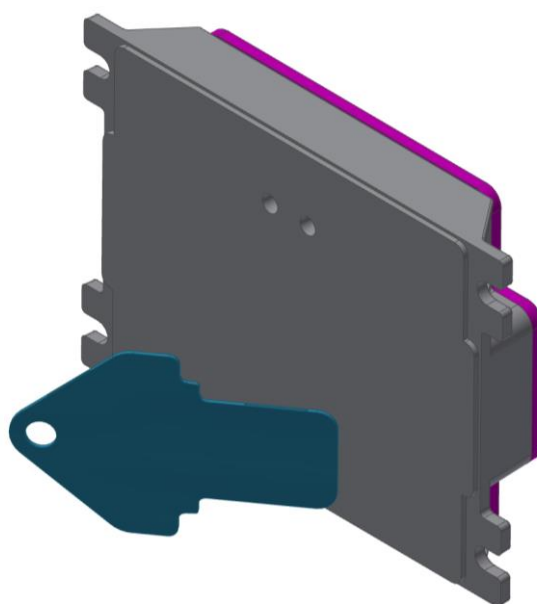# Technical Manual

Key Fob Reader
(RFID Reader)
BLK 100

with serial interface for
washers and dryers

- version 1.90 –

0. Safety Precautions

You are advised to observe the safety information during operation, maintenance and repairing of the BLK 100. Failure to do so may result in warranty and other claims being excluded.

Whilst every care has been taken in the preparation of information contained in this manual, WH Münzprüfer Dietmar Trenner GmbH will not be liable for any consequential loss or damage howsoever caused.

This manual is protected by copyright and all rights are reserved. Without prior authorisation by WH Münzprüfer Dietmar Trenner GmbH, no part of this manual may be reproduced in any form by photocopy, microfilm or other processes nor may it be transmitted in any form usable by data processing. The rights of reproduction by lecture are also reserved.

The Company would be very grateful if any accidental inaccuracies could be pointed out to us with any other constructive criticism which might lead to a better understanding.

Table of Contents

1.   Introduction

The key fob reader BLK 100 offers payment with NFC keys. Keys can be charged at the Central Pay Machine CPM 100 inside the laundry facility.

1.1.   Technical Data BLK 100

supply voltage	8 to 16 V DC
	These are the absolute limiting values. To ensure the undisturbed performance of the BLK 100 the applied voltage should be within these ranges and must never drop below or rise higher even in worst cases.
start-up time	10 seconds
rise of voltage	8 volts in less than 100 ms
power supply	200 mA current (limited to 500 mA max.)
temperature range	+10°C to +70 °C
humidity classification	85% relative humidity year-round, no condensation
dimensions	height: 79.2 mm width: 111.3 mm depth: 18.6 mm

1.2.   RFID Card Reader Functionality BLK 100

The BLK 100 is a RFID card reader. It can be used to pay with a preformatted RFID tag.

The serial interface between the BLK 100 and the machine controller transfers the price to charge to the BLK 100 and the price is deducted from the Pay Key upon presentation. The machine gets told the successful payment via serial interface.

1.3.   Payment with the Pay Key

Only Pay Keys with personalisation matching the personalisation of the BLK 100 are accepted.

Upon presentation of the Pay Key in front of the key fob reader BLK 100 the price received from the host is deducted from the Pay Key. Then the according information is transmitted via the serial interface to the machine.

When a suitable "Pay Key" is presented the red LED is switched on briefly and once the amount has been deducted from the key fob the green LED flashes 5 times.
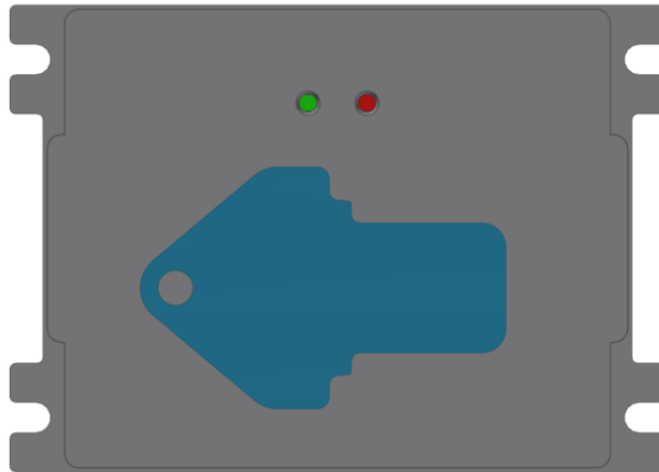
Fig. 1   LEDs, user interface BLK 100

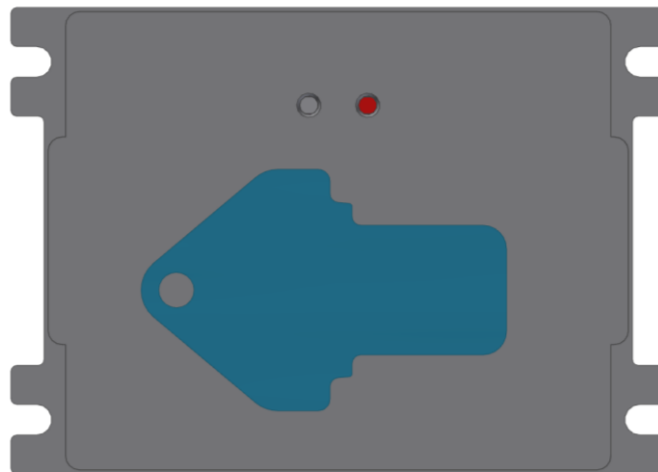If the red LED is on continuously the process failed.

Fig. 2   Red LED on, a failure occurred

If the red LED is flashing with the key in front of the key fob reader an invalid "Pay Key" (wrong operator or wrong currency) has been presented.

2.   Serial Interface

The serial interface of the key fob reader BLK 100 communicates with different protocols with the machine controller. There are different serial protocols implemented for washers and dryers.

3.   Changing the Operator

The key fob reader is delivered without an operator programmed. The device needs to be personalized prior to usage. This is done with the help of the "Operator Key" that is provided with the Central Pay Machine or separately.

On the back of the key fob reader you have to press the push button e.g. with a paper clip as indicated below.
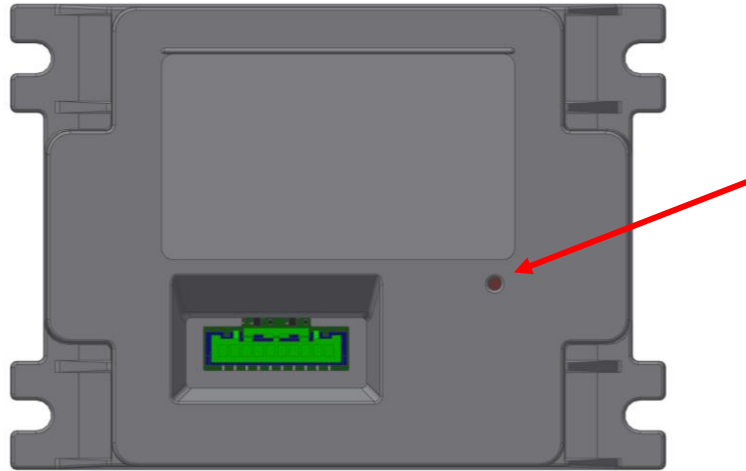

Fig. 3   Location of the push button

Once the key is pressed the LEDs red and green are switched on. Within 40 seconds the "Operator Key" must be presented in front of the reader. If the process is successful the red LED turns off and the green LED flashes 5 times.

If the red LED is on continuously the process failed.

4.   Changing the Currency

The key fob reader is delivered for USD as standard currency. In case of need the currency can be changed. This done with the help of the "Currency Key" that is provided separately.

On the back of the key fob reader you have to press the push button e.g. with a paper clip as shown in figure 3.

Once the key is pressed the LEDs red and green are switched on. Within 40 seconds the "Currency Key" must be present in front of the reader. If the process is successful the red LED turns off and the green LED flashes 5 times.

If the red LED is on continuously the process failed.

5.   BLK 100 Label

The label of the BLK 100 has all the necessary information required to identify it. The following section explains and clarifies the format and legend on the label.
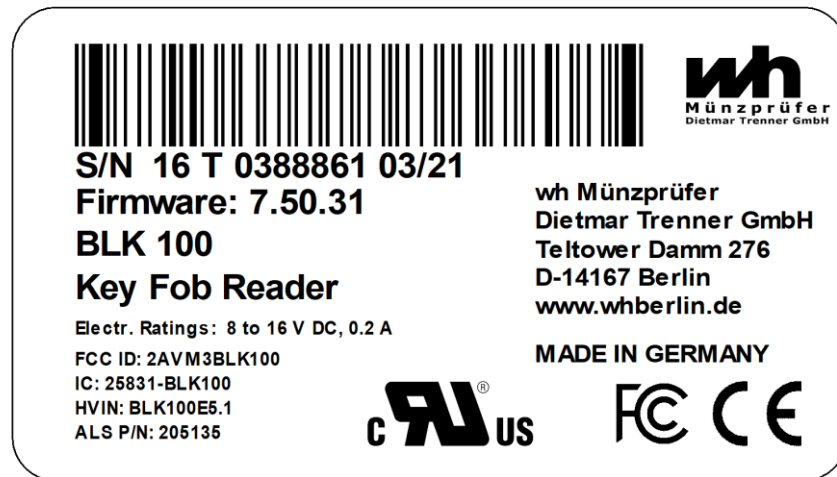

Fig. 4   Example of an BLK 100 label

Below the firmware version the exact type of BLK 100 is printed. Below the barcode is the serial number and the week and year of manufacture. The same information is contained in the bar code. The next line indicates the firmware version, that has been used when the device was programmed in the factory.

The label must be clearly readable. Do not remove it. Do not tamper with the details shown on it. Please remember that the guarantee is associated with the series number and manufacturing code.

6.   Accessories (Connection to Controller)

Cable to connect the Key fob reader BLK 100 to the machine's controller are not in the scope of delivery.

All machines are connected to the BLK 100 via the 10-pole connector on the back of the device (pls. refer to figure 3).

Examples for connecting cables:

K 120   BLK 100 - ACA H7S Controller and Midas Controller
K 121   BLK 100 - Titanium Controller
K 122   BLK 100 - Centurion Controller

7.   EC Conformation Declaration

EC-declarations of conformity on directive 2014/30/EU, attachment IV
(Electromagnetic compatibility (EMC))
and 2014/53/EU, attachment II
(RED)

Name of supplier: **wh Münzprüfer Dietmar Trenner GmbH**
Address: **Teltower Damm 276, 14167 Berlin**

Declares under its sole responsibility and based on a sample testing (type testing), that the product

Product name: **BLK 100**

corresponds to the following laws, standards, security rules and guidelines:

EN 61000-4-2:2009-12	Electromagnetic compatibility (EMC) Part 4-2: Testing and measurement techniques; Electrostatic discharge immunity test
EN 61000-4-4:2013-04	Electromagnetic compatibility (EMC) Part 4-4: Testing and measurement techniques - Electrical fast transient/burst immunity test
EN 61000-6-1:2016-05	Electromagnetic compatibility (EMC) Part 6-1: Generic standards - Immunity for residential, commercial and light-industrial environments
EN 61000-6-2:2016-05	Electromagnetic compatibility (EMC) Part 6-2: Generic standards - Immunity for industrial environments
EN 6100 -6-3:2007+A1:2011	Electromagnetic compatibility (EMC) Part 6-3: Generic standards - Emission standard for residential, commercial and light-industrial environments
EN 55014-2:2016-01	Electromagnetic compatibility Requirements for household appliances, electric tools and similar apparatus - Part 2: Immunity - Product family standard
EN 300 330 C2.2.2:2017-05	Short Range Devices (SRD) - Radio equipment in the frequency range 9 kHz to 25 MHz and inductive loop systems in the frequency range 9 kHz to 30 MHz
EN 301489-1 V2.2.1:2019-03	Electromagnetic Compatibility (EMC) standard for radio equipment and services Part 1: Common technical requirements
EN 301489-3 V2.1.1:2019-03	Electromagnetic Compatibility (EMC) standard for radio equipment and services Part 3: Specific conditions for Short-Range Devices (SRD) operating on frequencies between 9 kHz and 246 GHz
EN 50663:2017	Generic standard for assessment of low power electronic and electrical equipment related to human exposure restrictions for electromagnetic fields (10 MHz - 300 GHz)
EN 62311:2008	Assessment of electronic and electrical equipment related to human exposure restrictions for electromagnetic fields (0 Hz - 300 GHz)
EN 62368-1:2014	Audio/video, information and communication technology equipment Part 1: Safety requirements

Date: 18.12.2020

Signatures:

Ch. Trenner   B. Weickmann
Managing Director   Head R&D

8.   Compliance Statements FCC / ISED for BLK 100

FCC ID: 2AVM3BLK100

IC: 25831-BLK100

8.1.   USA - User Manual Statement

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

FCC RF Exposure Statement:

The BLK 100 has been designed and complies with the safety requirements for portable RF exposure in accordance with FCC rule part §2.1093 and KDB 447498 D01

8.2.   Canada – User Manual Statement

PMN: BLK 100

IC: 25831-BLK100

This device contains licence-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's licence-exempt RSS(s). Operation is subject to the following two conditions:

This device may not cause interference.

This device must accept any interference, including interference that may cause undesired operation of the device.

RF Exposure Statement:

The BLK 100 complies with the safety requirements for RF exposure in accordance with RSS-102 Issue 5 for Portable Limb-worn / Extremity Use conditions

L'émetteur/récepteur exempt de licence contenu dans le présent appareil est conforme aux CNR d'Innovation, Sciences et Développement économique Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes :

L'appareil ne doit pas produire de brouillage.

L'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

Déclaration d'exposition aux RF:

Le BLK 100 est conforme aux exigences de sécurité pour l'exposition aux RF conformément à la norme RSS-102 numéro 5 pour les conditions d'utilisation des membres portatifs / des membres portatifs.
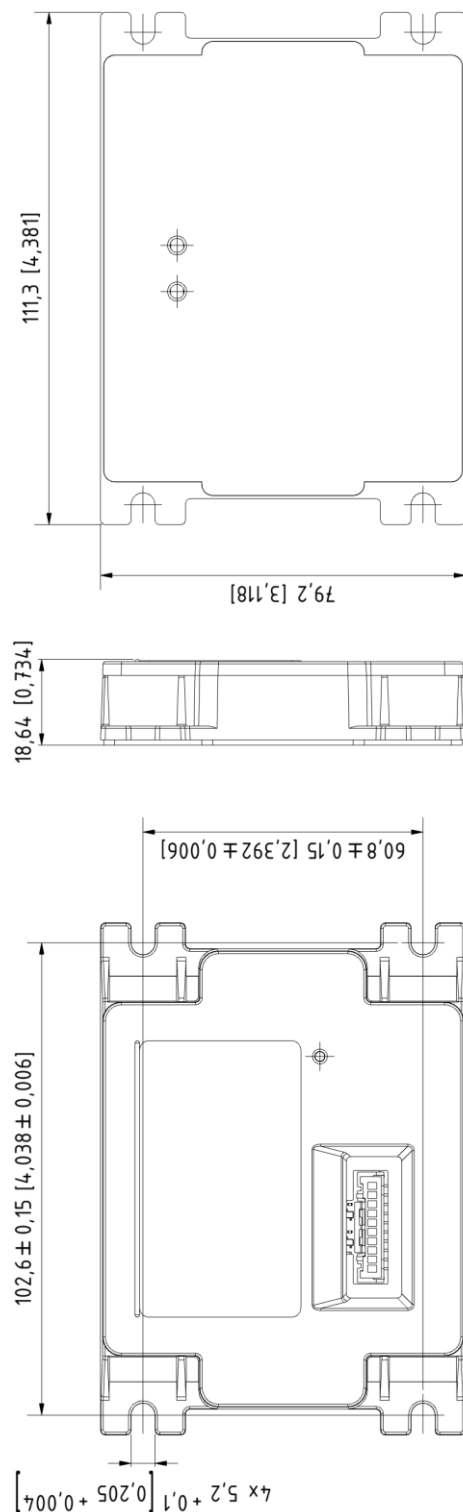
9.   Dimensions

Fig. 5   Dimensions of BLK 100