KePol FS-09

Product description

Revision V2.0

Automation by innovation.

Comments to this manual

In this manual you will find warnings against possible dangerous situations. The used symbols apply to the following meanings:

Notice
Notes on use of equipment and useful practical tips are identified by "Notice". Notices do not contain any information that draws attention to potentially dangerous or harmful functions.

List of changes

Revision change	Date	changed chapters	Description	by
V0.1	2017-04-19		Generated. Preliminary.	sche
V0.2	2017-05-02		Update based on discussion with DHL and internally. Preliminary.	sche
V0.3	2017-11-08	1.1; 2.1; 2.4; 3.1.3; 3.2.2; 3.2.5; 3.3; 3.3.1; 3.3.2; 3.3.4; 3.3.5; 3.3.6; 3.3.7; 3.3.10; 3.3.11; 3.3.14; 3.3.15; 3.4.3; 3.4.4.; 3.5; 4.1.2; 5.1.2; 5.1.3	Rough differences FS-08 vs. FS-09; Headphone plug; Preventative yearly maintenance; "No anchoring in front of a wall" deleted; CON picture - Control Unit 5 HU, module height 19U fix; shelf height below 900 mm needs lock secure, notice deleted; "Touch screen, Display and system control build are constructed as sandwich" deleted; Touch size 12.1"; display size 12.1.", contrast and brightness modified; phone plug; WLAN and Bluetooth fix, 1 free serial port; power supply for a overvoltage category II type 2; LAN 100Mb, Bluetooth is only available near Control Unit; shut down / restart when out of spec; version of RAP and .NET, no HAL; UPS only for the 24V system, UPS data deleted; new chapter over voltage protection; maximum of switched on lighting modules: 12; detailed spec of roof; new chapter "Tools"; packing designed for lorry transport; new options Over voltage protection unit and Power socket; roof not transparent	sche
V0.4	2018-02-07	2.1, 3.3.4; 3.3.6 3.2.2; 3.3.8 3.3.12; 3.3.13; 3.3.14; 3.3.15 5.1.3	Updated based on the visit of DHL in December 2017 Headphone Plug (not equipped); Wieland-connector Control Unit 1 HU higher; video surveillance dummy Printer equipped; camera not equipped UPS not equipped; over voltage protection not equipped Colouring defined for DHL	sche
V0.5	2018-07-20	2.4; 3.3.1: 3.3.2; 3.4.3; 5.1.2	Maintenance; PCT; 800x600; max 9 LIT on; Configuration fixt	sche
V0.6	2018-12-10	3.1.2; 3.3.7; 3.4; 3.6; 4.1; 5.1.2	Galvanized only, 100 mm adjustment range; Operation temperature range external router; SW Requirements added; Tools updated; Dimensions and weight updated; Options updated,	sche/zeh
V0.7	2019-03-28	2.2; 3.1.3; 3.3.7; 4.1.3; 4.2.1; 5.1.2; 5.1.3	Module roof supervision; anchoring; power consumption, temperature; Weights; wind load, standards; options updated; Base spec.	sche
V1.0	2019-08-06	3.1.1; 3.2.1; 3.2.2; 3.3.4 3.3.11; 3.3.12; 3.5.5; 3,1,4	Corrosion protection; rung load box shelf; Module type X05; play audio files; Printer messages; Camera is series; New chapter Extension Module; Emergency opening General revised version	sche
V1.1	2019-09-02	3.5.4; 4.1.1; 3.65.3	Dimensions roof into chapter dimensions; Update dimensions roof; Control of lighting modules	sche
V1.2	2019-09-05	3.1.2; 4.1.1	Adjustment range: 120 mm; Update dimensions roof	sche
V1.3	2019-10-24	3.2.2	Bug in lock size table fixed	sche
V1.31	2019-11-19	3.2.3; 3.3.10	Minor wording improvement	sche
V1.4	2019-12-04	3.3.15; 5.1.2	New chapter accessories; content updated as checklist	
V1.5	2020-01-07	3.3.14	OVP LAN discontinued, OVP variant DSL	sche
V1.6	2020-04-02	4.1.1	Dimensions COR	sche
V2.0	2020-05-06	divers	General review	sche

Contents

1 Introduction

1.1 For whom this manual is intended?

This manual describes the technical specification of the KePol FS-09.
FS-09 is the successor of FS-08.

The rough differences are:
- Higher operation temperature range
- Overall optimized construction. E.g.:
  - No extra Control Cabinet (Control Unit is built in a locker module)
  - Steel instead of concrete base
- Improved cost efficiency. E.g.:
  - Not mandatory used components gets to options (UPS, Over voltage protection)
  - Rarely used ones are placed in an optionally Extension Unit (payment terminal)

1.2 Intended use

KePol FS-09 is a self-service system for storage, deposit and pick up of goods such as parcels, letter mails, spare parts, ….

1.3 Condition and content of goods

The boxes are neither air-conditioned nor airtight. Thus, the goods are exposed to the surrounding climate conditions (i.e. they are exposed to natural heating and cooling, as well as to variable surrounding air moisture). The goods (packaging and content) must be resistant to these climatic conditions.

1.4 Overview

KePol FS-09 locker is designed primary for outdoor use, can also be installed indoor.
The key features of KePol FS-09 are:
- Modular structure, variable locker size and shape.
- Variable mix of box sizes by arrangement of different Box Modules

2 General specification

2.1 Ergonomics

KePol FS-09 locker can be used by the majority of population.
The FS-09 locker can be used also by handicapped people.
For this purpose KePol FS-09 is equipped with the following features:

- The height of the operation elements are according to ADA2010 and EN 301549.
- Audio guidance by integrated speaker
- Headphone Plug (not equipped)

Note
Some features are available only if a client software with the necessary features is installed.

2.2 Security and vandalism

- Usage of screws in visible and accessible areas is reduced to an absolute minimum.
- Safety screws are used in those areas.
- Rugged construction according to DIN EN 1627 / RC2 and CEN TS 16819 level 5 (XL boxes level 4).
- Control unit is locked up with a changeable standard cylinder lock (option).
- Small slits that do not offer leverage points for break-in tools.
- Hidden cable feeding
- Supervision of lock and door state of each box with 2 sensors
- Supervision of control unit door
- Simple replacement of parts in case of vandalism:
  Total prevention against vandalism is not possible. However, damaged parts can be easily replaced.

2.3 Quality

- Long lifetime. The locker is designed for a lifetime of 10 years.
- High reliability and availability
  Comprehensive tests during development to guarantee operation in specified environment.
- Long term available parts
  In KePol only industrial grade electronic components with guaranteed long term availability are used.

2.4 Service and maintenance

Except of a static examination after 5 years FS-09 needs no cyclic maintenance (only if no UPS is installed).
No need of lubricants.
Typical maintenance jobs:

- Cleaning (as required)
- Filling up of paper rolls (if a printer is installed)

3 KePol FS-09 specification

KePol FS-09 is a modular locker offering a mix of differently sized lockers, which cover most commonly used parcel sizes.
A set of locker modules with different locker sizes and different options are available to assemble the machine on customer's request.

3.1 Mechanics

3.1.1 General

- KePol FS-09 is designed for outdoor use, but can also be installed on indoor sites.
- KePol FS-09 will be delivered in single components.
- Outdoor anti-graffiti powder coating.
- Corrosion protection of coated surface: Corrosion Class C4 - 720 hours salt spray test according to ISO 9227
- The outer dimension of the module width is about 500 mm
- The outer dimension of the module depth is 640 mm

3.1.2 Base

- The Base is made of hot-tip galvanized steel.
- The Base is equipped with a levelling mechanism to compensate height differences and/or unevenness in the surface.
- Adjustment range: 120 mm
- Maximum unevenness of the surface: 0% -> +4% -> 0% -> -4% -> …
- Cover panels close the gap needed for levelling mechanism
- A cable outlet on the backside of each module is prepared (to be broken out)
- Breakthroughs in the base allows cabling from base to base

3.1.3 Anchoring

KePol FS-09 has to be anchored both indoor and outdoor.
Anchoring possibilities: Fixing to ground (no wall fixing).
Fixing devices for ground fixing to concrete are provided.

3.1.4 Emergency opening

Control Unit:
Time and effort for emergency opening of the Control Unit door depends on security level of the lock cylinder installed (cylinder can be provided by customer).
Emergency opening can be done by a professional locksmith (picking) or in worst case by drilling.
Locker doors:
Emergency opening of locker doors is possible by the help of Service Menu and special mechanical dismantling steps.
In case of the lowest box door is not openable this door must be drilled.

3.2 Locker system

3.2.1 General

- Maximum load per box: 31.5 kg
- Maximum load per Module: 320 kg
- Burglar resistance:
  Box and locking system reach a burglar resistance according to DIN EN 1627 / RC2 and CEN TS 16819 level 5 (XL boxes level 4).
- The construction of the doors prevents freezing up the doors.

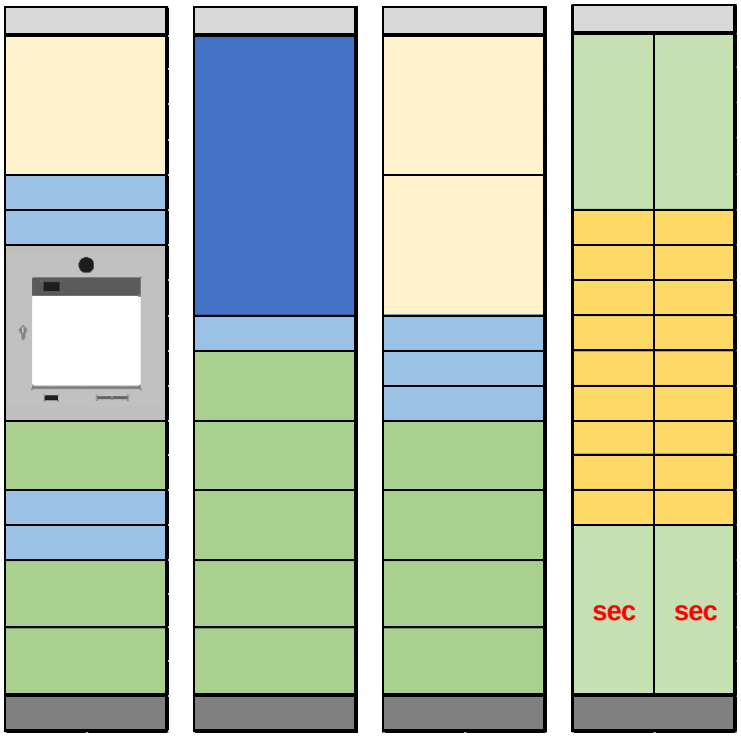
3.2.2 Module types

The KePol FS-09 provides a locker framework for goods of different sizes and additional options to shape a locker system optimizes to the needed size and given site condition.

Available locker modules:

- **Control Module** (CON)
  Locker Module which includes the Control Unit
  Hinge side of the doors of the Control Module is general right.

- **Locker Modules** (MOD)
  Set of Locker Modules of different box size and box count.
  Combine this modules to realize the required box count and mix of different box sizes.
  Locker Modules are available with hinge side right and left.



CON 01R MOD 01 L/R MOD 02 L/R MOD 05 X

Available locker sizes (internal dimensions in mm) and boxes per module:

Type	Height	Width	Depth	CON	MOD 01	MOD 02	MOD 05
XS	85	190	610	-	-	-	18
S	85	440	610	4	1	3	-
M	180	440	610	3	5	4	-
M *)	465	190	610	-	-	-	4
L	370	440	610	1	-	2	-
XL	750	440	610	-	1	-	-
Summary				8	7	9	22

*) In Kepol SW suit handled as M size

Basic conditions for additional (optional) box sizes:

- Possible sizes of box height:
  The height is variable by a modular grid of 95 mm = 1 height unit (U)
  Module height: 19 U
- Resulting heights are: 1U: 85 mm, 2U: 180 mm and so on.
- Minimal size of upper box: 4U or 370 mm
- Minimal size of lowest box: 2U or 180 mm
- If larger boxes than M are near bottom Lock Secure has to be used!

3.2.3 System boundaries

- Minimal size of KePol FS-09:
  Control Module plus at least one Box Module on left and right side.

- Maximum size of KePol FS-09
  Control Module plus 38 Box Modules, respectively limited to a total of 39 Module Controller (Note: Certain Box Module need 2 Module Controller)

- Maximum module arrangement:
  1 to 13 columns on the left of Control Module
  1 to 12 columns on the right of Control Module
  0 to 13 column on other position e.g. round the corner, in the line or opposite

3.2.4 Lock control

The lock control monitors the status of the locks. Unusual conditions of the lock and cabling, such as short circuit, break and other defects are clearly identified and registered.

- CAN-Bus based lock control network.
  Consisting of:
  - KePol Controller:
    Interface between System Control and Module Controller
  - Module Controller
    Control for each module. Controls up to 16 lockers.

3.2.5 Locks

Each box in the system has an electrical lock that is automatically monitored, unlocked and opened by the KePol module controller.

- Each lock has 2 sensors for
    - Door state (open / closed)
    - Lock state (unlocked / locked)
- Locks are released magnetically.
- Back load operation:
  Releases backloads (e.g. caused by oversized parcels squeezed into the box) up to 100N

There are 2 different lock types available:

- **KePol Lock 4**

This is the standard lock.
Operation:
After electronically releasing the lock, the door is pushed open by a spring mechanism.
Hands free operation for user parcel handling is ensured.
After the parcel is removed / deposited, the door is closed by the user and automatically locked by the locking mechanism.
Doors with this lock can be closed any time.

- **KePol Lock Secure**

This is a special lock to ensure child-safety.
Large boxes, which could be entered by children, are equipped with this Lock Secure.
The main difference to the standard lock lies within the closing behaviour.
The Lock Secure comes with special mechanics and electronics that block the closing of the door in situations where unintentionally locking of children could be possible. The door cannot be closed until a person with special user rights releases the blocking.
Blocking reasons are timeout (door was not closed within a time slot), power fail, malfunction in HW and/or SW.
This lock has to be used if

- the shelf of the box is lower than 900 mm from ground
- and the box size is L, XL

This lock need 2 ports of the Module Controller

3.3 Control Unit

The Control Unit consist of the below listed components.

3.3.1 Touch screen

Most of the operator inputs are done by touch screen.

- Diagonal size: 12,1”
- Projected Capacitive Touchscreen
- Input method: Finger input, single touch
- High Light Transmission: Better than 85%

- Surface Scratch Hardness: MoHS 7 or higher to induce a functional failure
- Anti-glare surface
- High impact resistance (UL steel ball test)
- Water drops on touch do not affect the function

3.3.2 Display

Most of the system interactions are shown on display
- Superior brightness and contrast for outdoor use
- Diagonal size: 12,1
- Active matrix LCD module
- Resolution: 800 (H) x 600 (V)
- Display format: 4:3
- Colors: 16.2M (RGB 8-bits)
- Contrast: 700:1
- Brightness: 500 candela
- LED back light

3.3.3 Barcode reader

A barcode reader is integrated in the KePol machine for scanning and processing the bar-codes.
- CMOS industrial grade image sensor technology
- Wide ambient light range: darkness to 100.000 lx (full sunlight)
- Illumination light
- Aiming light
- Scan distance from 50 to about 250 mm
  (depending on the barcode size)
- Wide range of symbologies:
    - Linear (1D): E.g.: Code 39, Code 128, Coda bar, UPC, EAN, Interleaved 2of5,
    - 2 Dimensional (2D): E.g.: Data Matrix, QR Code, Aztec,
- Rotational Sensitivity: 360°
- Scanning of barcodes on displays of mobile devices (e.g.: mobile phones)

3.3.4 Audio

- Weatherproof speaker
- Maximum sound pressure: Alarm 94 dB(A)@1m, speech ~85dB(A)
- HW available to play audio files for alarming and/or speech output
- Optional phone plug (not equipped)

3.3.5 System control

- Mainboard with
    - WIN 10 ready mainboard
    - Dual Core, low power processor, 1,46 GHz
    - 4 GB RAM

  - Intel HD Graphics
  - Ethernet
  - Audio
  - Different serial and USB boards
- 64 GB / 128 GB SSD
- WLAN and Bluetooth
- HMI and KePol Interface board
- LTE/4G Module (optional)
  - Region/countries: Country specific settings have to be defined with the national telecommunication provider (extra project)
- 3 free USB ports (USB-stick, keyboard)
- 1 free serial port

3.3.6 Power supply

KePol FS-09 needs mains voltage

- The power supply is designed for wide voltage range and 50/60 Hz .
- Cable feeding is done via prepared openings through the base
- The connector inside the Control Unit is realized by an IEC socket according IEC-60320 (“Kaltgeräte-Stecker”)
- For mains connection no qualified electrician is needed.
- The connection to mains can be done easily by a country specific IEC power cord to a wall socket or by a prepared mains cable with IEC socket.
- The power supply is designed for a overvoltage category II type 2.
  If this net quality cannot provided an optional overvoltage protection module can be built in (see separate chapter).

3.3.7 Communication Interfaces

- **LAN connection:**
  KePol FS-09 supports an Ethernet / RJ45 interface for connection to the network.
  Cable feeding is done via prepared openings through the socket of the KePol machine by a batch (provided by customer). 1 Gbit

- **WLAN**
  KePol FS-09 is equipped with a WLAN interface.
  To optimize reception the antenna itself is placed on the top cover of the Base Unit.

- **LTE (option)**
  See 3.3.5.
  To optimize reception the antenna itself is placed on the top cover of the Base Unit.

- **Antenna**
  The antenna supports WLAN or LTE (not both).
  Supported frequency bands: 698-960 MHz, 1,7-2,7GHz, 2,4 GHz
  The enclosed antenna is prepared to be mounted (during setup) on the top of the base module. The antenna is connected with a plug-able standard antenna connector to LTE or WLAN module (which one is used).

- **Bluetooth**
  KePol FS-09 supports a Bluetooth USB Adapter for communication to Mobile Devices. Supports 4.0 (LE) and 2.1 standard.
  Bluetooth is only available near Control Unit

- **External Modem or Router**
  Note!
  If an external Modem or Router has to be integrated some restrictions (documented in product manual) have to be followed concerning:
  - Operating temperature
  - Mechanical dimensions
  - Power consumption

3.3.8 Alarming

KePol FS-09 is equipped with

- An acoustic alarm in case of an unauthorized access to any box, Control Unit and any module roof. Alarming is done by playing a sound-file via audio amplifier and speaker. The sound pressure is adjustable.

- Camera for observation (option)

3.3.9 Control Unit Lock (option)

To protect the components and stored data against unauthorized access the Control Unit is locked with a mechanical lock.
- Standard profile cylinder lock
- The cylinder is changeable

Note:
The cylindric locks are not shipped with the KePol lockers per default. The customer can either provide locks out of his own locking system or order locks separately from KEBA.

In case of the lock is ordered from KEBA the lock cylinder (without keys) is enclosed to Control Module.
The keys have to be ordered for security reasons separately (the keys are generally not deliverred with the KePol FS-09 locker).

3.3.10 Heating, ventilation

To guarantee the specified operation temperature range KePol FS-09 provides
- A Control Unit with integrated temperature controlled heating and ventilation
- Automatically shut down and restart in case of Control Unit temperature is out of spec.

3.3.11 Printer (option)

KePol FS-09 can be provided with an optional printer solution.
- The printer is graphic-capable (e.g. for the printing of barcodes or logos).
- Paper width: 82 mm
- Printing area: max 72 mm
- Paper thickness: 65 µm until 140 µm
- Length of printouts: Project specific adjustable, from 100 mm to 230 mm
- Roll diameter max 150 mm
- Meter Age: Receipts about 170 m; Labels: about 75 m (comes up to about 325 labels with length of 230 mm)
- Life: 50 km, 500.000 cuts
- Pick-up mode: Presenter
- Message of printer: paper near end, paper end, printer out of order

3.3.12 Camera (option)

The camera option consists of
- Dome window
- High quality camera 1/3“ CMOS colour sensor, 1600x1200 pixel, rolling shutter, HQ-IR-filter
- Fisheye lenses
- USB2.0 connection to system control

The management of the camera solution is within the KePol client application.

Alternative configurations instead of the camera:
- Dummy dome (simulates a built in camera)
- Blind plate in door colour.

3.3.13 Uninterruptible Power Supply - UPS (option)

KePol FS-09 can be equipped optionally with an UPS (Uninterruptible Power Supply) for bridging short voltage failures.
Type: 24V DC UPS

The main functions are
- shutting down the system in defined way and
- ensuring the finish of a started transaction
- available, not for 230V AC circuit

3.3.14 Over voltage protection (option)

The power supply of FS-09 will be designed for overvoltage category II / Type 2 (pluggable). At some outdoor locations this quality could be not ensured.
For this case the option “Overvoltage protection” can be installed in the Control Unit with an permanent connection.

Features of this option:
- The Overvoltage protection unit is an overvoltage category III device.

- Equipped with surge protection devices (SPD Class II, Type 2) with “defective” indicators
- Terminals to connect foundation earth electrode and/or potential equalization
- Variant with additional over voltage protection of DSL data line

Warning!
The installation of this option must be done by an electrically qualified person.

3.3.15 Other optionally accessories

Power socket 230V AC / 20W
With this option customer specific devices can be connected which need mains voltage (e.g.: router)

Notes:
- This socket is not UPS supported.
  In case of a power failure this device will be out of order.
- This socket may not be used for power tools!

Router mounting plate
This option allows to place a costumer specific device in the top area of the Control Unit.
The available volume: Height 65 * Width 170 * Depth 250 (mm)

Note:
Consider the installation conditions of the device to be built-in!

3.4 Software

KePol FS-09 can be used with KePol SW Suite 2019.1
Recommended operating system: Microsoft Windows 10 IOT 2016 entry (minimum: Microsoft Windows Embedded POSReady 7 - 32 Bit).

3.5 Assembly set options

The KePol FS-09 provides additional options to shape a locker system optimized to the needed size and given site condition.

3.5.1 Corner Module

Corner Module are available to arrange a locker in L-shape (one piece) or in U-shape form (two pieces).
Back sides and top side are covered.

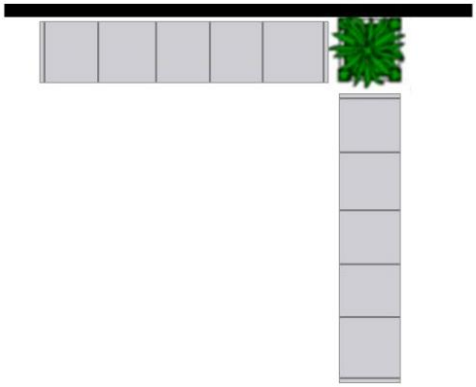
3.5.2 Termination Panel

One Set of Termination Panel is enclosed with the Control Module.
Additional set of Termination Panels can be ordered optionally.

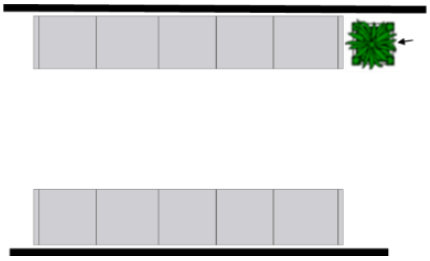
Application spectrum:

- To interrupt the box arrangement e.g. in case of an annoying pillar

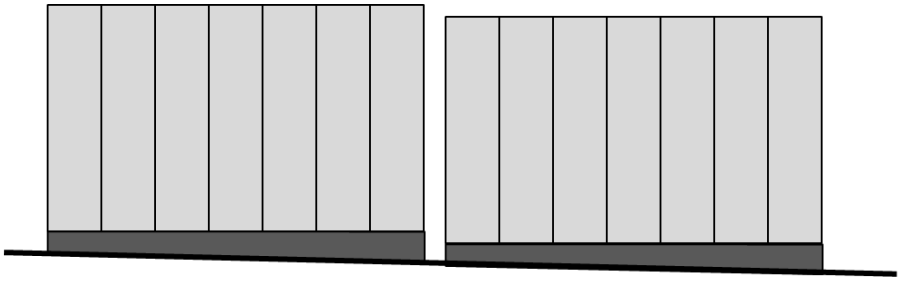
- To realize an open L-shape



- To realize vis-à-vis installation

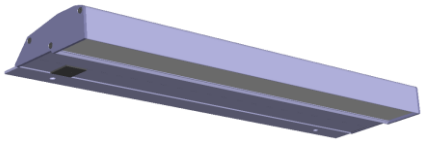


- To cover heavy incline



3.5.3 Lighting Module

KePol FS-09 can be equipped with economical LED lamps.
They illuminate the operation zone of KePol.



Illuminance: Typical 550 lm per module.
Lighting modules can be ordered for each module separately.
Maximum of switched on lighting modules:
with 100% duty-cycle are 9 pcs. In case of more lighting modules are installed the duty cycle is derated by software.
The lights are switched on/off or dimmed by the application software.

3.5.4 Customer Roof Module

KePol FS-09 can be also equipped with a roof module.
This protects the user against (not wind driven) rainfall.
Roof Modules are not available for Box Modules.
Material: transparent.

There are 2 variants of Roof Module:

Variant ROF-01: Roof for Control Unit

Variant ROF-02: Roof for Control Unit plus Extension Unit

3.5.5 Extension Module

The FS-09 Extension Module is used to integrate additional functions which cannot be placed in Control Module.

This could be:

- An additional printer
- A payment terminal
- Video surveillance components
- …

For the Extension Module the same box module (box mix and hinge side) is used as for the Control Module.

To protect the components against unauthorized access the Extension Unit is locked with a mechanical lock (same type of cylindric lock as Control Unit).

Note:
The cylindric locks are not shipped with the KePol CL lockers per default. The customer can either provide locks out of his own locking system or order locks separately from KEBA (see also chapter 3.3.9).

Standard configuration of EXT (equipment built in per default):

- Ventilation and heating (controlled by Control Unit)
- 3 Mains-sockets type F (CEE 7/4)
- Antenna mount possibility on module roof

Optional configurable equipment built in by Keba:

- Printer (same as in CON - see chapter 3.3.11)
- Additional 3 pcs of mains sockets type F (sum 6 pcs)
- Router mounting plate (kind of shelf to place e.g. a router safe in the cabinet)
- Intermediate shelf (an additional shelf for placing components safe in the cabinet)
- LTE/WLAN antenna (e.g. in case of a second wireless device should be built in)

Equipment to be built in by customer:
This devices are built in by the customer.

Important!

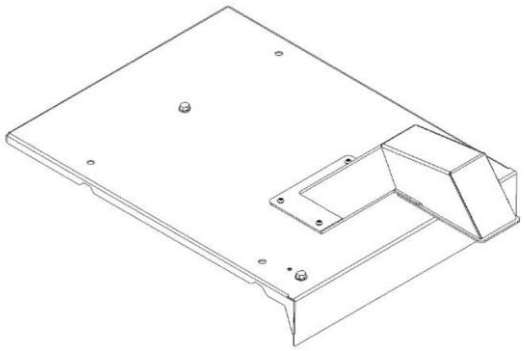
- Devices built in by the customer must meet specific requirements defined in the product manual concerning:
  - Operating temperature
  - Mechanical dimensions
  - Power consumption
- Operators who make changes to the product which KEBA has not approved do so at their own risk. KEBA shall assume no liability for said changes. The associated EC Declaration of Conformity shall lose its validity through such a change. The conformity assessment procedure must be repeated in accordance with the applicable laws.

Note:
Because of the high variants on possible configurations and customer specific devices to be built in, the Extension Module is developed always on customer specific demands based on above preconditions.

Option Customer Roof Module:
To protect users against (not wind driven) rainfall an optionally roof is available.
This roof covers the area above Control Unit and Extension Unit.
See also chapter “Customer Roof Module”.

3.5.6 Customer Device Holder

This option can be used to mount video cameras on top of Box Modules.
This Customer Device Holder can be placed on any Box Module



Camera specific mounting holes can be made by customer on a removable adapter plate.

3.6 Tools

The following tools will be available.

3.6.1 Machine Configurator

The Machine Configurator is a web-tool to configure the KePol FS-09 locker.
The tool makes sure that only valid and orderable configurations can be made.
A user specific login provides access to all available FS-09 components and options.

The Machine Configurator generates the following outputs:

- a front view,
- a foot print with the essential dimensions
- a detailed parts list (basic for order)
- and finally an electrical configuration file.

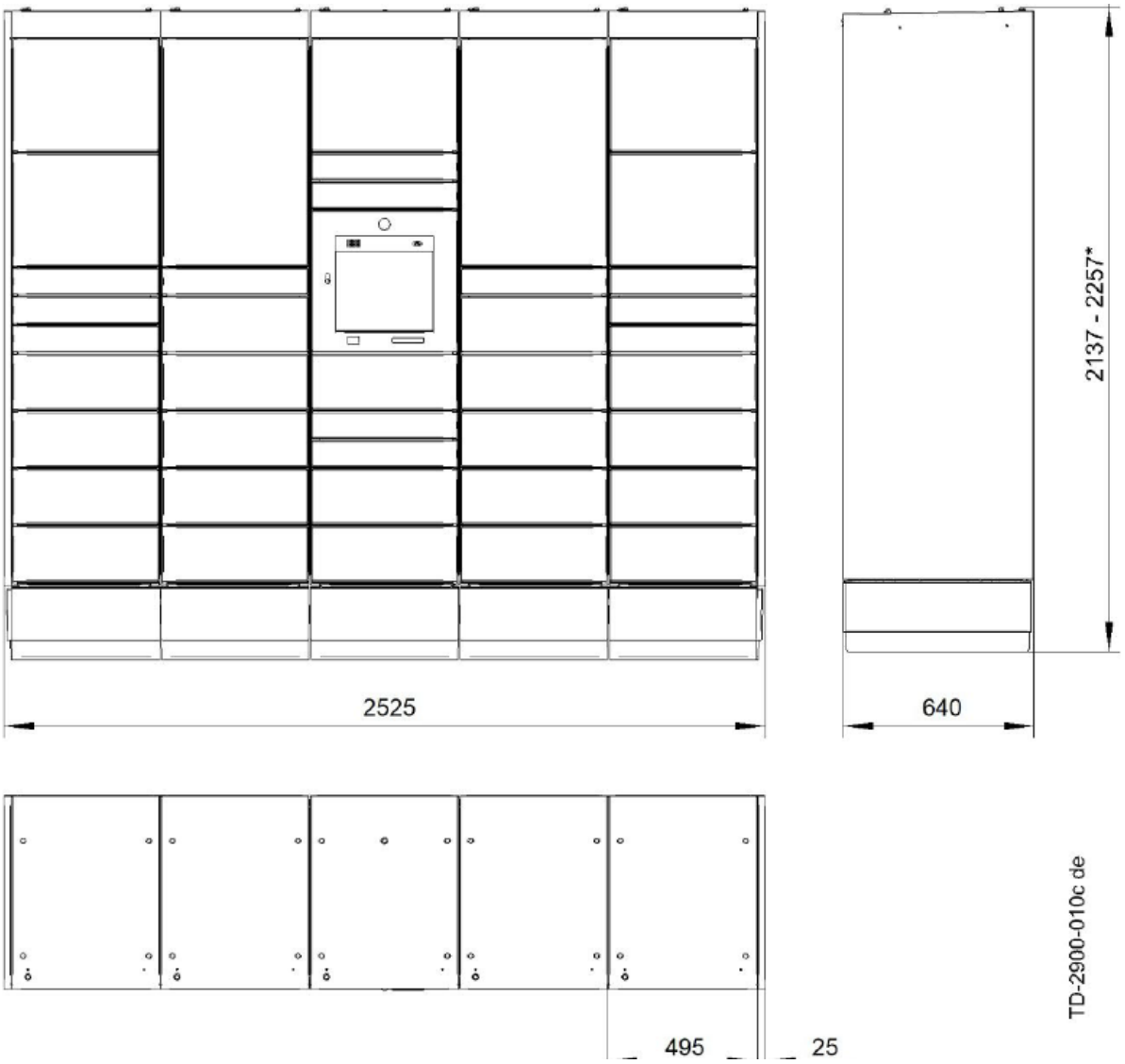
3.6.2 Service tools on machine

Separate user interface for service for testing the machine components.

4 Technical specifications

4.1 Dimensions and weight

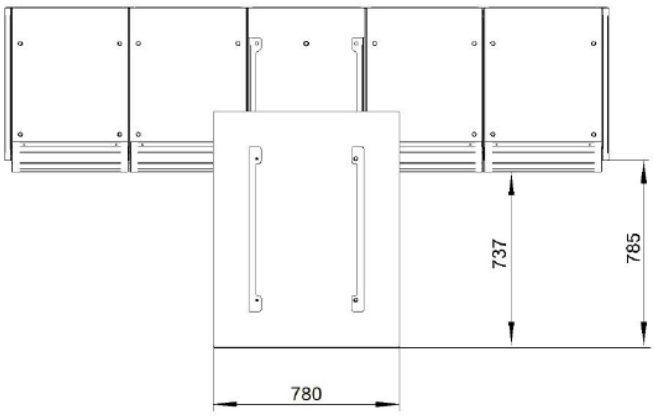
4.1.1 Dimensions – drawing

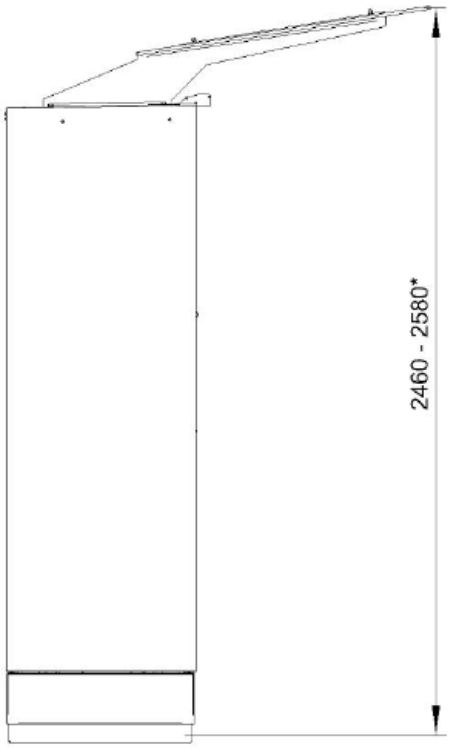


*) adjusting range for level compensation

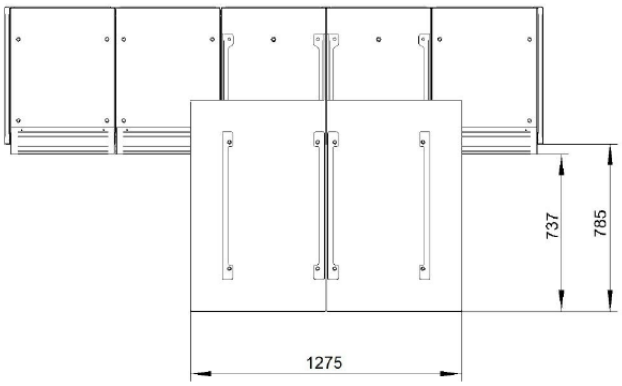
Dimensions customer roof:

- Roof for Control Module (ROF-01)

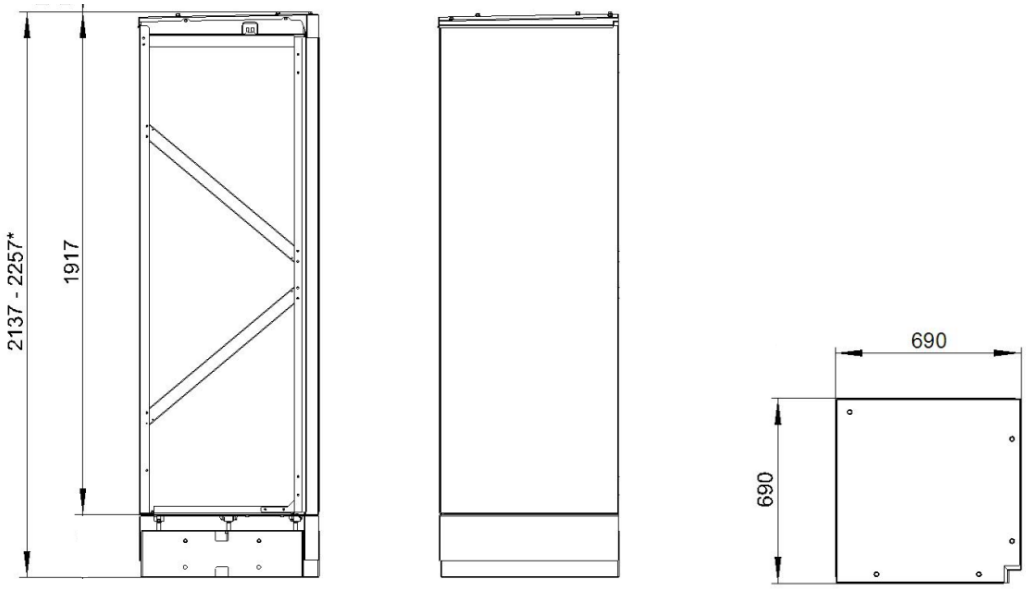




- Roof for Control and Extension Module (ROF-02)



Dimensions Corner Module



*) adjusting range for level compensation

4.1.2 Dimensions - transportation

KePol FS09 R is packed on ½ Euro or standard Euro-pallet (FND and COR) or added to a component (LIT).

Dimensions W x D x H in mm:

Component	W	D	H
Control Module (CON) incl. TRM	600	800	2100
Extension Module (MOD) – all variants	600	800	2050
Base (FND)	1200	800	Up to 1500
Corner Module (COR)	1200	800	1950
Side cover (TRM)	600	800	1950
Lighting Module	520	155	60
Customer Device Holder	800	600	300

4.1.3 Weight

Weight in kg (preliminary)

Component	net	gross
Control Module (CON) incl TRM	197	205
Compartment Module (MOD) *)	115	125
Base (FND) – 1 pce 10 pcs	32 320	39 345
Corner Module (COR)	91,5	117,5
Side Cover (TRM) – 2 pcs	39	70
Lighting Module (LIT)	1,6	2
Customer Device Holder	6	6

*) weight may vary depending on box mix

4.2 Environment and electrical data

4.2.1 Environment data

Storage:

Only indoors, in dry environment

Storage temperature:	-20°C to +60°C
Admissible relative air moisture:	5% to 80%, not condensing
UPS (option only):	Every 3 months UPS battery has to be recharged

Operating:

Operating temperature range:	-25°C to +45°C
Admissible relative air moisture:	5% to 100%
Insulation:	maximum of 1120 W/m²
Temperature variation speed:	maximum of 0.5°C /min
IP class:	Compartments: IP 33 Control Unit: IP 44

Protection against:	Rain Spray water at any angle up to 60° from vertical
Wind load:	(according to DIN EN 1991-1-4) maximum 0,85kN/m²
Snow load	(according to DIN EN 1991-1-3) maximum 5 kN/m²
Noise level during standby:	< 45 dB (A)

4.2.2 Electrical Data

Suitable electric networks:	TN network or TT network (no IT network)
Mains voltage:	230 (95 … 240) VAC ±10%
Mains frequency:	50 / 60 Hz
Nominal current (max):	
Control Unit	5 A
Control Unit and Extension Module	10A
Power consumption (typ.)	Approx. 115 W / 0,5A (standby, without heating)
Protection class:	Protection class I (according to EN 62368-1, protective grounding)
Overvoltage category:	Connection to a 230 V network with overvoltage category II (according to EN 62368-1; table 13) Optionally upgradeable overvoltage protection devices allow for connection with a network of overvoltage category III (according to EN 62368-1, table 13).

Connection for additional earth electrode / concrete footing ground electrode:
Provided with option “overvoltage protection device”.

4.3 Regulations and safety standards

CE

KePol FS-09 is designed in accordance with CE-regulations.

The declaration of conformity is being held by KEBA.

National approvals:
For the following countries relevant national standards are checked and fulfilled:
Germany, Austria, Netherlands
In order to install KePol FS-09 in other countries than mentioned above national standards has to be checked and fulfilled previously.

Additional reports:

Static report
The static report is provided acc. DIN EN 1991: EC 1, DIN EN 1992: EC 2, DIN EN 1993: EC 3 and DIN EN 1997: EC 7.
The expected snow load zones are 1, 1a, 2, 2a and 3 acc. to EN 1991-3.
The expected wind load zones are I+II (exposed areas excluded), III (not within a coastal strip of 5km) and IV (inside cities only) acc. to EN 1991-4.

This has been certified and fulfilled for the following countries: Germany, Austria, Netherlands.
In order to install KePol FS-09 in other countries than mentioned above national standards have to be previously checked and fulfilled.

Fire safety expertise (“Brandschutzgutachten”)
The KePol FS-09 will only be evaluated according to fire safety standards but not according to country specific (EU) building regulations and laws.

5 Appendix

5.1 Customizing possibilities

5.1.1 Site specific customizing

Site specific customizing means configuration of a site specific locker.
The complete assembly set of KePol FS-09 can be used by following defined rules.
The compliance with these rules is guaranteed by the configuration tool “Machine Configurator”.

5.1.2 Customer spezific options / configurations

This is a summary of options/accessories (checklist) including ordering variants:

Short	Options / accessories	Ordering choice
CYL	Lock Cylinder for Control Unit / Extension Unit (“By KEBA” – then enclosed to CON)	□ by customer □ by KEBA (FRU)
PRT	Printer	□ NOT built-in □ Standard built in □ Order separately (FRU)
UPS	Uninterruptible Power Supply	□ NOT built-in □ Standard built in □ Order separately (FRU)
LTE	LTE-Modem card	□ NOT built-in □ Standard built in □ Order separately (FRU)
CAM	Camera for observation	□ Blind plate □ Dummy dome □ Standard built-in □ Order separately (FRU)
SOC	Power socket 230V AC	□ NOT built-in □ Standard built in □ Order separately (FRU)
RMP	Router mounting plate	□ NOT built-in □ Standard built in □ Order separately (FRU)
PHO	Phone-out	□ Blind plate □ Standard built in □ Order separately (FRU)
OVP	Over voltage protection unit for mains only	□ Order separately (FRU)
OVP-LAN	Over voltage protection unit for mains and Ethernet	□ Order separately (FRU)
CDA	Customer Device Holder	□ Order separately (FRU)
ADA	Tactile marking	□ NOT built-in □ Standard built in □ Order separately (FRU)

Option: Extension Unit
The Extension Unit is a separate project specific component in case of a customer needs additional functions like payment terminal, second printer, etc.
For details see chapter “Extension Module”

5.1.3 Colouring

To ensure best price-performance ratio as many parts as possible should be non-variable parts.
This rule has to be also applied for the colouring as well.
The following list defines which parts have fix or variable colour:

Pos.	Name	Colour
1	Top cover	RAL 7040 window grey
2	Termination panel	RAL 7040 window grey
3	Back side	RAL 7040 window grey
4	Control panel door	Customer specific
5	Locker doors	Customer specific
6	Base / Base cover	Galvanized steel / RAL 7016 anthracite
7	Corner Module	RAL 7040 window grey
8	Lighting Module	RAL 7040 window grey
9	Roof Module	RAL 7040 window grey

5.2 Branding

Branding is done by the customer by adhesive foil.
KEBA provides a branding guide (recommended foils, dimensioning).

5.3 Spare parts

General spare parts are:

- Mechanical parts like box doors
- Electro mechanical part like KePol Lock
- Components of the Control Unit like
  - Display/touch sandwich
  - System Control
  - LTE Modem

A detailed spare parts list is available in a separate document.

www.keba.com