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ESTIA air to water heatpumps 2021

Simplify your water-life …

Claus Wackerbauer
Product Manager

Markus Pichler
Technical Director

TOSHIBA

ESTIA R410A & R32

R32 R410A

ESTiA

- Line-up 2021 – meeting all market applications

P nom. (kW)	4	6	8	11	14	16
ESTIA Serie 1 **All in One** (R32, New)	1-Ph	1-Ph	1-Ph	1-Ph	COMING SOON	COMING SOON
ESTIA Serie 1 **Split Hydrobox** (R32, New)	1-Ph	1-Ph	1-Ph	1-Ph	COMING SOON	COMING SOON
ESTIA Serie 5 **Standard** (R410A)				3-Ph	1-Ph/ 3-Ph	3-Ph
ESTIA Serie 5 **Hi-Power** (R410A)			1-Ph/ 3-Ph	1-Ph/ 3-Ph	3-Ph	

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ESTIA R32

ESTiA

- Full Line-up

P nom. (kW)	4	6	8	11	14	16
ESTIA Serie 1 **All in One**	1-Ph	1-Ph	1-Ph/ 3-Ph	1-Ph/ 3-Ph	1-Ph/ 3-Ph	3-Ph
ESTIA Serie 1 **Split Hydrobox**	1-Ph	1-Ph	1-Ph/ 3-Ph	1-Ph/ 3-Ph	1-Ph/ 3-Ph	3-Ph

COMING SOON

- ✓ 3-phase: ESTIA 8, 11, 14, 16
- ✓ 1-phase: ESTIA 14

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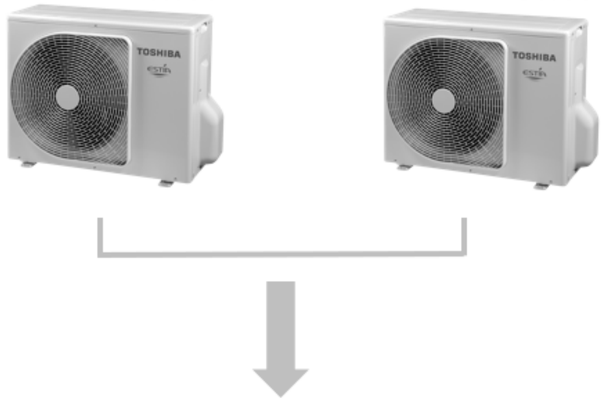
ESTIA R32

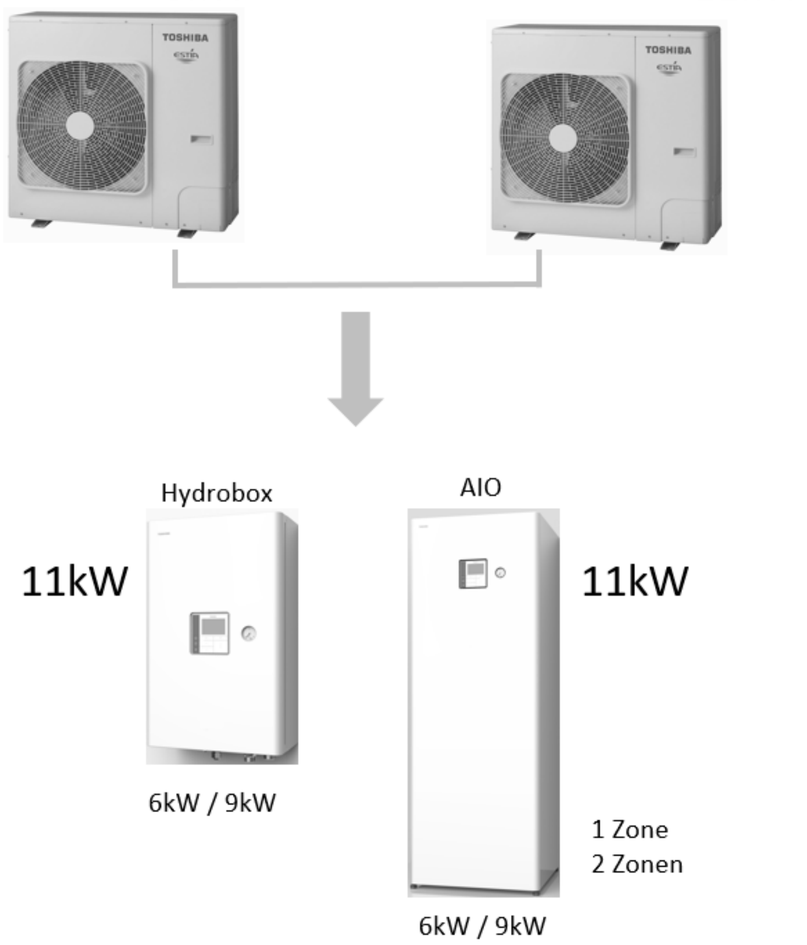
New

- New Line-up R32 – made in Europe

R32

Poland





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ESTIA R32 New

R32

Poland

- Types & Models

Outdoor unit	P nom. (h) kW	Power supply
HWT-401HW-E	4,00	1-Ph
HWT-601HW-E	6,00	1-Ph
HWT-801HW-E	8,00	1-Ph
HWT-1101HW-E	11,20	1-Ph
Hydrobox	**Backup-heater / Zone**	**Fits to:**
HWT-601XWHM3W-E	3 kW / 2 Zones	HWT-401, 601
HWT-601XWHT6W-E	6 kW / 2 Zones	HWT-401, 601
HWT-1101XWHT6W-E	6 kW / 2 Zones	HWT-801, 1101
HWT-1101XWHT9W-E	9 kW / 2 Zones	HWT-801, 1101
AIO – All In One		
HWT-601F21SM3W-E	3 kW / 1 Zone	HWT-401, 601
HWT-601F21ST6W-E	6 kW / 1 Zone	HWT-401, 601
HWT-1101F21ST6W-E	6 kW / 1 Zone	HWT-801, 1101
HWT-1101F21MT6W-E	6 kW / 2 Zones	HWT-801, 1101
HWT-1101F21ST9W-E	9 kW / 1 Zone	HWT-801, 1101
HWT-1101F21MT9W-E	9 kW / 2 Zones	HWT-801, 1101

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ESTIA R410A

Japan

- Line-up R410A, Split STANDARD – made in Japan

11kW

3ph

14kW

1ph / 3ph

16kW

3ph

Hydrobox

14kW

3kW / 6kW / 9 kW

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ESTIA Split Standard

R410A

Japan

- Types & Models

Outdoor unit	P nom. (h) kW	Power supply
HWS-1105H8-E	11,20	3-ph
HWS-1405H(8)-E	14,00	1-ph (3-ph)
HWS-1605H8-E	16,00	3-ph
Hydrobox	BU-heater kW	Fits to:
HWS-1405XWH*-E	*M3/T6/T9	HWS 1105, 1405, 1605

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ESTIA R410A

Japan

- Line-up R410A, Split HIPOWER – made in Japan

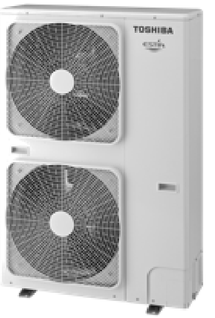
8kW

1ph / 3ph

11kW

1ph / 3ph

14kW



3ph

Hydrobox

8kW

3kW / 6kW / 9 kW

Hydrobox

11kW

3kW / 6kW / 9 kW

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ESTIA Split Hipower

R410A

Japan

- Types & Models

Outdoor unit	P nom. (h) kW	Power supply
HWS-P805H(8)R-E	8,00	1-ph (3-ph)
HWS-P1105H(8)R-E	11,20	1-ph (3-ph)
HWS-P1405H8R-E	14,00	3-ph
Hydrobox	BU-heater kW	Fits to:
HWS-P805XWH*-E	*M3/T6/T9	HWS-P805
HWS-P1105XWH*-E	*M3/T6/T9	HWS P1105, P1405

✓ Maximum supply temperature +60℃
✓ Minimum outdoor operation temp. -25℃
✓ Keeps nominal capacity down to -15℃ OAT

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ESTIA Split Hipower

- Differences R410A / R32

	ESTIA R410A Standard Split	ESTIA R410A HiPower	ESTIA R32 Standard Split	ESTIA R32 All In One
Min. outdoor temperature	all: -20°C	all: -25°C	401, 601: -20°C 801, 1101: -25°C	401, 601: -20°C 801, 1101: -25°C
Max. leaving water temp.	all: +55°C	all: +60°C	401, 601: +55°C 801, 1101: +65°C	401, 601: +55°C 801, 1101: +65°C

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ESTIA current line

Simplify your water-life …

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R32

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R32

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ESTIA

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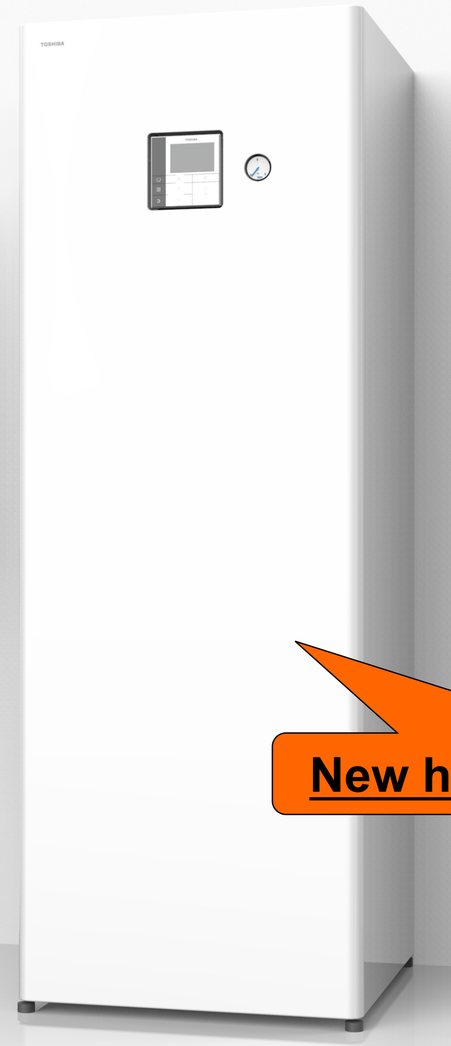
ESTIA R32

- New line-up for all market applications



Renovation market (ca. 60%)

New houses market (ca. 40%)

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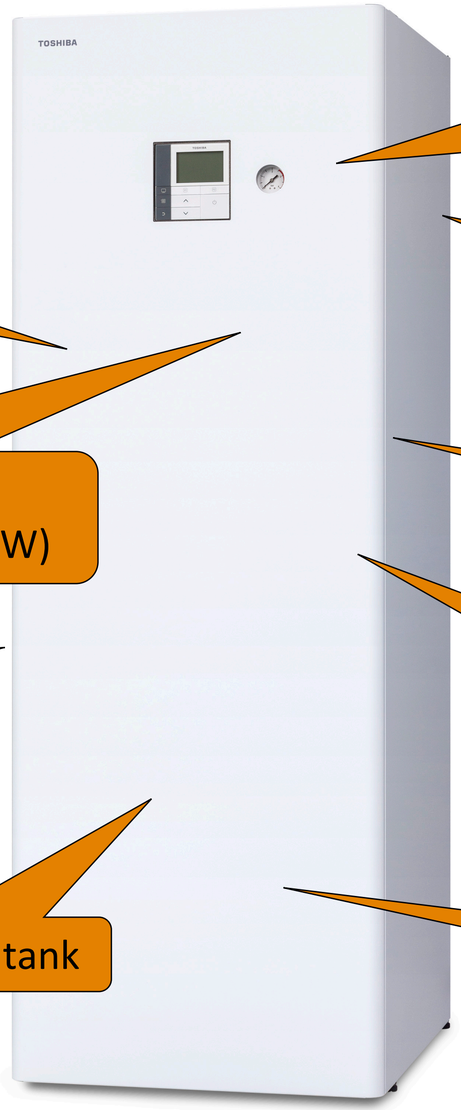
ESTIA R32

- New All-In-One indoor unit – details



Easy installation:
Top connections for all piping

Toshiba ESTIA Remote Control
including new features

Easy maintenance with
front access to all components

Easy commissioning & service
with front electrical box access

Hydronic circuits with pump
1 or 2 zones; factory fitted (8 und 11 kW)

Backup heater with 3, 6 or 9 kW
+ expansion vessel

DX brazed plate HEX
with high efficiency

Water Flow-Sensor

210 Liter DHW tank

compact dimensions
1700 x 600 x 670 mm (HxWxD)

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ESTIA R32

- New All-In-One indoor unit

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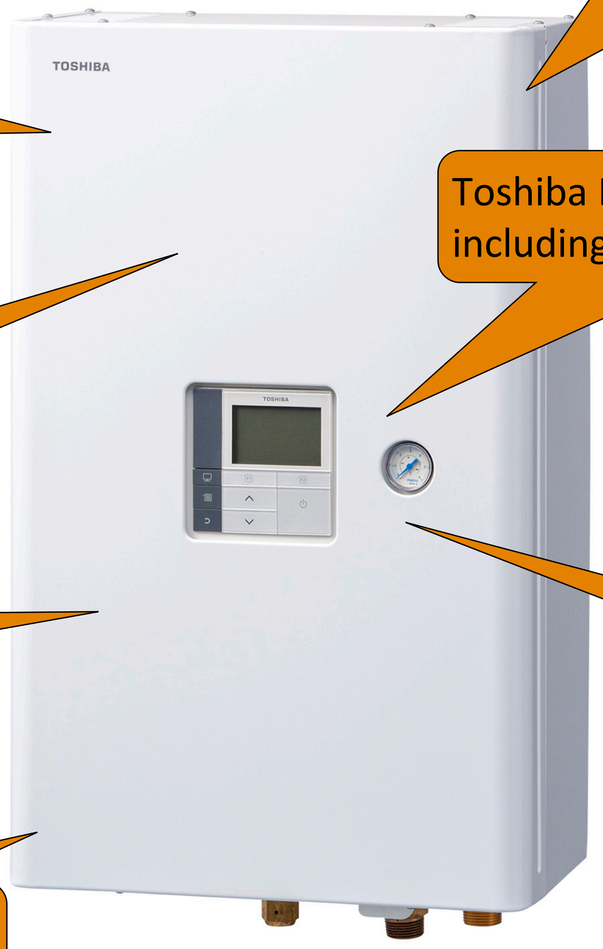
ESTIA R32

- New Hydrobox indoor unit – Details



Backup heater with 3, 6 or 9 kW + expansion vessel

electric box with new PCB design and layout

Toshiba ESTIA Remote Control including new features

Compact dimensions 725 x 450 x 235 mm (HxWxD)

Lightweight! Only 27 kg (-55% vs. Series 5 Hydrobox)

Easy maintenance and servicing of all main components

Pure white appearance suitable for any interior

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ESTIA R32

- New Hydrobox indoor unit

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ESTIA R32

- Unique to new ESTIA system

AIO with 210 Liter DHW tank

All In One with 2-Zone control as a choice: including pump, mixing valve & all sensors

compact & lightweight indoor units

Also with R32 – fits to small rooms:
Refrigerant amount below minimum limit of 1,82 kg

Liqud Injection Compressor for highest LWT @ lowest outdoor temperatures

Digital IN/OUT as standard onboard

Silent Modes for quiet night operation

Compact outdoor units:
4 and 6 kW only 63 x 80 x 30 cm (HxWxD)
8, 11, 14 kW only 105 x 101 x 37 cm (HxWxD)

Twin-Rotary Compressor in all units

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ESTIA R32

- Outdoor units 2021 – 2022

Split-outdoor units							
Supply	1-Ph		1-Ph		3-Ph		3-Ph
P nom. (kW)	4	6	8	11	8	11	14 / 16
ESTIA Series 1 R32							

New ESTIA R32 outdoor unit chassis offer SILENT-operation

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ESTIA R32

- 4 – 6 kW outdoor unit
- Compact with high capacity

	Höhe	Breite	Tiefe
Toshiba	**630 mm**	**800 mm**	**300 mm**
blue at	740 mm	884 mm	388 mm
red ed	880 mm	848 mm	330 mm

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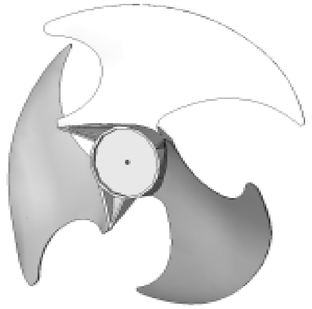
- 4 – 6 kW outdoor unit



High efficiency fan propeller

- Highest air performance with the lowest energy consumption

Inverter compressor control

- Supplies all benefits from TOSHIBA's proven DAISEIKAI series

TOSHIBA DC-Twin-Rotary Compressor

- Improved the efficiency via developed new motor and compression unit
- Improved system efficiency through less discharged oil in refrigeration circuit

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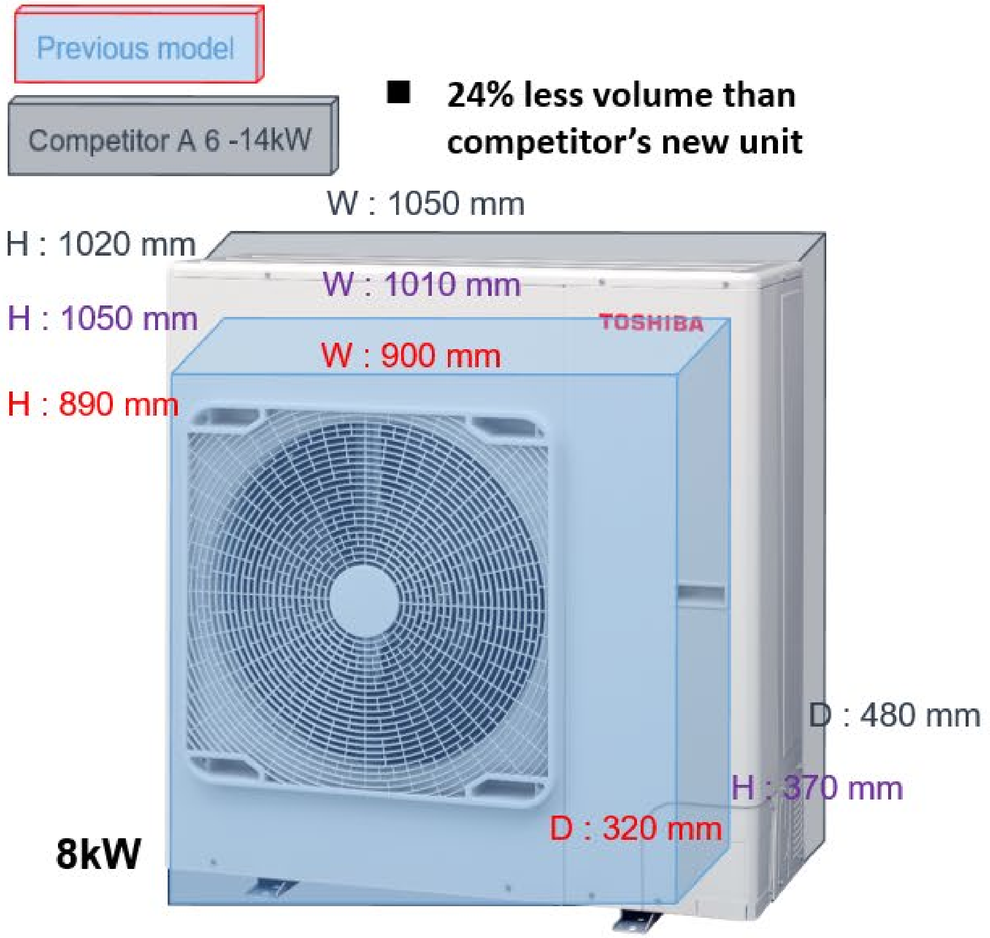
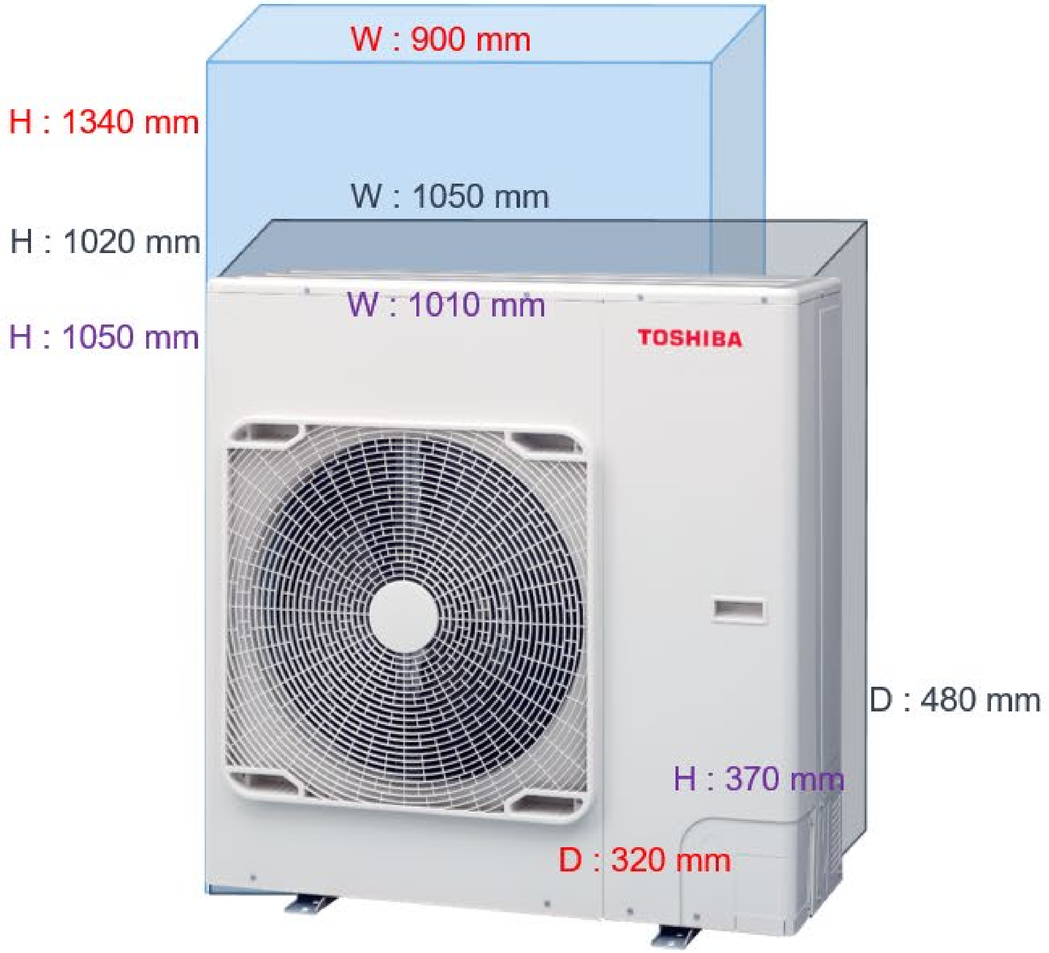
ESTIA R32

- 8 – 11 – 14 kW outdoor unit
- Compact with high capacity





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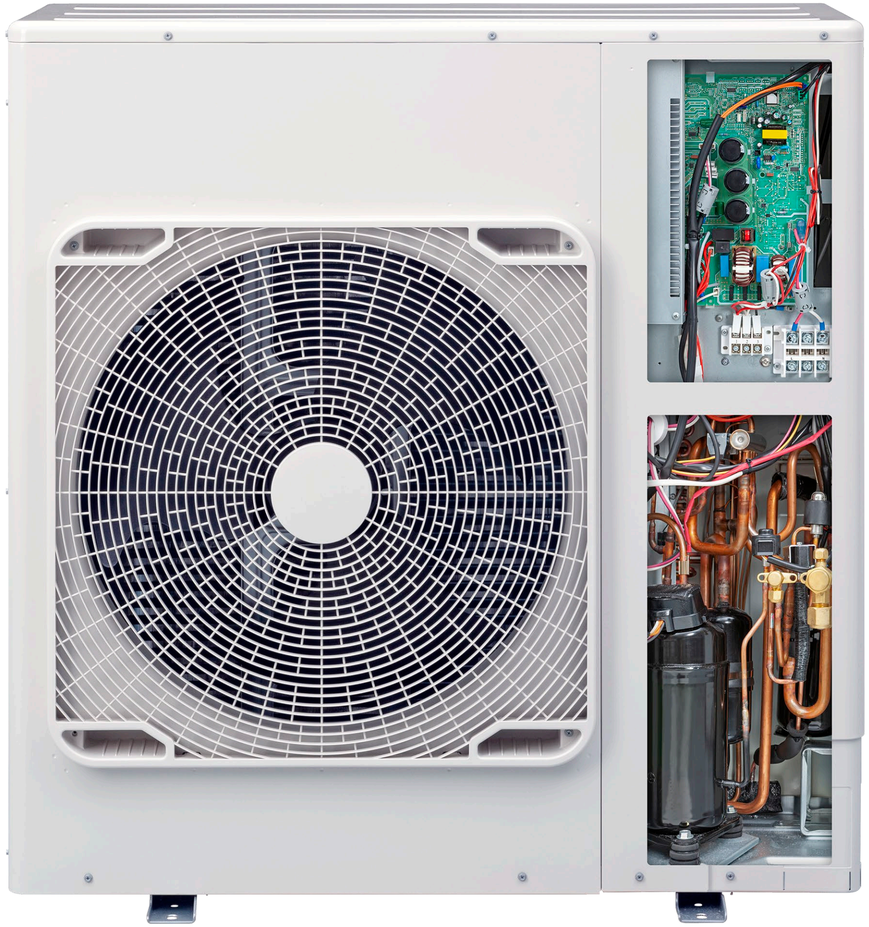
- 8 – 11 – 14 kW outdoor unit



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ESTIA R32

- 8 – 11 – 14 kW outdoor unit

High efficiency
heat-transfer by flat fin

High efficiency
DC fan motor

“Wide Flow” grill

Vector-controlled inverter

R32 Refrigerant

NEW Toshiba DC Twin-Rotary compressor with liquid injection

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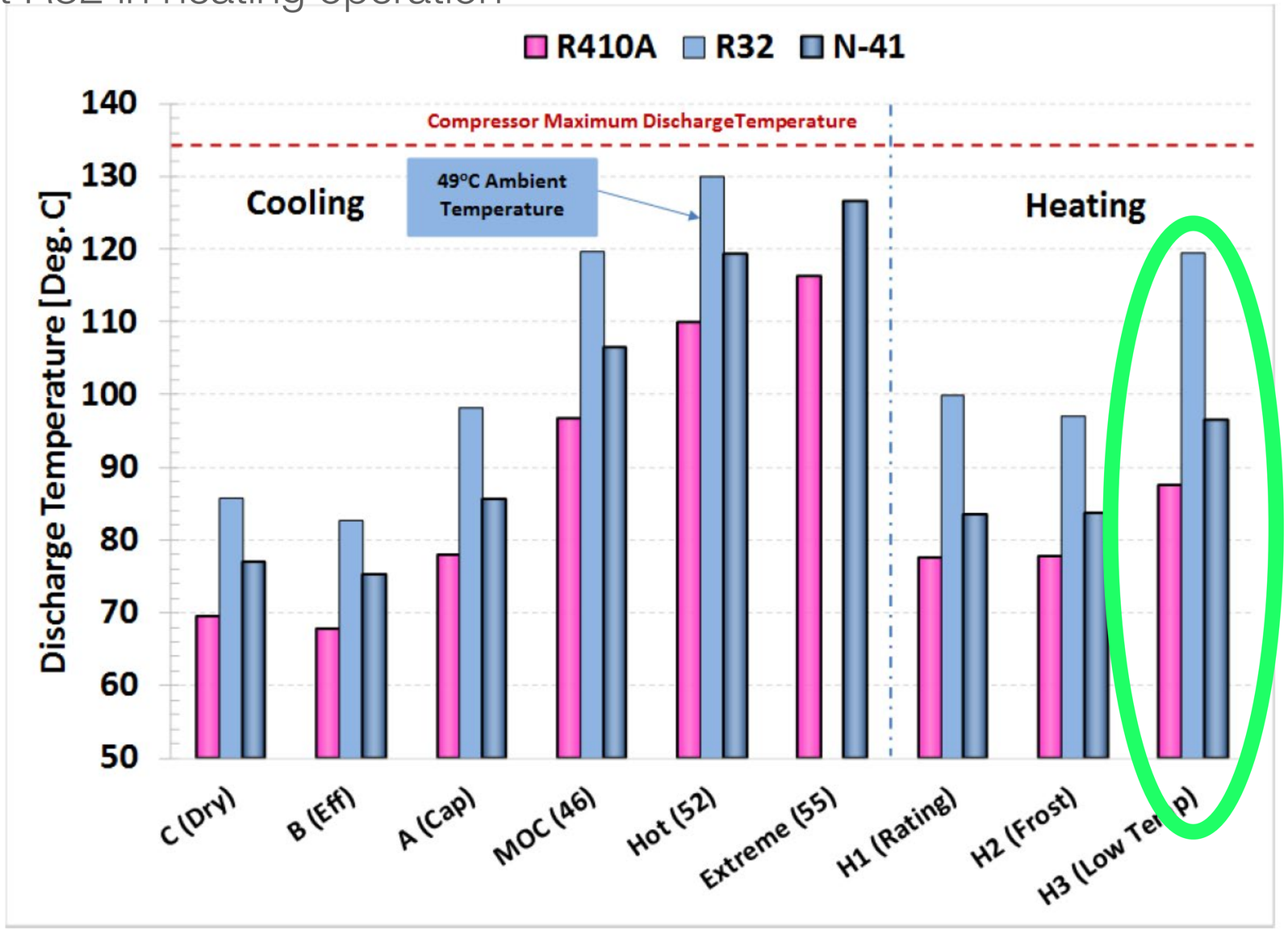
ESTIA R32

- Refrigerant R32 in heating operation



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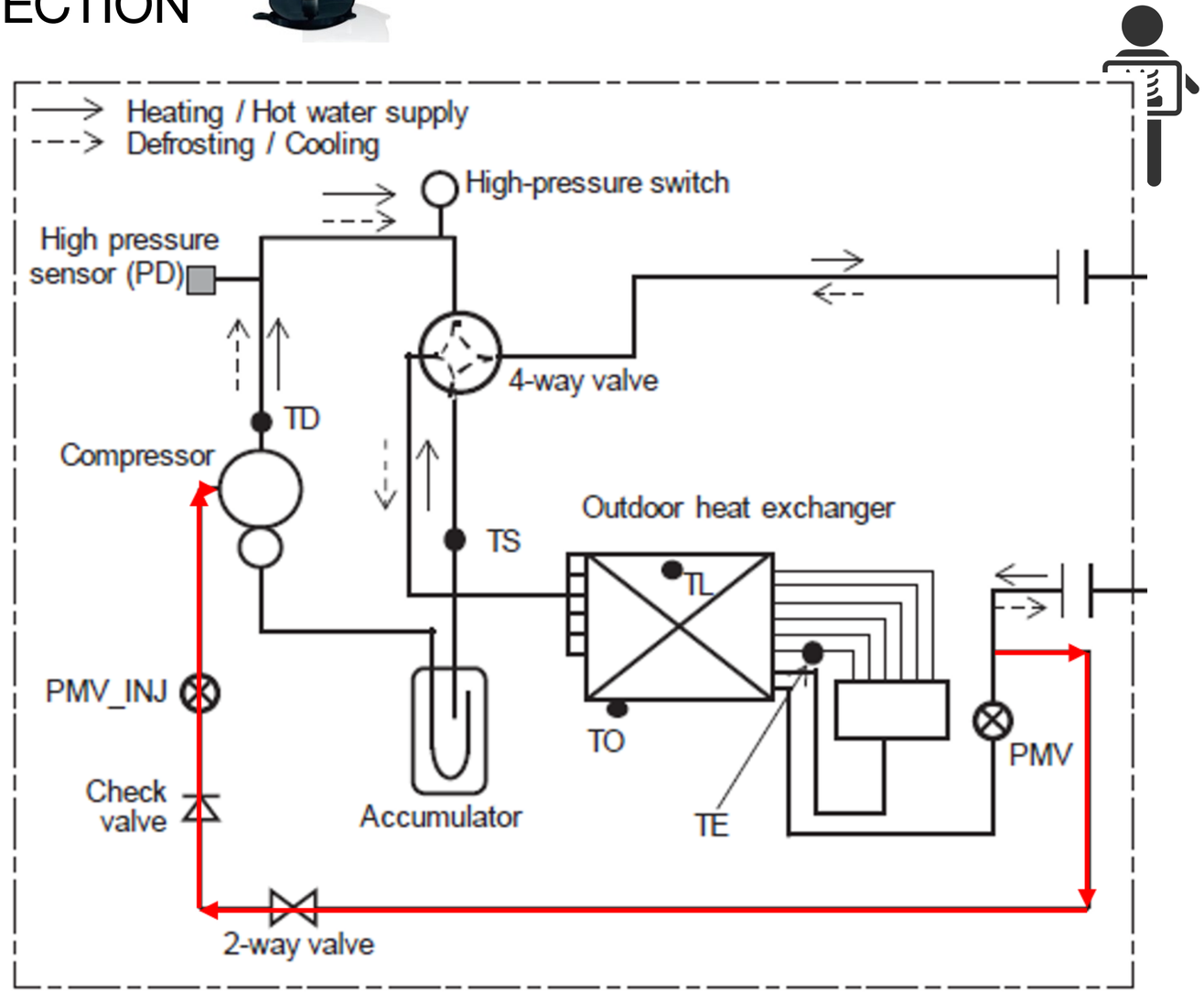
ESTIA R32

- R32 in heating operation : **LIQUID INJECTION**

Refrigerant vapor or two-phase refrigerant is injected during the compression process via one or more injection ports on a single-stage compressor – thus dividing the compression into several stages.

- ✓ Expanding the operation range @ low outdoor temperatures
- ✓ Increases the maximum achievable leaving water temperature



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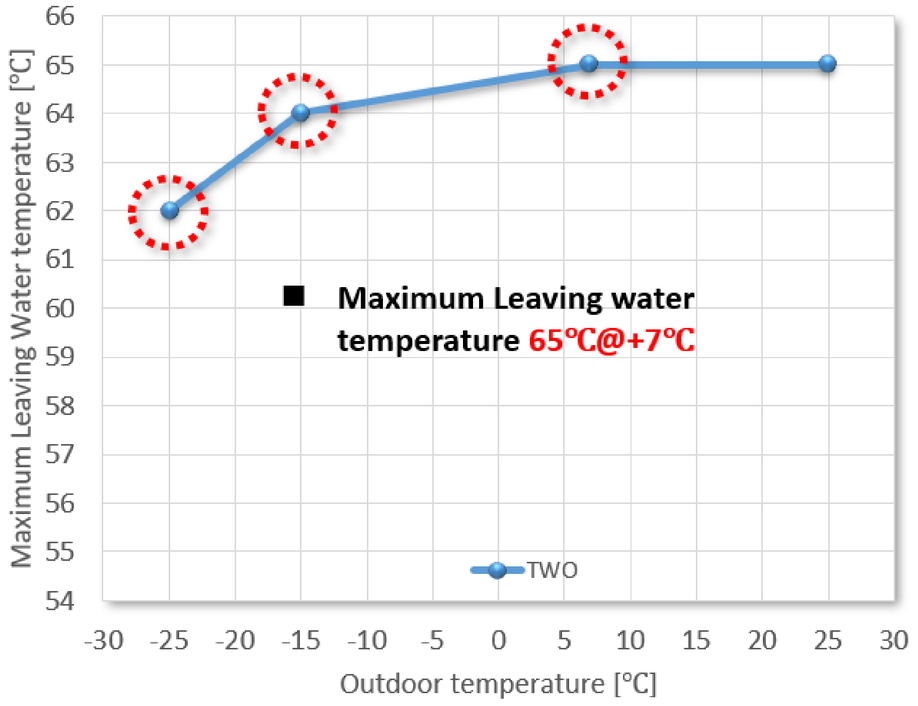
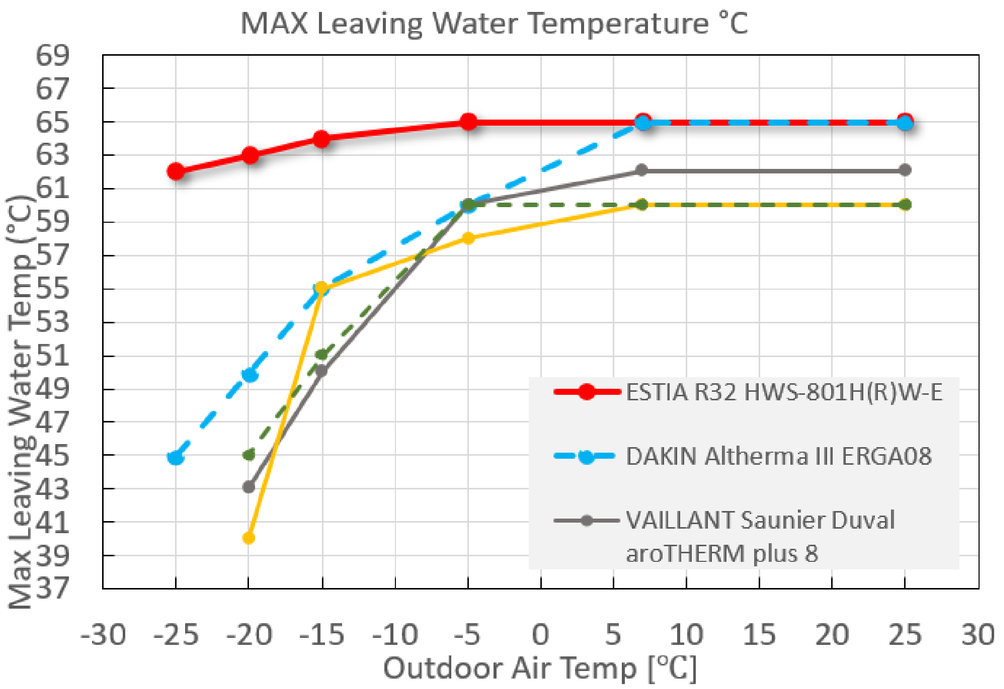
ESTIA R32

- High leaving water temperature @ low ambient conditions
- LWT +62°C @ OAT -25°C due to liquid injection compressor (from size 8)



8 & 11kW



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ESTIA R32

- User Interface

ESTIA RC Main features
Auto mode
Schedule timer
Night setback
Summer time setting
Schedule setting
Floor drying
Service mode
Alarm history
Service monitor

Quiet mode
preventing nuisance noise at night, by reducing the sound level of the outdoor unit down to -7 dB(A)

Night mode
automatically reducing the water temperature at night

Boost function
whenever you need domestic hot water quickly

Anti-bacteria control
regularly increases the temperature in the domestic hot water tank to 75°C for 30 minutes

Frost protection
ensuring a minimum temperature is maintained at all times to prevent freezing

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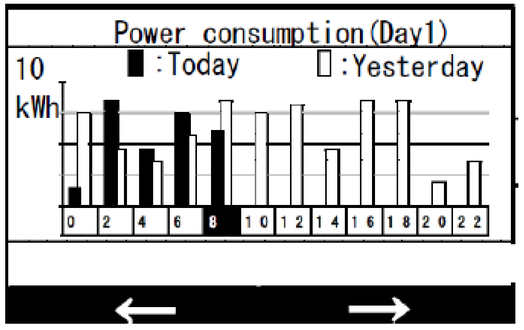
ESTIA R32

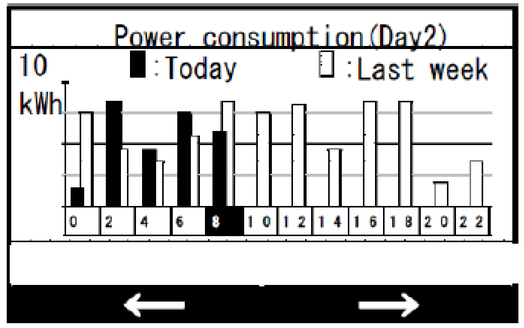
- User Interface

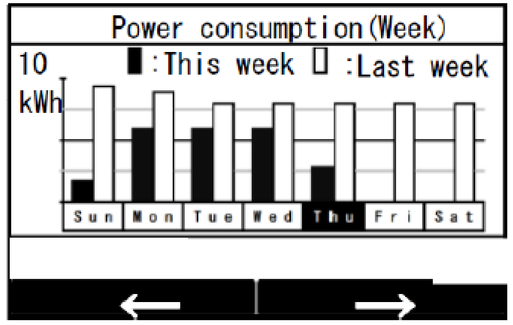
New ESTIA R32 remote Control with 15 languages:

English	Dutch
Portugese	French
Finnish	Polish
German	Czech
Danish	Spanish
Hungarian	Italian
Croatian	Turkish
Slovenian	

New ESTIA R32 Remote Control with power consumption display:







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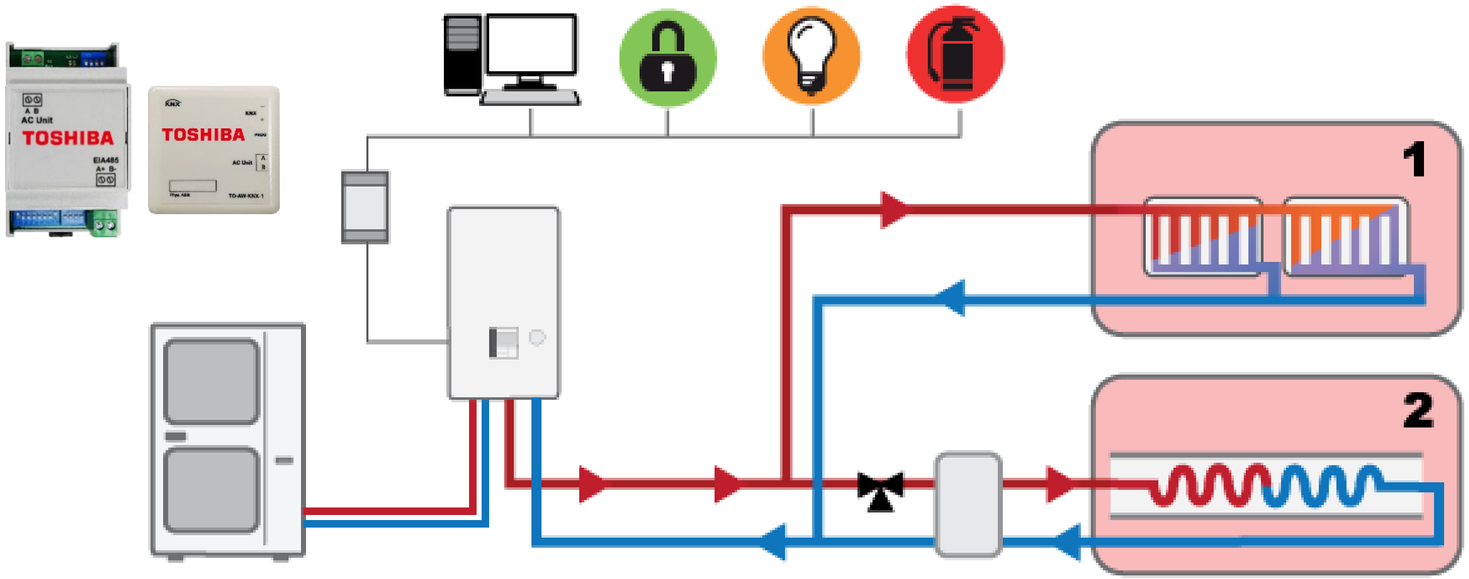
ESTIA R32

- Connectivity
- Modbus®& KNX optional:



- SG-Ready functionality:

"Smart Grid Ready" allows the Electricity Supplier to automatically control the operating change the electrical load on the network.

- 2nd RC cannot be connected together with Modbus®/KNX interface.
- Modbus®/ KNX interface can be connected to series 4 and series 5

** Modbus® is a registered trademark of Schneider E.*

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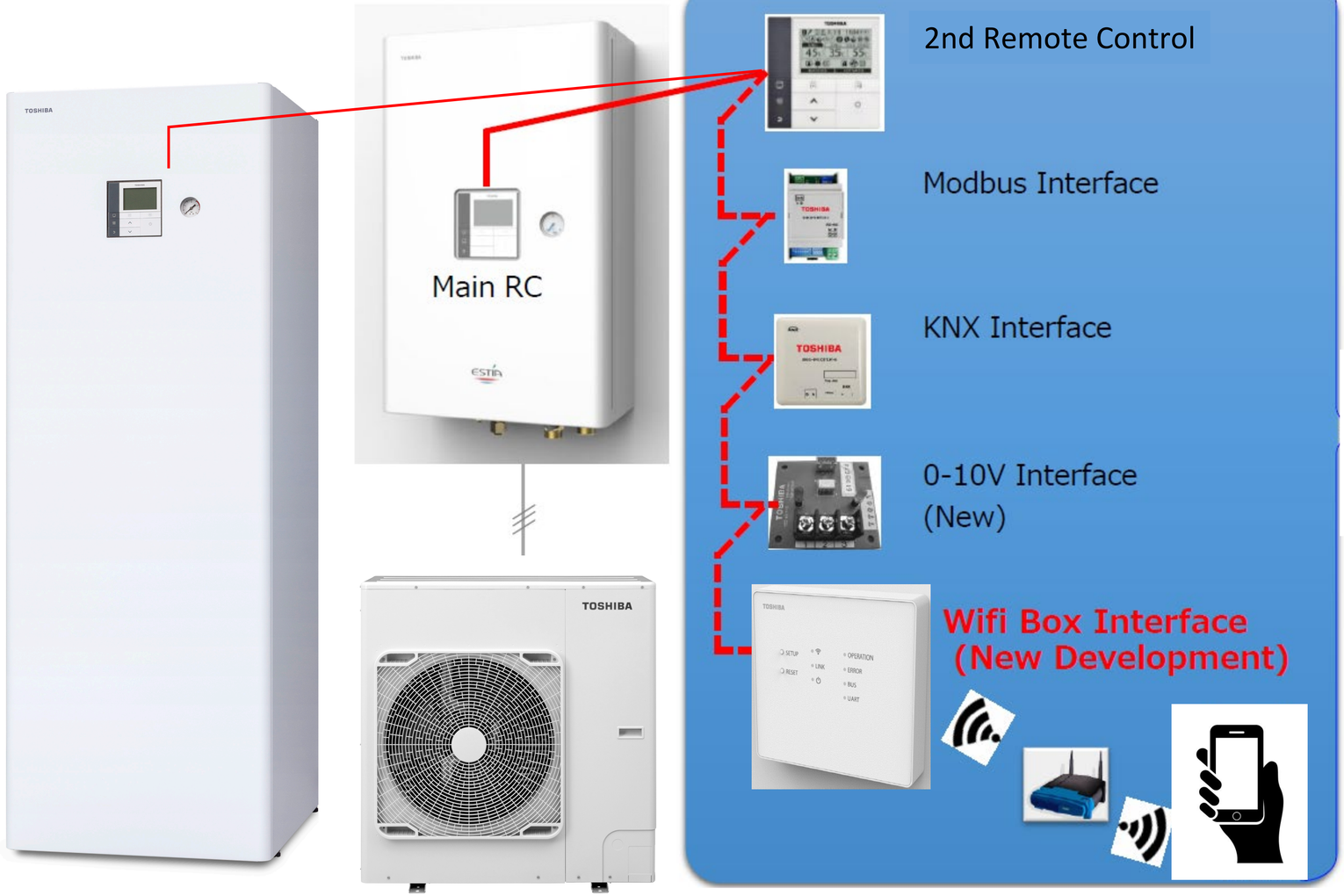
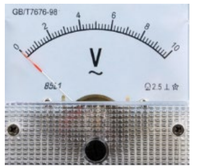
ESTIA R32

- Control options

or:





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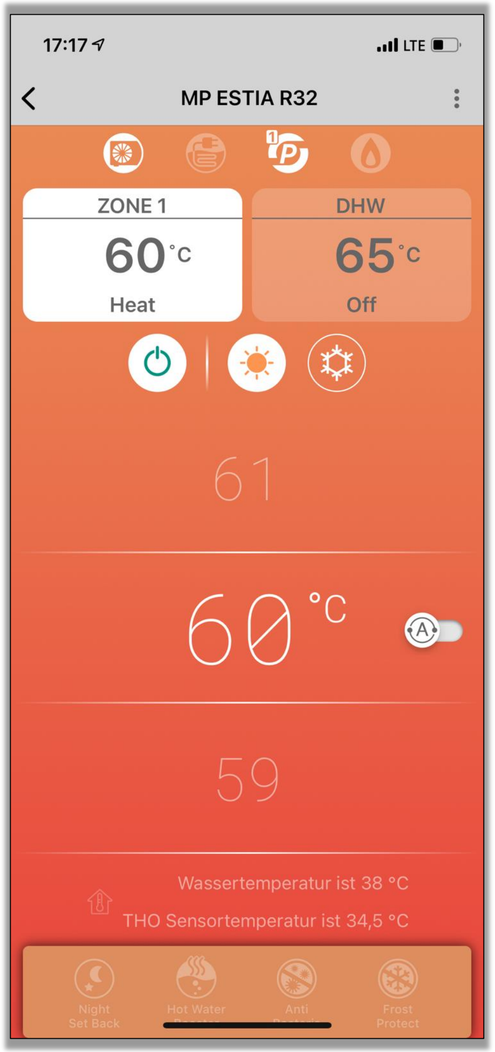
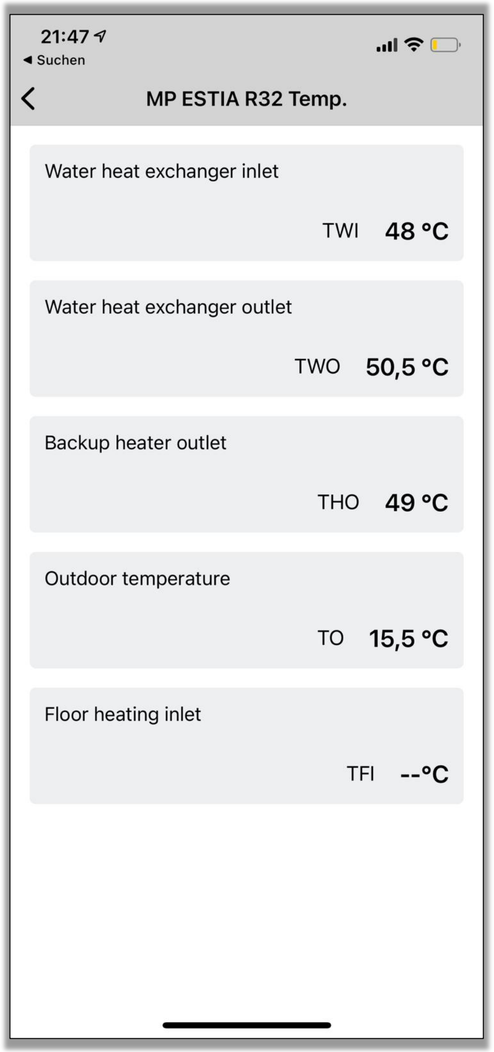
ESTIA R32

- Control: via *Toshiba Home AC Control*

Smart device application
- iOS 9.0 or later iPhone & iPad
- Android 5.0 or later Adroid phone & Android pad





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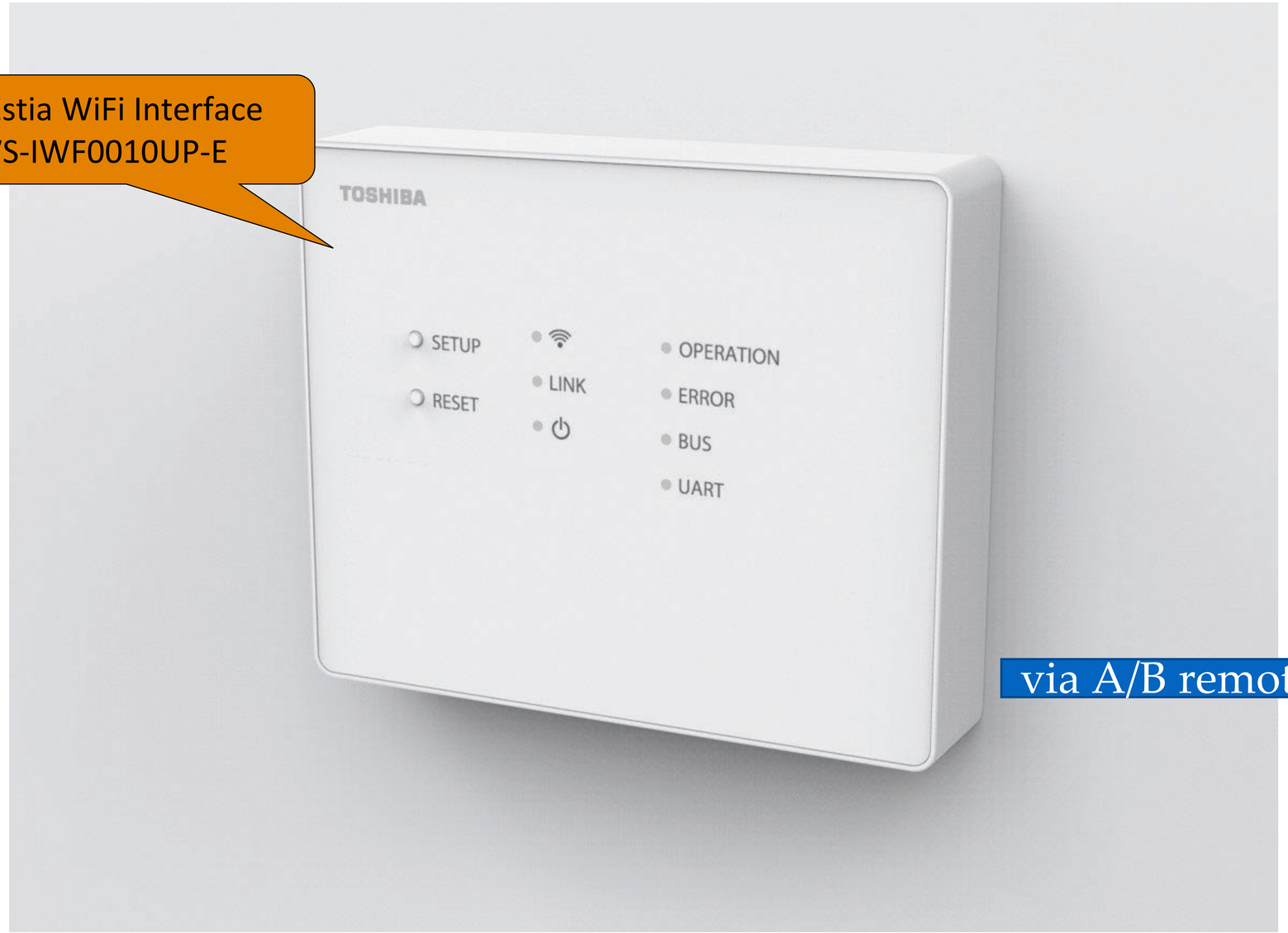
ESTIA R32

- WiFi Interface: the product

R32 Estia WiFi Interface
HWS-IWF0010UP-E



via A/B remote bus

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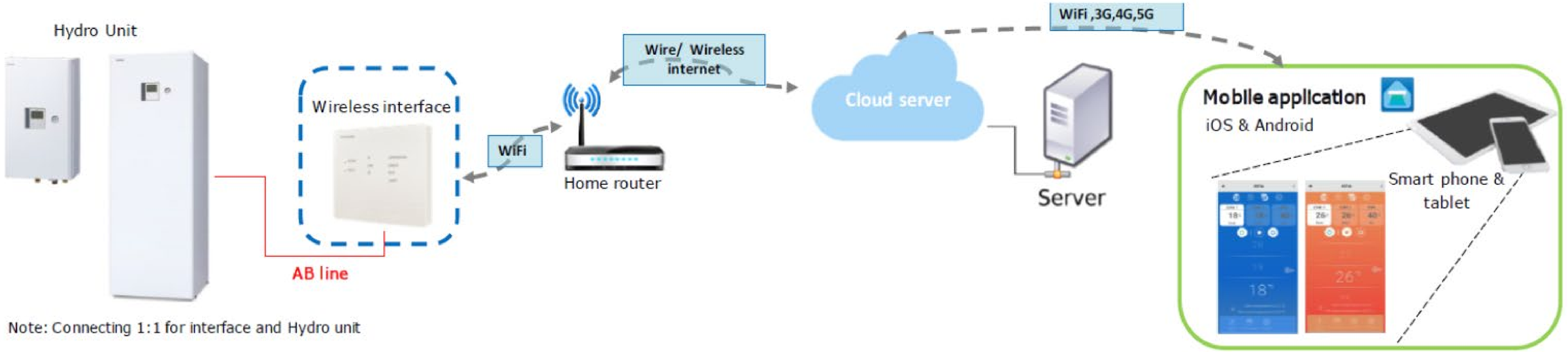
ESTIA R32

- WiFi Interface: system overview



Note: Connecting 1:1 for interface and Hydro unit

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ESTIA R32

- WiFi Interface: features & specifications

Wireless adapter Specification	
Dimension(WxLxH)	: 28mm x 120mm x 120mm
Connector length	: Max. from Hydro unit 50m.
Net Weight	: 0.13 kg.
Operating Temperature	: 0-50°C
Power input	: from Hydro unit via AB line
Power consumption	: 0.6W
Body Material	: ABS (Acrylonitrile Butadiene Styrene) (Flame retardant grade: UL94-HB)
Wi-Fi bands	: 2.4 GHz
Radio protocol	: IEEE 802.11b/g/n

Control and connection
Connecting 1 interface per 1 Hydro unit
1 Hydro unit can be controlled by 5 user name
1 User can control up to 10 units of AC and ESTIA.
All Hydro unit can be devided up to 2 Space Heating Zones and 1 Domestic Hot Water (DWH)

Features

Detail Control

-On/Off control
-Operation mode, Cool, Heat, Auto, Hot water
-Leaving Water Temperature setting for both Space Heating Zone 1 & Zone 2, and DHW
-Individual weekly schedule setting
-All ESTIA On/Off control
-All ESTIA weekly schedule setting
-Night Set Back setting
-Hot Water Booster activation
-Anti Bacteria activation
-Frost Protect activation, for holiday period

Display and Others

-Unit operation display
-Electrical heater operation display (Heater of "Hydro unit" and "Hot water tank unit")
-Hydro unit's pump operation display (Pump of "Hydro unit" and "Additional")
-Boiler operation display
-THO sensor temperature display (Outlet water temperature after back-up heater)
- Water temperature sensor display (TWO sensor for water temperature outlet after heat exchanger)
-Auto update.
-Multi language
-Signal Error code

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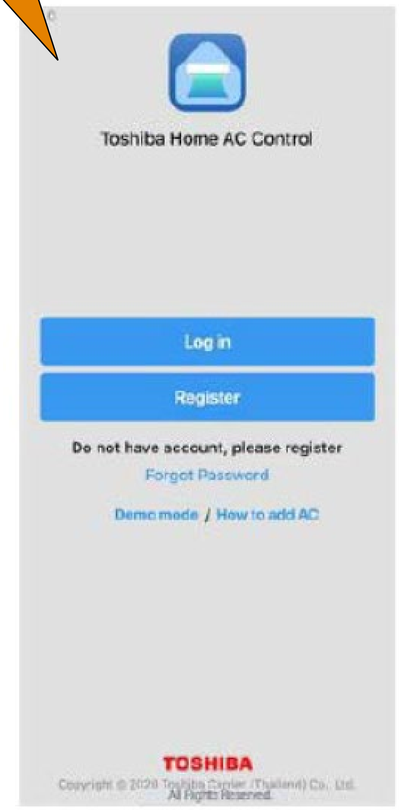
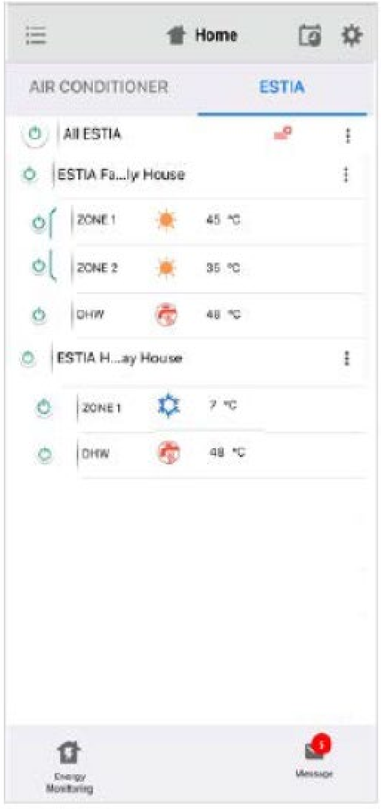
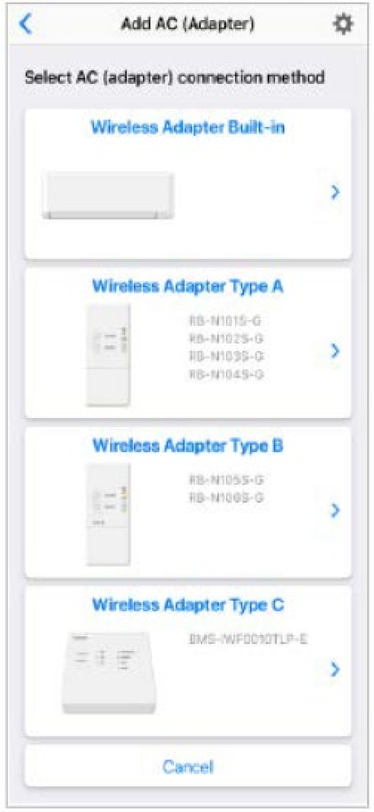
- WiFi Interface: APP control

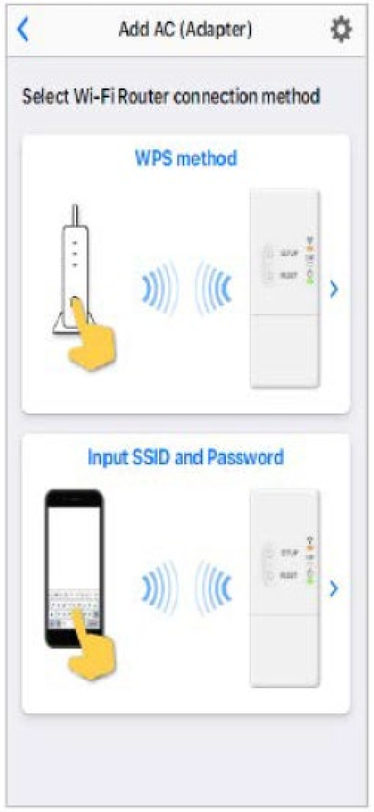
LogIn / Home





Registration process





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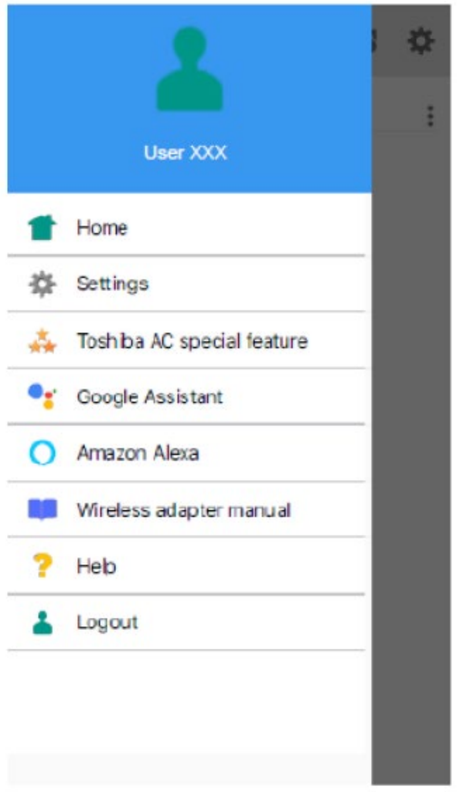
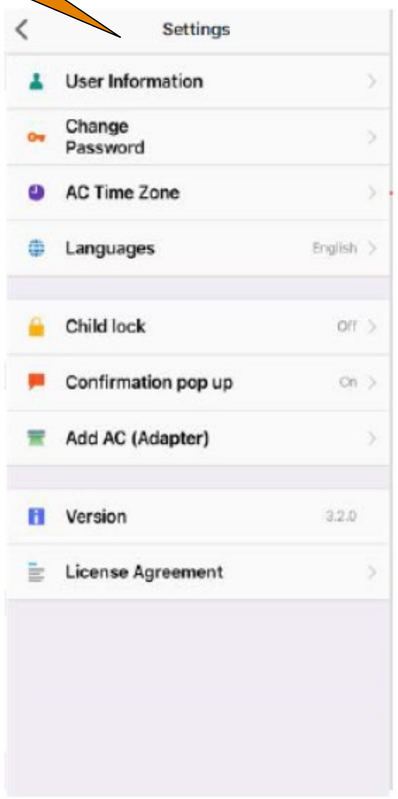
ESTIA R32

- WiFi Interface: APP control

Menue / general settings

Operation Modes: cool – heat – hot water



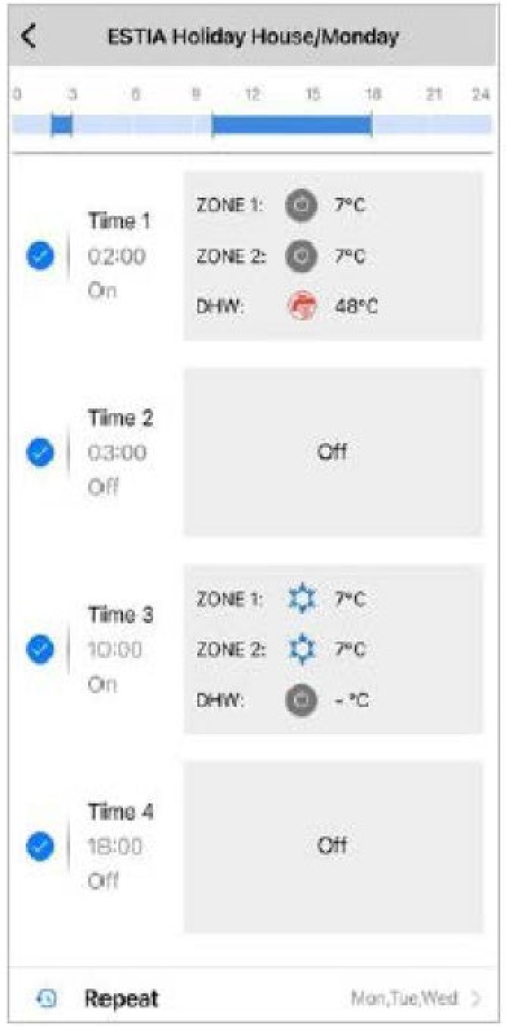


TOSHIBA

ESTIA R32

- WiFi Interface: APP control

Weekly schedule



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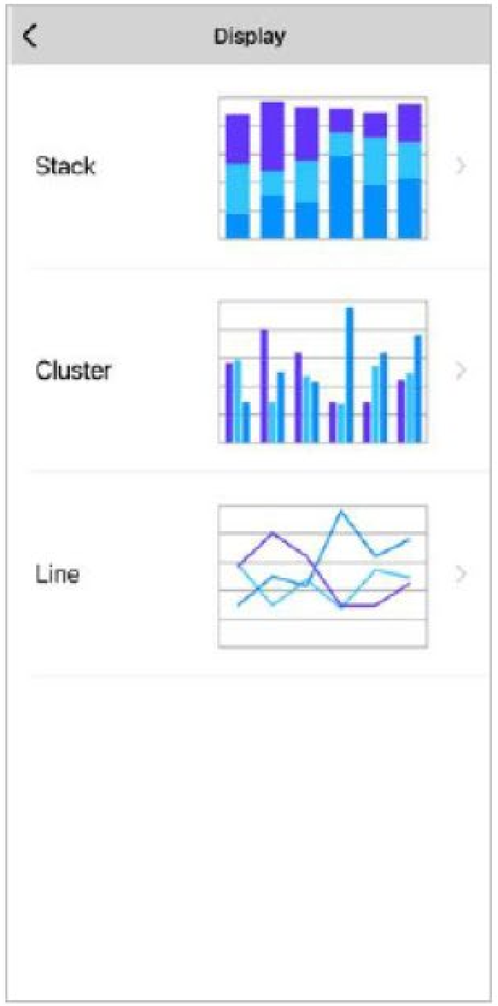
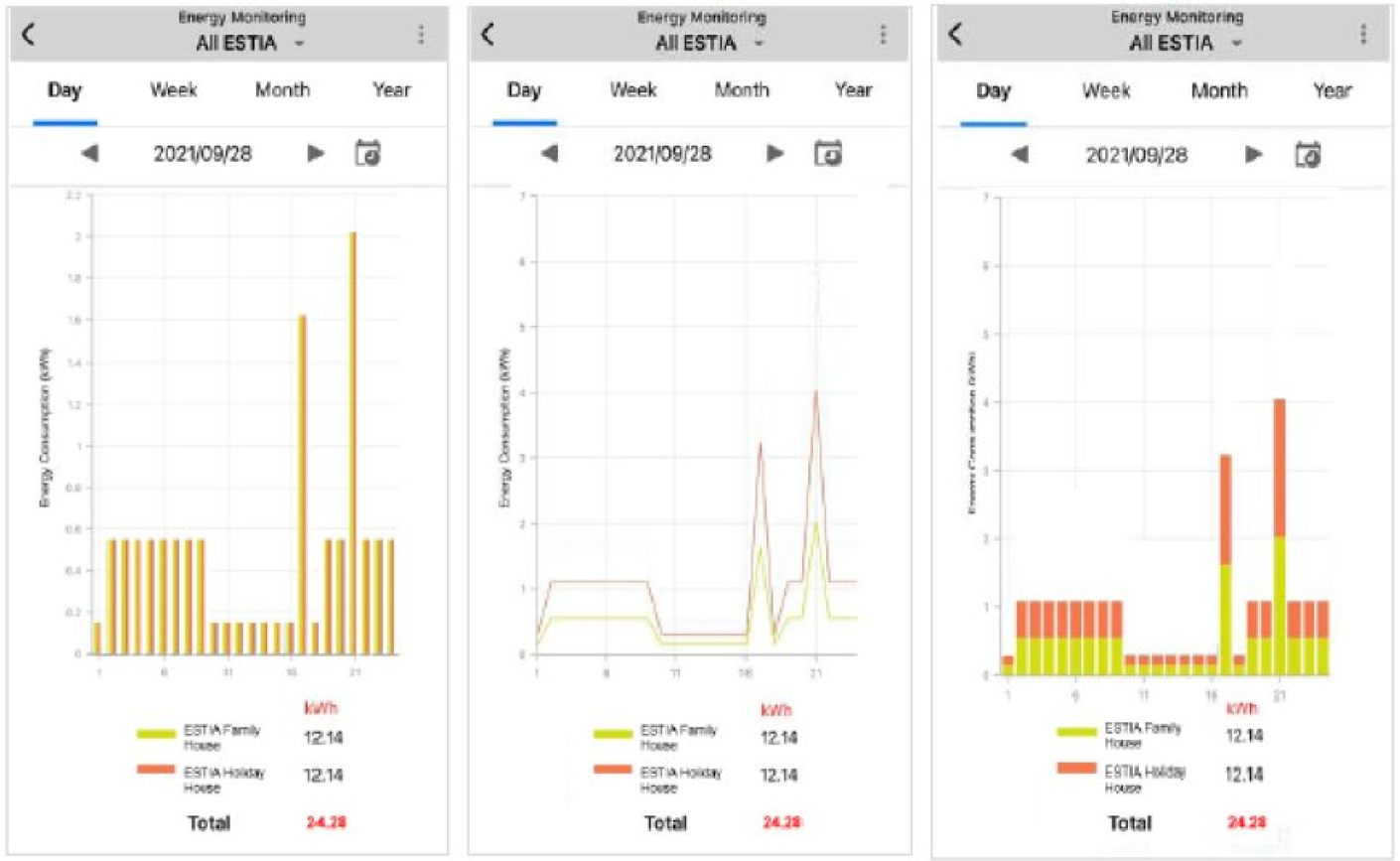
ESTIA R32

- WiFi Interface: APP control

Energy Monitoring



➢ Users can select suitable Energy Monitoring display

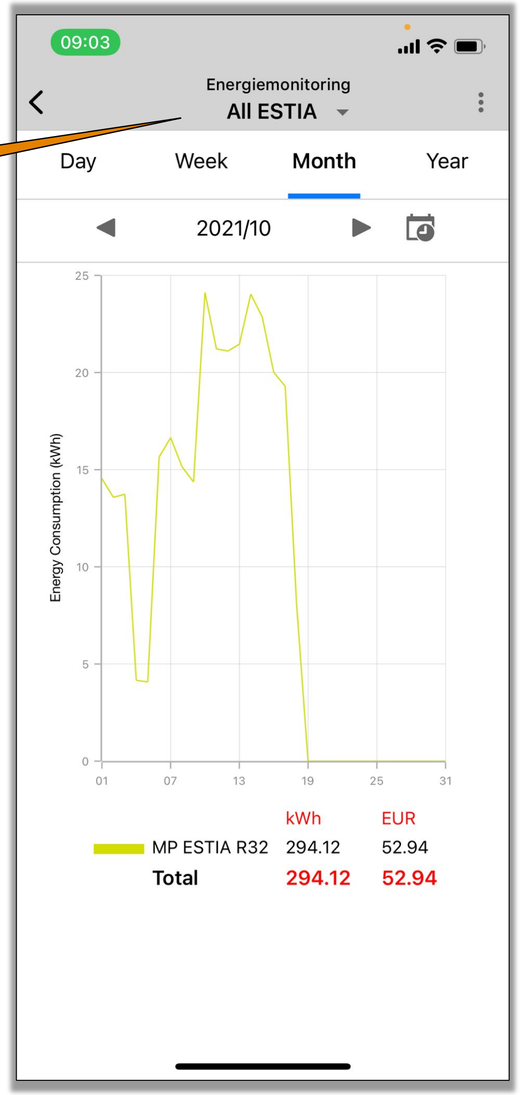


TOSHIBA

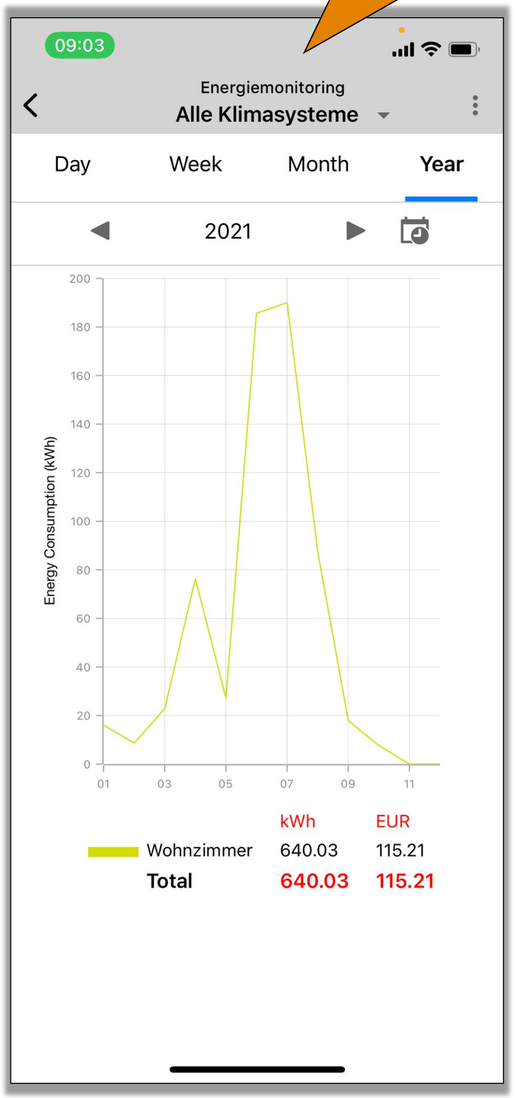
ESTIA R32

- Control: via *Toshiba Home AC Control*

Check **ESTIA** energy data



Check **all systems** energy data



TOSHIBA

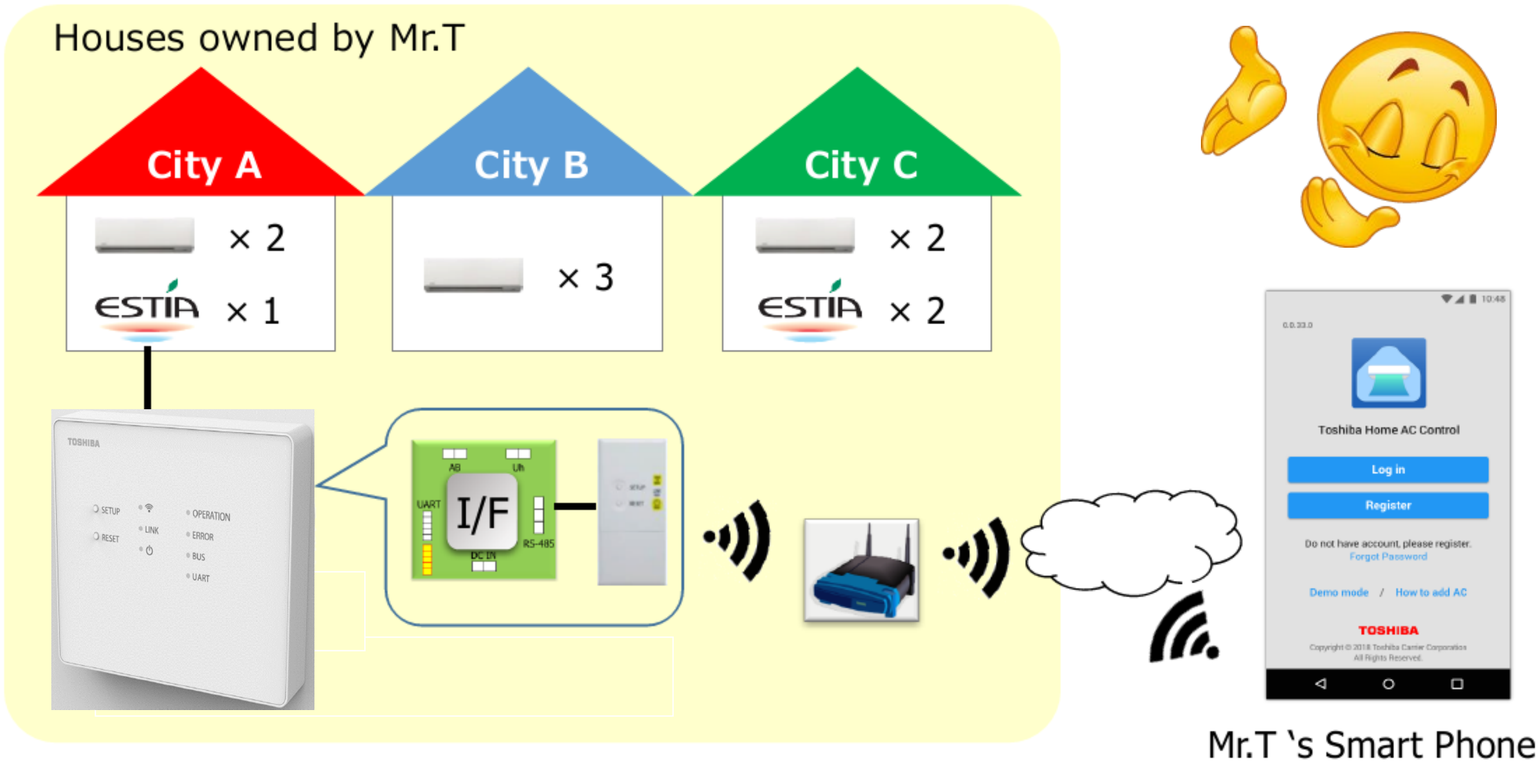
ESTIA R32

- Wi Fi Solutions

Extend ”Toshiba Home AC control” APP other IDU’s: ESTIA, RAV, VRF

Multiple systems at different locations shall be controlled with same application/ID.

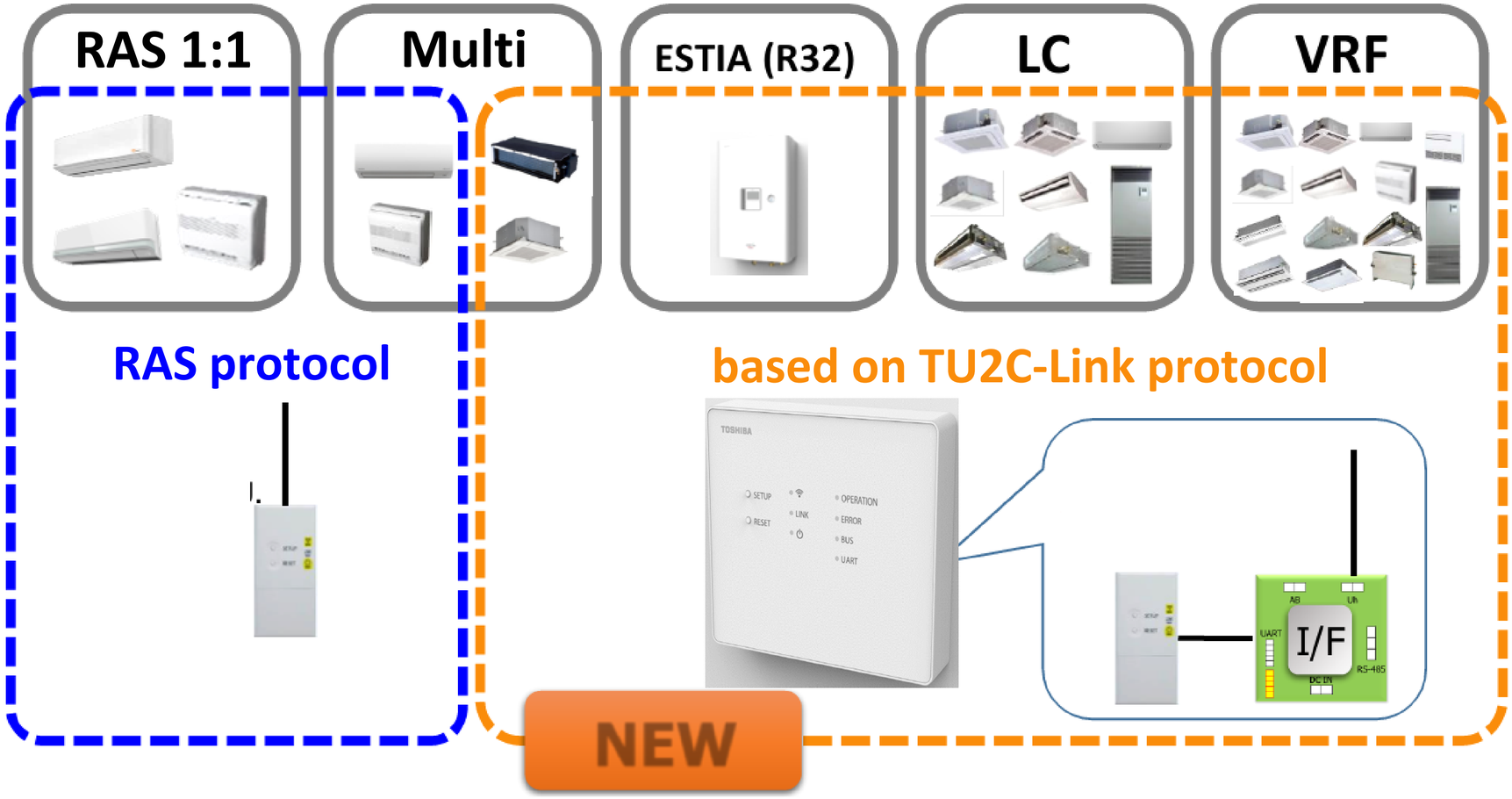
1:1 connection with Hydro unit or standard indoor units



TOSHIBA

ESTIA R32

- Wi Fi Solutions: cross-segment control!

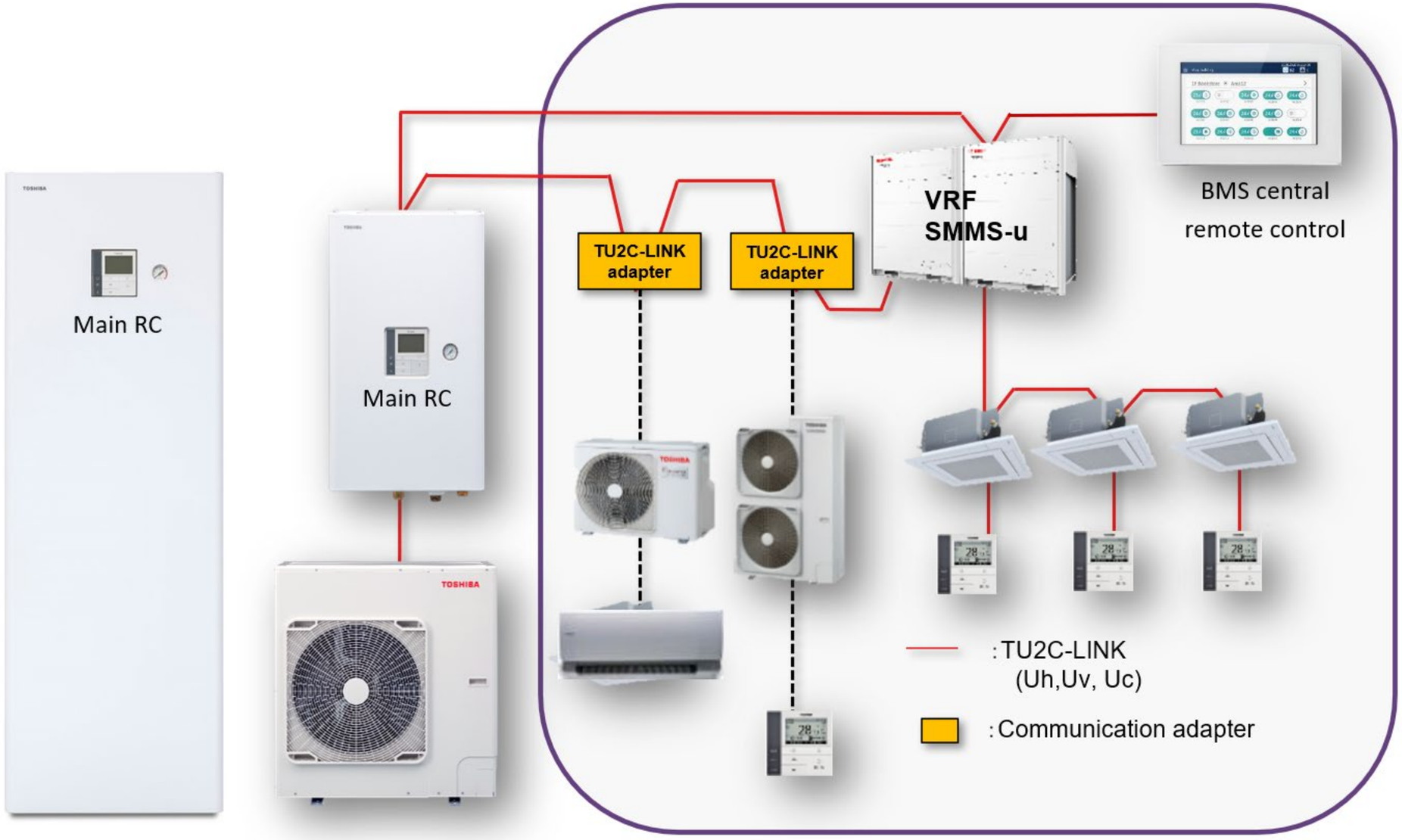


Power is supplied via the indoor unit

TOSHIBA

ESTIA R32

- Controls Solutions: cross-segment control!



TOSHIBA

ESTIA R32

- Waterpumps: variable speed!

- 230V ~ 50/60Hz
- $Current_{1/1}$ min. = 0.05A
- $Current_{1/1}$ max. = 0.58A / 1.0MPa
- P1 Min. = 2W
- P1 Max. = 60W
- EEI = ≤ 0.20
- $P_{L.avg}$ =.≤ 28W
- IP rating = IPX4D

Option 1: Variable speed control

- Set DN6A6 = 1 (default)
  0 = fixed speed control
  1 = variable speed control
- Set DN6A7 for pump speed control correction
  0 (default) = 100%
  1 = 90%
  2 = 75%
  3 = 50%

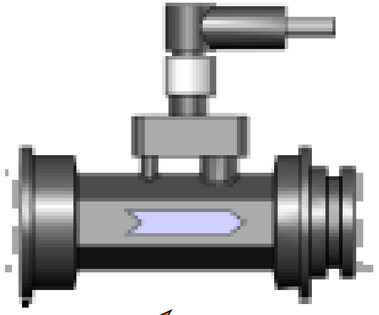
Option 2: Fixed speed control

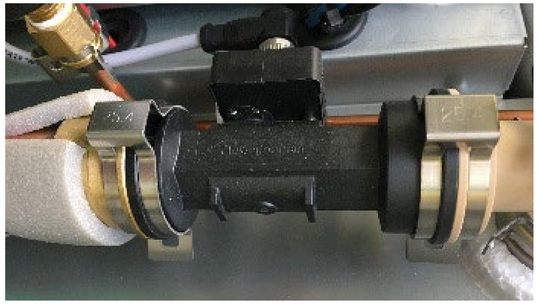
- Set DN6A6 = 0
  0 = fixed speed control
  1 = variable speed control
- Set DNA0 for required pump speed:
  0 (default) = 100%
  1 = 90%
  2 = 80%
  3 = 70%
  4 = 60%
  5 = 50%

TOSHIBA

ESTIA R32

- Flow-Sensor





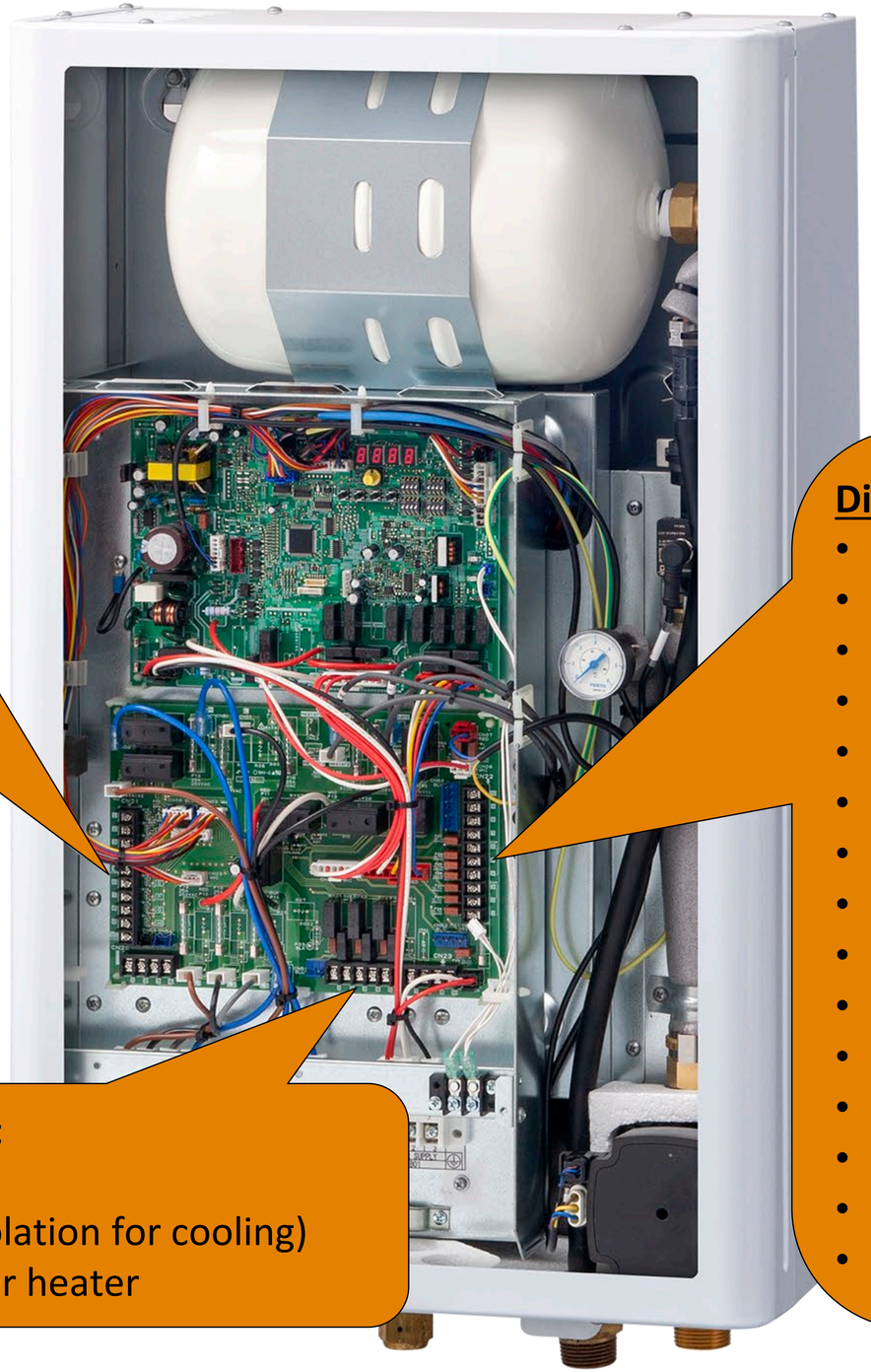
Hydrobox & AIO indoor unit use a flow sensor

- ✓ The flow sensor enables the water flow to be adjusted depending on the load and temperature conditions.
- ✓ Knowing the flow rate allows the optimal speed of the pump to be set.
- ✓ The variable flow pump control improves energy efficiency and increases the leaving water temperature (up to 65°C)

TOSHIBA

ESTIA R32

- Digital IN/OUT: on board!



Digital Inputs:
- External room thermostat - heating
- External room thermostat - cooling
- DHW cylinder thermostat
- Heating / cooling mode selection
- Heating / cooling mode ON/OFF
- DHW mode ON/OFF
- Custom (DNB6)
- Custom (DNB6)

230VAC Outputs:
- External pump
- 2 way valve (isolation for cooling)
- External booster heater

Digital Outputs:
- Custom (DN6CA)
- Custom (DN6CB)
- Custom (DN6CC)
- Custom (DN6CD)
- Outputs available:
- Alarm output
- Compressor operation
- Defrost operation
- Boiler control ON
- Safety/protection control running
- Back up heater ON
- DHW cylinder ON
- Heating operation ON
- Cooling operation ON
- DHW operation ON

TOSHIBA

ESTIA R32

- Monitoring: all sensor values on 2 display pages!

Press [↑] / [↓] button to select **SENSOR INFORMATION** on the FIELD SETTING MENU screen, then press [F2]

Select display number:
- Display 1 is Hydro Unit sensor
- Display 2 is Outdoor Unit sensor

Sensor information(1/2)	
TC 30°C	LPS 1.2MPa
TWI 30°C	TTW 45°C
TWO 35°C	TFI 30°C
THO 35°C	RT 20°C
WF 23.0 L/min	MIX 10step
RETURN	

Sensor information(2/2)	
TO 16°C	CMP 90Hz
TD 80°C	FAN1 600rpm
TE 12°C	
TS 15°C	PMV 250pls
CT 15.0A	HPS 4.0MPa
RETURN	

TOSHIBA

ESTIA R32

- Commissioning made easy : the *Startup Tool* software!

Allows system parameters to be set without using the local remote control.

Allows you to set the most important system parameters in the office.

Is onnected to the ESTIA system via the existing DynaKit hardware.

The pre-created setting file can be sent to the installer e.g. by e-mail.

Compatible with all ESTIA R32 systems

Will be uploaded to the ESTIA on site

TOSHIBA

ESTIA R32

- Commissioning made easy : the *Startup Tool* software!

➢ What is the Start-Up-Tool?

A software for commissioning the new ESTIA R32 system

➢ What do I need to use the StartUp Tool?

- Laptop PC
- DynaKit 6
- Startup-Tool Software

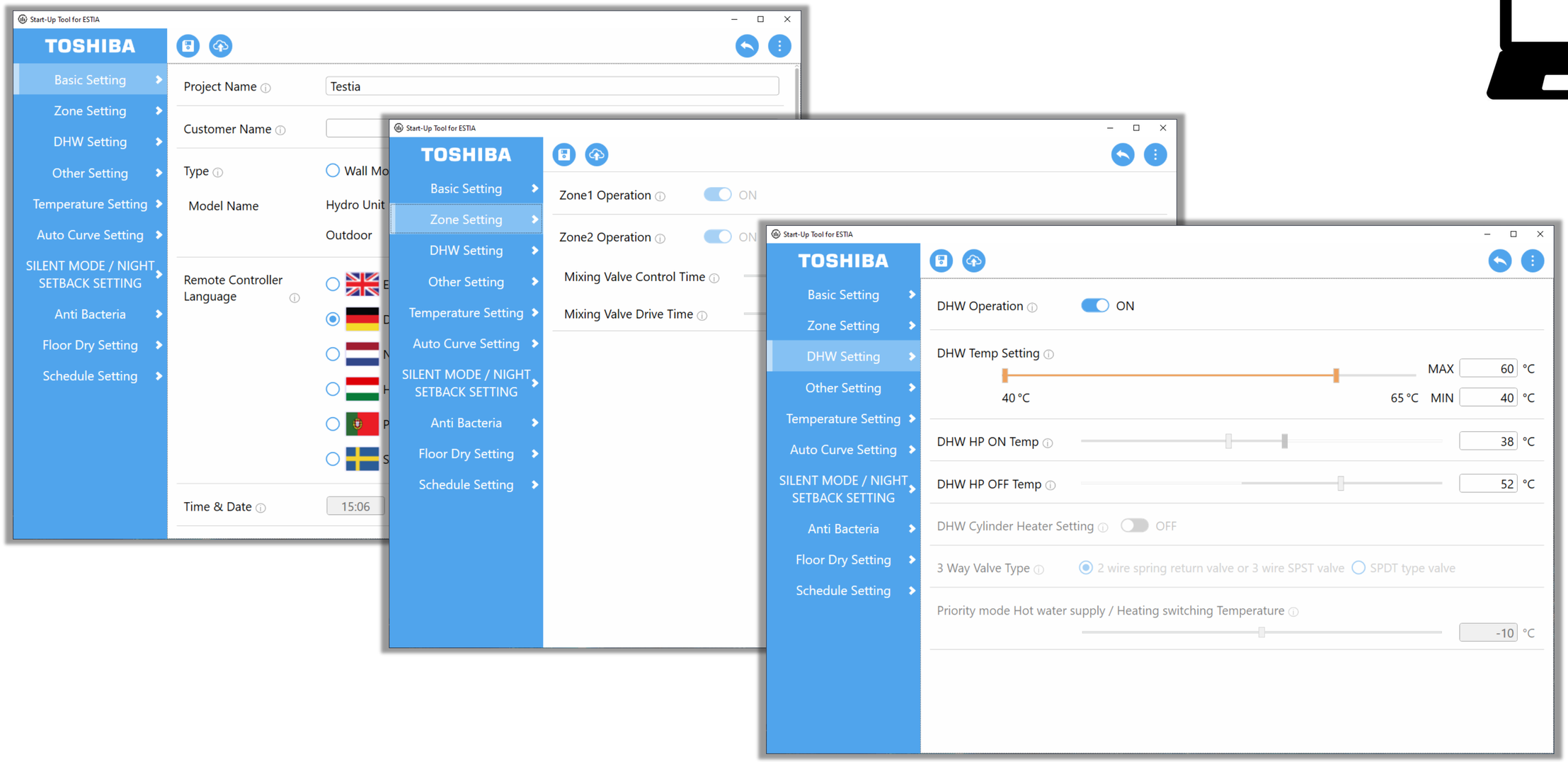
➢ What are the benefits of using the tool?

- Reduced commissioning time
- All system parameters can be preset and then uploaded to the ESTIA system when the technician is on site

TOSHIBA

ESTIA R32

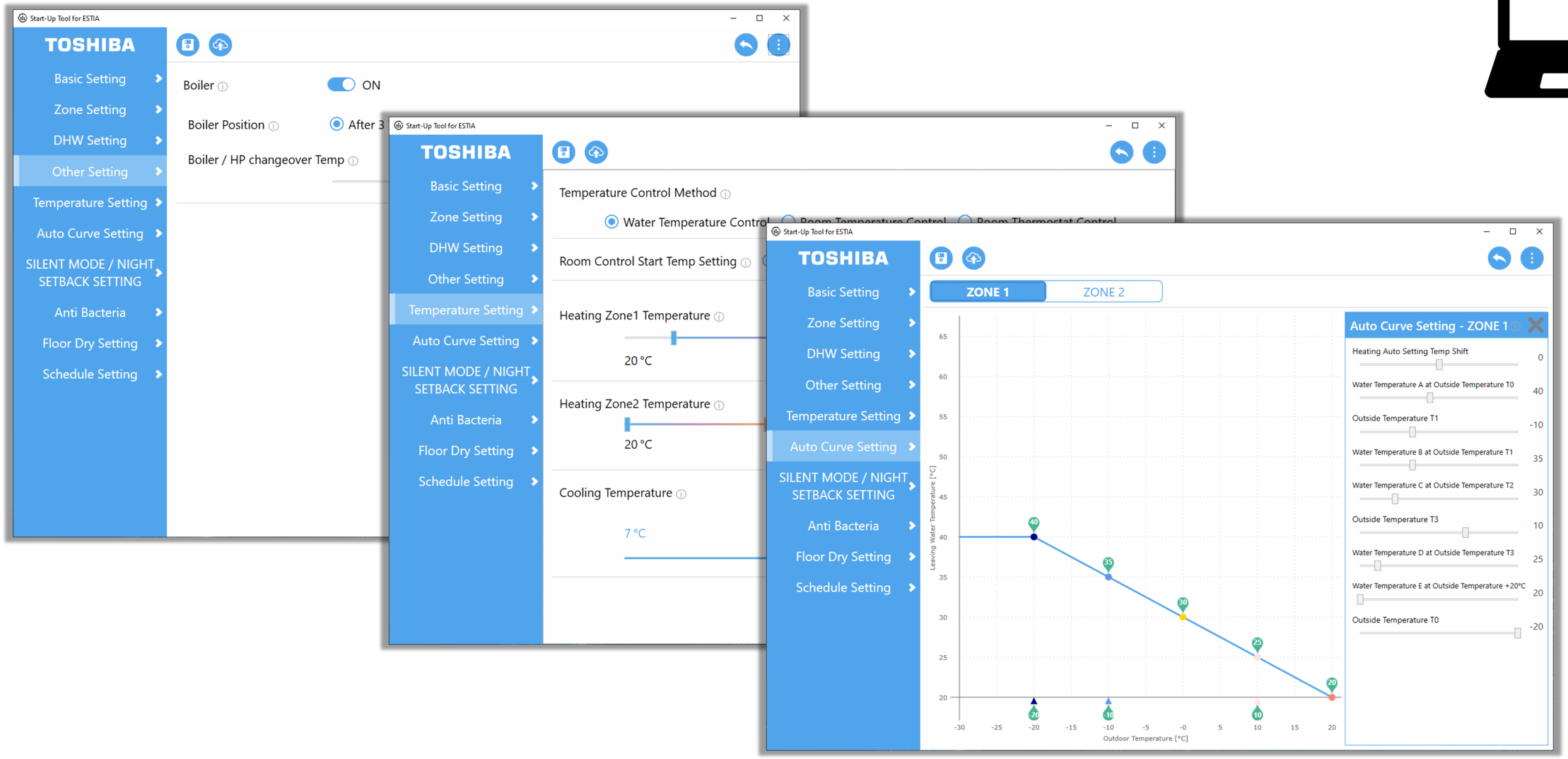
- Commissioning made easy : the *Startup Tool* software!



TOSHIBA

ESTIA R32

- Commissioning made easy : the *Startup Tool* software!



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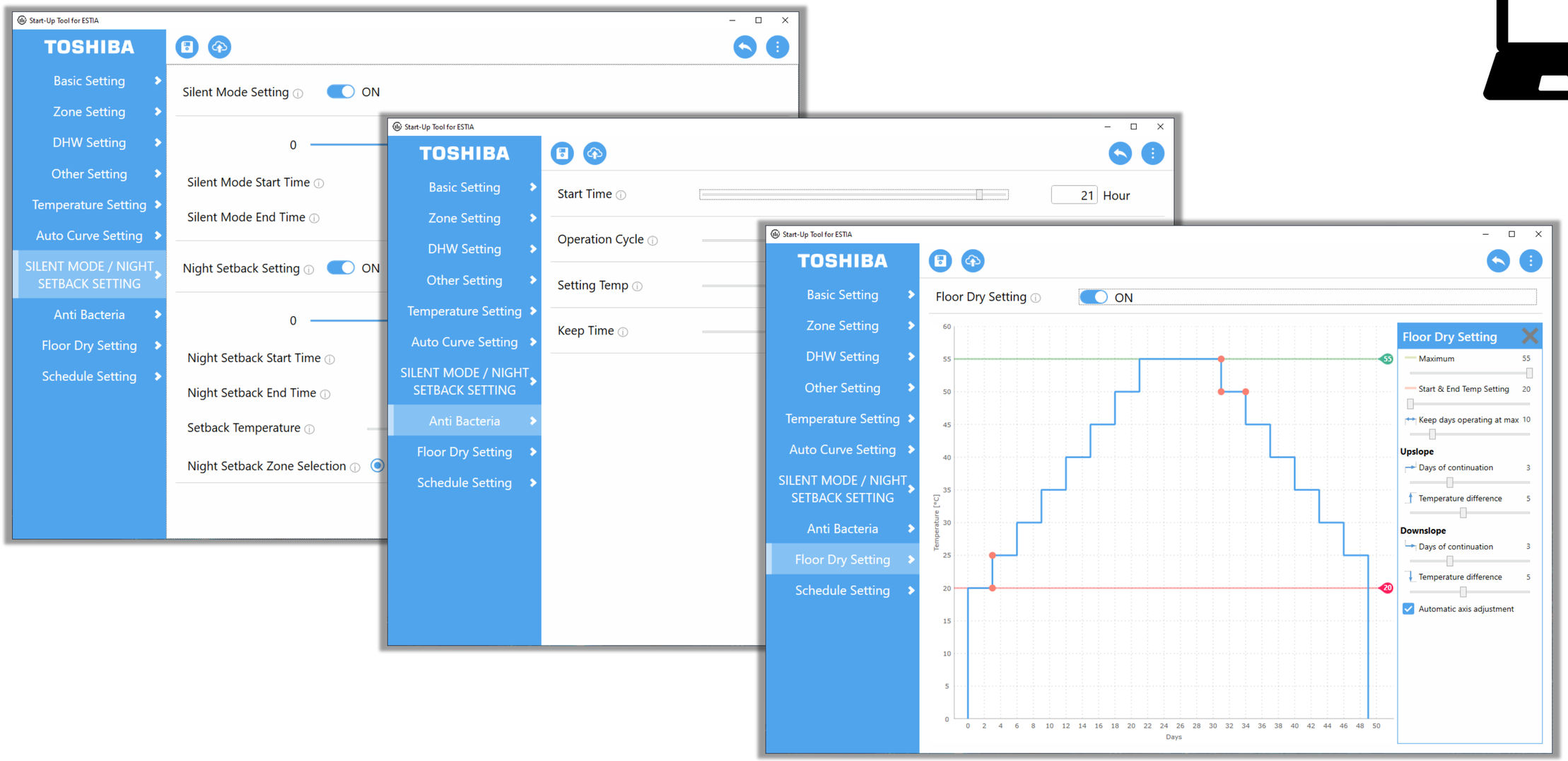
ESTIA R32

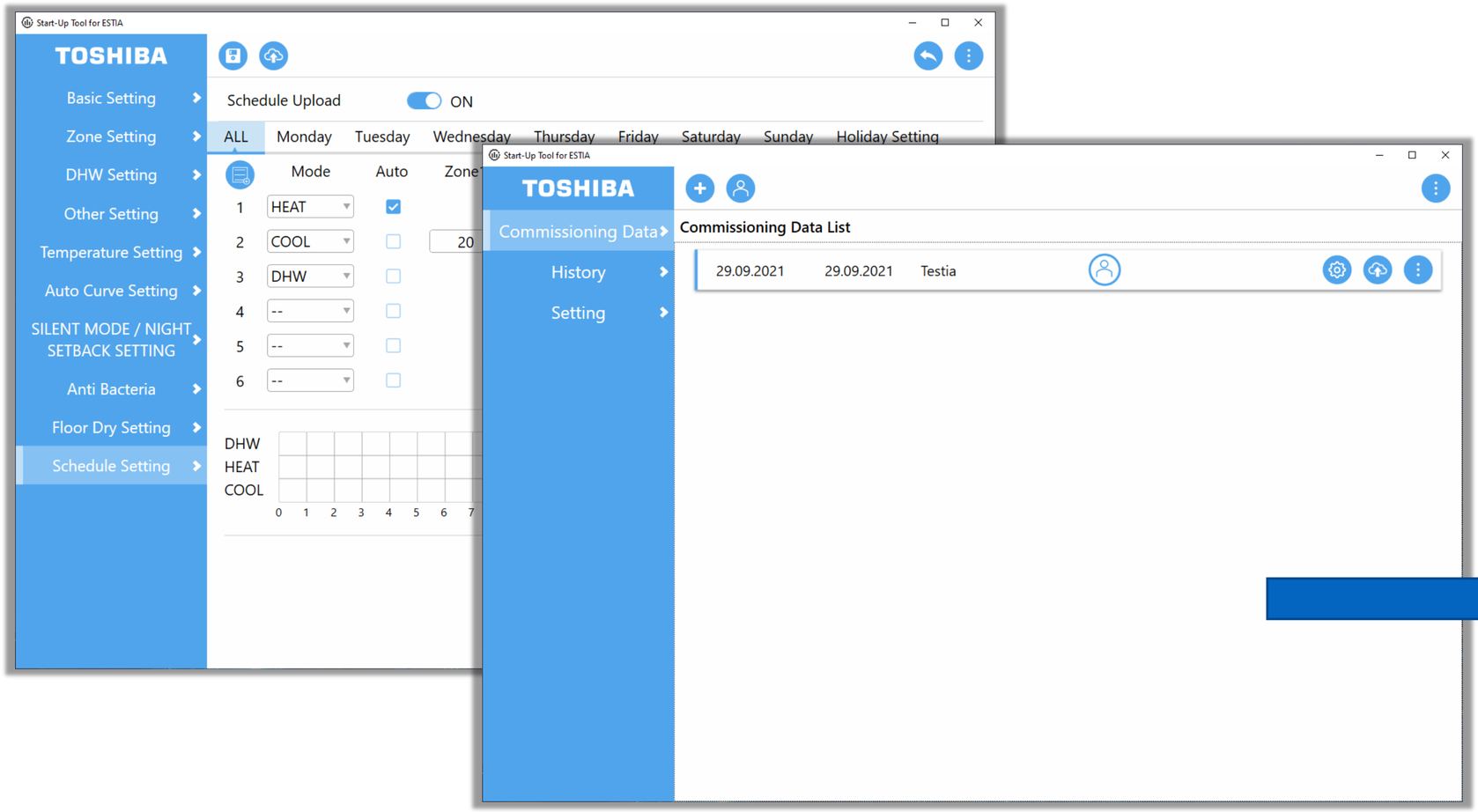
- Commissioning made easy : the *Startup Tool* software!



TOSHIBA

ESTIA R32

- Commissioning made easy : the *Startup Tool* software!



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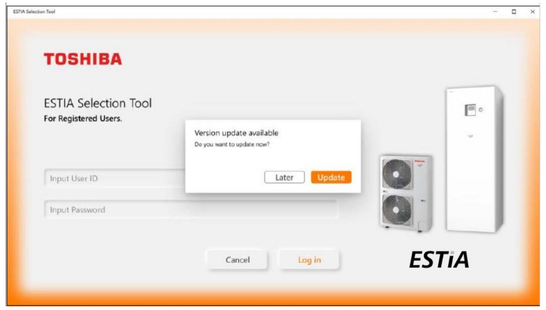
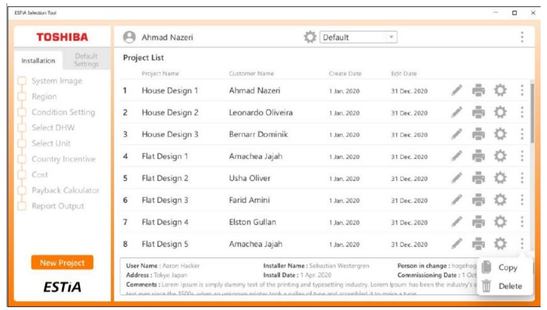
ESTIA R32

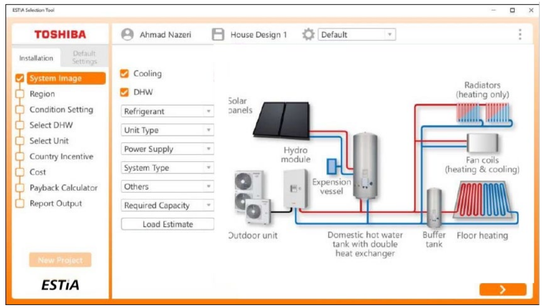
- NEW sales support / selection software

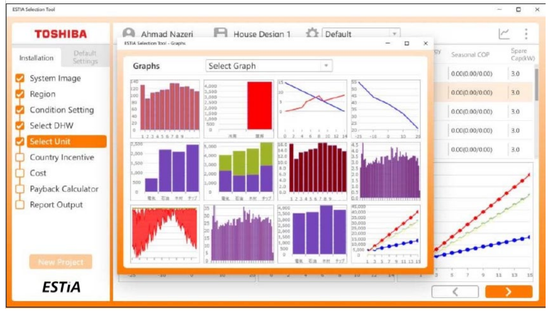
- New Features
- New GUI and user friendly selection flow
- Online update and user management
- New report design
- ESTIA System Selection supports:

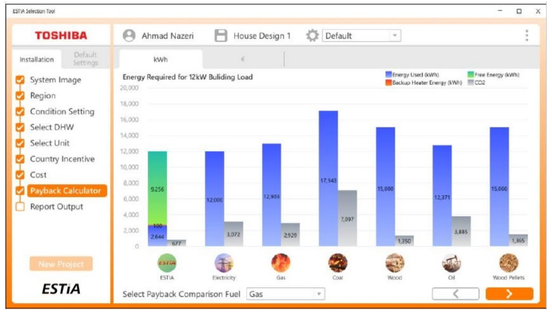
1) Load calculation (Simple and Detailed)
2) DHW Daily pattern
3) Incentive calculation
4) Comparison with other heating system
5) Running cost saving
6) SCOP and SEER as reference











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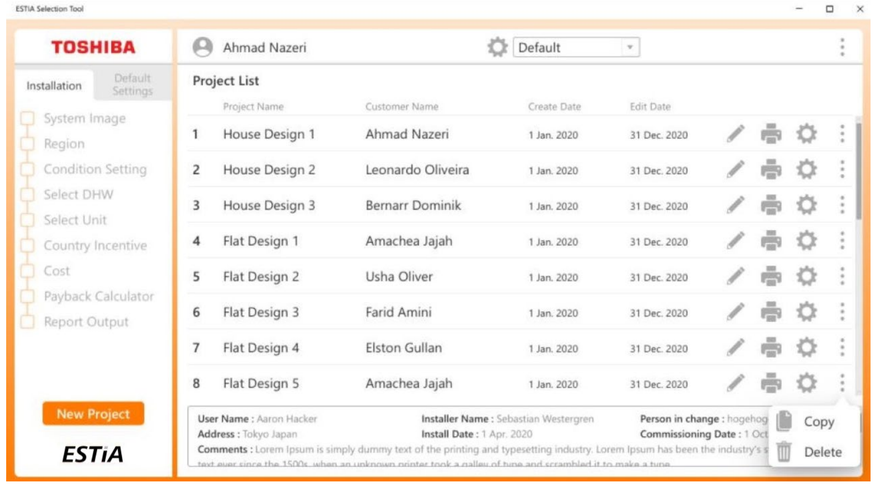
ESTIA R32

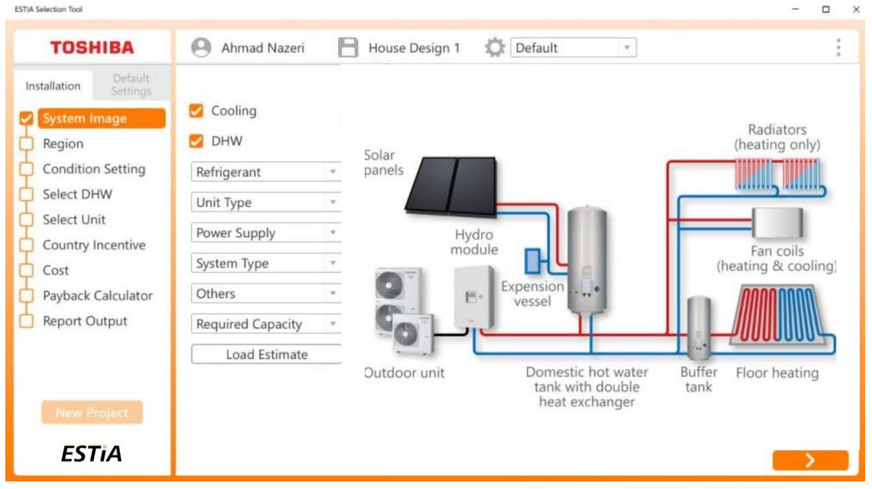
- NEW sales support / selection software

New Selection tool (local-not web based)
New user friendly interface



Project mode
Easy settings (energy cost, prices, etc.)

Multiple application/systems approach
Heating laod calculator (estimation)



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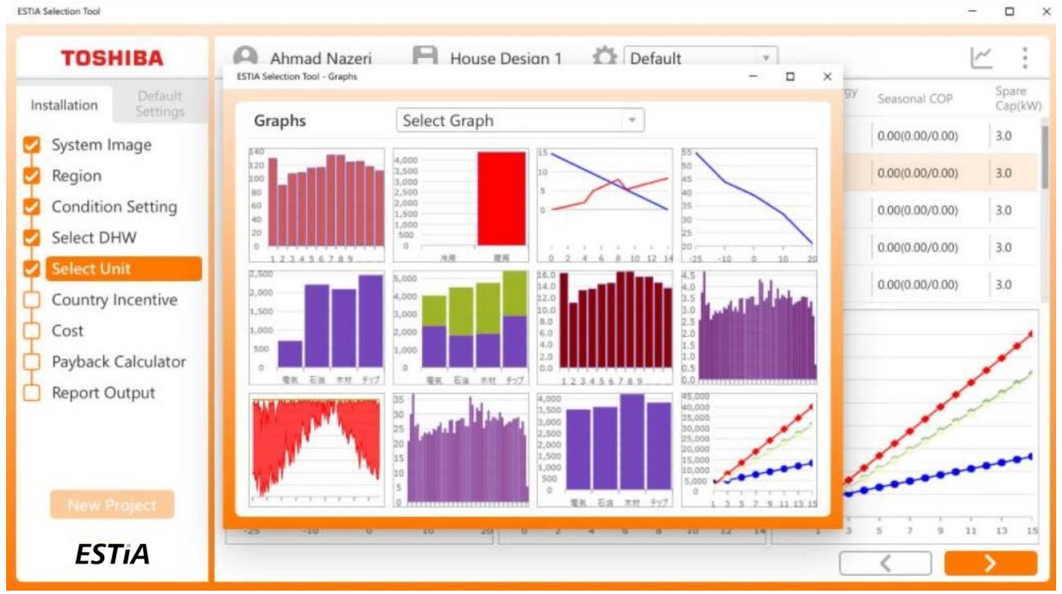
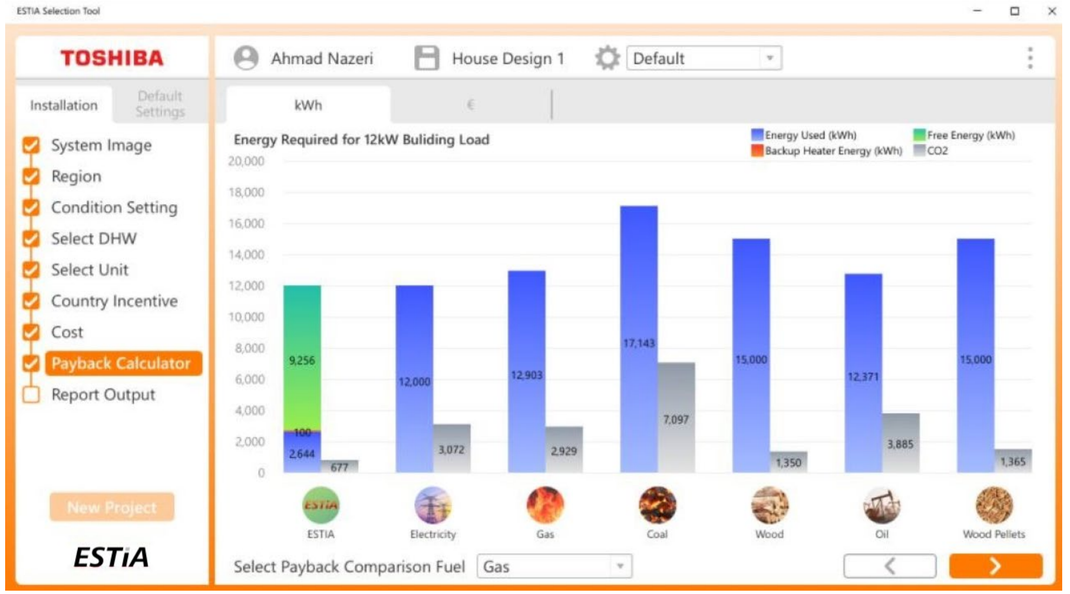
ESTIA R32

- NEW sales support / selection software



Large choice of charts display
Customized report



Annual consumption comparison with other energies
Retun On Investment calculations
(including local incentives)

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ESTIA R32

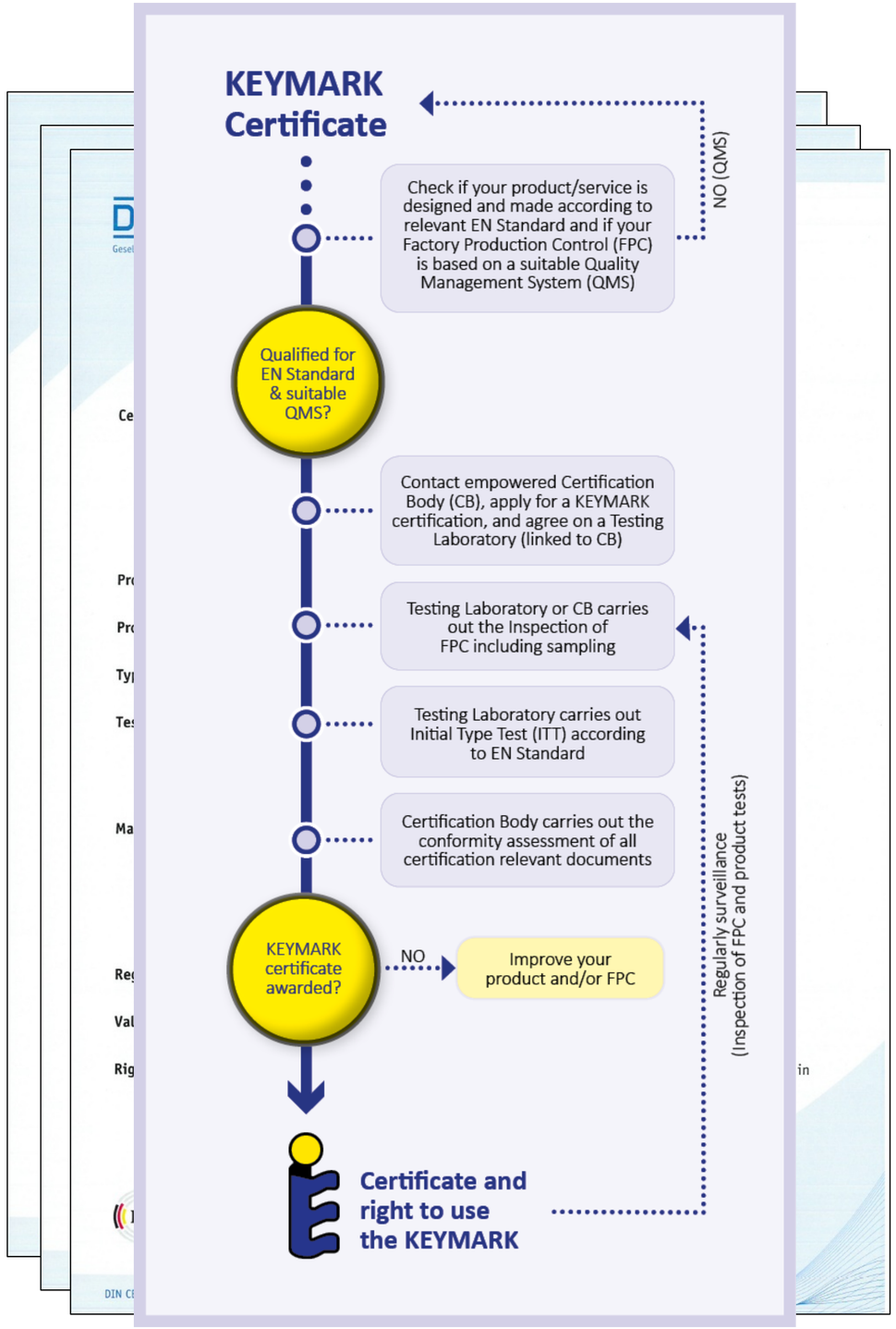
- 3rd party certification: KEYMARK Heat Pump

CEN heat pump
KEYMARK

✓Complete new ESTIA series 1 will be KEYMARK certified

✓EHPA is following KEYMARK

ehpa
european
heat pump association



TOSHIBA

ESTIA R32

- 5 best reasons to love the new ESTIA system

1. energy efficiency A+++
2. Safe operation down to -25°C outdoor temperature
3. Steady leaving water temperature up to +65°C
4. Wide range of control options, including
   2nd Remote, WiFi, Modbus, KNX, 0-10 Volt.
5. Choice of 1- or 2-Zone for AIO indoor unit

TOSHIBA

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ESTIA air to water heatpumps 2021

Simplify your water-life …

Claus Wackerbauer
Product Manager

Markus Pichler
Technical Director

ESTIA mono DHW

Flexible „set & forget comfort“ for Domestic Hot Water preparation

model type	tank (Ltr.)	design / variants
HWS-G1901CNMR-E	190	standard version
HWS-G2601CNMR-E	260	
HWS-G1901CNRR-E	190	variant water connection position
HWS-G2601CNRR-E	260	
HWS-G1901CNXR-E	190	+ deluxe PCB
HWS-G2601CNXR-E	260	
HWS-G1901ENXR-E	190	+ deluxe PCB + HEX
HWS-G2601ENXR-E	260	

ESTIA mono DHW

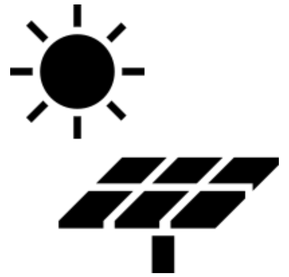
Basics!

- ✓2 Versions: 190 Ltr. & 260 Ltr.
- ✓Water temperature from +50 to +65°C
- ✓*Best in class* COP 3.57 (EN 16147)
- ✓*Best in class* fan external static pressure
- ✓*Best in class* noise level
- ✓Wide operating range from -7°C /+40°C
- ✓Corrosion protection with enamelled steel tank and magnesium anode

ESTIA mono DHW

User interface

Operation modes:
AUTO, ECO, BOOST, SILENT and HOLIDAY

Flexible control solutions:

- ✓ ModBus connectivity
- ✓ Smart Grid ready
- ✓ Photo-Voltaic ready
- ✓ Solar function with extra coil
- ✓ Air Cooling function