



KeTop Operation & Monitoring



KEBA[®]

Automation by innovation.

KeTop

Operation and Monitoring

Mobile and stationary visualization solutions

KeTop stands for a unique choice from mobile to stationary operating devices for easy implementation of all possible visualization and operating tasks. Performance and size of the devices are scalable; depending on the model, membrane keyboards, touchscreens as well as multitouch monitors – on request with unique haptic elements – are available.

Patented KEBA innovations create outstanding experiences of interaction. A user-friendly visualization software guarantees fast and unlimited project realization, no programming knowledge required.

Highest robustness, quality and safety are standard of the advanced premium products as well as a maximum in terms of ergonomics and best-possible operating efficiency.

KeTop operating devices are available with three software packages: Embedded, Trend and Style.

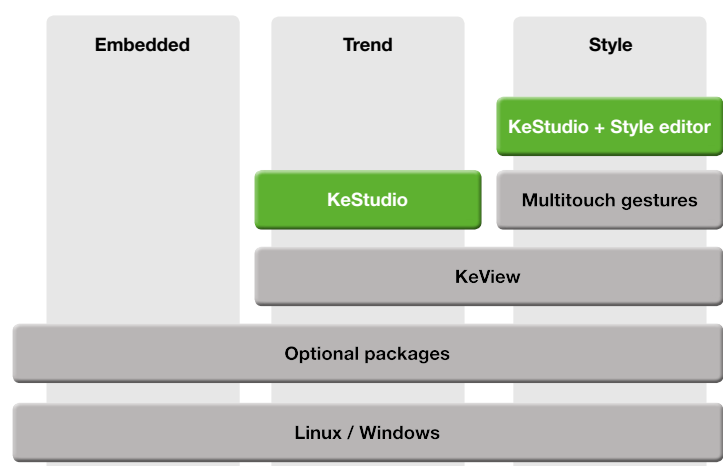
Embedded contains an operating system with VNC (Virtual Network Computing) and browser as well as a multi app manager, for switching between two application (VNC, browser or JAVA). The software package embedded also forms the basis for the Trend and Style versions.

The Trend software package also contains a standard visualization application and the Style variant offers modern multitouch visualization.

Customizing in hardware and software

Extensive customizing can be easily implemented with the KeTop devices for housings, keyboard layout and software.

In addition to machine visualizations in the customer's own design, individually designed housings and housing variants are also possible.





KeTop – overview

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KeTop T10 directMove

Handheld terminal

Product features

- Ideal for the intuitive teach-in of 6-axis robots
- Can be used without robot programming knowledge
- Time saving of approximately 20% during teach-in
- Detects its orientation in space
- Safe retraction from critical situations
- Customizing of keyboard and display icons optional



Short description

Using the inertial sensors of the 6D Inertial Measurement Unit (6D IMU), the KeTop T10 directMove detects its orientation and direction in three-dimensional space. The operator can therefore easily specify the desired movement or rotation of the robot's TCP by indicating the KeTop T10 directMove in the direction of motion and then by deflecting a small joystick – regardless of his/her position relative to the robot. The speed of motion can be changed by adjusting the intensity of the joystick deflection. This means that no in-depth knowledge of coordinate systems is required. Teach-in is easier and more efficient for both experienced operators and new users.

Maximum flexibility is achieved through four operating modes that are displayed on the 1.5" color display using icons:

directMove mode: the robot follows the direction instructions from the KeTop T10 directMove completely free in space.

snap2grid mode: use of defined coordinate systems as reference directions for the KeTop T10 directMove for precisely directed movements of the robot.

virtual handle mode: the KeTop T10 directMove acts as a virtual handle on the Tool Center Point to change its alignment quickly and easily.

axial movement mode: for the direct movement of individual robot axes as with a conventional handheld operating device.

With the KeTop T10 directMove, the individual path points are thereby determined and finely adjusted. If necessary, standard operating devices and screen devices such as laptops can also be used for programming.

Display

Type	TFT
Size	1.45" (1:1)
Resolution	128 x 128 pixels
Backlight	LED

Operating elements

Membrane keyboard	Max. 10 buttons
Joystick	2-axis with button functionality
Characteristics	KEBA robotics

Safety elements

Enabling switch	3 positions, 2 channels, B10d=1,000,000
Emergency-stop button / gray stop button	2 channels, B10d=250,000
Safety category	PLe acc. to EN 13849-1 or SIL3 acc. to EN 61508 can be achieved

Interfaces

Communication	1x Ethernet 10 Mbit/s
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Dimensions, weight

Dimensions LxWxH	210 x 62 x 75 mm
Weight	Approx. 250 g

Environmental conditions

Operating temperature	0 °C to 45 °C
Storage temperature	-25 °C to 70 °C
Relative air humidity	5% to 95% (non-condensing)
Vibration resistance	5 Hz ≤ f ≤ 8,4 Hz with 3,5 mm, 8,4 Hz ≤ f ≤ 150 Hz with 1 g (EN 61131-2 and EN 60068-2-6)
Shock resistance	15 g / 11 ms (EN 61131-2 and EN 60068-2-27)

General

Power supply	24 V DC
Max. switch-on current	<1 A
Power consumption	1.2 W
Protection class	III acc. to EN 61131-2 or EN 50178
Protection rating	IP54
Certification	UL, CE
Sensor system	6D IMU (acceleration and gyro sensors) Max. swing speed 2000 °/s Drift when stationary: 1 °/min Accuracy: typ. 2-3 ° (first minute after calibration) Max. orientation update rate: 10 ms
Accessories	Wall mount Cable 3 m / 10 m Connection box for control cabinet installation
Directives	Machinery Directive 2006/42/EC EMC Directive 2014/30/EU RoHs Directive 2011/65/EU

KeTop T20 eco / techno

Handheld terminal

Product features

- Low weight, compact and handy
- Comfortable, fatigue free operation
- Flexible and universal use
- Unlimited keyboard layouts - KeTop T20 techno with Smart Keypad



KeTop T20 eco

KeTop T20 techno

Short description

Handheld operating devices of the KeTop T20 series are compact, lightweight and feature a high-performance ARM-Cortex A8 processor. They are very versatile and can be equipped with various optional operating elements, such as key switches, push buttons, hand wheel and/or (axis) selection switch. KeTop T20 devices can thus be optimized for any application.

The low weight and the compact and ergonomic design make long, fatigue-free operation possible. The devices are equally suited for left- and right-hand operation and can be optimally adapted to the user's hand by means of an adjustable strap.

There are two versions available:

KeTop T20 eco: membrane keyboard - standard, robotics and CNC version

KeTop T20 techno: LCD Smart Keypad - freely programmable

Smart Keypad: Located behind every single button is an LCD, allowing each button to be individually customized in appearance and function. An unlimited number of individual keyboard layouts – independent of languages and symbols – is possible thanks to this innovative technology. Customizing to batch size “1” can easily be implemented.

Display	T20 eco	T20 techno
Type	TFT	
Size	3.4" (16:9)	
Resolution	WQVGA 480 x 272 pixels	
Touchscreen	Analog resistive	
Backlight	LED	

Operating elements	T20 eco	T20 techno
Membrane keyboard	Max. 36 buttons, 4 LEDs	28 buttons, tactile LCD keyboard
Selector switch*	2, 4 or 16 levels	
Key switch*	2 or 3 positions	
Push button*	momentary / maintained	
Hand wheel (optional in keyboard section)	Magnetic locking, 100 impulses/rotation	-
Characteristics	KEBA standard / KEBA robotics ** / KEBA CNC	freely programmable

* internally or externally wired // up to two elements marked with * can be selected of which up to one may be externally wired

** perfect in combination with KeMotion

Safety elements	T20 eco	T20 techno
Enabling switch	3 positions, 2 channels, B10d=1,000,000	
Emergency-stop button / gray stop button	2 channels, B10d=250,000	
Safety category	PLe acc. to EN 13849-1 or SIL3 acc. to EN 61508 can be achieved	

Software packages	T20 eco	T20 techno
KeTop T20 Embedded	Windows CE® 6.0 / Linux	Windows CE® 6.0
KeTop T20 Trend	For details, see KeView visualization software	

CPU board	T20 eco	T20 techno
CPU	ARM Cortex A8	
Onboard memory	Up to 256 MB flash, 128 MB SDRAM	128 MB flash, 128 MB SDRAM
Removable storage	MicroSD card (optional)	MicroSD card

Interfaces	T20 eco	T20 techno
Communication	1x Ethernet 10/100 Mbit/sec, 1x RS-422-A / RS-232-C	
Transfer	USB 2.0 (optional)	USB 2.0

Dimensions, weight	T20 eco	T20 techno
Dimensions LxWxH	226 x (82-162) x 55 mm	
Weight	Approx. 480 g (without optional hand wheel)	Approx. 520 g

Environmental conditions	T20 eco	T20 techno
Operating temperature	0 °C to 45 °C	
Storage temperature	-20 °C to 70 °C	
Relative air humidity	5% to 95% (non-condensing)	
Vibration resistance	5 Hz ≤ f ≤ 8,4 Hz with 3,5 mm, 8,4 Hz ≤ f ≤ 150 Hz with 1 g (EN 61131-2 and EN 60068-2-6)	
Shock resistance	15 g / 11 ms (EN 61131-2 and EN 60068-2-27)	

KeTop T20 eco / techno

Handheld terminal

General	T20 eco	T20 techno
Power supply	24 V DC	
Max. switch-on current	5.6 A	
Power consumption	6 W	7.7 W
Protection class	III acc. to EN 61131-2 or EN 50178	
Protection rating	IP65	
Certification	UL, CE	
Accessories	Magnetic holder, wall mount (various) Cable with screw connection 2,5 m / 5 m / 7 m / 10 m / 15 m / 20 m Cable with push-pull-connection 3 m / 5 m / 10 m / 15 m / 20 m Connection boxes for field and control cabinet installation (IP65)	
	-	Key editor software
Directives	Machinery Directive 2006/42/EC EMC Directive 2014/30/EU RoHs Directive 2011/65/EU	

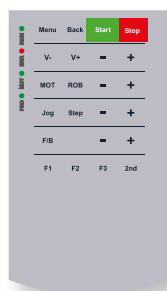
Overview of the available options



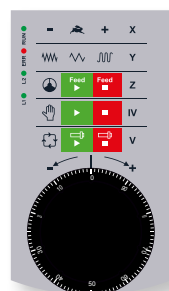
Overview of the keyboards



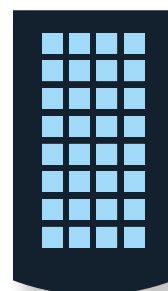
KeTop T20 eco
Standard keyboard



KeTop T20 eco
Robotics keyboard



KeTop T20 eco
CNC keyboard
with hand wheel



KeTop T20 techno
LCD Smart Keypad
freely programmable

KeTop T55

Handheld terminal

Product features

- High-performance, proven universal device for performing all operating and visualization tasks
- High-quality display for clear and well-arranged presentation, also suitable for complex processes
- Many equipment options for individual adaptations



Short description

With the high-performance ARM Cortex A8 processor, the KeTop T55 forms a powerful embedded platform with low power consumption. Available as operating system is either Windows CE 6.0 or Linux. Data can be transferred via USB port.

To increase the operational safety of the devices, the product design is based on a modern FE computer simulation. The round shape and the double-walled housing are the result of this development, whereby shock resistance is ensured to drop heights of up to 1.5 m. With its many grip and holding positions, the KeTop T55 can be used comfortably and fatigue-free by right- and left-handed persons.

Display	
Type	TFT
Size	6.5" (4:3)
Resolution	VGA 640 x 480 pixels
Touchscreen	Analog resistive
Backlight	LED

Operating elements	
Membrane keyboard	Max. 3x 16 buttons, 4 LEDs
Key switch*	2 or 3 positions
Potentiometer*	✓
Push button*	momentary / maintained
Hand wheel**	50 impulses/rotation
Joystick**	3-axis
Characteristics	KEBA standard / KEBA robotics***

* possible built-in elements at left: an element marked with * can be selected for the left operating area

** possible built-in elements in middle: an element marked with ** can be selected for the middle operating area

*** perfect in combination with KeMotion

Safety elements

Enabling switch	2x: 3 positions, 2 channels, integrated safety electronics
Emergency-stop button / gray stop button	2 channels
Safety category	PLe acc. to EN 13849-1 or SIL3 acc. to EN 61508

Software packages

KeTop T55 Embedded	Windows CE® 6.0 / Linux
KeTop T55 Trend	For details, see KeView visualization software

CPU board

CPU	ARM Cortex A8
Onboard memory	Up to 256 MB flash, 256 MB SDRAM

Interfaces

Communication	1x Ethernet 10/100 Mbit/s, 1x RS-422-A / RS-232-C, 1x RS-232-C (Debug)
Transfer	USB 2.0

Dimensions, weight

Dimensions LxWxH	250 x 250 x 125 mm (incl. handle)
Weight	Approx. 1330 g

Environmental conditions

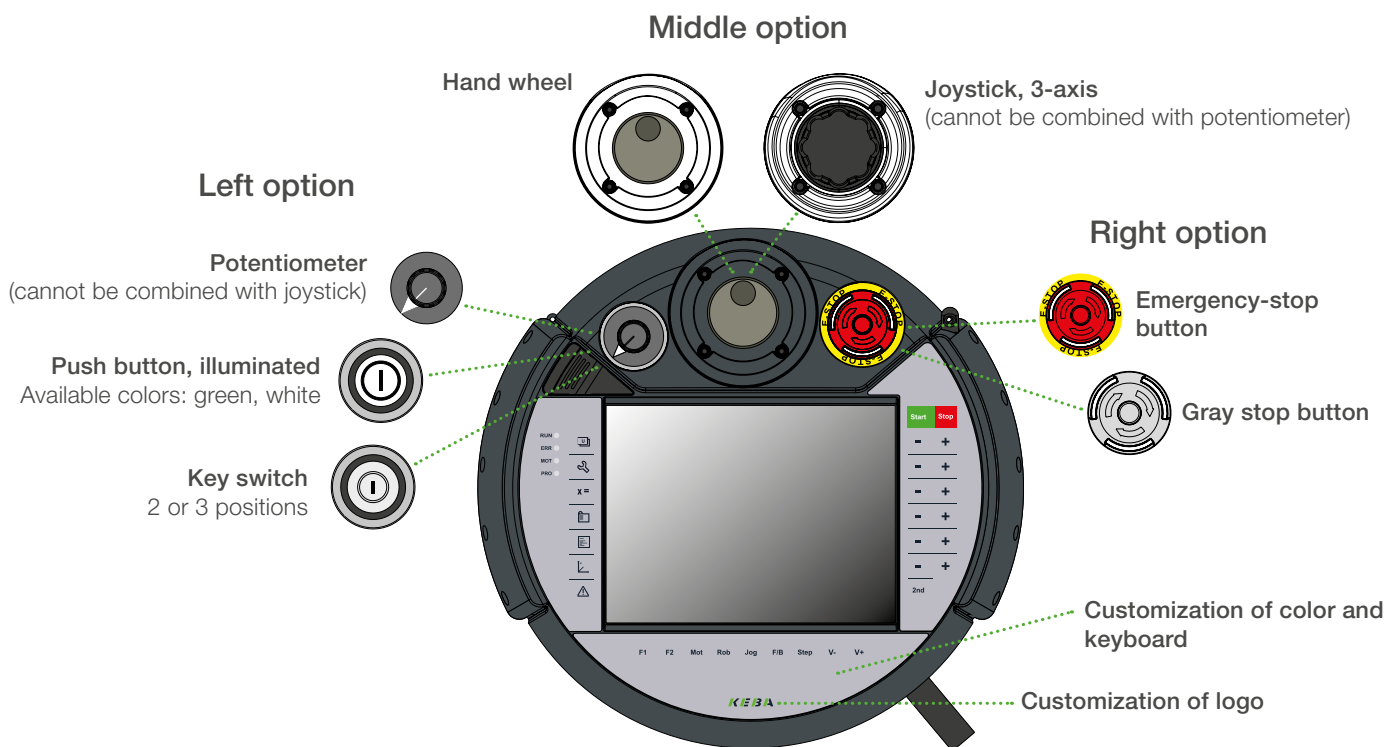
Operating temperature	0 °C to 45 °C
Storage temperature	-20 °C to 70 °C
Relative air humidity	5% to 95% (non-condensing)
Vibration resistance	10 Hz ≤ f ≤ 19 Hz with 0,5 g, 19 Hz ≤ f ≤ 60 Hz with 0,35 mm, 60 Hz ≤ f ≤ 150 Hz mit 5 g (EN 60068-2-6)
Shock resistance	15 g / 11 ms (EN 60068-2-27)

KeTop T55

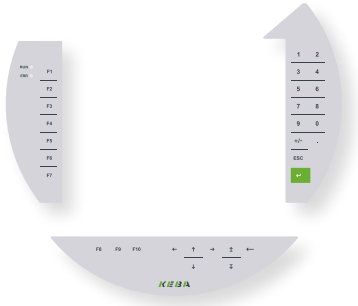
Handheld terminal

General	
Power supply	24 V DC
Max. switch-on current	5.6 A
Power consumption	8.6 W
Protection class	III acc. to EN 61131-2 or EN 50178
Protection rating	IP65
Certification	UL, CE, SIBE
Accessories	Wall mount (various, optionally with magnet) Cable with screw connection 2.5 m / 5 m / 7 m / 10 m / 15 m / 20 m Cable with push-pull-connection 3 m / 5 m / 10 m Connection boxes for field and control cabinet installation (IP65)
Directives	Machinery Directive 2006/42/EC EMC Directive 2014/30/EU RoHs Directive 2011/65/EU

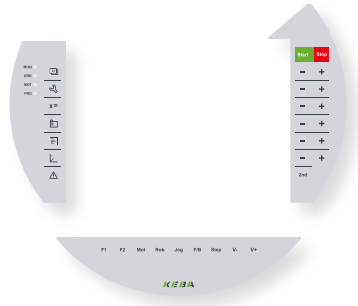
Overview of the available options



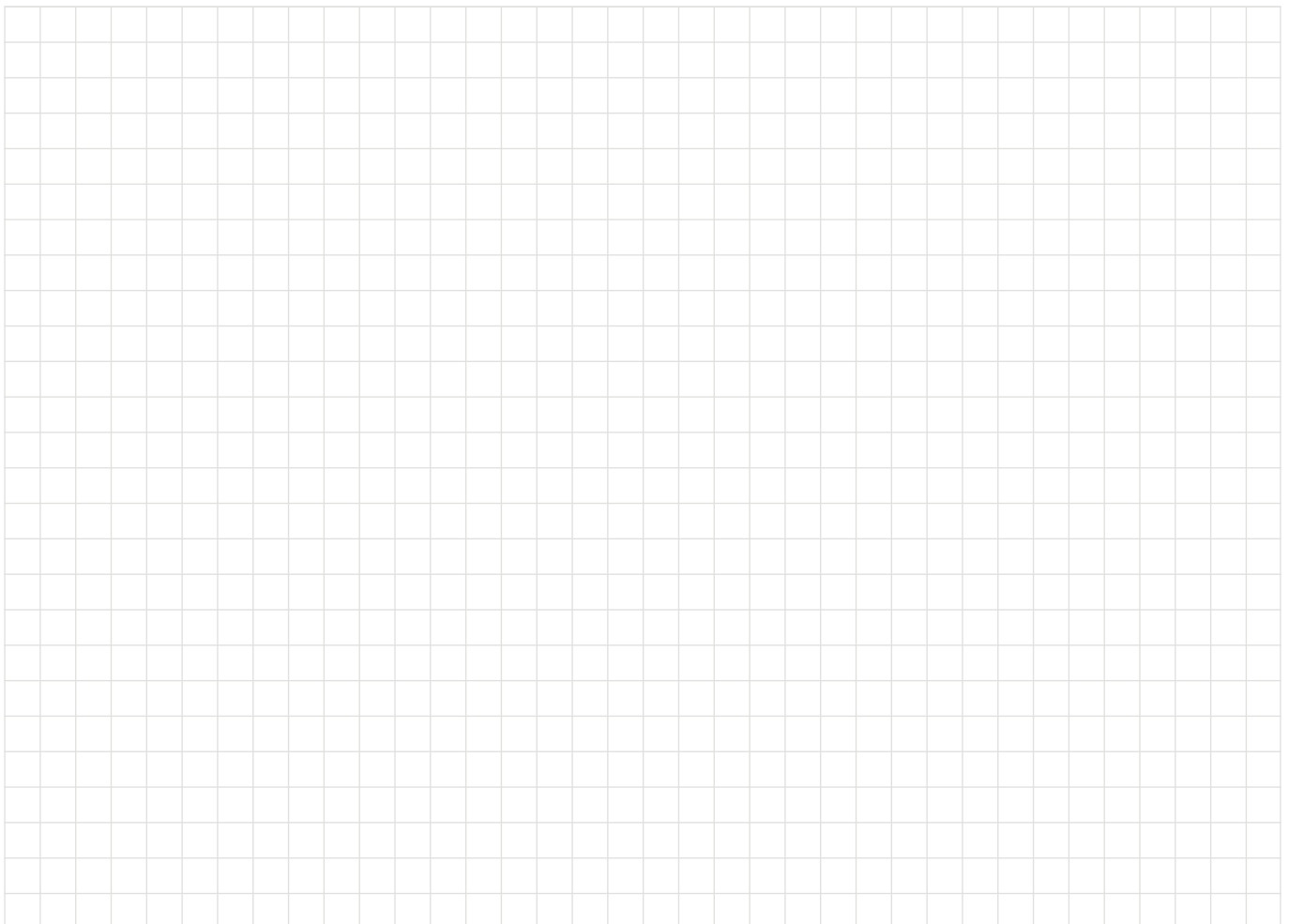
Overview of the keyboards



KeTop T55
Standard keyboard



KeTop T55
Robotics keyboard



KeTop T70

Handheld terminal

Product features

- Maximum operating efficiency thanks to optional additional keyboard on rear of device
- High-resolution, brilliant display
- Scalable performance
- Ergonomic design



Short description

The KeTop T70 mobile terminal features a high-resolution display and can be equipped with a selection of high-performance ARM processors. It is ideally suited for demanding visualization and operating applications. The robust housing is lightweight and ergonomic and enables long and fatigue-free operation.

Unique features, such as the modular construction, which facilitates easy upgrades to newer processor technologies as application requirements grow, as well as an additional, optional keyboard on the rear of the device make the KeTop T70 a versatile handheld operating device built for the long term.

Display	
Type	TFT
Size	7" (9:16)
Resolution	WSVGA, 600 x 1024 pixels
Touchscreen	Analog resistive
Backlight	LED

Operating elements	
Membrane keyboard	Front: max. 21 buttons, rear (optional): max. 12 buttons
Selector switch*	2, 4 or 16 levels
Key switch*	2 or 3 positions
Push button*	momentary / maintained
Characteristics	KEBA standard / KEBA robotics ** / KEBA IMM take-out handling**

* internally or externally wired // an element marked with * can be selected

** perfect in combination with KeMotion

Safety elements	
Enabling switch	3 positions, 2 channels, B10d=1,000,000, optional safety electronics
Emergency-stop button / gray stop button	2 channels, B10d=250,000
Safety category	PLe acc. to EN 13849-1 or SIL3 acc. to EN 61508 can be achieved

Software packages

KeTop T70 Embedded	Windows Embedded Compact® (on request) / Linux
KeTop T70 Trend	For details, see KeView visualization software

CPU board

CPU	ARM Cortex A9
Cores	Single-core / dual-core 1 GHz
Onboard memory	4 GB flash, at least 1 GB RAM

Interfaces

Communication	1x Ethernet 10/100 Mbit/s
Transfer	USB 2.0

Dimensions, weight

Dimensions LxWxH	251 x 212 x 73 mm
Weight	Approx. 950 g

Environmental conditions

Operating temperature	0 °C to 45 °C single-core / 40 °C dual-core
Storage temperature	-25 °C to 70 °C
Relative air humidity	5% to 95% (non-condensing)
Vibration resistance	5 Hz ≤ f ≤ 8,4 Hz with 3,5 mm, 8,4 Hz ≤ f ≤ 150 Hz with 1 g (EN 61131-2 and EN 60068-2-6)
Shock resistance	15 g / 11 ms (EN 61131-2 and EN 60068-2-27)

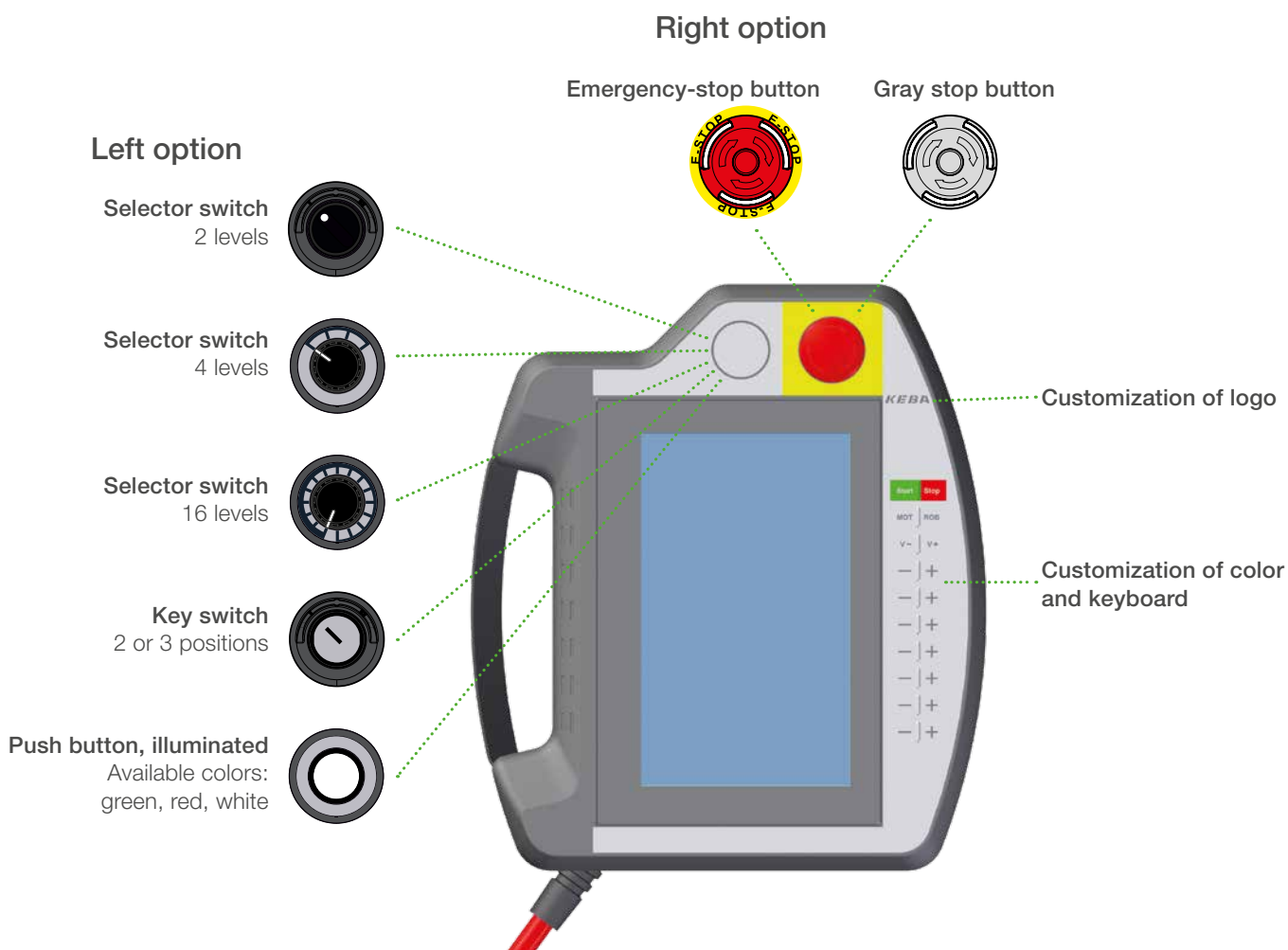
General

Power supply	24 V DC
Max. switch-on current	5.6 A
Power consumption	Up to 12 W
Protection class	III acc. to EN 61131-2 or EN 50178
Protection rating	IP65
Certification	UL, CE
Accessories	Magnetic holder, wall mount (various) Cable with screw connection 2,5 m / 5 m / 7 m / 10 m / 15 m / 20 m Cable with push-pull-connection 3 m / 5 m / 10 m / 15 m / 20 m Connection boxes for field and control cabinet installation (IP65)
Directives	Machinery Directive 2006/42/EC EMC Directive 2014/30/EU RoHs Directive 2011/65/EU

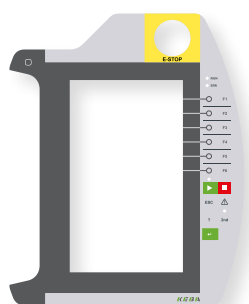
KeTop T70

Handheld terminal

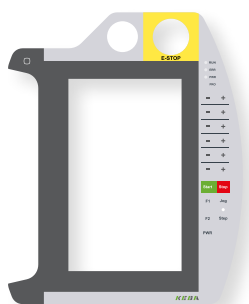
Overview of the available options



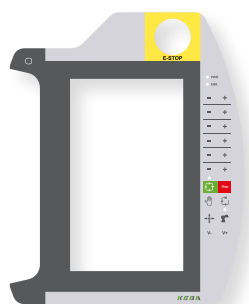
Overview of the keyboards



KeTop T70
Standard keyboard



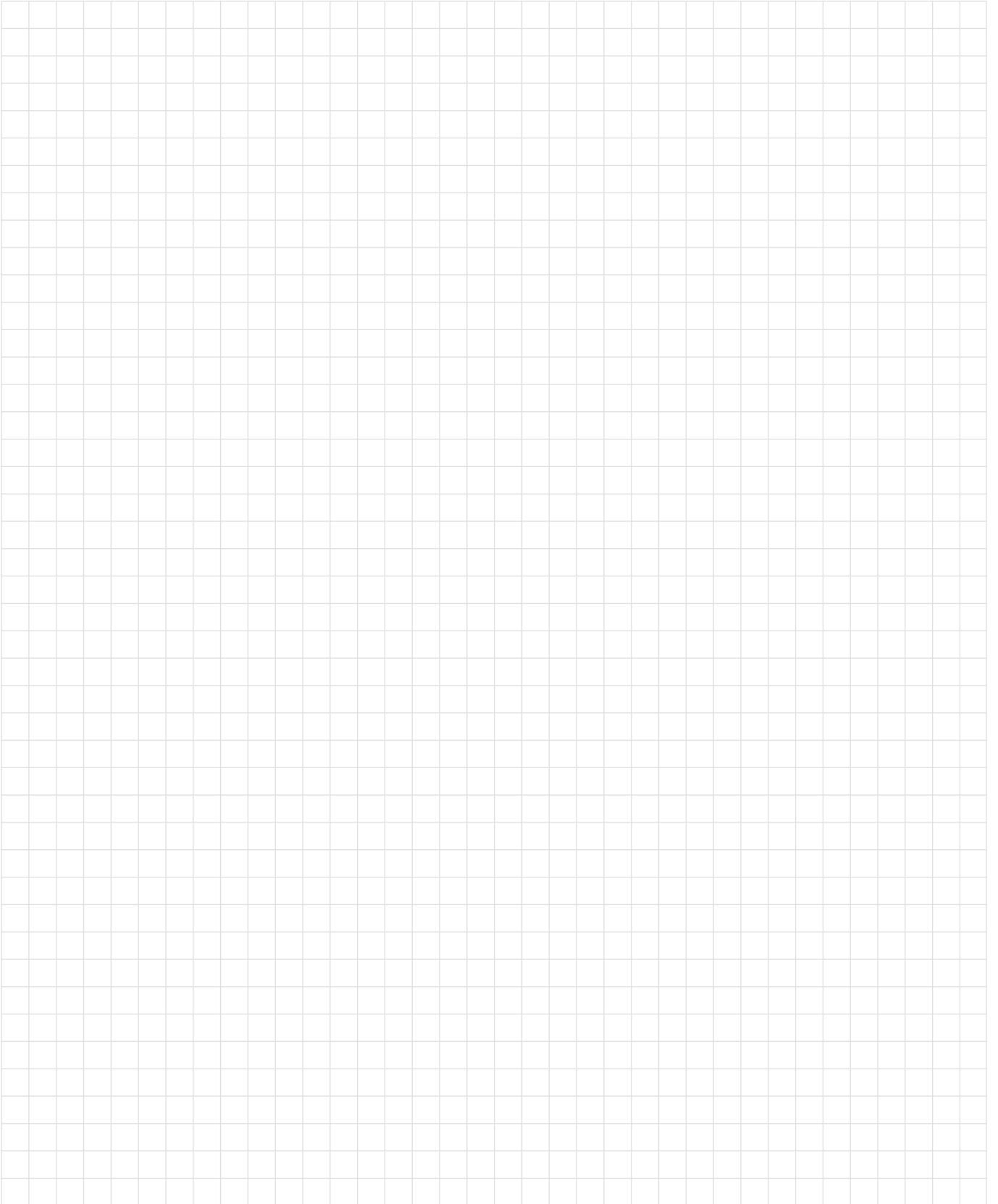
KeTop T70
Robotics keyboard



KeTop T70
IMM take-out handling
keyboard



KeTop T70
Rear keyboard



KeTop T150

Handheld terminal

Product features

- Multitouch screen
- Smart device usability
- Maximum brilliance, highest precision
- Customizability



Short description

The KeTop T150 features a capacitive touchscreen with real multitouch operability, which facilitates intuitive use, maximum ergonomics, and the best possible user experience. In spite of a display size of 10 inches, the KeTop T150 is a real lightweight.

The KeTop T150 features a modular design. Switching to newer processor technologies due to increasing application requirements is quick and easy. Depending on requirements, the KeTop T150 is available both with Linux as well as Windows IoT Enterprise. Optional features, such as energy storage and RFID, make many additional usage scenarios possible.

Display	
Type	TFT
Size	10.1" (16:10)
Resolution	WXGA 800 x 1280 pixels
Touchscreen	Projective capacitive
Backlight	LED

Operating elements	
Membrane keyboard	Max. 30 buttons, 6 LEDs
Selection switch*	2 or 4 levels
Rotary encoding switch*	16 levels
Key switch*	2 or 3 positions
Push button*	No-detent / detent
Characteristics	KEBA standard

* internally or externally wired // two elements marked with * can be selected

Safety elements

Enabling switch	1x (optional safety electronics), 3 levels, 2 channels, B10d=1,000,000
Emergency-stop button	2 channels, B10d=250,000
Safety category	Without safety electronics: PLe acc. to EN 13849-1 or SIL3 acc. to EN 61508 can be achieved; With safety electronics: PLe acc. to EN 13849-1 or SIL3 acc. to EN 61508

Computer core

CPU	ARM Cortex A9 / Intel Atom3815 or Celeron N2807
Cores	DualCore 1 GHz / 1.46GHz or 1.58GHz
GPU	Onboard or Intel HD Graphics
Onboard memory	8 GB flash, 2 GB RAM or 4GB eMMC Flash, 4 GB RAM (DDR3L)
Expansion memory	32 GB MLC SSD mSata
Removable storage	MicroSD card

Interfaces

Communication	1x Ethernet 10/100 Mbit/s
Transfer	USB 2.0, RFID optional
RFID transponder	Read and write unit with range of at least 1 cm, Type I-Code SLI ISO15693

Dimensions, weight

Dimensions LxWxH	215 x 284 x 69 mm
Weight	Approx. 1120 g

General

Power supply	24 V DC
Max. switch-on current	5.6 A
Power consumption	Up to 15 W
Energy storage	Optional maintenance-free energy storage with capacity of up to 5 minutes
Protection class	III acc. to EN 61131-2 or EN 50178
Protection rating	IP54
Certification	UL, ULr, CE, SIBE (if enabling-switch safety electronics installed)
Accessories	Wall mount Cables with screw connection 2.5 m / 5 m / 7 m / 10 m / 15 m / 20 m Cables with push-pull connection 3 m / 5 m / 10 m / 15 m / 20 m Connection boxes for control cabinet and field installation (IP65)
Directives	Machinery Directive 2006/42/EC EMC Directive 2014/30/EU RoHs Directive 2011/65/EU

KeTop T200

Handheld terminal

Product features

- Safe and rugged – the tablet for industry
- Mobile PC performance with investment protection
- Replacement for stationary panels
- Ergonomic housing
- HD-ready display
- Optional keyboard on rear of device



Short description

The mobile KeTop T200 terminal features an ergonomic housing with brilliant, HD-ready display. Fast processors make possible demanding visualization and operating applications. With integrated safety elements, performance on a PC level and Windows Embedded Standard 7[®], it is a full-fledged replacement for stationary panels.

Unique features, such as the modular construction, which facilitates easy upgrades to newer processor technologies as application requirements grow, as well as an additional, optional keyboard on the rear of the device make the KeTop T200 a versatile handheld operating device built for the long term. For the performance upgrade, neither modifications to the visualization solution and software nor interventions in the machine concept are necessary.

Display	
Art	TFT
Größe	10.1" (16:10)
Auflösung	WXGA 1280 x 800 pixels
Touchscreen	Analog resistive
Hintergrundbeleuchtung	LED

Operating elements	
Membrane keyboard	Front: max. 36 buttons, rear (optional): max. 12 buttons
Selector switch*	2, 4 or 16 levels
Key switch*	2 or 3 positions
Push button*	momentary / maintained
Characteristics	KEBA Standard

* internally or externally wired // an element marked with * can be selected

Safety elements

Enabling switch	1x (optional safety electronics) / 2x (integrated safety electronics), 3 positions, 2 channels, B10d=1,000,000
Emergency-stop button / gray stop button	2 channels, B10d=250,000
Safety category	without safety electronics: PLe acc. to EN 13849-1 or SIL3 acc. to EN 61508 can be achieved with safety electronics: PLe acc. to EN 13849-1 or SIL3 acc. to EN 61508 (with 2 enabling switches as standard)

Software packages

KeTop T200 Embedded	Windows Embedded Standard 7® (64 bit) / Linux (on request)
KeTop T200 Trend	For details, see KeView visualization software
KeTop T200 Style (on request)	For details, see KeView visualization software

CPU board

CPU	Intel Atom E3815
Cores	Single-core 1.46 GHz
GPU	Intel HD Graphics
Onboard memory	32 GB flash, 4 GB RAM (DDR3L)
Removable storage	SD card

Interfaces

Communication	1x Ethernet 10/100 Mbit/s
Transfer	USB 2.0

Dimensions, weight

Dimensions LxWxH	275 x 350 x 110 mm (incl. handle)
Weight	Approx. 1850 g

Environmental conditions

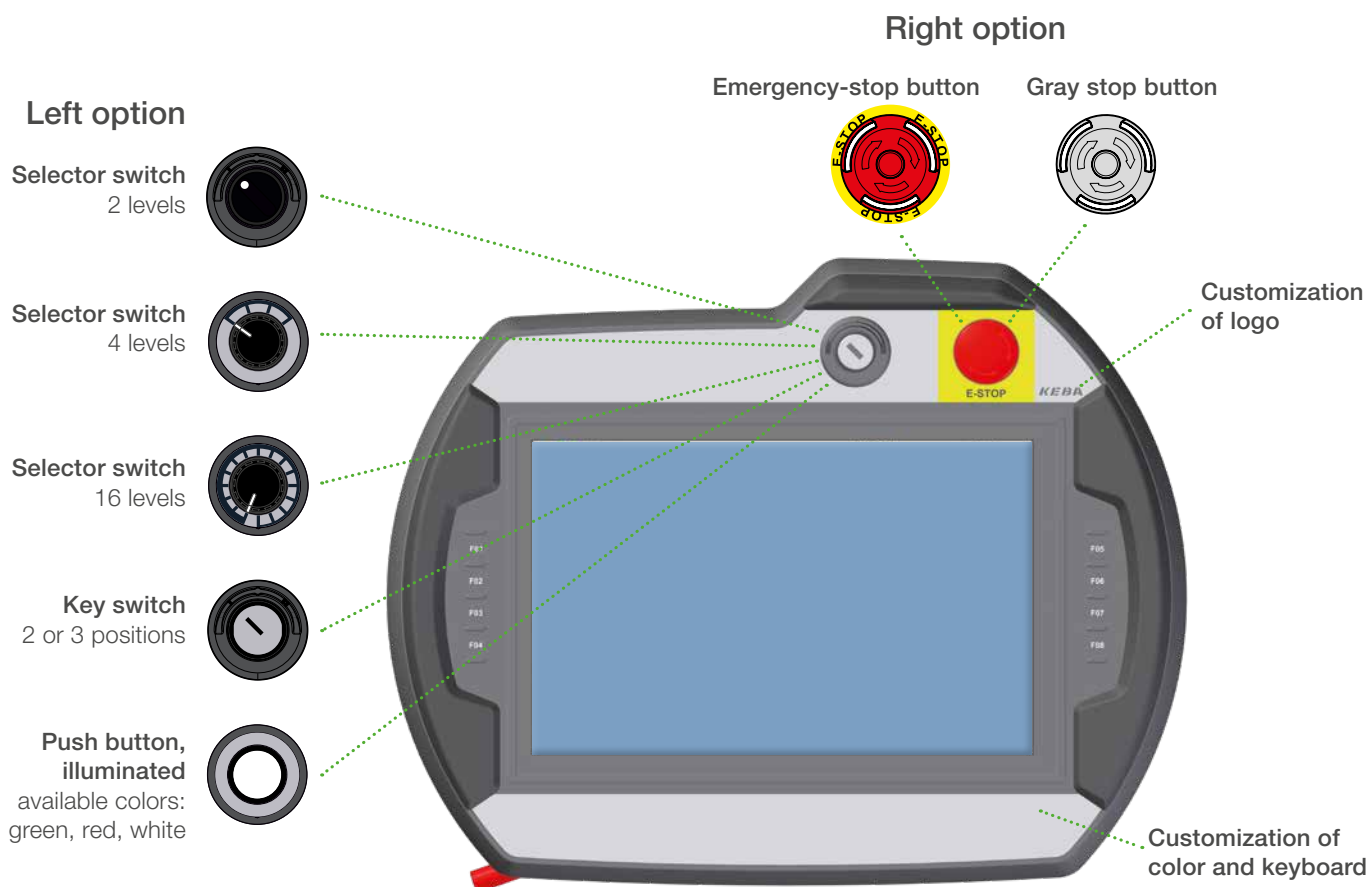
Operating temperature	0 °C to 45 °C
Storage temperature	-25 °C to 70 °C
Relative air humidity	5% to 95% (non-condensing)
Vibration resistance	5 Hz ≤ f ≤ 8,4 Hz with 3,5 mm, 8,4 Hz ≤ f ≤ 150 Hz with 1 g (EN 61131-2 and EN 60068-2-6)
Shock resistance	15 g / 11 ms (EN 61131-2 and EN 60068-2-27)

KeTop T200

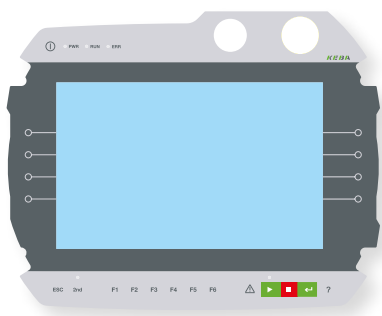
Handheld terminal

General	
Power supply	24 V DC
Max. switch-on current	5.6 A
Power consumption	Up to 15 W
Protection class	III acc. to EN 61131-2 or EN 50178
Protection rating	IP65
Certification	UL, CE, SIBE (if enabling-switch safety electronics installed)
Accessories	Wall mount (various) Cable with screw connection 2,5 m / 5 m / 7 m / 10 m / 15 m / 20 m Cable with push-pull-connection 3 m / 5 m / 10 m / 15 m / 20 m Connection boxes for field and control cabinet installation (IP65) Touch stylus holder
Directives	Machinery Directive 2006/42/EC EMC Directive 2014/30/EU RoHs Directive 2011/65/EU

Overview of the available options



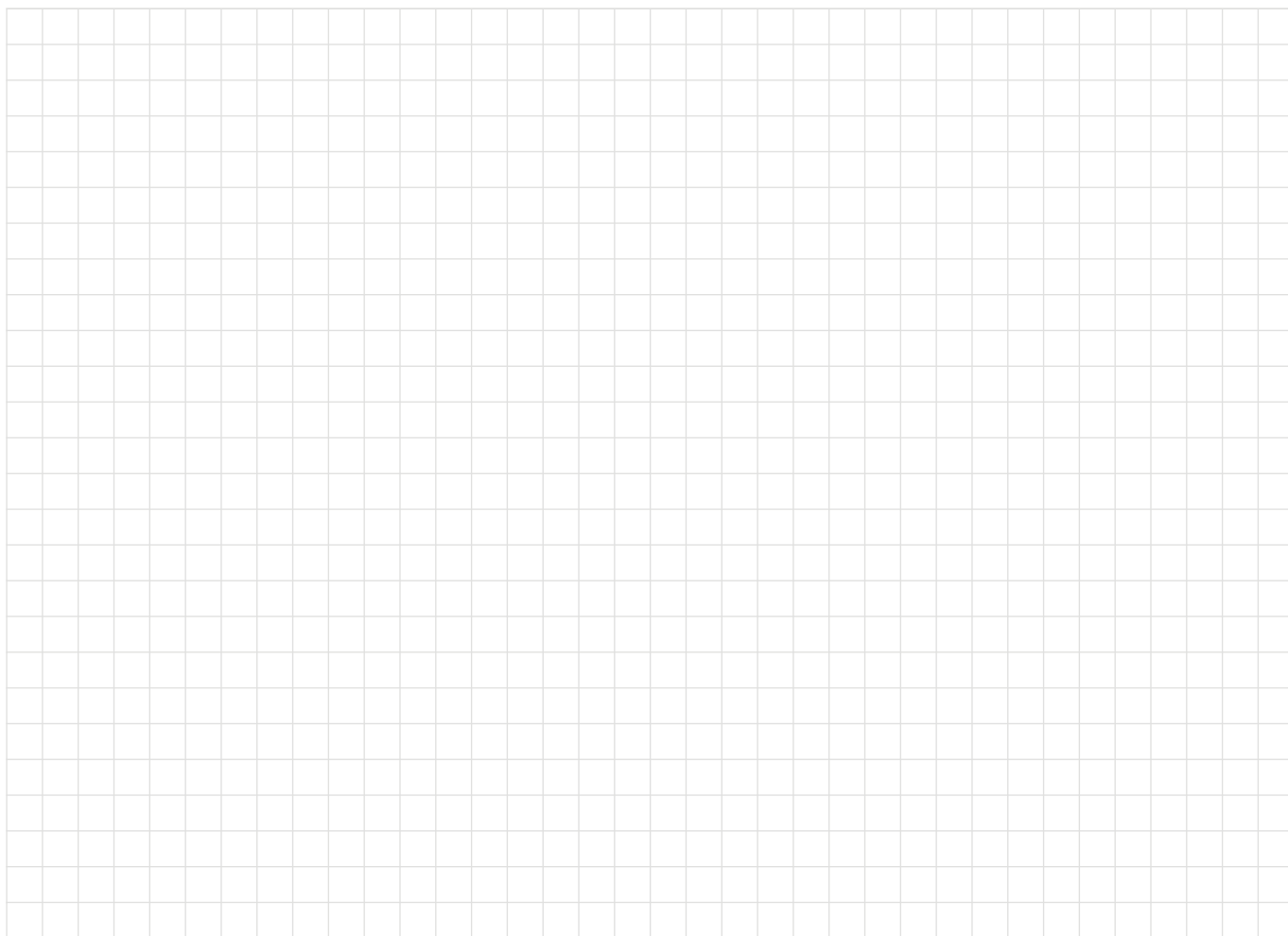
Overview of the keyboards



KeTop T200
Standard keyboard



KeTop T200
Rear keyboard



KeTop CB310

Connection options

Product features

- Hot plug connection box for emergency stop bridging
- Connection point recognition
- Full KeTop customizing options incl. safety and operating elements
- Cable destruction identification
- For handheld operating devices with illuminated E-Stop or gray stop button



Short description

KeTop CB310 is a hot plug connection box with emergency stop bridging for field installation. An operating device can be plugged in or unplugged without triggering an emergency stop. Thanks to the push-pull solution, plugging in and unplugging can be done with one hand. The box checks the connection and displays whether the connector is plugged in properly or the cable is broken (cable destruction identification).

Thanks to its automatic connection point recognition the associated application is displayed automatically when plugging in a KeTop operating device with Box ID function. This saves time and prevents operating errors.

If desired, the CB310 can be equipped with safety and operating elements: Emergency-stop button and key switch (suitable for the realization of safety functions) or push button. A removable front with mounting aid and an integrated Ethernet switch ensures simple and quick installation. Maintenance-free operation over 20 years - no cyclical proof test required.

Display

4 LEDs + LED bar	For displaying the operating, connection and error states
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Operating elements (optional)

Key switch*	2 or 3 positions
Push button*	Maintained

* possible built-in elements on the left, externally wired: an element marked with * can be selected

Safety

Safety category	PLe Cat. 4 acc. to EN 13849-1 or SIL3 acc. to EN 61508 can be achieved
Emergency-stop button (optional)	2 channels, B10d = 250,000, for simple integration (see EN ISO 13850:2015)

Interfaces

Communication	3x Ethernet 100 Mbit/s
Safety	Emergency stop and enabling switch discretely wired

Dimensions, weight

Dimensions LxWxH	160 x 210 x 70 mm
Weight	Approx. 500 g

Environmental conditions

Operating temperature	0 °C to 45 °C
Storage temperature	-25 °C to 70 °C
Relative air humidity	5% to 95% (non-condensing)
Vibration resistance	5 Hz ≤ f ≤ 8.4 Hz with 3.5 mm, 8.4 Hz ≤ f ≤ 150 Hz with 1 g (EN 61131-2 or EN 60068-2-6)
Shock resistance	15 g / 11 ms (EN 61131-2 or EN 60068-2-27)

General

Power supply	24 V DC
Protection class	III acc. to EN 61131-2 or EN 50178
Protection rating	IP65
Installation	Field and control cabinet installation, removable front, installation aid for easy and quick wiring
Maintenance	No proof test required, 20 years maintenance-free
Certification	UL, CE, TÜV Rheinland Functional Safety
Directives	Machinery Directive 2006/42/EC EMC Directive 2014/30/EU RoHs Directive 2011/65/EU

Overview of the available options



KeTop Reel

Connection options

Product features

- Automatic winding mechanism ensures a safe work area
- EMC-optimized
- Overload detection
- Retraction brake
- Certified system in combination with a KeTop hand-held operating device



Short description

The KeTop Reel with its automatic retraction system is used for convenient storage of the connection cable of a KEBA handheld operating device. Increased security risk from stumbling over loose cables becomes a thing of the past. With the KeTop Reel, contamination and damage of the cables are effectively prevented and the service life of the cable and work safety are significantly increased.

The integrated retraction brake ensures simple and safe winding. The KeTop Reel has protection from overloads, is EMC-optimized and is therefore compliant to all standards even without filtering measures in the control cabinet. It is available in different cable lengths with certified KEBA cables.

Cable

Cable length, device-side	10 m / 18 m
Cable length, control-side	2,5 m
Max. bending radius	ø 125 mm

Dimensions, weight

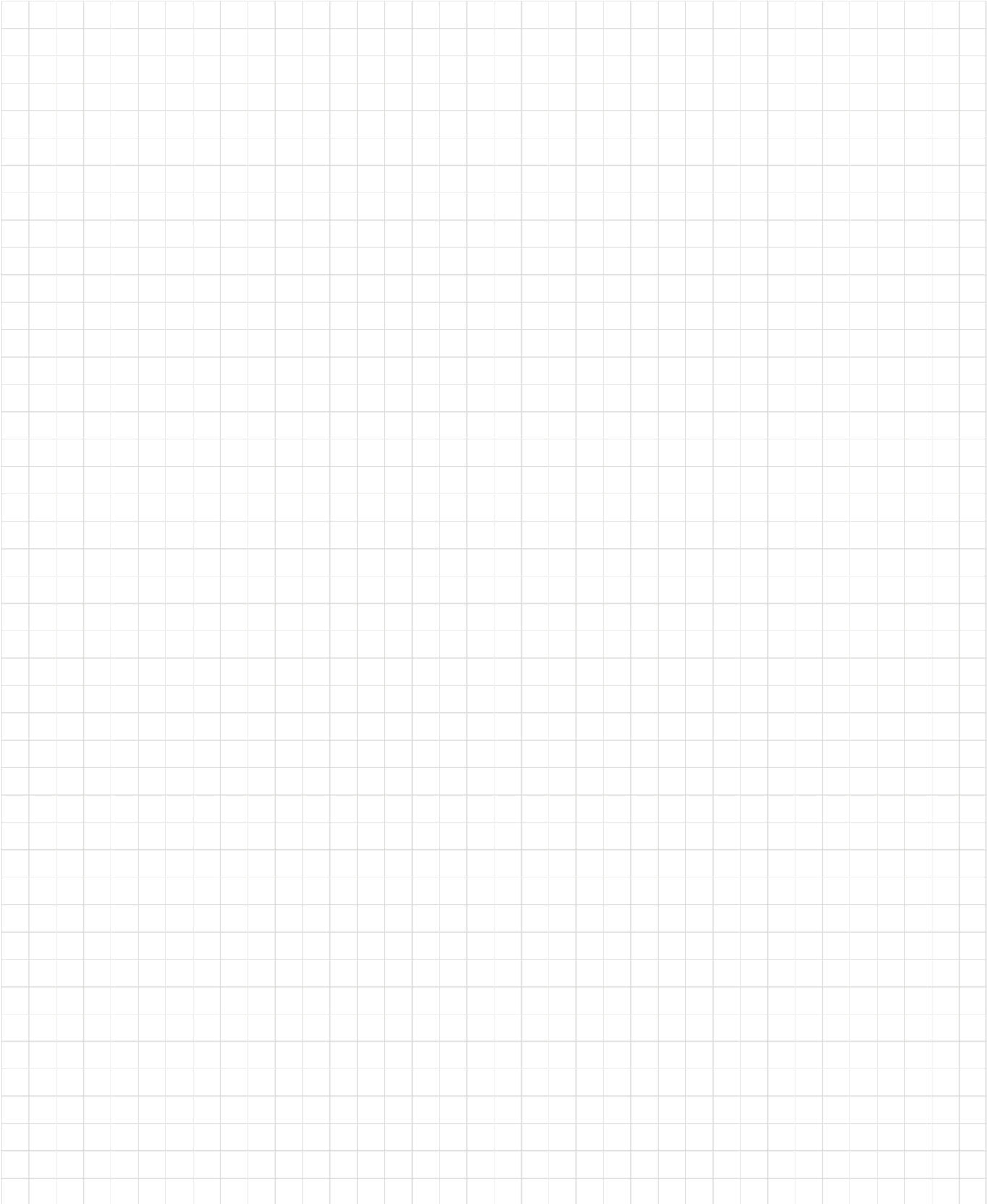
Dimensions LxWxH	315 x 190 x 355 mm
Weight	Approx. 6 kg

Environmental conditions

Operating temperature	+5 °C to +55 °C
Storage temperature	-15 °C to +70 °C
Relative air humidity	5% to 95% (non-condensing)

General

Max. cable extraction operating cycles	10,000 in accordance with IEC 61242
Protection rating	IP20



KeTop OP 4x0-LD/A

Stationary operating device

Product features

- For industrial applications
- Industrial-grade touch operation
- Expandable and adaptable



Short description

OP 4x0 operating panels are stationary operating devices for use in industrial environments. Thanks to the flexible construction, expansion is possible by means of additional modules, thereby facilitating an optimum, system-specific adaptation. The OP 4x0 series is designed as a monitor solution, i.e., the visualization runs centrally on the controller CPU.

Elegant front plate made of milled aluminum with opening for emergency-stop or additional toggle switch.

Display	OP 430-LD/A	OP 450-LD/A	OP 460-LD/A
Type	TFT		
Size	8.4"	12.1"	15"
Resolution	800 x 600 pixels	800 x 600 pixels	1024 x 768 pixels
Touchscreen	Analog resistive		
Colors	256,000	256,000	16 million

Operating elements

Membrane keyboard	10 membrane keys with tactile feedback
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Optional RFID unit

Reading range	40 mm from the front
Antenna installation	Fixed installation in the front plate
Communication protocol	Acc. to ISO 15693 or ISO 18000-3, Euromap 65 suitable
Signaling	Status LED on antenna print, can be read on the front plate of the operating panel
Signal frequency	13.56 MHz
Transmission power	200 mW (max. 250 mW)
Scanning rate	Configurable (standard: 10 scans/second)

Digital inputs	
Number of inputs	16 (DI0 - DI15) (not EN 61131-2 compliant)
Nominal voltage	24 V DC
Applied contact current	5 mA (supply exclusively by Vout)
Galvanic isolation	No
Status display	None
Min. update cycle	60 ms

Interfaces	OP 430-LD/A	OP 450-LD/A	OP 460-LD/A
Serial interface 115 kbit/s	RS-485-A		
Graphic interface	1x PL (Panel Link)		
Transmission range	Up to 30 m	Up to 30 m	Up to 20 m

Dimensions, weight	OP 430-LD/A	OP 450-LD/A	OP 460-LD/A
Dimensions LxWxH	269 x 298 x 62.4 mm	336 x 372 x 63.2 mm	390 x 432 x 64.6 mm
Weight (without / with RFID)	2.83 / 2.87 kg	4.02 / 4.06 kg	6.12 / 6.16 kg

Environmental conditions	
Operating temperature	+5 °C to +55 °C
Storage temperature	-40 °C to +70 °C
Relative air humidity	5% to 95% (non-condensing)
Vibration resistance / shock resistance	Acc. to EN 61131-2

General	OP 430-LD/A	OP 450-LD/A	OP 460-LD/A
Nominal supply voltage	24 V DC (voltage limits acc. to EN 61131-2)		
Max. switch-on current	10 A		
Power consumption (without / with RFID)	12 W / 13 W		14 W / 15 W
Max. power consumption (without / with RFID)	29 W / 30 W		31 W / 32 W
Max. power consumption (USB module)	14 W at 12 V DC (optional)		
Max. power consumption (digital inputs)	3 W at 24 V DC (optional)		
Protection class	III acc. to EN 61131-2		
Protection rating	IP65 front side, IP20 rear side		

KeTop AP500

Multitouch panel with realtime capability

Product features

- Unique, realtime-capable multitouch
- Blind operation through haptic printing
- Extensive customizing options
- Perfect in combination with KeView Style



Short description

The new KeTop AP500 panel line offers robust gesture operation through an industrial multitouch with integrated touch booster for use with gloves. The RealTime Multitouch is able to transmit user interactions directly to the control in real-time via EtherCAT or PROFINET. This makes many mechanical built-in elements and membrane keys a thing of the past. With the new KeTop AP500 line, you reduce your HMI variants to one panel and have full flexibility in the user interface thanks to the appropriate KeView Style software solution.

With the new Intel Atom CPU with 7th gen. Intel HD graphics acceleration, the KeTop AP500 panel line is an ideal platform for visualization tasks. Multitouch gesture operation and modern graphic effects ensure a new user experience in machine operation.

Display	AP512	AP515	AP521
Type	TFT		
Size	12.1"	15.6"	21.5"
Resolution	WXGA 1280 x 800 pixels	WXGA 1366 x 768 pixels	FullHD 1920 x 1080 pixels
Touchscreen	Projected capacitive multitouch, transmission > 88%		
Glass surface	High-gloss (optional anti-reflective)*		
Backlight	LED (50,000 h)		
Brightness	400 cd/m ²	300 cd/m ²	300 cd/m ²
Viewing angel	65°, 80°/160°	170°/160°	178°/178°

* see options and accessories

Operating elements

Expansion panels	Optional expansion panels for emergency-stop, USB, ...
RealTime Widgets	RealTime Multitouch with RealTime Widgets (only available in KeTop AP500 Style software package)

Software packages

KeTop AP500 Embedded	Linux / Windows (on request)
KeTop AP500 Style	For details, see KeView visualization software

Digital I/Os	
Digital inputs	12 digital inputs (not EN 61131-2 compliant)
Digital outputs	4 digital outputs (not EN 61131-2 compliant)
Nominal voltage	24 V
Voltage ranges	-3 to 5 volt low, 15 to 30 volt high
Applied contact current	5 mA (supply exclusively by Vout)
Galvanic isolation	No
Min. update cycle	60 ms

CPU board	
CPU	Intel Atom E3827 (2GB) / optional E3845 (4GB)*
Cores	DualCore 2 x 1,75 GHz / optional QuadCore 4 x 1,91 GHz*
Memory	2 GB RAM / optional 4 GB RAM*
GPU	7th gen. Intel HD graphics
Removable storage*	CFAST card, SD card

Interfaces	
Communication	1x Gbit Ethernet LAN interface, 1x 100 Mbit Ethernet PLC interface
Transfer	4 x USB 2.0, 480 Mbit/s
Realtime Ethernet slave (optional)*	EtherCAT / PROFINET

Dimensions, weight	AP512	AP515	AP521
Dimensions LxWxH	341 x 241 x 76 mm	425 x 274 x 76 mm	552 x 343 x 76 mm
Weight	Approx. 3.4 kg	Approx. 4.6 kg	Approx. 6.3 kg

Environmental conditions	
Operating temperature	0 °C to 45 °C (optional to 55 °C)*
Storage temperature	-20 °C to 60 °C
Relative air humidity	5% to 95% (non-condensing)
Vibration resistance	5 Hz ≤ f ≤ 8,4 Hz with 3,5 mm, 8,4 Hz ≤ f ≤ 150 Hz with 1 g (EN 61131-2 and EN 60068-2-6)
Shock resistance	15 g / 11 ms (EN 61131-2 and EN 60068-2-27)

General	AP512	AP515	AP521
Power supply	24 V DC		
Max. switch-on current	10 A		
Max. power consumption	40 W	43 W	53 W
Protection class	III acc. to EN 61131-2		
Protection rating	IP65 front side if correctly installed, IP20 rear side		
Certification	UL, CE		
Installation	Console mounting with snap-in mechanism		
			Arm mounting optional**
Directives	EMC Directive 2014/30/EU, RoHS Directive 2011/65/EU		

* see options and accessories

** see AP521 IP65 arm mounting

KeTop AP500

Multitouch panel with realtime capability

EP500 extension panels

In order to install command and signaling devices, AP500 multitouch panels can be equipped with extension panels (EP500). Depending on the version, up to 9 installation openings are available for any push buttons, switches and detectors as well as a yellow installation opening for an emergency-stop button. An RFID unit can also be integrated.

Customer-specific assignments of the installation openings are also provided upon request as well as fully equipped extension panels.



Extension panels	EP512	EP515	EP521
Suitable for short side	AP512	AP515	AP521
Installation openings (ø 22.5mm) freely selectable	On request	7	9
Installation openings (ø 22.5mm) for emergency stop	On request	1	1
Optional integrated RFID module*	On request	On request	On request
Dimensions LxWxH	On request	274 x 152 x 6 mm	343 x 152 x 6 mm

* see options and accessories

Customizing

Series AP500 panels offer extensive customizing options. Individual rear glass printing of the frames ensures easy color and logo adaptation of panels and extension panels. Furthermore, extension panels can be designed with regards to amount, position and type of command devices.



Options and accessories

Options	
Anti-reflective glass surface	Gloss 110
CPU upgrade	Upgrade to Quad-Core Intel Atom E3845 with 4 GB RAM
Realtime Ethernet	EtherCAT Slave / PROFINET Slave
Intelligent power management	Increased operating temperatures of up to 55 °C by derating of backlight and CPU

Storage media for industrial applications

CFast MLC memory card	8, 16, 32, 64, 128 GB
CFast SLC memory card	8, 16 GB
SD MLC memory card	8, 16 GB

Modules

Digital input/output module (XE 040/A)	24 DI, 8 DO
Digital input/output module (XE 040/B)	16 DI, 16 DO
External RFID module	Standalone RFID reading/writing unit (antenna and analysis unit together in the compact plastic housing)

Other accessories

20-pin socket board	For 12 DI and 4 DO
2-pin connector*	For 24 V power supply of the operating panel
Buffer battery	Li battery CR2032, 3 V / 220 mAh
Fan	Radial fan 52 x 15 mm

* included in the standard delivery scope

AP500 IP65 arm mounting

The AP500 in the IP65 support arm design can be used directly on the machine via a support arm or stand due to its closed housing. A single-row extension panel (EP500) with additional installation openings is integrated into the powder-coated housing.

In addition to the already described customizing options, the color of the housing can also be customized.



	AP512 IP65 arm mounting	AP515 IP65 arm mounting	AP521 IP65 arm mounting
Protection class	IP65		
Installation	VESA 100, further installation options upon request		
Installation openings	On request	On request	7
Dimensions LxWxH	On request	On request	619 x 342 x 88 mm
Weight	On request	On request	Approx. 13 kg

KeView

Visualization software

Product features

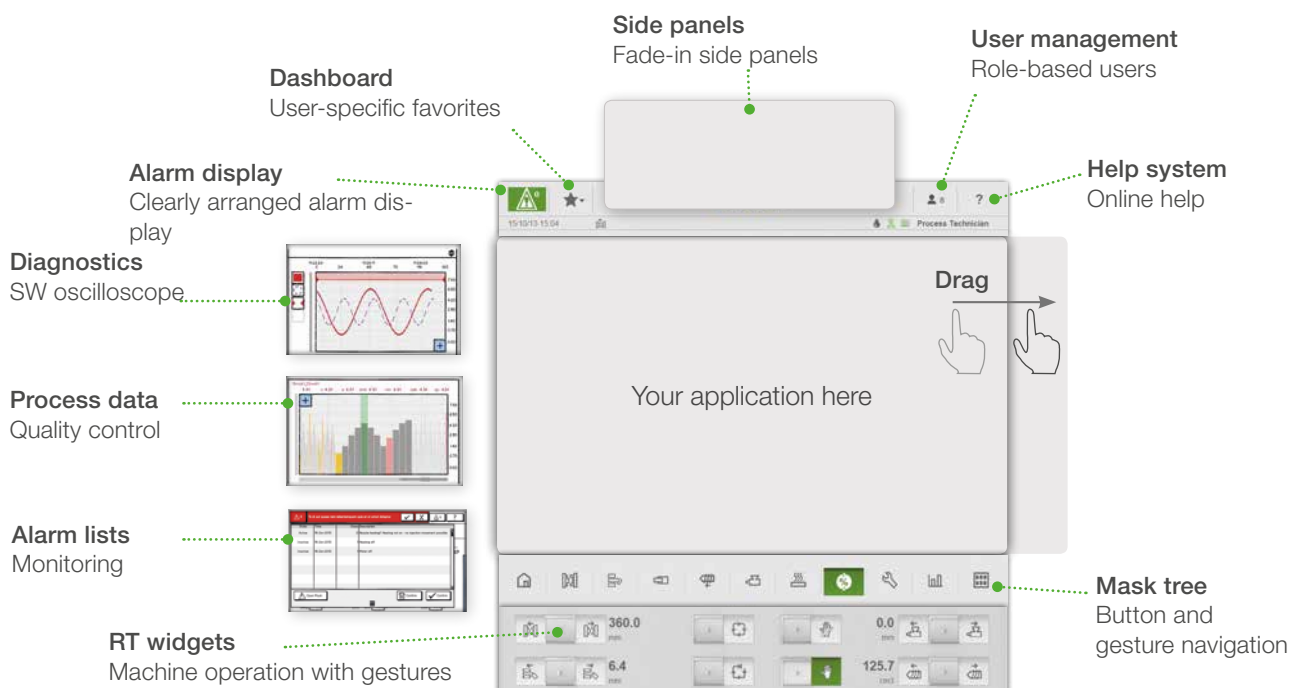
- Simple graphical editor for efficient project planning without programming knowledge
- Intuitive gesture navigation
- Individual combinations of complex composite widgets
- Dynamic widgets
- Extensive customizing options
- Flexibly expandable with JAVA



Short description

KeView Trend is a HMI software program for efficient use and fast visualization creation with the help of a powerful function library, even without programming knowledge. Thanks to freely definable widgets and excellent interaction with KEBA operating devices, a short time-to-market is ensured. Freely programmable JAVA extensions open the door to nearly unlimited applications.

KeView Style is based on the latest Java 8 with JavaFX. Innovative application concepts can be easily implemented using ViewEdit, the graphic designer. With the integrated multitouch gestures and the diverse graphical possibilities, it is very easy to create modern HMI applications. A machine can thereby be operated as intuitively as a smartphone. With the RealTime Widgets developed by KEBA, a machine can be directly operated in real-time. By means of this innovation, hardware variants can be reduced and the HMI can be used to create a true user experience.



Pre-made functionalities		KeView Trend	KeView Style
Layouts		Predefined with Layout Manager	Freely selectable with Layout Manager
Side panels	Fade-in side panels		X
Navigation concept		Single touch	Multitouch, Gestures
User management		Level-based	Role-based
Alarm management		X	X
Diagnostic tools	SW oscilloscope	X*	X
	I/O monitor	X*	X*
	Variable monitor	X*	X*
Process data management	Logging	X*	X
	Graphical monitoring	X*	X
Data management	Recipe management	X*	X*
	InfoLog (audit trail)	X*	X
Navigation service	Menu editor		X
	Predefined multitouch gestures		X
Internationalization	Integrated language translation help	X	X
	Unit changeover feature	X	X

* in development

Features		KeView Trend	KeView Style
Predefined libraries	Basic (numeric fields, labels, etc.)	X	X
	Advanced (radio buttons, analog meter, etc.)	X	X
	Variable links (charts, graphs, etc.)	X	X
Dynamic functions	Simple dynamization of characteristics through pre-made functions	X	X
Composite widgets	Combination of complex widgets for working efficiently	X	X
Central attribute management	Central assignment of texts, units and plausibility limits	X	X
Video player	Playing of videos and audio files		X
3D model viewer	Display of 3D models and manipulation with gestures		X

Adaptation possibilities		KeView Trend	KeView Style
Styling	Simple adaptation to corporate design		CSS
Openness	Flexible programmatic expansion through Java code	X	X
Platform independence	Through Java virtual machine	X	X

KeView

Visualization software

ViewEdit graphical editor		KeView Trend	KeView Style
WYSIWYG editor	Preview of the finished application	X	X
	Creation of applications without programming work	X	X
Drag-n-Drop	Simple placement of elements on the canvas	X	X
Alignment aids	Ruler, automatic centering, flushness, justification	X	X
Target download	Download the finished application to the device with the press of a button	X	X
Simulation	Simulation of the application with controller connection and variable update	X	X
Style editor	Graphical editor for adapting the visual design of the application		X

* in development

Manufacturer-independent connectivity		KeView Trend	KeView Style
OPC UA		X	X
Siemens		X*	X*

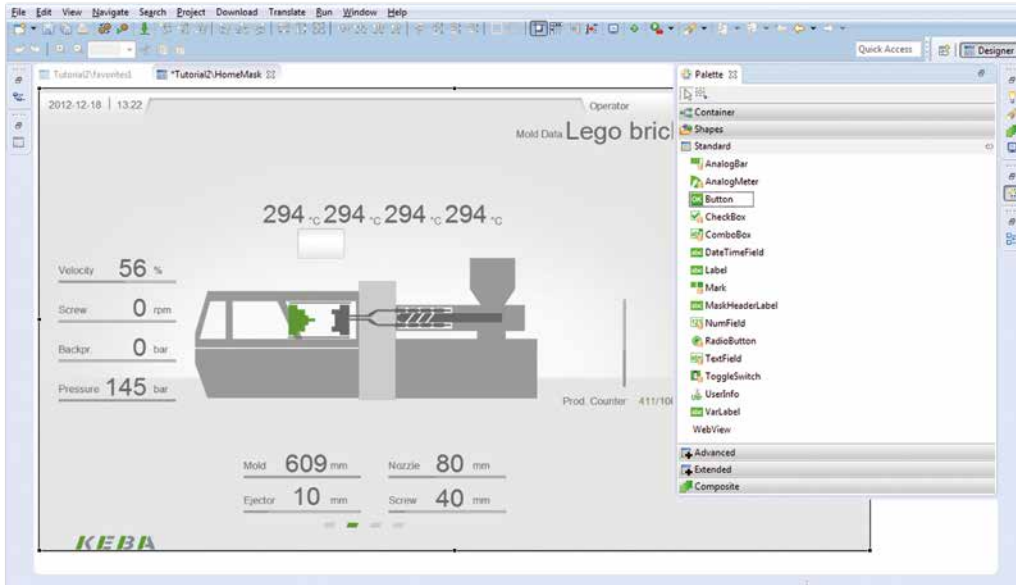
* in development

Technologies		KeView Trend	KeView Style
Programming language		Java	Java
Application model			Eclipse e4
Web viewer			X
PDF viewer			X
Web browser		Optional*	Optional*
VNC client		Optional	Optional

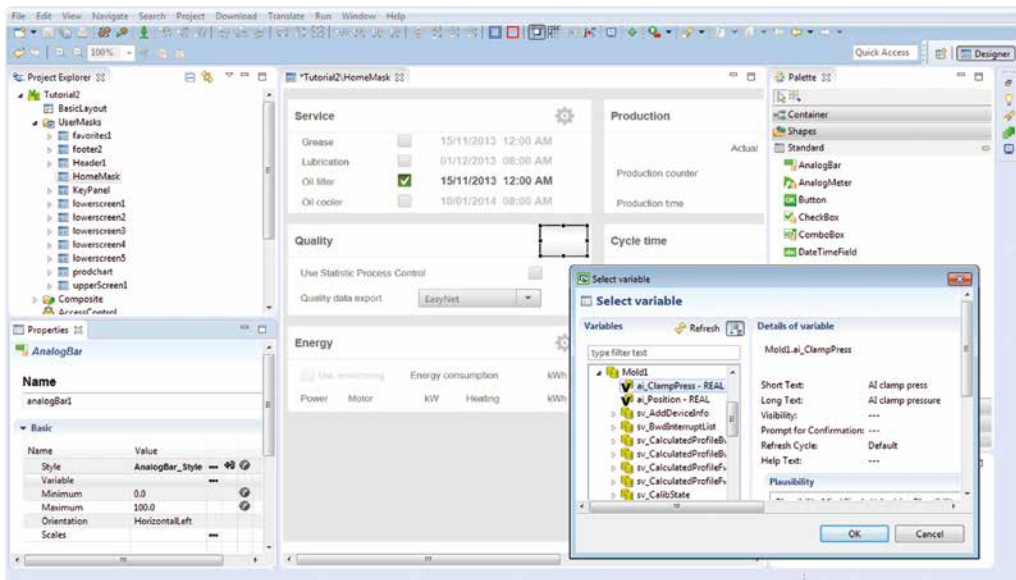
* in development

System requirements		KeView Trend	KeView Style
Hardware acceleration			X
Analog resistive touch		X	X**
Projected capacitive touch			X

** with limited gesture function



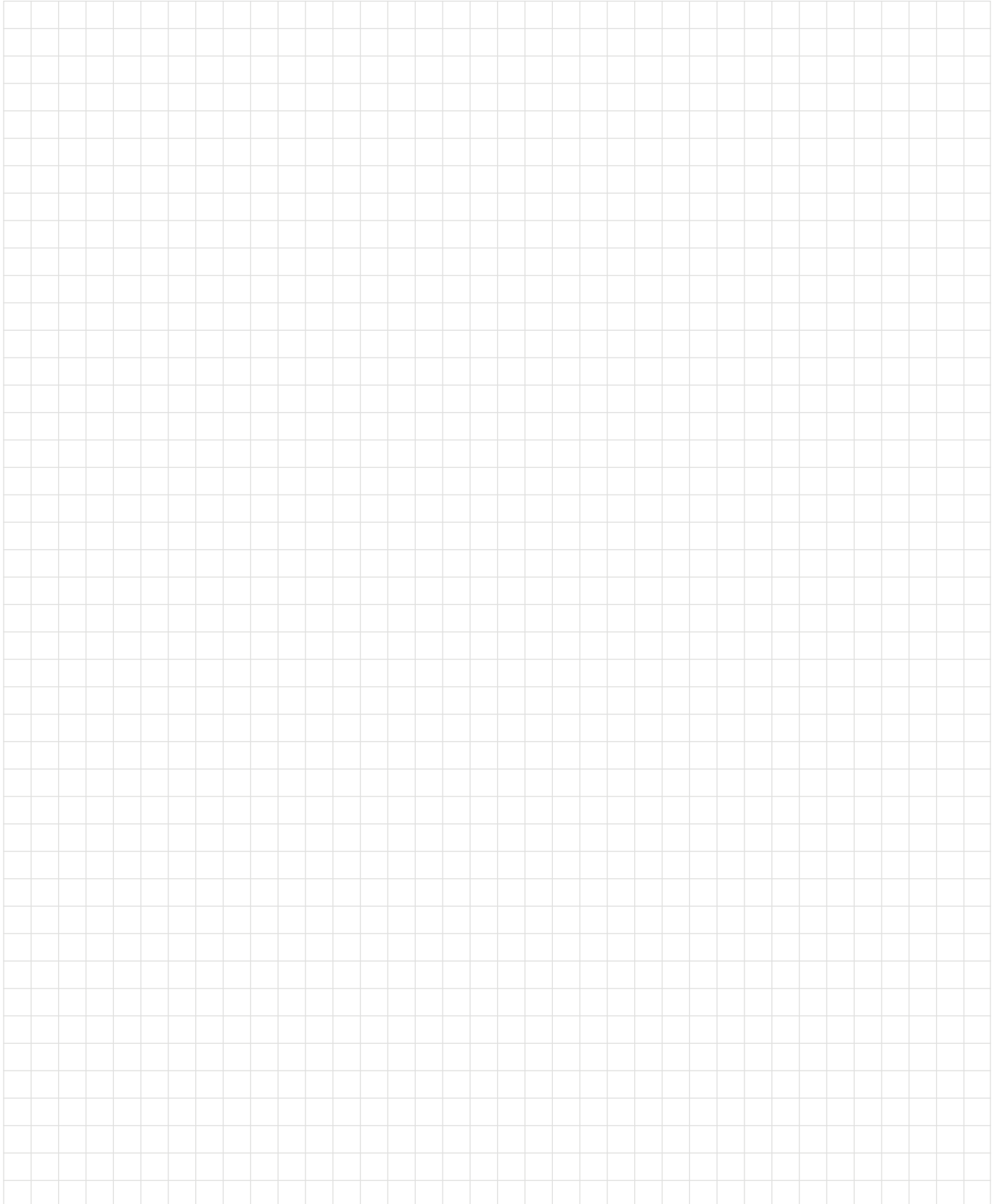
Example: Overview screen of an injection molding machine

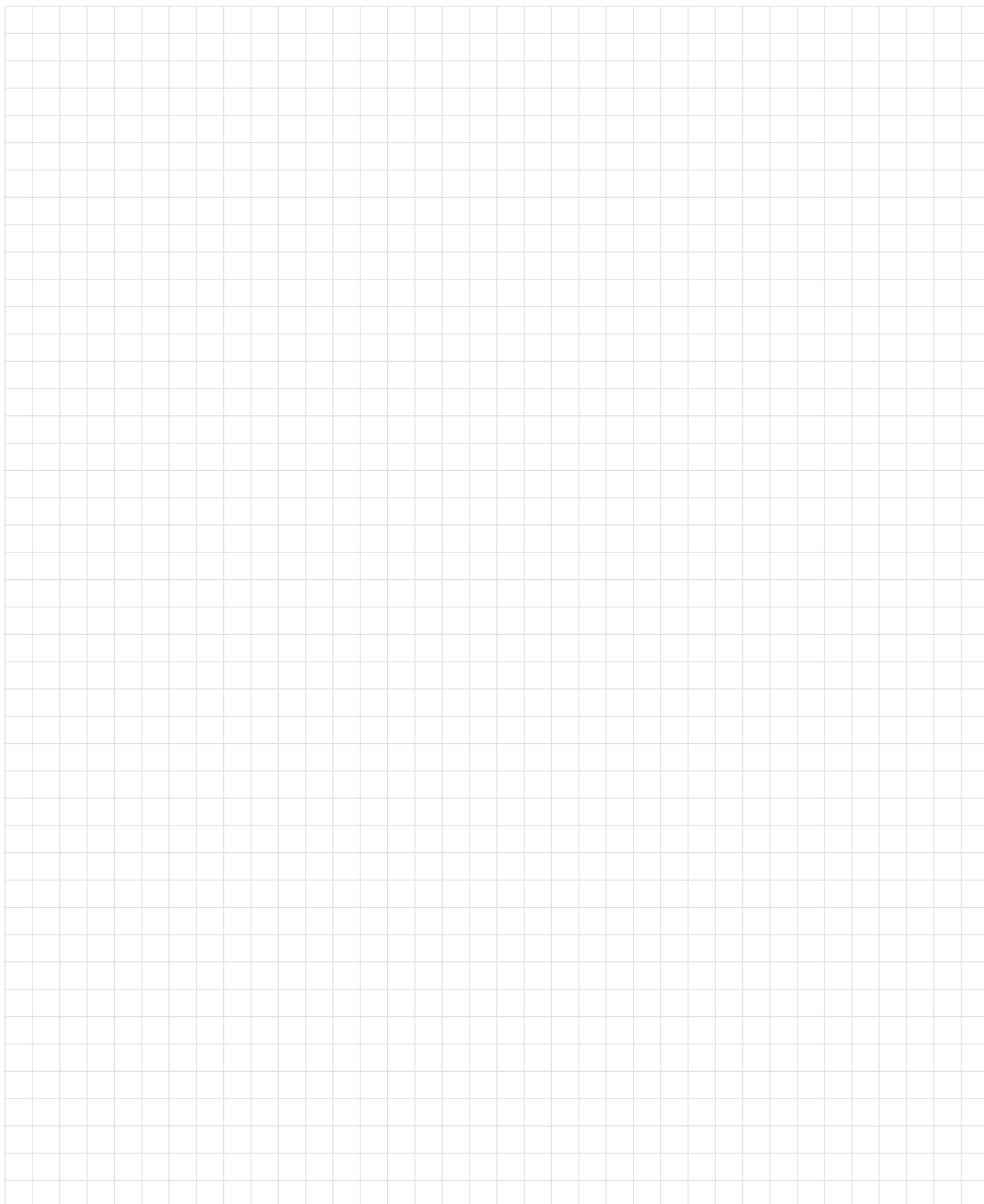


Assigning a variable to a widget

KeTop

Notes





Fit for the future with KEBA.

Founded in 1968, KEBA AG is an internationally successful electronics company based in Linz/Austria with subsidiaries around the world.

In line with its credo, "Automation by innovation", KEBA has been developing and producing inventive, top-quality automation solutions for 50 years for industrial, banking, services and energy automation branches. Indeed, as a result of competence, experience and courage, KEBA is the technology and innovation leader in its market segments. Extensive development and production expertise represents a guarantee for the highest quality.

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