

Copyright (c) 2015 Genesis Technologies AG Switzerland, all rights reserved

KNX Thermostat driver (GTSTC4ZRTH477) for Feller Room Thermostat RTH, types 477x-x

1. Disclaimer

- Genesis Technologies does provide this driver as it is. There is no commitment to support, nor does Genesis Technologies assure a decent reaction time in case of a problem. Genesis Technologies can refuse all support, discontinue support, end the driver lifetime at any time. Genesis Technologies will not refund in any case licenses
- Notwithstanding the foregoing, Genesis Technologies is not liable to licensee for any damages, including compensatory, special, incidental, exemplary, punitive, or consequential damages, connected with or resulting from this license agreement or licensee's use of this software. Licensee's jurisdiction may not allow such a limitation of damages, so this limitation may not apply.

By using this driver you accept that you have read and accepted the terms above!

2. What is the thermostat driver? What is it used for?

This driver is designed to work as an extended display of the room thermostat. It does not do any direct heating adjusting nor does it manage the heating/cooling direct. All the driver does is to integrate the standard features available on the Feller device front into Control4

3. What thermostatV2 features are supported?

Supported features of the thermostatV2 proxy

- Setpoint
- Modes
- Presets
- Preset scheduling
- Extras

Not supported

- Legacy scheduling
- Hold modes

4. What KNX thermostat features are supported?

Supported features of the Feller thermostat

- Set and display the actual setpoint
- Display room temperature
- Modes: Comfort, standby, night, frost/heat protection, dewpoint
- Cool/heat switchover
- Switch/display central heating on/off

5. Theory of operation / general info

5.1. General

The driver does reflect what on the thermostat display is shown. As well it follows all settings that are done on the thermostat interface.

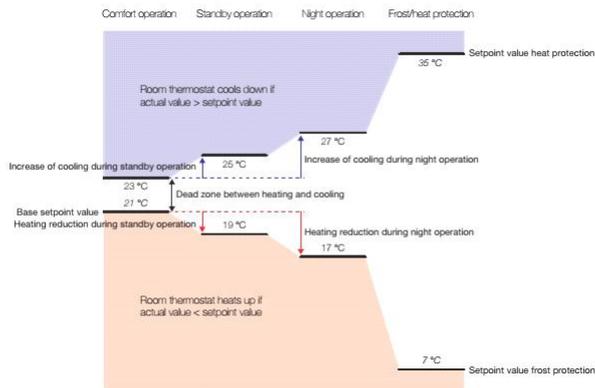
There is no regulation algorithms implemented, the cooling and heating curves, individual settings that match the heating system must be done in KNX.

5.2. Temperature

Room temperature is measured and delivered from KNX, no matter if it's the thermostat or an external sensor, the driver does interpret the values that are delivered. Fahrenheit and Celsius can be selected to display in the scale wished

5.3. Setpoints

Setpoints are recalculated that the feedback matches the set value. Depending of the mode (comfort, night...) currently active, the thermostat applies different shifts. In properties an info line can be activated to show the real borderlines, where the heating or cooling will be activated



Picture: Feller RTH documentation
despite of most KNX thermostats the Feller RTH uses single setpoint. All commands to heat/cool setpoints are recalculated or ignored.

5.4. Mapping of operation modes

All KNX modes comfort, standby, night, frost/heat protection can be selected from a preset or on the extras page.

Dewpoint mode does deactivate the Navigator interface and is meant as *off* state. As well if the mode *off* is selected the dewpoint mode is activated on the Thermostat. If there is no dewpoint address available the *off* will not be available as mode to select

5.5. Language support

All preset and extra page strings are per default in English. However the driver ships with predefined translations for de_CH, de_DE, fr_FR, it_IT and en_US. These languages are written as files into the path \\ IP of controller \drivers\lua\sandbox\driverId if they don't exist and loaded each time the driver starts. The driver id is shown by hovering with the mouse over the driver in the project tree, system design.

If for example a de_DE translation should not match your expectations, feel free to open the de_DE file in a text editor, edit and save.

Restart the driver and you should be set. (For Flash, press refresh Navigators after the driver restart)

As well if your system does run on a locale setting which may be missing, copy the en_EN to a new file and translate the strings inside.

Name the new file after the locale inside. If the locale code is not known, see here https://github.com/bobdenotter/locales/blob/master/locales_list.txt Restart the driver and you should be set. (For Flash, press refresh Navigators after the driver restart)

6. Can I use this driver for KNX thermostat x?

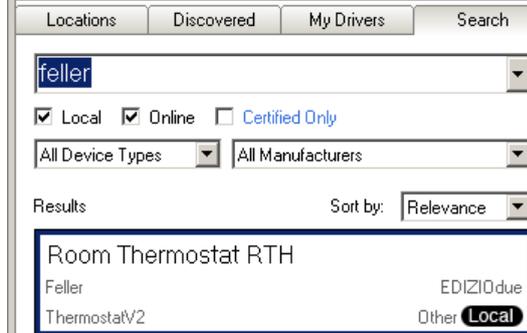
Yes. Maybe it will work. We only answer questions related to the specified Feller thermostat.

7. Software installation Control4

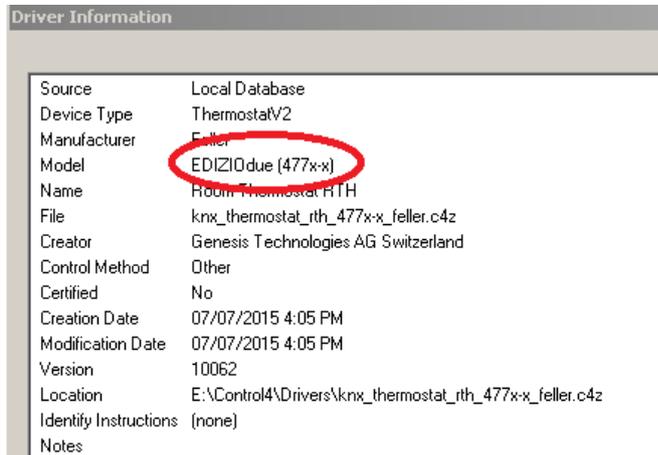
7.1. Prerequisites

- The driver uses the Control4 KNX network driver to connect to KNX. Please make sure that this driver is installed in your project and is connected to KNX, running
- Download the driver and placed them in %USERPROFILE%\Control4\Drivers.

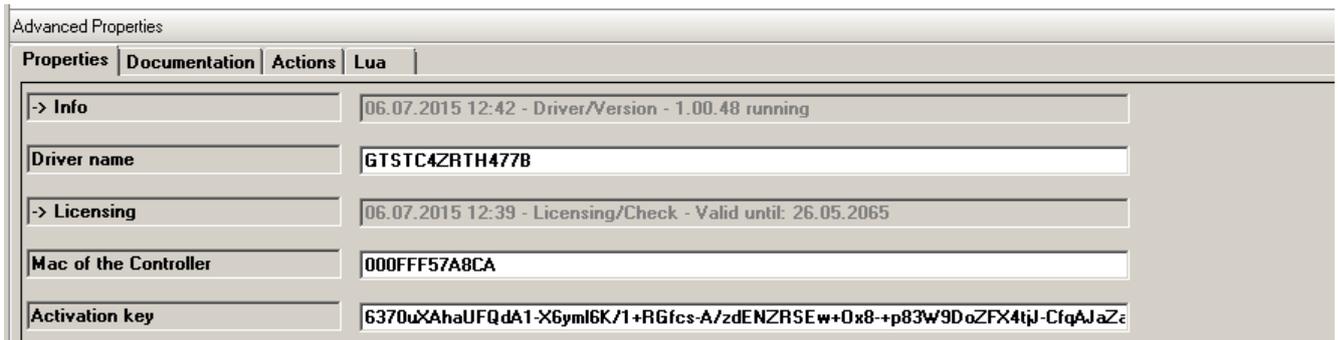
7.2. Start Composer, go to *System Design* and select the tab *Search* in the right top window. Search for *Feller RTH*



Make sure it's the right version for the RTH used. Right click with the mouse will bring up the details window. 477x-x MUST be shown.



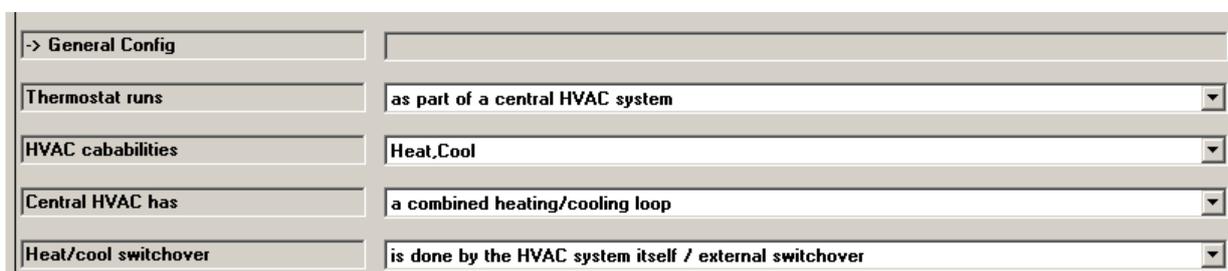
7.3. Drag and drop the *Feller RTH* driver into the wished room. Click on it and find the Properties page. (Hovering with the mouse over the Properties will show up hints)



7.4. Common properties

- -> Info: Does show the driver health info. If the driver experience issues this line will display it.
- Driver name: The product identification of the driver
- -> Licensing: Shows info about licensing status
- Mac of the Controller: Inserted automatically
- Activation key: Insert here the license key which is displayed in the driver dashboard after you bought a license and assigned it to the system. Once assigned in the Dashboard the license may jump in automatically once the driver connects to the online services

7.5. General Config



THESE SETTINGS MUST MATCH THE HVAC ENVIRONNEMENT

- Thermostat runs: Select if the room thermostat runs stand alone or as part of a central heating/ cooling system
- HVAC capabilities: Select the HVAC feature set. These settings will influence the availability of the modes in Navigators
- Central HVAC has: (only visible if *Thermostat runs* is set to *..part of a central HVAC system*)

Most European HVAC systems do work with underfloor pipes or radiators which are connected all together over one loop. Heating and cooling is done over the same loop, in winter warm water, summer cold water flows through the pipes. If those descriptions match your HVAC the select a *Combined heating/cooling loop*. More expensive HVAC systems do have separate loops, mainly ceiling cooling loops which are independent from the heating loop. If that is the case, select *separate heating and cooling loops*. Using that setting the driver knows if the room can select to heat if another does cool, e.g. the switch over heating/cooling is allowed. Otherwise selecting the non-active mode may result in a jump back of the Navigator to the general active mode.

- Heat/cool switchover: If in any case above the capabilities of the HVAC is cool and heat the switchover has to be defined. Also one thermostat driver can be configured to switch over and act as master for all others in terms of cool/heat switchover.

7.6. RTH group addresses

-> RTH group addresses	
Room temp. (2 Byte)	7/0/2
Setpoint (2 Byte)	7/0/0
Setpoint status (2 Byte)	7/0/1
Comfort mode (1 bit)	7/0/6
Night mode (1 bit)	7/0/8
Frost/heat prot. mode (1 bit)	7/0/7
Dewpoint mode (1 bit)	7/0/10
Operating status (1 Byte)	7/0/4
Heat/cool switchover (1 bit)	7/0/3
Status heating (1 bit)	7/0/12
Status heating (1 Byte)	
Status cooling (1 bit)	7/0/11
Status cooling (1 Byte)	

- Room temp. (2 Byte): In ETS the address is listed as "Room temperature actual value" and object number 55, DPT 9.001, required Flags: C,R,T
- Setpoint (2 Byte): In ETS the address is listed as "Room temperature basic set value" and object number 53 DPT 9.001, required Flags: C,W
- Setpoint status (2 Byte): In ETS the address is listed as "Room temperature set value" and object number 54 DPT 9.001, required Flags: C,R,T
- Comfort mode (1 bit): In ETS the address is listed as "Operating mode, Comfort" and object number 47, DPT 1.001, required Flags: C,R,W,T
- Night mode (1 bit): In ETS the address is listed as "Operating mode, Night" and object number 48, DPT 1.001, required Flags: C,R,W,T
- Frost/heat prot. mode (1 bit): In ETS the address is listed as "Operating mode, Frost protection, heat protection" and object number 49, DPT 1.001, required Flags: C,R,W,T
- Operating status (1 Byte): In ETS the address is listed as "Room thermostat status" and object number 61, DPT 5.010, required Flags: C,R,T
- Dewpoint mode (1 bit): In ETS the address is listed as "Dewpoint" and object number 50, DPT 1.001, required Flags: C,W. Without this property the "Off" will not appear on the UI
- Heat/cool switchover (1 bit): In ETS the address is listed as "Heating / Cooling" and object number 59, DPT 1.001, required Flags: C,W,T,U
- Status heating (1 bit): In ETS the address is as object number 51 or 52, whichever does activate the heating with 1 bit values, DPT 1.001, required Flags: C,R,T. Only one address for status heating, 1 bit or 1 Byte is required to get the feedback, not both
- Status heating (1 Byte): In ETS the address is as object number 51 or 52, whichever does activate the heating with 1 Byte values, DPT 5.001, required Flags: C,R,T. Only one address for status heating, 1 bit or 1 Byte is required to get the feedback, not both
- Status cooling (1 bit): In ETS the address is as object number 51 or 52, whichever does activate the cooling with 1 bit values, DPT 1.001, required Flags: C,R,T. Only one address

- for status cooling, 1 bit or 1 Byte is required to get the feedback, not both
- Status cooling (1 Byte): In ETS the address is as object number 51 or 52; whichever does activate the cooling with 1 bit values, DPT 1.001, required Flags: C,R,T. Only one address for status cooling, 1 bit or 1 Byte is required to get the feedback, not both

Addressing example in KNX, how it should look like in ETS. (Addresses may vary)

47	Operating mode	Comfort	7/0/6	1 bit	C	R	W	T	-
48	Operating mode	Night	7/0/8	1 bit	C	R	W	T	-
49	Operating mode	Frost protection, heat protect	7/0/7	1 bit	C	R	W	T	-
50	Operating mode	Dew point	7/0/10	1 bit	C	-	W	-	-
51	Control variable	Heating	7/0/12	1 bit	C	R	-	T	-
52	Control variable	Cooling	7/0/11	1 bit	C	R	-	T	-
53	Room temperature, basic set value	Preset value	7/0/0	2 Byte	C	-	W	-	-
54	Room temperature, set value	set	7/0/1	2 Byte	C	R	-	T	-
55	Room temperature, actual value	Control variable	7/0/2	2 Byte	C	R	-	T	-
56	External temperature	Display		2 Byte	C	-	W	-	-
57	Time	Displays		3 Byte	C	R	W	-	-
59	Heating/cooling	Switch operating mode	7/0/3	1 bit	C	R	W	-	-
61	Status	Response	7/0/4	1 Byte	C	R	-	T	-

7.7. Other properties

The screenshot shows the following configuration values:

- Dead zone (K): 2
- Heating red. standby (K): 2
- Heating red. night (K): 4
- Cooling inc. standby (K): 2
- Cooling inc. night (K): 4
- Show setpoint info line: Yes
- Visible extras: Operating modes
- Enabled options: Operating modes and setpoint
- HVAC on/off (1 bit): 2/0/0
- HVAC on/off status (1 bit): 2/0/2
- Lua window: None
- Online logserver: None
- Log period (h): 1
- Log auth: (empty)

- Dead zone (K): Set to match the settings in ETS, see picture below
- Heating red. standby (K): Set to match the settings in ETS, see picture below
- Heating red. night (K): Set to match the settings in ETS, see picture below
- Cooling inc. standby (K): Set to match the settings in ETS, see picture below
- Cooling inc. night (K): Set to match the settings in ETS, see picture below

Set values		
Brief instructions	Basic set value (16 to 31 °C) (comfort temperature)	25 °C
Brightness LED	Stand-by operation reduction, heating (1 to 8 K)	2 K
General block	Night operation reduction, heating (1 to 8 K)	4 K
block keys	Set value, frost protection (4 to 10 °C)	7 °C
Configuration of keys	Temp. rise, cooling, standby mode (1 to 8 K)	2 K
Key 3	Temp. rise, cooling, night mode (1 to 8 K)	4 K
Key 4	Set value, heat protection (30 to 42 °C)	35 °C
Heating/cooling system	Dead zone between heating and cooling (1 to 8 K)	2 K
Set values		
Functionality		
Room temperature measurement		
Control variable output		
Display configuration		
manual preset set value		

- Show setpoint info line: As the heat and cool setpoint does not reflect the borderline where the thermostat begins to cool/heat (especially when working with modes) this line shows what the thermostat will do exactly.
- Visible extras: Defines what the Extras page will display. After a change a *refresh navigators* should be executed
- Enabled options: Defines what options should be available for Presets
- HVAC on/off (1 bit): 1 bit address to switch on/off the central HVAC, DPT 1.001, required
Flags: C,W
- HVAC on/off status (1 bit): 1 bit address to switch on/off the central HVAC, DPT 1.001,
Flags: C,R,T
- -> Log / Lua window: Selects the log level printed out in Lua window from Composer. Use the level *Debug* to see what the driver does
- -> Log / Online log server: If a persistent problem appears that cannot be solved from the installer support may ask you to activate a decent level. Do not use until support ask you to do so
- Log period (h): The time frame the log should output
- Log auth: Developer can give you a code to see more logs. Usually not really interesting, only for in deep debug

7.8. Connections

The KNX connection should auto connect. Room bindings can be used to assign the thermostat to the rooms

KNX Thermostat Feller RTH				
Name	Type	Connection	Input/Output	Connected To
Control Inputs				
 KNX Control	Control	KNX_DEVICE	Input	KNX Network->KNX Device
Room Control				
 Room Selection	RoomControl	TEMPERATURE	Output	Fix Room->Temperature, C4 KNX Test->Temperat...
 Room Selection	RoomControl	TEMPERATURE_CON...	Output	Fix Room->Temperature Control, C4 KNX Test->T...

8. Additional settings in ETS

Right click on the thermostat and select *Edit parameters*. Click on *Room temperature measurement* and change *Cycle time for automatic transmission of the room temperature* to 10 min

Functionality	Cycle time for automatic transmission of the room temperature	10 min
Room temperature measurement		
Control variable output		
Display configuration		
manual preset set value		

9. Known issues

- Depending on what language the system is set temperatures and setpoints are maybe not shown with decimal values (22.6 C). en_US and de_CH are tested to fully work, it_IT, de_DE and fr_FR do not show decimal places

- Changes on the extra page setting will not be shown on Flash Navigators without refreshing them over *refresh Navigators*
- Temperature on Navigators may not refresh if Thermostat is selected for over 5 days
- List navigators are often not showing the setpoints; also if cooling is active adjusting the heat setpoint will not work. Same for heating and cool setpoint.
- Programming: Using the variables SINGLE_SETPOINT_C and SINGLE_SETPOINT_F the value needs to be multiplied by 10. So if the setpoint should be 25C then you set it to 250.0
- With OS2.7.2 the single setpoint cannot be set in Programming in the thermostat page. Use the device variable instead
- SR-250 and SR-260 may not show the single setpoint. Only heat setpoint which is equal to the single setpoint

10. Updates / Support

Updates are available on: <https://technet.genesis-technologies.ch>

Bugs should be reported to: info@genesis-technologies.ch