TOSHIBA

APPENDIX R32

VERSION 1.0

ESTiA

Manual for
ESTIA air-to water heat pump

ESTIA R410A & R32

Overview

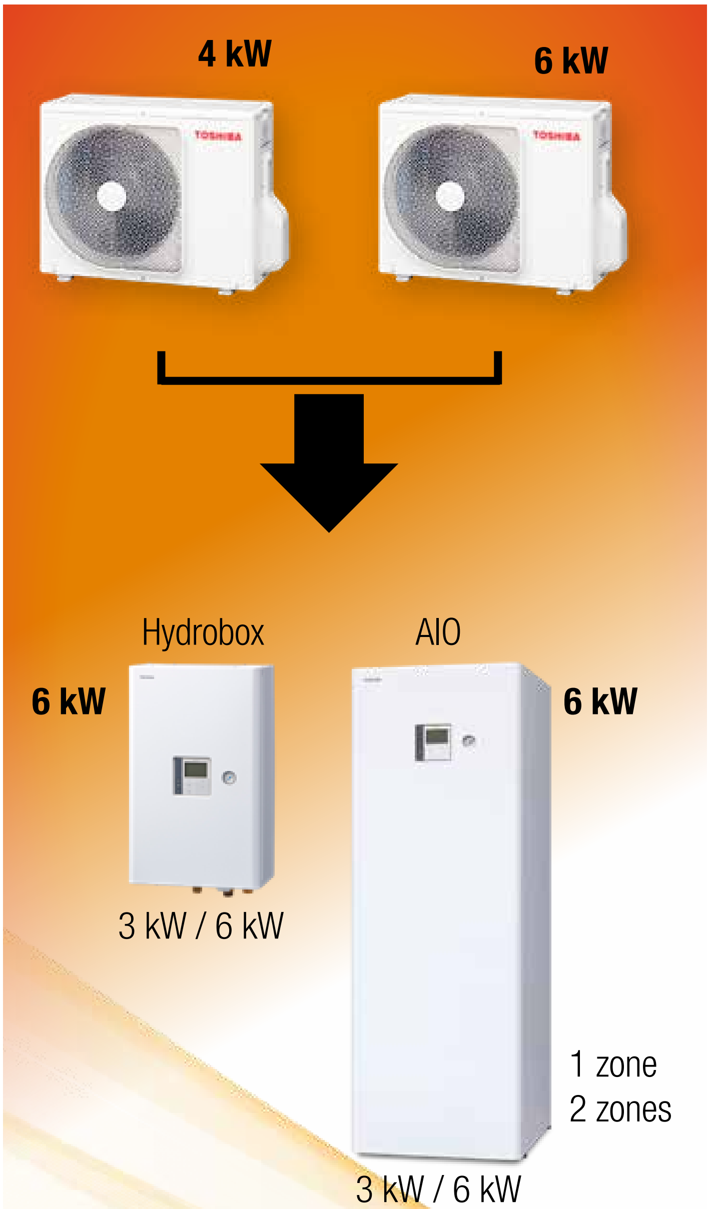
P nom. (kW)	4	6	
ESTIA R32 ALL-IN-ONE NEW R32	1-Ph 	1-Ph 	1-Ph
ESTIA R32 Split Hydrobox NEW R32	1-Ph 	1-Ph 	1-Ph
ESTIA R410A Series 5 Standard R32			
ESTIA R410A Series 5 HiPower R32			1-Ph 3-Ph

LI = Liquid Injection Compressor

8	11	14	16
h LI 	1-Ph LI 	1-Ph LI 	
h LI 	1-Ph LI 	1-Ph LI 	
	3-Ph 	1-Ph/ 3-Ph 	3-Ph 
h/ h 	1-Ph/ 3-Ph 	3-Ph 	

ESTIA R32

New R32 line-up – Made in Europe



4 kW

6 kW

Hydrobox

6 kW

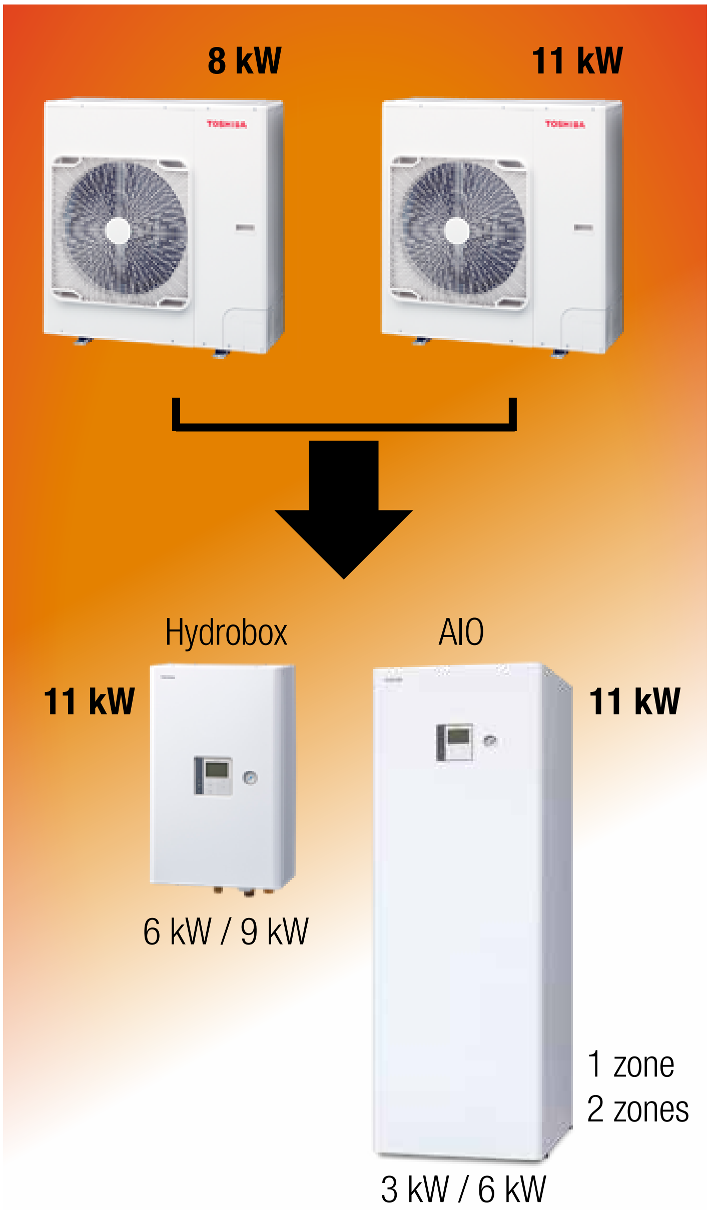
3 kW / 6 kW

AIO

6 kW

1 zone
2 zones

3 kW / 6 kW



8 kW

11 kW

Hydrobox

11 kW

6 kW / 9 kW

AIO

11 kW

1 zone
2 zones

3 kW / 6 kW

ESTIA R32

Types & models

Outdoor unit	P nom. (h) kW	E-connection
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

Standard Hydrobox	Backup heater / zone	Fits:
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	Backup heater / zone	Fits:
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

APPENDIX R32

MANUAL FOR ESTIA AIR-TO WATER HEAT PUMP

Version 1.0

Summary of the most important data from the original TOSHIBA manuals.

Publisher:
AIR-COND International GmbH
Haushamer Straße 2, 8054 Graz-Seiersberg

This summary in no way replaces the original technical manuals from TOSHIBA!

TABLE OF CONTENTS


TOSHIBA
ESTIA

OVERVIEW OF DESIGNS

Outdoor unit HWT-401HW-E
Hydrobox HWT-601XWH**W-E
All-in-One HWT-601F21S**W-E

Nominal heating capacity and nominal power consumption

Nominal conditions VLT=35°C dT= 5°C	Power	kW	4.0
	Power consumption	kW	0.77
	Coefficient of performance (COP)	W/W	5.20
	Nominal flow rate	l/min	11.6

- Heating capacity and power consumption at maximum compressor speed
- Power consumption without water pump
- Heating capacity and power consumption are measured according to EN 14511

TO: Outdoor temperature (TK°C) RH85%
VLT: Supply water temperature (°C)
dT: Temperature difference (°C)
Supply water temperature - water return temperature

Maximum heating capacity and power consumption
HWT-401HW-E

Power (kW)		VLT (°C)					
		30	35	40	45	50	55
TO (°C)	-20	3.22	3.10	2.98	--	--	--
	-15	3.91	3.73	3.55	3.37	--	--
	-10	4.57	4.40	4.23	4.06	3.90	--
	-7	4.96	4.80	4.64	4.48	4.40	4.31
	-2	5.89	5.70	5.51	5.32	5.15	4.98
	2	6.64	6.42	6.21	5.99	5.76	5.52
	7	7.39	7.25	7.11	6.97	6.74	6.51
	10	8.11	7.95	7.80	7.64	7.41	7.18
	12	8.53	8.42	8.26	8.09	7.86	7.62
	15	8.76	8.63	8.47	8.31	8.05	7.79
	20	9.13	8.98	8.83	8.67	8.37	8.06

Power consumption (kW)		VLT (°C)					
		30	35	40	45	50	55
TO (°C)	-20	1.22	1.32	1.42	--	--	--
	-15	1.32	1.41	1.51	1.60	--	--
	-10	1.38	1.46	1.56	1.69	1.85	--
	-7	1.37	1.49	1.61	1.73	1.88	2.03
	-2	1.37	1.51	1.65	1.79	1.95	2.11
	2	1.37	1.52	1.68	1.83	2.00	2.17
	7	1.33	1.49	1.66	1.82	1.99	2.15
	10	1.31	1.48	1.66	1.83	2.00	2.17
	12	1.31	1.48	1.66	1.84	2.02	2.19
	15	1.31	1.48	1.66	1.84	2.02	2.19
	20	1.31	1.48	1.67	1.85	2.02	2.18

Coefficient of performance (COP)		VLT (°C)					
		30	35	40	45	50	55
TO (°C)	-20	2.64	2.35	2.10	--	--	--
	-15	2.97	2.65	2.36	2.11	--	--
	-10	3.30	3.01	2.71	2.41	2.11	--
	-7	3.62	3.22	2.88	2.59	2.34	2.12
	-2	4.31	3.78	3.35	2.98	2.65	2.36
	2	4.86	4.22	3.70	3.27	2.88	2.54
	7	5.58	4.87	4.30	3.83	3.40	3.03
	10	6.19	5.36	4.70	4.17	3.70	3.30
	12	6.51	5.69	4.97	4.40	3.90	3.48
	15	6.68	5.83	5.10	4.51	3.99	3.56
	20	6.97	6.07	5.30	4.69	4.15	3.70

- Heating capacity and power consumption at maximum heating capacity
- Heating capacity and power consumption at maximum compressor speed
- Power consumption without water pump
- Heating capacity and power consumption are measured according to EN 14511

TO:	Outdoor temperature (TK°C)
VLT:	Supply water temperature (°C)

Outdoor unit HWT-401HW-E
Hydrobox HWT-601XWH**W-E
All-in-One HWT-601F21S**W-E

Nominal cooling capacity and nominal power consumption

Nominal conditions VLT=7°C dT=5°C	Power	kW	4.0
	Power consumption	kW	1.16
	EER	W/W	3.45
	Nominal flow rate	l/min	11.5

- Nominal cooling capacity and nominal power consumption relate to the nominal speed of the compressor
- Power consumption without water pump
- Cooling capacity and power consumption are measured according to EN 14511

TO: Outdoor temperature (TK°C)
VLT: Supply water temperature (°C)
dT: Temperature difference (°C)
Water return temperature - supply water temperature

Cooling capacity and power consumption
HWT-401HW-E

Power (kW)		**VLT (°C)**				
		7	**10**	**13**	**15**	**18**
TO (°C)	20	5.47	5.86	6.24	6.62	7.19
	27	5.13	5.56	5.98	6.31	6.79
	30	4.98	5.43	5.87	6.17	6.62
	35	4.74	5.22	5.69	5.95	6.34
	40	4.00	4.58	5.16	5.44	5.87
	43	3.56	4.20	4.84	5.14	5.59

Power consumption (kW)		**VLT (°C)**				
		7	**10**	**13**	**15**	**18**
TO (°C)	20	1.03	1.11	1.18	1.16	1.13
	27	1.20	1.25	1.30	1.29	1.28
	30	1.27	1.31	1.35	1.35	1.34
	35	1.39	1.41	1.43	1.44	1.45
	40	1.51	1.54	1.57	1.58	1.59
	43	1.58	1.62	1.65	1.66	1.68

Coefficient of performance (COP)		**VLT (°C)**				
		7	**10**	**13**	**15**	**18**
TO (°C)	20	5.31	5.30	5.29	5.71	6.36
	27	4.28	4.45	4.61	4.89	5.31
	30	3.92	4.15	4.36	4.59	4.93
	35	3.41	3.70	3.98	4.14	4.37
	40	2.65	2.98	3.29	3.45	3.68
	43	2.25	2.60	2.93	3.09	3.33

- Cooling capacity and power consumption at maximum compressor speed
- Power consumption without water pump
- Cooling capacity and power consumption are measured according to EN 14511

TO:	Outdoor temperature (TK°C)
VLT:	Supply water temperature (°C)

Outdoor unit HWT-601HW-E
Hydrobox HWT-601XWH**W-E
All-in-One HWT-601F21S**W-E

Nominal heating capacity and nominal power consumption

Nominal conditions VLT=35°C dT= 5°C	Power	kW	6.0
	Power consumption	kW	1.25
	Coefficient of performance (COP)	W/W	4.80
	Nominal flow rate	l/min	17.3

- Heating capacity and power consumption at maximum compressor speed
- Power consumption without water pump
- Heating capacity and power consumption are measured according to EN 14511

TO:	Outdoor temperature (TK°C)
VLT:	Supply water temperature (°C)
dT:	Temperature difference (°C) Supply water temperature - water return temperature

Maximum heating capacity and power consumption
HWT-601HW-E

Power (kW)		VLT (°C)					
		30	35	40	45	50	55
TO (°C)	-20	4.13	4.03	3.93	--	--	--
	-15	5.11	4.75	4.39	4.03	--	--
	-10	5.79	5.57	5.35	5.14	4.92	--
	-7	6.19	6.06	5.93	5.80	5.61	5.42
	-2	5.89	5.70	5.51	5.32	5.56	5.80
	2	6.64	6.42	6.21	5.99	6.05	6.10
	7	7.39	7.25	7.11	6.97	7.25	7.53
	10	8.11	7.95	7.80	7.64	7.82	8.00
	12	8.53	8.42	8.26	8.09	8.20	8.31
	15	8.76	8.63	8.47	8.31	8.26	8.22
	20	9.13	8.98	8.83	8.67	8.37	8.06

Power consumption (kW)		VLT (°C)					
		30	35	40	45	50	55
TO (°C)	-20	1.58	1.73	1.88	--	--	--
	-15	1.77	1.79	1.82	1.84	--	--
	-10	1.81	1.89	1.99	2.11	2.26	--
	-7	1.79	1.95	2.10	2.25	2.46	2.66
	-2	1.37	1.51	1.65	1.79	2.18	2.58
	2	1.37	1.52	1.68	1.83	2.18	2.52
	7	1.33	1.49	1.66	1.82	2.22	2.61
	10	1.31	1.48	1.66	1.83	2.22	2.60
	12	1.31	1.48	1.66	1.84	2.22	2.59
	15	1.31	1.48	1.66	1.84	2.14	2.44
	20	1.31	1.48	1.67	1.85	2.02	2.18

Coefficient of performance (COP)		VLT (°C)					
		30	35	40	45	50	55
TO (°C)	-20	2.61	2.33	2.09	--	--	--
	-15	2.90	2.65	2.42	2.19	--	--
	-10	3.20	2.94	2.69	2.43	2.18	--
	-7	3.45	3.12	2.83	2.58	2.29	2.04
	-2	4.31	3.78	3.35	2.98	2.55	2.25
	2	4.86	4.22	3.70	3.27	2.78	2.42
	7	5.58	4.87	4.30	3.83	3.27	2.89
	10	6.19	5.36	4.70	4.17	3.53	3.08
	12	6.51	5.69	4.97	4.40	3.70	3.21
	15	6.68	5.83	5.10	4.51	3.86	3.37
	20	6.97	6.07	5.30	4.69	4.15	3.70

- Heating capacity and power consumption at maximum heating capacity
- Heating capacity and power consumption at maximum compressor speed
- Power consumption without water pump
- Heating capacity and power consumption are measured according to EN 14511

TO: Outdoor temperature (TK°C)
VLT: Supply water temperature (°C)

Outdoor unit HWT-601HW-E
Hydrobox HWT-601XWH**W-E
All-in-One HWT-601F21S**W-E

Nominal cooling capacity and nominal power consumption

Nominal conditions VLT=7°C dT=5°C	Power	kW	5.0
	Power consumption	kW	1.52
	EER	W/W	3.30
	Nominal flow rate	l/min	14.3

- Nominal cooling capacity and nominal power consumption relate to the nominal speed of the compressor
- Power consumption without water pump
- Cooling capacity and power consumption are measured according to EN 14511

TO:	Outdoor temperature (TK°C)
VLT:	Supply water temperature (°C)
dT:	Temperature difference (°C) Water return temperature - supply water temperature

Cooling capacity and power consumption
HWT-601HW-E

Power (kW)		**VLT (°C)**				
		7	**10**	**13**	**15**	**18**
TO (°C)	20	5.72	6.18	6.63	6.98	7.51
	27	5.54	6.06	6.57	6.88	7.33
	30	5.46	6.01	6.55	6.83	7.25
	35	5.33	5.92	6.51	6.75	7.12
	40	4.81	5.42	6.04	6.26	6.60
	43	4.49	5.12	5.75	5.97	6.29

Power consumption (kW)		**VLT (°C)**				
		7	**10**	**13**	**15**	**18**
TO (°C)	20	1.12	1.17	1.21	1.22	1.23
	27	1.40	1.44	1.48	1.49	1.51
	30	1.52	1.56	1.59	1.60	1.62
	35	1.72	1.75	1.78	1.80	1.82
	40	1.86	1.90	1.94	1.95	1.97
	43	1.94	1.99	2.03	2.04	2.06

Coefficient of performance (COP)		**VLT (°C)**				
		7	**10**	**13**	**15**	**18**
TO (°C)	20	5.11	5.30	5.48	5.73	6.11
	27	3.96	4.21	4.45	4.62	4.87
	30	3.59	3.86	4.12	4.26	4.47
	35	3.10	3.38	3.66	3.76	3.91
	40	2.59	2.86	3.12	3.21	3.35
	43	2.31	2.58	2.83	2.92	3.05

- Nominal cooling capacity and nominal power consumption relate to the nominal speed of the compressor
- Power consumption without water pump
- Cooling capacity and power consumption are measured according to EN 14511

TO: Outdoor temperature (TK°C)
VLT: Supply water temperature (°C)

Outdoor unit HWT-801H(R)W-E
Hydrobox HWT-1101XWH**W-E
All-in-One HWT-1101F21S***W-E

Nominal heating capacity and nominal power consumption

Nominal conditions VLT=35°C dT= 5°C	Power	kW	8.0
	Power consumption	kW	1.54
	Coefficient of performance (COP)	W/W	5.19
	Nominal flow rate	l/min	23.1

- Heating capacity and power consumption at maximum compressor speed
- Power consumption without water pump
- Heating capacity and power consumption are measured according to EN 14511

TO: Outdoor temperature (TK°C)
VLT: Supply water temperature (°C)
dT: Temperature difference (°C)
Supply water temperature - water return temperature

Maximum heating capacity and power consumption
HWT-801H(R)W-E

Power (kW)		VLT (°C)							
		30	35	40	45	50	55	60	65
TO (°C)	-25	4.37	4.43	4.49	4.55	4.61	4.67	4.51	--
	-20	5.40	5.45	5.50	5.27	5.54	5.54	5.31	--
	-15	6.42	6.46	6.50	6.54	6.48	6.41	6.10	--
	-10	7.60	7.49	7.47	7.45	7.23	7.00	6.67	--
	-7	8.30	8.11	8.06	8.00	7.68	7.35	7.01	--
	-2	9.35	9.24	9.20	9.15	8.97	8.79	7.78	--
	2	10.50	10.30	10.28	10.26	9.88	9.50	8.40	--
	7	12.39	11.90	11.83	11.75	10.86	9.96	9.07	5.08
	10	13.02	12.57	12.46	12.36	11.56	10.76	9.96	5.09
	12	13.44	13.01	12.89	12.77	12.03	11.29	10.55	5.09
	15	13.69	13.22	13.04	12.87	12.11	11.36	10.60	5.08
	20	14.10	13.57	13.30	13.03	12.25	11.47	10.69	5.06

Power consumption (kW)		VLT (°C)							
		30	35	40	45	50	55	60	65
TO (°C)	-25	1.99	2.22	2.45	2.68	2.98	3.27	3.21	--
	-20	2.14	2.41	2.68	2.83	3.15	3.36	3.41	--
	-15	2.30	2.60	2.91	3.21	3.33	3.44	3.61	--
	-10	2.55	2.78	3.04	3.31	3.43	3.54	3.67	--
	-7	2.70	2.88	3.13	3.37	3.49	3.60	3.71	--
	-2	2.48	2.71	2.99	3.26	3.46	3.65	3.61	--
	2	2.57	2.77	3.08	3.38	3.47	3.56	3.53	--
	7	2.41	2.62	3.01	3.39	3.43	3.47	3.51	2.19
	10	2.42	2.63	3.00	3.38	3.42	3.47	3.52	2.06
	12	2.42	2.63	3.00	3.37	3.42	3.47	3.52	1.98
	15	2.42	2.63	3.01	3.39	3.42	3.46	3.49	1.90
	20	2.42	2.62	3.02	3.42	3.43	3.44	3.45	1.76

Coefficient of performance (COP)		VLT (°C)							
		30	35	40	45	50	55	60	65
TO (°C)	-25	2.20	2.00	1.83	1.70	1.55	1.43	1.40	--
	-20	2.52	2.26	2.05	1.86	1.76	1.65	1.56	--
	-15	2.80	2.48	2.24	2.04	1.95	1.86	1.69	--
	-10	2.98	2.70	2.46	2.25	2.11	1.98	1.82	--
	-7	3.07	2.82	2.58	2.37	2.20	2.04	1.89	--
	-2	3.78	3.41	3.08	2.81	2.60	2.41	2.16	--
	2	4.08	3.72	3.34	3.04	2.85	2.67	2.38	--
	7	5.14	4.54	3.94	3.47	3.16	2.87	2.58	2.32
	10	5.39	4.79	4.15	3.66	3.38	3.10	2.83	2.46
	12	5.55	4.95	4.30	3.79	3.52	3.25	3.00	2.57
	15	5.66	5.03	4.34	3.80	3.54	3.28	3.03	2.68
	20	5.84	5.18	4.40	3.81	3.57	3.33	3.10	2.88

- Heating capacity and power consumption at maximum heating capacity
- Heating capacity and power consumption at maximum compressor speed
- Power consumption without water pump
- Heating capacity and power consumption are measured according to EN 14511

TO:	Outdoor temperature (TK°C)
VLT:	Supply water temperature (°C)

Outdoor unit HWT-801H(R)W-E
Hydrobox HWT-1101XWH**W-E
All-in-One HWT-1101F21S***W-E

Nominal cooling capacity and nominal power consumption

Nominal conditions VLT=7°C dT=5°C	Power	kW	6.0
	Power consumption	kW	1.88
	EER	W/W	3.20
	Nominal flow rate	l/min	17.2

- Cooling capacity and power consumption at maximum compressor speed
- Power consumption without water pump
- Cooling capacity and power consumption are measured according to EN 14511

TO:	Outdoor temperature (TK°C)
VLT:	Supply water temperature (°C)
dT:	Temperature difference (°C) Water return temperature - supply water temperature

Cooling capacity and power consumption
HWT-801H(R)W-E

Power (kW)		VLT (°C)				
		7	**10**	**13**	**15**	**18**
TO (°C)	20	7.79	8.42	8.97	9.46	10.09
	27	7.30	7.90	8.49	8.91	9.51
	30	7.08	7.68	8.28	8.67	9.26
	35	6.73	7.31	7.94	8.27	8.85
	40	5.54	6.22	7.00	7.36	8.04
	43	4.82	5.57	6.43	6.81	7.56

Power consumption (kW)		VLT (°C)				
		7	**10**	**13**	**15**	**18**
TO (°C)	20	1.71	1.71	1.77	1.71	1.71
	27	1.93	1.95	1.99	1.97	1.98
	30	2.03	2.05	2.09	2.08	2.10
	35	2.19	2.22	2.25	2.26	2.29
	40	2.40	2.44	2.50	2.50	2.54
	43	2.53	2.57	2.65	2.65	2.69

Coefficient of performance (COP)		VLT (°C)				
		7	**10**	**13**	**15**	**18**
TO (°C)	20	4.56	4.92	5.07	5.53	5.90
	27	3.77	4.06	4.26	4.53	4.80
	30	3.49	3.75	3.96	4.17	4.42
	35	3.07	3.30	3.53	3.66	3.86
	40	2.30	2.55	2.80	2.94	3.17
	43	1.91	2.16	2.43	2.57	2.81

- Cooling capacity and power consumption at maximum compressor speed
- Power consumption without water pump
- Cooling capacity and power consumption are measured according to EN 14511

TO: Outdoor temperature (TK°C)
VLT: Supply water temperature (°C)

Outdoor unit HWT-1101H(R)W-E
Hydrobox HWT-1101XWH**W-E
All-in-One HWT-1101F21S***W-E

Nominal heating capacity and nominal power consumption

Nominal conditions VLT=35°C dT= 5°C	Power	kW	11.0
	Power consumption	kW	2.39
	Coefficient of performance (COP)	W/W	4.60
	Nominal flow rate	l/min	31.8

- Heating capacity and power consumption at maximum compressor speed
- Power consumption without water pump
- Heating capacity and power consumption are measured according to EN 14511

TO:	Outdoor temperature (TK°C)
VLT:	Supply water temperature (°C)
dT:	Temperature difference (°C) Supply water temperature - water return temperature

Maximum heating capacity and power consumption
HWT-1101H(R)W-E

Power (kW)		VLT (°C)							
		30	**35**	**40**	**45**	**50**	**55**	**60**	**65**
TO (°C)	-25	5.12	5.20	5.28	5.36	5.35	5.33	5.06	--
	-20	6.21	6.29	6.36	6.25	6.26	6.07	5.58	--
	-15	7.30	7.37	7.45	7.52	7.17	6.81	6.10	--
	-10	8.70	8.45	8.27	8.10	7.62	7.15	6.67	--
	-7	9.56	9.10	8.77	8.44	7.86	7.35	7.01	--
	-2	10.65	10.28	10.16	10.03	9.41	8.79	7.78	--
	2	11.95	11.46	11.06	10.66	10.08	9.50	8.40	--
	7	14.01	13.24	12.83	12.41	11.29	10.17	9.05	5.08
	10	14.62	13.86	13.39	12.92	11.88	10.84	9.80	5.09
	12	15.03	14.28	13.77	13.26	12.28	11.29	10.31	5.09
	15	15.30	14.51	13.87	13.23	12.30	11.36	10.42	5.07
	20	15.76	14.90	14.05	13.19	12.33	11.47	10.61	5.06

Power consumption (kW)		VLT (°C)							
		30	**35**	**40**	**45**	**50**	**55**	**60**	**65**
TO (°C)	-25	2.32	2.60	2.89	3.17	3.43	3.69	3.63	--
	-20	2.58	2.89	3.19	3.49	3.59	3.68	3.62	--
	-15	2.85	3.17	3.50	3.82	3.75	3.67	3.61	--
	-10	3.17	3.32	3.53	3.74	3.68	3.63	3.67	--
	-7	3.35	3.41	3.55	3.69	3.68	3.60	3.71	--
	-2	3.05	3.17	3.43	3.69	3.67	3.65	3.61	--
	2	3.16	3.24	3.42	3.59	3.58	3.56	3.53	--
	7	3.03	3.15	3.43	3.71	3.67	3.62	3.58	2.19
	10	3.02	3.12	3.37	3.61	3.57	3.53	3.49	2.06
	12	3.01	3.10	3.33	3.55	3.51	3.47	3.43	1.98
	15	3.00	3.09	3.31	3.53	3.50	3.46	3.42	1.90
	20	2.99	3.08	3.29	3.50	3.47	3.44	3.41	1.76

Coefficient of performance (COP)		VLT (°C)							
		30	**35**	**40**	**45**	**50**	**55**	**60**	**65**
TO (°C)	-25	2.21	2.00	1.83	1.69	1.56	1.44	1.39	--
	-20	2.41	2.18	1.99	1.79	1.74	1.65	1.54	--
	-15	2.56	2.32	2.13	1.97	1.91	1.86	1.69	--
	-10	2.74	2.55	2.34	2.17	2.07	1.97	1.82	--
	-7	2.86	2.67	2.47	2.29	2.14	2.04	1.89	--
	-2	3.49	3.24	2.96	2.72	2.56	2.41	2.16	--
	2	3.78	3.54	3.24	2.97	2.82	2.67	2.38	--
	7	4.62	4.20	3.74	3.35	3.08	2.81	2.53	2.32
	10	4.84	4.44	3.98	3.57	3.33	3.07	2.81	2.46
	12	5.00	4.61	4.14	3.74	3.50	3.25	3.00	2.57
	15	5.10	4.69	4.19	3.75	3.52	3.28	3.04	2.67
	20	5.27	4.84	4.27	3.77	3.55	3.33	3.11	2.88

- Heating capacity and power consumption at maximum heating capacity
- Heating capacity and power consumption at maximum compressor speed
- Power consumption without water pump
- Heating capacity and power consumption are measured according to EN 14511

TO: Outdoor temperature (TK°C)
VLT: Supply water temperature (°C)

Outdoor unit HWT-1101H(R)W-E
Hydrobox HWT-1101XWH**W-E
All-in-One HWT-1101F21S***W-E

Nominal cooling capacity and nominal power consumption

Nominal conditions VLT=7°C dT=5°C	Power	kW	8.0
	Power consumption	kW	2.86
	EER	W/W	2.80
	Nominal flow rate	l/min	22.9

- Nominal cooling capacity and nominal power consumption relate to the nominal speed of the compressor
- Power consumption without water pump
- Cooling capacity and power consumption are measured according to EN 14511

TO:	Outdoor temperature (TK°C)
VLT:	Supply water temperature (°C)
dT:	Temperature difference (°C) Water return temperature - supply water temperature

Cooling capacity and power consumption
HWT-1101H(R)W-E

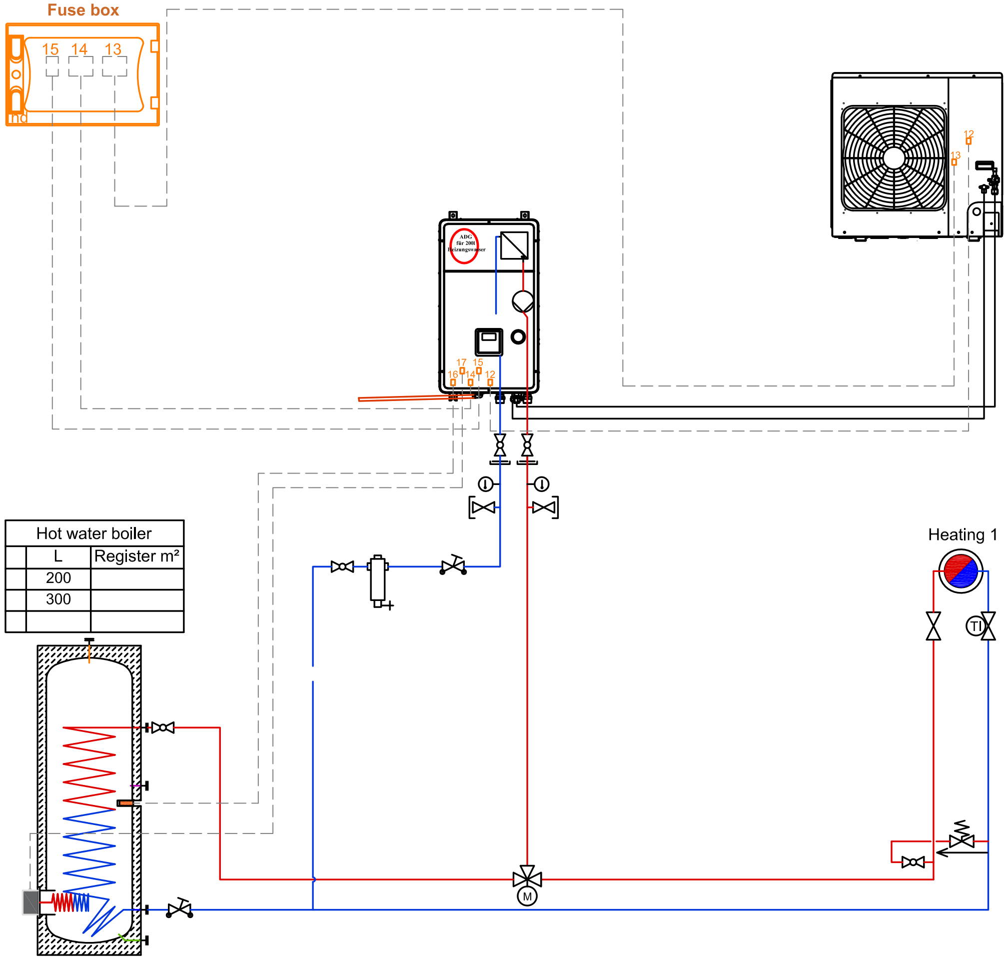
Power (kW)		VLT (°C)				
		7	**10**	**13**	**15**	**18**
TO (°C)	20	8.12	8.79	9.47	9.90	10.57
	27	7.91	8.60	9.37	9.74	10.43
	30	7.83	8.52	9.32	9.67	10.36
	35	7.68	8.38	9.25	9.56	10.26
	40	5.97	6.68	7.49	7.86	8.57
	43	4.95	5.66	6.43	6.85	7.56

Power consumption (kW)		VLT (°C)				
		7	**10**	**13**	**15**	**18**
TO (°C)	20	1.85	1.84	1.83	1.81	1.80
	27	2.25	2.29	2.37	2.35	2.39
	30	2.42	2.48	2.60	2.58	2.64
	35	2.71	2.81	2.98	2.96	3.06
	40	2.69	2.72	2.77	2.79	2.83
	43	2.67	2.68	2.65	2.68	2.69

Coefficient of performance (COP)		VLT (°C)				
		7	**10**	**13**	**15**	**18**
TO (°C)	20	4.39	4.79	5.17	5.46	5.87
	27	3.52	3.76	3.96	4.14	4.37
	30	3.23	3.43	3.59	3.75	3.93
	35	2.83	2.99	3.10	3.22	3.35
	40	2.22	2.45	2.70	2.82	3.03
	43	1.85	2.12	2.43	2.55	2.81

- Nominal cooling capacity and nominal power consumption relate to the nominal speed of the compressor
- Power consumption without water pump
- Cooling capacity and power consumption are measured according to EN 14511

TO:	Outdoor temperature (TK°C)
VLT:	Supply water temperature (°C)



Hot water boiler	
L	Register m²
200	
300	

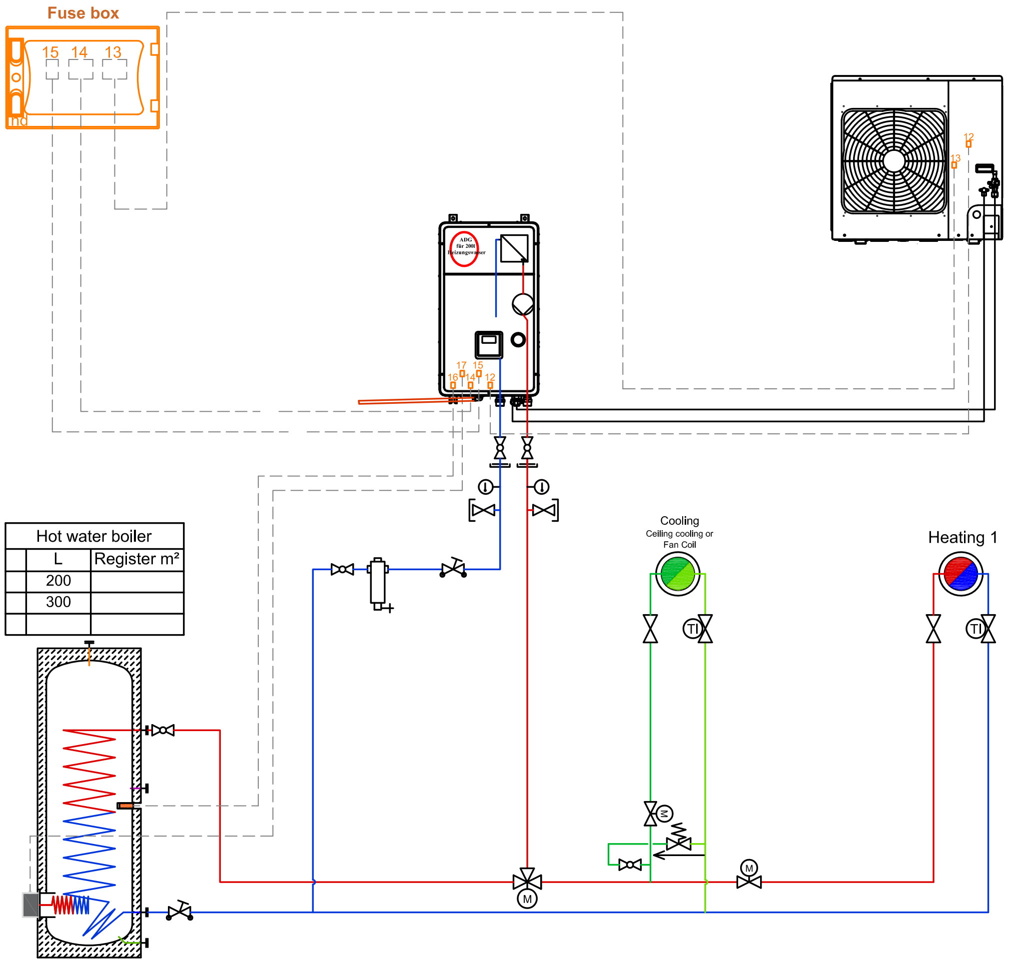
	Zone valve cooling		pump
	3-Way valve		stop valve
	Check valve		balancing valve
	Overflow valve		Thermometer
	Pressure reducer		Manometer
	Backflow preventer		Flushing nozzle
	Safety valve		Magnetite filter
	Test facility	- - -	Control line
—	Supply cooling	—	Supply heating
—	Return cooling	—	Return heating
—	Potable water warm	—	Potable water cold
—	Potable water circulation	—	Drain

SCHEMATIC 1.0
ESTIA

1 heating curcuit 3-Way valve
hot water boiler with 3-way valve

Company signature	Name:	Date:
System start up:		

Exemplary system scheme for integrating an ESTIA air / water heat pump.
Planning and installation of the system in accordance with national standards and guidelines.



Hot water boiler	
L	Register m²
200	
300	

	Zone valve cooling		pump
	3-Way valve		stop valve
	Check valve		balancing valve
	Overflow valve		Thermometer
	Pressure reducer		Manometer
	Backflow preventer		Flushing nozzle
	Safety valve		Magnetite filter
	Test facility	– – – –	Control line
🟩	Supply cooling	🟥	Supply heating
🟩	Return cooling	🟦	Return heating
🟧	Potable water warm	🟩	Potable water cold
🟪	Potable water circulation	🟧	Drain

SCHEMATIC 1.1
ESTIA

1 heating curcuit 3-Way valve
hot water boiler with 3-way valve
1 cooling circuit with overflow and cooling stop valve

Company signature

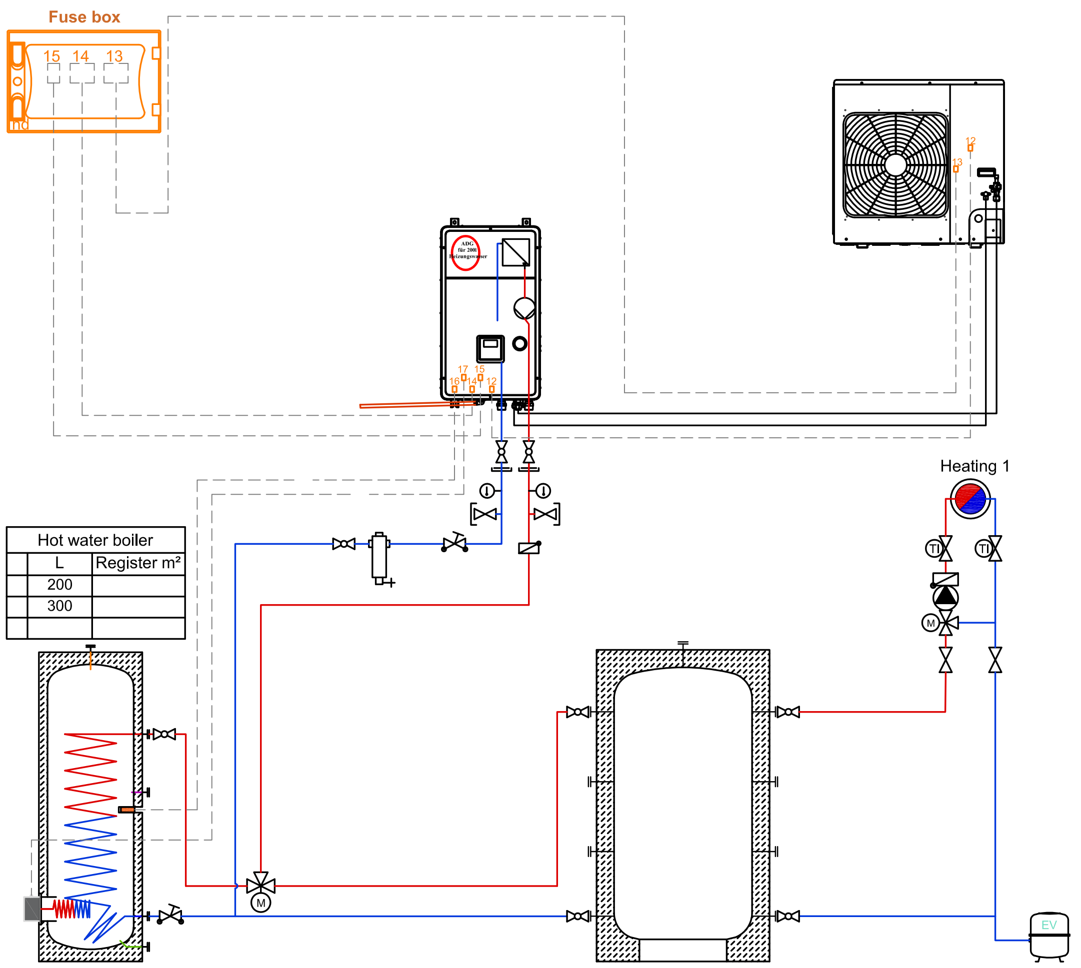
System start up:

Name:

Date:

ESTiA TOSHIBA

Exemplary system scheme for integrating an ESTIA air / water heat pump.
Planning and installation of the system in accordance with national standards and guidelines.



Hot water boiler	
L	Register m²
200	
300	

Zone valve cooling	pump
3-Way valve	stop valve
Check valve	balancing valve
Overflow valve	Thermometer
Pressure reducer	Manometer
Backflow preventer	Flushing nozzle
Safety valve	Magnetite filter
Test facility	Control line
Supply cooling	Supply heating
Return cooling	Return heating
Potable water warm	Potable water cold
Potable water circulation	Drain

SCHEMATIC 2.0
ESTIA

1 heating curcuit 3-Way valve
buffer tank
hot water boiler with 3-way valve

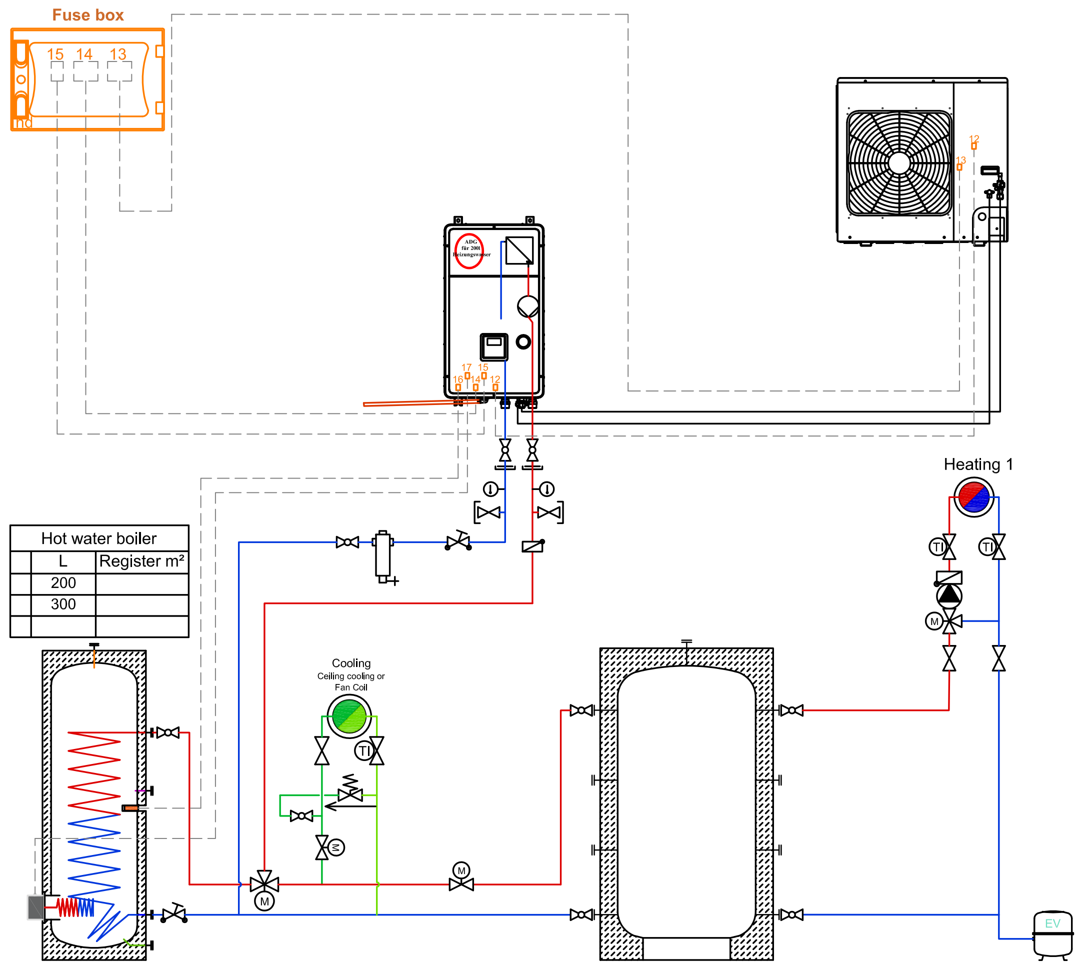
Company signature
System start up:

Name:

Date:

ESTiA TOSHIBA

Exemplary system scheme for integrating an ESTIA air / water heat pump.
Planning and installation of the system in accordance with national standards and guidelines.



Hot water boiler	
L	Register m²
200	
300	

	Zone valve cooling		pump
	3-Way valve		stop valve
	Check valve		balancing valve
	Overflow valve		Thermometer
	Pressure reducer		Manometer
	Backflow preventer		Flushing nozzle
	Safety valve		Magnetite filter
	Test facility	– – –	Control line
🟩	Supply cooling	🟥	Supply heating
🟩	Return cooling	🟦	Return heating
🟧	Potable water warm	🟩	Potable water cold
🟪	Potable water circulation	🟧	Drain

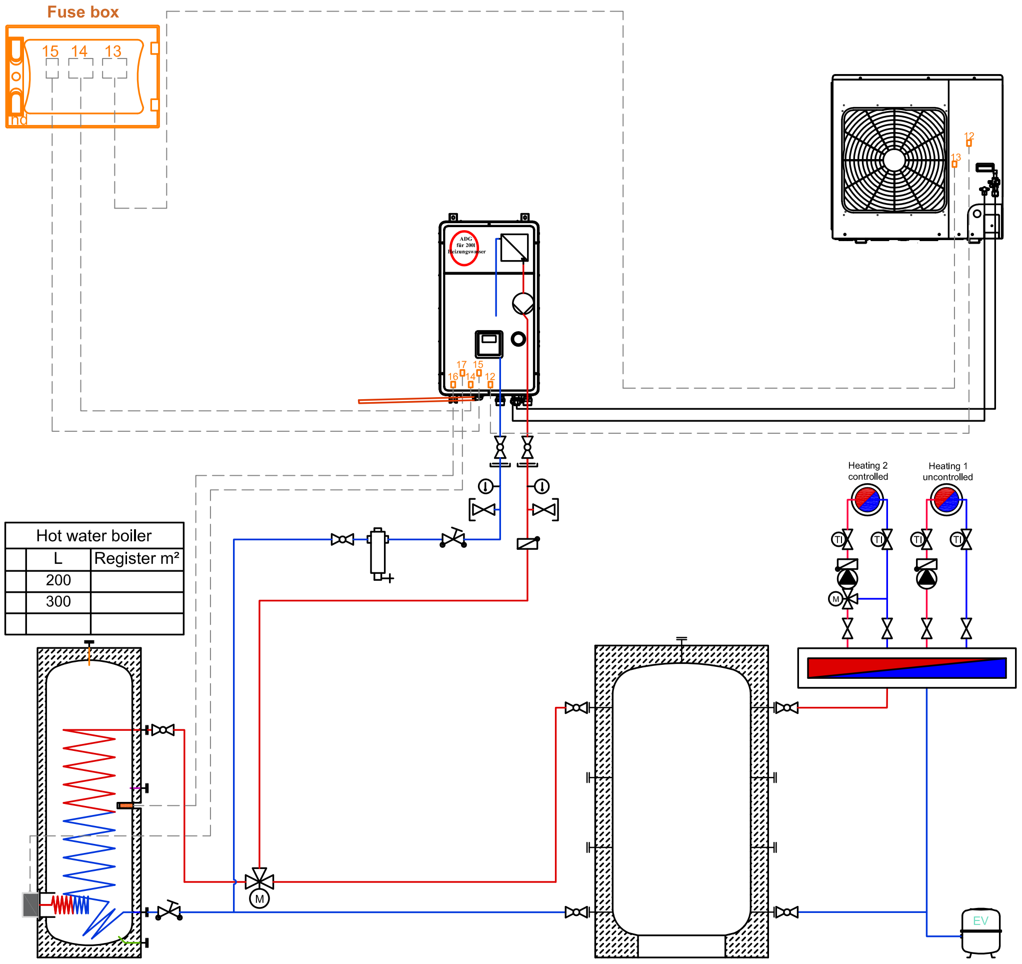
SCHEMATIC 2.1
ESTIA

1 heating curcuit 3-Way valve
buffer tank
hot water boiler with 3-way valve
1 cooling circuit with overflow and cooling stop valve

Company signature	Name:	Date:
System start up:		

ESTiA TOSHIBA

Exemplary system scheme for integrating an ESTIA air / water heat pump.
Planning and installation of the system in accordance with national standards and guidelines.



Hot water boiler	
L	Register m²
200	
300	

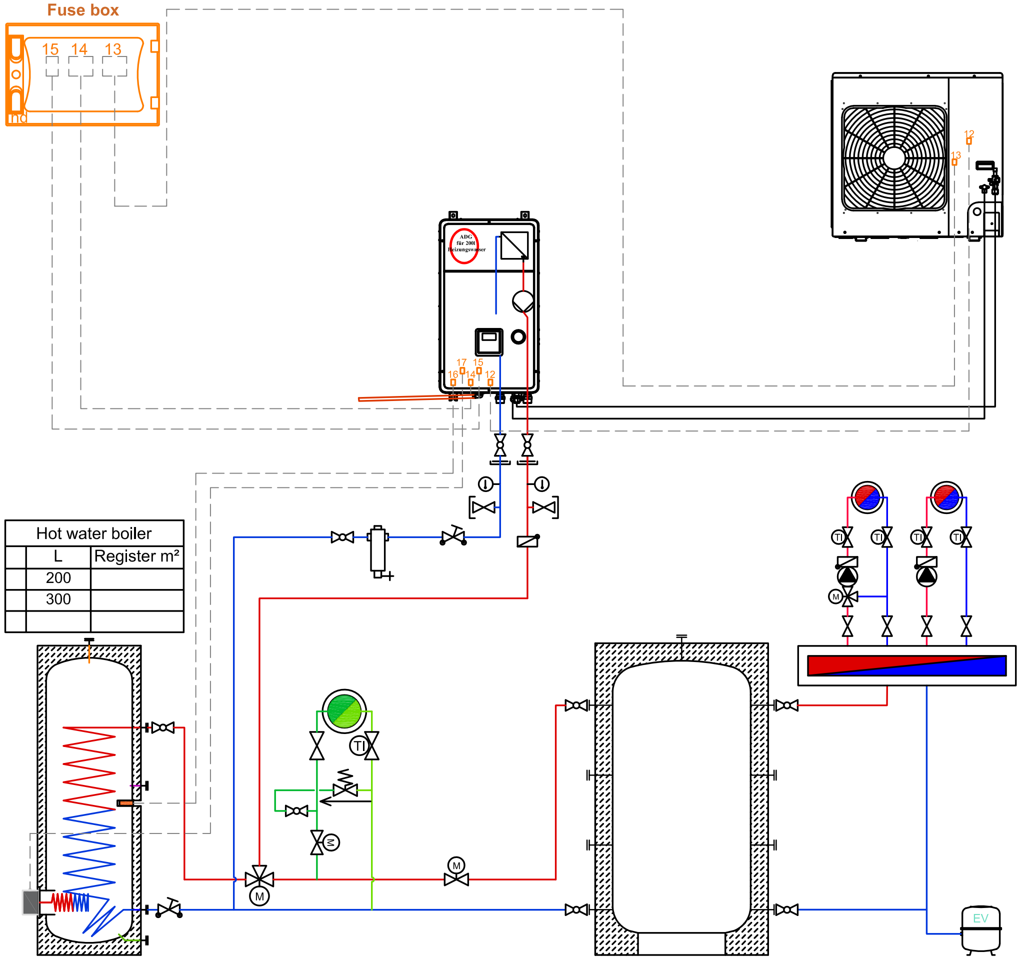
Zone valve cooling	pump
3-Way valve	stop valve
Check valve	balancing valve
Overflow valve	Thermometer
Pressure reducer	Manometer
Backflow preventer	Flushing nozzle
Safety valve	Magnetite filter
Test facility	Control line
Supply cooling	Supply heating
Return cooling	Return heating
Potable water warm	Potable water cold
Potable water circulation	Drain

SCHEMATIC 3.0
ESTIA

1 heating curcuit 3-Way valve
1 heating curcuit uncontrolled
buffer tank
hot water boiler with 3-way valve

Company signature	Name:	Date:
System start up:		

Exemplary system scheme for integrating an ESTIA air / water heat pump.
Planning and installation of the system in accordance with national standards and guidelines.



Hot water boiler	
L	Register m²
200	
300	

⋈	Zone valve cooling	○	pump
⋈	3-Way valve	⋈	stop valve
▱	Check valve	⋈	balancing valve
⋈	Overflow valve	Ⓣ	Thermometer
⋈	Pressure reducer	Ⓟ	Manometer
➔	Backflow preventer	⋈	Flushing nozzle
⋈	Safety valve	▯	Magnetite filter
↓	Test facility	– – –	Control line
——	Supply cooling	——	Supply heating
——	Return cooling	——	Return heating
——	Potable water warm	——	Potable water cold
——	Potable water circulation	——	Drain

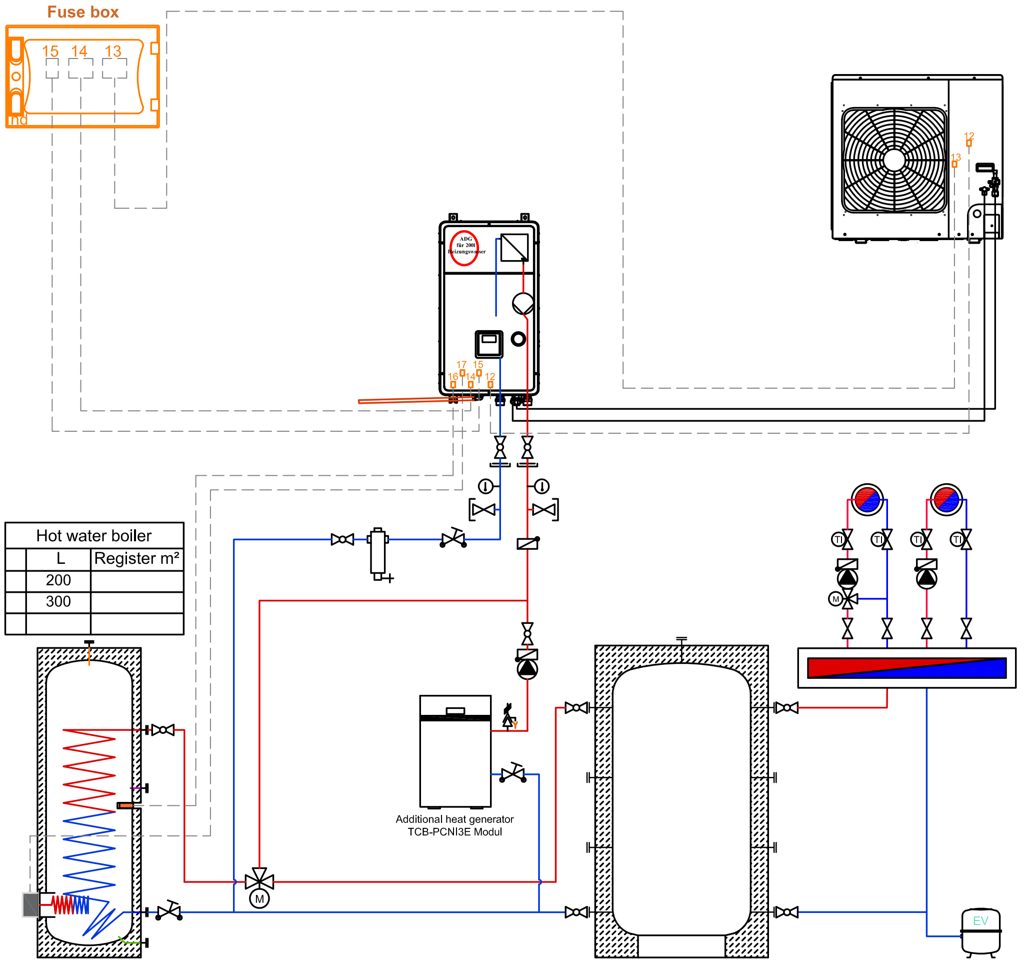
SCHEMATIC 3.1
ESTIA

1 heating curcuit 3-Way valve
1 heating curcuit uncontrolled
buffer tank
hot water boiler with 3-way valve
1 cooling circuit with overflow and cooling stop valve

Company signature	Name:	Date:
System start up:		

ESTiA TOSHIBA

Exemplary system scheme for integrating an ESTIA air / water heat pump.
Planning and installation of the system in accordance with national standards and guidelines.



Hot water boiler	
L	Register m²
200	
300	

⊗	Zone valve cooling	○	pump
⊗	3-Way valve	⋈	stop valve
⊘	Check valve	⋈	balancing valve
⋈	Overflow valve	Ⓣ	Thermometer
⋈	Pressure reducer	Ⓟ	Manometer
▶	Backflow preventer	⋈	Flushing nozzle
⋈	Safety valve	▯	Magnetite filter
↓	Test facility	- - -	Control line
🟩	Supply cooling	🟥	Supply heating
🟩	Return cooling	🟦	Return heating
🟧	Potable water warm	🟩	Potable water cold
🟪	Potable water circulation	🟧	Drain

SCHEMATIC 4.0
ESTIA

1 heating curcuit 3-Way valve
1 heating curcuit uncontrolled
buffer tank and bivalent heat generator
hot water boiler with 3-way valve

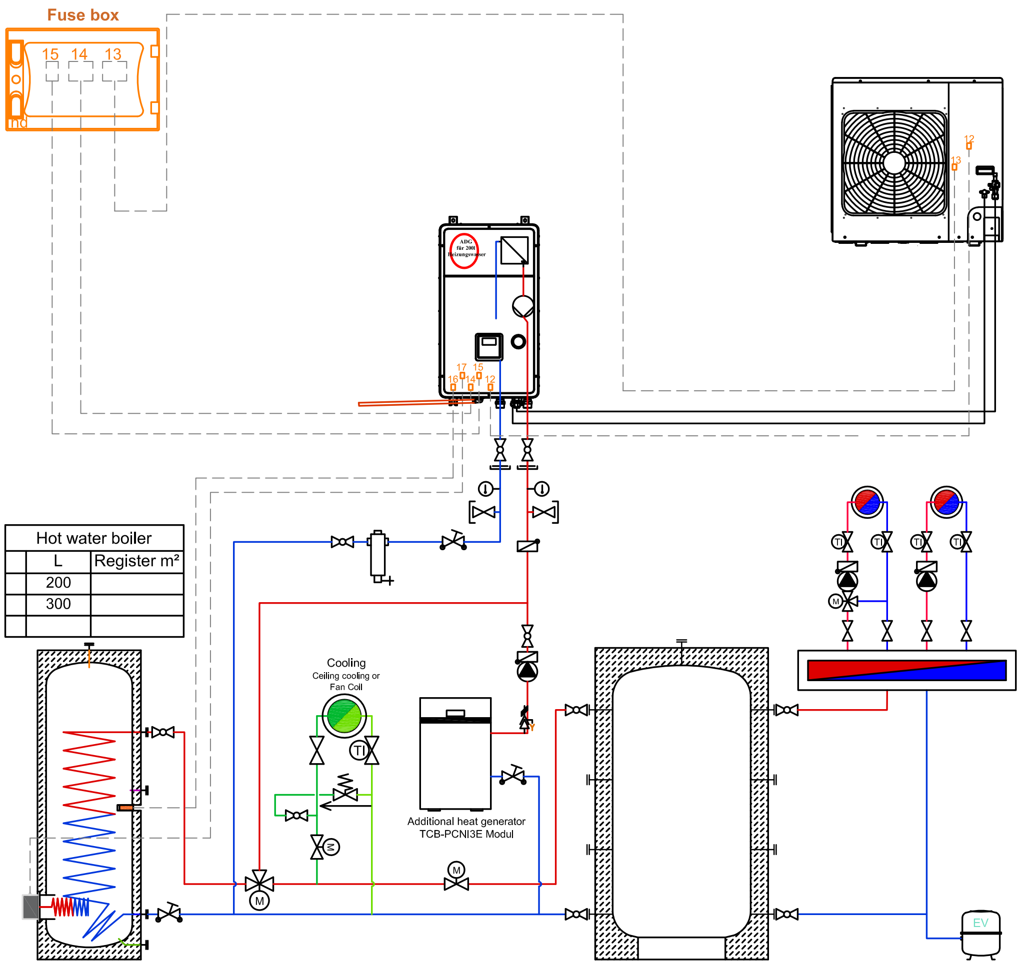
Company signature

Name:

Date:

System start up:

Exemplary system scheme for integrating an ESTIA air / water heat pump.
Planning and installation of the system in accordance with national standards and guidelines.



Hot water boiler	
L	Register m²
200	
300	

	Zone valve cooling	○	pump
	3-Way valve	⋈	stop valve
	Check valve		balancing valve
	Overflow valve	TI	Thermometer
⋈	Pressure reducer	PI	Manometer
	Backflow preventer		Flushing nozzle
	Safety valve		Magnetite filter
	Test facility	- - -	Control line
—	Supply cooling	—	Supply heating
—	Return cooling	—	Return heating
—	Potable water warm	—	Potable water cold
—	Potable water circulation	—	Drain

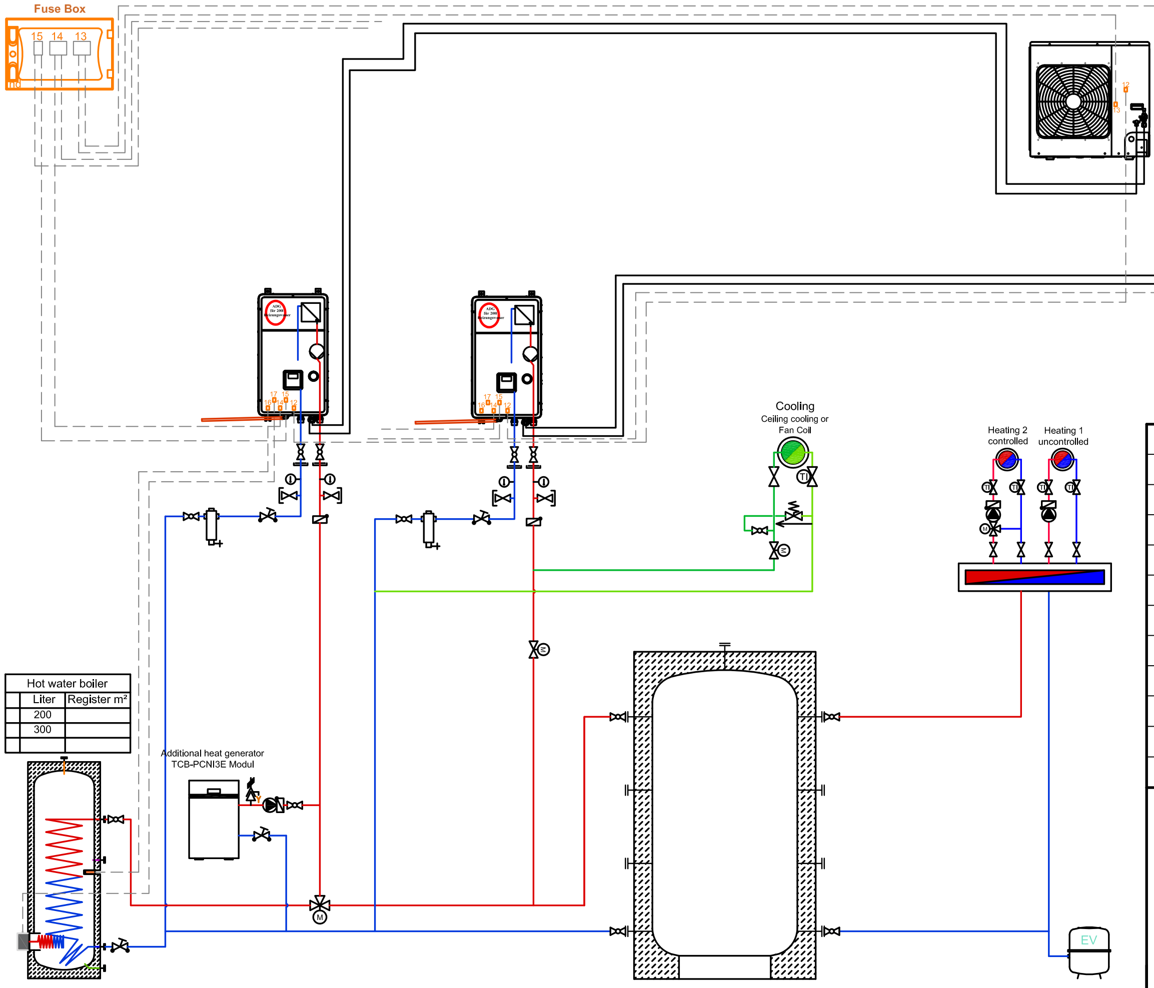
SCHEMATIC 4.1
ESTIA

1 heating curcuit 3-Way valve
1 heating curcuit uncontrolled
buffer tank and bivalent heat generator
hot water boiler with 3-way valve
1 cooling circuit with overflow and cooling stop valve

Company signature	Name:	Date:
System start up:		

ESTiA TOSHIBA

Exemplary system scheme for integrating an ESTIA air / water heat pump.
Planning and installation of the system in accordance with national standards and guidelines.



Zone valve cooling	pump
3-Way valve	stop valve
Check valve	balancing valve
Overflow valve	Thermometer
Pressure reducer	Manometer
Backflow preventer	Flushing nozzle
Safety valve	Magnetite filter
Test facility	Control line
Supply cooling	Supply heating
Return cooling	Return heating
Potable water warm	Potable water cold
Potable water circulation	Drain

SCHEMATIC 5.0
ESTIA

1 heating curcuit 3-Way valve
1 heating curcuit uncontrolled
buffer tank and 2.ESTIA parallel
hot water boiler with 3-way valve
1 cooling circuit with overflow and cooling stop valve

Company signature

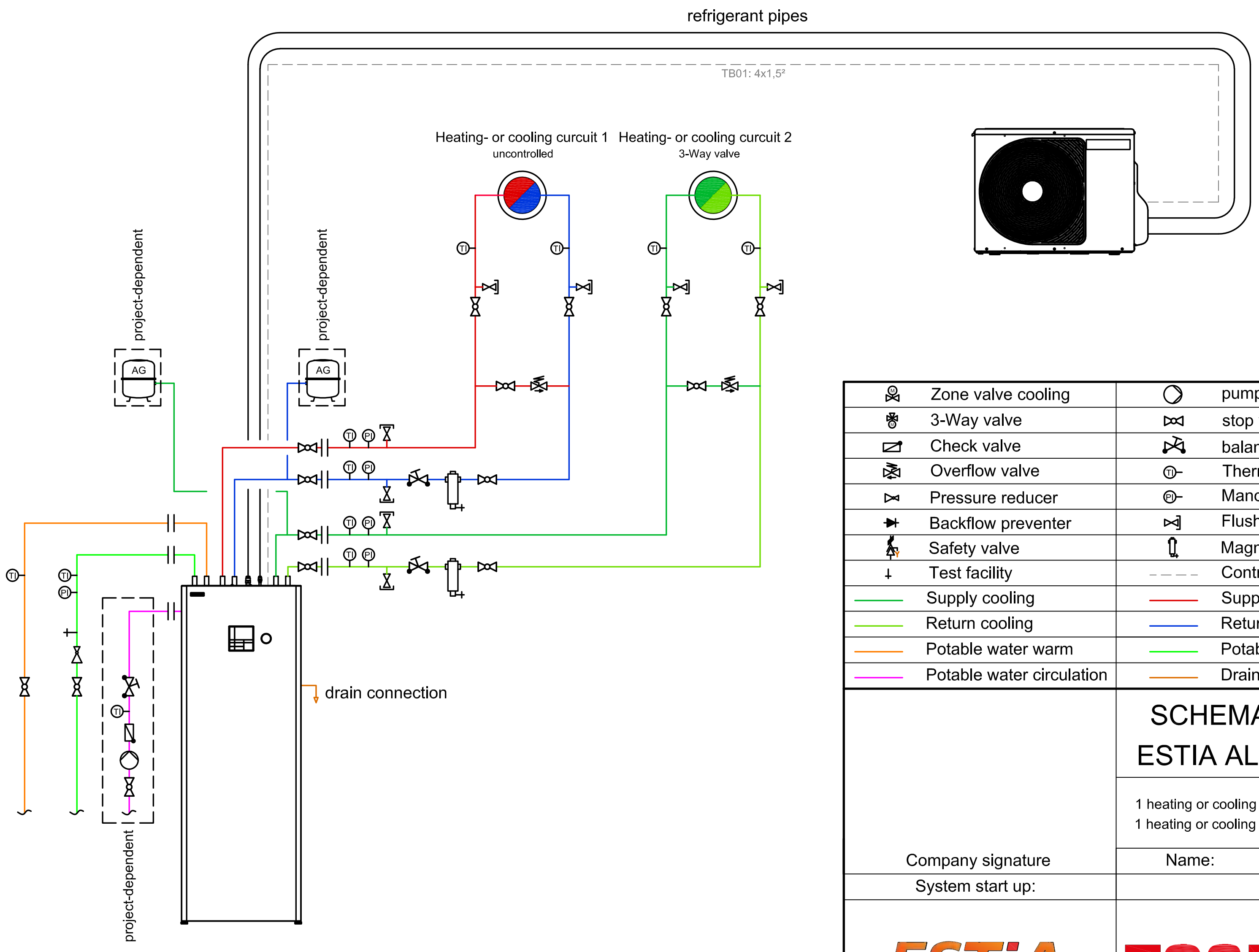
Name:

Date:

System start up:

ESTiA TOSHIBA

Exemplary system scheme for integrating an ESTIA air / water heat pump.
Planning and installation of the system in accordance with national standards and guidelines.



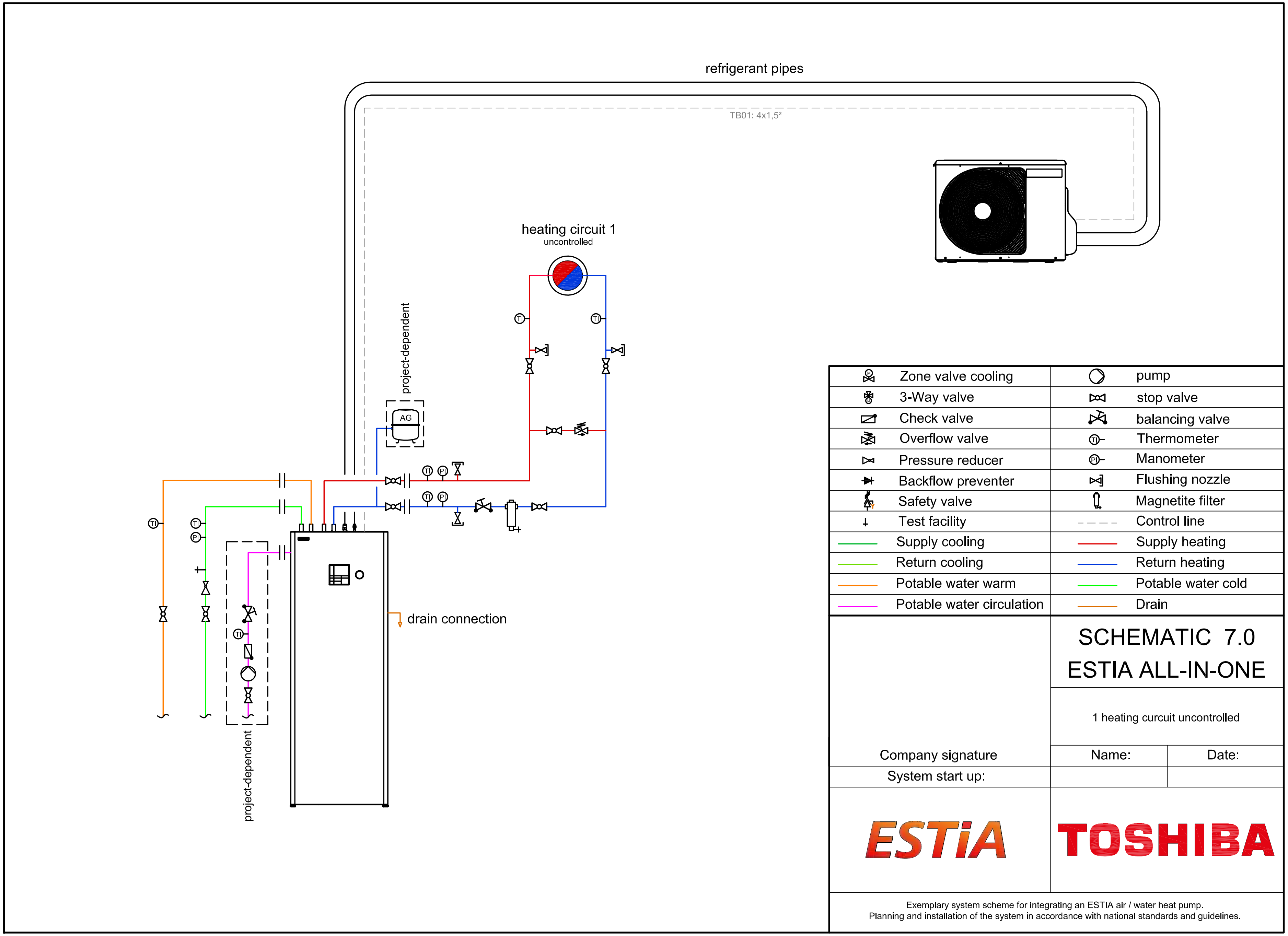
	Zone valve cooling		pump
	3-Way valve		stop valve
	Check valve		balancing valve
	Overflow valve		Thermometer
	Pressure reducer		Manometer
	Backflow preventer		Flushing nozzle
	Safety valve		Magnetite filter
	Test facility	- - -	Control line
—	Supply cooling	—	Supply heating
—	Return cooling	—	Return heating
—	Potable water warm	—	Potable water cold
—	Potable water circulation	—	Drain

SCHEMATIC 6.0
ESTIA ALL-IN-ONE

1 heating or cooling curcuit uncontrolled
1 heating or cooling curcuit 3-Way valve

Company signature	Name:	Date:
System start up:		

Exemplary system scheme for integrating an ESTIA air / water heat pump.
Planning and installation of the system in accordance with national standards and guidelines.



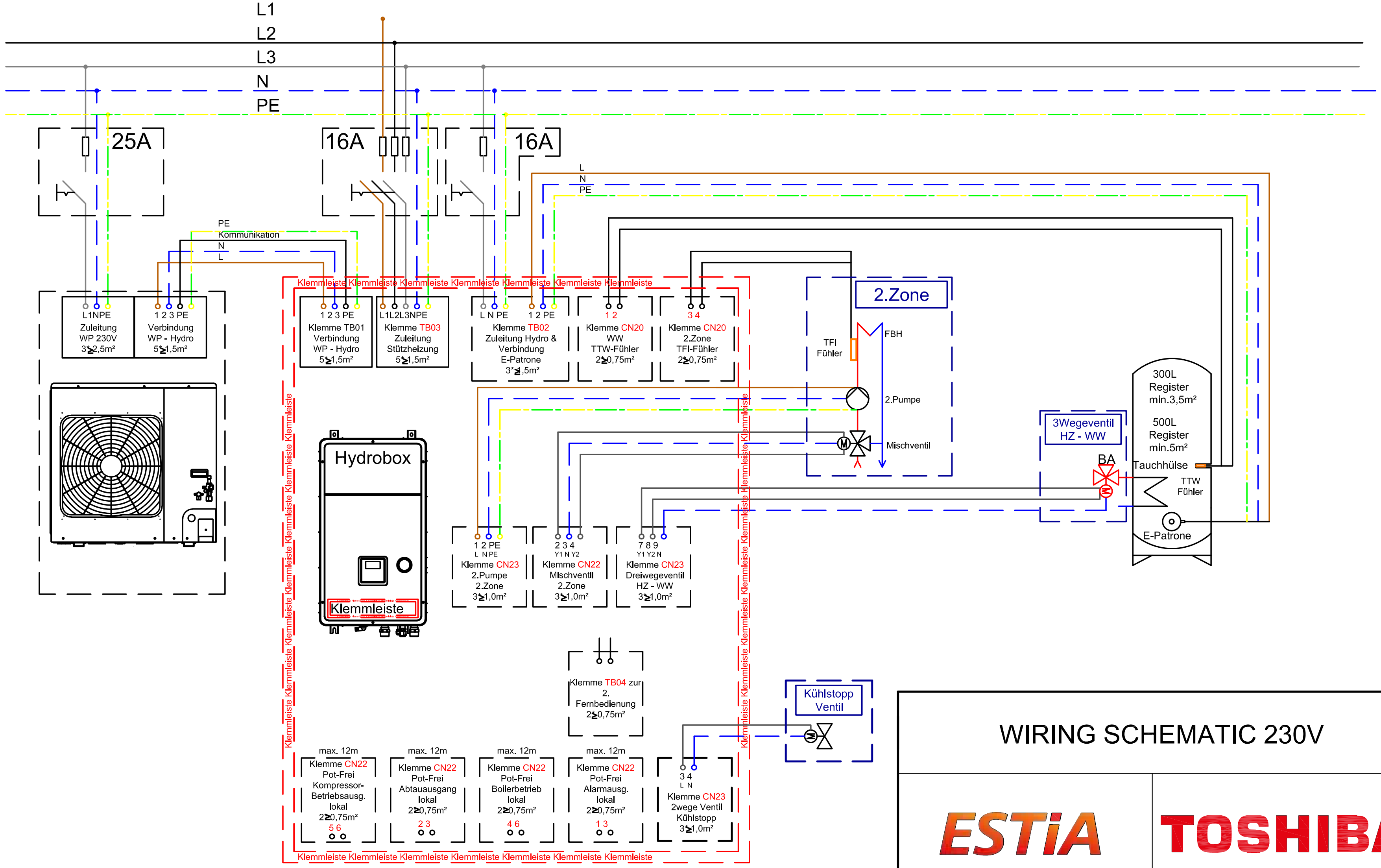
Zone valve cooling	pump
3-Way valve	stop valve
Check valve	balancing valve
Overflow valve	Thermometer
Pressure reducer	Manometer
Backflow preventer	Flushing nozzle
Safety valve	Magnetite filter
Test facility	Control line
Supply cooling	Supply heating
Return cooling	Return heating
Potable water warm	Potable water cold
Potable water circulation	Drain

SCHEMATIC 7.0
ESTIA ALL-IN-ONE

1 heating curcuit uncontrolled

Company signature	Name:	Date:
System start up:		

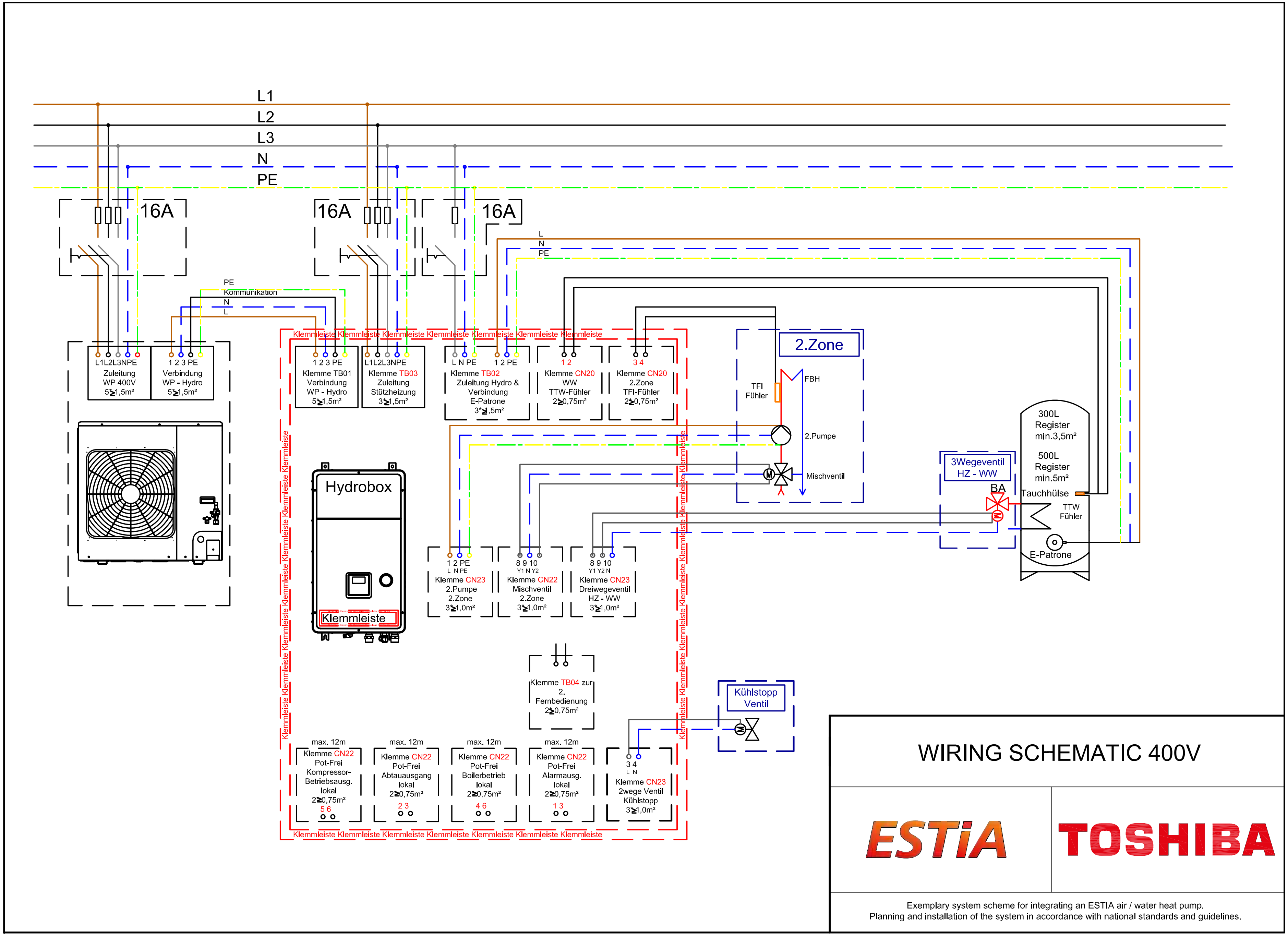
Exemplary system scheme for integrating an ESTIA air / water heat pump.
Planning and installation of the system in accordance with national standards and guidelines.



WIRING SCHEMATIC 230V

ESTiA TOSHIBA

Exemplary system scheme for integrating an ESTIA air / water heat pump.
Planning and installation of the system in accordance with national standards and guidelines.



WIRING SCHEMATIC 400V

ESTiA TOSHIBA

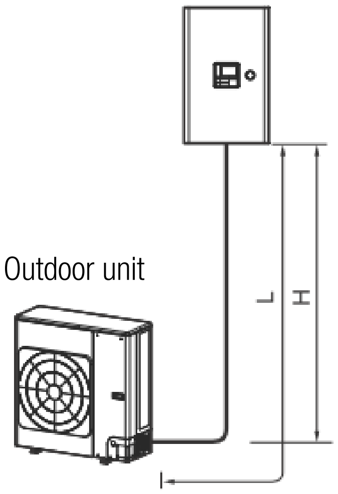
Exemplary system scheme for integrating an ESTIA air / water heat pump.
Planning and installation of the system in accordance with national standards and guidelines.

ESTIA R32 refrigerant piping

New Hydrobox hanging on the wall

ESTIA R32:
Basic refrigerant charge:
401/601 = 0.9 kg
801/1101 = 1.25 kg

NEW



ESTIA series 5:
Max. height = 10 m
Max. length = 15 m

ESTIA series 5:
Liquid pipe Ø = 9.58 mm

Outdoor unit	Max. height H (m)	Max. length L (m)	Min. length (m)	Max. unfilled (m)	Gas line (Ømm)	Liquid pipe (Ømm)
HWT-401/601HW-E	**±30**	30	5	20	12.70	6.35
HWT-801/1101H(R)W-E	±30	30	5	8	15.88	**6.35**

NEW

ESTIA R32:
Additional refrigerant charge
401/601 = 20 g/m
801/1101 = 25 g/m

NEW

The ESTIA must be installed by qualified engineers in compliance with all local and national regulations

R32 ESTIA specification - sound level

Physical data outdoors

Outdoor unit	**HWT-**	**401HW-E**	**601HW-E**	**801HW-E**	**1101HW-E**
Sound pressure level (rated) H/C @ 1 m (1)	**dB(A)**	45/46	46/46	51/50	51/51
Sound pressure level (silent mode) H/C @ 1 m (1)	**dB(A)**	**40/41**	**42/41**	**46/47**	**49/47**
Sound pressure level (rated) H/C @ 5 m (2)	dB(A)	37/38	40/39	41/40	42/40
Sound pressure level (silent mode) H/C @ 5 m (2)	**dB(A)**	**32/33**	**36/35**	**36/37**	**40/38**
Sound power level (max.) H/C	dB(A)	65/-	65/-	65/-	65/-
Sound power level (rated) H/C	**dB(A)**	59/60	62/61	63/62	64/62
Sound power level (silent mode) H/C	**dB(A)**	**54/55**	**58/57**	**58/59**	**62/60**

(1) Sound pressure level according to EN 12102 @ 1 m, sound propagation factor Q = 2, hemisphere
(2) Sound pressure level according to EN 12102 @ 5 m, sound propagation factor Q = 2, hemisphere

OAT 7°C		**4 kW**	**6 kW**	**8 kW**	**11 kW**
Rated	Heating capacity	4.00	6.00	8.00	11.20
	Sound pressure level	59	62	63	64
Silent mode	Heating capacity	2.85	4.29	5.93	8.28
	vs rated	71%	72%	74%	74%
	Sound pressure level	54	58	58	62
	vs rated	▲ 5	▲ 4	▲ 5	▲ 2

TOSHIBA

APPENDIX R32

VERSION 1.0

ESTiA

Manual for ESTIA air-to water heat pump

APPENDIX R32

MANUAL FOR ESTIA AIR-TO WATER HEAT PUMP

Version 1.0

Summary of the most important data from the original TOSHIBA manuals.

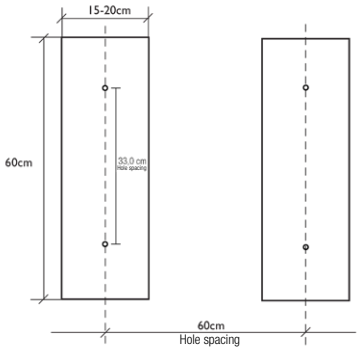
Publisher:
AIR-COND International GmbH
Haushamer Straße 2, 8054 Graz-Seiersberg

This summary in no way replaces the original technical manuals from TOSHIBA!

TABLE OF CONTENTS

Base for TOSHIBA ESTIA air-to water heat pump 4/6 kW

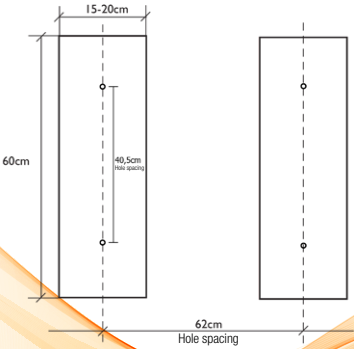
Top view



Base height: 30 cm

HWT-401HW-E
HWT-601HW-E

Base for TOSHIBA ESTIA R32 air-to water heat pump 8/11 kW



Base height: 20 cm

HWT-801HW-E
HWT-1101HW-E

Detailed dimensions can be found on page 37 onwards.

Information on the membrane expansion vessel

Both ESTIA indoor units are equipped with membrane expansion vessels ex works:

Indoor unit model	**Volume (liters)**	**Pre-pressure (bar)**
Hydrobox	8	1.5
All In One	10	0.5

The dimensioning required in relation to the installed water system is the responsibility of the specialist company carrying out the installation.
To provide a rough overview, the entire expansion volume can be determined in a simplified manner as follows:

Water content				**Expansion**	
Heating system design	**Temperature, supply/return**	**Contents**		**Temperature, supply**	**Factor**
Tubular heating element	60 / 40°C	36.2 liters/kW		40°C	0.0093
	70 / 50°C	26.1 liters/kW		50°C	0.0129
Plate-type heating element	60 / 40°C	14.6 liters/kW		60°C	0.0171
	70 / 50°C	11.4 liters/kW		70°C	0.0222
Underfloor heating	-	20 liters/kW			

1. Determine the approximate water content of the heating system:
2. Determine the approximate expansion volume:

Expansion volume = water content x expansion factor

Detailed dimensioning takes into account further parameters, however:
- The water seal required in the expansion vessel
- Pre- and final pressure of the expansion vessel
- The nominal volume of the expansion vessel

Software solutions, apps and technical literature are available for precise system planning.

Fusing and current consumption

Model HWT-	401HW-E	601HW-E	801H(R)W-E	1101H(R)W-E
Energy supply	220-240 V ~50 Hz			
Maximum running current	14.6 A		20.3 A	
Recommended fusing	16 A		25 A	
Power supply cable	2 x 2.5 mm^2 or more (H07 RN-F or 60245 IEC 66)			
Grounding cable for outdoor areas	1 x 2.5 mm^2 or more			
Hydro/outdoor connection cable	4 x 1.5 mm^2 or more (H07 RN-F or 60245 IEC 66)			

3-way changeover valve for domestic hot water preparation

3-way valve connection (diverter)

Required valve specification:

Electrical specification: 230 V; 50 Hz; <100 mA

- Valve diameter: Connection A, connection B: ⌀ 1 1/4"
- Return mechanism: Three different 3-way valves (diverters) can be used. Adjust the 3-way valve being used with the DN 6B4.

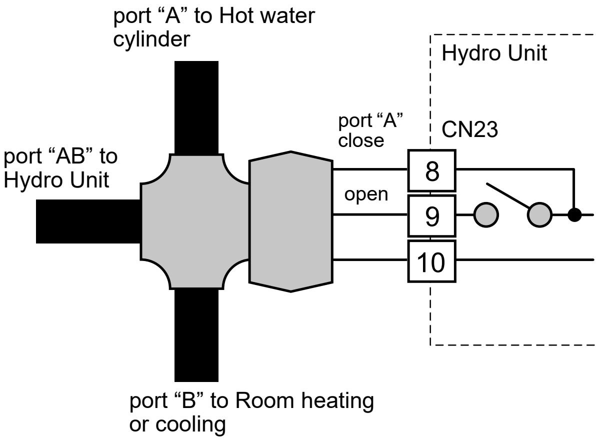
		6B4
Type 1	2-wire spring return	0
Type 2	3-wire SPST	0
Type 3	3-wire SPDT	1

NOTE
In the fully open position, the motor should not run continuously.

- The 3-way bypass valve is used to select between hot water supply or heating operation.
- Connect the 3-way bypass valve with terminals 8, 9 and 10 at CN23.
- Connect the 3-way bypass valve as shown in the following diagram:

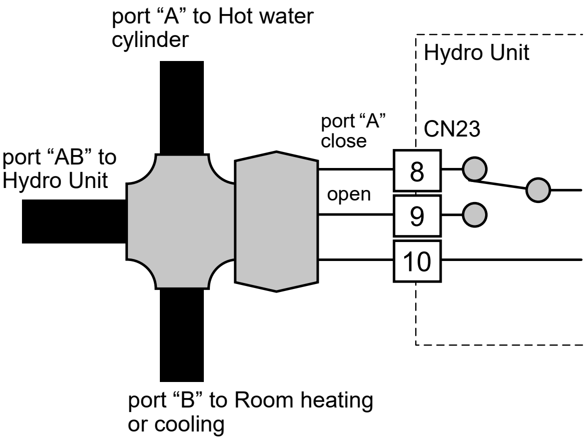
NOT recommended!

Type 2: SPST



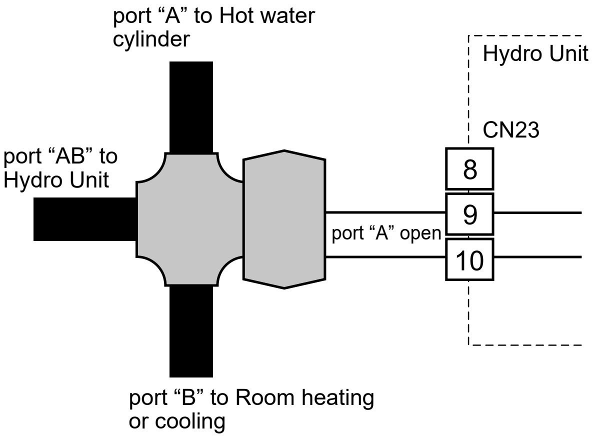
Recommended!

Type 3: SPDT



Recommended!

Type 1: SPRING RETURN



3-way mixing valve for 2nd zone

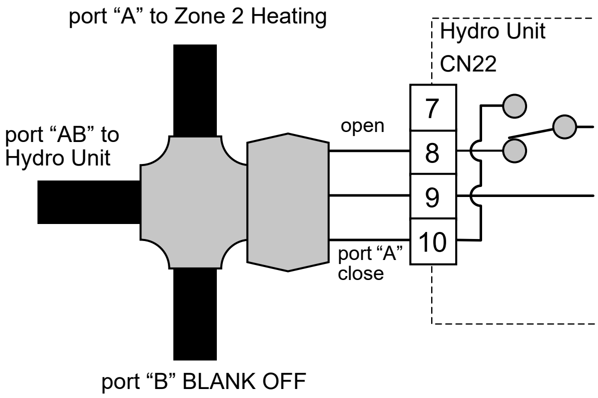
3-way mixing valve connection

Required controller specification:

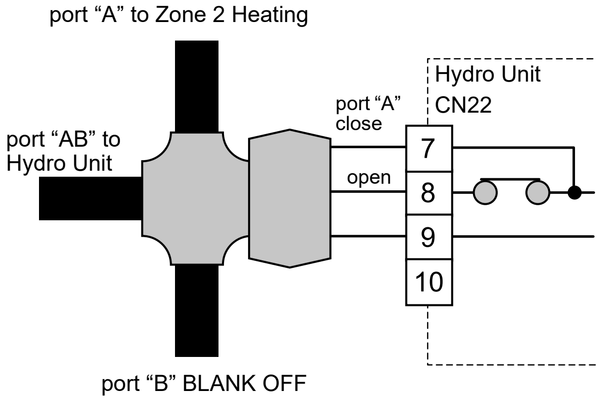
Electrical specification: 230 V; 50 Hz; <100 mA
The 3-way mixing valve is required in order to achieve the temperature difference in a 2-zone heating system.

- Connect the 3-way mixing valve with terminals 8, 9 and 10 at CN22 (for mixing valve type 1)
  or terminals 7, 8 and 9 at CN22 (for mixing valve type 2).
- Connect the 3-way mixing valve as shown in the following diagrams:

Type 1: SPDT

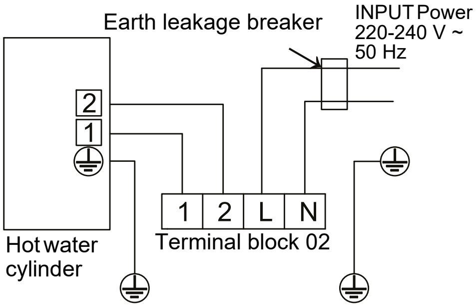


Type 2: SPST



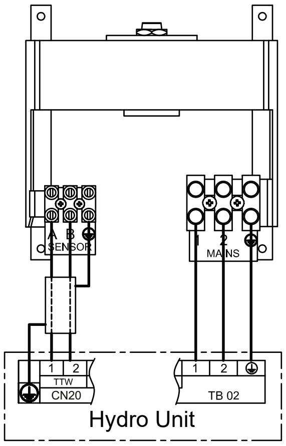
Electrical connection (electric heating system, hot water cylinder)

- The electric heating system integrated in the hot water cylinder requires a dedicated connection to the hydro unit.
- Connect the hot water cylinder heating system as follows:
  Current-carrying: Terminal L to terminal strip 02
  Neutral: Terminal N to terminal strip 02
  Grounding: Grounding terminal to terminal strip 02
- Connect the hot water cylinder heating system to the hydro unit as follows:
  Current-carrying line on hot water cylinder:
  Terminal 1 to terminal strip 03
  Neutral line on hot water cylinder:
  Terminal 2 to terminal strip 03
  Grounding line on hot water cylinder:
  Grounding terminal to terminal strip 03



Electrical connection (temperature sensor, hot water cylinder)

- Connect the temperature sensor of the hot water cylinder to terminals 1 & 2 at CN20 in the hydro unit as shown below.
- Make sure that the connection cable between the hydro unit and the hot water cylinder is grounded at both ends with the shielded cable.



Start and configuration

Select "DN for hydro unit" in the "Submenu settings" to change the DN codes of the hydro unit.
Define the following initial settings and the other set points:

Setting the DN codes of the hydro unit

*HB= Hydrobox EEPROM
*RC= Remote Control

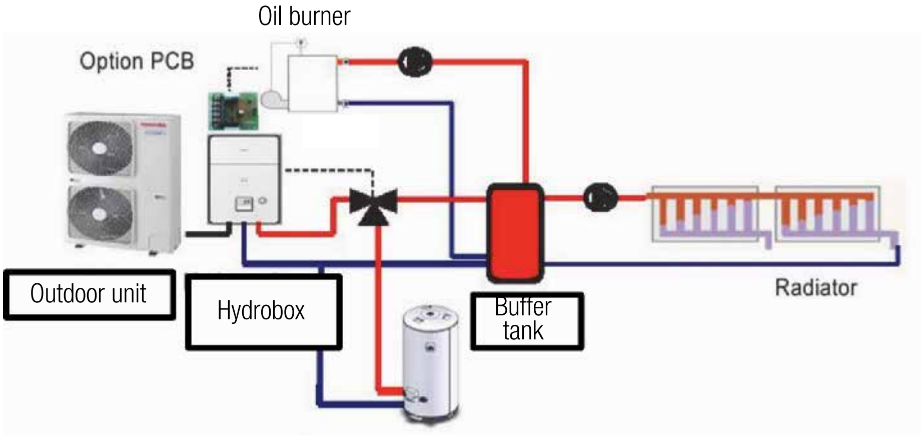
		Storage location Function code no.				
	FC description	**HB***	**RC***	**Range**	**Preset**	**Additional info**
System setup (DPSW replacement)	Used to activate the external heating output 0 = External heating output deactivated 1 = External heating output activated	6B0	-	0~1	0	Only with a bivalent heating system
	Integration of an external heating system 0 = Integrated downstream of 3-way valve 1 = Integrated upstream of 3-way valve	6B1	-	0~1	0	Only for a bivalent heating system (oil, gas, etc.) Explained in the diagrams on the next page
	If an external hot water thermostat is connected 0 = No external hot water thermostat connected 1 = External hot water thermostat connected	6B2	-	0~1	0	Use of an external hot water thermostat (TTW sensor not required)
	If an external room thermostat is used 0 = No external room thermostat 1 = External room thermostat connected	6B3	-	0~1	0	Only when using an external room thermostat
	Used to define the 3-way control valve used in the system 0 = 2-wire/spring return or 3-wire/SPST valve; 1 = 3-wire/SPDT valve	6B4	-	0~1	0	SPDT valve preferred
	Synchronization from pump P2 0 = Pump 2 runs in parallel with pump 1 1 = Continuous operation of pump 2	6B5	-	0~1	0	OFF: With a bivalent heating system, when 5B is set to 3, P2 and mixing valve control remain active ON: P2 switches off during hot water generation
	Used if a domestic hot water tank is connected to the system 0 = Domestic hot water tank connected 1 = No domestic hot water tank connected	6B8	-	0~1	0	
	For activating zone 1 operation 0 = Zone 1 activated 1 = Zone 1 deactivated	6B9	-	0~1	0	Must be set to ON if the heat pump is only used for domestic hot water generation.
	For activating zone 2 operation 0 = Zone 2 deactivated 1 = Zone 2 activated	6BA	-	0~1	0	e.g., when using radiators and underfloor heating
	P1 pump operation for heating 0 = P1 runs continuously 1 = At an outdoor temperature of over 20°C, P1 switches off	6D0	-	0~1	0	ON = From an outdoor temperature of over 20°C, the pump switches itself off. The temperature can be changed using DN code 9E.
	Pump P1 at normal output when thermo off for long periods. 0 = No operation 1 = Normal output	6D1	-	0~1	0	
	Used to activate the backup heater of the hydro unit 0 = Backup heater activated 1 = Backup heater deactivated	6D2	-	0~1	0	Backup heater in the Hydrobox: TB03 connection 3, 6, or 9 kW output
	For activating e-heating in the domestic hot water tank 0 = E-heating elements in the domestic hot water tank activated 1 = E-heating elements in the domestic hot water tank deactivated	6D3	-	0~1	0	TB02 connection Should always be set to OFF
	For activating booster heating 0 = External booster heating output activated 1 = External booster heating output deactivated	6D4	-	0~1	0	When the outdoor temperature drops below -20°C, the contact at connection CN23 / 5+6 (230 V/1 A) is activated.
	Used to activate the automatic restart following a power blackout 0 = Automatic restart deactivated 1 = Automatic restart activated	28	-	0~1	1	
	P1 pump operation for hot water 0 = P1 only runs during hot water preparation 1 = P1 runs continuously	5A	-	0~1	0	Synchronizes pump 1 with outdoor unit during hot water preparation

*HB= Hydrobox EEPROM
*RC= Remote Control

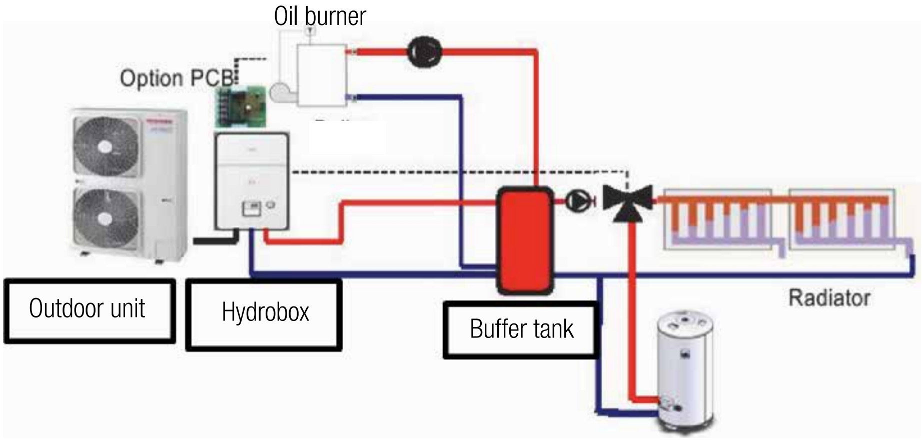
		Storage location Function code no.				
	FC description	**HB***	**RC***	**Range**	**Preset**	**Additional info**
System setup (DPSW replacement)	User-defined options for I/P7 /8 (SN21): 0: I/P 7 = Forced stop input; I/P 8 = None 1: I/P 7 = TEMPO 1 input; I/P 8 = None 2: I/P 7 = TEMPO 2 input; I/P 8 = None 3: I/P 7 = Forcefully switch off reserve heating I/P 8 = Switch off hot water externally 4: I/P 7 = SMART Grid network input 1 I/P 8 = SMART Grid network input 2	B6	-	0~4	0	
Hydrobox type setting	Hydrobox type setting: 70 = Wall-mounted Hydrobox 71 = ALL-IN-ONE Hydrobox	10	-	70 or 71	Depending on Hydrobox	
Hydrobox capacity setting	Capacity of the water-to-air heat exchanger: 0010 = 401 / 601 0015 = 801 / 1101	11	-	0010 or 0015	Depending on Hydrobox	
Outdoor unit type setting	Outdoor unit type setting 0 = 401 / 601 1 = 801 / 1101 2, 3 = None	6BD	-	0~3	Depending on type	
Addressing	Refrigeration cycle address	12	-	1~128	None	
	Indoor unit address	13	-	1~128	None	
	Group address 0= Individual (no group control) 1= Master unit 2= Slave unit	14	-	0~2	None	
	Central address	03	-	1~128	None	Used if ESTIA is controlled via a central controller.
SG Ready	The temperature increase in "Forced ON" mode (SG Ready control)	AC	-	0~10	0	
	SG Ready forced operation heating control 0 = Heating capacity permitted 1 = Heating capacity not permitted	6CE	-	0~1	0	
Energy consumption	Current consumption function used 0 = OFF 1 = ON	-	1B	0~1	1	

Integration of an external heating system (bivalent heating)

6B1=0 = Integrated downstream of 3-way valve

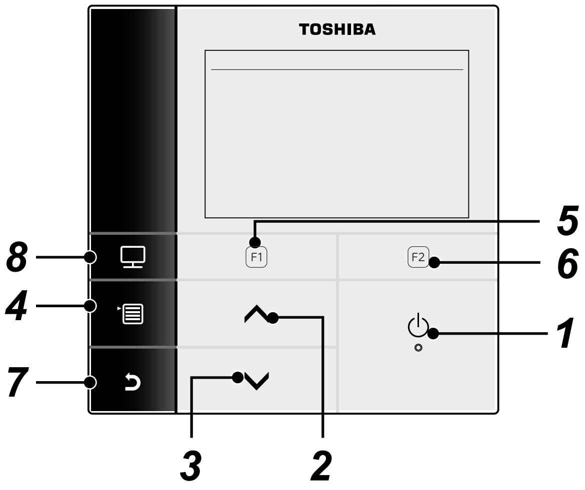


6B1=1 = Integrated upstream of 3-way valve



Names and functions of the parts

Buttons



1 Button [⏻ On/Off]

2 Button [∧]
On the top screen: For controlling the temperature.
On the menu screen or another screen: For selecting a menu item or switching each function on/off or for moving a cursor, etc.

3 Button [∨]
On the top screen: For controlling the temperature.
On the menu screen or another screen: For selecting a menu item or switching each function on/off or for moving a cursor, etc.

4 Button [☰ Menu]
On the top screen: Displays the menu screen.
On another screen: Fixes or copies the setting of the parameter value.

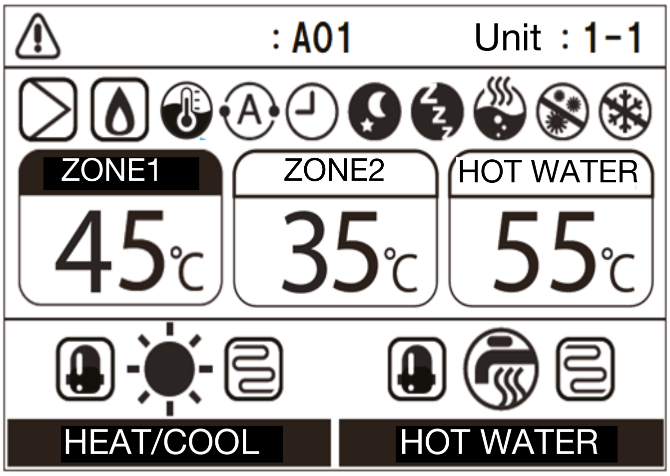
5 Button [F1]
On the top screen: Selection of heating or cooling mode.
On another screen: The function varies depending on the screen.

6 Button [F2]
On the top screen: Selection of heating or cooling mode.
On another screen: The function varies depending on the screen.

7 Button [↩ Back]
Returns to the previous screen, etc.

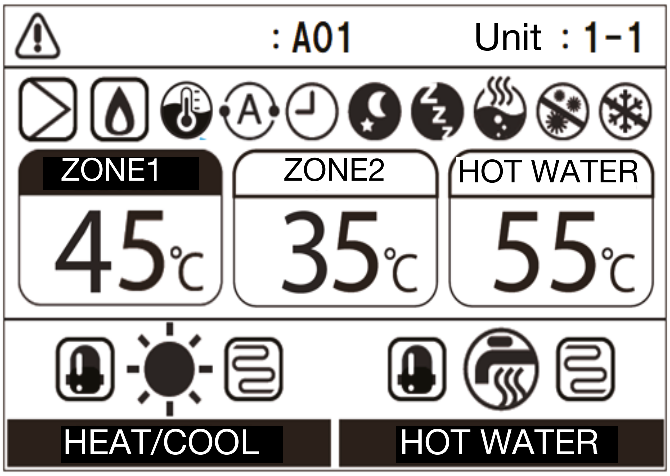
8 Button [🖵 Mode]
On the top screen: Select the mode for which the temperature is to be changed.
On another screen: Repeats the setting parameter value.

Meaning of the display on the top screen



Display	Description
ZONE1	Lights up when the system is connected to floor heating or a radiator (provided the system features underfloor heating or radiators).
ZONE2	Lights up when the second temperature is being controlled (the display may not light up depending on the system).
HOT WATER	Lights up when the hot water supply system is connected (provided the system features a hot water supply).
ZONE1	The color marking lights up for the operating mode for which the temperature is to be changed.
▣ HEAT/COOL	Lights up when the compressor for heating or cooling is in operation.
☰ HEAT/COOL	Lights up when the electric heater inside the hydro unit is being supplied with electricity during heating operation.
▣ HOT WATER	Lights up when the compressor is operating in domestic hot water supply mode.
☰ HOT WATER	Lights up when the electric domestic hot water tank heater is being supplied during domestic hot water mode.
☀	Lights up when heating is selected.
❄	Lights up when cooling is selected.
♨	Lights up while domestic hot water supply mode is selected.
▷	Lights up while the internal pump (pump 1) or the extension pump (pump 2) is being operated.
💧	Lights up when the auxiliary boiler or an additional external heater is supporting heat pump operation.
🌡 / 🌡	Lights up during water temperature control mode/room temperature control mode.
Ⓐ	Lights up during auto mode.
🕘	Lights up when the time program or screed heating is set to "On".

Meaning of the display on the top screen



Display	Description
☾	Lights up when night reset mode is set to "On" and heating or cooling is selected.
z	Lights up while low-noise operation is actually running.
♨	Lights up while domestic hot water boost is actually running.
⊘	Lights up when the legionella protection program is set to "On" and domestic hot water mode is selected.
❄	Lights up while frost protection operation is actually running.
🔧	Lights up when the test mode or screed heating is set to "On".
2	Is displayed when the remote control is set as the second remote control.
⚠	Lights up when a fault occurs and goes out when the fault has been eliminated.
⑤	Lights up when a fault occurs. This number is the unit number.
▣	Lights up when operation is limited by the setting of the central remote control.

Navigating the menu

(1) Press the [☰] button to display the menu screen.

(2) Press the [∧] / [∨] button to select an element.
The selected element is highlighted.

(3) Press the [F2] button. The settings screen appears.

To cancel

Press the [⮌] button to go back. The display returns to the previous screen.

Submenu settings

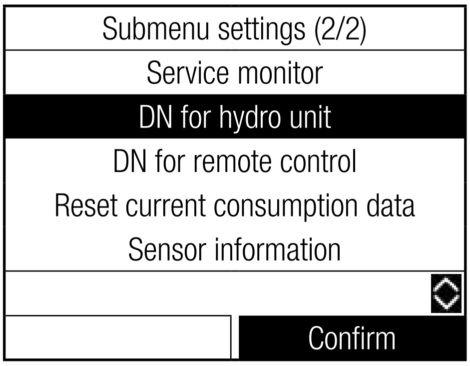
Top screen

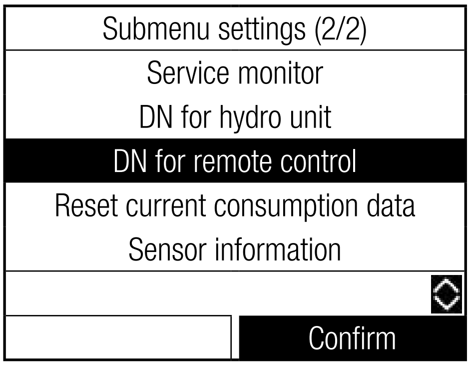
Press [☰ Menu] + [∨]
at the same time (4 s)

DN for hydro unit (DN for remote control)

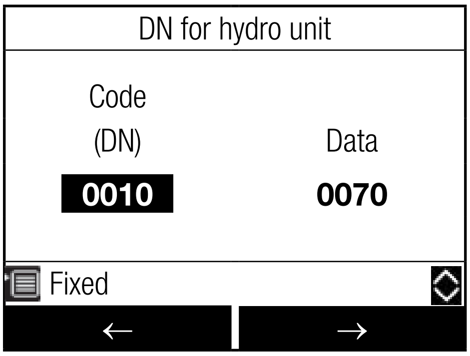
- The DN code setting for the hydro unit is only available for the main remote control.
- Set the DN codes for the various operating modes via the remote control.

(1) Press the [∧] / [∨] button to select "DN for hydro unit" (or "DN for remote control") on the "Submenu settings" screen, then press the [F2] button.



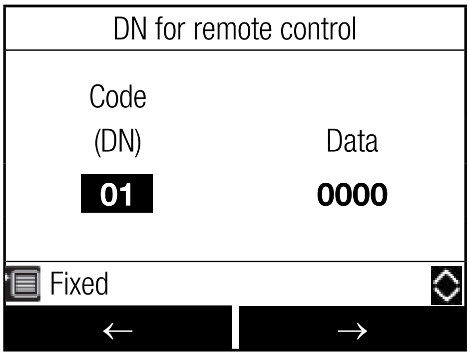


(2) Press the [F2] / [F2] button to select "DN" or "Data", then press the [∧] / [∨] button to enter the value.


DN for hydro unit

Code (DN): 0010

Data: 0070


DN for remote control

Code (DN): 01

Data: 0000

(3) Press the [☰] button. The setting is registered.

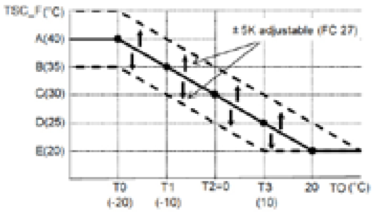
Function codes

*HB= Hydrobox EEPROM
*RC= Remote Control

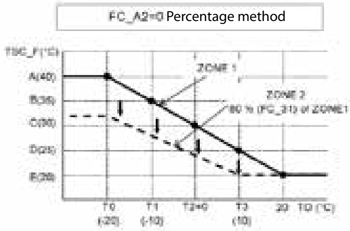
		Storage location Function code no.				
	FC description	**HB***	**RC***	**Range**	**Preset**	**Additional info**
Setting the temperature range	Upper limit temperature for zone 1 heating	1A	-	37~55°C	55	Is also the stop temperature for room temperature control
	Lower limit temperature for zone 1 heating	1B	-	20~37°C	20	
	Upper limit temperature for zone 2 heating	1C	-	37~55°C	55	
	Lower limit temperature for zone 2 heating	1D	-	20~37°C	20	Min. and max. setting range on the remote control
	Upper limit temperature for cooling	18	-	20~30°C	25	
	Lower limit temperature for cooling	19	-	7~20°C	10	Limit to +17°C when using concrete core cooling
	Upper limit temperature for domestic hot water	1E	-	60~75°C	75	
	Lower limit temperature for domestic hot water	1F	-	40~60°C	40	
Domestic hot water preparation	Start temperature for domestic hot water generation	20	-	20~45°C	38	The temperature, measured at the TTW sensor, from which domestic hot water generation is requested. Should be set to +42°C!
	Stop temperature Domestic hot water generation	21	-	40~65°C	45	The temperature, measured at the TTW sensor, from which domestic hot water generation is stopped. Should be set to +60°C!
	Group control - connection of the TTW sensor: 0 = TTW sensor for connection to each Hydrobox 1 = TTW value transferred from the master unit	AB	-	0~1	0	
	0 = 30 minutes 1 = 60 minutes 2 = 90 minutes 3 = 120 minutes	73	-	0~3	0	Defines the time that must elapse after the heat pump is switched on before the e-heating element in the domestic hot water tank is activated
	Domestic hot water cycle emergency heating	6AC	-	0 = Invalid 1-50h	24h	If the hot water function is not working, the hot water is heated within the set time period
Maximum operating time for domestic hot water generation	Maximum operating time of the heat pump for domestic hot water generation (min.)	07	-	1~120	30	The max. time that the HP may use for domestic hot water generation Attention: The backup heater in the domestic hot water tank always switches on after 30 min., only up to series 3
Hot water temperature compensation	Changeover temperature priority for heating/ domestic hot water generation, lower priority	22	-	-20~20°C	0	Outdoor temperature from which domestic hot water should be generated exclusively by the backup heater in the hot water tank
	Start temperature for domestic hot water temp. increase	24	-	-20~10°C	0	If the outdoor temperature drops below the set value, the domestic hot water temperature is increased by the correction factor
	Correction factor for domestic hot water temperature increase	25	-	0~15°C	3	Should be set to 0
Hot water booster	Operating time (x 10 min.)	08	-	3~18	6	The length of time for which the unit remains in this mode after the boost button is pressed on the remote control (e-heating element in the domestic hot water tank active).
	Domestic hot water target value	09	-	40~75°C	75	Max. temperature reached in boost mode
Anti-bacteria function	Temperature	0A	-	65~80°C	75	Temperature reached in anti-bacteria mode
	Start cycle (day)	-	0D	1~10	7	Cycle after which anti-bacteria mode should be repeated (in days)
	Start time	-	0C	0~23	22	Time at which the mode is started
	Cycle duration (min.)	0B	-	0~60	30	
Priority mode	Switchover for external heating system	23	-	-20~20°C	-10	Bivalent switchover point to oil, gas, etc.
	Priority selection: 0 = Cooling takes priority, domestic hot water is generated by additional electric heater 1 = Domestic hot water takes priority, domestic hot water is generated by heat pump	0F	-	0~1	0	Method by which hot water should be generated in cooling mode

*HB= Hydrobox EEPROM
*RC= Remote Control

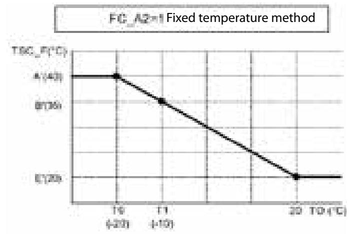
<table>
<tr><th></th><th></th><th colspan="2">Storage location Function code no.</th><th></th><th></th><th></th></tr>
<tr><th></th><th>FC description</th><th>HB*</th><th>RC*</th><th>Range</th><th>Preset</th><th>Additional info</th></tr>
<tr><td rowspan="14">Settings:
automatic
curve for heating</td><td>Outdoor temperature T0 (°C)</td><td>A1</td><td>–</td><td>-20 (-30)~
-15 (-20)°C</td><td>-20</td><td rowspan="10">Zone 1:



Zone 1+2:



Auto curve in ZONE 2 controls 80% (FC31) of Zone 1.
The water temperature setting does not drop below 20°C.</td></tr>
<tr><td>Outdoor temperature T1 (°C)</td><td>29</td><td>–</td><td>-15~0°C</td><td>-10</td></tr>
<tr><td>Outdoor temperature T3 (°C)</td><td>2B</td><td>–</td><td>0~15°C</td><td>10</td></tr>
<tr><td>Setting of temperature A to T0 (°C) - ZONE 1</td><td>2C</td><td>–</td><td>20~55°C (65°C)</td><td>40</td></tr>
<tr><td>Setting of temperature B to T1 (°C) - ZONE 1</td><td>2D</td><td>–</td><td>20~55°C (65°C)</td><td>35</td></tr>
<tr><td>Setting of temperature C to T2 (°C) - ZONE 1</td><td>2E</td><td>–</td><td>20~55°C (65°C)</td><td>30</td></tr>
<tr><td>Setting of temperature D to T3 (°C) - ZONE 1</td><td>2F</td><td>–</td><td>20~55°C (65°C)</td><td>25</td></tr>
<tr><td>Setting of temperature E to 20°C (°C) - ZONE 1</td><td>30</td><td>–</td><td>20~55°C
(65°C)</td><td>20</td></tr>
<tr><td>Ratio of Zone 2 to Zone 1 auto mode (%)</td><td>31</td><td>–</td><td>0~100%</td><td>80</td></tr>
<tr><td>ZONE 2
Temperature setting
0 = Percentage (DN 31)
1 = Set value (DN A3~A5)</td><td>A2</td><td>–</td><td>0~1</td><td>0</td></tr>
<tr><td>Setting of temperature A’ to T0 (°C) - ZONE 2</td><td>A3</td><td>–</td><td>20~55°C
(65°C)</td><td>40</td><td rowspan="4">Zone 2:



Set temperature in ZONE2 for A’ °C at an outdoor temperature of T0°C, B’ °C at T1°C, E’ °C at 20°C</td></tr>
<tr><td>Setting of temperature B’ to T1 (°C) - ZONE 2</td><td>A4</td><td>–</td><td>20~55°C
(65°C)</td><td>35</td></tr>
<tr><td>Setting of temperature E’ to 20°C (°C) - ZONE 2</td><td>A5</td><td>–</td><td>20~55°C
(65°C)</td><td>20</td></tr>
<tr><td>Automatic curve - temperature change (°C)</td><td>27</td><td>–</td><td>-5~5°C</td><td>0</td></tr>
<tr><td rowspan="4">Frost protection</td><td>Frost protection
0 = Invalid
1 = Valid</td><td>3A</td><td>-</td><td>0-1</td><td>1</td><td>Frost protection ON/OFF</td></tr>
<tr><td>Frost protection target value (°C)</td><td>3B</td><td>-</td><td>10-20°C</td><td>15</td><td>Supply water temp. target value in frost protection mode should be set to +20°C</td></tr>
<tr><td>Holiday function: Days</td><td>-</td><td>12</td><td>0-20</td><td>0</td><td>Number of days the mode remains in operation</td></tr>
<tr><td>Holiday function: Start time</td><td>-</td><td>13</td><td>0-23</td><td>0</td><td>Time of day at which the mode is ended</td></tr>
<tr><td rowspan="5">Backup heater control</td><td>Electric heating coil downward control
Heat pump 0 = 5 min.;
1 = 10 min.; 2 = 15 min.; 3 = 20 min.</td><td>33</td><td>-</td><td>0-3</td><td>1</td><td>Upward and downward control of the backup heater stages based on the difference between the set temperature defined on the remote control and the supply water temperature downstream of the backup heater (THO sensor)</td></tr>
<tr><td>Electric heating coil upward control
Heat pump 0 = 10 min.; 1 = 20 min.
2 = 30 min.; 3 = 40 min.</td><td>34</td><td>-</td><td>0-3</td><td>0</td><td>Set to 3 when using a buffer tank</td></tr>
<tr><td>0= No restriction
1= 20°C 3= 10°C 5= 0°C
2= 15°C 4= 5°C 6= -5°C</td><td>B8</td><td>-</td><td>0-6</td><td>0</td><td>Outdoor temperature from which the backup heater is no longer switched on (measured at the TO sensor)</td></tr>
<tr><td>0= 0K 2= 20K 4= 40K
1= 10K 3= 30K</td><td>B9</td><td>-</td><td>0-4</td><td>0</td><td>Temperature difference between TSC-F (target heating value, e.g., Zone 1 +40°C) - THO (Sensor downstream of backup heater, e.g., +10°C) = 30 K (if, e.g., B9 = 3 is set, the backup heater would switch on at 3 kW at +10°C THO temperature.)</td></tr>
<tr><td>Capacity of the backup heater
0 = 3 kW
1 = 6 kW
2 = 9 kW</td><td>6BC</td><td>-</td><td>0~2</td><td>Dependent on type</td><td></td></tr>
<tr><td rowspan="4">Night setback (do not use with FBH)</td><td>Night setback temperature</td><td>26</td><td>-</td><td>3-20°C</td><td>5</td><td>Kelvin by which the temperature is reduced</td></tr>
<tr><td>Zone selection 0= Zone 1&2; 1= Zone 1</td><td>58</td><td>-</td><td>C0~1</td><td>0</td><td>Zones in which the temperature is reduced</td></tr>
<tr><td>Start time</td><td>-</td><td>OE</td><td>0~23</td><td>22</td><td>Time at which the night setback begins</td></tr>
<tr><td>End time</td><td>-</td><td>OF</td><td>0~23</td><td>6</td><td>Time at which the night setback ends</td></tr>
</table>

*HB= Hydrobox EEPROM
*RC= Remote Control

		Storage location Function code no.				
	FC description	**HB***	**RC***	**Range**	**Preset**	**Additional info**
Room temperature control with second wired remote control or external room thermostat	Room temperature control with second remote control: 0 = Invalid; 1 = Valid	40	-	0~1	0	Second remote control, target temperature setting 0 = Water temperature 1 = Room temperature (sensor on remote control)
	Cooling room temperature, upper limit	92	-	15~30	29	Settings on the remote control
	Cooling room temperature, lower limit	93	-	15~30	18	
	Heating room temperature, upper limit	94	-	15~30	29	
	Heating room temperature, lower limit	95	-	15~30	18	
	Start temperature in cooling mode, either with room temperature sensor on the remote control or external room temperature sensor	96	-	10~25	20	Supply water temperature at which the heat pump starts; =20°C If the set temperature set on the external room thermostat or on the second remote control is not reached, the supply water temp. is lowered by 1°C every 1/2 h until the limit temperature (FC 19) or set temperature is reached
	Start temperature in heating mode, either with room temperature sensor on the remote control or external room temperature sensor	9D	-	20~55 401/ 601 65 801/1101	40	Supply water temperature at which the heat pump starts; =40°C If the set temperature set on the external room thermostat or on the second remote control is not reached (room sensor), the supply water temp. is increased by 1°C every 1/2 h until the limit temperature (FC 1A) or set temperature is reached
	HiPower restarts water temperature in Zone A. (Only valid with room temperature control by means of 2nd remote control)	B2	-	20~37	25	A Zone = Thermo off; but if TWi < 25°C heat pump restarts to prevent underfloor heating from cooling
	Start temperature in heating mode, control setting by means of room temperature remote control or room temperature thermostat	B5	-	0~1	0	0 = Fixed value as per FC 9D 1 = Calculated value based on auto curve
	Room temperature compensation: Heating: Room temperature compensation value (sensor temperature control temperature, K)	-	02	-10~10	-1	Adjusts the measured difference between the room temperature sensor on the remote control and the actual room temperature
	Room temperature compensation: Cooling: Room temperature compensation value (sensor temperature control temperature, K)	-	03	-10~10	-1	Adjusts the measured difference between the room temperature sensor on the remote control and the actual room temperature
2-way valve operation output (cooling mode)	Reversal of the switching logic for the 2-way cooling stop valve	3C	-	0~1		0 = Output assigned 230 V for cooling 1 = Output voltage-free during cooling
Control of the hydraulic 3-way control valve	Reversal of the switching logic for the 3-way changeover valve / domestic hot water	54		0~1	0	0 = Voltage during hot water preparation 1 = Voltage-free during hot water preparation
Mixing valve runtimes, 2 zones	3-way mixing valve runtime (x 10 sec.)	0C	-	3~24	6	Runtime of the valve motor between fully open and closed, different depending on make. Must be set prior to commissioning! Only use valves with 10-second increments e.g., 90 sec., 100 sec., etc. (range 30 - 240 sec.)
	Actuation of 3-way mixing valve (min.)	59	-	1~30	2	Interval at which the valve readjusts (Recommendation: 1 min.)
	Temperature difference for changing the opening value of the mixing valve	6F1	-	1~3	2	
	Maximum stages of the mixing valve	6F2	-	12~60	24	
Boiler/heat pump synchronization	External heating/heat pump synchronization 0 = Synchronized 1 = Not synchronized	3E	-	0~1	0	
	0 = HP + hot water generation 1 = Hot water generation only 2 = E-heating element function only up to 60 min. 3 = HP + circulation pump STOP	5B	-	0~3	3	
	Activate / deactivate error code A02 (high water return control): 0 = A02 activated 1 = A02 deactivated	62	-	0~1	0	
Cooling mode	0 = Cooling & heating 1 = Heating operation only	02	-	0~1	0	For activating cooling mode
Remote control display	24 h or 12 h time display 0 = 24 h; 1 = 12 h	-	05	0~1	0	Defines whether 24-hour or 12-hour format should be displayed on the remote control
Low-noise night mode	Low-noise night mode 0 = Invalid; 1 = Valid	-	09	0~1	0	Restricts the maximum output of the HP to 75%, thereby achieving a noise reduction
	Start time	-	0A	0~23	22	
	End time	-	0B	0~23	6	

*HB= Hydrobox EEPROM
*RC= Remote Control

		Storage location Function code no.				
	FC description	HB*	RC*	Range	Preset	Additional info
Alarm sounds	Sound 0 = Off; 1 = ON	-	11	0~1	1	Defines whether an acoustic signal sounds in the event of a fault
Control Pump 1 + 2	0 = Pump 1 stops when heat pump has switched off in domestic hot water mode and E-element in the tank has switched on and there is no request for heating 1 = Pump 1 runs continuously	5A	-	0~1	0	Pump control during domestic hot water generation
	Pump P2 operation in cooling mode: 0 = P2 continuous operation 1 = P2 stops in cooling mode	64	-	0~1	0	
	Synchronizes pump P1 with room thermostat: 0 = P1 continuous operation 1 = P1 synchronizes with room temperature sensor. If a room temperature sensor or external room thermostat is used. P1 is stopped when HP is in Thermo OFF mode	65	-	0~1	0	If a room thermostat is present; control based on room temperature (only to be used for radiators, not for underfloor heating)
	Pump P1 operation: Upper outdoor temperature limit in heating mode P1 stops > target value for switch-off point	9E	-	10~30	20	Outdoor temperature from which the heat pump switches off, if DN code 6D0 = 1
	T0 diff. temperature when P1 stops	6E	-	1~5	2	In conjunction with 9E, hysteresis when pump 1 switches back on
	0 = 100% 3 = 70% 1 = 90% 4 = 60% 2 = 80% 5 = 50%	A0	-	0~5	0	Pump 1 can be controlled in 6 different speed stages
	Pump P1 speed control method: 0 = Fixed speed control (with DN A0) 1 = Variable speed control	6A6	-	0~1	1	
	Speed correction pump P1 for pump control with variable speed: 0 = 100% flow max. 1 = 90% flow max. 2 = 75% flow max. 3 = 50% flow max.	6A7	-	0~3	0	
	Speed control pump P2 (fixed speed): 0 = 100% 1 = 80% 2 = 70% flow max. 3 = 60%	6A1	-	0~3	0	
	P1 interval function, heating 0= Continuous operation 1= 20°C 3= 10°C 5= 0°C 2= 15°C 4= 5°C 6= -5°C	BA	-	0-6	0	Outdoor temperature from which ESTIA switches P1 to interval mode with the Thermo off status
	P1 interval function, cooling 0= Continuous operation 2= 30°C 1= 35°C 3= 25°C	BB	-	0-3	0	Outdoor temperature from which ESTIA switches P1 to interval mode with the Thermo off status
	Pump P2 display	42	-	0~1	0	0 = P2 is not shown on the display 1 = P2 is shown on the display
	P1 off interval 0= 5 min. 2= 15 min. 4= 25 min. 1= 10 min. 3= 20 min. 5= 30 min.	BC	-	0-5	0	Defines the interval time for P1 when ESTIA has the Thermo off status (pump downtime)
External On/Off	Input signal setting when using I/P7 / 8 (ON21) as forced system STOP (and DN B6 = 0) 0 = Contacts closed > high system stop. System restart with remote control 1 = Contacts open > low system stop. System restart with remote control	52	-	0~1	0	External On/Off via contacts I/P7/8 Function via pulse contact (button function)
	Input signal setting when using I/P5 / 6 (CN21): 0 = Contacts open > low system stop. Contacts closed > high system restart 1 = Contacts closed > high system stop. Contacts closed > high (2nd time - pulse input) system restart	61	-	0~1	0	DN=B6="0"

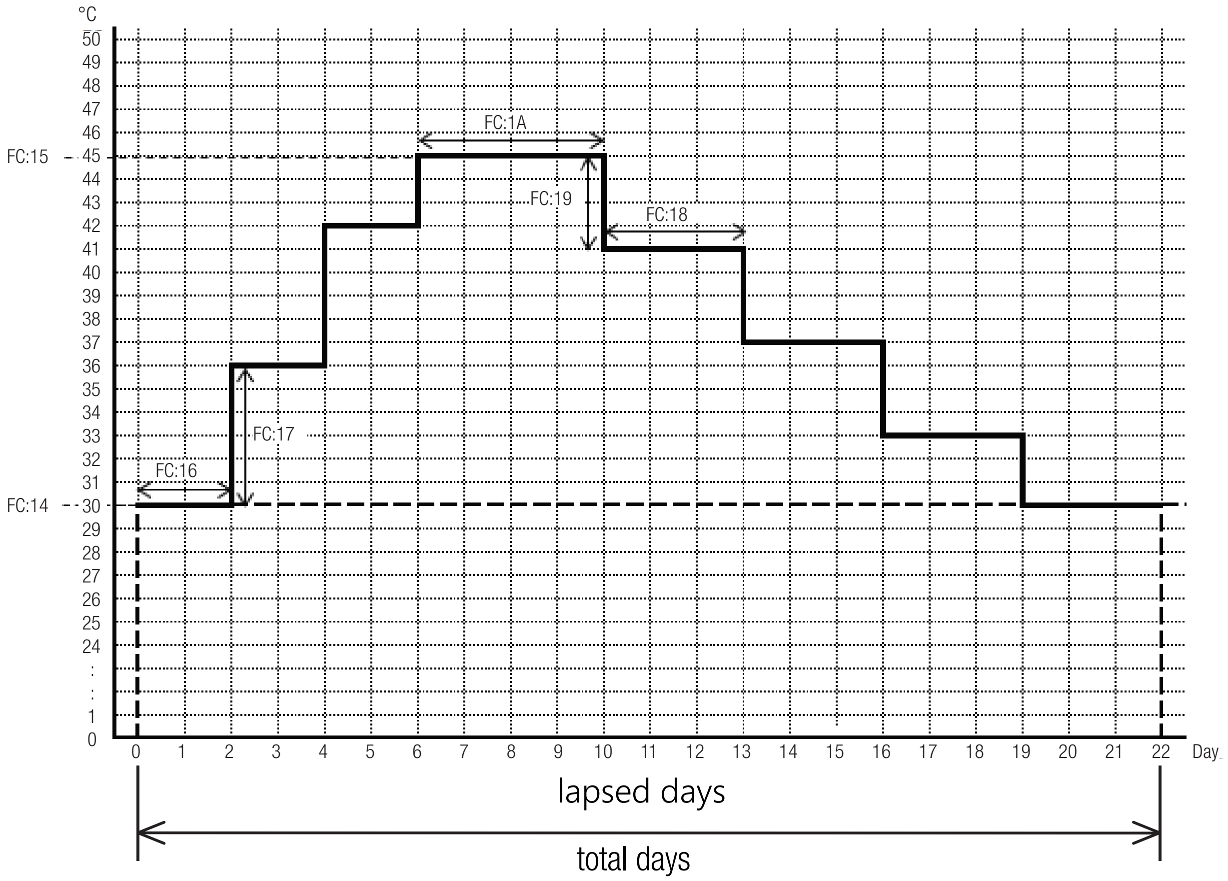
*HB= Hydrobox EEPROM
*RC= Remote Control

		Storage location Function code no.				
	FC description	**HB***	**RC***	**Range**	**Preset**	**Additional info**
Hydrobox digital outputs	Output 1 options: 0 = Alarm output 1 = Compressor operating output 2 = Defrost operating output 3 = Boiler control output 4 = Safety or protection control running 5 = Backup heater ON 6 = Hot water tank heating ON 7 = Heating mode ON 8 = Cooling mode ON 9 = Hot water preparation mode ON	6CA	-	0~9	0	
	Output 2 options: 0 = Alarm output 1 = Compressor operating output 2 = Defrost operating output 3 = Boiler control output 4 = Safety or protection control running 5 = Backup heater ON 6 = Hot water tank heating ON 7 = Heating mode ON 8 = Cooling mode ON 9 = Hot water preparation mode ON	6CC	-	0~9	2	
	Output 3 options: 0 = Alarm output 1 = Compressor operating output 2 = Defrost operating output 3 = Boiler control output 4 = Safety or protection control running 5 = Backup heater ON 6 = Hot water tank heating ON 7 = Heating mode ON 8 = Cooling mode ON 9 = Hot water preparation mode ON	6CD	-	0~9	3	
	Output 4 options: 0 = Alarm output 1 = Compressor operating output 2 = Defrost operating output 3 = Boiler control output 4 = Safety or protection control running 5 = Backup heater ON 6 = Hot water tank heating ON 7 = Heating mode ON 8 = Cooling mode ON 9 = Hot water preparation mode ON	6CB	-	0~9	1	
0-10 V interface (optional)	ESTIA control type: 0 = Normal control 1 = Target temperature control (DN 681~DN 684) 2 = Direct capacity control - HTG/CLG mode (AI1) 3 = Direct capacity control - hot water (AI 2) 4 = Direct capacity control - HTG/CLG (AI 1) & hot water (AI 2)	680	-	0~4	0	
	Hot water set temperature - selection of analog input (AI) 0 = Analog input not used 1 = AI 1 2 = AI 2 3 = AI 3	681	-	0~3	0	
	Zone 1 set temperature (HTG) - selection of analog input 0 = Analog input not used 1 = AI 1 2 = AI 2 3 = AI 3	682	-	0~3	0	
	Zone 2 set temperature (HTG) - selection of analog input 0 = Analog input not used 1 = AI 1 2 = AI 2 3 = AI 3	683	-	0~3	0	
	Zone 1 set temperature (CLG) - selection of analog input 0 = Analog input not used 1 = AI 1 2 = AI 2 3 = AI 3	684	-	0~3	0	
	Upper limit of hot water set temperature	685	-	40~80	65	
	Accuracy of hot water set temperature	689	-	1~5	5	
	Upper limit of Zone 1 set temperature (HTG)	686	-	20~55 (65)	55	
	Accuracy of Zone 1 set temperature (HTG)	68A	-	1~5	3	
	Upper limit of Zone 2 set temperature (HTG)	687	-	20~55 (65)	55	
	Accuracy of Zone 2 set temperature (HTG)	68B	-	1~5	3	
	Upper limit of Zone 1 set temperature (CLG)	688	-	7~29	20	
	Accuracy of Zone 1 set temperature (CLG)	68C	-	1~5	1	

*HB= Hydrobox EEPROM
*RC= Remote Control

		Storage location Function code no.				
	FC description	**HB***	**RC***	**Range**	**Preset**	**Additional info**
Screed drying program	Screed drying setting 0 = OFF 1 = ON	-	1D	0~1	0	
	Start and end temperature setting (°C)	-	14	20~55	0	
	Maximum temperature setting (°C)	-	15	20~55	0	
	Continuous days for each step up to maximum temperature (days)	-	16	1~7	0	
	Temperature difference for each step up to maximum temperature (K)	-	17	1~10	0	
	Continuous days for each step down to end temperature (days)	-	18	1~7	0	
	Temperature difference for each step down to end temperature (K)	-	19	1~10	0	
	Continuous days at maximum temperature (days)	-	1A	1~30	0	

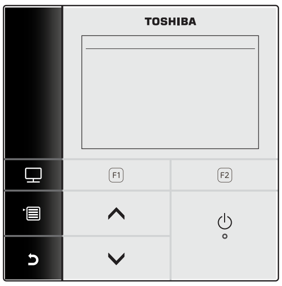
Screed diagram



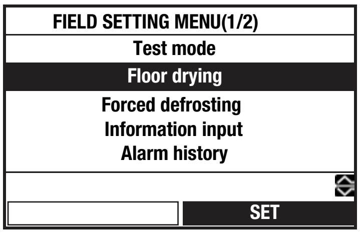
Floor drying program

- This function is only available with the master remote control.
- This function is used for drying concrete.
- Service personnel must operate the unit after setting the corresponding function code.
- Operation does not start until all corresponding function codes have been set.
- Note the following settings.
  Please consult the person responsible for the installation.
  Improper setup can cause a crack in the concrete, etc.
- Once operation starts, the unit works as follows:

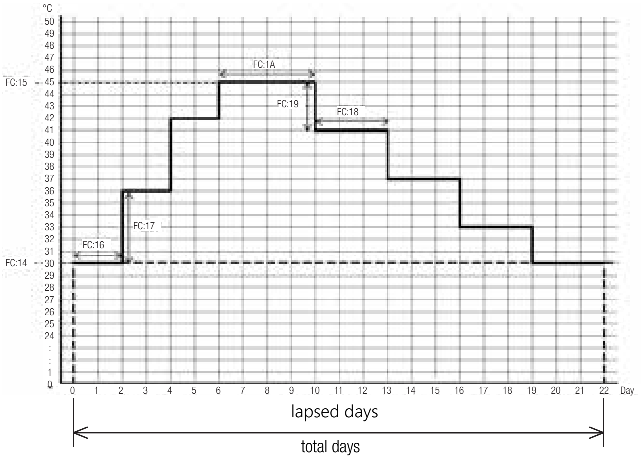
1 Press the [▤] and [∨] buttons at the same time for at least 4 seconds or longer on the top screen in order to access the "FIELD SETTING MENU" menu item.



2 Press the [∧] / [∨] buttons to select "Floor bake-out program" in the FIELD SETTING MENU. Then press [F1] for 4 seconds or longer.

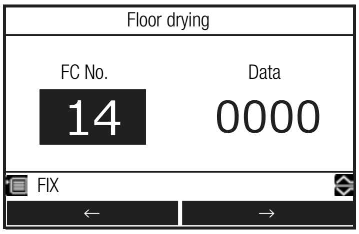

FIELD SETTING MENU(1/2)
Test mode
Floor drying
Forced defrosting
Information input
Alarm history
SET

FC:14	Start and end temperature setting [20-55°C]
FC:15	Maximum temperature setting [20-55°C]
FC:16	Continuous days for each step up to maximum temperature [1-7 days]
FC:17	Temperature difference for each step up to maximum temperature [1-10 K]
FC:18	Continuous days for each step up to end temperature [1-7 days]
FC:19	Temperature difference for each step up to end temperature [1-10 K]
FC:1A	Continuous days at maximum temperature [1-30 days]



3 Press [F1] / [F2] to select the FC number or data, then press the [∨] / [∧] buttons to set the values.

4 Press [▤]. The set values are saved.


Floor drying
FC No. 14
Data 0000
FIX
←
→

Function check via PCB switch

Function check mode

In this mode, the functions of the 2-way valve, the 3-way valve, the mixing valve, and the circulation pump can be checked. This process applies when the Hydrobox and outdoor unit are switched on.

Function check mode

(1) Preparation

1) Switch all remote controls for hot water supply and heating to "OFF".
2) Switch off the Hydrobox and the outdoor unit.
3) Remove the front panel of the Hydrobox.
4) Set DIP_SW705_3 to "ON".

(2) Function check

1) Switch on the Hydrobox and the outdoor unit.
2) Turn the SW700 rotary switch to position "0" and press the SW703 key switch for 5 seconds or longer.
3) Each process can be checked by turning the SW700.
4) Set DIP_SW705_3 to "OFF" to complete the process.

Rotary switch	Check of the content		Comment
0	Not used		OP.CH
1	2-way valve	Active for approx. 2 seconds, inactive for 3 seconds	2.ON ↔ 2.OFF
2	3-way valve	Active for 4 minutes (heating/cooling) Active for 4 minutes (hot water preparation)	7-segment display ON → Heating, OFF → Hot water 3.ON ↔ 3.OFF
3	Mixing valve	Active for 30 seconds in the forward direction Active for 30 seconds in the reverse direction	F.ON ↔ F.OFF
4	Integrated circulation pump	Active / inactive for 20 seconds	P.ON ↔ P.OFF
5	External circulation pump 2	Active / inactive for 20 seconds	P2.ON ↔ P2.OFF
6	Not used		
7	Water heating backup heater	Repeat Heating 1, Heating 2 and OFF every 20 seconds	The integrated circulation pump is active. H.ON ↔ H.OFF
8	Hot water generator	Active / inactive for 20 seconds	dH.ON ↔ dH.OFF
9	Booster heating	Active / inactive for 20 seconds	The integrated circulation pump and external circulation pump are active. bH.ON ↔ bH.OFF
A	Check the alarm output.	Output for 20 sec. / no output for 20 sec.	01.ON ↔ 01.OFF
B	Check the boiler output.	Output for 20 sec. / no output for 20 sec.	02.ON ↔ 02.OFF
C	Check the defrost output.	Output for 20 sec. / no output for 20 sec.	03.ON ↔ 03.OFF
D	Check the operating output.	Output for 20 sec. / no output for 20 sec.	04.ON ↔ 04.OFF
E	Not used		
F	Integrated circulation pump Continuous operation	Continuous operation	Continuous operation of the circulation pump does not work if there is no water in the Hydrobox. P1.ON ↔Flow display

Submenu settings

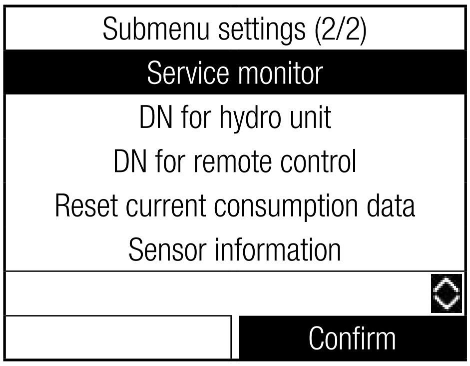
Top screen

Press [☰ Menu] + [∨]
at the same time (4 s)

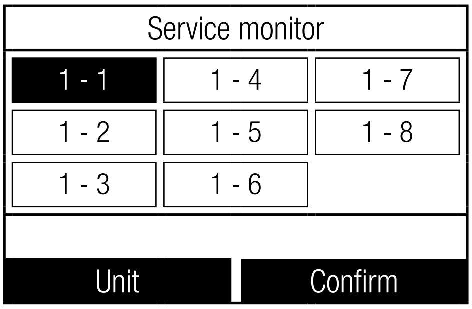
Service monitor

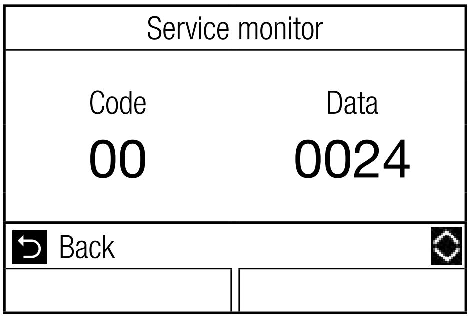
- The temperature of the sensor is displayed on the remote control.
- This function can be used to check whether the sensor is correctly installed.

(1) Press the [∧] / [∨] button to select "Service monitor" on the "Submenu settings" screen, then press the [F2] button.



(2) Press the [F1] button to select the unit, then press the [F2] button to display the status.





Code 00
Data 0024

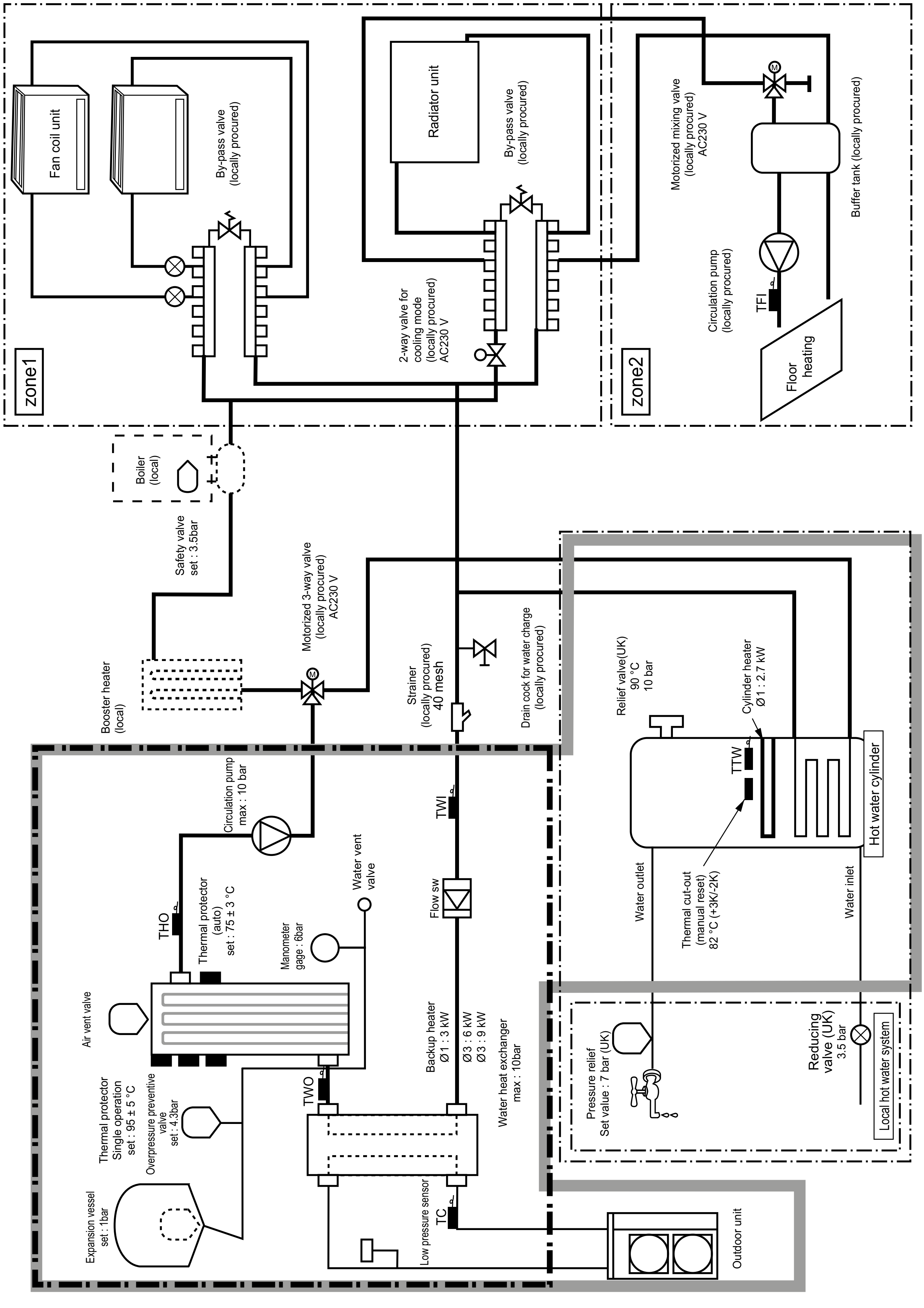
	Code	Data designation	Unit
Hydro unit data	00	Control temperature (hot water cylinder)	°C
	01	Control temperature (Zone 1)	°C
	02	Control temperature (Zone 2)	°C
	03	Remote control sensor temperature	°C
	04	Condensation temperature (TC)	°C
	06	Water inlet temperature (TWI)	°C
	07	Water outlet temperature (TWO)	°C
	08	Water heating outlet temperature (THO)	°C
	09	Floor input temperature (TFI)	°C
	0A	Hot water cylinder temperature (TTW)	°C
	0B	Position of the mixing valve	Step
	0E	Low pressure (Ps) x 100	MPa
	0F	Hydro Soft Ver.	-

	Code	Data designation	Unit
Outdoor unit data	60	Heat exchange temperature (TE)	°C
	61	Outdoor air temperature (TO)	°C
	62	Drain temperature (TD)	°C
	63	Intake temperature (TS)	°C
	65	Heat sink temperature (THS)	°C
	6A	Current x 10	A
	6D	Temperature of the heat exchanger coil (TL)	°C
	70	Compressor operation Hz	Hz
	72	Number of revolutions of the outdoor fan (low or model with 1 fan)	rpm
	73	Number of revolutions of the outdoor fan (high)	rpm
	74	Outdoor PMV position x 1/10	pls
	7A	Discharge pressure (PD) x 1/10	kPa

	Code	Data designation	Unit
Hydro unit data	F0	Microprocessor-supplied accumulation time x 1/100	h
	F1	Domestic hot water compressor ON accumulation time x 1/100	h
	F2	Cooling water compressor ON accumulation time x 1/100	h
	F3	Heating compressor ON accumulation time x 1/100	h
	F4	Operation of integrated WS pump accumulation time x 1/100	h
	F5	Accumulation time for operation of domestic hot water cylinder heating x 1/100	h
	F6	Accumulation time for operation of auxiliary heating x 1/100	h
	F7	Accumulation time for operation of additional heating x 1/100	h

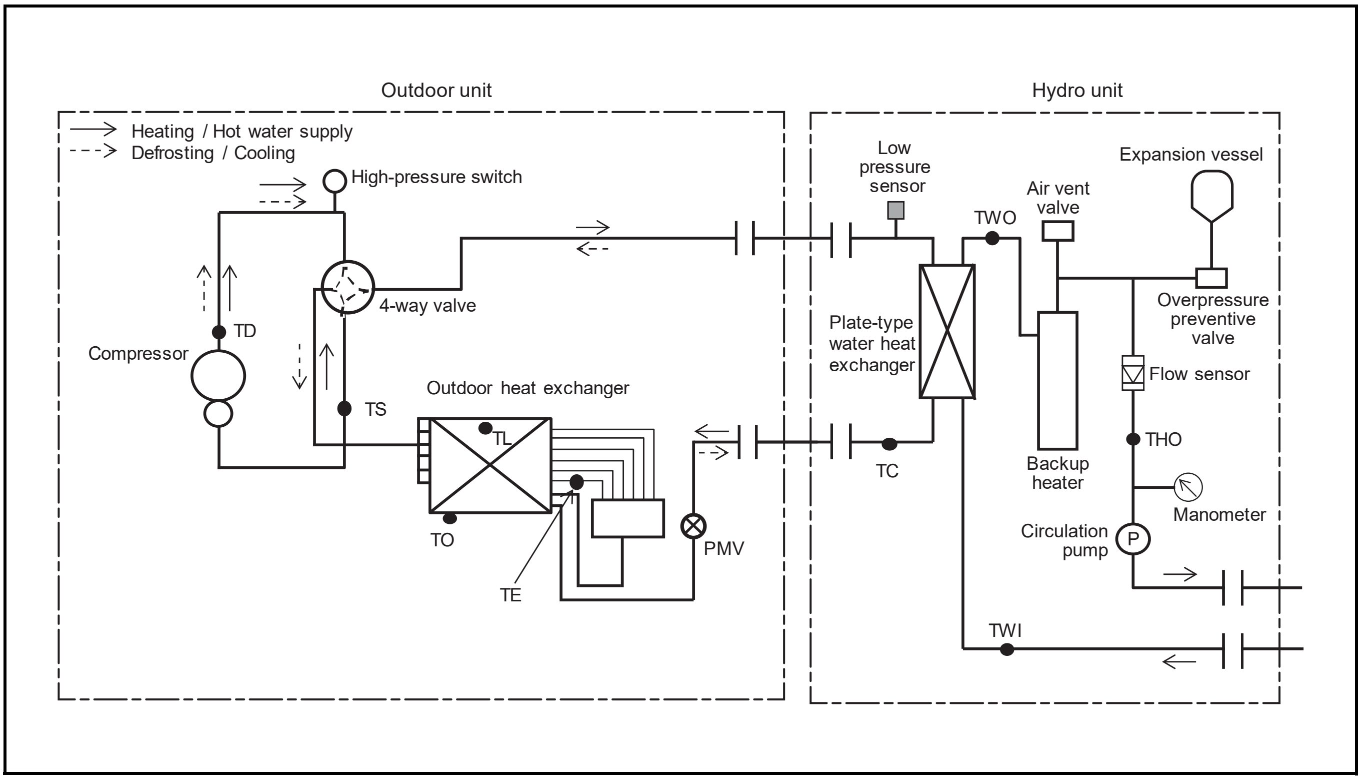
- Some sensors (temperature/pressure) are not displayed as these are not connected.

Water circuit and sensor placement

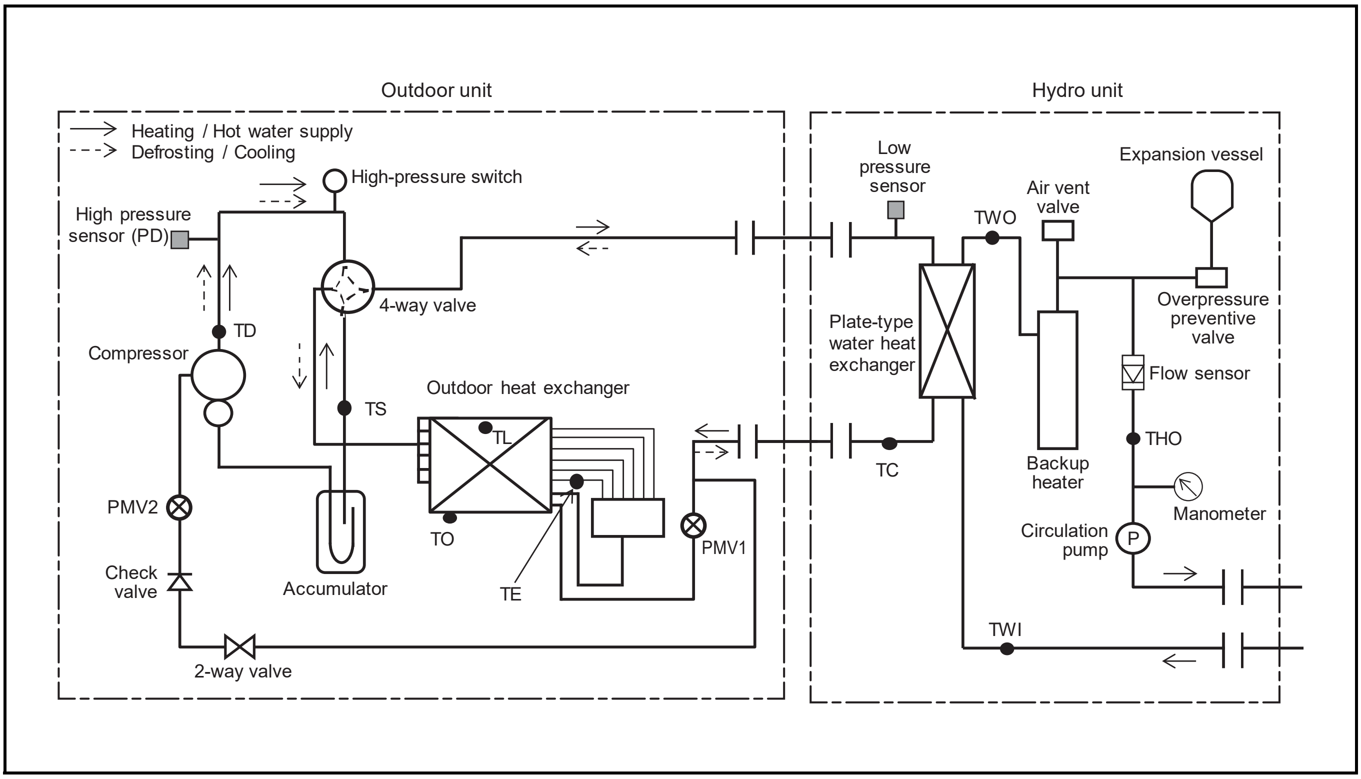


Refrigeration circuit and sensor placement

HWT-601XWHM3W-E, HWT-601XWHT6W-E
HWT-401HW-E, HWT-601HW-E



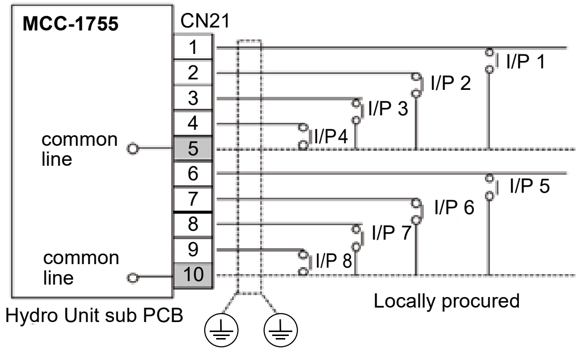
HWT-1101XWHM3W-E, HWT-1101XWHT6W-E, HWT-1101XWHT9W-E
HWT-801HW-E, HWT-1101HW-E



Optional inputs on the hydro unit

This unit has eight inputs. Two of the inputs can be selected with the DN. The below table shows the input functions that can be selected and the basic settings.

Potential-free contacts



Entry points (default setting)	
I/P 1	Room thermostat input for heating
I/P 2	Room thermostat input for cooling
I/P 3	Domestic hot water tank thermostat input
I/P 4	Switching input for heating/cooling mode
I/P 5	Heating/cooling mode ON/OFF
I/P 6	Hot water mode ON/OFF
I/P 7 (DN: B6)	0: Emergency stop input
I/P 8 (DN: B6)	0: Not used

Selectable entry points (DN: B6)		
DN: B6	CN21	Point
0	8-10	Emergency stop input
	9-10	Not used
1	8-10	TEMPO control input 1
	9-10	Not used
2	8-10	TEMPO control input 2
	9-10	Not used
3	8-10	Forcefully switch off emergency heating
	9-10	Forcefully switch off hot water tank heating
4	8-10	Smart Grid network input 1
	9-10	Smart Grid network input 2

I/P1 & I/P2 room thermostat input

- Setting: DN [6B3] = 1
- Potential-free contacts

Thermostat operation

CN21	Heating		Cooling	
	Reach	Do not reach	Reach	Do not reach
1-5 (I/P1)	Open	Close	-	-
2-5 (I/P2)	-	-	Close	Open

I/P3: Hot water tank thermostat input

- This function is used when the customer uses the local hot water tank.
- Setting: DN [6B2] = 1
- Potential-free contacts
  Open: Set temperature reached
  Close: Set temperature not reached

I/P4: Switching input for heating/cooling mode

- Potential-free contact
  Open: Heating mode
  Close: Cooling mode

I/P5: Heating/cooling mode ON/OFF input

- Potential-free contact
  Open: Operation OFF (remote control OFF)
  Close: Operation ON (remote control ON)

I/P5: Hot water mode ON/OFF input

- Potential-free contact
  Open: Operation OFF (remote control OFF)
  Close: Operation ON (remote control ON)

I/P7 I/P8: Connection to a Smart Grid network (SG Ready)

- Potential-free contact
- The operating mode is controlled by voltage-free contacts that are integrated in the energy meter.
- Setting: DN [B6] = 4

0: Open, 1: Close

I/P7	I/P8	Operating mode
0	0	Limited operation
1	0	System OFF
0	1	Standard operation
1	1	Forced system ON

Hydrobox control

Operating sequence and applicable data

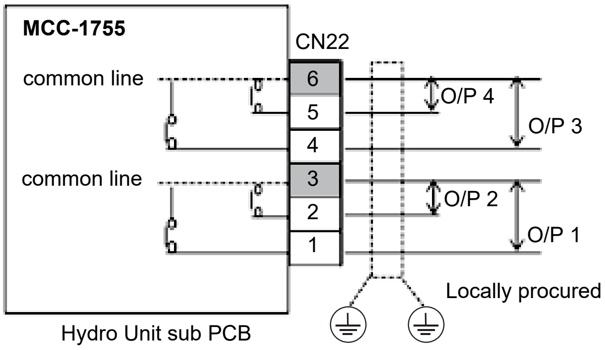
Output signal control

(Connect the connection cable to the CN22 connection on the PCB (MCC-1755) in the Hydrobox.)

Additional outputs on the Hydrobox

This unit has four output connections. They can be selected by DN. Table 1 shows the selectable output functions and presets.

Potential-free contact – for specification see below:
AC230 V; 0.5 A (maximum)
DC24 V; 1 A (maximum)
Minimum current; 10 mA



Preset	
O/P 1 (DN_6CA)	Alarm output
O/P 2 (DN_6CC)	Defrost operating output
O/P 3 (DN_6CD)	Boiler control output
O/P 4 (DN_6CB)	Compressor operating output

Selectable output elements	
0	Alarm output
1	Compressor operating output
2	Defrost operating output
3	Boiler control output
4	Safety or protection control running
5	While the backup heater is running
6	While hot water tank heating is running
7	Heating mode output
8	Cooling mode output
9	Hot water preparation output

0: Alarm output
- Open: No alarm
- Closed: Alarm

1: Compressor operating output
- Open: Compressor stops
- Closed: Compressor is in operation

2: Defrost operating output
- Open: Unit is not in defrost mode
- Closed: Unit is defrosting

3: Boiler control output
- Open: Standard operation
- Closed: Boiler operating output

4: While safety or protection control is running
(Safety or protection control of the indoor unit only)
- Open: Standard operation
- Closed: Release control running

5: While the backup heater is running
- Open: Backup heater not running
- Closed: Backup heater running

6: While hot water tank heating is running
- Open: Hot water tank heating not running
- Closed: Hot water tank heating running

7: Heating mode output
- Open: No heating operation
- Closed: Heating operation

(Includes heat pump, heating and Thermo off, unless a fault occurs.)

8: Cooling mode output
- Open: No cooling mode
- Closed: Cooling mode

(Includes heat pump and Thermo off, unless a fault occurs.)

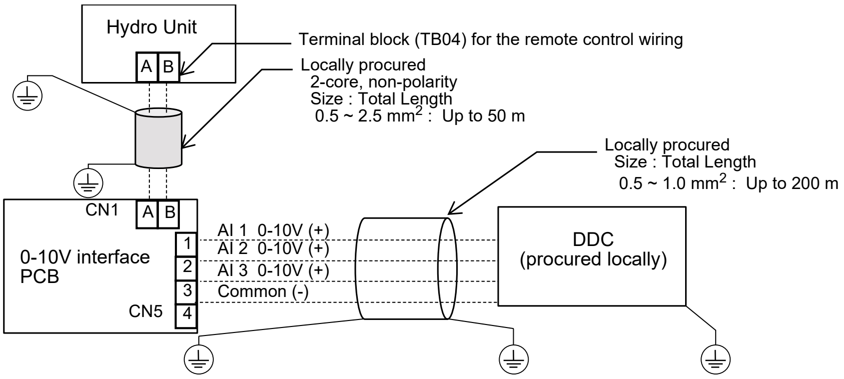
9: Hot water preparation output
- Open: No hot water preparation
- Closed: Hot water preparation

0-10 V interface [HWS-IFAIP01U-E] (optional)

For connecting the 0-10 V interface

TB04 for wiring the 0-10 V interface to the E-BOX of the hydro unit

- Use 2-wire, non-polarized lines for the communication line.
- Use 2-wire shielded lines to prevent faults.
- In this case, close (connect) the ends of the shielded lines and insulate the end of the terminal in order to ground the system.
- Make sure that no more than DC10 V is applied to the analog input inlays.
- The remote control line (AB line) can establish a connection to a maximum of 2 units. Main control plus second remote control or KNX or MODBUS or WLAN adapter or 0-10 V control.
  For example, main control plus second remote control or KNX or MODBUS or WLAN adapter or 0-10 V control.



This option enables either the set temperatures or the capacity to be controlled.

Control of the set temperature

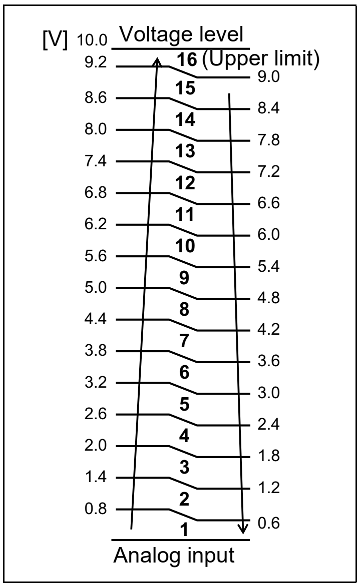
- DN 680 is set to "1".
- Define the input method for each set temperature.

DN	Point	Selectable value (input of)			
681	Set hot water temperature	0: AI not used	1: AI1	2: AI 2	3: AI 3
682	Zone 1 set temperature for heating.	0: AI not used	1: AI1	2: AI 2	3: AI 3
683	Zone 2 set temperature for heating.	0: AI not used	1: AI1	2: AI 2	3: AI 3
684	Zone 1 set temperature for cooling.	0: AI not used	1: AI1	2: AI 2	3: AI 3

- Set the temperature from 0 to 10 V and define its accuracy.

*( ): HWT-110

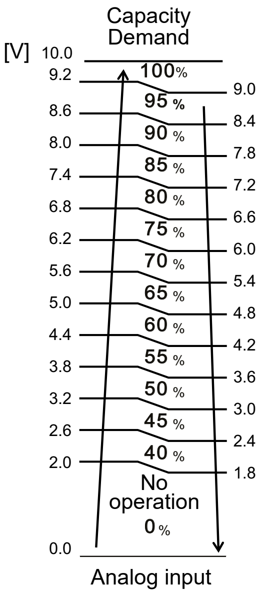
DN	Point	Selectable value
685	Upper limit value of the set hot water temperature (at voltage level 16)	40 to 80 Default: 65°C
689	Accuracy of the set hot water temperature (value at voltage level)	1 to 5 Default: 5°C
686	Upper limit of the set temperature in Zone 1 for heating (at voltage level 16)	20 to 55 (65) Default: 55°C
68A	Accuracy of the set temperature in Zone 1 for heating (value at voltage level)	1 to 5 Default: 3°C
687	Upper limit of the set temperature in Zone 2 for heating (at voltage level 16)	20 to 55 (65) Default: 55°C
68B	Accuracy of the set temperature in Zone 2 for heating (value at voltage level)	1 to 5 Default: 3°C
688	Upper limit of the set temperature in Zone 1 for cooling (at voltage level 16)	7 to 25 Default: 20°C
68C	Accuracy of the set temperature in Zone 1 for cooling (value at voltage level)	1 to 5 Default: 1°C

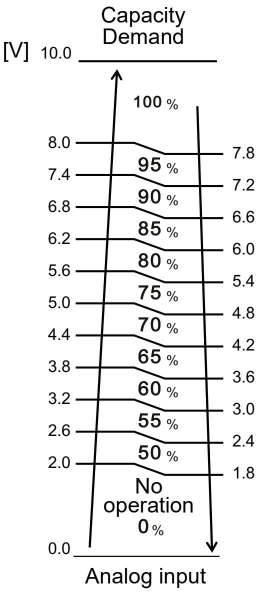


Direct capacity control

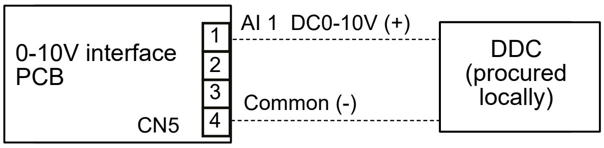
- DN 680 is set to "2, 3 or 4".

DN [AI01]	0	1	2	3	4
AI 1	Not used	Control of the set temperature Input of settings from DN 681 to 684	Direct capacity control of HP operation for heating/ Cooling mode	Not used	Direct capacity control of HP operation for heating/ Cooling mode
AI 2			Not used	Direct capacity control of HP operation for hot water mode	Direct capacity control of HP operation for hot water mode
AI 3			Not used	Not used	Not used

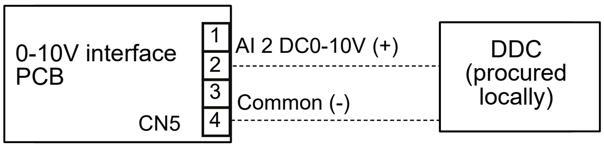




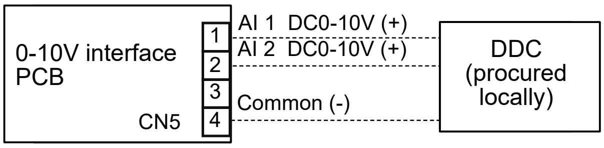
- **DN 680 = 2**
  Only activate the analog input for heating or cooling mode.



- **DN 680 = 3**
  Only activate the analog input for hot water mode.



- **DN 680 = 4**
  Activate the analog input for heating/cooling mode and hot water mode.



Resetting the main PCB

Resetting the hydro DN

Procedure

1. Continue with the hydro DN settings screen.
2. Press and hold [∧] [∨] [↩] in the DN settings screen and select "YES".

NOTE

- After resetting the DN, it takes a few minutes for the normal screen to be restored.
  The first communication screen is displayed for a few more minutes, but this is NOT a problem.
- After resetting the DN, some of the following points must be confirmed and reset.

DN	Subject	Details		Preset
11	Capacity of the water-to-air heat exchanger	0010: 601	0015: 1101	Dependent on type
6B8	Hot water supply used	0000: Yes	0001: No	0000: Yes
6BA	ZONE2 operation used	0000: No	0001: Yes	0000: No
6BC	Capacity of the backup heater	0000: 3 kW 0002: 9 kW	0001: 6 kW	Dependent on type

Resetting the remote control DN

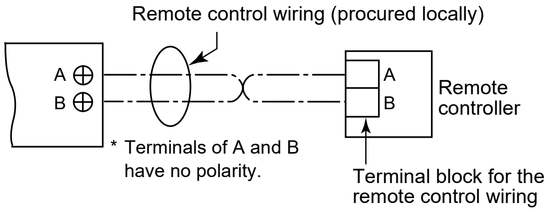
Procedure

1. Continue with the remote control DN settings screen.
2. Press and hold [∧] [∨] [↩] in the DN settings screen and select "YES".

Wire the remote control

Connection diagram

Terminal block (TB04) for
remote control wiring on the hydro unit



* Use wire of 0.5 mm^2 to 2.0 mm^2.

* A crimp-style terminal cannot be used.

Requirements for the installation of a second remote control

Installation

Install the remote controls in a dual
remote control system as follows.

1. Set one of the remote controls as the distributor remote control. (The remote control of the hydro unit is preset as the header unit.)
2. Set this under "Main / auxiliary" in "Initial settings" on the settings screen.

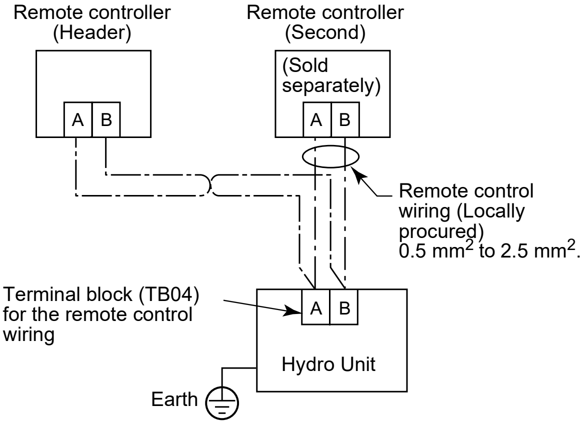
- To control the room temperature instead of the water temperature with this remote control, set DN "40" of the hydro unit to "1".

Schematic wiring diagram

NOTE

The terminals of A and B have no polarity.

Branching off the hydro unit

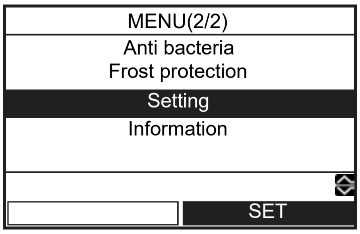


Time program setting

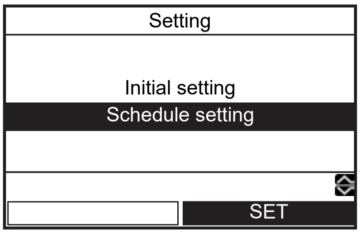
- This function is only available for the master remote control.
- The following modes can be set flexibly via the schedule setting: Hot water supply, heating, cooling, hot water supply, and heating, hot water supply and cooling as well as stop and set temperature.
- Set the unit time and the schedule setting before the timer.

<Preparation>
First set the time on the remote control.

1 Press the [∧] / [∨] buttons to select "Setting" on the MENU screen, then press the [F2] button.



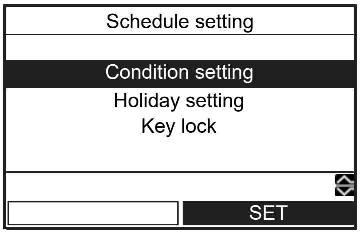
2 Press the [∧] / [∨] buttons to select "Schedule setting" on the settings screen, then press the [F2] button.



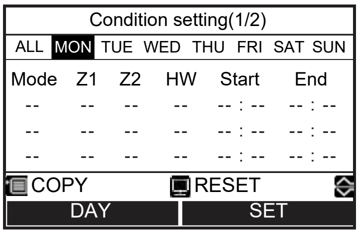
Condition setting

- Up to six different sequences can be programmed per day.

1 Press the [∧] / [∨] buttons to select "Condition setting" on the schedule setting screen, then press the [F2] button.

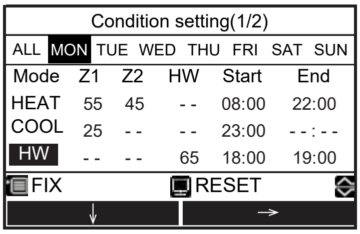


2 Press the [F1] button to select the day, then press the [F2] button to enter the sequence.



Mode	Z1	Z2	HW	Start	End
--	--	--	--	-- : --	-- : --
--	--	--	--	-- : --	-- : --
--	--	--	--	-- : --	-- : --

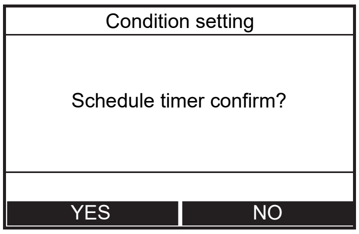
3 Press the [F1] / [F2] buttons to select the changeover point, then press the [∧] / [∨] buttons.



Mode	Z1	Z2	HW	Start	End
HEAT	55	45	- -	08:00	22:00
COOL	25	- -	- -	23:00	- - : - -
HW	- -	- -	65	18:00	19:00

Time program setting

4 Press the [☰] button.



Condition setting

Schedule timer confirm?

5 Press the [F1] button to confirm.

Mode: Operating mode (HEATING, COOLING, HW (hot water))
Z1: ZONE1 set temperature
Z2: ZONE2 set temperature
HW: Operating temperature for hot water supply
Start: Operation start time (0:00 ~ 23:59)
End: Operation end time (0:00 ~ 24:00, -- : --)

- "-- : --" means that operation is continued.

If the end time is set earlier than the start time, an error is displayed.

Time setting

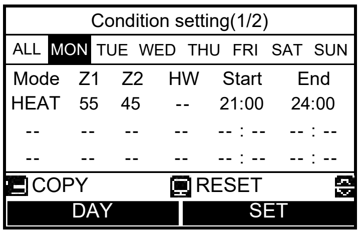
There are two methods.

If "24:00" is set at "END" and "00:00" is set on the next day at "START", the previous operating status is continued. Set the time at which you want to stop at "END".

If "--" is set at "END", the previous operating status is continued the next day. Set the time at which you want to stop at "END". Any start time can be applied provided it is before the end time.

In heating operation from Monday evening at 21:00 until Tuesday morning at 03:00.

Example configuration (1)



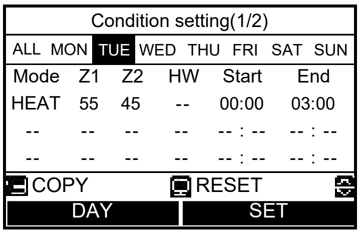
Condition setting(1/2)

ALL **MON** TUE WED THU FRI SAT SUN

Mode	Z1	Z2	HW	Start	End
HEAT	55	45	--	21:00	24:00
--	--	--	--	-- : --	-- : --
--	--	--	--	-- : --	-- : --

COPY RESET

DAY SET



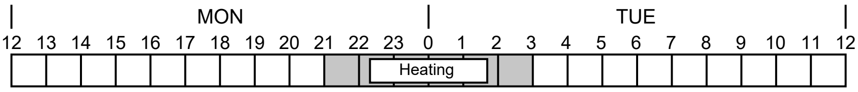
Condition setting(1/2)

ALL MON **TUE** WED THU FRI SAT SUN

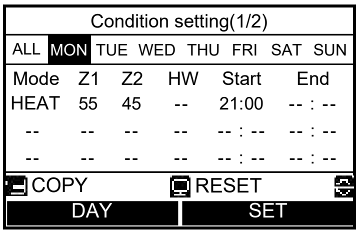
Mode	Z1	Z2	HW	Start	End
HEAT	55	45	--	00:00	03:00
--	--	--	--	-- : --	-- : --
--	--	--	--	-- : --	-- : --

COPY RESET

DAY SET



Example configuration (2)



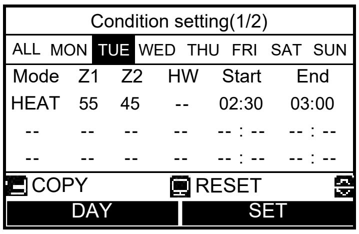
Condition setting(1/2)

ALL **MON** TUE WED THU FRI SAT SUN

Mode	Z1	Z2	HW	Start	End
HEAT	55	45	--	21:00	-- : --
--	--	--	--	-- : --	-- : --
--	--	--	--	-- : --	-- : --

COPY RESET

DAY SET



Condition setting(1/2)

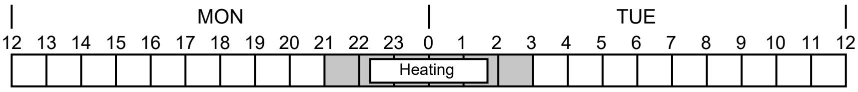
ALL MON **TUE** WED THU FRI SAT SUN

Mode	Z1	Z2	HW	Start	End
HEAT	55	45	--	02:30	03:00
--	--	--	--	-- : --	-- : --
--	--	--	--	-- : --	-- : --

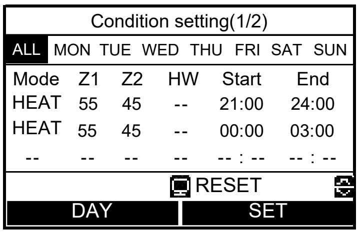
COPY RESET

DAY SET

*1



Example configuration (3) (all day)



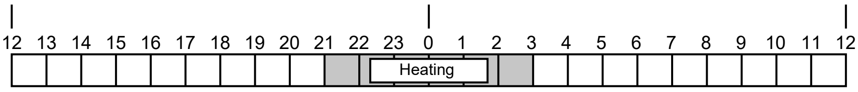
Condition setting(1/2)

ALL MON TUE WED THU FRI SAT SUN

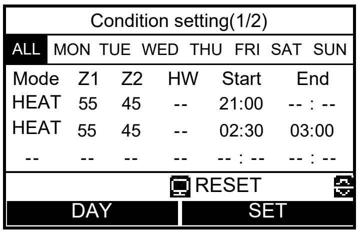
Mode	Z1	Z2	HW	Start	End
HEAT	55	45	--	21:00	24:00
HEAT	55	45	--	00:00	03:00
--	--	--	--	-- : --	-- : --

RESET

DAY SET



Example configuration (4) (all day)



Condition setting(1/2)

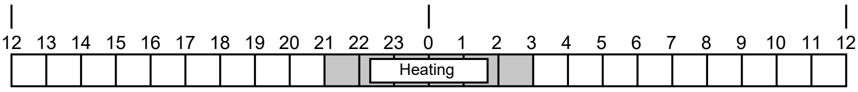
ALL MON TUE WED THU FRI SAT SUN

Mode	Z1	Z2	HW	Start	End
HEAT	55	45	--	21:00	-- : --
HEAT	55	45	--	02:30	03:00
--	--	--	--	-- : --	-- : --

RESET

DAY SET

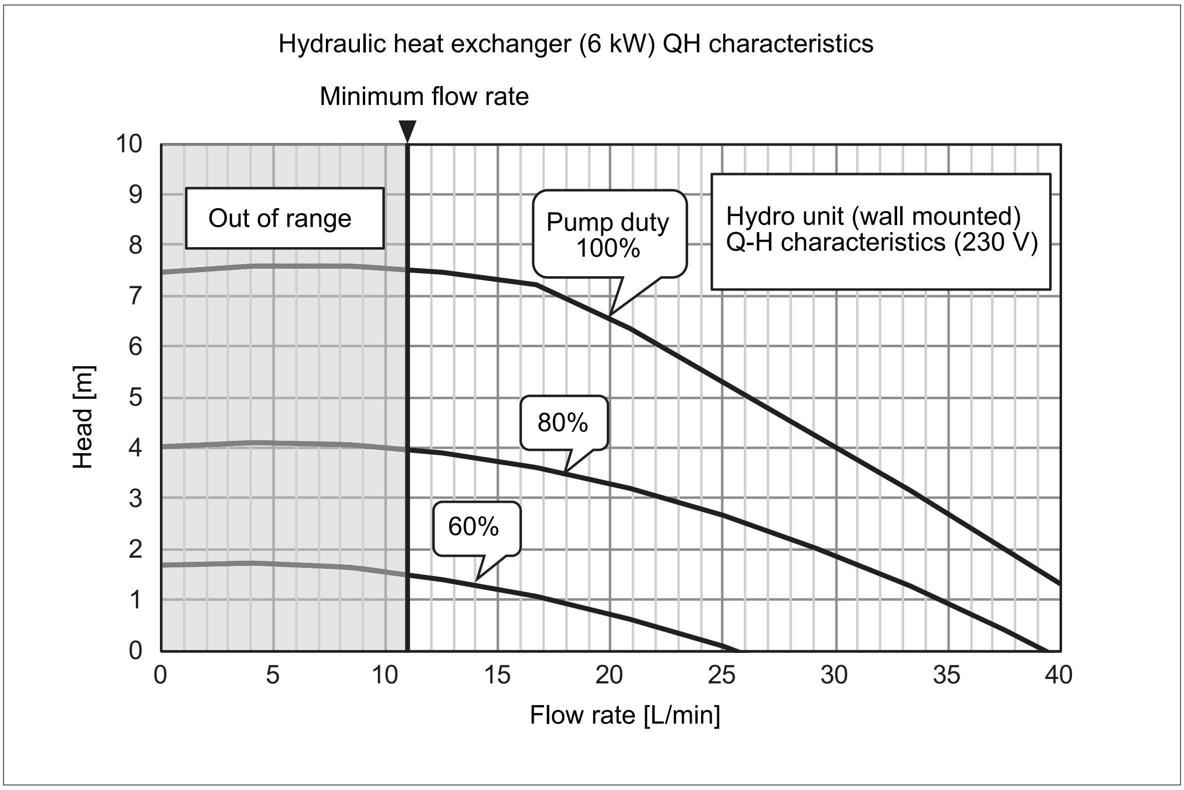
*1



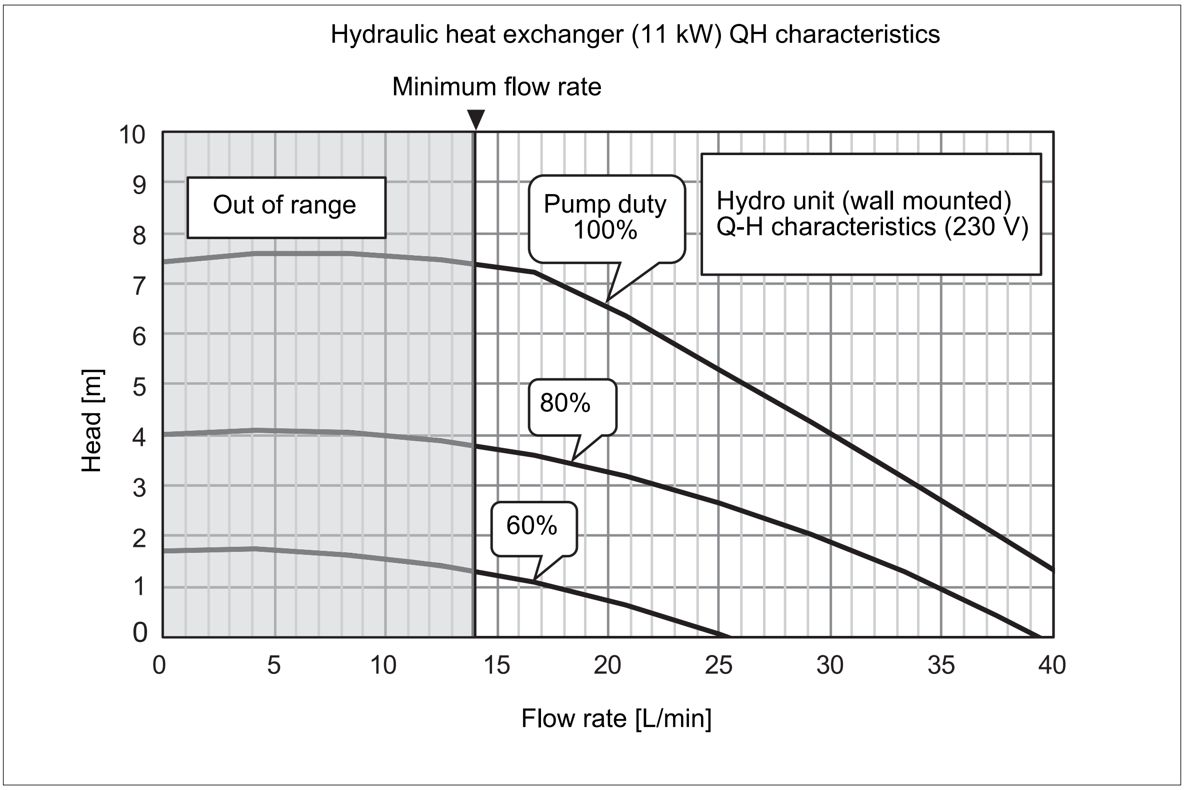
*1: In this example, a start time of 00:00 to 02:59 is permitted.

Pump QH curves

HWT-601XWHM3W-E
HWT-601XWHT6W-E



HWT-1101XWHM3W-E
HWT-1101XWHT6W-E
HWT-1101XWHT9W-E



Temperature sensor characteristics

TC, TWI, TWO, TFI, TTW, TS, TO sensors

Typical value

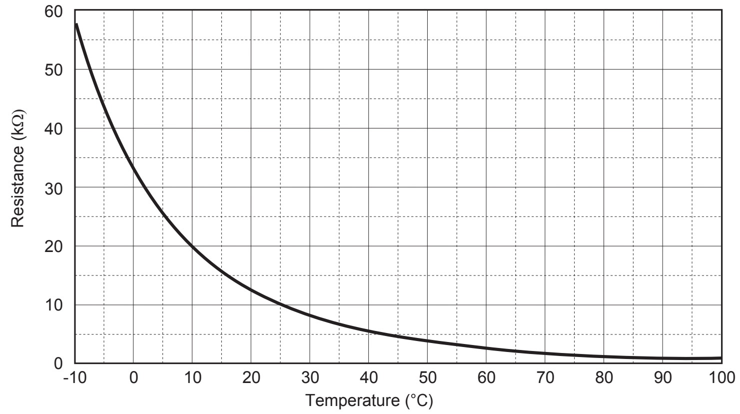
Temperature (°C)	Resistance value (kΩ)		
	Minimum	Standard	Maximum
-10	55.42	55.73	60.04
0	32.33	33.80	35.30
10	19.63	20.35	21.09
20	12.23	12.59	12.95
25	9.75	10.00	10.25
30	7.764	7.990	8.218
40	5.013	5.192	5.375
50	3.312	3.451	3.594
60	2.236	2.343	2.454
70	1.540	1.623	1.709
80	1.082	1.146	1.213
90	0.7740	0.8237	0.8761
100	0.5634	0.6023	0.6434

TD, TL sensors

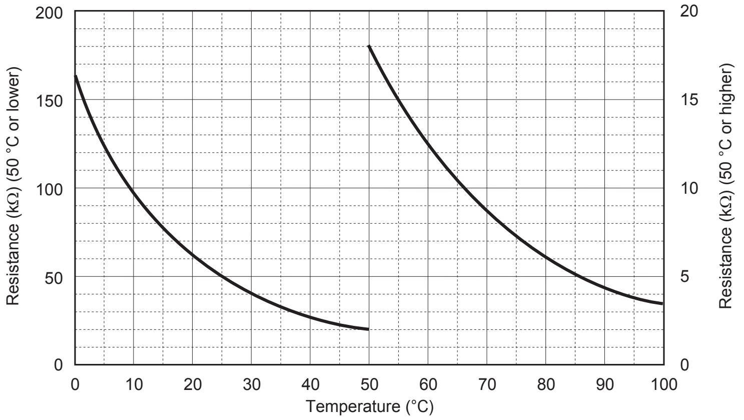
Typical value

Temperature (°C)	Resistance value (kΩ)		
	Minimum	Standard	Maximum
0	150.5	161.3	172.7
10	92.76	99.05	105.6
20	58.61	62.36	66.26
25	47.01	49.93	52.97
30	37.93	40.22	42.59
40	25.12	26.55	28.03
50	17.00	17.92	18.86
60	11.74	12.34	12.95
70	8.269	8.668	9.074
80	5.925	6.195	6.470
90	4.321	4.507	4.696
100	3.205	3.336	3.468

TC, TWI, TWO, TFI, TTW, TE, TS, TO sensors



TD, TL sensors

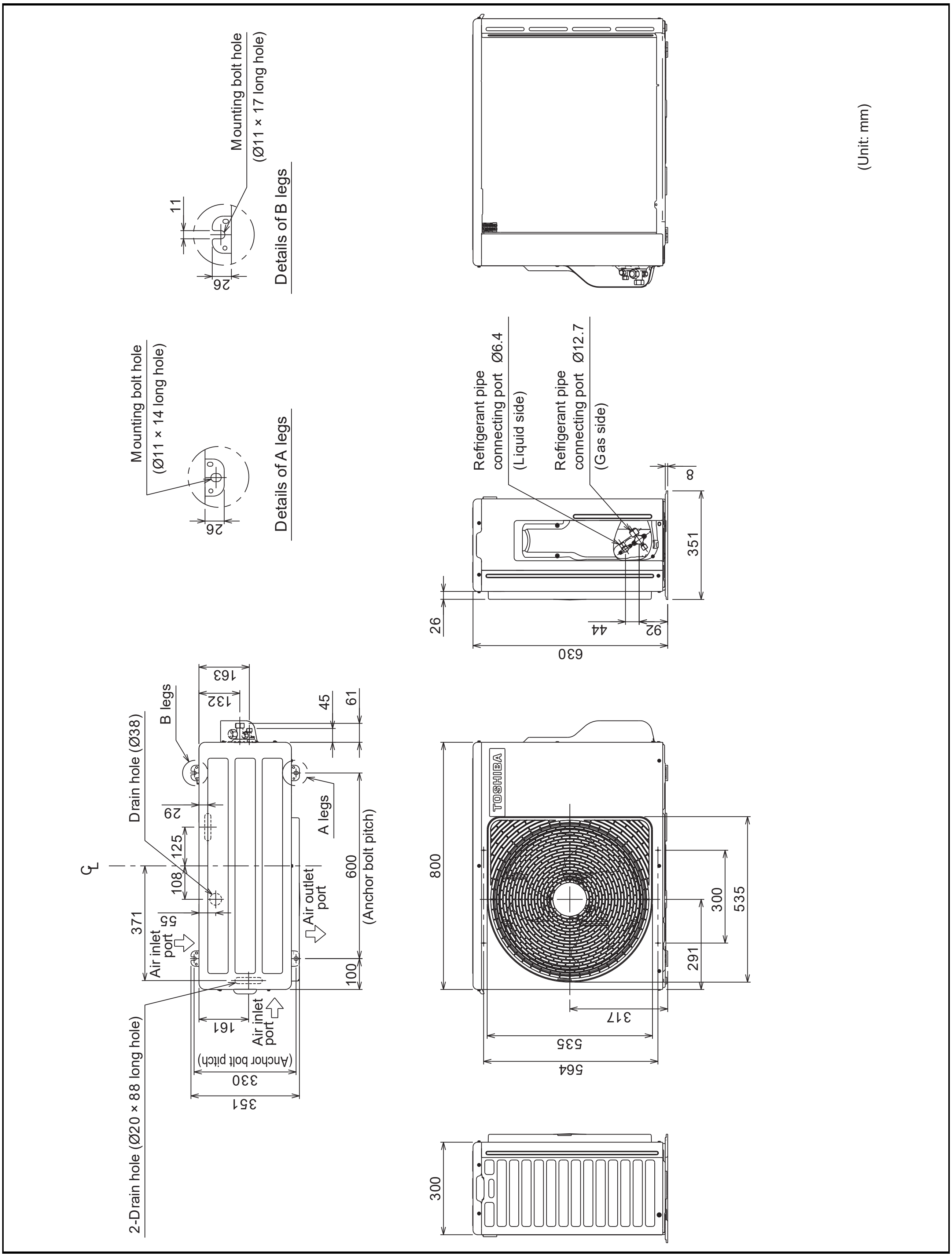


* As the TH sensor (outdoor unit heat sink temperature sensor) is installed in the outdoor control board, the resistance value cannot be measured.

Dimensions (in mm)

Outdoor unit

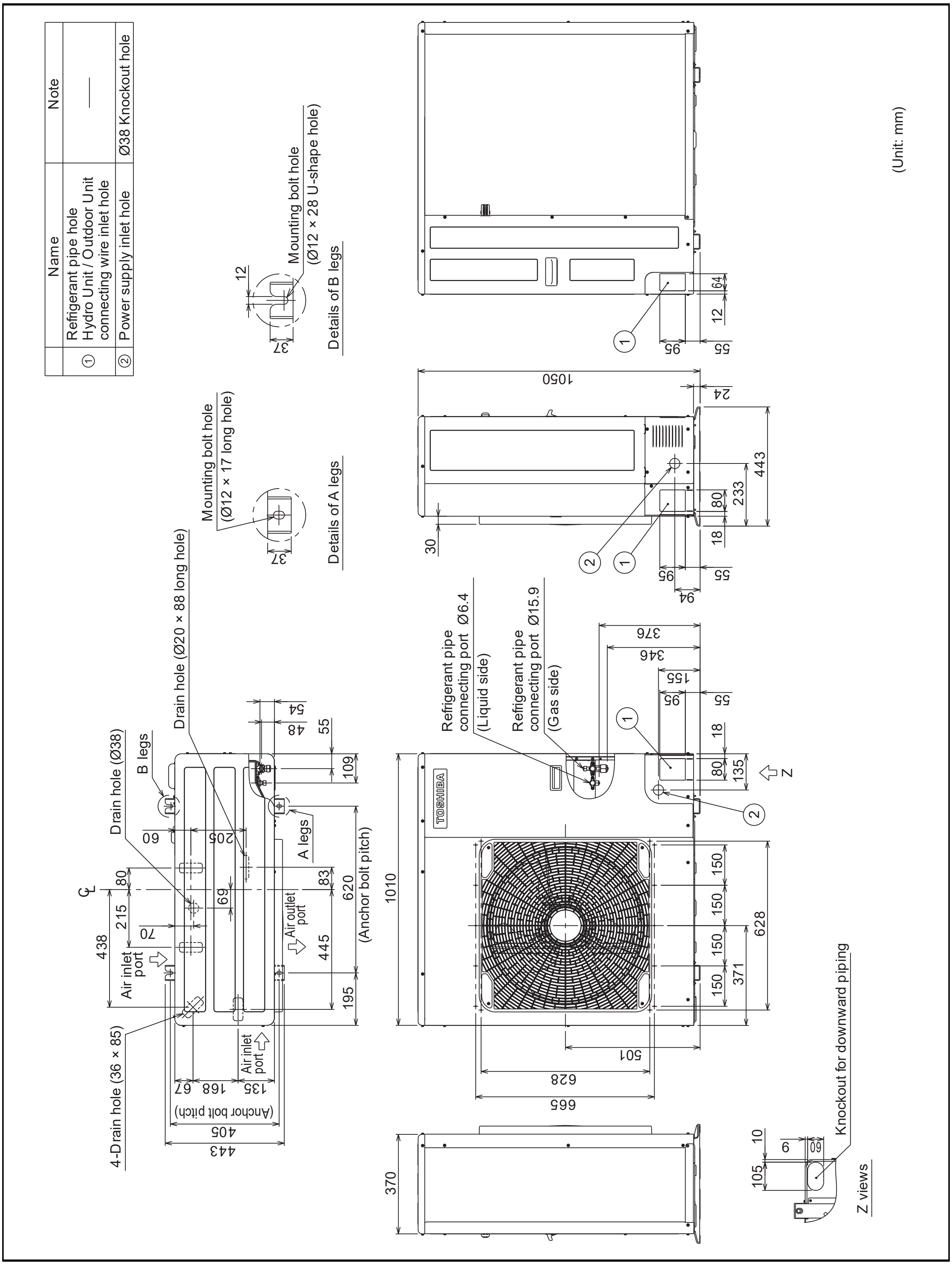
HWT-401HW-E, HWT-601HW-E



Dimensions (in mm)

Outdoor unit

HWT-801HW-E, HWT-1101HW-E

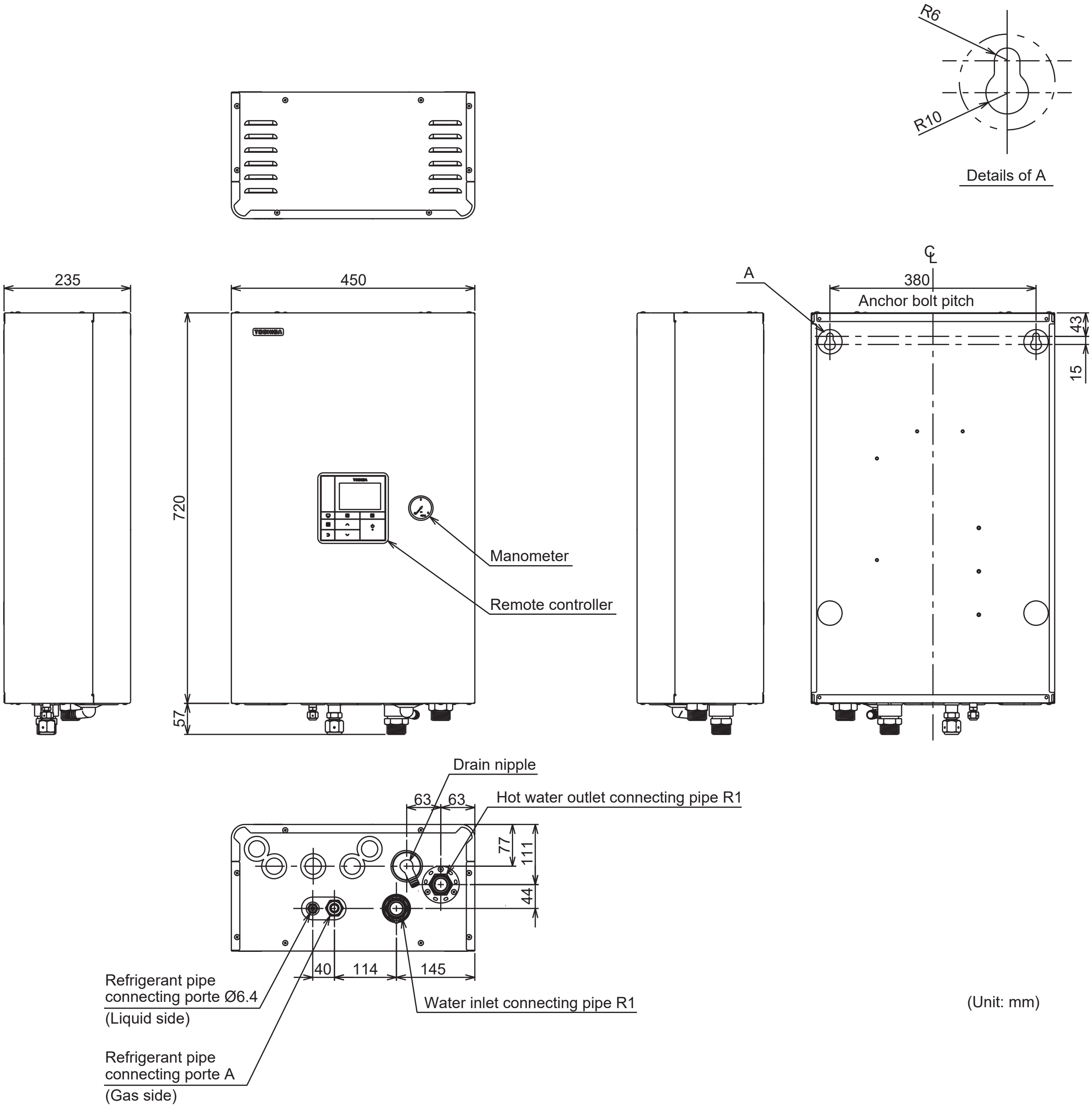


	Name	Note
①	Refrigerant pipe hole Hydro Unit / Outdoor Unit connecting wire inlet hole	—
②	Power supply inlet hole	Ø38 Knockout hole

Dimensions (in mm)

Hydrobox

HWT-601XWHM3W-E, HWT-601XWHT6W-E
HWT-1101XWHM3W-E, HWT-1101XWHT6W-E, HWT-1101XWHT9W-E

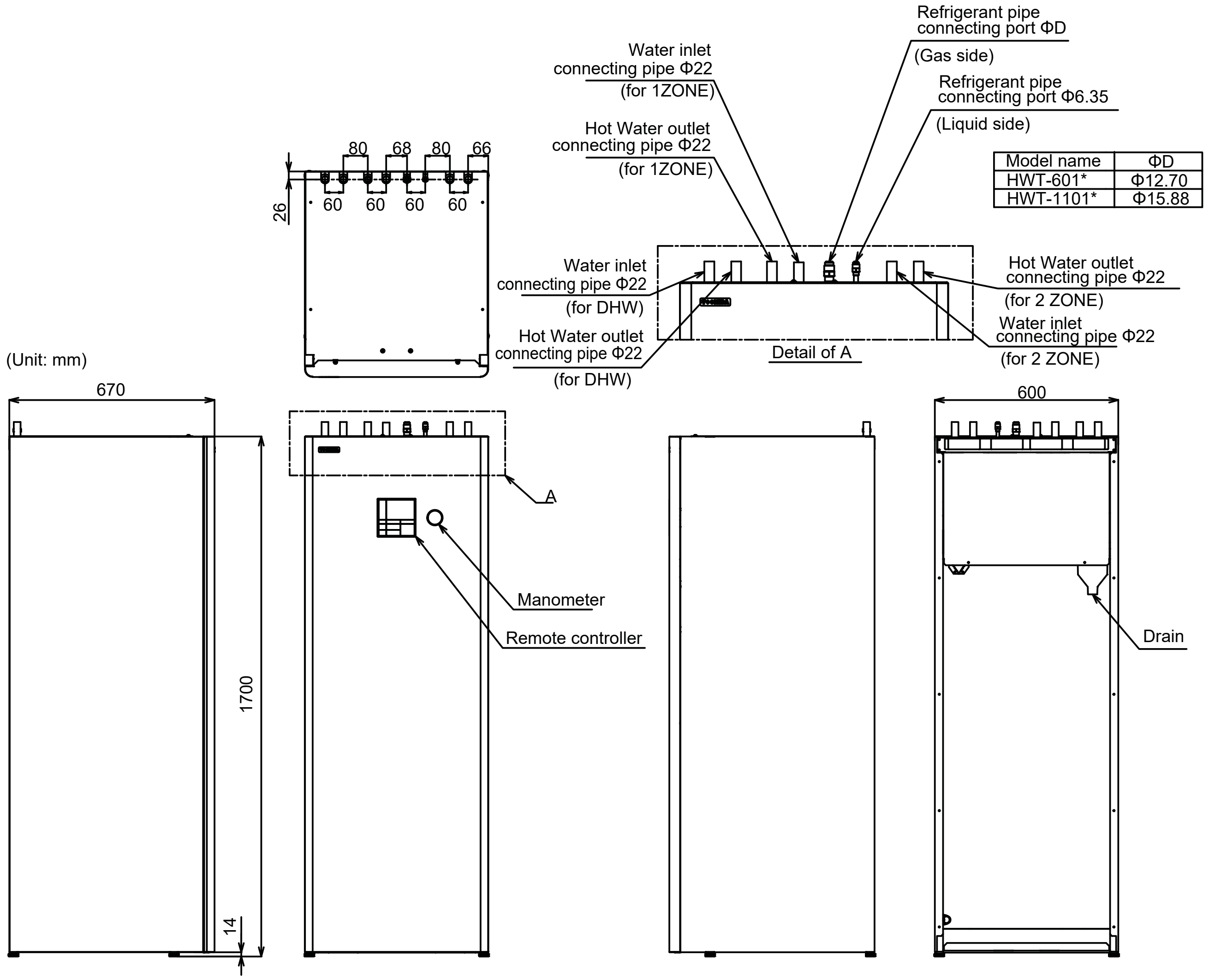


Model name	A
HWT-601	Ø12.7
HWT-1101	Ø15.9

Dimensions (in mm)

ALL-IN-ONE

HWT-601F21SM3W-E, HWT-601F21ST6W-E, HWT-1101F21ST6W-E, HWT-1101F21MT6W-E, HWT-1101F21ST9W-E, HWT-1101F21MT9W-E



Model name	ΦD
HWT-601*	Φ12.70
HWT-1101*	Φ15.88

Fault symptoms

Symptom	Possible cause	Measures
Room is not heated or cooled, water is not warm or cold enough	Incorrect settings on the remote control	Check the remote control and the temperature setting
	Incorrect function code setting	Check the function code setting according to the function code table
	Backup heater not connected	Check the backup heater and the bimetal thermostat
	Insufficient power	Check the selection of components
	Sensor defective	Check whether the temperature sensor has been installed in the correct location
Nothing is displayed on the remote control	No power	Check the power cables
	Incorrect setting	Check the DIP switch setting on the PCB of the hydro unit. Check the setting according to the function code table
Flow switch is activated Error code [A01]	Air in the pump	Ventilate the system according to the instructions
	Low hydraulic pressure	Adjust the hydraulic pressure according to the piping height and add water until the required hydraulic pressure as a minimum is displayed on the manometer
	Sieve is blocked	Clean the sieve
	High resistance on the hydro side	Increase the water supply to the hydro unit or install a bypass valve
	Malfunction of the 3-way diverter valve for hot water supply	Check the wiring and the components
Hot water is escaping from the pressure-reducing valve	Excessive hydraulic pressure	Adjust the hydraulic pressure according to the piping height and add water until the required hydraulic pressure as a minimum is displayed on the manometer
	Insufficient capacity of the expansion tank	Check the capacity of the expansion tank compared to the total water volume. If this is not sufficient, install a further expansion tank
	Malfunction of the expansion tank	Check the air pressure

Fault detection via water-to-air heat exchanger or outdoor unit

O .... Possible
X .... Not possible

Error Code	Diagnostics of functional operation			Determination and measures
	Technical cause	**Backup present**	**Automatic reset**	
A01	**Pump or flow volume error** 1. Determined by TC sensor TC≥63°C was detected in heating or hot water supply heat pump operation (except for defrosting)	Heating X Hot water O	X	Hardly any or low water flow rate - Insufficient air supply - Blockage due to dirt in water pipe system - The water pipe is too long - Installation of a buffer tank and a secondary pump
	2. Detected by flow switch deviation In no signal from the flow switch is displayed 2 minutes after the installed pump starts			
	3. Detection of excessive rattling at the flow switch input Detection of rattling: Detects changes at the input (OFF⇔ON) 4 times within 10 seconds during operation			
	4. Removal of the flow switch connection If the stopped installed pump starts operation, the flow switch status "Water flow" is detected			1. Removal of the flow switch connection 2. Flow switch defect
A02	**Water temperature increase error** (heating) If one of the TWI, TWO, and THO sensors reaches 70°C	Heating X Hot water O	O	1. Check water inlet, water outlet, and heating outlet sensors (TWI, TWO, THO) 2. Backup heater defect (defective thermostat for automatic reset)
A03	**Temperature increase error** (hot water preparation) If the TTW sensor reaches 85°C	Heating O Hot water X	O	1. Check the hot water cylinder sensor (TTW) 2. Check the hot water cylinder thermo cut-out
A04	**Frost protection mode** (1) 1. TWO>20°C: 2xTC+TWO≤-12°C detected 2. TWO≤20°C: TC+TWO≤4°C detected 3. TWI≤10°C detected during defrosting	O	X	1. Hardly any or low water flow rate - Blockage due to dirt in water pipe system - The water pipe is too long or short 2. Check the heating circuit - Power supply voltage, cut-out, power supply connection 3. Apply the setting for the backup heater 4. Check water inlet, water outlet, heat exchanger sensors (TWI, TWO, TC), and flow switch
A05	**Piping frost protection mode** Activation of the heating if TWO<4 or TWI<4 or THO<4 and after 30 minutes not TWO, TWI, THO≥5°C	O	O	1. Check the heating circuit - Power supply voltage, cut-out, power supply connection 2. Check water inlet, water outlet, and heating outlet sensors (TWI, TWO, THO) 3. Disconnection of the backup heater
A07	**Pressure switch operation** The pressure switch works continuously for 300 seconds while the heat pump is in operation	O	X	1. Hardly any or low water flow rate 2. Flow switch defect 3. Under-load operation under the above conditions 4. Pressure switch defect
A07 HI POWER	**Combined fault** Model name of the Hydrobox is different	O	X	Check whether DP_SW13_4 is set to "ON"

Error Code	Diagnostics of functional operation			Determination and measures
	Technical cause	**Backup present**	**Automatic reset**	
A08	**Low pressure sensor malfunction** The low pressure sensor detects 0.2 MPa or less	O	X	1. Hardly any or low water flow rate 2. Flow switch defect 3. Under-load cooling or prolonged defrosting (heavy frost formation) under the above conditions 4. Low pressure sensor defect 5. Check the refrigerant circuit (gas leakage)
A09	**Overheating protection mode** - If the thermostat on the backup heater is activated while the heat pump or backup heater is in operation. - If operation of the thermostat is activated despite the fact that it has been stopped	Heating X Hot water O	X	1. No water (heating without water) or no water flow 2. Flow switch defect
				Backup heater defect (fault on thermostats for automatic reset)
A10	**Frost protection mode** (2) If TC-TWO<-15K in cooling mode	O	X	1. Hardly any water flow 2. Flow switch defect 3. Refrigerant low
A11	**Operation of the release protection** If TWO release goes toward 10	Heating Cooling X Hot water O	X	1. Hardly any water flow 2. Flow switch defect 3. Check water outlet temperature sensor (TWO)
A12	**Heating or hot water heating** The frost protection control detects under the condition of TWI<15°C while TWI≥15°C, TW≥20°C downstream of the heating backup is not detected	O	O	1. Activated due to high heating or hot water supply load 2. Check heating circuit (auxiliary or hot water cylinder heating) - Power supply voltage, cut-out, power supply connection
A13	**Pump fault**	Heating X Hot water O	X	1. Pump has stopped for various reasons - Low voltage - High humidity around the electrobox of the pump - Condensation formation on the electric PCB of the pump - Switch off the power supply then switch it back on to operate the system 2. Check the flow switch in the Hydrobox
A14	**Pump fault**	Heating X Hot water O	X	1. Pump has stopped for various reasons - Low voltage - High humidity around the electrobox of the pump - Condensation formation on the electric PCB of the pump - Switch off the power supply then switch it back on to operate the system 2. Check the power supply
E03	**Error in normal communication between Hydrobox and remote control** If there is no normal communication from the remote control for 3 minutes or if no remote control is connected	X	O	1. Check the remote control connection 2. Remote control defect
E04	**Error in normal communication between Hydrobox and outdoor unit** The continuous signal cannot be received by the outdoor unit	O	O	Check the series connection - Miswiring at the crossover point between the water-to-air heat exchanger and the outdoor unit
E08	**Duplicated address of the Hydrobox or duplicated master Hydrobox during group control**	X	O	Correct the address number of rotary switch "SW01" for the Hydrobox

Error Code	Diagnostics of functional operation			Determination and measures
	Technical cause	Backup present	Automatic reset	
E14	**Regular communication error between Hydrobox and 0-10 V-IF** If no regular communication takes place from the 0-10 V interface for 3 min. or if no 0-10 V interface is connected.	X	X	1. Check the 0-10 V-IF connection. 2. Fault in 0-10 V-IF.
E18	**Regular communication error between master and slave Hydrobox during group control**	X	0	Check the Hydrobox connection. - Miswiring of the master and slave Hydrobox
F03	**TC sensor fault** Interruption or short circuit in the coil temperature sensor	0	0	Check the resistance and connection of the temperature sensor of the heat exchanger (TC)
F04	**TD sensor fault** Interruption or short circuit in the hot gas temperature sensor	0	X	Check the resistance and connection of the hot gas temperature sensor (TD)
F06	**TE sensor fault** Interruption or short circuit in the coil temperature sensor	0	X	Check the resistance and connection of the temperature sensor of the heat exchanger (TE)
F07	**TL sensor fault** Interruption or short circuit in the coil temperature sensor	0	X	Check the resistance and connection of the temperature sensor of the heat exchanger (TL)
F08	**TO sensor fault** Interruption or short circuit in the outdoor temperature sensor	0	X	Check the resistance value and connection of the outdoor temperature sensor (TO)
F10	**TWI sensor fault** Interruption or short circuit in the water inlet temperature sensor	0	0	Check the resistance and connection of the temperature sensor of the water inlet (TWI)
F11	**TWO sensor fault** Interruption or short circuit in the water outlet temperature sensor	Heating X Hot water 0	0	Check the resistance and connection of the temperature sensor of the water outlet (TWO)
F12	**TS sensor fault** Interruption or short circuit in the intake temperature sensor	0	X	Check the resistance value and connection of the intake temperature sensor (TS)
F13	**TH sensor fault** Interruption or short circuit in the heat sink temperature sensor	0	X	Check the resistance and connection of the temperature sensor of the heat sink (TH)
F14	**TTW sensor fault** Interruption or short circuit in the hot water temperature sensor	Heating 0 Hot water X	0	Check the temperature sensor of the hot water cylinder (TTW)
F15	**TE/TS sensor fault** TE, TS sensor connections have been mixed up	0	X	Check for incorrect installation of the temperature sensor of the heat exchanger (TE) and the intake temperature sensor (TS)
F17	**TFI sensor fault** Interruption or short circuit in the floor temperature sensor	Heating X Hot water 0	0	Check the resistance and connection of the temperature sensor of the floor inlet (TFI)
F18	**THO sensor fault** Interruption or short circuit in the heating outlet temperature sensor	Heating X Hot water 0	0	Check the resistance and connection of the temperature sensor of the heating outlet (THO)
F19	**Detection of a THO disconnection fault** If TWO-THO>15K has been detected and 30 seconds elapse	Heating X Hot water 0	X	1. Check for interruptions in the connection of the temperature sensor of the heating outlet (THO) 2. Flow switch defect

Error Code	Diagnostics of functional operation			Determination and measures
	Technical cause	**Backup present**	**Automatic reset**	
F20	**TFI sensor fault** If TWO-TFI>40K and TFI<TWI-5K was detected for 60 seconds	Heating X Hot water 0	X	Check the connection of the temperature sensor of the floor inlet (TFI)
F23	**Low pressure sensor fault** - If PS<0.07 MPa was detected for 90 seconds or more (cooling, defrosting) - If PS<0.07 MPa was detected for 10 minutes or more (hot water preparation, heating)	0	0	1. Check the connection (body or connection wiring) of the low pressure sensor 2. Check the resistance value of the low pressure sensor 3. Check the refrigerant circuit (gas leakage)
F24	**PD sensor fault** Interruption or short circuit in the high pressure sensor	0	X	Check the value of the PD sensor with the remote control
F29	**EEPROM error** If the file sent to EEPROM (e.g., changes to error codes) is damaged and no transfer is confirmed by the internal storage element	X	X	Replace the water-to-air heat exchanger control board
F30	**Fault in the extended integrated switching circuit** If the extended integrated switching circuit is abnormal	X	X	Replace the water-to-air heat exchanger control board
F31	**EEPROM error**	0	X	
F32	**Flow sensor fault**	Heating X Hot water 0	0	1. Check the flow sensor connection 2. Check the flow rate detected by the flow sensor and the actual flow.
F33	**Flow volume error** 1. Detected by TC sensor TC ≥ 68°C is detected in the heating or hot water supply heat pump operation (except for defrosting).	Heating X Hot water 0	X	- No or low water flow - Flow sensor defect
	2. Detected by flow rate If the integrated circulation has been stopped Pump starts operation, flow sensor status "Water flow" is detected.			- Flow sensor defect - Incorrect connection of flow sensor and low pressure sensor - Check the water flow of the external pump
H01	**Compressor failure** 1. If the operating frequency drops due to the release of current 40 seconds or later following compressor activation and stops when the frequency drops below the minimum 2. If the operating frequency drops due to current limiting control and stops when the frequency drops below the minimum 3. If an overcurrent was detected 0.8 seconds or later following compressor activation	0	X	1. Check the power supply voltage (AC220-230 V±10%: 1-phase units) (AC380-400 V±10%: 3-phase units) 2. Overload of the cooling circuit 3. Check whether the service valve is fully open
H02	**Compressor blockage** If the input current is greater than zero 20 seconds or more after the compressor has been started and the activation has not been completed	0	X	1. Compressor defect (blockage) - Replace the compressor 2. Compressor wiring defect (open phase)
H03	**Current detection circuit defect**	0	X	Replace the control board of the outdoor unit inverter

Error Code	Diagnostics of functional operation			Determination and measures
	Technical cause	Backup present	Automatic reset	
H04	**Casing thermostat operation** If the casing thermostat reaches 125°C	0	X	1. Check the cooling circuit (gas leakage) 2. Check the casing thermostat and connection 3. Check whether the service valve is fully open 4. Pulse modulation valve defect 5. Check lines for kinks
L02	**Combined fault** Model name of the outdoor unit is different	X	X	1. Check the model name of the outdoor unit 2. Check whether DP_SW13_4 is set to "OFF"
L03	**Duplicated main hydro unit during group control** There are several header units in the group.	X	X	1. Check the addresses of the hydro units. (DN_14) 2. Check whether the remote control connection (group/single person) has changed since the hydro address was set
L07	**Communication error** Single Hydroboxes have a group line	X	X	Replace the water-to-air heat exchanger control board
L08	**Hydro unit group / address not assigned** Addressing has not been implemented for Hydroboxes.	X	X	Check the Hydrobox addresses. Note: This code is displayed the first time the system is switched on following installation.
L09	**Communication error** The capacity code has not been set for the Hydrobox	X	X	Check the setting of the FC01 capacity specifications 0012 = 805XWH**-E, P805XWH**-E 0015 = P1105XWH**-E 0017 = 1405XWH**-E
L10	**Remove the maintenance PCB jumper** Jumpers J800-J803 have not been disconnected	0	X	Disconnect J800-J803
L15	**Combined fault** Model name of the Hydrobox is different	X	X	1. Check the model name of the Hydrobox 2. Check whether DP_SW13_4 is set to "ON"
L16	**Setting error** If ZONE 1 has not been set while ZONE 2 has been set	X	X	Check DP-SW12_2.3
L22	**0-10 V setting error** DN680 settings in the group control are not the same for all units.	X	X	Check the 0-10 V setting for all units (DN_680)
L29	**Error in communication between the outdoor unit PCB and MUCs** No communication signal between IPDU and CDB	0	X	Replace the control board of the outdoor unit
P03	**Outlet temperature error** If the hot gas temperature sensor (TD) reaches 111°C	0	X	1. Check the cooling circuit (gas leakage) 2. Pulse modulation valve defect 3. Check the resistance value of the hot gas temperature sensor (TD)
P04	**High pressure switch fault**	0	X	
P05	**Power supply voltage fault** If the power supply voltage is extremely high or low	0	X	Check the power supply voltage (AC220-230 V±10%: 1-phase unit) (AC380-400 V±10%: 3-phase unit)
P07	**Heat sink overheating fault** If the heat sink reaches 105°C	0	X	1. Check the threaded joint and heat sink grease between the control board of the outdoor unit and the heat sink 2. Check the fan air duct of the heat sink 3. Check the resistance value of the heat sink temperature sensor (TH)

Error Code	Diagnostics of functional operation			Determination and measures
	Technical cause	Backup present	Automatic reset	
P15	**Detection of a gas leakage** - If the hot gas temperature sensor (TD) exceeds 106°C for more than 10 minutes - If the suction gas temperature sensor (TS) reaches 60°C during cooling or 40°C during heating for 10 consecutive minutes If TG≤TC -10K and TG≤TWI -15K was detected for 10 minutes (hot water supply, heating) - If TG≤TE -12K was detected for 10 minutes (cooling)	0	X	1. Check the cooling circuit (gas leakage) 2. Check whether the service valve is fully open 3. Pulse modulation valve defect 4. Check lines for kinks 5. Check the resistance value of the drain temperature sensor (TD) and the air intake temperature sensor (TS) 6. Check the PD sensor with the remote control
P19	**4-way check valve fault** If the coil temperature sensor (TE) reaches 30°C or the suction gas temperature sensor (TS) reaches 50°C during operation of the heat pump	0	X	1. Check the operation of the 4-way valve and the coil properties 2. Pulse modulation valve defect 3. Check the resistance value of the heat exchanger (TE) temperature sensor and air intake temperature sensor (TS)
P20	**High-pressure protection mode** - If an abnormal stop occurs because of the high-pressure relief control - If the high pressure sensor (PD) detects 4.05 MPa - If the heat exchange temperature sensor (TL) detects 63ºC during cooling mode - If the water outlet sensor (TWO) detects 60°C during heating or hot water supply mode	0	X	1. Check whether the service valve is fully open 2. Pulse modulation valve defect 3. Check the outdoor unit fan system (including for blockages) 4. Overfilling with refrigerant 5. Check the resistance value of the heat exchange temperature sensor (TL) and the water outlet temperature sensor (TWO) 6. Check the value of the high pressure sensor (PD) 7. Water pipe is too short. Install a buffer tank or set the temperature lower
P22	**Outdoor unit fan system fault** If the DC fan reference point measurement fails, motor winding short circuit, loss of rotor synchronization due to motor operation fault or abnormal motor current (e.g., blocked rotor)	0	X	1. Check the blocked state of the motor fan 2. Check the cable connection of the fan motor 3. Check the power supply voltage (AC220~230 V±10%: 1-phase unit) (AC380~400 V±10%: 3-phase unit)
P26	**Short circuit error in the compressor drive element** If an abnormal short circuit of the IGBT occurs	0	X	1. P26 anomaly during operation with disconnected compressor wiring - Check the control board 2. No anomaly during operation with disconnected compressor wiring - Compressor winding short circuit
P29	**Compressor rotor position error** The rotor position in the compressor cannot be determined	0	X	1. Despite the fact that the connection lead wire of the compressor is not connected, it stops due to an anomaly in the position detection - Replace the control board of the inverter 2. Check the winding resistance of the compressor In the event of a short circuit, replace the compressor
P31	**Fault occurs in the slave Hydrobox when a fault occurs in the master Hydrobox**	X	0	1. Check the remote control connection 2. Remote control defect 3. Set the address number from DN_12 to 14 correctly for each Hydrobox

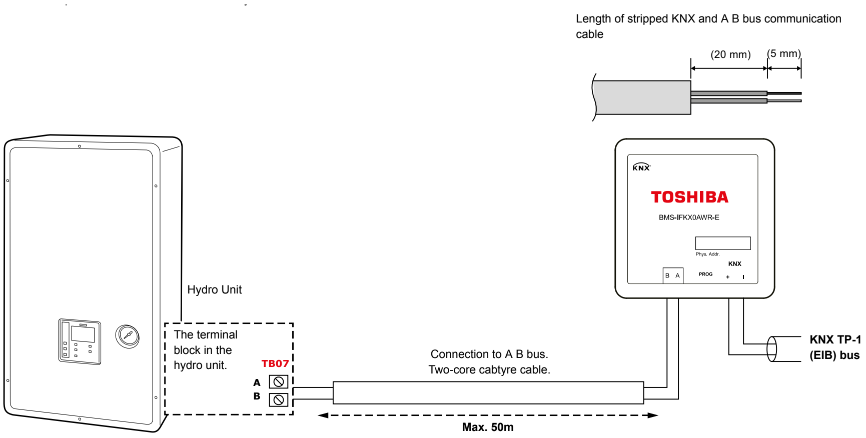
Fault detection via remote control

Error Code	Diagnostics of functional operation			Determination and measures
	Technical cause	Backup present	Automatic reset	
Not generally displayed (cannot be operated with the remote control)	**No communication between Hydrobox and remote control** - The remote control wiring has not been implemented correctly - The Hydrobox has not been switched on	Stop	-	Fault in the remote control power supply 1. Check the remote control wiring 2. Check the remote control 3. Check the Hydrobox power supply cable 4. Check the water-heat exchanger control board
E01	**No communication between Hydrobox and remote control** Disconnection of the transition from the remote control and the base unit of the indoor unit (detected via the remote control)	Stop (automatic reset)	Displayed if an anomaly has been detected	Error with remote control reception 1. Check the remote control transition 2. Check the remote control 3. Check the power supply cable of the Hydrobox 4. Check the water-heat exchanger PCB
E02	**Error in signal transmission to the Hydrobox** (detected via the remote control)	Stop (automatic reset)	Displayed if an anomaly has been detected	Error in remote control transmission 1. Check the transmitter circuit in the remote control 2. Replace the remote control
E09	**Several master remote controls** (detected via the remote control)	Stop (slaves continue to operate)	Displayed if an anomaly has been detected	Several master remote controls Only one remote control can be set as the master. All other remote controls must be set as a slave

KNX module

IMPORTANT:

- Only ever use one remote control. No additional remote controls can be used if you connect this interface.
- You cannot connect or mix Hydroboxes from series 4 and series 5.



Specification

Part	Specification value
Power supply unit	KNX line 29 VDC / 8 mA AW line 14 VDC / 20 mA
Operating temperature and humidity	0°C to 40°C 10 to 80% RH (non-condensing)
Storage temperature and humidity	-20°C to 60°C 10 to 80% RH (non-condensing)
Casing material	Sheet metal box: galvanized sheet iron (SGCC-CSC) base 0.8 t; cover 0.6 t; no coating; forming unit ABS (UL 94 HB) 2.5 mm thick
Size	Sheet metal box 33.4 (H) x 82.5 (W) x 92.1 (D) mm Forming unit 28 (H) x 70 (W) x 70 (D) mm
Weight	225 g (including sheet metal box) 70 g (forming unit)

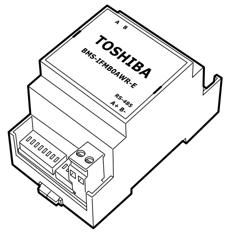
Supplied items

No.	Part designation	Quantity	Comments
1	KN interface (forming unit)	1	
2	Operating instructions	1	
3	Sheet metal box	1	Cover, base
4	Fastening screws		

Use the following wiring material to connect the signal lines (to be procured on site)

No.	Cable	Part	Value
1	For KNX TP-1 bus	Cable type	KNX TP1
		Cable diameter	
		Cable length	1000 m
		Polarity	Yes (+/-)
2	For AB bus (AW-LINK) lines	Cable type	VCTF
		Cable diameter	0.5 mm^2 to 2.0 mm^2
		Cable length	50 m (0.75^2)
		Polarity	No

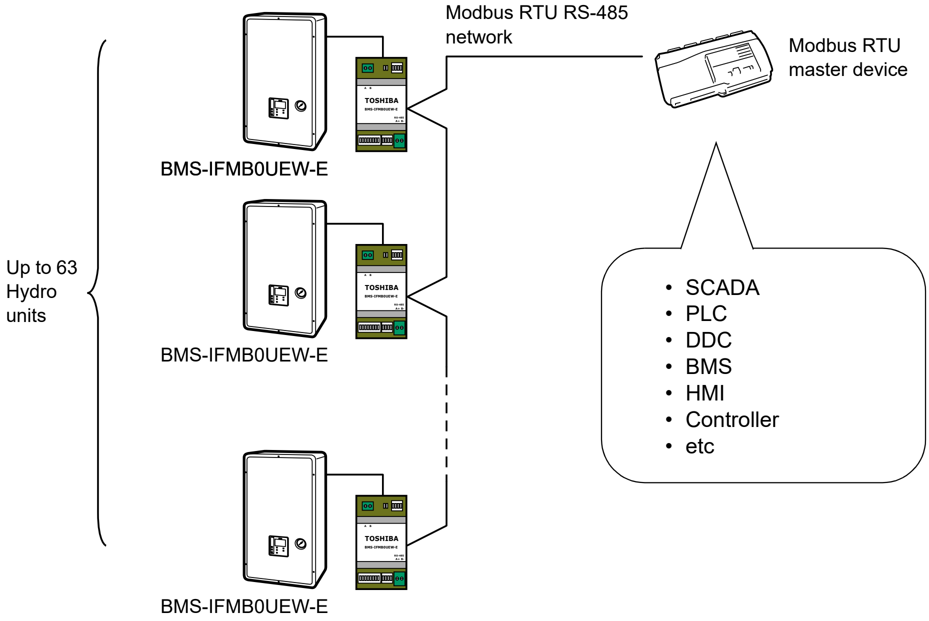
MODBUS module



The BMS-IFMB0AWR-E interface enables the complete and natural integration of TOSHIBA air conditioners in Modbus RTU (RS-485) networks.

The BMS-IFMB0AWR-E is compatible with the TOSHIBA ESTIA AW-LINK lines.

- Reduced dimensions 90 (93) x 53 x 58 mm.
- Quick and easy installation.
  Mounting on DIN rail, wall
- No external power supply required.
- Direct connection to Modbus RTU (RS-485) networks.
  BMS-IFMB0AWR-E is a Modbus slave unit.
- Direct connection to the hydro unit.
- Configuration of both integrated DIP switches and Modbus RTU.
- Total control and monitoring.
- Real states of the internal variables of the hydro unit.
- Enables the simultaneous use of the remote control and the Modbus RTU.



Installation instructions

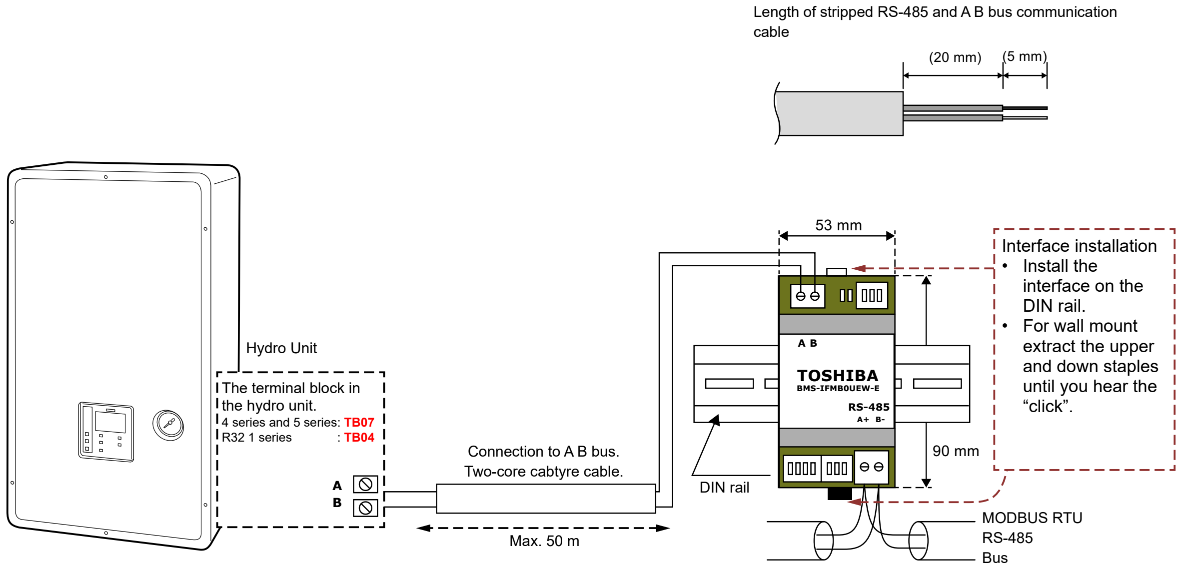
- Disconnect the Hydrobox from the power supply.
- Secure the interface next to the Hydrobox (wall mounting). Observe the instructions in the figure below or install the interface in the Hydrobox (while following the above safety instructions).
- Connect the interface with the A B bus to any point on the bus. The A B bus is the bus that connects the Hydrobox to the wired remote control. It is a two-wire bus that connects connections A and B. The A B connection does not have a special polarity.
- Connect the RS-485 bus to the RS-485 connection terminal of the interface.
- After closing the Hydrobox, reconnect it to the power supply.
- Follow the instructions in the user manual to configure and commission the interface.
- Follow the instructions on the next page to configure the interface via the integrated DIP switch.

NOTE

The cable for connecting the BMS-IFMB0AWR-E to the A B bus can be any two-wire cable insulated in accordance with the specifications. The maximum distance for the A B bus is 50 meters. Further details can be found in the Hydrobox user manual.
Observe the maximum distance of 500 meters for the bus; no loop or star topologies are permitted for the RS-485 bus; a terminating resistance of 120 Ω must be present at each end of the bus in order to prevent signal reflections. A fail-safe biasing mechanism must also be present.

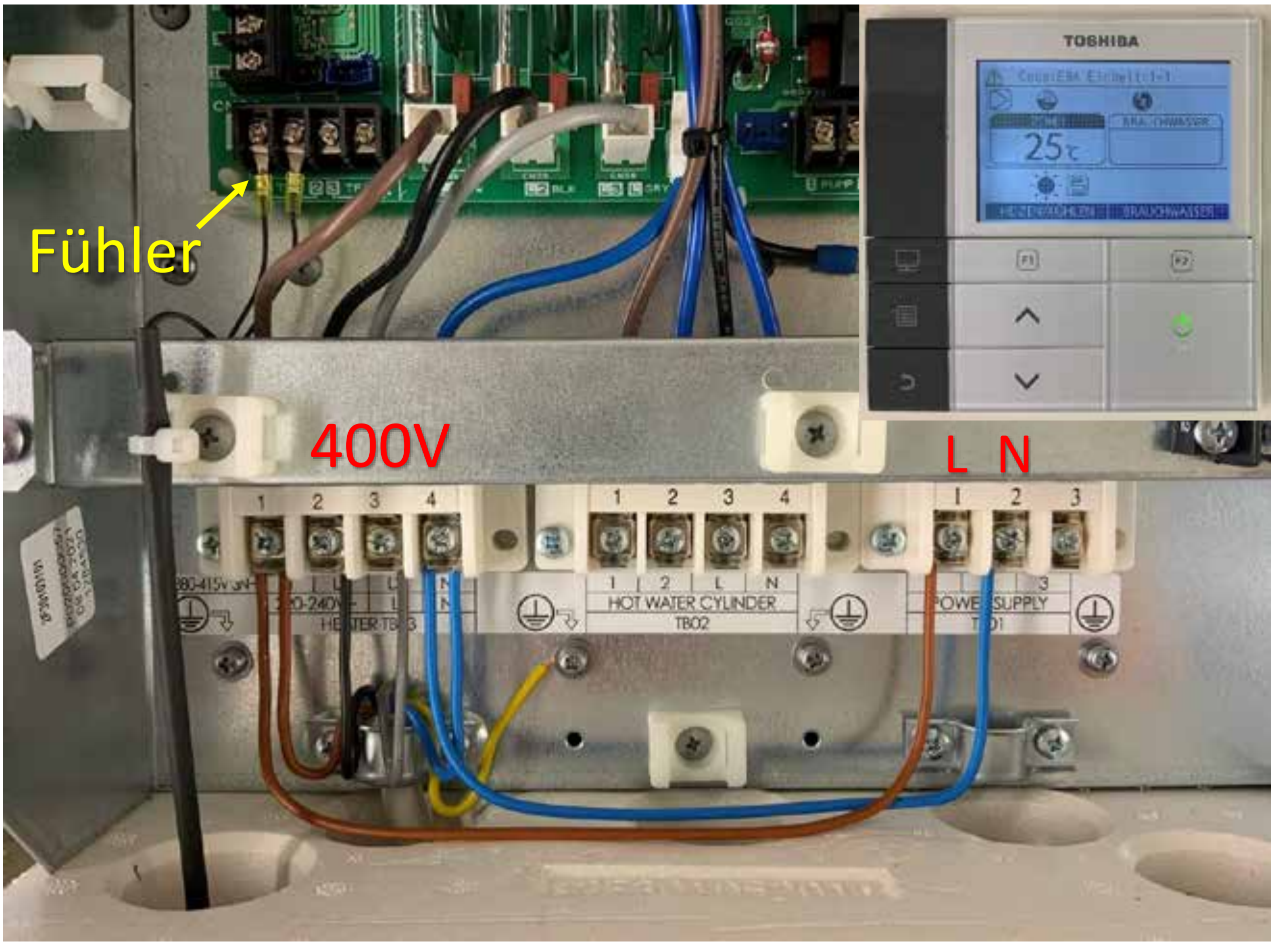
IMPORTANT

- Only ever use one remote control. No additional remote controls can be used if you connect this interface.
- You cannot connect or mix Hydroboxes from series 4 and series 5.



Electrical connection for preheating prior to commissioning

Essential during the period from October to March and at temperatures below 15°C!



1. Connection of 400 V to TB03 and HW sensor to TTW - see photo
2. 230V to TB01 (bracket) - see photo
3. Switch on current / fuse 400 V
4. Activate the heating ⏻ (error message E04 is normal)
5. F1 -> Set temperature to 25°C (using arrow buttons) ☀
6. Check whether water is flowing at the UFH distributor. If not – ventilate/flush the system
7. Error A01 = Air in the system or valve closed // -> Reset button (OFF/ON) ⏻

Connections:

TB 01: Connect 1 & 2 230 V (1=L, 2=N), do not connect 3.
TB 02: Connect 400 V.
TB 02: Does not need to be connected (required later for hot water).
TTW: Connect sensor to TTW.