



0 Characteristics and essential performance of the system hardware and software.		
Parameter	Characteristic value	
12 Slope detection.	0 ÷ 90 degrees; uncertainty in measurement: 5 degrees.	
13 Delivered accessories.	W8-APP™ software application for the remote monitoring and control from a compatible device using IOS or Android operating system.	
14 Optional accessories.	factory installation kits for extreme climate conditions; replacement center plate with vibration damping rubber foam.	

14

1. Rif. R6P, R6S in 60086-2 © IEC:2000+A1:2001(E) [IEC-60086-2: 2011].

2.8. **Manufacturer identification.**

The W8system® product was designed by the following company:



W8 s.r.l.
viale XXIII Marzo, 56 - 33100 Udine (UD)
ITALY

WWW.W8system.it

and is manufactured and distributed by the following company:



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via Buozzi, 8 - Buozzistrasse, 8 - 39100 Bolzano - Bozen (BZ)
ITALY
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WWW.BRUNNER.IT



W8system "Caravan"

1. **Instructions.**

The instructions of the integrated "Weight System" must be read before use, for a correct installation, setup and maintenance during the lifecycle of the "Caravan" W8system® product.

WARNING

[W - 1]



The W8system® product includes automatic functions that require a basic level of experience to be correctly and safely used. In case of doubts, please contact directly the technical support department of the manufacturer, or the customer in-service support of the local distributor.

NOTE

[N - 2]



Although we do our best to keep the information on our knowledge management system current, our products are continually being improved and exact values, dimensions, and weights may change subject to each installation and user requirements. Please contact directly the sales department of W8 s.r.l. for the most current and accurate data.

NOTE

[N - 3]



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The W8system® product is an electronic appliance with a base device and battery power supply, controlled from a remote device connected with radio frequency signals, and using a dedicated W8-APP™ software. The remote control device may be implemented in various portable or wearable devices, such as smartphones and tablets (Android, IOS), commonly available on the market, installing the appropriate W8-APP™ software that is delivered as an integrated "Weight System" to measure the available reserve of fluid.

The essential function of the W8system® product is to detect and sense the residual quantity of fluid, and the integrated "Weight System" including hardware and software items may be used as "measurement gauge of the residual reserve of a specific liquid or gas that is spilled from a fluid container or reservoir accumulating the substance", according to the best practice of use, and the technical regulations and norms that are applicable to the recreational, outdoor and "Caravan" market.

The base device requires an initial setup, after which it is ready for continued everyday use. During the setup process, the base device is selectively paired to the mobile device using a 'Bluetooth Smart' connection, and the link is established automatically, or by user request, to access information and warnings generated by the base device. In normal conditions, the base device detect the liquid or gaseous flux from the container and turn-on a status LED light, which gives an approximate indication of the level of fluid that is currently left in the bottle or in the gas cylinder, permitting to plan the change over to a filled container, within the estimated time to completely void it. To operate according to the specifications, the base device requires to be into contact with the bottom side of the container for the fluid (bottle



or gas cylinder), and it shall remain in this position for the whole period during which the measurement function is needed. The switch-over of the container requires a reset and setup of the base device to restart the measurement function with the accuracy necessary for camping, handicrafts, barbecues, outdoor heaters. The base device does not measure mixtures, powders, or foams, for lack of precision in the gauge sensors and electronics. Modification kits for use in tropical or nordic climates are available upon request and may be installed in factory. The base device is not hermetically sealed and suffer for excessive humidity: do not use in adverse weather conditions.

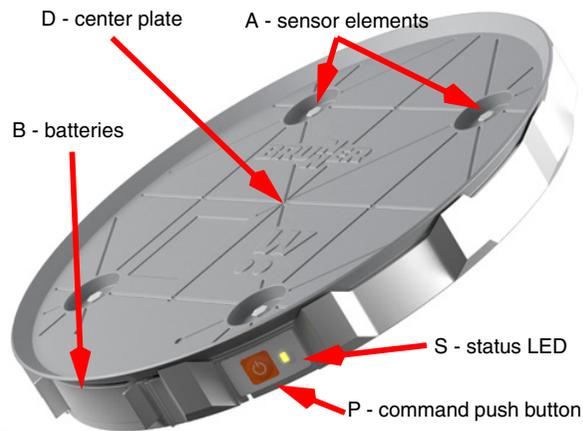


Fig. 1 Top view of the W8system® product.

DANGER

[D - 4]



The base device of the W8system® product must not be used in locations saturated of gas or in proximity of inflammable liquid vapors.

This product is assembled in factory with the optional kits for tropical or nordic climates. User has only to load the batteries and insert the base device under the bottom part of the container that will be monitored for the level of the fluid reserve.

1.1.

First activation "START".

To activate the base device, follows the sequence of operations described in the following paragraphs. In case of error, unload the batteries from the battery pack to reset the system, and restart from the beginning.

1



Fig. 2 Compatible battery type.

Battery power-up of the base device. [1]
The power supply of the base device requires 4 batteries (standard AA size) commonly used for consumer electronics. Keep the required number of spare batteries to support the continued functionality of the system. The load and unload of the battery pack is done through a lateral opening of the base device, which does not require the removal of the container.

following the norms applicable to information technology equipment (ITE):

EN 60950; EN 55014-1:2006+A1: 2009+A2: 2011; EN 55014-2:1997+A1: 2001+A2: 2008;
EN 301 489-1 v1.9.2; N 301 489-17 v2.2.1.

2.7.

Technical characteristics.

The electronic hardware manufacturing is made by integration of subsystem parts and subassemblies in the production area of the company site, where the W8-APP™ software modules of the supervision and control application are developed and configured for delivery to the customer.

Tab. 1: Registration code.

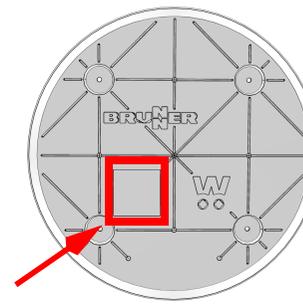


Fig. 7 Location of the type plate.

Tab. 2: Technical characteristics.

Characteristics and essential performance of the system hardware and software.		
Parameter	Characteristic value	
1 Power supply.	Selfpowered with primary batteries (4 standard cells AA "Mignon" size). Nominal voltage of each cell $V_N = 1.5$ Volt, electrochemistry zinc/carbon (IEC 'size R6, ANSI size 15D, United Kingdom size HP7) or alkaline/manganese (IEC size LR6, ANSI size 15A) or Li-FeS ₂ (IEC size FR6, ANSI size 15LF), with capacity R6S (standard), or alternatively R6C (high capacity) or R6P (high power).	
2 Functional duration.	approximate duration before substitution of the battery cells: 1600 hours.	
3 Alarm signals and operational controls.	RGB multicolor LED light indication: fixed red (R) light: malfunction alarm; fixed green (G) light: operational; blinking green (K) light: configuration fixed yellow (Y) light: diagnostic check.	
4 Local control.	multifunction pushbutton; instant pressure: switch-on, switch-off, continuous pressure for at least 5 seconds: diagnostic check and setup.	
5 Remote control.	W8-APP™ software application for <i>smartphone / tablet</i> (Android, IOS) with "Bluetooth Smart" / "Bluetooth Low Energy" (BLE) communication link.	
6 Control distance.	maximum distance for device monitoring and control: 10 meters.	
7 Measurement accuracy.	± 10% (full range)	
8 Dimensions.	round shape with 310 [mm] diameter; height: 60 [mm].	
9 Maximum weight.	30 kilogrammes for a single fluid container (bottle or gas cylinder), loaded onto the central plate of the device; supported overload of the mechanical structure: 25%.	
10 Environmental limits.	operational within range $T_{op} -10 + +40$ [°C]. extended range (tropical kit) $T_{trop} -25 + +90$ [°C]; (polar kit) $T_{plus} -40 + +120$ [°C]	
11 Temperature measurement.	resolution: 1 Celsius degree; measurement error: ± 10%.	



2.3. **Conditions for transportation, dismantling, and disposal.**

The transport conditions, and relevant environmental limits, are detailed in the list of technical characteristics (ref.: table 2 on page 7). To uninstall the base device from under the fluid container to which it was applied, simply reverse the sequence of steps performed for the installation, that didn't require any irreversible action for the initial setup of the system.

CAUTION

[C - 9]



During dismantling or disassembly of the integrated "Weight System" hardware, exercise extreme caution for the removal of the fluid container, to avoid damages to the center plate of the base device, and to reduce the risk of fluid spillage or overturn of the reservoir.

2.4. **Maintenance.**

Maintenance activities are not specified for the integrated "Weight System", but common care must be taken to preserve the system during the lifecycle. The external surfaces of the W8system® product should be cleaned regularly from accumulated dust using a soft wipe wetted with a light non corroding detergent, such as those used for kitchen appliance cleaning. The battery cells should be substituted according to usage, on a regular schedule, to avoid downtimes.

CAUTION

[C - 10]



During long periods of inactivity, with the integrated "Weight System", out of service, remove the battery pack and unload the 4 AA size cells from their slots to reduce the risk of electrolyte spillage from the primary batteries at the end of their natural discharge.

2.5. **Environmental limits and specifications of the W8system® product.**

Normal operational temperature limits T_{op} from -10 [°C] to 40 [°C].

Extended climate limits: tropical kit from -25 [°C] to +90 [°C]; nordic kit from -40 [°C] to +120 [°C].

The integrity and safety of the base device without the optional kits for extended climates is guaranteed within the temperature range T_{st} from -25 [°C] to 90 [°C]

WARNING

[W - 11]



The W8system® product must not be used for indoor gas cylinders or in closed compartments.

2.6. **Declaration of conformity.**

The W8system® product is certified according to the EU Directive 2014/53/EU as "gauge appliance sensor to survey the amount of gas used from a metallic container with cylindrical shape". Compatibility (EMC) tests were performed



WARNING

[W - 5]



This integrated "Weight System" cannot use rechargeable batteries for power supply.



Fig. 3 Recommended commercial types.

Load the 4 alkaline batteries AA size (primary battery) in the battery pack located at the side of the W8system® product (ref.: 2 in figure 5), observing the polarity signs indicated on the battery body and in the slot contacts of the battery pack.

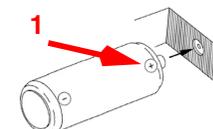


Fig. 4 Battery polarity.

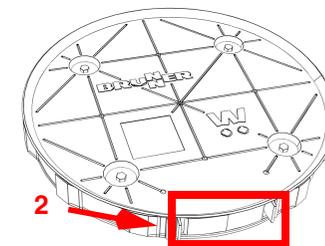


Fig. 5 Location of the battery pack.

2

Activation of the base device. [2]

Push for at least one second, the command button located on the front side of the base device (ref.: "P" in figure 1 at page 2): the status LED light (ref.: "S" in figure 1) starts blinking in green colour to indicate the execution of the autotest sequence; wait until the end of the diagnostic sequence after 10 light pulses; the start of the remote control programme is indicated by a fixed green light of the status LED for more than a second. After a positive response of the built-in test sequence, the base device enters the record-and-standby state. When the built-in test sequence has a negative response, the status LED starts blinking in a red colour every 2 seconds, with a number of pulses corresponding to the internal error code. Please report this error code to the support personnel. To enter the record-and-standby state after an error code, push the command button between a blink and the other.

3

Activation of the mobile device. [3]

Switch-on the mobile device and activate the Bluetooth Smart communication features. **Execute the W8-APP™ software**, that has been previously installed in a single or multiple *smartphone / tablet* (Android, IOS) devices, remaining in close proximity of the base device, which will be automatically detected by the W8-APP™ software.

4

Pairing of the base device and mobile device. [4]

Link the base device to the mobile device using the pairing functions of the Bluetooth Smart communication protocol. To connect the devices **use the unique "Registration code" printed on the label of the W8system® product**, which can be acquired by the W8-APP™ software from the QR code label (ref.: table 1 on page 7) using the camera integrated in the mobile device. Every base device has a

different registration code, and a single mobile device may record multiple codes, so that it can control simultaneously many different fluid containers. To complete the interconnection, follows the instructions given by the W8-APP™ software which will save the ID code and functional parameters of the selected base device.

5 Container setup (void and full capacity weight). [5]
Modify as necessary the capacity parameters for the fluid containers.

6 Gauge sensor position. [6]
Unload the container storing the liquid or gas from its enclosure and **put the base device on the floor of the empty compartment**, checking that its edges may not come into contact with the lateral panels of the enclosure.

7 Fluid container position. [7]
Reposition the fluid container (ref.: "C" in figure 6 at page 4) into its enclosure, on top of the centre plate of the base device (ref.: "W" in figure 6) previously put into the compartment, and check that there are no interferences or contacts between the fluid container and the enclosure. Verify that the whole system is on an horizontal levelled surface, and within the admissible slope limits. If the enclosure is a closed-type model, close the compartment door, or otherwise fix the container, to guaranty its stability in place.

8 Check of the level from the mobile device. [8]
Select the appropriate function from the W8-APP™ software menu, and verify the current level for the fluid contained in the reservoir. Refer to the W8-APP™ software documentation for other supported functions.

9 Check of the level from the base device. [9]
Push the command button (ref.: "P" in figure 1 at page 2) located on the front side of the base device to check the level of the fluid in the container supported by the base device. The status LED lightens for two seconds, and the colour gives an approximate indication of the volume of fluid available in the reservoir:
RED - less than 25% remaining,
YELLOW - between 25% and 50% available,
GREEN - more than 50% filled.

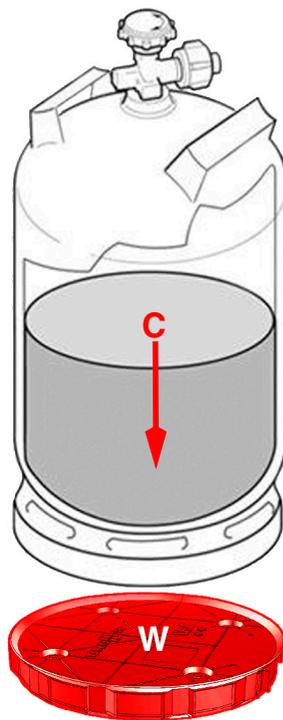


Fig. 6 Gauge sensor position.

If the status LED is blinking, it is necessary to substitute the batteries, that are discharged under the limit required for a correct use.

1.2. **Deactivation "STOP".**

10 Turn off the base device. [10]
Push the command button (ref.: "P" in figure 1 at page 2) located on the front side of the base device **for at least five seconds**: the LED light begins to give indications of the system status, and after about two seconds, at the end of the blinking sequence, stops emitting lights, send a single red light pulse, and definitely turns off. This confirms that automatic recording of the system status is complete with average filedata saved in the base device; statistical information may be accessed later on by the mobile device, which is storing the history data. If it is necessary to remove the battery pack for a long period of inactivity, wait until the process is ended and the remote control program is shutdown, as indicated by the turn off of the LED light.

2. **Annotations.**

2.1. **Precautions.**

CAUTION

[C - 6]



Reduce vibrations to a minimum and prevent external impacts to avoid either potential damage to the integrated "Weight System" hardware or loss of data.

WARNING

[W - 7]



To avoid irreversible damages to the integrated "Weight System" do not overload the center plate with excessive weight, and do not hit the base device during exchange of the fluid container for the reservoir.

NOTICE

[E - 8]



Avoid to spill liquids over the base device; do not immerse in water; do not expose to excessive temperatures, to adverse environmental conditions, continuous vibrations, or overload; do not keep under direct sunlight radiation, or near to high frequency fields that may result in undesirable performance.

2.2. **Accessories.**

The base device does not require accessories for installation or during normal use, except for the mobile device from which it is monitored and remotely controlled. Optional accessories may support increased capabilities or widen operational limits, but their unavailability will not cause a lack in the essential performances, and although guarantee the achievement of the standard accuracy specified for the primary functions of the integrated "Weight System".