

Accessories: PG 1 electronic signal test/set-up boxes

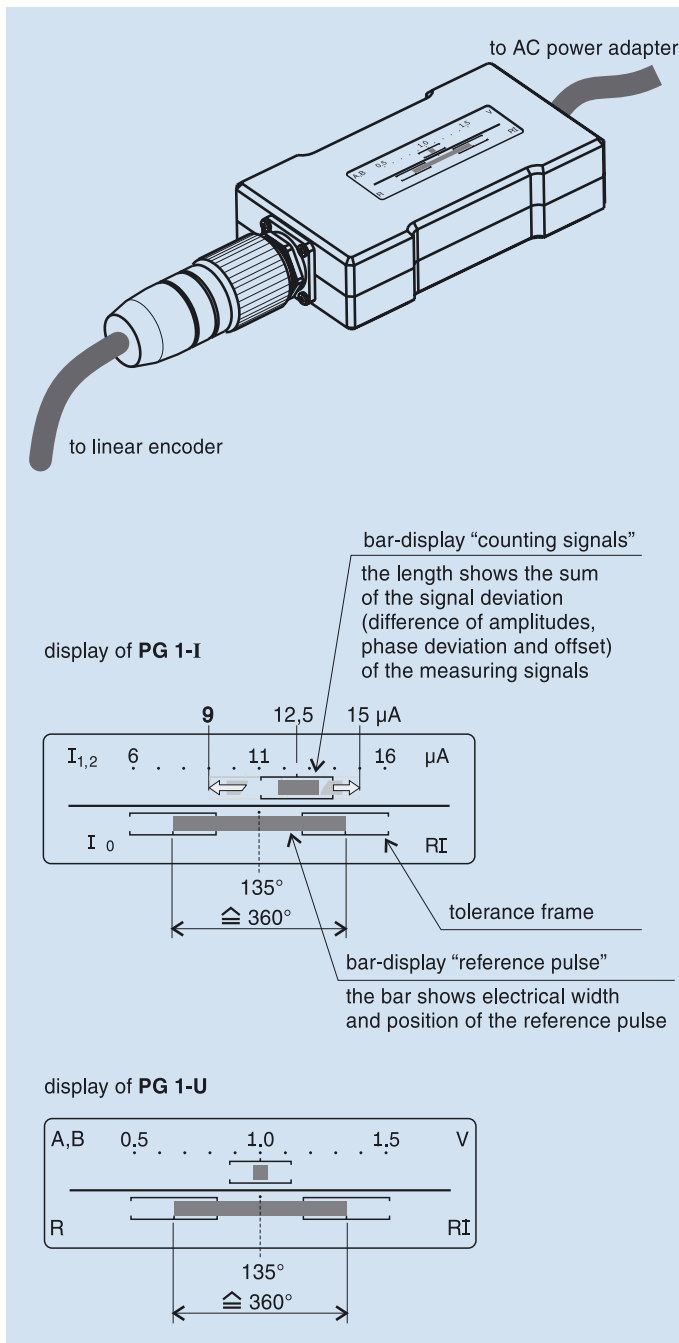
Open linear encoders are adjusted at the factory to provide the signal specifications at the specified mounting conditions.

Even though the linear encoders allow for large mechanical mounting tolerances, it is recommended to inspect the mounting by checking the quality of the output signals.

There are various methods of checking the quality of the output signals.

The signals can be connected to an oscilloscope and checked for conformity with signal specifications. This method requires effort, training and expensive test equipment (oscilloscope). Often one or all of these items are unavailable to the installing technician.

As an alternative to this method RSF offers two different signal test boxes (PG 1 and PG 3). With these test boxes all encoder signals can be quickly and easily checked.

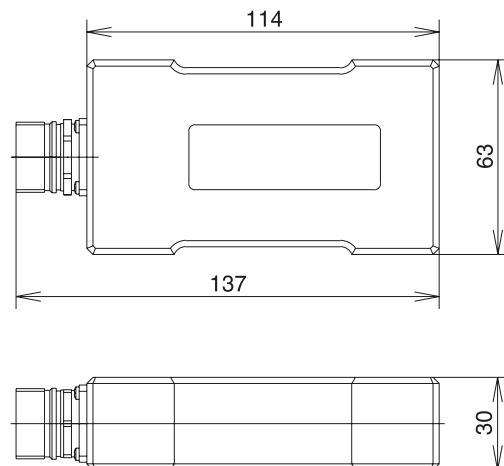


The PG 1 is an all-purpose signal test box where all the relevant signals are displayed on LCD Bars. The counting signals, the reference mark signal, and the switch signals are displayed separately. The PG 1 allows the quantitative as well as the qualitative evaluation of the encoder signals.

To facilitate connection to the PG 1, RSF has made available various adapter cables.

Power for the PG 1 and linear encoder is supplied by an AC power adapter.

This provides a stand-alone signal inspection system isolating it from any external electronics. There is no need to connect the encoder to customer electronics.



Electronic mounting controller PG1-I

To optimize or check the mounting, the Linear Encoder must be connect to the electronic mounting controller PG1-x.
Corresponding the possible output signals there are different versions to select.

PG1-I

- for connecting of measuring systems with
- sinusoidal micro-current signals,
 - square wave signals and analog signal switch-over

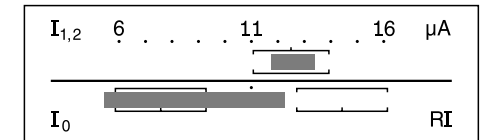
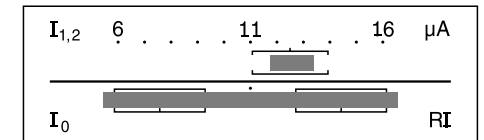
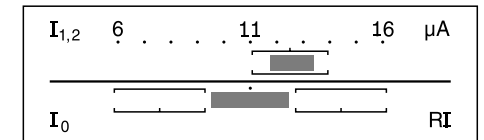
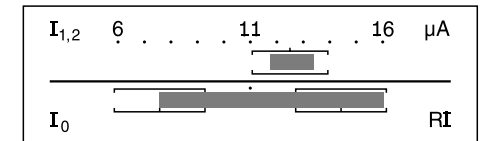
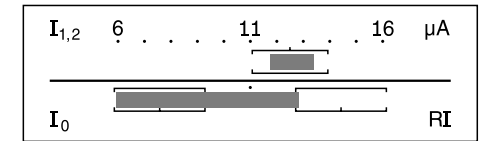
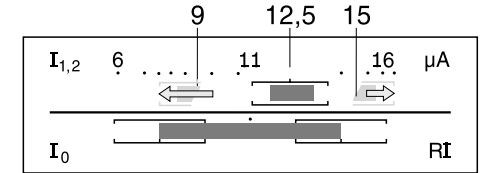
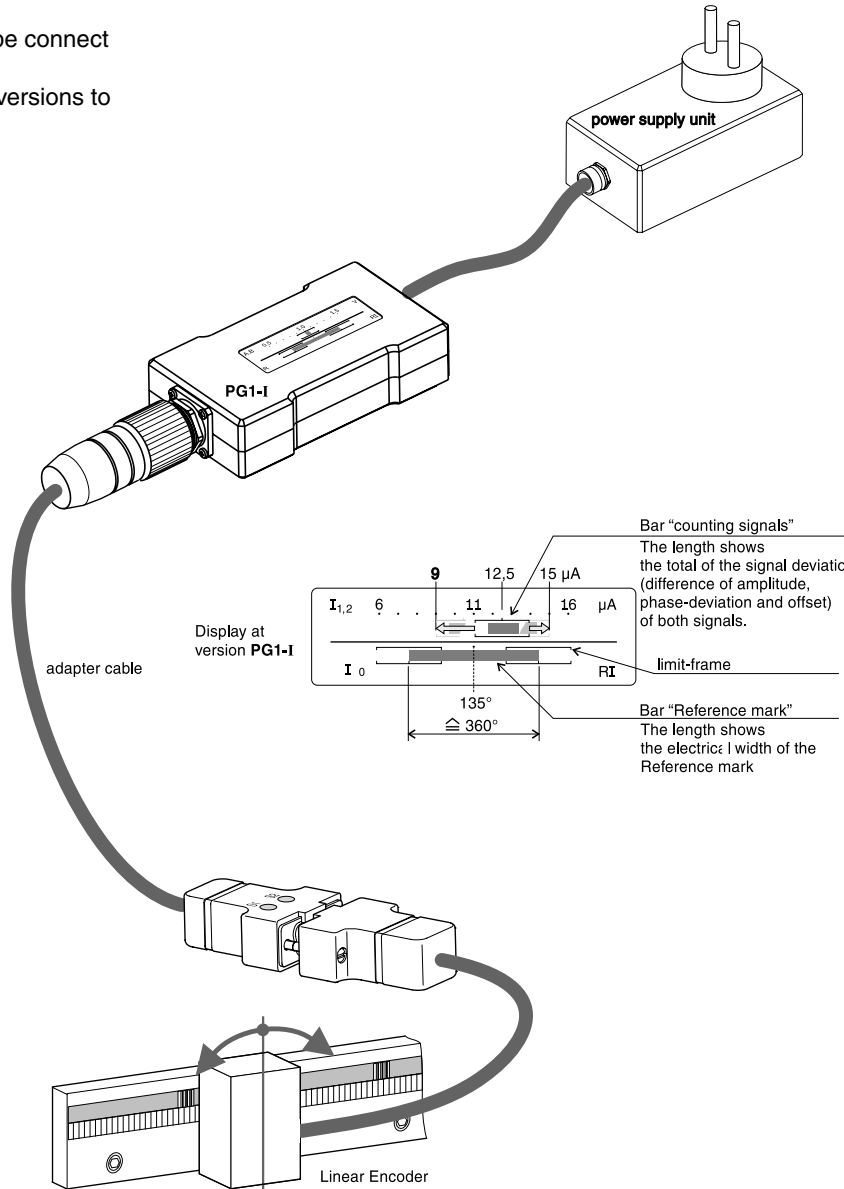
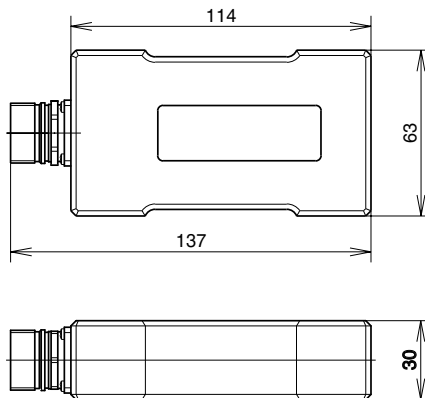
Depending on the type of the Linear Encoder an appropriate adapter cable is needed.

In the display of the PG1-I the quality of the counting signals and the reference mark (RI) is shown in form of bars.

The length and the position of the bars inform about how exact the Linear Encoder is mounted within the mounting tolerances.

Only if the bars are within the limit-frame, the signal deviations are in a permitted range.

Dimensions:



Electronic mounting controller PG1-U

To optimize or check the mounting, the Linear Encoder must be connect to the electronic mounting controller PG1-x.
Corresponding the possible output signals there are different versions to select.

PG1-U

- for connecting of measuring systems with sinusoidal voltage signals

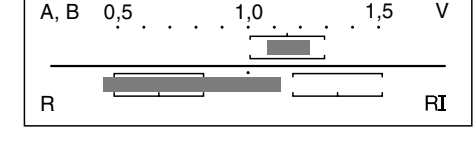
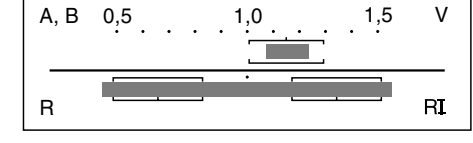
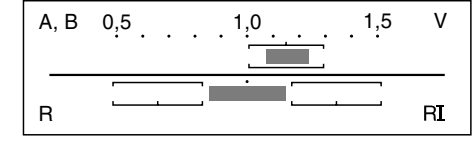
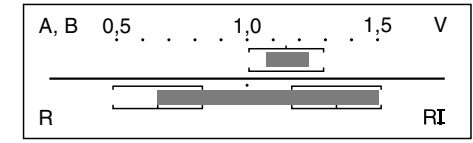
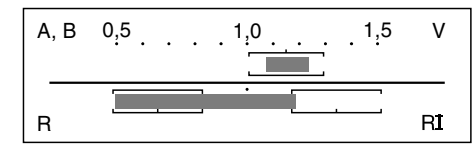
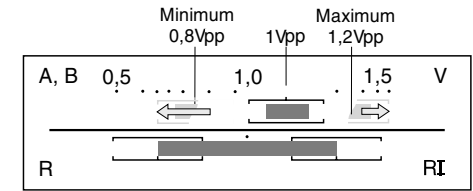
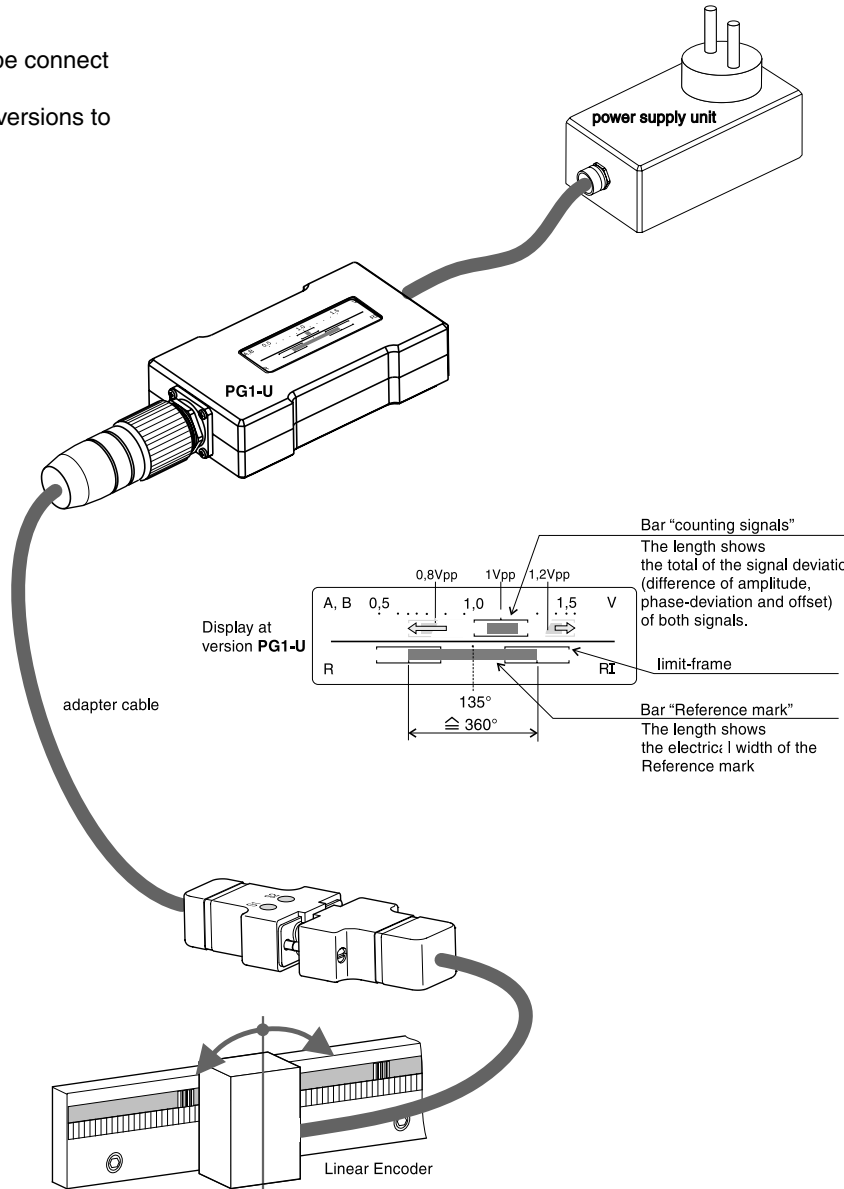
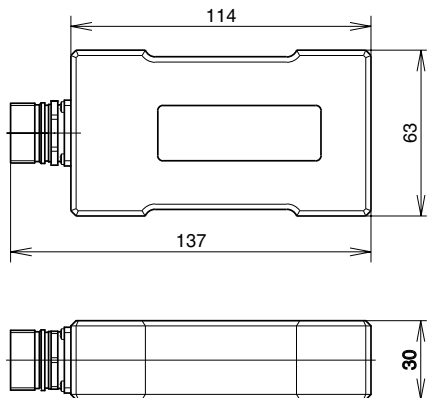
Depending on the type of the Linear Encoder an appropriate adapter cable is needed.

In the display of the PG1-U the quality of the counting signals and the reference mark (RI) is shown in form of bars.

The length and the position of the bars inform about how exact the Linear Encoder is mounted within the mounting tolerances.

Only if the bars are within the limit-frame, the signal deviations are in a permitted range.

Dimensions:



PG2-I electronic signal test/set-up box

PG2-I

for connecting measuring systems with

- sinusoidal micro-current signals
- square wave signals with analog signal switch-over

Full function control and signal inspection with four LEDs.

Even though the linear encoders in the MS 2x series allow for large mechanical mounting tolerances, it is recommended to inspect the mounting by checking the quality of the output signals.

The PG2-I test box checks all relevant signals; amplitude, phase and offset, and displays the results in a **qualitative** format on a polychromatic LED display.

Status of the LEDs:

Counting Signals

- LED red (out of tolerance)
- LED green (in tolerance)

Reference Mark Signal

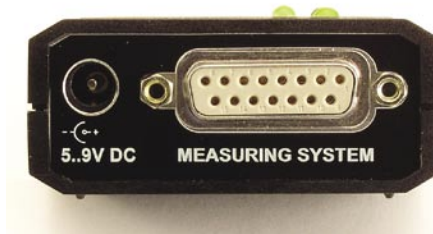
- LED red (out of tolerance)
- LED orange (slightly out of tolerance)
- LED green (in tolerance)

Switch Signals S1, S2

- LED green (function OK)

The PG2-I is equipped with a female 15 pin D-type connector with RSF standard pin out.

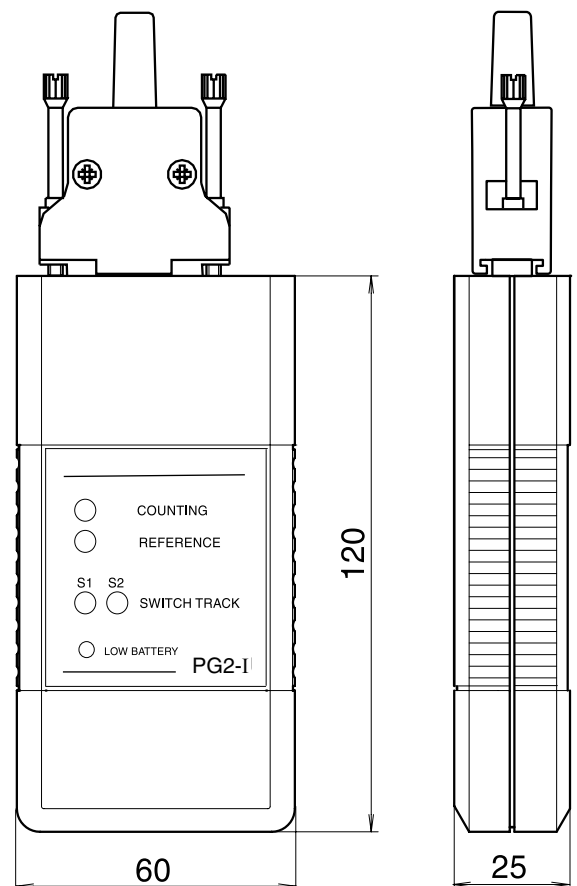
Adapter cables for other connectors and pin outs are also available.



The PG2-I works either with a built-in 9V battery or with an external AC power adapter.

Like the PG 1, stand-alone signal inspection without connecting the encoder to the customer electronics is possible.

The portable design makes the PG2-I a simple and powerful tool for evaluating encoder signals both in production and in the field.



Electronic signal test/set-up box PG2-I

The PG2-I is used for easy mounting and checking the quality of the output signals of incremental Linear Encoders of the MS 20 series.

Even though the Linear Encoders in the MS 20 series allow large mechanical mounting tolerances, it is recommended to control the mounting.

PG2-I

- for connecting measuring systems with
- sinusoidal micro-current signals
 - square wave signals with analog signal switch-over

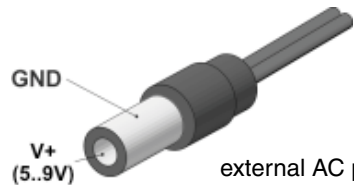
The output-signals of MS 20 with square wave signals are switched to analog signals if the PG2-I is connected

The PG2-I test box checks all relevant signal parameters: amplitude, phase and offset.

The PG2-I works either with a built-in 9V battery or with an external AC power adapter (5 V DC 2,4 A)
The PG2-I is switched on by connecting a Linear Encoder.

Information:

- Use the AC power adapter for continuous operation!
Battery is only for a one hour operation.
- The PG2-I switches automatically from battery - to net power operation by connecting the AC power adapter.



external AC power adapter:
required output voltage 5 to 9 V DC
line voltage 100 to 240 V AC 47 to 63 Hz 400 mA

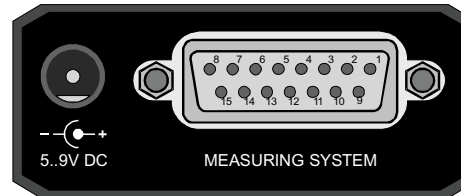


Attention: Protect PG2-I against wetness!



Attention: Please remove the battery if the device is not used for a longer time!

The PG2-I is equipped with a female 15 pin D-type connector with RSF standard pin out. Adapter cables for other connectors and pin outs are also available.



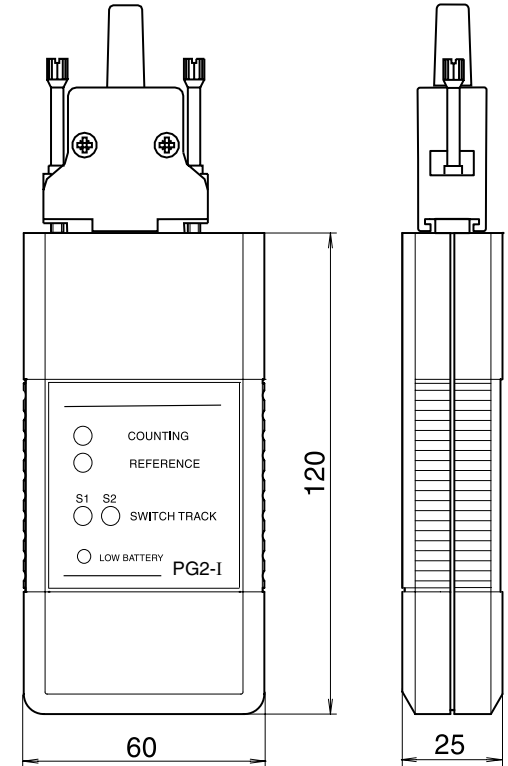
Pin outs:

15 pin. D-SUB female connector

PIN	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
PG2-I	+5 V*	GND supply	n.c.	RI	90°	0°	n.c.	+5 V	GND	S1	S2	RI	90°	0°	n.c.

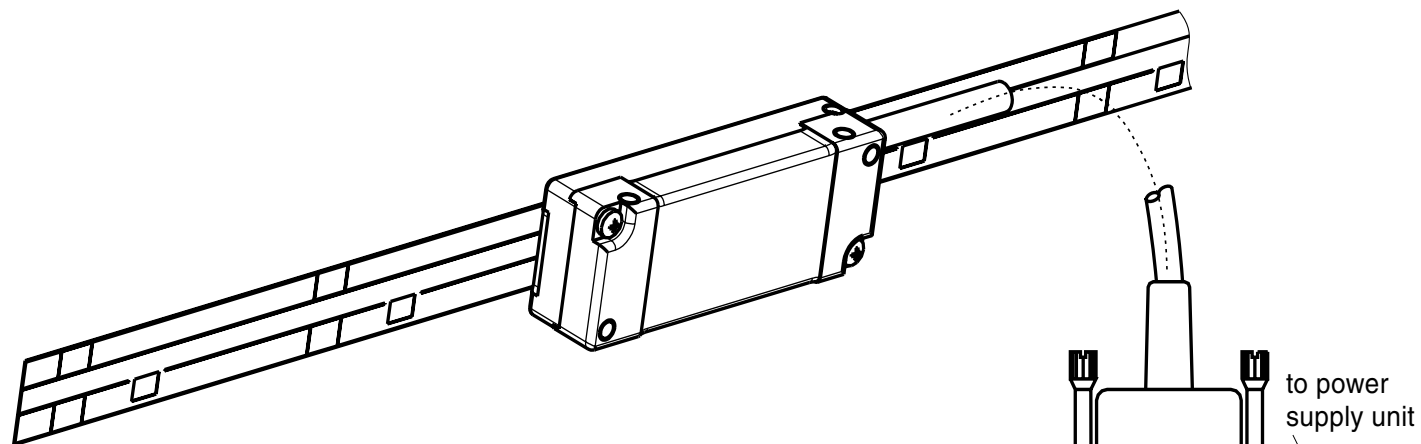
Connection must exist in the connected of the Encoder!

Dimensions:



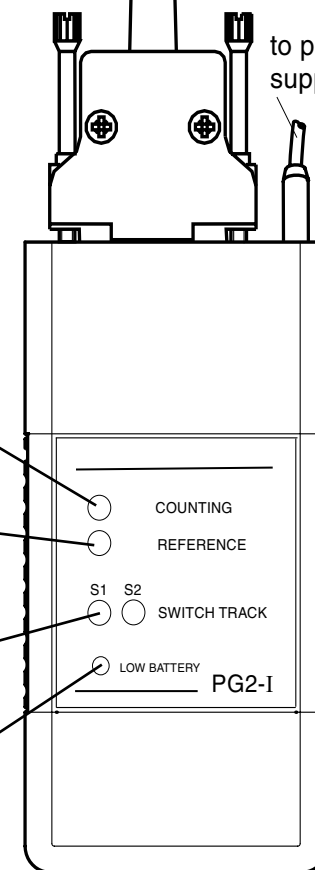
* It has to be guaranteed that the test pin of the measuring system is connected with 5 V if customer specified connectors and adapters for MS 20 with square wave signals in use. Otherwise the PG2-I cannot be used.

Full function control and signal inspection with LEDs:



Attention: accomplish function control over the whole measuring length!

Status of LEDs	Information	Measure
Counting signals (COUNTING) - red - green	track signals out of tolerance track signals ok	revise mounting mounting accurate
Reference mark signals (REFERENCE) (only by passing the reference mark) - red - orange - green	RI out of tolerance RI slightly out of tolerance RI ok	revise mounting revise mounting mounting accurate
Switch signals S1, S2 (SWITCH TRACK) (only by passing the covertape of the switch track) - green	function ok	mounting accurate
Battery (LOW BATTERY) - lights during operation - lights when a Linear Encoder or AC power adapter is connected	empty battery connector is not connected properly	substitute battery disconnect the connector and connect it again after a short waiting period



PG 3 electronic signal test/set-up box

Open linear encoders are adjusted at the factory to provide the signal specifications at the specified mounting conditions.

Even though the linear encoders in the MS 30 series allow for large mechanical mounting tolerances, it is recommended to inspect the mounting by checking the quality of the output signals.

Full function control and signal inspection with four LEDs.

The PG 3 test box checks all relevant signals; amplitude, phase and offset, and displays the results in a **qualitative** format on a polychromatic LED display.

Status of the LEDs:

counting signals

- LED red (out of tolerance)
- LED green (in tolerance)

reference mark signal

- LED red (out of tolerance)
- LED orange (slightly out of tolerance)
- LED green (in tolerance)

switch signals S1, S2

- LED green (function OK)



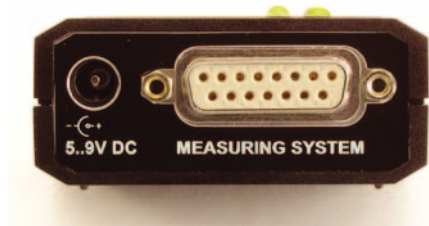
There are various methods of checking the quality of the output signals.

The signals can be connected to an oscilloscope and checked for conformity with signal specifications. This method requires effort, training and expensive test equipment (oscilloscope). Often one or all of these items are unavailable to the installing technician.

As an alternative to this method RSF offers two different signal test boxes (PG 1 and PG 3). With these test boxes all encoder signals can be quickly and easily checked.

The PG 3 is equipped with a female 15 pin D-type connector with RSF standard pin out.

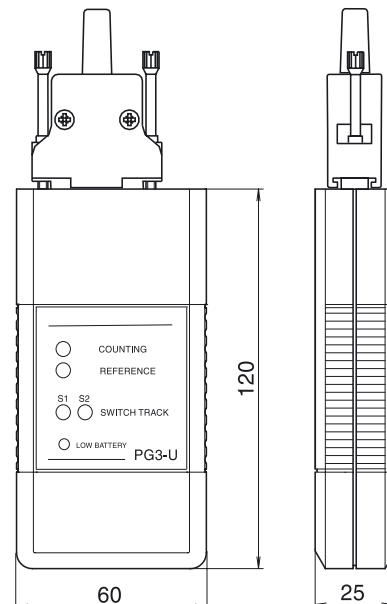
Adapter cables for other connectors and pin outs are also available.



The PG 3 works either with a built-in 9V battery or with an external AC power adapter.

Like the PG 1, stand-alone signal inspection without connecting the encoder to the customer electronics is possible.

The portable design makes the PG3 a simple and powerful tool for evaluating encoder signals both in production and in the field.



Electronic signal test/set-up box PG3-I

The PG3-I is used for easy mounting and checking the quality of the output signals of incremental Linear Encoders of the MS 30 series.

Even though the Linear Encoders in the MS 30 series allow large mechanical mounting tolerances, it is recommended to control the mounting.

PG3-I

- for connecting measuring systems with
- sinusoidal micro-current signals,
 - square wave signals with analog signal switch-over

The output-signals of MS 30 with square wave signals are switched to analog signals if the PG3-I is connected

The PG3-I test box checks all relevant signal parameters: amplitude, phase and offset.

The PG3-I works either with a built-in 9V battery or with an external AC power adapter (5 V DC 2,4 A)
The PG3-I is switched on by connecting a Linear Encoder.

Information:

- Use the AC power adapter for continuous operation!
Battery is only for a one hour operation.
- The PG3-I switches automatically from battery - to net power operation by connecting the AC power adapter.

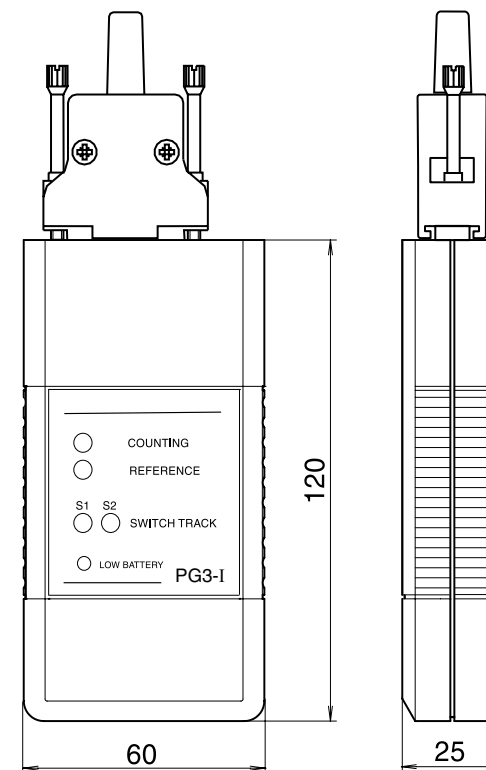


Attention: Protect PG3-I against wetness!

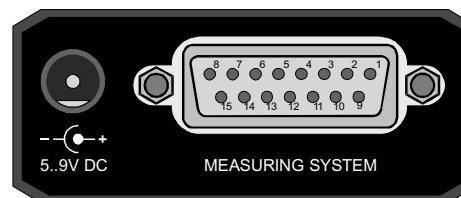


Attention: Please remove the battery if the device is not used for a longer time!

Dimensions:



The PG3-I is equipped with a female 15 pin D-type connector with RSF standard pin out. Adapter cables for other connectors and pin outs are also available.



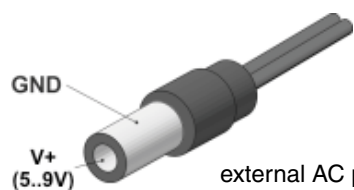
Pin outs:

15 pin. D-SUB female connector

PIN	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
PG3-I	+5 V*	GND supply	n.c.	RI	90°	0°	n.c.	+5 V	GND	S1	S2	RI	90°	0°	n.c.

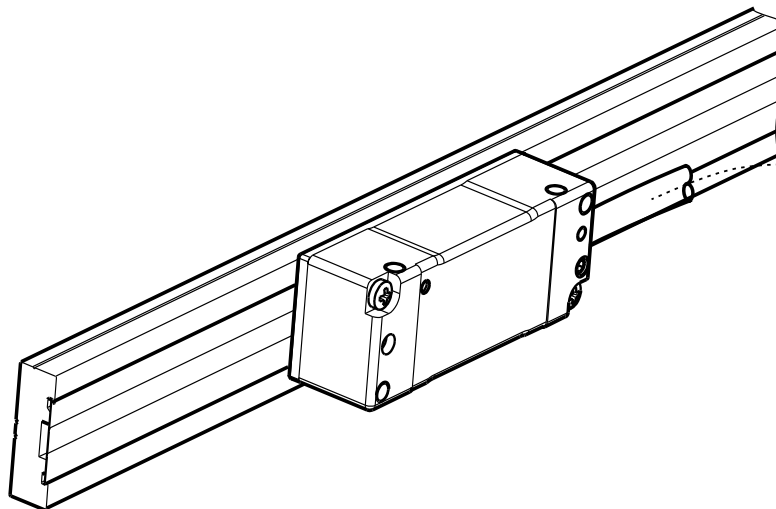
Connection must exist in the connected of the Encoder!

* It has to be guaranteed that the test pin of the measuring system is connected with 5 V if customer specified connectors and adapters for MS 30 with square wave signals in use. Otherwise the PG3-I cannot be used.



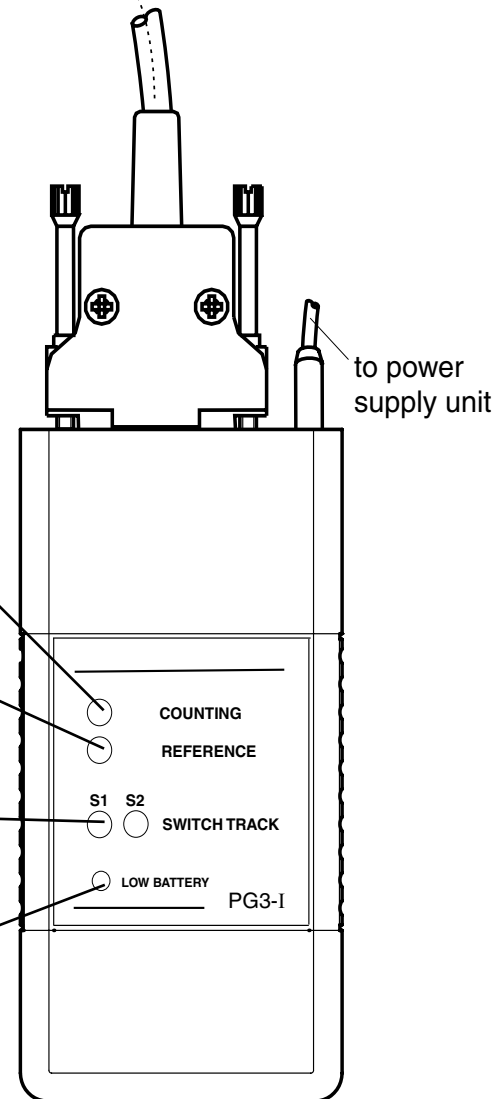
external AC power adapter:
required output voltage 5 to 9 V DC
line voltage 100 to 240 V AC 47 to 63 Hz 400 mA

Full function control and signal inspection with LEDs:



Attention: accomplish function control over the whole measuring length!

Status of LEDs	Information	Measure
Counting signals (COUNTING) - red - green	track signals out of tolerance track signals ok	revise mounting mounting accurate
Reference mark signals (REFERENCE) (only by passing the reference mark) - red - orange - green	RI out of tolerance RI slightly out of tolerance RI ok	revise mounting revise mounting mounting accurate
Switch signals S1, S2 (SWITCH TRACK) (only by passing the covertape of the switch track) - green	function ok	mounting accurate
Battery (LOW BATTERY) - lights during operation - lights when a Linear Encoder or AC power adapter is connected	empty battery connector is not connected properly	substitute battery disconnect the connector and connect it again after a short waiting period



PG4 electronic signal test/set-up box

PG4

for connecting measuring systems with

- square wave signals

For checking the reference puls this must be passed by with a velocity of $<0,2$ m/s.

Even though the linear encoders in the MS 40 series allow for large mechanical mounting tolerances, it is recommended to inspect the mounting by checking the quality of the output signals.

The PG4 test box displays the results in a **qualitative** format on a polychromatic LED display.

Status of the LEDs:

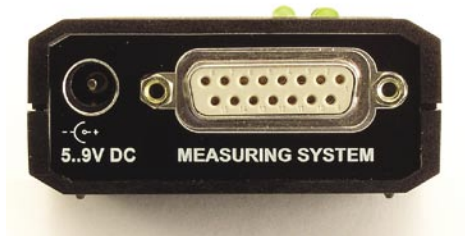
Counting Signals

- LED red (out of tolerance)
- LED green (in tolerance)

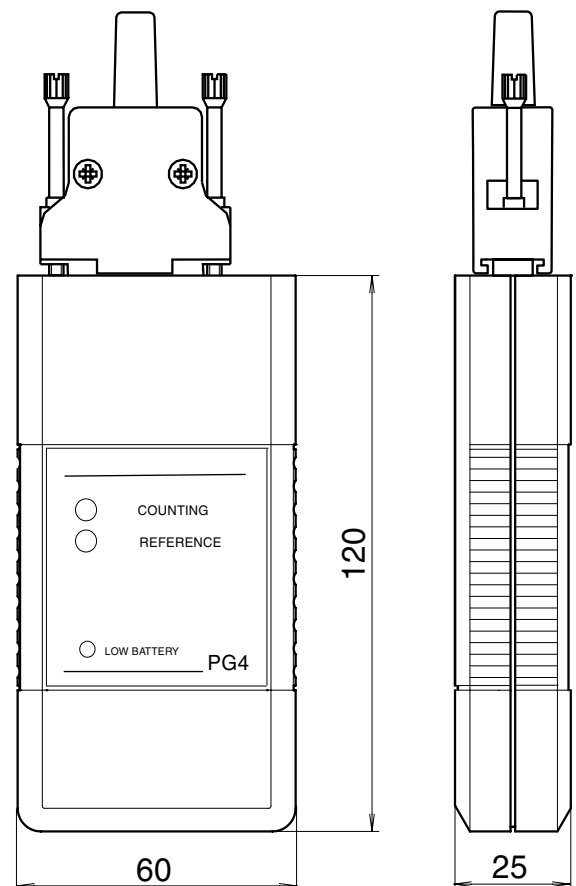
Reference Mark Signal

- LED red (out of tolerance)
- LED doesn't light (out of tolerance)
- LED green (in tolerance)

The PG4 is equipped with a female 15 pin D-type connector with RSF standard pin out. Adapter cables for other connectors and pin outs are also available.



The PG4 works either with a built-in 9V battery or with an external AC power adapter. Like the PG1, stand-alone signal inspection without connecting the encoder to the customer electronics is possible. The portable design makes the PG4 a simple and powerful tool for evaluating encoder signals both in production and in the field.



Electronic signal test/set-up box PG4

The PG4 is used for checking the quality of the output signals of incremental Linear Encoders of the MS 40 series.

For checking the Reference pulse this must be passed with a velocity of <0,2 m/s.

Even though the Linear Encoders of the MS 40 series allow large mechanical mounting tolerances, it is recommended to check the mounting.

PG4

for connecting MS 40 measuring systems with square wave signals

The PG4 works either with a built-in 9V battery or with an external AC power adapter (5 V DC 2,4 A)
The PG4 is switched on by connecting a Linear Encoder.

Information:

- Use the AC power adapter for continuous operation!
Battery is only for a one hour operation.
- The PG4 switches automatically from battery - to net power operation by connecting the AC power adapter.

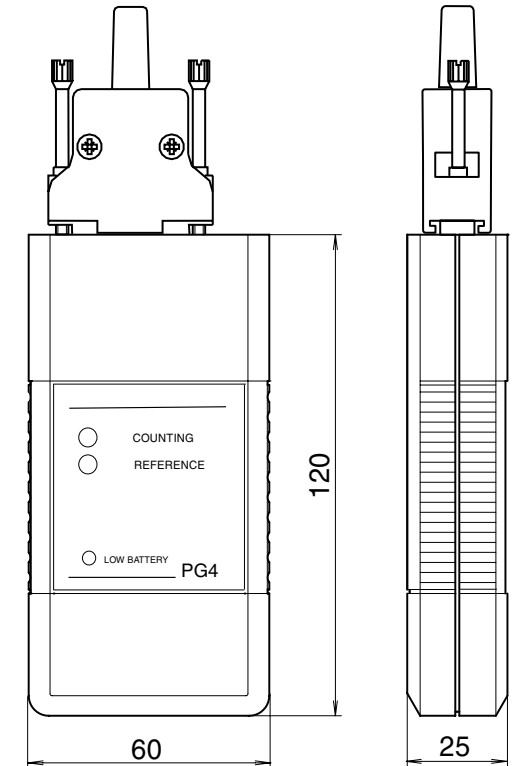


Attention: Protect PG4 against wetness!

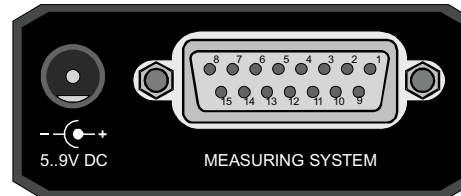


Attention: Please remove the battery if the device is not used for a longer time!

Dimensions:



The PG4 is equipped with a female 15 pin D-type connector with RSF standard pin out.
Adapter cables for other connectors and pin outs are also available.

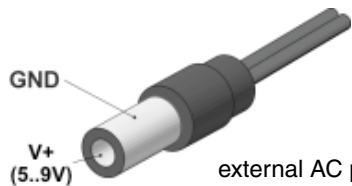


Pin outs:

15 pin. D-SUB female connector

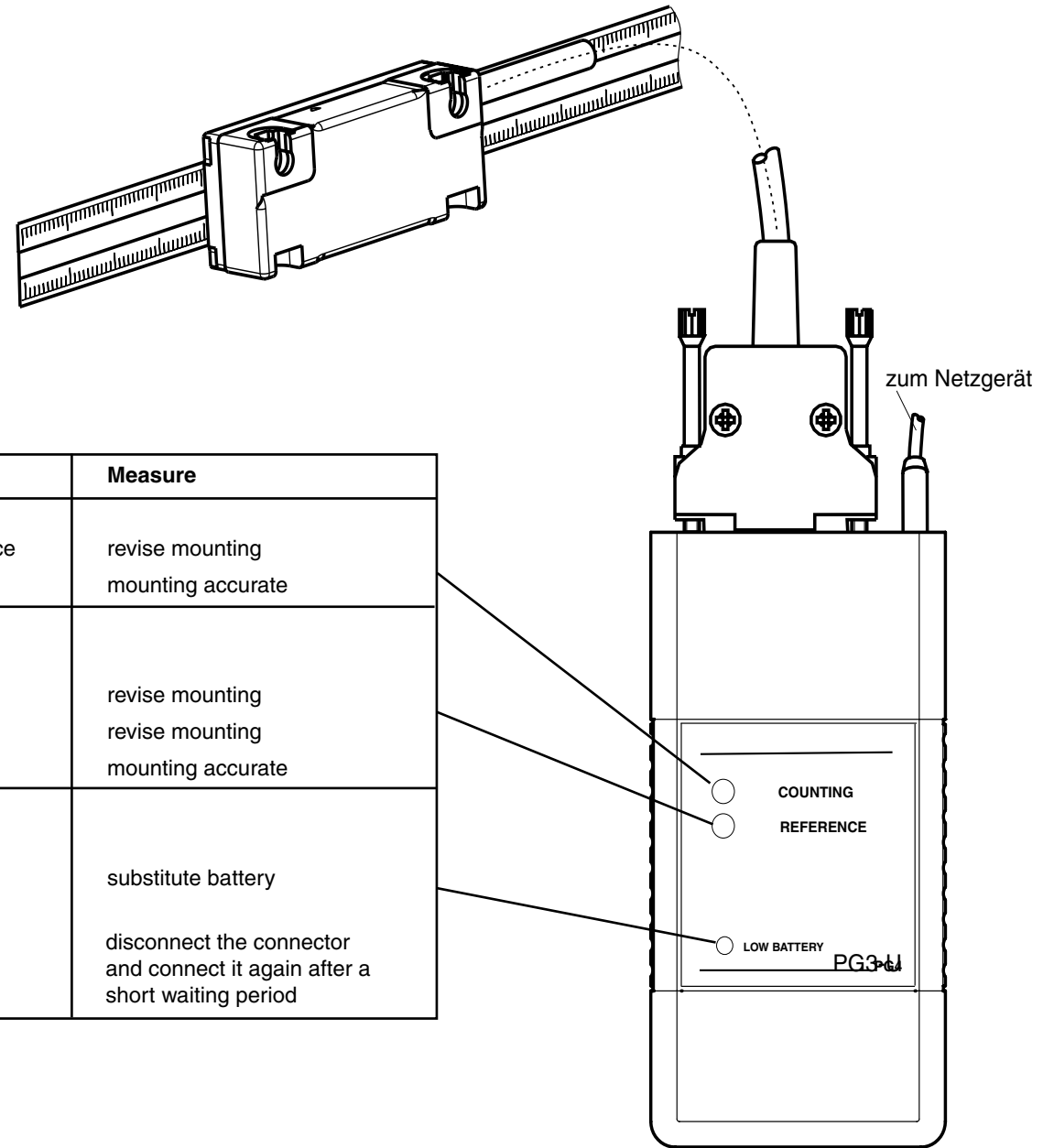
PIN	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
PG4	n.c.	GND supply	US	RI	T2	T1	n.c.	+5 V	GND	n.c.	n.c.	RI	T2	T1	n.c.

Link must exist in the connector of the Encoder!



external AC power adapter:
required output voltage 5 to 9 V DC
line voltage 100 to 240 V AC 47 to 63 Hz 400 mA

Full function control and signal inspection with LEDs:



Attention: accomplish function control over the whole measuring length!

Status of LEDs	Information	Measure
Counting signals (COUNTING) - red - green	track signals out of tolerance track signals ok	revise mounting mounting accurate
Reference mark signals (REFERENCE) (only by passing the reference mark) - red - doesn't light - green	RI out of tolerance RI out of tolerance RI ok	revise mounting revise mounting mounting accurate
Battery (LOW BATTERY) - lights during operation - lights when a Linear Encoder or AC power adapter is connected	empty battery connector is not connected	substitute battery disconnect the connector and connect it again after a short waiting period

PG-U electronic signal test/set-up box

PG-U

for connecting measuring systems with

- sinusoidal voltage signals

Full function control and signal inspection with four LEDs.

Even though the linear encoders allow for large mechanical mounting tolerances, it is recommended to inspect the mounting by checking the quality of the output signals.

The PG-U test box checks all relevant signals; amplitude, phase and offset, and displays the results in a **qualitative** format on a polychromatic LED display.

Status of the LEDs:

Counting Signals

- LED red (out of tolerance)
- LED green (in tolerance)

Reference Mark Signal

- LED red (out of tolerance)
- LED orange (slightly out of tolerance)
- LED green (in tolerance)

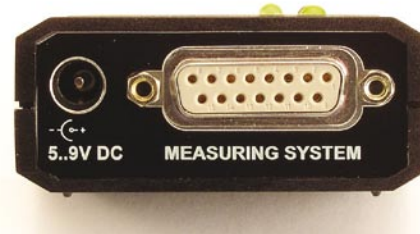
Switch Signals S1, S2

- LED green (function OK)

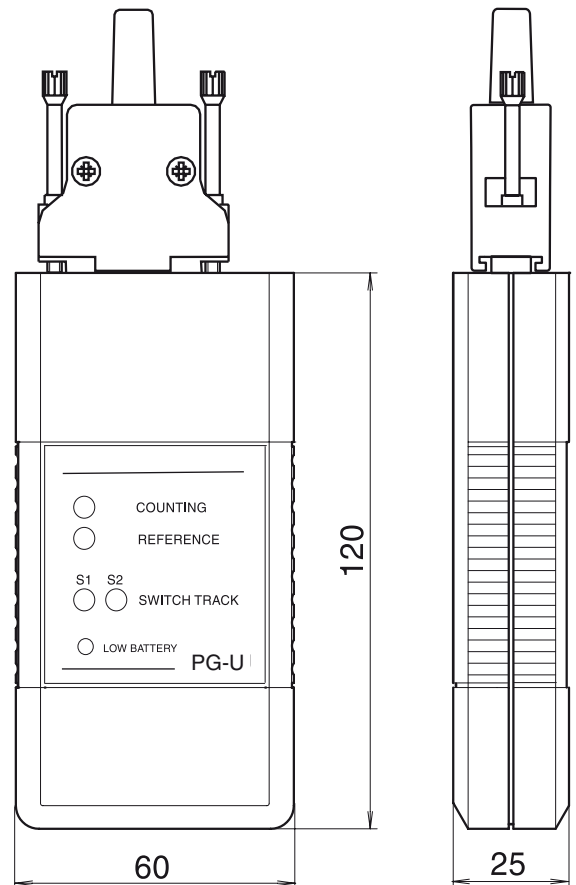
Attention!

By using MS 40 S1 and S2 are without function

The PG-U is equipped with a female 15 pin D-type connector with RSF standard pin out. Adapter cables for other connectors and pin outs are also available.



The PG-U works either with a built-in 9V battery or with an external AC power adapter. Like the PG1, stand-alone signal inspection without connecting the encoder to the customer electronics is possible. The portable design makes the PG-U a simple and powerful tool for evaluating encoder signals both in production and in the field.



Electronic signal test/set-up box PG-U

The PG-U is used for easy mounting and checking the quality of the output signals of incremental Linear Encoders.

Even though the Linear Encoders allow large mechanical mounting tolerances, it is recommended to control the mounting.

PG-U

for connecting measuring systems with

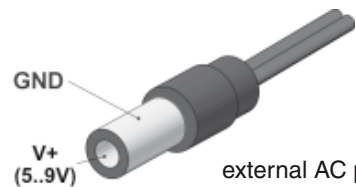
- sinusoidal voltage signals

The PG-U test box checks all relevant signal parameters: amplitude, phase and offset.

The PG-U works either with a built-in 9V battery or with an external AC power adapter (5 V DC 2,4 A)
The PG-U is switched on by connecting a Linear Encoder.

Information:

- Use the AC power adapter for continuous operation!
Battery is only for a one hour operation.
- The PG-U switches automatically from battery - to net power operation by connecting the AC power adapter.



external AC power adapter:
required output voltage 5 to 9 V DC
line voltage 100 to 240 V AC 47 to 63 Hz 400 mA

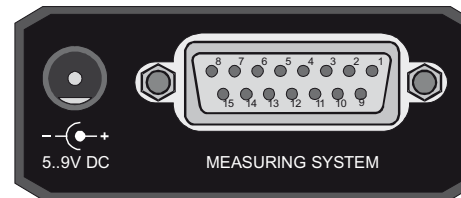


Attention: Protect PG-U against wetness!



Attention: Please remove the battery if the device is not used for a longer time!

The PG-U is equipped with a female 15 pin D-type connector with RSF standard pin out.
Adapter cables for other connectors and pin outs are also available.



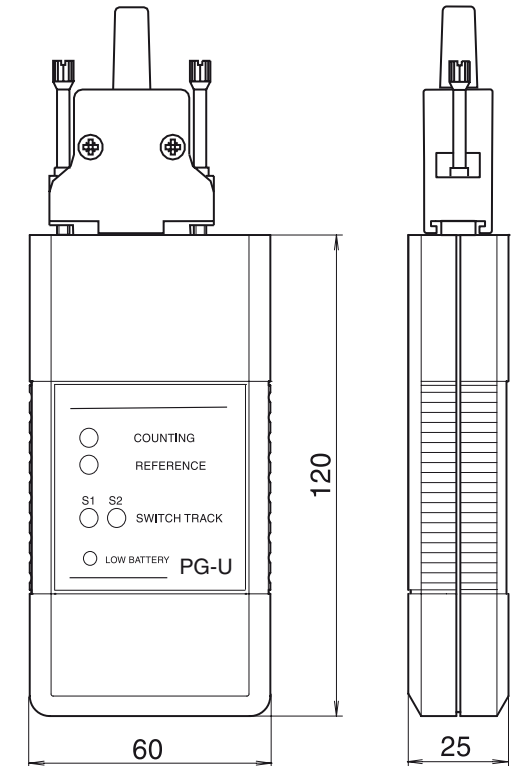
Pin outs:

15 pin. D-SUB female connector

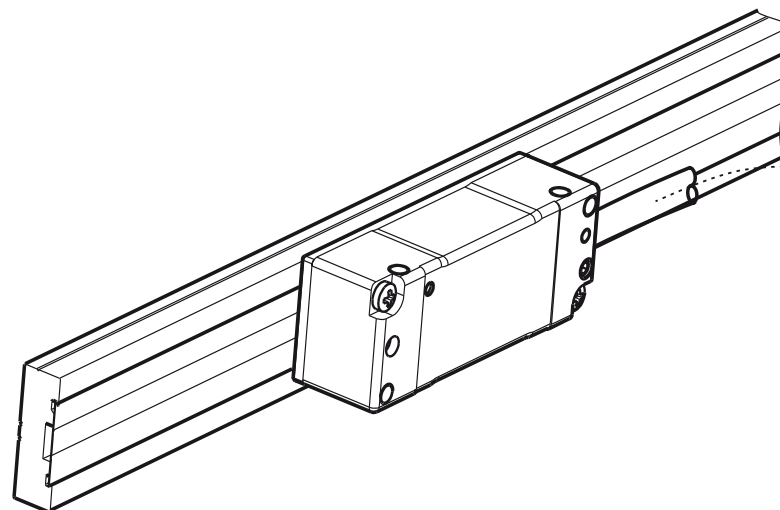
PIN	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
PG-U	+5 V	GND supply	n.c.	R1	A2	A1	n.c.	+5 V	GND	S1	S2	R1	A2	A1	n.c.

Connection must exist in the connected of the Encoder!

Dimensions:

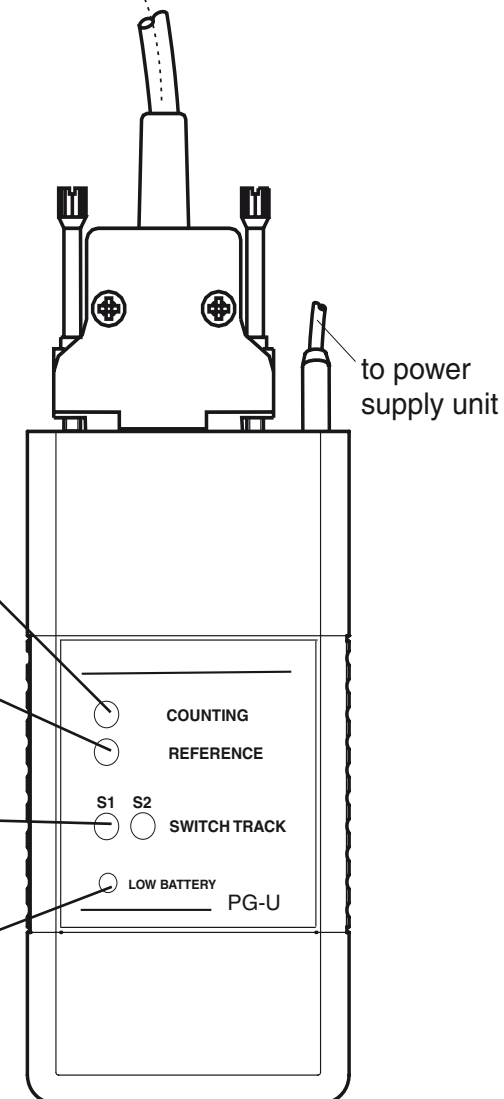


Full function control and signal inspection with LEDs:



Attention: accomplish function control over the whole measuring length!

Status of LEDs	Information	Measure
Counting signals (COUNTING) - red - green	track signals out of tolerance track signals ok	revise mounting mounting accurate
Reference mark signals (REFERENCE) (only by passing the reference mark) - red - orange - green	RI out of tolerance RI slightly out of tolerance RI ok	revise mounting revise mounting mounting accurate
Switch signals S1, S2 (SWITCH TRACK) (only by passing the covertape of the switch track) - green	Attention! By using MS 40 S1 and S2 are without function function ok	mounting accurate
Battery (LOW BATTERY) - lights during operation - lights when a Linear Encoder or AC power adapter is connected	empty battery connector is not connected properly	substitute battery disconnect the connector and connect it again after a short waiting period



PS4 electronic signal test/set-up box

For connecting measuring systems of the MS 40 series with

- square wave signals
- in-circuit test

Even though the Linear Encoders of the MS 40 series allow large mechanical mounting tolerances, it is recommended to inspect the mounting by checking the quality of the output signals.

The PS4 test box checks all relevant signals: amplitude, phase and offset, and displays the results with LEDs.

Status of the LEDs:

Counting signals

LED red (out of tolerance)

LED green (in tolerance)

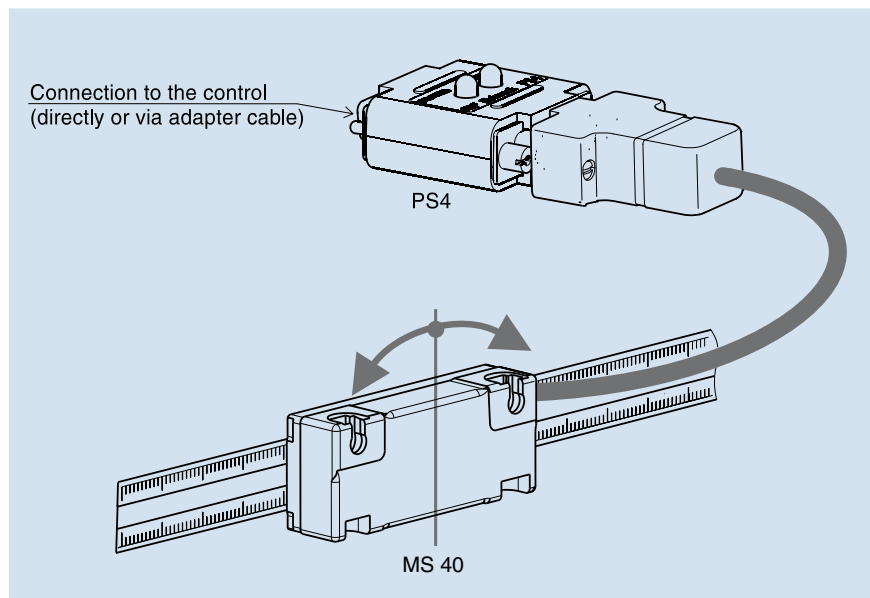
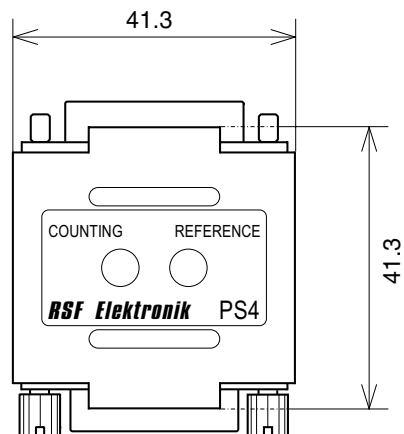
For checking the reference pulse it must be passed with a velocity of <0.2 m/s

Reference mark signal

LED red (out of tolerance)

LED green (in tolerance)

The PS4 is equipped with a female 15 pin D-type connector with RSF standard pin out. Adapter cables for other connectors and pin outs are also available.



Electronic signal test/set-up box PS4

The PS4 is used for checking the quality of the output signals of incremental Linear Encoder MS 40 series.

Even though the Linear Encoders of the MS 40 series allow large mechanical tolerances, it is recommended to check the mounting.

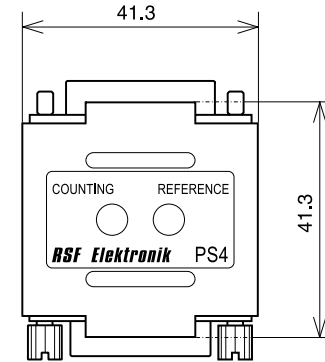
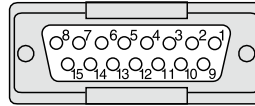
For checking the reference pulse it must be passed with a velocity of <0,2 m/s.

PS4

for connecting MS 40 measuring systems with

- square wave signals
- in-circuit test

The PS4 is equipped with a female 15 pin D-type connector with RSF standard pin out. Adapter cables for other connectors and pin outs are also available.



Connector pin outs:

female 15 pin D-type connector

PIN	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
PS4	n.c.	n.c.	US	RI	T2	T1	n.c.	+5 V	GND	n.c.	n.c.	RI	T2	T1	n.c.

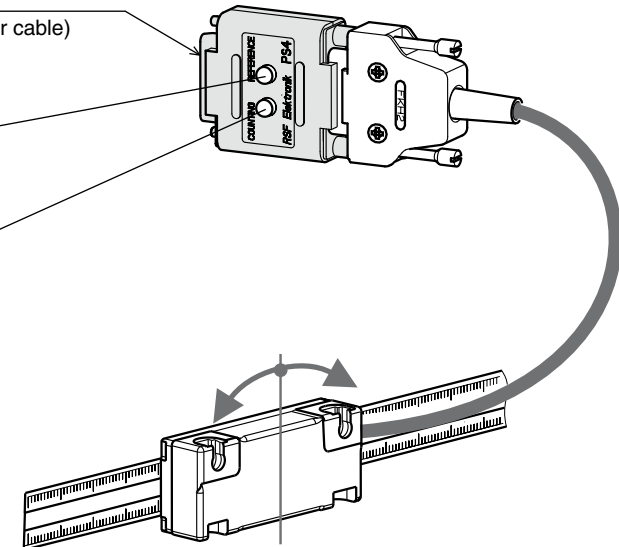


Attention! Protect against wetness!

Full function control and signal inspection with LEDs:

status of LEDs	information	measure
counting signals (COUNTING) - red - green	track signals out of tolerance track signals ok	revise mounting mounting accurate
reference mark signals (REFERENCE) (only by passing the reference marks) - red - doesn't light - green	RI out of tolerance RI out of tolerance RI ok	revise mounting revise mounting mounting accurate

connection to control
(directly or via adapter cable)



Attention: accomplish function control along the whole measuring length!