 70 °C

Order reference

Format	Model	Power	Color	Option 1	Option 2	Option 3	Custom
B46	485	H	R				
		-H (85-265 Vac and 120-370Vdc) -L (11-36 Vdc)	-R (red led) -G (green led)	-R1 (1 relay output) -AO (analog output) -RTU (Modbus RTU) -S4 (RS-485) -S2 (RS-232) -T1 (1 transistor output) -SSR (1 SSR control output) -0 (empty)			



Rear view

Additional documentation

Bxx-485 user's manual	www.fema.es/docs/4382_Bxx-485.pdf
Series B options	www.fema.es/docs/4326_SERIES-B_OPTIONS_manual_en.pdf
Series B web page	www.fema.es/Series_B

Output and control options

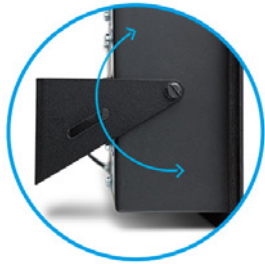
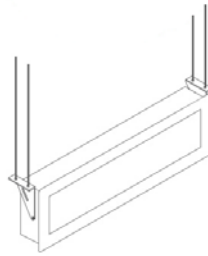
Format	Model	Power	Color	Option 1	Option 2	Option 3	Custom
B46	485	H	R				

	Function	Installable options	Isolation
R1	1 relay output	2	yes
T1	1 transistor output	2	yes
SSR	1 control for SSR relay	2	yes
AO	1 analog output	2	yes
RTU	1 Modbus RTU port	2	yes
S4	1 RS-485 port	2	yes
S2	1 RS-232 port	2	yes

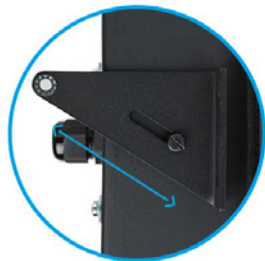
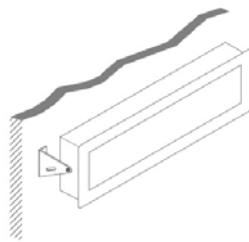
Mounting options



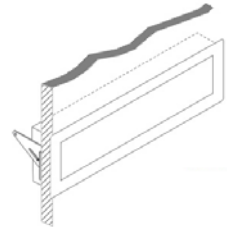
hanging



wall



panel

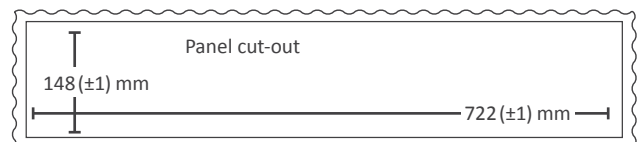
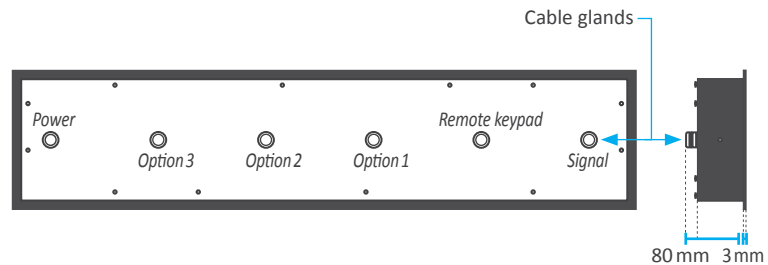
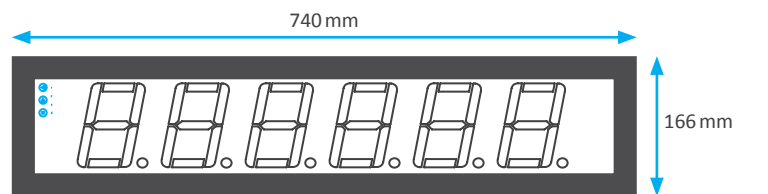


side fixations (included)

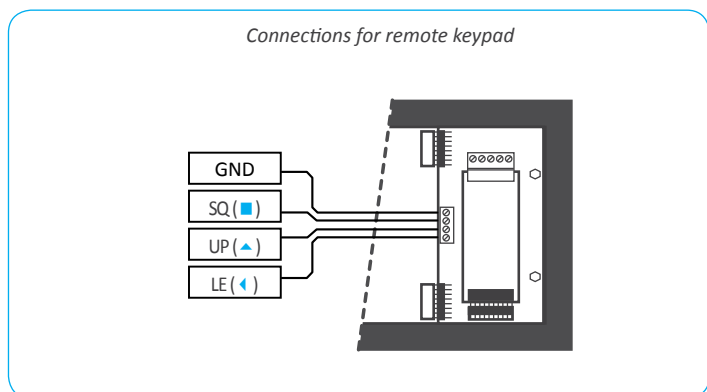
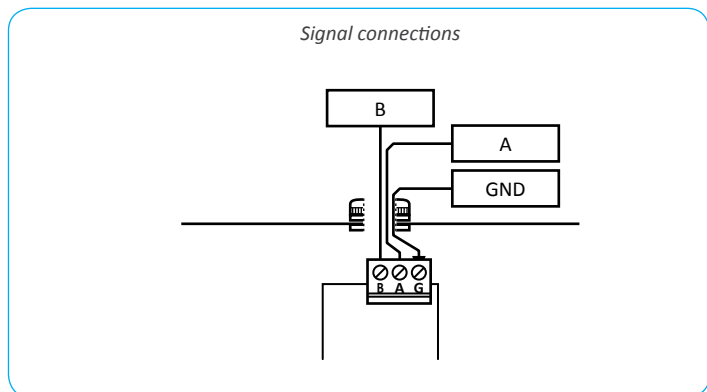
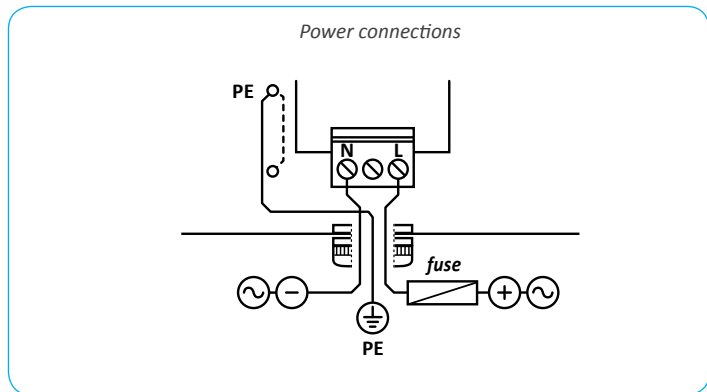
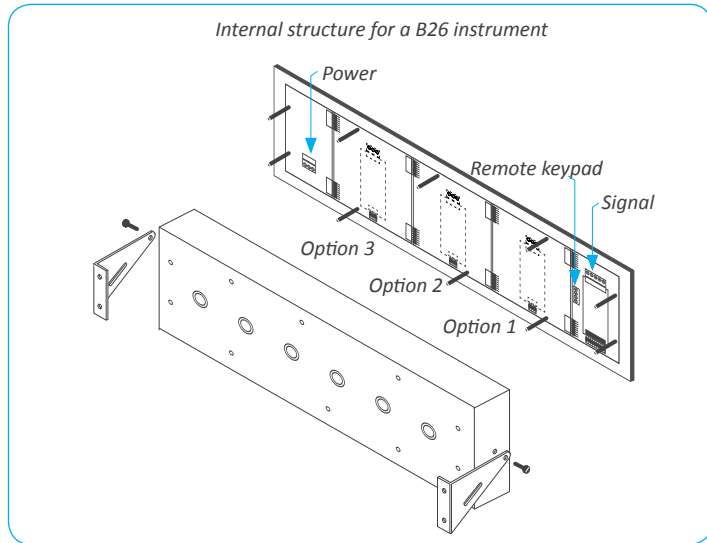
Functions included

- Remote or local alarms 'Full slave' mode allows for remote control of the alarms by writing to registers or coils. 'Process slave' mode allows for local control of alarms, based on local alarm configuration and actual display value.
- 'Text' mode in 'Text' mode, ASCII characters received are not translated to number, but are directly displayed as 7 segment characters. Alphanumeric characters are allowed and will be translated to 7 segment. Alarms are controlled remotely.
- 'Watchdog' function generates error after predefined time without communication with the master. Alarm can be linked to the watchdog function.
- 'Bus activity' function detects electrical activity on the bus. Useful for troubleshooting.
- 'Fast access' menu a single press on the front keypad gives access to the instrument address or alarm setpoint.
- 'On power-up' function protects systems at cold start-up.
- Brightness 5 levels of brightness intensity.
- Password blocks access to configuration menu.

Dimensions

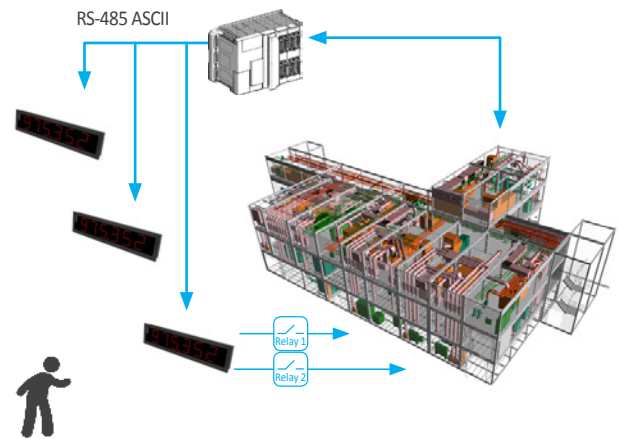


Connections



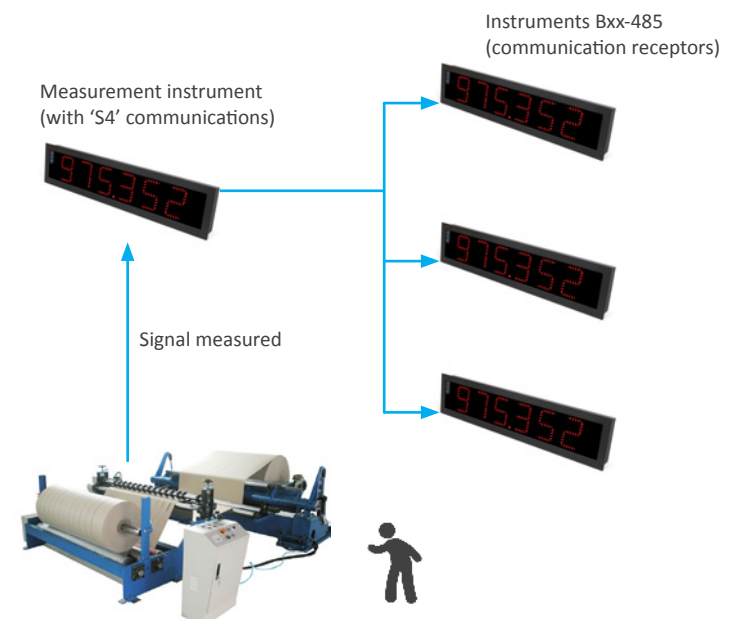
Example of application with control

A manufacturing line is controlled from a centralized PLC or SCADA. The PLC receives and manages all the information related to process control. Some information is critical to the local operators, and it is communicated through the ASCII protocol repeaters. Critical information depends on each application, for example, production rates, total stop times, trouble codes, etc.



One measure, multiple information points

The large format meters from Series B can measure a wide variety of signals, and can integrate multiple output and control options. Option 'S4' for communications can be configured to transmit the measure directly to remote information points.



Other options

Red color

JPG

Red leds

Green color

JPG

Green leds

White color

JPG

White leds


Cable output

JPG

Preinstalled cable, 2 meters

Accessories

RKB



Remote keypad

IPB24

JPG

IP65 protection for the B24 panel junction

IPB26

JPG

IP65 protection for the B26 panel junction

IPB44

JPG

IP65 protection for the B44 panel junction

IPB46

JPG

IP65 protection for the B46 panel junction

Others formats within the Series B



	Digit height	Digits	Reading distance
Format B24	60 mm	4	up to 25 meters
Format B26	60 mm	6	up to 25 meters
Format B44	100 mm	4	up to 50 meters
Format B46	100 mm	6	up to 50 meters

Other RS-485 ASCII repeaters

Series M

4, 5 and 6 digits

digit height 14 mm
 color red, green
 vision 5 meters
 size 96 x 48 mm

DIGITAL PANEL METER
SERIES M
 Full Signal Ranges Available



45 YEARS

Series K

Further view

digit height 20 mm
 color red
 vision 8 meters
 size 96 x 48 mm

DIGITAL PANEL METERS
SERIES K
 20 mm Digit Size



45 YEARS

Series S

Compact size

digit height 14 mm
 color red, green
 vision 5 meters
 size 72 x 36 mm

DIGITAL PANEL METERS
SERIES S
 Compact Size 72x36 mm

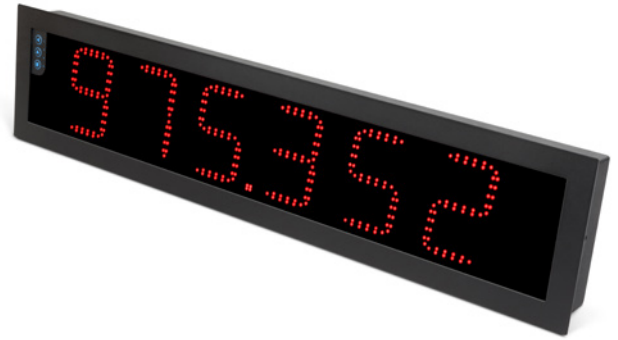


45 YEARS

B46-232 RS-232 ASCII repeater



Large format meter with 6 digits and 100 mm digit height, for reading up to 50 meters for industrial applications. Repeater for ASCII protocol over RS-232 bus. Versatile and configurable instrument, with local or remote alarm control, 'watchdog' and 'bus activity' functions. Front keypad for easy access to the configuration menu and connection for remote keypad. Two universal high and low power supply options for AC and DC. Optional output and control modules for relay output, transistor output, SSR control, analog output retransmission and communications for Modbus RTU and RS-485 ASCII protocols. Sturdy metallic housing with full IP65 protection, for panel mount, wall mount or hanging mount.



Front view

Technical specifications

Reading	
Digits	6
Reading	999999 / -199999
Decimal point	configurable
Led color	red or green
Digit height	100 mm
Type of digit	7 segment
Angle of vision	120°
Signal	
Protocol	ASCII
Bus	RS-232
Function	repeater for ASCII code
Speed	38.400 bps to 600 bps
Data format	8n1, 8e1, 8o1, 8n2
Addresses	1 to 31 ('daisy-chain' connections)
Bus terminator	not included
Watchdog	configurable from 1 to 120 seconds
Signal wire diameter	max. 0.5 mm ²
Outputs and configuration	
Output and control options	relays, analog output, serial communications, ...
Configuration	3 button front keypad (connection for remote keypad)
Power	
Power 'H'	85 to 265 Vac and 120 to 370 Vdc (isolated 2500 Vac)
Power 'L'	11 to 36 Vdc (isolated 1500 Vdc)
Consumption	<5.5 W (meter only) <7.0 W (meter with options)
Power wire diameter	max. 2.5 mm ²
Mechanical	
Housing	metallic (textured black painted iron)
Front filter	methacrylate
IP protection	full IP65 housing
Connections	cable gland output internal plug-in screw terminals
Weight	<4500 grams
Mounting	panel, wall, hanging
Front size	740 x 166 mm
Panel cut-out	722 x 148 mm
Deep	80 mm (including terminals)
Operating temperature	0 to 50 °C
Storage temperature	-20 to 70 °C

Order reference

Format	Model	Power	Color	Option 1	Option 2	Option 3	Custom
B46	232	H	R				
		-H (85-265 Vac and 120-370Vdc) -L (11-36 Vdc)	-R (red led) -G (green led)	-R1 (1 relay output) -AO (analog output) -RTU (Modbus RTU) -S4 (RS-485) -S2 (RS-232) -T1 (1 transistor output) -SSR (1 SSR control output) -0 (empty)			



Rear view

Additional documentation

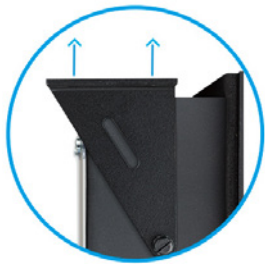
Bxx-232 user's manual	www.fema.es/docs/3819_Bxx-232.pdf
Series B options	www.fema.es/docs/4326_SERIES-B_OPTIONS_manual_en.pdf
Series B web page	www.fema.es/Series_B

Output and control options

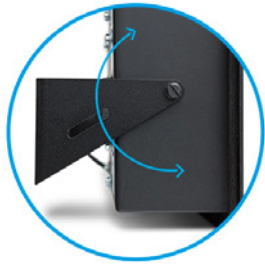
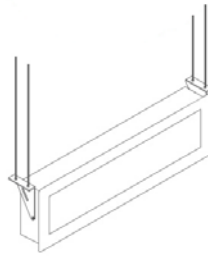
Format	Model	Power	Color	Option 1	Option 2	Option 3	Custom
B46	232	H	R				

	Function	Installable options	Isolation
R1	1 relay output	2	yes
T1	1 transistor output	2	yes
SSR	1 control for SSR relay	2	yes
AO	1 analog output	2	yes
RTU	1 Modbus RTU port	2	yes
S4	1 RS-485 port	2	yes
S2	1 RS-232 port	2	yes

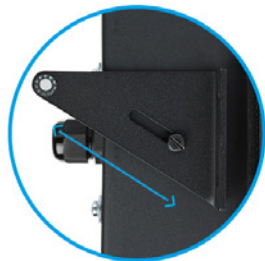
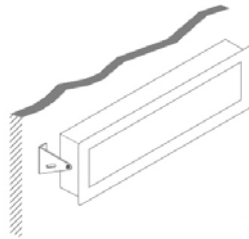
Mounting options



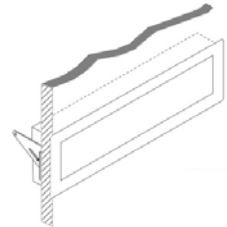
hanging



wall



panel

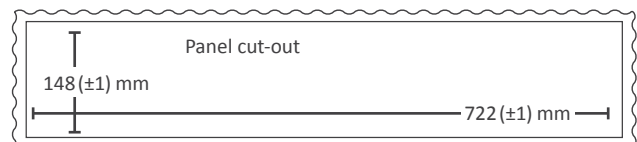
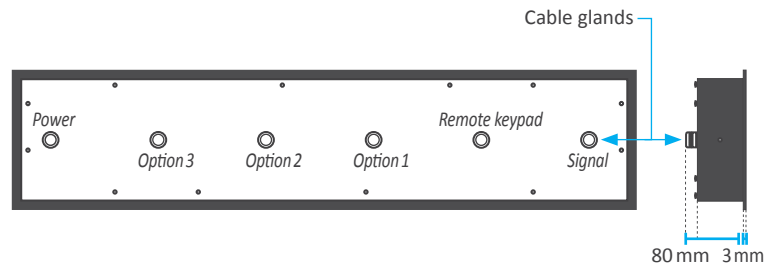
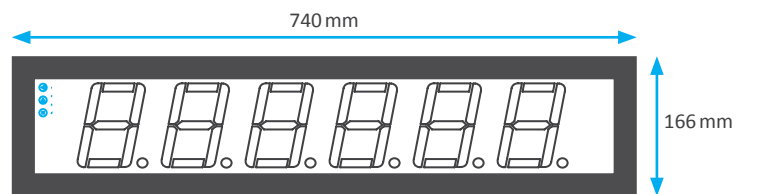


side fixations (included)

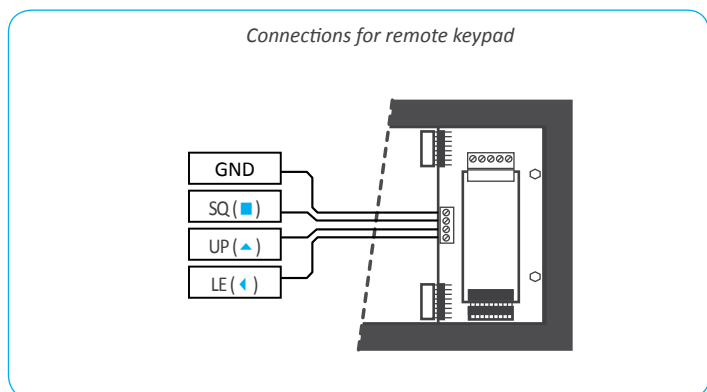
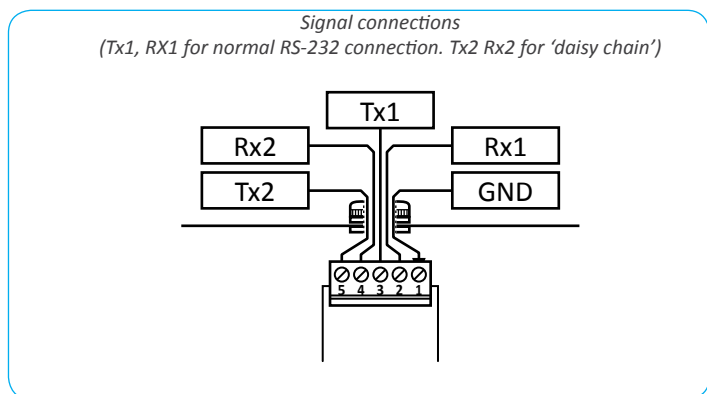
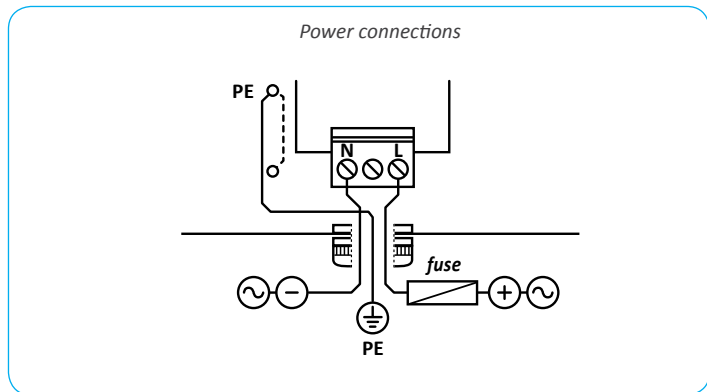
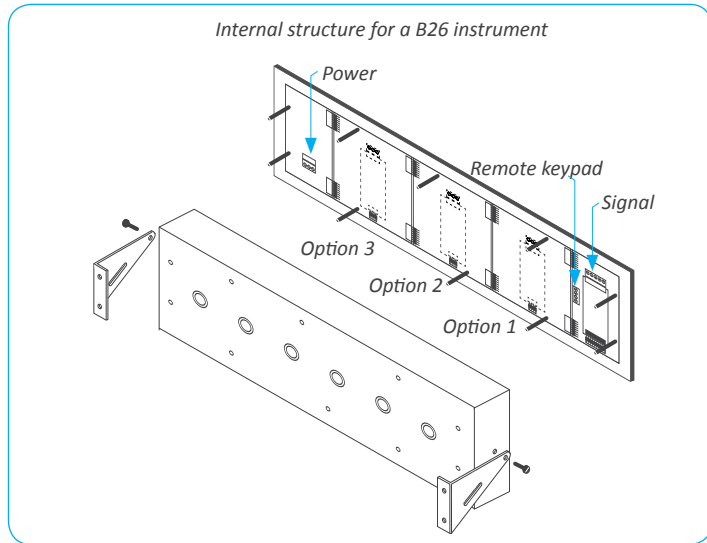
Functions included

- Remote or local alarms 'Full slave' mode allows for remote control of the alarms by writing to registers or coils. 'Process slave' mode allows for local control of alarms, based on local alarm configuration and actual display value.
- 'Text' mode in 'Text' mode, ASCII characters received are not translated to number, but are directly displayed as 7 segment characters. Alphanumeric characters are allowed and will be translated to 7 segment. Alarms are controlled remotely.
- 'Watchdog' function generates error after predefined time without communication with the master. Alarm can be linked to the watchdog function.
- 'Bus activity' function detects electrical activity on the bus. Useful for troubleshooting.
- 'Fast access' menu a single press on the front keypad gives access to the instrument address or alarm setpoint.
- 'On power-up' function protects systems at cold start-up.
- Brightness 5 levels of brightness intensity.
- Password blocks access to configuration menu.

Dimensions

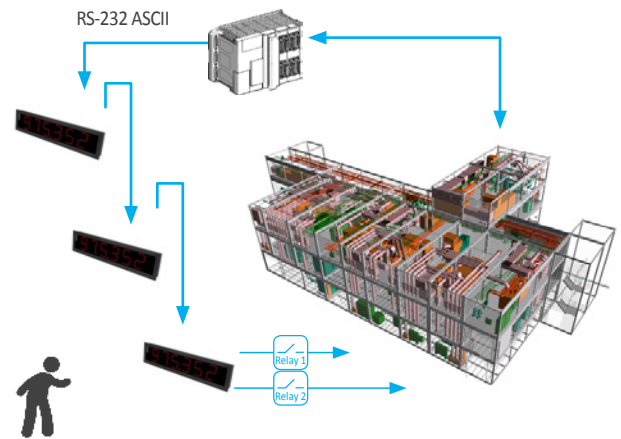


Connections



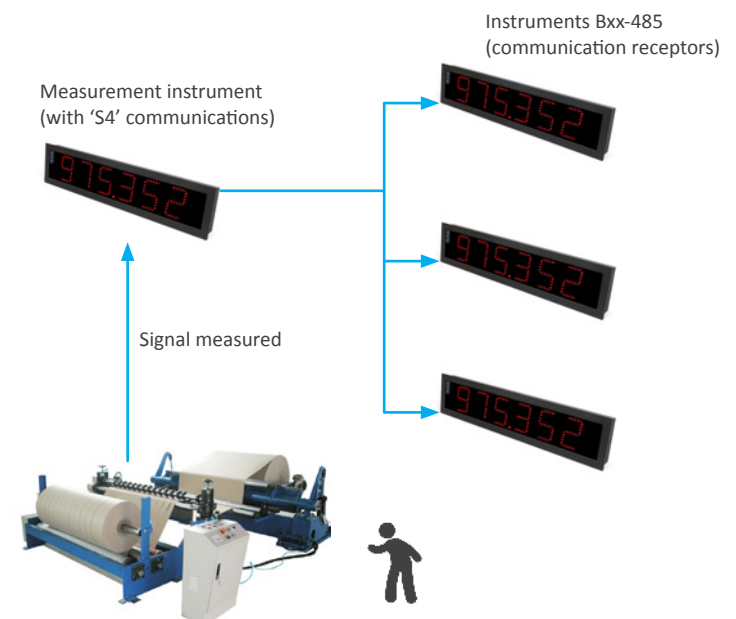
Example of application with control

A manufacturing line is controlled from a centralized PLC or SCADA. The PLC receives and manages all the information related to process control. Some information is critical to the local operators, and it is communicated through the ASCII protocol repeaters. Critical information depends on each application, for example, production rates, total stop times, trouble codes, etc.



One measure, multiple information points

The large format meters from Series B can measure a wide variety of signals, and can integrate multiple output and control options. Option 'S4' for communications can be configured to transmit the measure directly to remote information points.



Other options

Red color

JPG

Red leds

Green color

JPG

Green leds

White color

JPG

White leds


Cable output

JPG

Preinstalled cable, 2 meters

Accessories

RKB



Remote keypad

IPB24

JPG

IP65 protection for the B24 panel junction

IPB26

JPG

IP65 protection for the B26 panel junction

IPB44

JPG

IP65 protection for the B44 panel junction

IPB46

JPG

IP65 protection for the B46 panel junction

Others formats within the Series B



	Digit height	Digits	Reading distance
Format B24	60 mm	4	up to 25 meters
Format B26	60 mm	6	up to 25 meters
Format B44	100 mm	4	up to 50 meters
Format B46	100 mm	6	up to 50 meters

Other RS-232 ASCII repeaters

Series M

4, 5 and 6 digits

digit height 14 mm
 color red, green
 vision 5 meters
 size 96 x 48 mm

DIGITAL PANEL METER
SERIES M
 Full Signal Ranges Available



45 YEARS

Series K

Further view

digit height 20 mm
 color red
 vision 8 meters
 size 96 x 48 mm

DIGITAL PANEL METERS
SERIES K
 20 mm Digit Size



45 YEARS

Series S

Compact size

digit height 14 mm
 color red, green
 vision 5 meters
 size 72 x 36 mm

DIGITAL PANEL METERS
SERIES S
 Compact Size 72x36 mm



45 YEARS

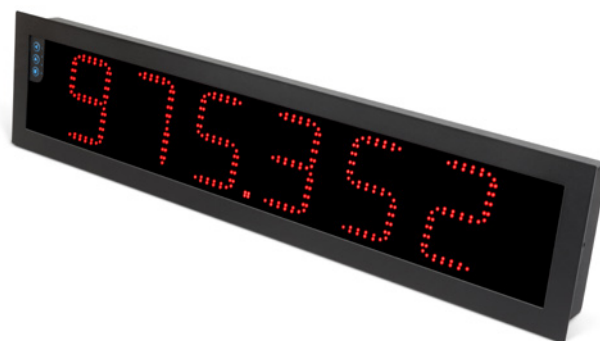
B46-LC for load cells



Large format meter with 6 digits and 100 mm digit height, for reading up to 50 meters, for load cell signals at industrial applications. Versatile and configurable instrument, provides excitation voltage, 'tare' and 'auto-tare' functions, configurable acquisition speed and noise rejection to 50 and 60 Hz. Front keypad for easy access to the configuration menu and connection for remote keypad. Two universal power supply options for AC and DC. Optional relay outputs, transistor, SSR control, analog retransmission and communications for Modbus RTU and RS-485 ASCII protocols. Sturdy metallic housing with full IP65 protection, for panel, wall or hanging mount.

Technical specifications

Reading	
Digits	6
Reading	999999 / -199999
Decimal point	configurable
Led color	red or green
Digit height	100 mm
Type of digit	7 segment
Angle of vision	120°
Load cells	
Type of cells	1 mV/V, 2 mV/V, 3 mV/V and others
Excitation voltage	5 Vdc or 10 Vdc, configurable (max. 140 mA)
Vexc. protection	against shortcircuit
Maximum voltage at terminals	30 Vdc
Number of cells*	1 to 8 load cells (powered 5 Vdc) 1 to 4 load cells (powered 10 Vdc)
* (values calculated for standard 350 Ohms load cells. For cells with different impedance, the number is limited by the 140 mA available current)	
Measure	
Signal ranges (FS)	5 mV, 10 mV, 15 mV, 20 mV, 30 mV, 100 mV (internal)
Accuracy at 25 °	0.05 % FS
Thermal stability	100 ppm / °
Input impedance	20 MOhms
Acquisitions / second*	15, 50 or 60 acquisition / second (configurable)
*(and refresh for alarms, analog outputs and bus)	
Signal terminals	plug-in screw terminals (pitch 3.81 mm) cable gland output PG9 (max. 8 mm diameter) max. 0.50 mm ²
Wire section	
Outputs and configuration	
Output and control options	relays, analog output, serial communications, ...
Configuration	3 button front keypad (connection for remote keypad)
Power	
Power 'H'	85 to 265 Vac and 120 to 370 Vdc (isolated 2500 Vac)
Power 'L'	11 to 36 Vdc (isolated 1500 Vdc)
Consumption	<3.0 W (meter only) <5.0 W (meter with options)
Power terminals	plug-in screw terminals (pitch 5.08 mm) output through cable gland
Wire section	max. 2.5 mm ² (max. AWG14)
Mechanical	
Housing	metallic (textured black painted iron)
Front filter	methacrylate
IP protection	full IP65 housing
Weight	<4500 grams
Mounting	panel, wall, hanging
Front size (panel cut-out)	740 x 166 mm (722 x 148 mm)
Deep	80 mm (including terminals)
Operating temp. (storage)	0 to 50 °C (-20 to 70 °C)
Packing box	paperboard, 78 x 18 x 10 cm



Front view

Order reference

Format	Model	Power	Color	Option 1	Option 2	Option 3	Custom
B46	LC	H	R				
		-H (85-265 Vac and 120-370Vdc) -L (11-36 Vdc)	-R (red led) -G (green led)	-R1 (1 relay output) -AO (analog output) -RTU (Modbus RTU) -S4 (RS-485) -S2 (RS-232) -T1 (1 transistor output) -SSR (1 SSR control output) -0 (empty)			



Rear view

Additional documentation

Bxx-LC user's manual	www.fema.es/docs/4625_Bxx-LC_manual_en.pdf
Series B options	www.fema.es/docs/4326_SERIES-B_OPTIONS_manual_en.pdf
Series B web page	www.fema.es/Series_B

Output and control options

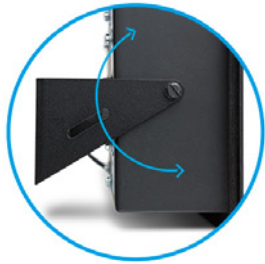
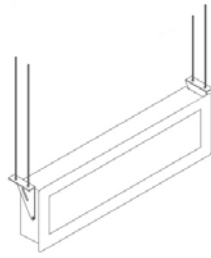
Format	Model	Power	Color	Option 1	Option 2	Option 3	Custom
B46	LC	H	R				

	Function	Installable options	Isolation
R1	1 relay output	2	yes
T1	1 transistor output	2	yes
SSR	1 control for SSR relay	2	yes
AO	1 analog output	2	yes
RTU	1 Modbus RTU port	2	yes
S4	1 RS-485 port	2	yes
S2	1 RS-232 port	2	yes

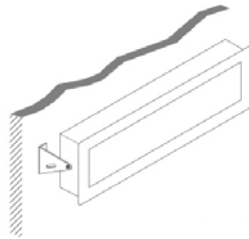
Mounting options



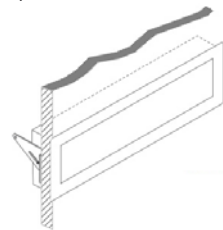
hanging



wall



panel

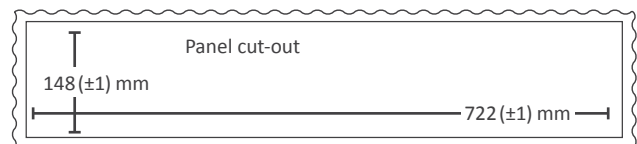
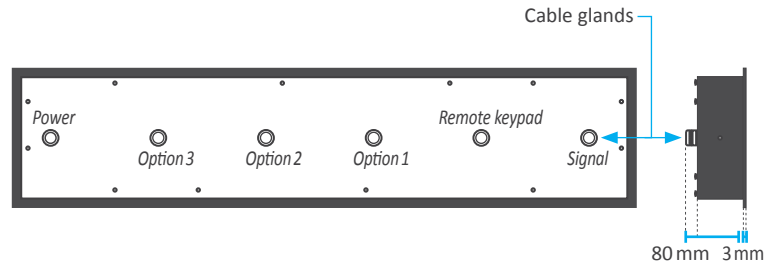
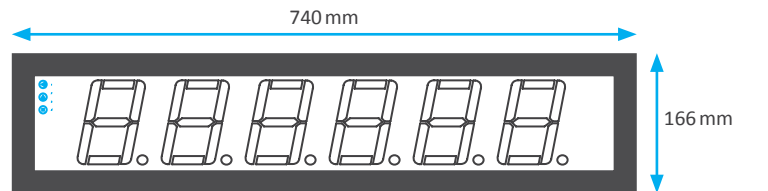


side fixations (included)

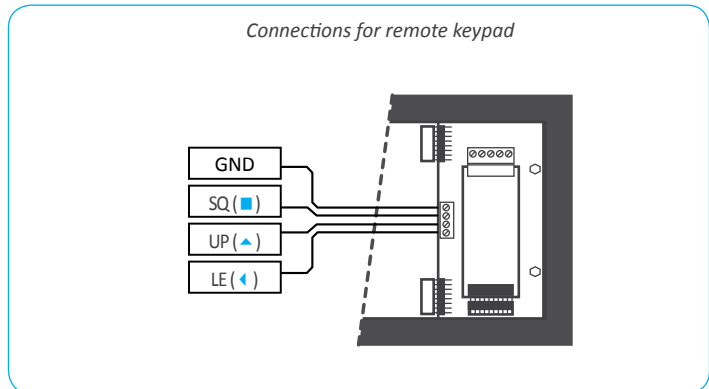
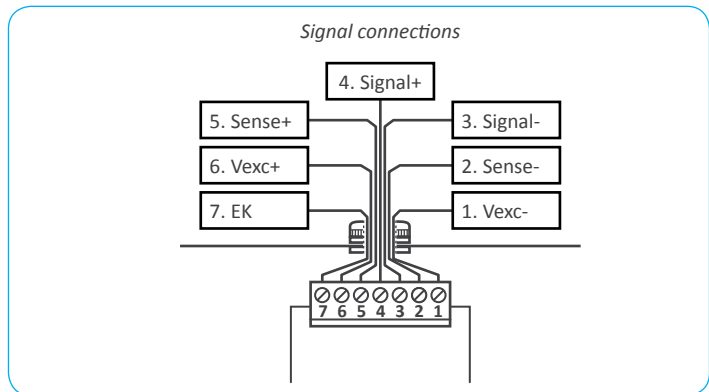
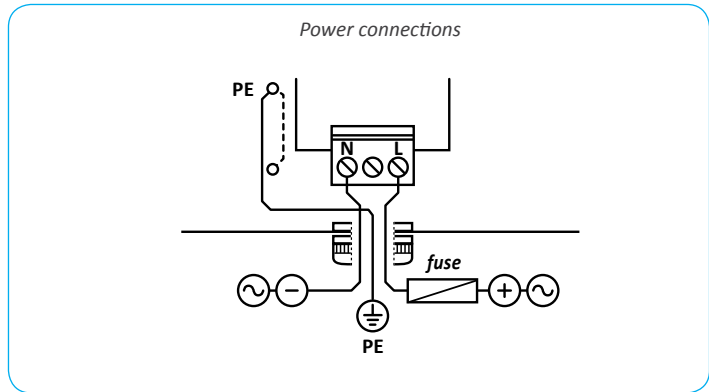
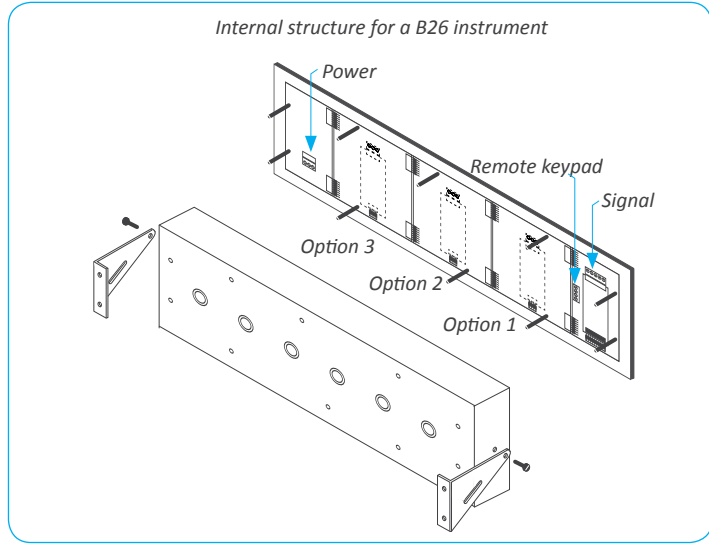
Functions included

- 'Fast access' menu fast access to parameters from front key 'UP' (■) (alarm setpoint, ...)
- 'Tare' function configurable from different access points
- 'Auto-tare' function automatic tare
- Scale factor scale the reading values and offset
- 'Stock of units' count number of items based on weight
- Modes modes with noise rejection to 50 and 60 Hz
- Alarms with one or two setpoints, independent activation and deactivation delays, hysteresis, optional manual deactivation of the relay
- Stability alarms activation triggered by stability of the signal
- Display filters recursive filter, 'steps', fixed digits, ...
- Rear control activate functions from rear terminal
- Front key 'LE' (◀) activate functions from front key
- 'On power-up' function activate functions at power-up
- Memory maximum and minimum
- Password blocks access to configuration menu.
- Troubleshooting functions values for input signal, excitation voltage and excitation current provided to the cell
- Brightness 5 levels of brightness intensity.

Dimensions

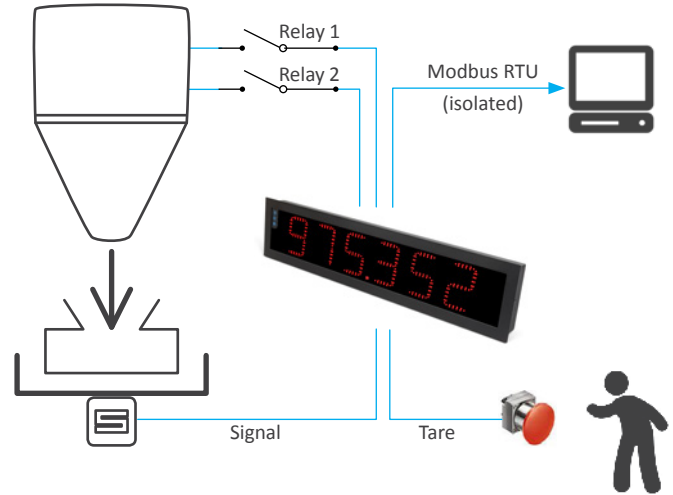


Connections

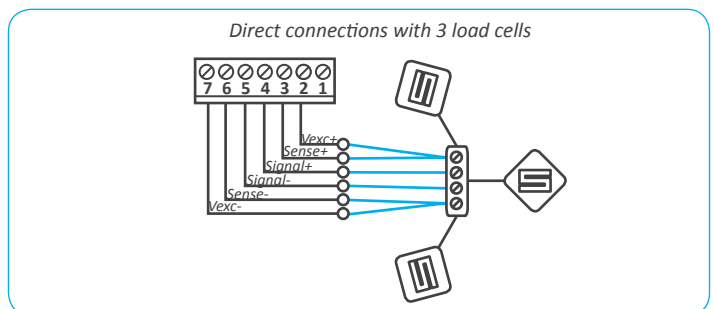
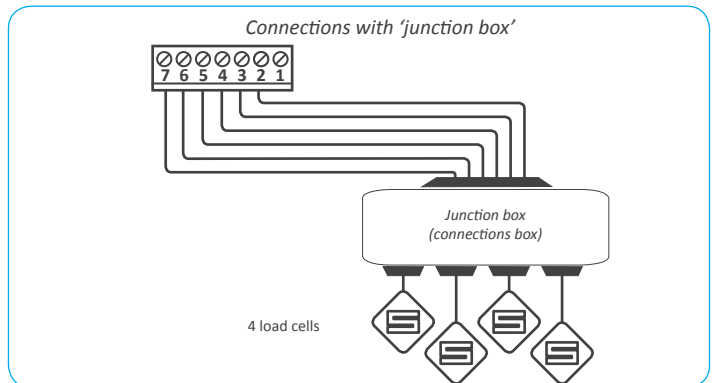
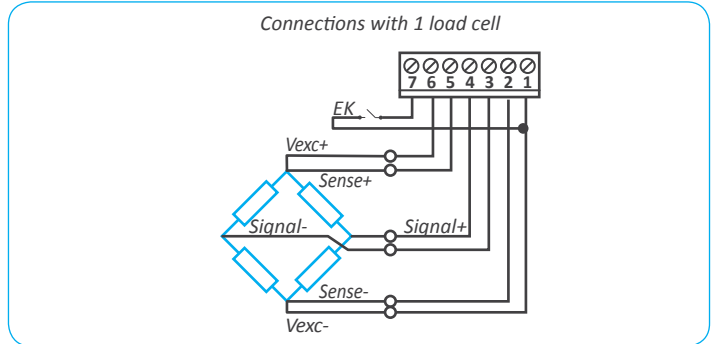


Example of application with control

Bucket filling with material from a silo. Measure and reading of the weight at the bucket, with automatic control for slow filling with relay 1 and final closing of the silo opening with relay 2. The measure is transmitted to a central data for storage and future analysis, via Modbus RTU.



Examples for other connections



Other options

Red color

Red leds

Green color

Green leds

White color

JPG

White leds

Cable output

JPG

Preinstalled cable, 2 meters

Accessories

RKB

Remote keypad

Units-8

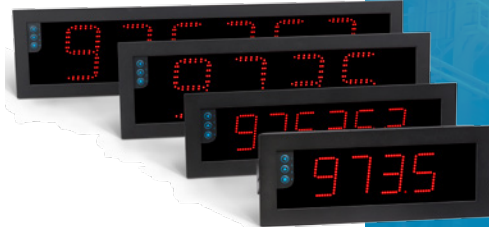
Labelling units
(g, kg, t, pcs, mg, lb, N, kN)

Other meters for load cells

Series B

4 and 6 digits

digit height 60 and 100 mm
 color red, green
 reading 25 and 50 meters
 formats B24, B26, B44, B46



Series M

4, 5 and 6 digits

digit height 14 mm
 color red, green
 reading 5 meters
 size 96 x 48 mm

DIGITAL PANEL METER
SERIES M
 Full Signal Ranges Available



Series K

Further view

digit height 20 mm
 color red
 reading 8 meters
 size 96 x 48 mm

DIGITAL PANEL METERS
SERIES K
 20 mm Digit Size



Series S

Compact size

digit height 14 mm
 color red, green
 reading 5 meters
 size 72 x 36 mm

DIGITAL PANEL METERS
SERIES S
 Compact Size 72x36 mm



Other signals

Process	°C / °F	160%	Vac/Aac
Vdc/Adc	Hz	Modbus	
BCD	Kg	RS-485	RS-232
			Custom

45 YEARS 1969-2014	Q ISO 9001 Certified Quality	CE EN-61010-1 Security	CE EN-61326-1 Electromagnetic C.	5 YEARS Extended Warranty
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