KELOX room thermostats -
KM690D Digital-Standard/ KM690U Digital-Control

The KELOX room thermostats are high-quality room temperature controllers for recording and controlling the required room temperature for a maximum user comfort.

The **KELOX digital room thermostats** are available for 230 V operating voltages. Easy individual room control is already possible with the directly connected actuators. In conjunction with the **KM691 KELOX connection unit**, a perfectly coordinated overall system is realisable for surface temperature control.

The setting of the required room temperature and the operation takes place using the rotary knob with push-turn mechanics and soft click. The symbols are always shown distinctly with the clearly laid out, language-neutral indicator of the high-quality display.

In order to satisfy the desired requirements, various versions are available.

Performance features

- Available in two versions: Standard and Control
- Large, clearly laid out LC display with backlighting (only KM690U) - enables the display to be read even in the dark
- Flat design and small dimensions (86 x 86 x 31 mm)
- Standalone controller or realisable in the system
- Fittings for heating and cooling systems (KM690U)
- Smart Start / Smart Stop function (only KM690U)
- Comfort programs of heating and cooling mode (only KM690U)
- Correction of the actual temperature recording
- Limitation of the adjustment range of the target temperature
- Valve and frost protection function
- Change over input (only KM690U)
- High-quality design disk made of scratch-resistant plastic
- High-quality, modern design
- Suitable for NC and NO mode (only KM690U)
- High functional stability

The KE KELIT product quality ensures easy, intuitive installation, operation and maintenance of the entire system.

Versions

Art. No.	Art. Code	Operating voltage	Features
8581120	KM690D	230:	Heating, fixed set-back difference, set-back input
8581140	KM690U	230V	Heating/cooling, changeover, heating system selectable, Smart Start / Smart Stop, adjustable set-back temperature, set-back output

Fittings

The KELOX room thermostats are available in the 230 V version. Various versions are available, which differ in terms of functional fittings:

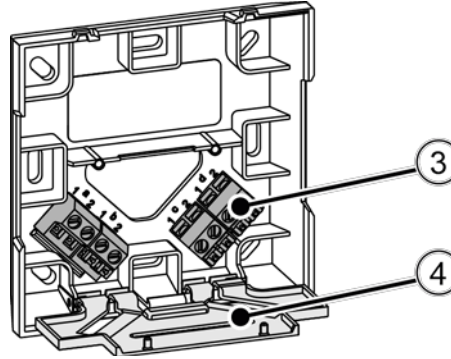| Overview of fittings	KM690D - Standard	KM690U - Control
Heating	✓	✓
Cooling		✓
Direction of operation switchover from currentless-closed (NC) to (NO)		✓
Fixed set-back difference	✓	
Adjustable desired temperature for heating and cooling		✓
Desired temperature specification: Daytime Heating, Daytime Cooling, Night Heating, Night Cooling		✓
Comfort programs		✓
Selectable operating mode: Daytime/night/automatic mode	✓	✓
Block cooling		✓
Set-back input	✓	
Set-back output		✓
Internal timer		✓
Power reserve		✓
Changeover input		✓
Correction of actual temperature recording	✓	✓
Desired temperature limiter	✓	✓
Valve protection function	✓	✓
Frost protection function	✓	✓
Selectable heating system		✓
Switch output can be deactivated	✓	✓
Activation lock	✓	✓
Smart Start / Smart Stop function		✓
Display backlighting		✓
Connection for external sensor		✓

Function

All room temperature controllers contain identical basic functions, further system functions depend on the version and its fittings.

## Device overview (Example – KM690U KELOX room thermostat Digital-Control)

Top view

Terminal contacts

|			
1	**Display**	▪	Display of all functions and menus
2	**Rotary knob**	▪	Push-turn mechanism with fine detent
		▪	Operation and navigation using the menus
		▪	Desired temperature specification
			Setting of the desired temperature for the Daytime Heating, Daytime Cooling and Night (ECO) operating modes
3	**Terminal clamps**	▪	Screw terminals for connection lines
		▪	Quick connection of a multi-core connection cable for the power supply and signal transmission
4	**Protective cover**	▪	Protection from contact with live components

Dimensions
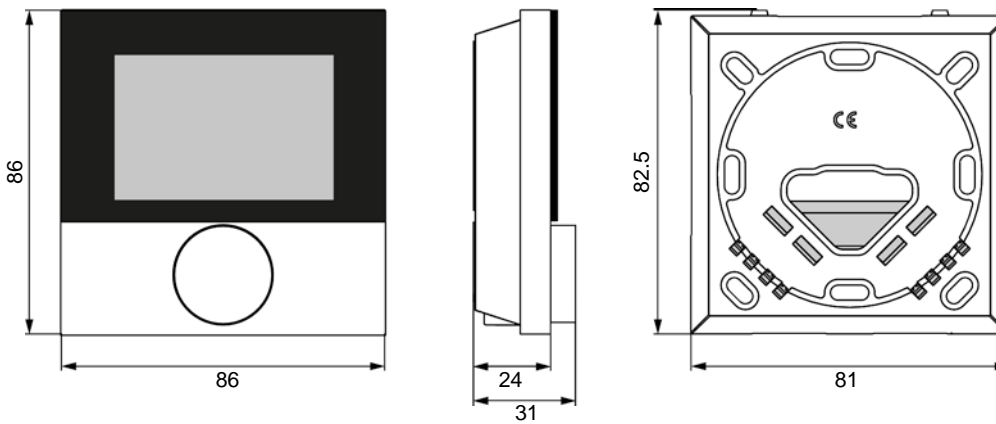
Dimensions (all details in mm)

Use

For the convenience of the user and for energy optimisation, numerous system functions and parameters can be set using the KELOX room thermostat. A multi-layered menu structure guarantees that no important settings are accidentally shifted. The setting options in the "Lifestyle functions" and "Settings" menus can be adjusted by the users. In the "Service" menu, system settings are made, this level is reserve for installation engineers and protected from unauthorised access by a
PIN code (1234).

Displays

The KELOX room thermostats as a clearly laid out and language-neutral display. All symbols are clearly shown in the high-quality display. The internationally understandable symbols guarantee intuitive operation.

KM690D KELOX room thermostat Digital-Standard
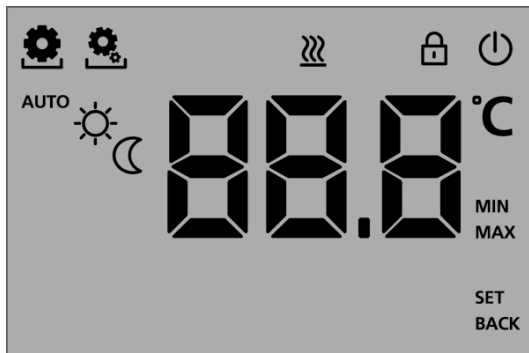
⚙	Lifestyle functions menu	☾	Night mode
⚙	Settings menu	88.8	Desired/actual temperature
〰	Heating	℃	Temperature unit
🔒	Activation lock	MIN	Minimum temperature
⏻	Switch-off	MAX	Maximum temperature
AUTO	Automatic mode	SET	Confirm entry
☀	Daytime mode	BACK	Back

KM690U KELOX room thermostat Digital-Control
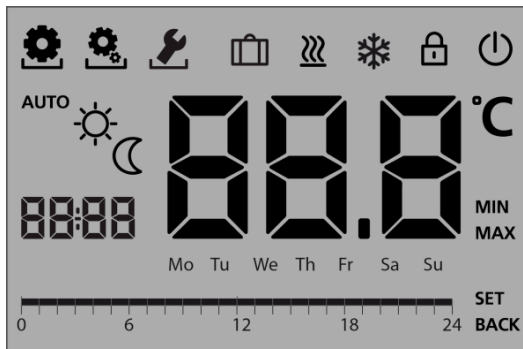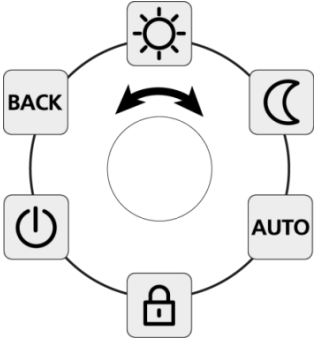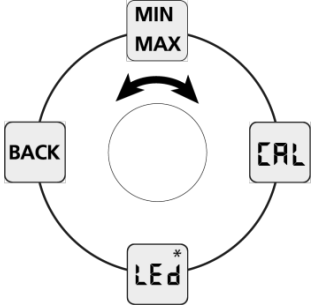
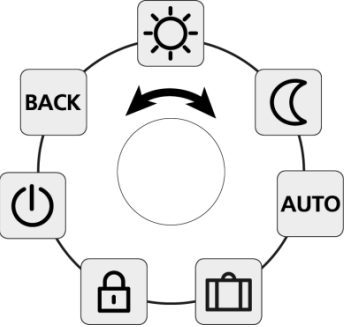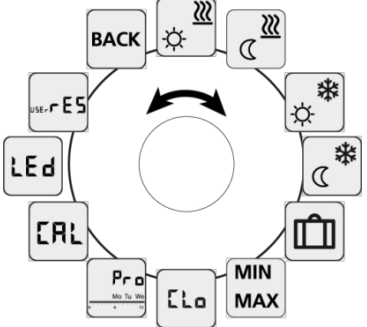|			
⚙	Lifestyle functions menu	☾	Night mode
⚙	Settings menu	88:88	Time
🔧	Service menu	88.8	Desired/actual temperature
🧳	Holiday function	℃	Temperature unit
〰	Heating	MIN	Minimum temperature
❄	Cooling	MAX	Maximum temperature
🔒	Activation lock	Mo — Su	Weekdays
⏻	Switch-off	0 6 12	Time scale
AUTO	Automatic mode	SET	Confirm entry
☀	Daytime mode	BACK	Back

Navigation

The setting of the desired room temperature and the operation of the comprehensive functions takes place using the rotary knob. This enables convenient navigation through the intuitive menu structure of KELOX room thermostats. By turning and pressing, functions are selected and adapted according to the user's requirements. The soft click of the rotary knob always provides a high-quality feel, from which the navigation is perceptible for the user. Depending on the version, the following functions, settings and parameters are available in the individual menu levels.

KM690D KELOX room thermostat Digital-Standard

Lifestyle functions	Settings
o Operating modes Daytime mode, Night mode, Automatic o Activation lock for protection from accidental adjustment and incorrect operation o Switch-off of the room temperature controller and consequently the regular operation - the frost protection mode is activated automatically o Back to basic level	o Limitation of the lowest and highest adjustable room temperature o Temperature correction of the temperature recording

KM690U KELOX room thermostat Digital-Control

Lifestyle functions	Settings	Service

		o Protected from third-party access with PIN code (1234)
		o Individual, optimum coordination of the system using system parameters, such as
		  - Setting of the heating system used, such as underfloor heating, radiator, convector, etc.
		  - Blocking of switch outputs based on the activated operating mode (heating/cooling)
		  - Deactivation of the valve protection function
		  - Smart Start / Smart Stop function
		  - Activation locks with/without PIN
		  - Switchover of the direction of operation of the system (currentless-open / currentless-closed)
		  - Block cooling

o Operating modes Daytime mode, Night mode, Automatic o Holiday mode to reduce the defined holiday temperature o Activation lock for protection from accidental adjustment and incorrect operation o Switch-off of the room temperature controller and consequently the regular operation - the frost protection mode is activated automatically o Back to basic level	o Separate selection of the target temperature for various operating modes, such as daytime / night mode and holiday mode o Limitation of the lowest and highest adjustable room temperature o Set time and date o Comfort programs for individual weekdays, week, weekend and week including weekend o Correction of the temperature recording o Display illumination for setting the brightness for the backlighting o Restore factory settings	

Technical data

The listed technical data relate to the maximum functional fittings of the KELOX room thermostats. Individual positions may be omitted, depending on the model.

Version		KM690D	KM690U
Article number		5881120	5881140
Operating voltage		230 V ±10 % 50 Hz	
Power supply		via base / mains connection	
Power reserve		-	10 hours
Floor temperature measurement		-	KM699 optionally available
Power consumption in idle		< 0.3 W	
Max. power consumption		< 0.5 W	
Switching element		Relay	
Switching capacity		1 A ohmic load, 200 VA inductive	
Fuse protection		T1AH	
Max. number of connectible actuators		5 (max. 3 W/actuator)	
Direction of operation of connectible actuators		NC	NC/NO
Adjustment range desired temperature specification		5 to 30 C	
Resolution desired temperature specification		0.2 C	
Measurement range of actual temperature recording		0 to 40 C	
Correction of actual temperature recording		±2 C	
Measurement precision actual temperature		±2.5 K at 0 to 5 C ±1.5 K at 5 to 10°C ±1 K at 10 to 17 C ±0.5 K between 17 and 24 C ±1 K at 24 to 28 C ±1.5 K at 29 to 35 C ±2.5 K at 35 to 40 C	
Control precision		±1 K between 10 and 17 C ±0.5 K between 17 and 24 C ±1 K between 24 and 28 C	
Changeover input		-	electronic
Block cooling		-	yes
Set-back input		yes	-
Set-back output / switching current		-	yes/100 mA
Set-back difference / set-back temperature		2°C	adjustable value for daytime and night temperature (heating & cooling)
Frost protection temperature		5 C	
Valve protection function		every 14 days for 10 minutes	
Permitted ambient temperature		0 to 50 C	
Permitted storage temperature		-20 to +70 C	
Permitted ambient humidity		80 % non-condensing	
Backlighting		-	yes
Assembly type		Wall assembly surface-mounted	
Connection line		NYM-J 5x1.5 mm²	NYM-O 5x1.5 mm²
Terminal clamps		4 screw terminals 0.22 - 1.5 mm²	8 screw terminals 0.22 - 1.5 mm²
Standards and regulations		EN 60730-1, EN 60730-2-9	
Protection class		II	
Degree of protection		IP20	
Material	Housing	ABS	
	Design disk	Acrylic glass XT	
Surface structure		eroded	
Colour		Pure white (RAL 9010)	
Weight		105 g ±0.5 g	
Dimensions	Housing	86 x 86 x 31 mm	
	Display	58 x 34 mm	
	Design disk	86 x 56 x 2 mm	

System diagrams

+A selection of possible system versions is shown below for the setup of an individual room control. A standalone system is already realisable with a KM690D KELOX room thermostat and directly connected actuators. It is possible to connect up to five actuators is to the room controller. Individualisation of the individual room control can take place by adding compatible components to the system, such as
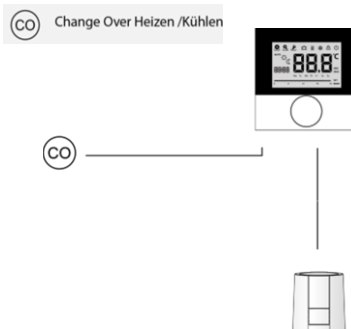
- KM691 KELOX connection unit
- KM594 Room thermostat - Analogue and
- KM690D KELOX room thermostat Digital-Standard
- KM690D KELOX room thermostat Digital-Control
- Thermal actuators KM596

Stand-alone KM690D KELOX room thermostat Digital-Standard
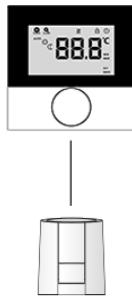
Feature	
Heating	✓
KM690D KELOX room thermostat	✓

Stand-alone KM690U KELOX room thermostat – Digital-Control

Feature	
Heating	✓
Cooling	✓
Internal timer of a KM690U KELOX room thermostat	✓[1]
KM690U KELOX room thermostat	✓

[1] *not in combination with an external system clock*

Controller with KM691 KELOX connection unit
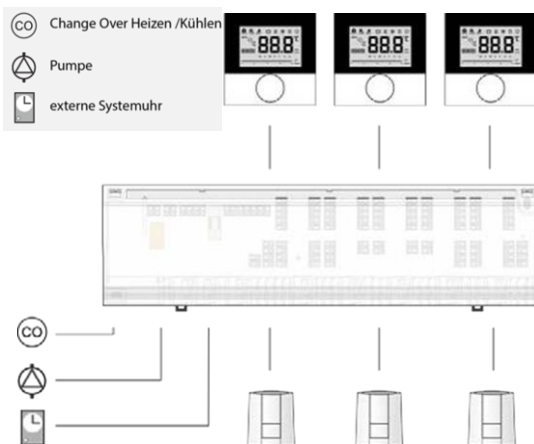
| Feature	
Heating	✓
Cooling (with KM690U)	✓
Easy pump control	✓
Connection of external system clock	✓
Internal timer of a KM690U KELOX room thermostat	✓[1]
Temperature limiter or dewpoint monitor	✓
KM594 Room thermostat – Analogue	✓
KM690 Room thermostat – Analogue	✓
KM690D Room thermostat – Digital-Standard	✓
KM690U Room thermostat – Digital-Control	✓

[1] *not in combination with an external system clock*

Installation instructions

The installation of the KELOX room thermostats is simple, convenient and intuitive in only a few steps.

Assembly site

For the KELOX room thermostats to determine the precise room temperature, a freely accessible area is recommended for assembly. No obstacles or additional heat sources should impair the measurement of the precise room temperature at the assembly position.
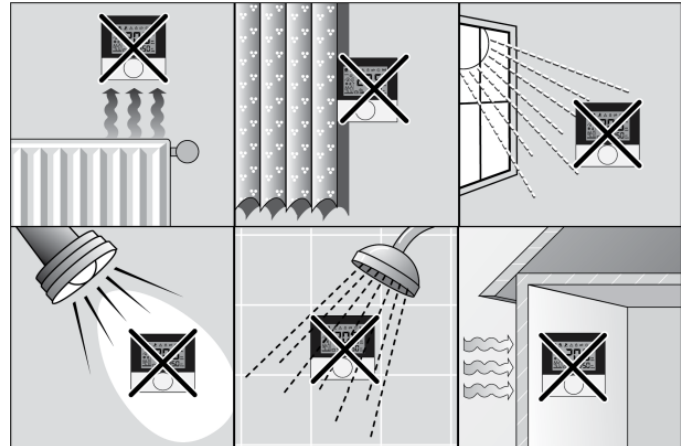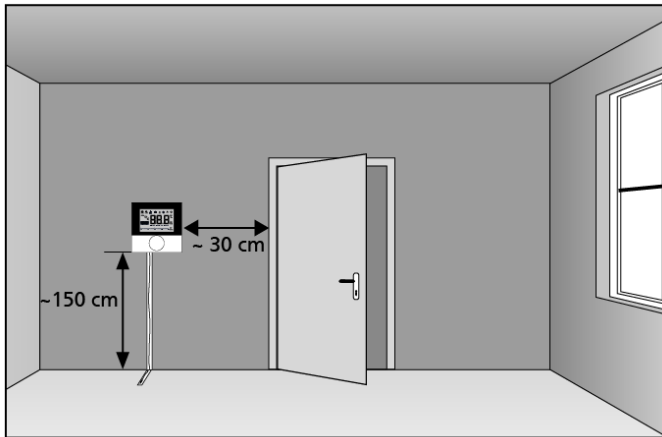
Assembly

The assembly of the KELOX room thermostats can take place conveniently as surface-mounting or on a flush-mounted socket with only a few simple steps.
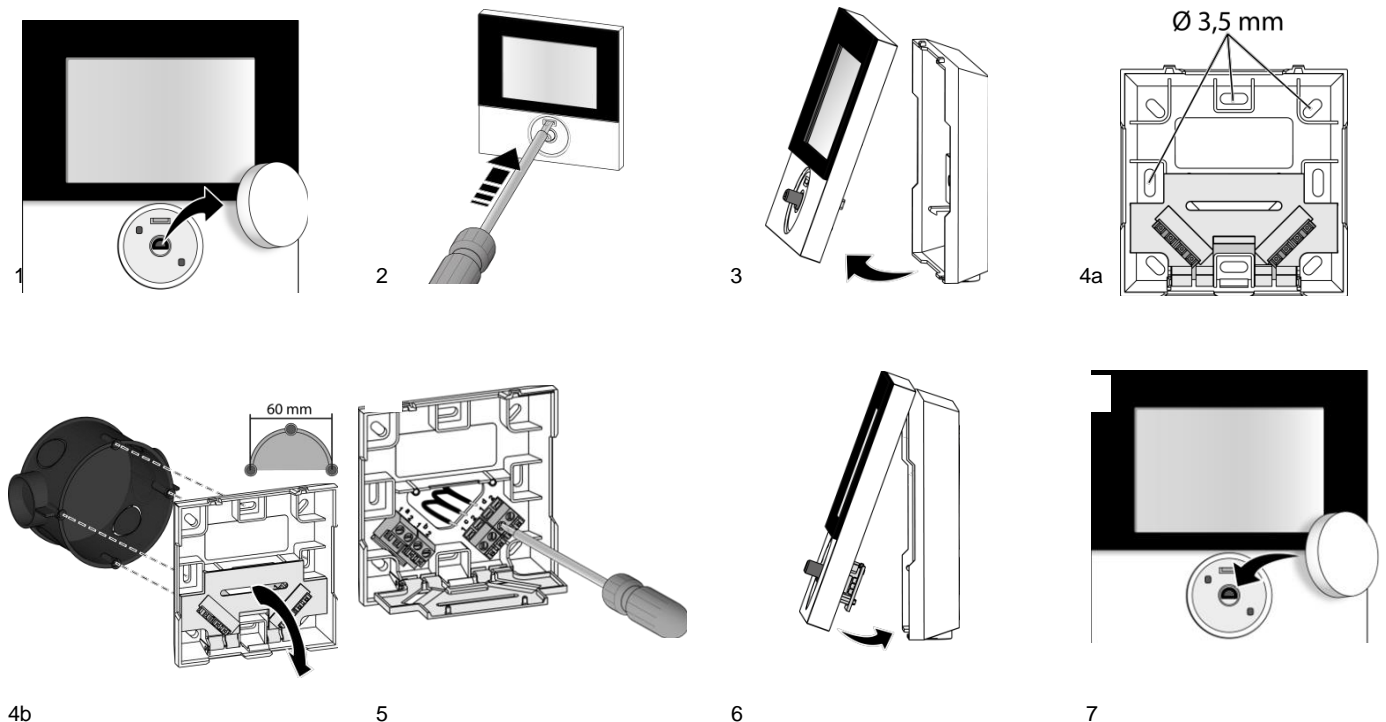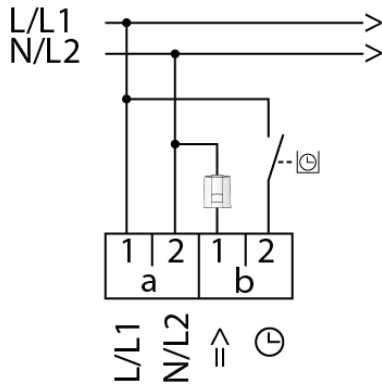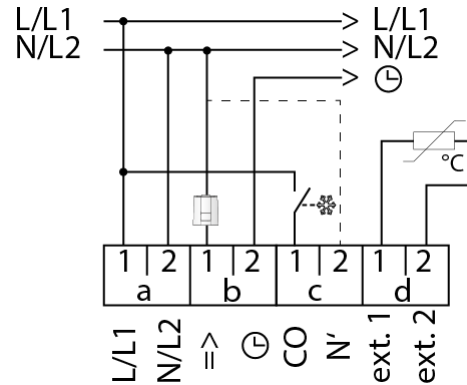
Electrical connection

The wiring between the KELOX room thermostats and the components to be connected takes place with a multi-core cable.
For simple control without a KM691 KELOX connection unit, at least a three-wire cable is required.

KM690D Digital-Standard	KM690U Digital-Control

- Mains connection
  - Power supply via KM691 KELOX connection unit or a separate voltage source
- Set-back input
- Reception of an external timer signal for time-controlled reduction of the room temperature
- Set-back output (KM690U Digital-Control)
- Forwarding of the internal timer signal the KM691 KELOX connection unit
- Changeover input (KM690U Digital-Control)
  - Switchover between heating and cooling via an external signal (potential-free contact)
- Connection for actuators
  - Two wiring options for the neutral conductor (KM690U Digital-Control)
    - The wiring of the neutral conductor can take place directly from the supply line or via the internal terminal clamps. In the circuit diagrams, the wiring is marked with the terminal clamp N with a dotted line.
  - Integrated valve protection function
    - Cyclical sequencing of connected actuators every 14 days for 10 minutes reduces the jamming of valves in time periods without temperature control
  - Integrated frost protection function
    - Prevents lines from freezing during periods without temperature control, for example, during extended absence
    - Not active in cooling mode
- Connection of external sensor (KM690U Digital-Control)
  - Monitoring of the room or floor temperature and minimum floor temperature control

Additional information at www.kekelit.com