

Data sheet

Kamstrup Valve

- Battery-operated motor valve
- Open/Close with READy App
- Up to 10 years battery lifetime
- Throttle or time-controlled throttle function
- Antiscaling function to prevent valve getting stuck over time
- Integrated Wireless M-Bus communication
- Designed to operate while inundated
- Short installation length
- Ambient temperature measurement with max and min alarms
- Tamper alarm
- Easy to use



Content

General description	3
Technical data	4
Valve sketch	4
Data communication	5
User application	5
Throttle Function	5
Display	6
Battery lifetime	7
Safety	7
Info codes	8
Logger description	8
Installation and operation	9
READY	10
Order form	11
Configuration	11
Service	12

General description

Kamstrup Valve uses smart technology to control the water supply to consumers or to protect revenue. It can be used to close the water supply to households that have overdue water bills, in circumstances where water needs to be shut off for a period of time or where the water supply must be controlled for other reasons. The valve has a 10-year lifespan if used under normal conditions where the valve is operated one time per month and the battery temperature remains below 30 °C.

In some cases, the user will need to operate the valve more frequently, which will reduce the lifespan of the battery. The valve will send an alarm if the battery needs to be replaced.

How to control the valve

The user can open or close the valve via Kamstrup's READY App if he is near the unit. A consumer does not need to be at home for a water utility representative to operate the valve.

If the water supply to a consumer is closed and it is opened again without warning, there is a risk of unwanted water usage and possibly flooding. To mitigate this risk, a feature has been added where the consumer must press a touch button on the valve three times before it opens. This ensures that the water supply resumes only when the consumer is ready.

The user has the option to turn off the water supply to a consumer. However, there are also cases where the water supply only needs to be reduced, for example due to legislative requirements. Therefore, the valve can be 'ajar', letting only a restricted amount of water to flow through. Additionally, water flow can be restricted to a certain period of the day, for example 10 minutes of water availability per day. In this case, the consumer will need to press a touch button on the valve three times for water to flow through. This is to ensure that the consumer is at home when water is available.

Kamstrup Valve can be ordered in 2 throttle modes:

Small permanent flow	config number 1
Time limit throttle	config number 2

Kamstrup Valve is a ball valve driven by a battery-powered motor and gearbox. The valve has a display that provides the user with information about the valve position and mode. There is also a touch button on the glass display to open the valve.

The valve is fitted with an optical eye that provides access to logged info codes and the ability to change configuration settings.

The valve has left-hand thread on the inlet that connects to a socket with corresponding left hand-thread. The outlet side of the valve has G1B thread.

A socket fits the meter outlet and the valve inlet together without the need for coupling. Therefore, a short installation length is achieved. Socket no: 3026-940.

The electronics casing is IP68-approved waterproof material.

The valve opening is electronically controlled.

The valve has a built-in memory and several loggers that can be read via the optical eye.

The valve has built-in Wireless M-Bus radio with C1 and C2 modes, 868Mhz. NB: The valve cannot be controlled via Fixed Network, only via Drive-by. The Wireless M-Bus data package is transmitted every 96 seconds.

NB: The valve closes slowly, but forms a very strong seal. NEVER put a finger or any other foreign objects in the valve opening.

The valve can be controlled with Wireless M-Bus-radio via READY App and READY Converter.

READY converters must communicate directly with the valve via Drive-by, it cannot go through Fixed Network or a repeater.

The current ambient temperature is measured by the valve and maximum and minimum temperatures are calculated and logged. The ambient temperature is sent via radio.

Two temperature limits are programmed into the valve, a minimum and a maximum value. If the current ambient temperature is above the high limit or below the low limit, an info code is sent to indicate high or low temperature.

The two temperature limits must be entered in the order of minimum followed by maximum Default settings: MIN. = 3 °C, MAX = 45 °C.

These limits can be reconfigured with METERTOOL and the optical eye.

The valve occasionally moves itself to avoid getting stuck in place over time (antiscaling) if it has not operated over a long period. This function is only active when the valve is in the open state.

Technical data

Mechanical data

Connection	G1" water installation, 60 mm long
Water temperature	Cold water 0.1.....50 °C
Climate	5...55 °C, condensation humidity (Mounted inside in utility room and outside in pit) Avoid mounting in direct or prolonged sunlight
Storage temperature	-25...60 °C (empty/drain valve)
Pressure rating	PN16
Protection class	IP68
Weight	0.9 kg

Electrical data

Battery	3.65 VDC 1 C cell with HLC
Battery lifetime	Depends on use, but up to 10 years with 1 operation per month (tBAT < 30 °C) or 5 years with 1 operation per month (tBAT < 30-55 °C)
EMC	RE-D compliance with EN 300 220-2
Ambient temperatures	-5...+55 °C ± 2 °C

Materials

Valve casing	Brass W511
Ball valve	Brass CW511L, coating Ni-Cr
Ball valve gasket	Teflon (PTFE)
Electronic casing	Polyphenylene sulfide (PPS)
Top ring	Polycarbonate (dyed)

Frequency

Kamstrup Valve	868 MHz, modes C1 and C2
European standard for remote reading	EN13757-4

Valve sketch

Type	Size	Total installation length with valve	Weight
021-YY-C0H-8XX	G1B 130 mm	G1B 190 mm	0.9 kg
021-YY-C0J-8XX			
021-YY-C0L-8XX			
021-YY-C0M-8XX			



Data communication

Wireless M-Bus

The valve has built-in Wireless M-Bus data communication. It is delivered with module 90 which includes modes C1 and C2, 868 MHz. The valve can ONLY be controlled via Drive-by and NOT from Fixed Network.

A radio package on mode C1 is being transmitted every 96 seconds.

The valve comes with a data package containing:

- valve status
- valve info codes
- valve ambient temperatures

The data package can be read via Drive-by and Fixed Network. The status of the valve can be read through Fixed Network.

When in mode C2, the valve can be controlled via READY Converter and READY App. NB. READY App has to receive a C1 radio package before it can activate the valve.

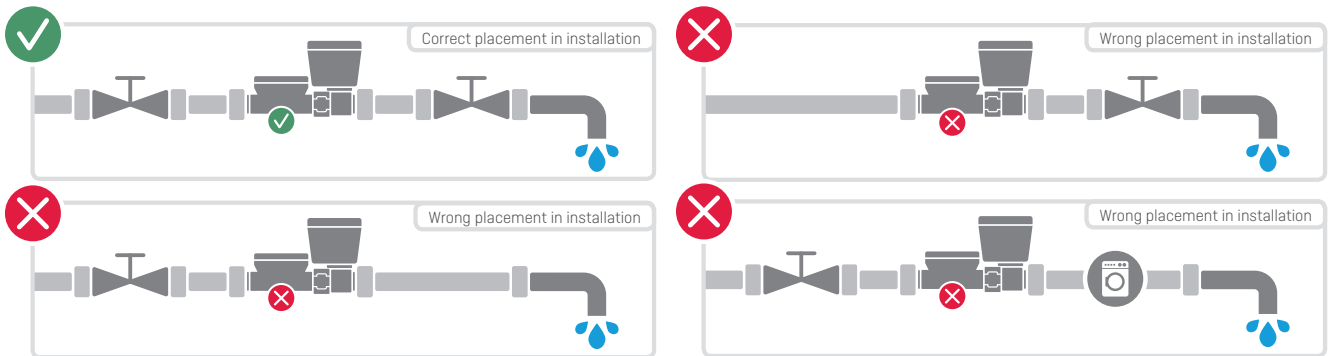
Optical read-out head

You can read out the valve settings and the logger with an optical read-out head and using the Kamstrup software programs METERTOOL and LogView. You can also change the valve settings with METERTOOL, but only after permission from READY App. Therefore, before any re-programming of the settings, you need to 'enable valve configuration via optical head' in READY App.

Application

Disturbances such as lost radio connection, flat battery and flooding may prevent functioning of the touch button. This could result in locking of the valve position, it could get stuck in open, closed or throttle mode. When the valve is not

functional, it is the responsibility of the water utility company to undertake repair works. The consumer's rights, according to local regulations, must be respected in order to ensure that the consumer does not suffer from any damages.



Throttle function

In order to limit the water consumption to a household, there are two variations of the throttle function. One of these options needs to be selected in the sales order. The throttle function can always be changed using the optical eye and METERTOOL.

- Small permanent flow: Provides a limited water supply by setting the valve in a fixed position with a smaller valve opening. Throttle configuration is specified from 0-100 where 0 is closed and 100 is completely open (default is 50, nearly full flow). The throttle configuration must always be adjusted according to the specific installation. The adjustments can easily be done in READY App.

- Time-limited throttle: A function that turns off water supply except during a specified time period where the consumer receives an amount of water by pressing the button three times. This time period is configurable. The valve position is indicated by the same parameter as the 'Small permanent flow', i.e. configurable from 0-100.

The time period when the valve is open is configurable from 1-1440 minutes, default is 10 minutes.

The frequency that allows the consumer access to water for the specified time period is also configurable, default is 24 hours (1440 minutes).

Throttle function

Open conditionally

If the valve is closed or in one of the throttle modes and the user wants to open the valve via READY App, he has two options.

Pressing 'Open' will open the valve immediately.

Pressing 'Open conditionally' will not open the valve immediately, but the touch button on the valve will be activated.

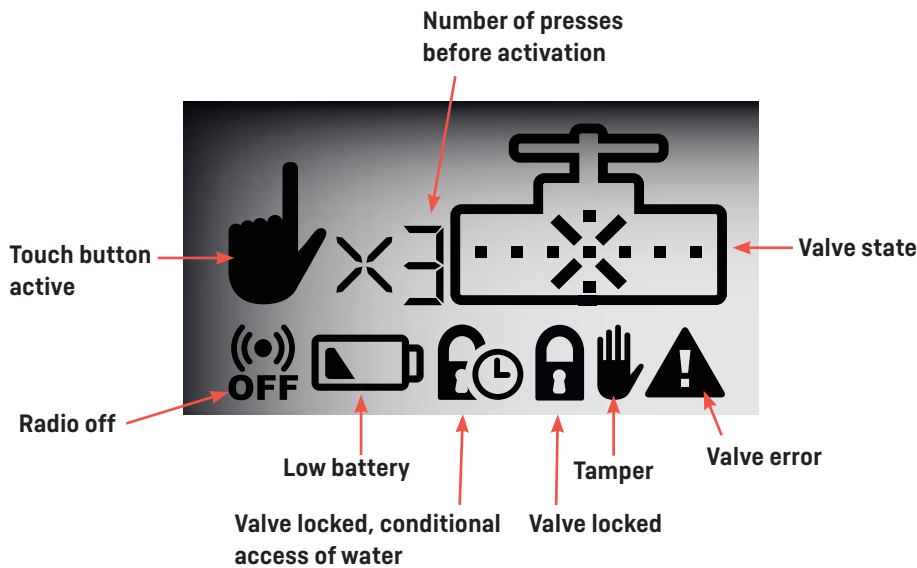
Pressing the button on the valve three times will open the valve. This ensures that the valve cannot be opened by anyone else but the consumer. Kamstrup recommends always opening the valve in this way. Always check the valve status in READY before leaving the site.

The symbol indicating activation of touch button to open or throttle the valve (see also the section 'Touch button'):



Display

The display on the valve shows information about the status of the valve and has a touch button to control the valve.



Touch button

On the valve display, there is a touch button that works through the glass. To avoid unwanted water supply, three presses on the touch button activates the valve, a count-down is displayed after each touch. The valve symbol flashes when the valve is moving from one position to another, e.g. when opening, the symbol for valve open will flash.

The touch button is only active when the touch button symbol is active in the display. This is to avoid unwanted activation of the button and therefore, touching the glass also has to be slow and with a few seconds between each touch. Dirt and condensation on the glass can prevent the button from working, so it might be necessary to wipe the glass with a cloth before activation. If the valve is flooded, the button will not function since the water pressure on the glass will be registered as a constant touching on the button.

Battery lifetime

Kamstrup Valve has voltage supplied internally from a lithium C-cell battery with HLC power backup and with a lifetime of up to 10 years when used under normal conditions [i.e. operated once per month and ambient temperature maintained below 30 °C].

With higher operation frequency and higher ambient temperature, the battery life will be reduced. For example, with one operation each day, the battery will have a lifetime of approximately four years.

When the battery needs to be replaced, a symbol indicating low battery appears on the display. An info code for battery replacement is sent to the user via radio signal.

The symbol for battery replacement:



Safety

Kamstrup Valve is a ball valve driven by a battery-powered motor. It is manually controlled via READy App which sends radio signals to the valve through EADy Converter. The valve cannot be automatically controlled through Fixed Network.

The valve closes slowly, but forms a very strong seal. NEVER put a finger or any other foreign objects in the valve opening.

When the valve is delivered from Kamstrup, it is closed and in 'radio off' mode. The valve is activated by pressing the touch button three times, the valve will then open slowly and no longer be in transport mode. Upon installation, the valve can be closed with READy App.

Important: Do not press the button before the protective seals are removed and the valve is installed.

Important: Before dismantling an installed valve, the battery should be disconnected. When the valve is dismantled from an installation, the valve shall always be maintained by a Kamstrup trained installer before re-installation.

Tamper function

The valve has two tamper functions.

If someone tries to tamper with the valve using a magnet, an info code will be sent to the user via radio signal. The tamper symbol will also flash on the display.

Attempts to dismantle the valve will also trigger an info code to be sent to the utility. The tamper symbol will flash on the display screen.








See the section 'Info codes'.

Both kinds of tampering can be reset via READy App.

The valve case is screwed together with four screws. One screw is sealed and must be broken in order to separate the two units.

Info codes

The valve can send several info codes to indicate the valve status.

Info code	Description	Symbol		Data logger
Tamper mechanical	Someone tried to dismantle the valve NB: This info code will also be triggered when changing the battery (see the section 'Maintenance')		Flashes	Valve logger Info logger Config logger Service logger M Service logger Y
Tamper magnetic	Someone tried to tamper with the valve through a magnet		Flashes	Valve logger Info logger Config logger Service logger M Service logger Y
Batteri low	The battery is low – if the symbol is active for more than 24 hours, the battery should be changed as soon as possible		Flashes	Valve logger Info logger Config logger Service logger M Service logger Y
Temperature high	Ambient temperature is above the specified max level (default 45 °C)		Constantly emitting light	Service logger M Service logger Y
Temperature low	Ambient temperature is below the specified min. level (default 3 °C)		Constantly emitting light	Service logger M Service logger Y
Valve error	The valve is defective The valve needs to be repaired or replaced		Flashes	Valve logger
Excessive use	Frequent valve movements decrease the lifetime of battery		Flashes	Valve logger

Logger description

The valve has several loggers that can be read with the optical eye and the software program LogView.

They cannot be read via radio communication. For logger descriptions, see the technical description for Kamstrup Valve.

Data logging interval	Data logging events
Configuration logger	26 events
Valve event logger	200 events
Info logger	50 events
Service logger M	24
Service logger Y	10

Installation and operation

Kamstrup Valve is built to be mounted on a MULTICAL® 21/flowIQ® 2101 1" (G1B) meter.

The valve should always be mounted downstream of the meter, i.e. on the meter outlet.

The valve can be installed inside, outside or in a pit that may contain water.

The valve has left-hand thread on the inlet side that connects to the enclosed socket no. 3026-940 with corresponding left-hand thread. Therefore, the valve can be connected directly to the water meter to make the length of the installation as small as possible.

See the section 'Valve sketch'.

* Always use a new gasket between the meter and the valve.

When the meter and valve are assembled, the unit can be installed according to general conditions for installation of a Kamstrup water meter.

Just as the Kamstrup water meters can be installed in different angles and positions, so can the valve. Kamstrup recommends installing it in a position where the display screen is legible.

Commissioning

When delivered from the factory, the valve is closed and in 'radio off' mode.

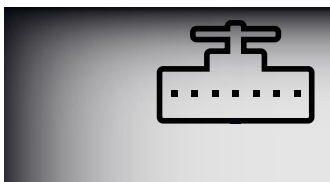
The valve should only be activated after it is installed.

To deactivate the 'Radio off' mode, the touch button must be pushed three times.

*NB: Never press the touch button before the valve is installed.

The valve will then open slowly and the display will indicate that the radio is no longer turned off.

When the radio is turned on and the valve is completely open (indicated by symbols on display screen), the valve is in operation and can be controlled with READY App via radio signal.



The valve is open and the radio is active.

READy

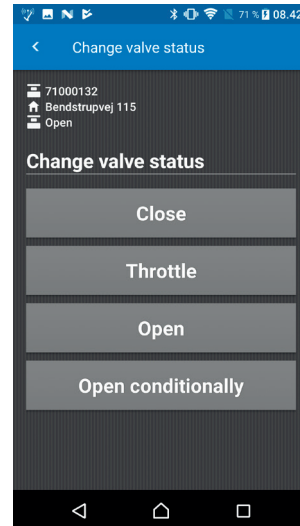
The valve can easily be controlled with READy App.

* NB: For further information, also see the help function in READy.

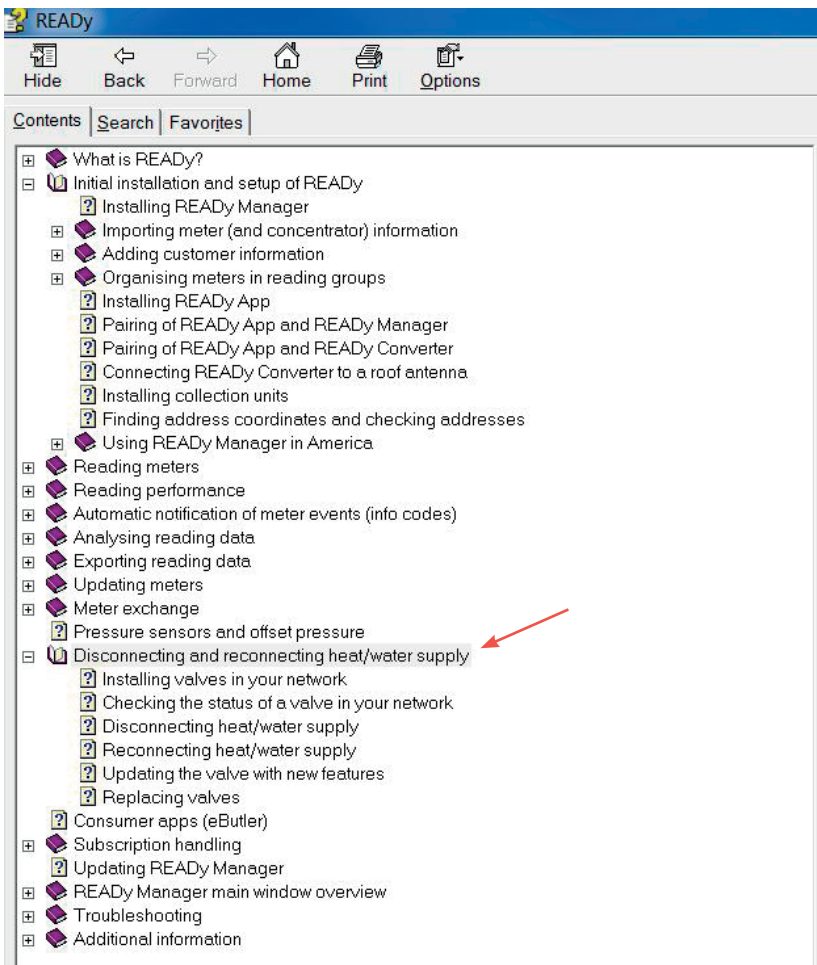
There are four options to control the valve:

- Close: Immediately closes the valve
- Throttle: Puts the valve in either of the two throttle modes, depending on how the valve has been configured
- Open: Immediately opens the valve (warning: only use this function when there is no risk of flooding)
- Open conditionally: Activates the button on the valve, but does not open the valve until the touch button has been pressed three times

NB: When changing the valve status, always wait until you can press DONE in the app, or always read the valve status after you have changed it. Otherwise, you cannot be sure that the valve is in the right status.



Information about using READy: all information can be found under the help function in READy Manager.



Order form

Kamstrup Valve	Type 66-95	XX	B	C	DD	E	FF
Communication							
Wireless M-Bus 868 MHz Valve		90					
Supply							
Battery, C-cell			C				
Reserved							
				0			
Coupling							
1"					DD		
Valve type							
Valve cold						8	
Country code							XX

Configuration

Kamstrup Valve	JJ	MMMM	Q	V	T	YY	ZZZ
Time zone							
GMT +1	52						
GMT +2	56						
Customer label		0000					
Throttle mode							
Small permanent flow			1				
Time-limited throttle			2				
Temperature units							
Celsius				0			
Fahrenheit				1			
Encryption level							
No encryption					0		
Utility encryption (only available in certain markets)					2		
Encryption with separate key					3		
System configuration							
C1+C2, Fixed Network (C1)/Walk-by/Drive-by						00	
Datagram							
Info, status, ambient temperatures							101

Unless otherwise stated in the customer order, Kamstrup delivers the following:

52	0000	2	0	3	00	101
----	------	---	---	---	----	-----

Service

Disposal

Kamstrup A/S holds an environmental certification according to ISO 14001 and as part of our environmental policy, we use materials that can be disposed in an environmentally sustainable manner to the greatest extent possible.

Disposal by Kamstrup A/S

Kamstrup A/S accepts worn-out valves for environmentally correct disposal according to previous agreement. The disposal is free of charge to the customer, except for the cost of transportation to Kamstrup A/S.

The customer sends for disposal

The valve must not be disassembled prior to dispatch, only the battery should always be disconnected. Hand in the complete valve for approved national/local disposal. Enclose a copy of this page in order to inform the recipient of the contents.

Disposal by the customer himself

Disassemble valve, as described below, and hand in the separate parts for approved destruction. Do not expose batteries to mechanical impact. Also avoid short-circuit of lead-in wires during transport.

Also, see table below.

Any questions about environmental conditions should be sent to:

Kamstrup A/S
Att.: Miljø- og kvalitetsafd.
Fax.: +45 89 93 10 01
info@kamstrup.dk

Topic	Material information	Recommended disposal
Lithium cells+HLC	Lithium-thionylchloride	Approved deposit of lithium cells
Printed circuits (remove LCD-display)	Coppered epoxy laminate, components soldered on	PCB scrap for metal recovery
LCD display	Glass and liquid crystals	Approved processing of LCD displays
Valve casing, socket	PPS	Plastic recovery
Valve body	Brass W511	Metal recovery
Sight glass	Soda lime glass	Glass recovery
Top cover (type label)	ABS, (copper, can be stripped)	Plastic recovery (copper metal recovery)
Other plastic parts, casted	PC + 10 % glass	Plastic recovery
Moisture-absorbent materials	98 % bentonite, 2 % quartz	Ordinary disposal
Packing	APET - (Amorphous Polyethylene Terephthalate) - also used for storage of food	Plastic recycling 'Combustible'
E-motor with gearbox Other plastic parts, casted	Metal 95 %, copper 2 %, plastic 3 %	Metal recovery

Kamstrup Middle East FZC

Dubai Outsource City, Building 8
Office 205 P.O. BOX 345040
Dubai, United Arab Emirates
T: +971 4 453 7337
dubai@kamstrup.com
kamstrup.com