Manuals+

☰

ESBE®

CONTROLLERS

CONTROLLER

SERIES CRx200

CRA200

CRB200

CRC200

CRD200

CRA200

Self Adaptive Temperature Controller

Instruction Manual

ESBE Controllers Series CRx200 are actuators combined with controllers and consist of four different ranges. The CRx200 range offers constant temperature control (CRA200), room temperature control (CRB200), outside temperature control (CRC200) and combined temperature control (CRD200). The controllers Series CRx200 is dedicated to ESBE valves series VRx.

Contents [hide]

INTRODUCTION CRx200

ESBE Controllers Series CRx200 consist of 4 different ranges which are built on the same platform and with smart software which makes it possible to upgrade the controller, just by adding components. Thanks to ESBE Smart Software the controllers series CRx200 is a flexible platform with minimum handling time.

THE SMART SOFTWARE

The software of the controllers makes it possible to add components such as a room unit and/or outdoor sensor to the actuator, which recognize it and opens the correct interface and unlock additional options. This means that it is possible to start with CRA200 and later add additional components, e.g. a room unit, to control the controller remotely or turn it into a CRB200. This feature is a part of the smart software and is included in the whole CRx200 series, which makes it possible to upgrade any controller to a more advanced version, or a version which best fulfil the system and comfort requirements.

The ESBE Smart Software also minimize the controller setting time. By choosing the CRD200, no curve setting is needed, the controller continuously adjusts the curve

according to the indoor climate. This minimizes the risk of using the wrong curve setting. The curve adjusts depending of changes in the outdoor or indoor conditions. The minimum and maximum temperature can still be set though, if the CRx works with for example underfloor heating, and calendar settings if it is desired that the temperature decreases while no one is at home or during the night.

In systems where there are no temperature restrictions, the CRD200, because of the smart software, delivers the highest comfort without any settings.

THE SELF-ADAPTIVE SYSTEM BEHIND THE SMART SOFTWARE

The smart software makes it possible to upgrade the controller, use the room unit as a remote control or setting device, delivers the highest comfort and makes the CRD200 free of settings. This makes CRx200 a Plug&Play controller.

However, Plug&Play includes a lot more for ESBE. That is why we have created a self-adaptive system behind the software with the purpose of fixing all issues connected to reaction time, delays, and unbalanced performance. The ESBE Self-Adaptive System is taking care of PI factors (Proportional gain and Integral response) by learning the system behaviours and solving the issues, which in the past needed to be taken care of by an installer at the controller installation site. The self-adaptive system cares for smooth operation of the controller, eliminates issues connected to delays or controller response times, delivering a high control standard and comfort, and makes the CRx200 Series controllers which are suited to work in any system setup or environment.

PWM PUMP CONTROL

The CRx controllers are available in versions with PWM pump control. These controllers have two temperature sensors, one for the flow temperature and one for the return temperature. The PWM pump control could be used for temperature difference control, by adapting the pump speed to achieve the set temperature difference.

The pump control has four different modes.

- Pump control Off – pump is not controlled by CRx2x7, pump working mode needs to be set on the pump.
- Pump stop – Pump control via valve angle. The pump runs in constant speed until the valve position reach its lower limit. When the valve reaches its lower limit, a timer is

started. If the valve angle is still in lower limit after the time limit has passed the pump will stop.

- Pump control ΔT (difference between supply temperature and return temperature) – two different modes:

  a) Pump control with regulation to achieve constant ΔT.

  b) Pump control with regulation to achieve a ΔT

  dependent on supply temperature.

- Pump control ΔT & pump stop – combined function of pump stop and ΔT control. Meaning that, ΔT regulation of pump speed when the water regulation is fulfilled plus pump is stopped if the valve angle is lower than the minimum angle.

  The cable to connect the CRx to the pump has to be bought separately.

OTHER FEATURES

The CRx200 controllers can be equipped with an auxiliary switch to control "on/off " for any device according to the actuator/valve position.

The CRx200 series comes with the T/T2 (main temperature / alternative temperature) setting via relay, but additional equipment is needed to release the relay, e.g. a clock. The feature can also be controlled via ESBE room unit dedicated for CRx controllers. With series CRA200, a room unit is required to control the T/T2 function. For series CRC200 a room unit is required to control T/T2 function and enable the alternative curve feature (offset).

When the series CRD200 and CRB200 is delivered with a room unit, this feature is already enabled.

The ESBE Room Unit and auxiliary switch are available as accessory.

CRA211	**CRA215**
Cable	Cable, UK plug

CRB211 Cable		**CRB221** Wireless	
CRC211 Cable		**CRD221** Wireless	

QUICK GUIDE

Function	Version			
	CRA200	**CRB200**	**CRC200**	**CRD200**
Constant temperature control	●	●	●	●
Indoor temperature control	o	●	o	●
Outside temperature control	Δ	Δ	●	●
In-/outside temperature control	□	Δ	o	●
Pump control[1]	●	●	●	●
Working with room unit	o	●	o	●
Auxiliary switch control	●	●	●	●
T/T2 via relay	●	●	●	●

T/T2 via room unit	o	●	o	●

● feature is available and can be set on the device

0 a room unit is required to unlock the features – see accessories

Δ an outside temperature sensor is required to unlock the features – see accessories

□ a room unit and outside temperature sensor is required to unlock the features – see accessories 1) special version

OPERATION CRA200

The series CRA200 is a constant temperature controller dedicated to applications where a constant flow temperature is required. The controller is integrated with an actuator and should be used with rotary mixing valves series VRx100, VRx200 and VRx300.

The settings are done via joystick and presented on a display. If a remote control is needed, the CRA200 can be upgraded with a room unit.

An alternative temperature can be activated by an external signal (T/T2 relay). This feature can be activated and controlled via the room unit. An additional relay, an auxiliary switch, can be installed in the CRA200 which makes it possible to control another device, for example a pump, from the actuator/valve position.

The series CRA200 can be upgraded to series CRB200, CRC200 or CRD200 by adding required accessory (see quick guide)

OPERATION CRB200

The CRB200 is a room temperature controller providing a high level of comfort. There are two versions of CRB200 available; wireless (CRB220) and wired (CRB210).

The CRB200 consists of two main parts, the actuator and room unit:

- Actuator unit which can be connected to the room display unit either by wireless radio connection (CRB220) for easy installation or by cable (CRB210).
- Room display unit which contains the indoor temperature sensor and in which all settings, such as day to day climate adjustments as well as the internal day and weekly program, are set.

The room unit has a timer, with daily and weekly programming, which gives the

possibility to have day and night settings with alternative temperatures. The alternative temperature can also be activated by an external device, via relay. An additional relay, an auxiliary switch, can be installed in the CRB200, which makes it possible to control another device, for example a pump, from the actuator/valve position.

The CRB200 can be used as a CRA200 by changing the software settings. The CRB200 can also be changed to a CRC200 or upgraded to a CRD200 by adding required accessories (see quick guide).

OPERATION CRC200

The CRC200 is an outdoor temperature controller providing a high level of comfort.

The CRC200 consists of two main parts, the actuator and an outdoor sensor:

- actuator, to be mounted to the mixing valve controlling the heat supply.
- Outdoor sensor with 20 m cable. The sensor should be mounted on the north side of the building under the eaves in order to protect the sensor from direct sunlight and rain.

The smart software and self-adaptive system secures that, for example in a well insulated building with quick heating system, an imbalance between estimated and actual heating demand will not occur (the filter option in the software is still available for additional fine tuning).

An additional relay, an auxiliary switch, can be installed in the CRC200, which makes it possible to control another device, for example a pump, from the actuator/valve position.

The CRC200 can be changed to CRB200, or upgraded to CRD200, by adding required accessories (see quick guide).

OPERATION CRD200

The CRD200 is a combined outdoor and room temperature controller providing the highest level of comfort thanks to the input from both sensors, ESBEs Smart Software and Self-Adaptive System. The ESBE Smart Software and Self-Adaptive System are responsible for advanced heating curve adaptation; in other words the heating curve will be built and shaped ideally for specific building, system requirements and weather conditions. Thanks to smart software feature only one setting needs to be set and it is the room temperature.

The Controller consist of three main parts; actuator, room wireless room unit and outdoor sensor.

- Actuator unit connected to the room display unit by wireless radio connection for easy installation.
- Room display unit which contains the indoor temperature sensor and in which all settings, such as day to day climate adjustments as well as the internal day and weekly program, are set.
- Outdoor sensor with 20 m cable.

The room unit has a timer, with daily and weekly schedule, which makes it possible to have day and night settings with alternative temperatures. The alternative temperature can also be activated by an external device (via relay). An additional relay, an auxiliary switch, can be installed in the CRD200, which makes it possible to control another device, for example a pump, from the actuator/ valve position.

INSTALLATION

Power supply by 230 V AC adapter complete with transformer, 1,5 m cable and wall socket plug.

Flow temperature sensor with 1,5 m cable included (longer cable is available as accessory). The flow temperature sensor must be carefully insulated from the ambient temperature.

Room display unit (CRB200 and CRD200) should be placed in a central open area in the house, out of direct sunlight to provide the best comfort.

Outdoor sensor with 20 m cable (CRC200 and CRD200). The sensor should be mounted on the north side of the building under the eaves in order to protect the sensor from direct sunlight and rain.

Thanks to the special interface between the controllers series CRx200 and the ESBE valve series VRx, the unit as a whole has a unique stability and precision when regulating.

SUITABLE MIXING VALVES

- Series VRG100

- Series VRG200
- Series VRG300
- Series VRH100
- Series VRB100
- Series F ≤ DN50
- Series T
- Series HG

ADAPTOR KITS

Required adaptor kits for easily fitting onto an ESBE rotary mixing valve series VRx is supplied with each controller.

Adaptor kits can also be ordered separately.

Art. No.

16000500_____ ESBE valve series
VRG, VRH, VRB, G, MG, F, BIV, T, TM, H, HG

Adaptor kits for other mixing valves are available as follows:

Art. No.

16000600_____ Meibes

16000700_____ Watts

16000800_____ Honeywell Corona

16000900_____ Lovato

16001000_____PAW

16001100_____Wita Minimix, Maximix

OPTIONAL EQUIPMENT

Art. No.

16200700_____ ARA801 Auxiliary switch kit

17053100_____ CRA911 Flow pipe sensor, 5m cable

17055300_____ CRB912 Room unit for cable communication, without communication cable

17055500_____ CRB913 Room unit, wireless
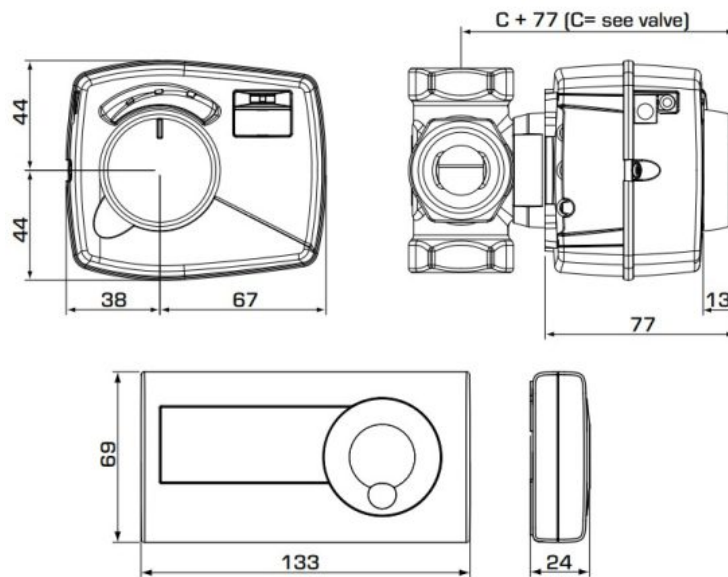
17055600_____CRA913 Pump control module, On/Off

17055700_____ CRB914 Communication cable, 20m

17056000_____CRC911 Outdoor sensor, without communication cable

17056200_____CRA915 UK Plug

17056400__CRB916 Communication radio module, wireless

17053200___ CRA911 Flow and return pipe sensor, 1 m cable

SERIES CRA200

Art. No.	Reference	Voltage [V AC]	Temperature range	Torque [Nm]	Weight [kg]	Note	Replaces
1272110 00	CRA2 11						12720 100
1272150 00	CRA2 15	230	5–95°C	6	0,5	Transformer with UK plug	12720 500
1272170 00	CRA2 17					with PWM pump control	

SERIES CRB200

Art. No.	Reference	Voltage [V AC]	Torque [Nm]	Room display unit	Weight [kg]	Note	Replaces
12663100	CRB211	230	6	Cable	0,7		12660100
12663700	CRB217					with PWM pump control	
12665200	CRB221			Wireless	0,9		12662200
12665700	CRB227				0,7	with PWM pump control	

SERIES CRC200

Art. No.	Reference	Voltage [V AC]	Torque [Nm]	Weight [kg]	Note	Replaces
12821100	CRC211	230	6	0,8		12820100
12821700	CRC217				with PWM pump control	

SERIES CRD200

Art. No.	Reference	Voltage [V AC]	Torque [Nm]	Room display unit	Weight [kg]	Note	Replaces

12684200	CRD221	230	6	Wireless	0,9		12682200
12684700	CRD227					with PWM pump control	

TECHNICAL DATA

Ambient temperature:_____max. +55°C

_____ min. –5°C

Sensor type:_____ NTC

Temperature range,

Flow temperature sensor:_____+5 to +95°C

Outdoor sensor:_____–50 to +70°C

Room unit (indoor sensor):_____+5 to +30°C

Enclosure rating,

Actuator unit:_____IP41

Room unit:_ _____IP20

Protection class:_____ II

Power supply,

Actuator unit: _____ 230 ± 10% V AC, 50 Hz

Room unit (wireless):_____ 2×1,5V LR6/AA

Power consumption:_____ 10 VA

Battery endurance (wireless room unit):_____ 1 year

Torque (actuator):_____6 Nm

Running time at max. speed (actuator):_____ 30s

ErP Temperature control class,

CRA200:_____N/A

CRB200:_____ IV

CRC200:_____ III

CRD200:_____VII

Energy efficiency contribution,

CRA200:_____N/A

CRB200:_____2%

CRC200:_____ 1,5%

CRD200:_____ 3,5%

Radio frequency (wireless room unit):_____868 MHz

ITU region 1 approved acc. to EN 300220-2

PWM Pump control signal

Status ON output resistance:_____ 530 Ω

Status OFF output resistance:_____ 10 kΩ

Recommended load resistance:_____≥ 1,5 kΩ

OFF voltage range:_____0,0 – 1,0 V DC

ON voltage range unloaded:_____8,5 – 12,7 V DC

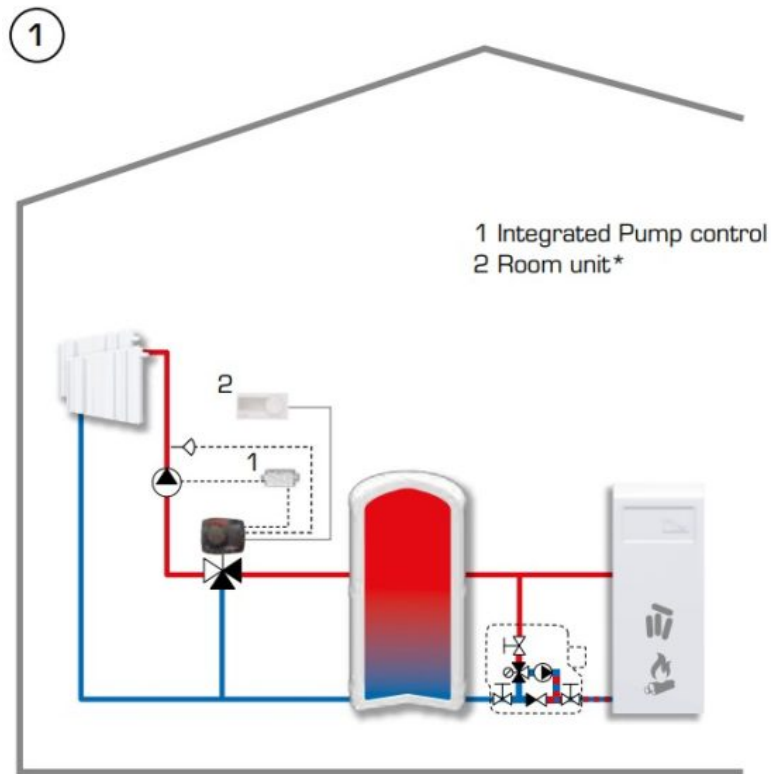ON voltage range @ 1,5 kΩ load:_____5,6 – 12,7 V DC

$C\varepsilon$

LVD 2014/35/EU

EMC 2014/30/EU

RoHS3 2015/863/EU

RED 2014/53/EU

WIRING

Please see the Installation Instruction

APPLICATION EXAMPLES

1 Integrated Pump control
2 Room unit*

CRA217 with Pump control via PWM signal and CRB912 Room unit as a remote control

This application shows how to control a constant flow temperature supplied to the heating circuit. The CRA200 controls and secures the set flow temperature.

The setting of the flow temperature can be done via CRB912 room unit (remote control function). The heating circuit pump will be controlled by the PWM pump control function.

circuit no.3

circuit no.1

circuit no.2

1 Pump control
2 Room unit*
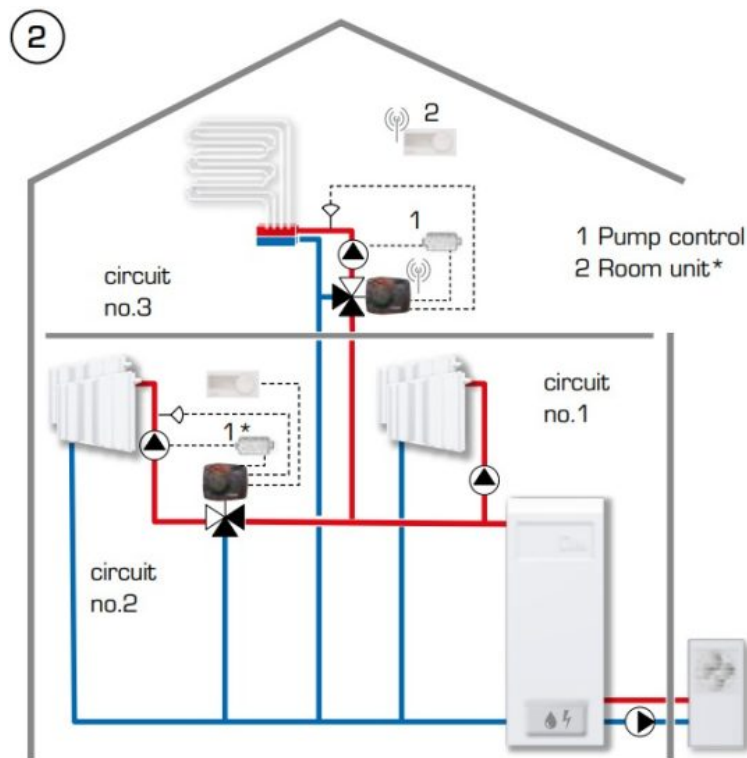
CRB2x1 with additional accessory, CRA913 Pump control via valve position

This application shows how to control the indoor temperature on different floors.

Heating circuit no.1 has no mixing valve and the temperature sent out to the receivers will be the same as from the heat source.

Heating circuit no.2 is equipped with a VRG and CRB210 with cable connection. The CRB210 controls the indoor temperature of this zone by mixing the flow temperature with the return temperature.

Heating circuit no.3 is equipped with a VRG and CRB220 with wireless connection. The CRB220 controls the indoor temperature of this zone by mixing the flow temperature with the return temperature.

In circuit no. 2 and 3 the heating circuit pump will be shut off via CRA913 Pump control if the valve is closed – no heat demanded.

* Cable or wireless connection depending on requirements.

The shown applications are only examples of product use!

Before using the product in any application, the regional and national regulations need to be checked.
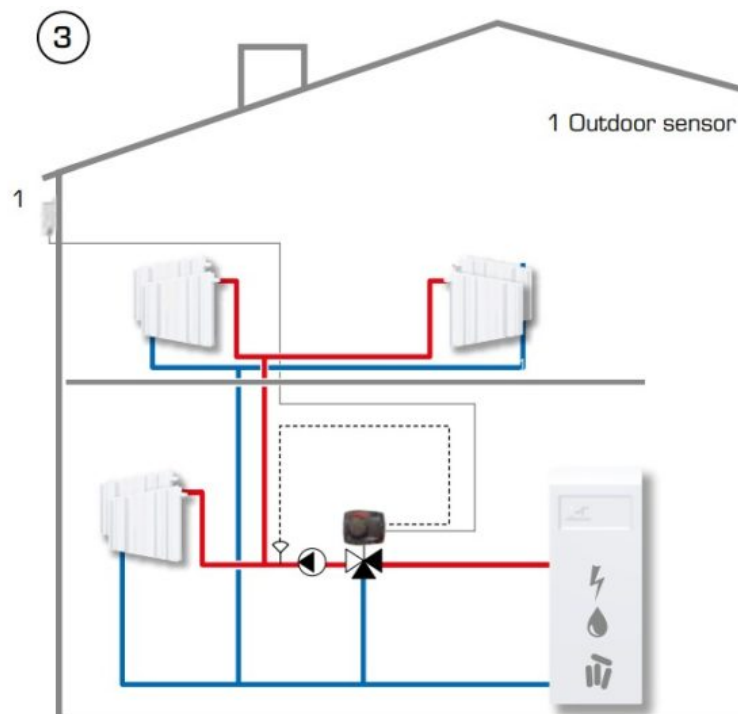
CRC211

This application shows how to control the indoor temperature based on the outdoor temperature.

This control setup is used for buildings where a room unit cannot be used for indoor

temperature reference, e.g. buildings with complicated structure, no open spaces or many zones. The CRC200 controls the indoor temperature based on the outdoor temperature via the heating curve.

All heat emitters are supplied with the same flow temperature calculated by CRC200.
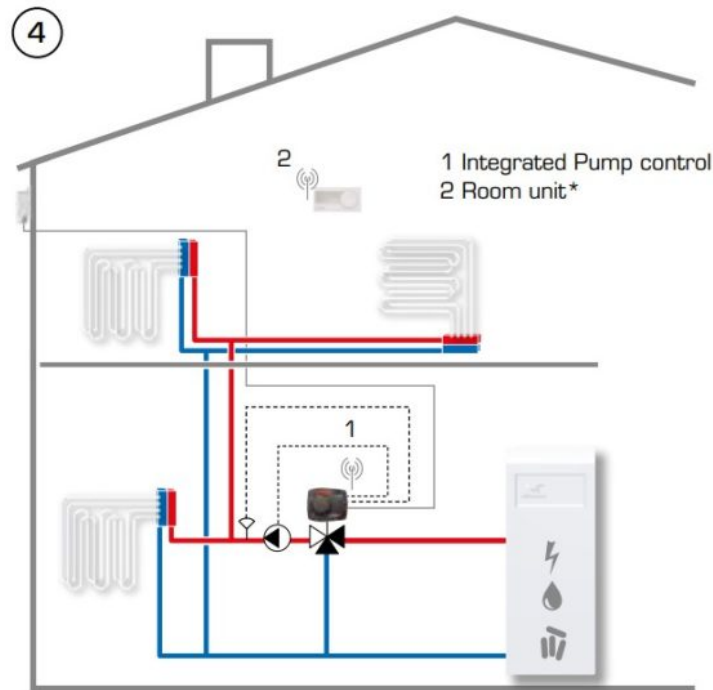
CRD227 with Pump control via PWM signal

This application shows how to control the indoor temperature based on the outdoor and indoor temperature.

This control setup is used for buildings where a room unit can be used for indoor temperature reference, e.g. buildings with open space and where the most accurate temperature control is needed. The CRD200 controls the indoor temperature based on the outdoor and indoor temperature. The heating curve is constantly adjusted by ESBE Smart Software for the best indoor comfort.

All heat emitters are supplied with the same flow temperature calculated by CRD200. The heating circuit pump will be controlled by the PWM pump control function.

* Cable or wireless connection depending on requirements.

Documents / Resources

[ESBE CRA200 Self Adaptive Temperature Controller](#) [[pdf](#)] Instruction Manual

CRA200, CRB200, CRC200, CRD200, CRA200 Self Adaptive Temperature Controller, CRA200, Self Adaptive Temperature Controller, Adaptive Temperature Controller, Temperature Controller

References

- [User Manual](#)

📁 ESBE

🏷 Adaptive Temperature Controller, CRA200, CRA200 Self Adaptive Temperature Controller, CRB200, CRC200, CRD200, ESBE, Self Adaptive Temperature Controller, Temperature Controller

---

Leave a comment

Your email address will not be published. Required fields are marked *

Comment *

Name

Email

Website

☐ Save my name, email, and website in this browser for the next time I comment.

Post Comment

Search:

e.g. whirlpool wrf535swhz

Search