VERSION 3.0

FAN OF APPENDIX

TOSHIBA

ESTIA

Manual of

ESTIA air-to water heat pump

Appendix

MANUAL OF ESTIA AIR-TO WATER HEAT PUMP

Version 3.0

Summary of key data from the original Toshiba manuals.

Publisher:
AIR-COND Klimaanlagen-Handelsgesellschaft m.b.H.
Haushamer Straße 2, 8054 Graz-Seiersberg

CONTENTS

Outdoor unit HWS-455H-E
Hydro unit HWS-455WH**-E

Rated heating capacity and power input

Rated condition LWT=35°C dT= 5°C	Capacity	kW	4,5
	Power input	kW	0,92
	COP	W/W	4,90
	Nominal flow rate	l/min	12,9

- Rated heating capacity and power input are the data at rated compressor operating frequency
- Power input without water pump power
- Heating capacity and power input are measured according to EN14511

TO: Outdoor temperature (DB°C) RH85%
LWT: Leaving water temperature (°C)
dT: Delta temperature (°C)
Leaving water temperature – Return water temperature

Heating peak capacity and power input
HWS-455H-E

Capacity (kW)		LWT (°C)					
		30	35	40	45	50	55
TO (°C)	-20	1,97	1,94	--	--	--	--
	-15	3,66	3,61	3,56	--	--	--
	-7	4,54	4,48	4,42	4,37	4,31	--
	-2	5,60	5,43	5,26	5,10	4,93	4,77
	2	6,45	6,19	5,94	5,68	5,43	5,18
	7	7,36	6,83	6,62	6,42	6,33	6,25
	10	7,82	7,40	7,15	6,89	6,74	6,36
	12	8,13	7,78	7,49	7,21	7,15	6,75
	15	8,59	8,36	8,02	7,86	7,57	7,14
	20	9,57	9,53	8,99	8,90	8,38	7,56

Power input (kW)		LWT (°C)					
		30	35	40	45	50	55
TO (°C)	-20	0,76	0,85	--	--	--	--
	-15	1,21	1,35	1,50	--	--	--
	-7	1,28	1,43	1,58	1,74	1,89	--
	-2	1,31	1,47	1,63	1,78	1,94	2,10
	2	1,42	1,55	1,69	1,82	1,96	2,09
	7	1,44	1,56	1,79	1,87	2,04	2,21
	10	1,43	1,55	1,78	1,91	2,14	2,22
	12	1,42	1,55	1,78	1,94	2,17	2,22
	15	1,40	1,55	1,78	1,99	2,18	2,22
	20	1,38	1,54	1,78	1,99	2,05	2,05

COP		LWT (°C)					
		30	35	40	45	50	55
TO (°C)	-20	2,59	2,28	--	--	--	--
	-15	3,02	2,67	2,37	--	--	--
	-7	3,55	3,13	2,80	2,51	2,28	--
	-2	4,27	3,69	3,23	2,87	2,54	2,27
	2	4,54	3,99	3,51	3,12	2,77	2,48
	7	5,11	4,38	3,70	3,43	3,10	2,83
	10	5,47	4,77	4,02	3,61	3,15	2,86
	12	5,73	5,02	4,21	3,72	3,29	3,04
	15	6,14	5,39	4,51	3,95	3,47	3,22
	20	6,93	6,19	5,05	4,47	4,09	3,69

- Heating capacity and power input are shown peak value during operation
- Heating capacity and power input are shown at maximum compressor operating frequency
- Power input without water pump power

TO: Outdoor temperature (DB°C)
LWT: Leaving water temperature (°C)

Outdoor unit HWS-455H-E
Hydro unit HWS-455XWH**-E

Rated cooling capacity and power input

Rated condition LWT=7°C dT=5°C	Capacity	kW	4,5
	Power input	kW	1,46
	EER	W/W	4,90
	Nominal flow rate	l/min	12,9

- Rated cooling capacity and power input are the data at rated compressor operating frequency
- Power input without water pump power
- Cooling capacity and power input are measured according to EN14511

TO: Outdoor temperature (DB°C)
LWT: Leaving water temperature (°C)
dT: Delta temperature (°C)
Return water temperature – Leaving water temperature

Cooling capacity and power input
HWS-455H-E

Capacity (kW)		LWT (°C)				
		7	10	13	15	18
TO (°C)	20	5,98	6,43	7,09	7,26	7,55
	27	5,61	6,01	6,53	6,73	7,06
	30	5,45	5,83	6,29	6,51	6,84
	35	5,18	5,54	5,89	6,13	6,49
	40	3,83	4,19	4,55	4,79	5,15
	43	3,27	3,79	4,13	4,39	4,78

Power input (kW)		LWT (°C)				
		7	10	13	15	18
TO (°C)	20	1,43	1,47	1,52	1,53	1,56
	27	1,59	1,62	1,66	1,67	1,70
	30	1,66	1,69	1,72	1,74	1,76
	35	1,78	1,80	1,82	1,84	1,86
	40	1,49	1,48	1,46	1,46	1,44
	43	1,44	1,45	1,44	1,46	1,48

COP		LWT (°C)				
		7	10	13	15	18
TO (°C)	20	4,18	4,37	4,66	4,75	4,84
	27	3,53	3,71	3,93	4,03	4,15
	30	3,28	3,45	3,66	3,74	3,89
	35	2,91	3,08	3,24	3,33	3,49
	40	2,57	2,83	3,12	3,28	3,58
	43	2,27	2,61	2,87	3,01	3,23

- Cooling capacity and power input are the data at rated compressor operating frequency of rated condition 1
- Power input without water pump power
- Cooling capacity and power input are measured according to EN14511

TO: Outdoor temperature (DB°C)
LWT: Leaving water temperature (°C)

Outdoor unit HWS-805H-E
Hydro unit HWS-805XWH**-E

Rated heating capacity and power input

Rated condition LWT=35°C dT= 5°C	Capacity	kW	8,0
	Power input	kW	1,79
	COP	W/W	4,46
	Nominal flow rate	l/min	22,9

- Rated heating capacity and power input are the data at rated compressor operating frequency
- Power input without water pump power
- Heating capacity and power input are measured according to EN14511

TO: Outdoor temperature (DB°C) RH85%
LWT: Leaving water temperature (°C)
dT: Delta temperature (°C)
Leaving water temperature – Return water temperature

Heating peak capacity and power input
HWS-805H-E

Capacity (kW)		LWT (°C)					
		30	35	40	45	50	55
TO (°C)	-20	3,88	3,78	3,74	--	--	--
	-15	4,59	4,47	4,41	4,31	--	--
	-7	5,89	5,74	5,65	5,55	5,29	--
	-2	6,81	6,60	6,48	6,35	6,23	5,84
	2	7,70	7,46	7,34	7,23	7,01	6,77
	7	8,75	8,52	8,32	8,13	7,93	7,70
	10	9,28	9,01	8,76	8,50	8,24	8,11
	12	9,81	9,52	9,25	8,99	8,72	8,67
	15	10,33	10,01	9,73	9,46	9,18	9,03
	20	11,73	11,32	11,03	10,75	10,46	10,22

Power input (kW)		LWT (°C)					
		30	35	40	45	50	55
TO (°C)	-20	1,44	1,55	1,89	--	--	--
	-15	1,53	1,65	2,01	2,28	--	--
	-7	1,55	1,68	2,04	2,41	2,56	--
	-2	1,57	1,71	2,06	2,42	2,62	2,74
	2	1,56	1,71	2,05	2,38	2,62	2,76
	7	1,82	2,01	2,21	2,42	2,62	2,81
	10	1,79	1,97	2,17	2,38	2,58	2,82
	12	1,78	1,96	2,16	2,36	2,56	2,83
	15	1,76	1,94	2,19	2,43	2,68	2,97
	20	1,75	1,93	2,17	2,42	2,66	3,00

COP		LWT (°C)					
		30	35	40	45	50	55
TO (°C)	-20	2,68	2,44	1,98	--	--	--
	-15	3,00	2,71	2,20	1,89	--	--
	-7	3,79	3,41	2,76	2,30	2,07	--
	-2	4,34	3,86	3,15	2,63	2,38	2,13
	2	4,94	4,37	3,59	3,03	2,68	2,45
	7	4,81	4,24	3,76	3,36	3,03	2,74
	10	5,18	4,57	4,03	3,58	3,20	2,87
	12	5,50	4,85	4,28	3,80	3,40	3,06
	15	5,88	5,16	4,45	3,88	3,42	3,04
	20	6,71	5,87	5,08	4,45	3,93	3,41

- Heating capacity and power are shown peak value during operation
- Heating capacity and power input are shown at maximum compressor operating frequency
- Power input without water pump power

TO: Outdoor temperature (DB°C)
LWT: Leaving water temperature (°C)

Outdoor unit HWS-805H-E
Hydro unit HWS-805XWH**-E

Rated cooling capacity and power input

Rated condition LWT=7°C dT=5°C	Capacity	kW	6,0
	Power input	kW	1,94
	EER	W/W	3,10
	Nominal flow rate	l/min	17,2

- Rated cooling capacity and power input are the data at rated compressor operating frequency
- Power input without water pump power
- Cooling capacity and power input are measured according to EN14511

TO: Outdoor temperature (DB°C)
LWT: Leaving water temperature (°C)
dT: Delta temperature (°C)
Return water temperature – Leaving water temperature

Cooling capacity and power input
HWS-805H-E

Capacity (kW)		LWT (°C)				
		7	10	13	15	18
TO (°C)	20	7,34	7,91	8,49	8,95	9,64
	27	7,18	7,74	8,30	8,75	9,43
	30	7,11	7,67	8,23	8,67	9,34
	35	7,00	7,55	8,10	8,53	9,19
	40	6,41	6,91	7,42	7,82	8,42
	43	5,39	5,75	6,13	6,43	6,85

Power input (kW)		LWT (°C)				
		7	10	13	15	18
TO (°C)	20	1,65	1,68	1,71	1,73	1,77
	27	2,01	2,04	2,08	2,11	2,15
	30	2,16	2,20	2,24	2,27	2,32
	35	2,42	2,46	2,51	2,54	2,59
	40	2,62	2,66	2,71	2,74	2,80
	43	2,37	2,38	2,38	2,38	2,40

COP		LWT (°C)				
		7	10	13	15	18
TO (°C)	20	4,45	4,71	4,97	5,17	5,46
	27	3,57	3,79	3,99	4,15	4,38
	30	3,29	3,48	3,67	3,82	4,03
	35	2,89	3,06	3,23	3,36	3,55
	40	2,45	2,60	2,74	2,85	3,01
	43	2,27	2,42	2,58	2,71	2,85

- Cooling capacity and power input are the data at rated compressor operating frequency of rated condition 1
- Power input without water pump power
- Cooling capacity and power input are measured according to EN14511

TO: Outdoor temperature (DB°C)
LWT: Leaving water temperature (°C)

Outdoor unit HWS-1105H-E
Hydro unit HWS-1405XWH**-E

Rated heating capacity and power input

Rated condition LWT=35°C dT= 5°C	Capacity	kW	11,2
	Power input	kW	2,30
	COP	W/W	4,88
	Nominal flow rate	l/min	32,1

- Rated heating capacity and power input are the data at rated compressor operating frequency
- Power input without water pump power
- Heating capacity and power input are measured according to EN14511

TO: Outdoor temperature (DB°C)
LWT: Leaving water temperature (°C)
dT: Delta temperature (°C)
Leaving water temperature – Return water temperature

Heating peak capacity and power input
HWS-1105H-E

Capacity (kW)		LWT (°C)					
		30	35	40	45	50	55
TO (°C)	-20	6,36	6,20	6,08	5,84	--	--
	-15	7,72	7,52	7,36	7,12	--	--
	-7	9,95	9,67	9,44	9,16	8,83	--
	-2	11,52	11,18	10,89	10,57	10,26	8,60
	2	12,84	12,42	12,07	11,72	11,38	9,53
	7	15,12	14,63	14,12	13,62	13,11	10,98
	10	16,03	15,51	14,97	14,43	13,89	11,64
	12	16,95	16,24	15,68	15,12	14,55	12,19
	15	18,30	17,20	16,13	15,07	14,00	11,72
	20	21,09	19,44	18,24	17,03	15,83	13,26

Power input (kW)		LWT (°C)					
		30	35	40	45	50	55
TO (°C)	-20	2,23	2,36	2,75	3,11	--	--
	-15	2,39	2,53	2,95	3,34	--	--
	-7	2,47	2,64	3,06	3,48	3,89	--
	-2	2,51	2,69	3,12	3,54	3,97	3,92
	2	2,51	2,71	3,13	3,56	3,98	3,95
	7	3,00	3,24	3,50	3,76	4,02	3,99
	10	2,99	3,22	3,48	3,74	4,00	3,96
	12	2,98	3,20	3,47	3,73	3,99	3,95
	15	2,93	3,16	3,33	3,50	3,67	3,64
	20	2,91	3,14	3,31	3,48	3,65	3,61

COP		LWT (°C)					
		30	35	40	45	50	55
TO (°C)	-20	2,85	2,63	2,21	1,88	--	--
	-15	3,24	2,97	2,49	2,13	--	--
	-7	4,03	3,66	3,09	2,63	2,27	--
	-2	4,59	4,15	3,49	2,98	2,59	2,19
	2	5,11	4,59	3,86	3,29	2,86	2,42
	7	5,03	4,52	4,04	3,62	3,26	2,75
	10	5,37	4,82	4,31	3,86	3,48	2,94
	12	5,70	5,07	4,52	4,06	3,65	3,09
	15	6,24	5,45	4,85	4,31	3,82	3,22
	20	7,25	6,20	5,51	4,90	4,34	3,67

- Heating capacity and power input are shown peak value during operation
- Heating capacity and power input are shown at maximum operation frequency
- Power input without water pump power

TO: Outdoor temperature (DB°C)
LWT: Leaving water temperature (°C)

Outdoor unit HWS-1105H-E
Hydro unit HWS-1405XWH**-E

Rated cooling capacity and power input

Rated conditions LWT=7°C dT=5°C	Capacity	kW	10,0
	Power input	kW	3,26
	EER	W/W	3,07
	Nominal flow rate	l/min	28,9

- Rated cooling capacity and power input are the data at rated compressor operating frequency
- Power input without water pump power
- Cooling capacity and power input are measured according to EN14511

TO: Outdoor temperature (DB°C)
LWT: Leaving water temperature (°C)
dT: Delta temperature (°C)
Return water temperature – Leaving water temperature

Cooling capacity and power input
HWS-1105H-E

Capacity (kW)		LWT (°C)				
		7	10	13	15	18
TO (°C)	20	11,14	12,04	12,95	13,67	14,75
	27	10,72	11,62	12,52	13,24	14,32
	30	10,54	11,44	12,34	13,05	14,13
	35	10,24	11,14	12,03	12,75	13,82
	40	9,18	9,98	10,78	11,42	12,38
	43	7,06	7,67	8,29	8,78	9,53

Power input (kW)		LWT (°C)				
		7	10	13	15	18
TO (°C)	20	2,15	2,16	2,17	2,17	2,19
	27	2,68	2,71	2,74	2,76	2,79
	30	2,91	2,95	2,98	3,01	3,05
	35	3,29	3,34	3,39	3,43	3,49
	40	3,57	3,57	3,58	3,62	3,69
	43	3,06	3,05	3,05	3,07	3,10

COP		LWT (°C)				
		7	10	13	15	18
TO (°C)	20	5,18	5,58	5,97	6,29	6,75
	27	4,00	4,29	4,57	4,80	5,12
	30	3,62	3,88	4,14	4,34	4,63
	35	3,11	3,33	3,55	3,72	3,96
	40	2,57	2,79	3,01	3,16	3,36
	43	2,30	2,51	2,72	2,86	3,07

- Cooling capacity and power input are the data at rated compressor operating frequency of rated condition1
- Power input without water pump power
- Cooling capacity and power input are measured according to EN14511

TO: Outdoor temperature (DB°C)
LWT: Leaving water temperature (°C)

Outdoor unit HWS-1405H-E
Hydro unit HWS-1405XWH**-E

Rated heating capacity and power input

Rated condition LWT=35°C dT= 5°C	Capacity	kW	14,0
	Power input	kW	3,11
	COP	W/W	4,50
	Nominal flow rate	l/min	40,1

- Rated heating capacity and power input are the data at rated compressor operating frequency
- Power input without water pump power
- Heating capacity and power input are measured according to EN14511

TO: Outdoor temperature (DB°C)
LWT: Leaving water temperature (°C)
dT: Delta temperature (°C)
Leaving water temperature – Return water temperature

Heating peak capacity and power input
HWS-1405H-E

Capacity (kW)		LWT (°C)					
		30	35	40	45	50	55
TO (°C)	-20	6,56	6,36	6,04	5,64	--	--
	-15	8,62	8,34	7,90	7,37	--	--
	-7	11,19	10,79	10,21	9,59	8,93	--
	-2	12,98	12,50	11,80	11,09	10,37	8,88
	2	14,14	13,59	12,81	12,02	11,26	9,63
	7	17,42	16,74	15,50	14,26	13,02	11,67
	10	18,29	17,58	16,28	14,97	13,67	12,26
	12	19,53	18,58	17,21	15,83	14,45	12,96
	15	20,96	19,56	17,68	15,80	13,92	12,48
	20	23,26	21,29	19,24	17,20	15,15	13,58

Power input (kW)		LWT (°C)					
		30	35	40	45	50	55
TO (°C)	-20	2,51	2,65	2,92	3,15	--	--
	-15	2,66	2,83	3,11	3,36	--	--
	-7	2,83	3,03	3,32	3,59	3,87	--
	-2	2,89	3,11	3,40	3,69	3,98	4,00
	2	2,89	3,11	3,40	3,68	3,98	4,01
	7	3,65	3,95	3,97	4,00	4,03	4,06
	10	3,66	3,95	3,97	4,00	4,03	4,06
	12	3,64	3,93	3,93	3,94	3,95	3,98
	15	3,62	3,90	3,89	3,88	3,87	3,89
	20	3,42	3,68	3,67	3,65	3,64	3,66

COP		LWT (°C)					
		30	35	40	45	50	55
TO (°C)	-20	2,62	2,39	2,07	1,79	--	--
	-15	3,24	2,95	2,54	2,19	--	--
	-7	3,96	3,56	3,08	2,67	2,31	--
	-2	4,49	4,02	3,47	3,01	2,61	2,22
	2	4,89	4,36	3,77	3,27	2,83	2,40
	7	4,77	4,24	3,90	3,56	3,23	2,87
	10	5,00	4,45	4,09	3,74	3,39	3,02
	12	5,36	4,73	4,38	4,02	3,66	3,26
	15	5,79	5,01	4,54	4,07	3,60	3,21
	20	6,80	5,78	5,25	4,71	4,17	3,71

- Heating capacity and power input are shown peak value during operation
- Heating capacity and power input are shown at maximum operating frequency
- Power input without water pump power

TO: Outdoor temperature (DB°C)
LWT: Leaving water temperature (°C)

Outdoor unit HWS-1405H-E
Hydro unit HWS-1405XWH**-E

Rated cooling capacity and power input

Rated condition LWT=7°C dT=5°C	Capacity	kW	11,0
	Power input	kW	3,81
	EER	W/W	2,89
	Nominal flow rate	l/min	31,5

- Rated cooling capacity and power input are the data at rated compressor operating frequency
- Power input without water pump power
- Cooling capacity and power input are measured according to EN14511

TO: Outdoor temperature (DB°C)
LWT: Leaving water temperature (°C)
dT: Delta temperature (°C)
Return water temperature – Leaving water temperature

Cooling capacity and power input
HWS-1405H-E

Capacity (kW)		LWT (°C)				
		7	10	13	15	18
TO (°C)	20	13,29	14,40	15,50	16,38	17,71
	27	12,59	13,55	14,52	15,29	16,45
	30	12,28	13,19	14,09	14,82	15,90
	35	11,78	12,59	13,39	14,03	15,00
	40	9,46	10,10	10,75	11,26	12,05
	43	7,29	7,79	8,28	8,69	8,90

Power input (kW)		LWT (°C)				
		7	10	13	15	18
TO (°C)	20	2,88	2,88	2,88	2,88	2,88
	27	3,44	3,44	3,44	3,44	3,44
	30	3,67	3,67	3,67	3,67	3,67
	35	4,07	4,07	4,07	4,07	4,07
	40	3,83	3,76	3,70	3,71	3,68
	43	3,24	3,15	3,11	3,08	3,05

COP		LWT (°C)				
		7	10	13	15	18
TO (°C)	20	4,61	5,00	5,38	5,69	6,15
	27	3,66	3,94	4,23	4,45	4,79
	30	3,34	3,59	3,84	4,03	4,33
	35	2,89	3,09	3,29	3,45	3,69
	40	2,47	2,69	2,90	3,04	3,27
	43	2,25	2,47	2,67	2,82	2,91

- Cooling capacity and power input are the data at rated compressor operating frequency of rated condition 1
- Power input without water pump power
- Cooling capacity and power input are measured according to EN14511

TO: Outdoor temperature (DB°C)
LWT: Leaving water temperature (°C)

Outdoor unit HWS-1105H8-E
Hydro unit HWS-1405XWH**-E

Rated heating capacity and power input

Rated condition LWT=35°C dT= 5°C	Capacity	kW	11,2
	Power input	kW	2,34
	COP	W/W	4,80
	Nominal flow rate	l/min	32,1

- Rated heating capacity and power input are the data at rated compressor operating frequency
- Power input without water pump power
- Heating capacity and power input are measured according to EN14511

TO: Outdoor temperature (DB°C)
LWT: Leaving water temperature (°C)
dT: Delta temperature (°C)
Leaving water temperature – Return water temperature

Heating peak capacity and power input
HWS-1105H8-E

Capacity (kW)		LWT (°C)					
		30	35	40	45	50	55
TO (°C)	-20	6,38	6,12	6,01	5,90	--	--
	-15	7,60	7,29	7,16	7,03	--	--
	-7	9,90	9,50	9,33	9,17	8,92	--
	-2	11,30	10,86	10,69	10,52	10,22	9,44
	2	12,99	12,49	12,13	11,78	11,26	10,40
	7	15,32	14,73	14,33	13,93	13,53	12,56
	10	16,36	15,73	15,37	15,02	14,66	13,85
	12	17,05	16,39	16,02	15,64	15,26	14,57
	15	17,90	17,21	16,76	16,30	15,85	15,03
	20	20,04	19,27	18,83	18,38	17,94	16,85

Power input (kW)		LWT (°C)					
		30	35	40	45	50	55
TO (°C)	-20	1,91	2,06	2,37	2,69	--	--
	-15	2,21	2,38	2,74	3,11	--	--
	-7	2,37	2,55	2,94	3,34	3,73	--
	-2	2,42	2,60	3,00	3,42	3,82	4,06
	2	2,54	2,74	3,12	3,52	3,90	4,14
	7	2,92	3,14	3,45	3,76	4,08	4,36
	10	2,92	3,14	3,46	3,79	4,12	4,43
	12	2,91	3,13	3,47	3,81	4,15	4,48
	15	2,90	3,11	3,47	3,82	4,17	4,48
	20	2,88	3,10	3,46	3,83	4,20	4,55

COP		LWT (°C)					
		30	35	40	45	50	55
TO (°C)	-20	3,34	2,97	2,54	2,19	--	--
	-15	3,44	3,07	2,61	2,26	--	--
	-7	4,18	3,73	3,18	2,75	2,39	--
	-2	4,68	4,17	3,56	3,07	2,67	2,33
	2	5,12	4,56	3,89	3,35	2,89	2,51
	7	5,24	4,69	4,15	3,70	3,32	2,88
	10	5,61	5,02	4,44	3,96	3,56	3,13
	12	5,85	5,23	4,61	4,10	3,68	3,25
	15	6,18	5,53	4,83	4,27	3,80	3,36
	20	6,96	6,22	5,44	4,80	4,28	3,70

- Heating capacity and power input are shown peak value during operation
- Heating capacity and power input are shown at maximum compressor operating frequency
- Power input without water pump power

TO: Outdoor temperature (DB°C)
LWT: Leaving water temperature (°C)

Outdoor unit HWS-1105H8-E
Hydro unit HWS-1405XWH**-E

Rated cooling capacity and power input

Rated condition LWT=7°C dT=5°C	Capacity	kW	10,0
	Power input	kW	3,26
	EER	W/W	3,07
	Nominal flow rate	l/min	28,9

- Rated cooling capacity and power input are the data at rated compressor operating frequency
- Power input without water pump power
- Cooling capacity and power input are measured according to EN14511

TO: Outdoor temperature (DB°C)
VLT: Leaving water temperature (°C)
dT: Delta temperature (°C)
Return water temperature – Leaving water temperature

Cooling capacity and power input
HWS-1105H8-E

Capacity (kW)		LWT (°C)				
		7	10	13	15	18
TO (°C)	20	11,15	11,95	12,75	13,38	14,34
	27	10,69	11,46	12,24	12,86	13,78
	30	10,49	11,25	12,02	12,63	13,55
	35	10,16	10,91	11,66	12,25	13,15
	40	9,39	10,09	10,78	11,33	12,01
	43	8,93	9,59	10,25	10,78	11,33

Power input (kW)		LWT (°C)				
		7	10	13	15	18
TO (°C)	20	2,10	2,11	2,12	2,13	2,14
	27	2,60	2,62	2,65	2,67	2,70
	30	2,81	2,84	2,87	2,90	2,94
	35	3,17	3,21	3,25	3,29	3,34
	40	3,50	3,55	3,59	3,63	3,67
	43	3,70	3,75	3,80	3,84	3,87

COP		LWT (°C)				
		7	10	13	15	18
TO (°C)	20	5,32	5,67	6,02	6,29	6,70
	27	4,12	4,37	4,62	4,82	5,11
	30	3,73	3,96	4,18	4,36	4,61
	35	3,21	3,40	3,58	3,73	3,94
	40	2,68	2,84	3,00	3,12	3,27
	43	2,41	2,56	2,70	2,81	2,93

- Cooling capacity and power input are the data at rated compressor operating frequency of rated condition 1
- Power input without water pump power
- Cooling capacity and power input are measured according to EN14511

TO: Outdoor temperature (DB°C) RH85%
LWT: Leaving water temperature (°C)

Outdoor unit HWS-1405H8-E
Hydro unit HWS-1405XWH**-E

Rated heating capacity and power input

Rated condition LWT=35°C dT= 5°C	Capacity	kW	14,0
	Power input	kW	3,16
	COP	W/W	4,44
	Nominal flow rate	l/min	40,1

- Rated heating capacity and power input are the data at rated compressor operating frequency
- Power input without water pump power
- Heating capacity and power input are measured according to EN14511

TO: Outdoor temperature (DB°C)
LWT: Leaving water temperature (°C)
dT: Delta temperature (°C)
Leaving water temperature – Return water temperature

Heating peak capacity and power input
HWS-1405H8-E

Capacity (kW)		LWT (°C)					
		30	35	40	45	50	55
TO (°C)	-20	7,15	6,85	6,68	6,50	--	--
	-15	8,51	8,16	7,96	7,75	--	--
	-7	11,08	10,64	10,38	10,12	9,76	--
	-2	12,66	12,16	11,88	11,61	11,19	10,33
	2	14,25	13,70	13,30	12,90	12,33	11,39
	7	16,35	15,77	15,42	15,07	14,72	13,64
	10	17,61	17,14	16,74	16,35	15,95	15,04
	12	18,37	17,86	17,50	17,14	16,77	15,81
	15	19,39	18,86	18,31	17,77	17,22	17,21
	20	21,41	20,90	20,37	19,83	19,30	18,75

Power input (kW)		LWT (°C)					
		30	35	40	45	50	55
TO (°C)	-20	2,24	2,41	2,76	3,13	--	--
	-15	2,59	2,78	3,19	3,62	--	--
	-7	2,77	2,98	3,42	3,88	4,32	--
	-2	2,83	3,05	3,50	3,98	4,43	4,71
	2	3,01	3,25	3,67	4,11	4,52	4,80
	7	3,29	3,55	3,89	4,24	4,58	4,86
	10	3,29	3,55	3,91	4,27	4,63	4,93
	12	3,29	3,55	3,91	4,29	4,67	4,98
	15	3,31	3,55	3,93	4,31	4,68	5,09
	20	3,34	3,58	3,97	4,36	4,75	5,18

COP		LWT (°C)					
		30	35	40	45	50	55
TO (°C)	-20	3,19	2,85	2,42	--	--	--
	-15	3,29	2,94	2,49	2,14	--	--
	-7	4,00	3,57	3,03	2,61	2,26	--
	-2	4,48	3,99	3,39	2,92	2,53	2,20
	2	4,73	4,21	3,62	3,14	2,73	2,37
	7	4,98	4,44	3,96	3,56	3,21	2,81
	10	5,36	4,83	4,29	3,83	3,44	3,05
	12	5,59	5,03	4,47	4,00	3,59	3,17
	15	5,86	5,31	4,66	4,13	3,68	3,38
	20	6,41	5,83	5,13	4,55	4,06	3,62

- Heating capacity and power input are shown peak value during operation
- Heating capacity and power input are shown at maximum compressor operating frequency
- Power input without water pump power

TO: Outdoor temperature (DB°C)
LWT: Leaving water temperature (°C)

Outdoor unit HWS-1405H8-E
Hydro unit HWS-1405XWH**-E

Rated cooling capacity and power input

Rated condition LWT=7°C dT=5°C	Capacity	kW	11,0
	Power input	kW	3,81
	EER	W/W	2,89
	Nominal flow rate	l/min	31,5

- Rated cooling capacity and power input are the data at rated compressor operating frequency
- Power input without water pump power
- Cooling capacity and power input are measured according to EN14511

TO: Outdoor temperature (DB°C)
LWT: Leaving water temperature (°C)
dT: Delta temperature (°C)
Return water temperature – Leaving water temperature

Cooling capacity and power input
HWS-1405H8-E

Capacity (kW)		LWT (°C)				
		7	10	13	15	18
TO (°C)	20	13,27	14,18	15,10	15,83	16,92
	27	12,69	13,57	14,46	15,17	16,23
	30	12,44	13,31	14,19	14,88	15,93
	35	12,02	12,88	13,73	14,41	15,44
	40	11,27	12,07	12,87	13,38	14,18
	43	10,82	11,59	12,36	12,75	13,43

Power input (kW)		LWT (°C)				
		7	10	13	15	18
TO (°C)	20	2,82	2,82	2,82	2,82	2,82
	27	3,43	3,46	3,49	3,52	3,55
	30	3,70	3,74	3,78	3,82	3,87
	35	4,13	4,20	4,26	4,31	4,39
	40	4,58	4,65	4,72	4,75	4,80
	43	4,84	4,92	5,00	5,00	5,04

COP		LWT (°C)				
		7	10	13	15	18
TO (°C)	20	4,70	5,02	5,35	5,61	6,00
	27	3,69	3,92	4,14	4,31	4,57
	30	3,37	3,56	3,75	3,90	4,12
	35	2,91	3,07	3,22	3,34	3,52
	40	2,46	2,60	2,73	2,82	2,96
	43	2,23	2,35	2,47	2,55	2,67

- Cooling capacity and power input are the data at rated compressor operating frequency of rated condition 1
- Power input without water pump power
- Cooling capacity and power input are measured according to EN14511

TO: Outdoor temperature (DB°C)
LWT: Leaving water temperature (°C)

Outdoor unit HWS-1605H8-E
Hydro unit HWS-1405XWH**-E

Rated heating capacity and power input

Rated condition LWT=35°C dT= 5°C	Capacity	kW	16,0
	Power input	kW	3,72
	COP	W/W	4,30
	Nominal flow rate	l/min	45,8

- Rated heating capacity and power input are the data at rated compressor operating frequency
- Power input without water pump power
- Heating capacity and power input are measured according to EN14511

TO: Outdoor temperature (DB°C)
LWT: Leaving water temperature (°C)
dT: Delta temperature (°C)
Leaving water temperature – Return water temperature

Heating peak capacity and power input
HWS-1605H8-E

Capacity (kW)		LWT (°C)					
		30	35	40	45	50	55
TO (°C)	-20	7,56	7,25	7,04	6,84	--	--
	-15	9,00	8,63	8,39	8,15	--	--
	-7	11,73	11,25	10,94	10,64	10,22	--
	-2	13,39	12,87	12,53	12,20	11,72	10,82
	2	15,17	14,59	14,09	13,60	12,91	11,93
	7	17,43	16,76	16,26	15,77	15,28	14,12
	10	18,63	17,92	17,47	17,01	16,56	15,57
	12	19,41	18,68	18,23	17,78	17,32	16,53
	15	20,63	19,82	19,30	18,78	18,27	17,23
	20	23,10	22,08	21,54	21,01	20,47	19,13

Power input (kW)		LWT (°C)					
		30	35	40	45	50	55
TO (°C)	-20	2,45	2,63	3,00	3,38	--	--
	-15	2,83	3,04	3,46	3,91	--	--
	-7	3,03	3,26	3,71	4,19	4,64	--
	-2	3,09	3,33	3,80	4,29	4,76	5,06
	2	3,28	3,54	3,98	4,43	4,86	5,16
	7	3,61	3,89	4,24	4,58	4,93	5,22
	10	3,61	3,89	4,25	4,61	4,98	5,30
	12	3,61	3,89	4,26	4,64	5,02	5,35
	15	3,63	3,90	4,30	4,70	5,10	5,46
	20	3,66	3,93	4,34	4,76	5,17	5,55

COP		LWT (°C)					
		30	35	40	45	50	55
TO (°C)	-20	3,09	2,76	2,35	2,02	--	--
	-15	3,19	2,84	2,42	2,09	--	--
	-7	3,87	3,46	2,95	2,54	2,20	--
	-2	4,34	3,87	3,30	2,84	2,46	2,14
	2	4,62	4,12	3,54	3,07	2,66	2,31
	7	4,83	4,30	3,84	3,44	3,10	2,70
	10	5,17	4,61	4,11	3,69	3,33	2,94
	12	5,38	4,81	4,28	3,83	3,45	3,09
	15	5,69	5,09	4,49	4,00	3,58	3,16
	20	6,31	5,62	4,96	4,42	3,96	3,45

- Heating capacity and power input are shown peak value during operation
- Heating capacity and power input are shown at maximum operating frequency
- Power input without water pump power

TO: Outdoor temperature (DB°C)
LWT: Leaving water temperature (°C)

Outdoor unit HWS-1605H8-E
Hydro unit HWS-1405XWH**-E

Rated cooling capacity and power input

Rated condition LWT=7°C dT=5°C	Capacity	kW	13,0
	Power input	kW	4,80
	EER	W/W	2,71
	Nominal flow rate	l/min	37,3

- Rated cooling capacity and power input are the data at rated compressor operating frequency
- Power input without water pump power
- Cooling capacity and power input are measured according to EN14511

TO: Outdoor temperature (DB°C)
LWT: Leaving water temperature (°C)
dT: Delta temperature (°C)
Return water temperature – Leaving water temperature

Cooling capacity and power input
HWS-1605H8-E

Capacity (kW)		LWT (°C)				
		7	10	13	15	18
TO (°C)	20	14,39	15,37	16,34	17,12	18,29
	27	13,67	14,60	15,54	16,28	17,40
	30	13,36	14,27	15,19	15,92	17,02
	35	12,84	13,73	14,62	15,33	16,39
	40	11,53	12,32	13,29	14,12	14,92
	43	10,72	11,53	12,49	13,33	14,24

Power input (kW)		LWT (°C)				
		7	10	13	15	18
TO (°C)	20	3,25	3,26	3,27	3,28	3,29
	27	3,89	3,94	3,99	4,02	4,08
	30	4,17	4,23	4,29	4,34	4,42
	35	4,63	4,72	4,81	4,88	4,98
	40	4,95	5,05	5,15	5,24	5,35
	43	5,16	5,28	5,42	5,51	5,68

COP		LWT (°C)				
		7	10	13	15	18
TO (°C)	20	4,43	4,71	5,00	5,22	5,56
	27	3,51	3,71	3,90	4,05	4,27
	30	3,20	3,37	3,54	3,67	3,85
	35	2,78	2,91	3,04	3,14	3,29
	40	2,33	2,44	2,58	2,69	2,79
	43	2,08	2,18	2,31	2,42	2,50

- Cooling capacity and power input are the data at rated compressor operating frequency of rated condition 1
- Power input without water pump power
- Cooling capacity and power input are measured according to EN14511

TO: Outdoor temperature (DB°C)
LWT: Leaving water temperature (°C)

Outdoor unit HWS-P805HR-E
Hydro unit HWS-P805XWH**-E

Rated heating capacity and power input

Rated condition LWT=35°C dT= 5°C	Capacity	kW	8,0
	Power input	kW	1,68
	COP	W/W	4,76
	Nominal flow rate	l/min	22,9

- Rated heating capacity and power input are the data at rated compressor operating frequency
- Power input without water pump power
- Heating capacity and power input are measured according to EN14511

TO: Outdoor temperature (DB°C)
LWT: Leaving water temperature (°C)
dT: Delta temperature (°C)
Leaving water temperature - return water temperature

Heating peak capacity and power input
HWS-P805HR-E

Capacity (kW)		LWT (°C)						
		30	35	40	45	50	55	60
TO (°C)	-25	6,81	6,18	5,79	--	--	--	--
	-20	8,35	7,77	7,25	6,72	--	--	--
	-15	9,89	9,37	8,71	8,04	7,38	--	--
	-7	12,35	11,92	11,04	10,16	9,28	8,40	--
	-2	14,45	13,74	12,65	11,56	10,48	9,39	8,30
	2	16,14	15,19	13,94	12,69	11,43	10,18	8,93
	7	18,31	16,92	15,46	14,00	12,54	11,08	9,62
	10	19,69	18,21	16,60	15,00	13,39	11,79	10,18
	12	20,61	19,06	17,36	15,66	13,96	12,26	--
	15	21,99	20,35	18,50	16,66	14,81	12,97	--
	20	24,29	22,49	20,41	18,32	16,24	14,15	--

Power input (kW)		LWT (°C)						
		30	35	40	45	50	55	60
TO (°C)	-25	3,43	3,40	3,53	--	--	--	--
	-20	3,68	3,66	3,76	3,88	--	--	--
	-15	3,87	3,85	3,93	4,02	4,13	--	--
	-7	4,11	4,08	4,12	4,17	4,23	4,32	--
	-2	4,16	4,22	4,22	4,23	4,24	4,26	4,28
	2	4,19	4,31	4,29	4,27	4,25	4,23	4,20
	7	4,22	4,25	4,22	4,20	4,17	4,13	4,08
	10	4,06	4,09	4,07	4,05	4,02	3,98	3,94
	12	3,97	4,00	3,98	3,96	3,93	3,90	--
	15	3,86	3,89	3,87	3,85	3,82	3,79	--
	20	3,71	3,74	3,73	3,70	3,68	3,65	--

COP		LWT (°C)						
		30	35	40	45	50	55	60
TO (°C)	-25	1,98	1,82	1,64	--	--	--	--
	-20	2,27	2,13	1,93	1,73	--	--	--
	-15	2,55	2,43	2,22	2,00	1,79	--	--
	-7	3,01	2,92	2,68	2,44	2,19	1,95	--
	-2	3,48	3,26	2,99	2,73	2,47	2,21	1,94
	2	3,85	3,53	3,25	2,97	2,69	2,41	2,13
	7	4,34	3,98	3,66	3,33	3,01	2,68	2,36
	10	4,85	4,45	4,08	3,71	3,33	2,96	2,59
	12	5,19	4,76	4,36	3,95	3,55	3,14	--
	15	5,70	5,23	4,78	4,33	3,87	3,42	--
	20	6,55	6,01	5,48	4,95	4,41	3,88	--

- Heating capacity and power input are shown peak value during operation
- Heating capacity and powr input are shown at maximum compressor operating frequency
- Power input without water pump power

TO: Outdoor temperature (DB°C) RH85%
LWT: Leaving water temperature (°C)

Outdoor unit HWS-P805HR-E
Hydro unit HWS-P805XWH**-E

Rated cooling capacity and power input

Rated condition LWT=7°C dT=5°C	Capacity	kW	6,0
	Power input	kW	1,64
	EER	W/W	3,66
	Nominal flow rate	l/min	17,2

- Rated cooling capacity and power input are the data at rated compressor operating frequency
- Power input without water pump power
- Cooling capacity and power input are measured according to EN14511

TO: Outdoor temperature (DB°C)
LWT: Leaving water temperature (°C)
dT: Delta temperature (°C)
Return water temperature - leaving water temperature

Cooling capacity and power input
HWS-P805HR-E

Capacity (kW)		LWT (°C)				
		7	10	13	15	18
TO (°C)	20	7,82	8,41	8,99	8,99	8,99
	27	7,53	8,01	8,50	8,82	9,30
	30	7,41	7,96	8,51	8,88	9,43
	35	7,20	7,91	8,62	9,03	9,65
	40	6,50	7,14	7,77	8,20	8,84
	43	6,08	6,69	7,31	7,72	8,35

Power input (kW)		LWT (°C)				
		7	10	13	15	18
TO (°C)	20	1,30	1,30	1,29	1,29	1,29
	27	1,67	1,67	1,67	1,67	1,67
	30	1,83	1,83	1,83	1,83	1,83
	35	2,09	2,10	2,11	2,10	2,10
	40	2,31	2,33	2,35	2,36	2,37
	43	2,44	2,48	2,51	2,52	2,54

COP		LWT (°C)				
		7	10	13	15	18
TO (°C)	20	6,00	6,49	6,97	6,97	6,97
	27	4,81	5,09	5,38	5,57	5,86
	30	4,29	5,59	4,89	5,09	5,38
	35	3,44	3,77	4,09	4,29	4,59
	40	2,84	3,10	3,35	3,52	3,78
	43	2,49	2,70	2,91	3,06	3,29

- Cooling capacity and power input are the data at rated compressor operating frequency of rated condition 1
- Power input without water pump power
- Cooling capacity and power input are measured according to EN14511

TO: Outdoor temperature (DB°C)
LWT: Leaving water temperature (°C)

Outdoor unit HWS-P1105HR-E
Hydro unit HWS-P1105XWH**-E

Rated heating capacity and power input

Rated condition LWT=35°C dT= 5°C	Capacity	kW	11,2
	Power input	kW	2,30
	COP	W/W	4,88
	Nominal flow rate	l/min	32,1

- Rated heating capacity and power input are the data at rated compressor operating frequency
- Power input without water pump power
- Heating capacity and power input are measured according to EN14511

TO: Outdoor temperature (DB°C)
LWT: Leaving water temperature (°C)
dT: Delta temperature (°C)
Leaving water temperature - return water temperature

Heating peak capacity and power input
HWS-P1105HR-E

Capacity (kW)		LWT (°C)						
		30	35	40	45	50	55	60
TO (°C)	-25	8,36	7,81	7,15	--	--	--	--
	-20	9,82	9,19	8,42	7,64	--	--	--
	-15	12,78	11,23	9,68	8,13	6,58	--	--
	-7	13,62	12,79	11,70	10,61	9,51	8,42	--
	-2	15,41	14,39	13,17	11,95	10,73	9,51	8,29
	2	16,85	15,67	14,35	13,03	11,70	10,38	9,25
	7	19,15	18,05	16,39	14,74	13,08	11,43	9,77
	10	20,38	18,94	17,22	15,50	13,78	12,06	10,34
	12	21,21	19,54	17,78	16,01	14,25	12,49	--
	15	22,44	20,43	18,61	16,78	14,95	13,12	--
	20	24,50	21,92	19,99	18,05	16,12	14,18	--

Power input (kW)		LWT (°C)						
		30	35	40	45	50	55	60
TO (°C)	-25	4,30	4,32	4,31	--	--	--	--
	-20	4,34	4,33	4,32	4,31	--	--	--
	-15	4,34	4,34	4,33	4,32	4,31	--	--
	-7	4,40	4,35	4,34	4,33	4,31	4,30	--
	-2	4,37	4,35	4,33	4,31	4,29	4,26	4,23
	2	4,35	4,35	4,33	4,30	4,28	4,25	4,19
	7	4,37	4,29	4,26	4,23	4,18	4,12	4,05
	10	4,18	4,12	4,09	4,06	4,02	3,98	3,92
	12	4,07	4,01	3,99	3,97	3,94	3,90	--
	15	3,93	3,88	3,86	3,84	3,82	3,79	--
	20	3,74	3,70	3,69	3,67	3,66	3,64	--

COP		LWT (°C)						
		30	35	40	45	50	55	60
TO (°C)	-25	1,94	1,81	1,66	--	--	--	--
	-20	2,26	2,12	1,95	1,77	--	--	--
	-15	2,94	2,59	2,24	1,88	1,53	--	--
	-7	3,10	2,94	2,70	2,45	2,21	1,96	--
	-2	3,53	3,31	3,04	2,77	2,50	2,23	1,96
	2	3,87	3,61	3,32	3,03	2,74	2,45	2,21
	7	4,38	4,20	3,85	3,49	3,13	2,77	2,42
	10	4,88	4,60	4,21	3,82	3,42	3,03	2,64
	12	5,21	4,87	4,45	4,04	3,62	3,21	--
	15	5,71	5,27	4,82	4,37	3,92	3,47	--
	20	6,55	5,93	5,42	4,91	4,41	3,90	--

- Heating capacity and power input are shown peak value during operation
- Heating capacity and power input are shown at maximum compressor operating frequency
- Power input without water pump power

TO: Outdoor temperature (DB°C) RH85%
LWT: Leaving water temperature (°C)

Outdoor unit HWS-P1105HR-E
Hydro unit HWS-P1105XWH**-E

Rated cooling capacity and power input

Rated condition LWT=7°C dT=5°C	Capacity	kW	10,0
	Power input	kW	3,33
	EER	W/W	3,00
	Nominal flow rate	l/min	28,9

- Rated cooling capacity and power input are the data at rated compressor operating frequency
- Power input without water pump power
- Cooling capacity and power input are measured according to EN14511

TO: Outdoor temperature (DB°C)
LWT: Leaving water temperature (°C)
dT: Delta temperature (°C)
Return water temperature - leaving water temperature

Cooling capacity and power input
HWS-P1105HR-E

Capacity (kW)		LWT (°C)				
		7	10	13	15	18
TO (°C)	20	11,21	12,05	12,89	13,38	14,12
	27	10,67	11,45	12,22	12,74	13,51
	30	10,44	11,21	11,97	12,48	13,25
	35	10,06	10,86	11,66	12,12	12,81
	40	8,75	9,23	9,70	10,01	10,49
	43	7,97	8,57	9,16	9,14	9,09

Power input (kW)		LWT (°C)				
		7	10	13	15	18
TO (°C)	20	2,07	2,07	2,08	2,07	2,07
	27	2,63	2,65	2,67	2,68	2,70
	30	2,87	2,89	2,92	2,94	2,97
	35	3,27	3,31	3,36	3,38	3,42
	40	3,49	3,40	3,31	3,25	3,16
	43	3,62	3,60	3,58	3,35	3,01

COP		LWT (°C)				
		7	10	13	15	18
TO (°C)	20	5,42	5,81	6,20	6,45	6,83
	27	4,33	4,62	4,91	5,10	5,40
	30	3,86	4,11	4,36	4,53	4,78
	35	3,08	3,27	3,47	3,58	3,75
	40	2,53	2,74	2,95	3,09	3,30
	43	2,20	2,38	2,56	2,75	3,02

- Cooling capacity and power input are the data at rated compressor operating frequency of rated condition 1
- Power input without water pump power
- Cooling capacity and power input are measured according to EN14511

TO: Outdoor temperature (DB°C)
LWT: Leaving water temperature (°C)

Outdoor unit HWS-P805H8R-E
Hydro unit HWS-P805XWH**-E

Rated heating capacity and power input

Rated condition LWT=35°C dT= 5°C	Capacity	kW	8,00
	Power input	kW	1,71
	COP	W/W	4,68
	Nominal flow rate	l/min	23,2

- Rated heating capacity and power input are the data at rated compressor operating frequency
- Power input without water pump power
- Heating capacity and power input are measured according to EN14511

TO: Outdoor temperature (DB°C)
LWT: Leaving water temperature (°C)
dT: Delta temperature (°C)
Leaving water temperature - return water temperature

Heating peak capacity and power input
HWS-P805H8R-E

Capacity (kW)		LWT (°C)						
		30	35	40	45	50	55	60
TO (°C)	-25	6,81	6,18	5,79	-	-	-	-
	-20	7,78	7,18	6,58	5,98	-	-	-
	-15	8,69	8,18	7,67	7,16	6,47	-	-
	-7	11,5	10,8	10,4	10,4	9,90	9,41	-
	-2	14,0	13,5	12,9	12,4	11,7	11,1	10,4
	2	15,9	15,6	14,8	14,0	13,2	12,4	12,3
	7	18,3	18,1	17,2	16,3	15,7	15,0	13,8
	10	19,6	18,7	17,9	17,1	16,3	15,4	14,6
	12	20,4	19,5	18,5	17,6	16,6	15,7	-
	15	22,0	21,2	20,3	19,4	18,6	17,7	-
	20	24,7	24,0	23,2	22,5	21,7	21,0	-

Power input (kW)		LWT (°C)						
		30	35	40	45	50	55	60
TO (°C)	-25	3,47	3,43	3,57	-	-	-	-
	-20	3,48	3,52	3,56	3,61	-	-	-
	-15	3,55	3,59	3,64	3,69	3,26	-	-
	-7	3,60	3,72	3,94	4,26	4,50	4,87	-
	-2	3,70	3,89	4,11	4,38	4,67	5,05	5,56
	2	4,06	3,98	4,19	4,45	4,78	5,22	5,50
	7	4,48	4,56	4,58	4,60	4,91	5,30	5,63
	10	4,36	4,50	4,66	4,85	5,08	5,35	5,70
	12	4,30	4,44	4,61	4,82	5,07	5,39	-
	15	4,01	4,20	4,42	4,70	5,04	5,48	-
	20	3,67	3,90	4,19	4,55	5,00	5,61	-

COP		LWT (°C)						
		30	35	40	45	50	55	60
TO (°C)	-25	1,96	1,80	1,62	-	-	-	-
	-20	2,23	2,04	1,85	1,66	-	-	-
	-15	2,45	2,28	2,11	1,94	1,98	-	-
	-7	3,20	2,91	2,65	2,44	2,20	1,93	-
	-2	3,78	3,47	3,15	2,83	2,51	2,19	1,88
	2	3,92	3,91	3,53	3,15	2,76	2,38	2,24
	7	4,08	3,96	3,75	3,55	3,19	2,84	2,44
	10	4,49	4,17	3,85	3,52	3,20	2,88	2,56
	12	4,76	4,39	4,02	3,65	3,28	2,91	-
	15	5,50	5,05	4,59	4,13	3,68	3,22	-
	20	6,74	6,14	5,54	4,94	4,34	3,75	-

- Heating capacity and power input are shown peak value during operation
- Heating capacity and powr input are shown at maximum compressor operating frequency
- Power input without water pump power

TO: Outdoor temperature (DB°C) RH85%
LWT: Leaving water temperature (°C)

Outdoor unit HWS-P805H8R-E
Hydro unit HWS-P805XWH**-E

Rated cooling capacity and power input

Rated condition LWT=7°C dT=5°C	Capacity	kW	6,00
	Power input	kW	1,64
	EER	W/W	3,66
	Nominal flow rate	l/min	17,2

- Rated cooling capacity and power input are the data at rated compressor operating frequency
- Power input without water pump power
- Cooling capacity and power input are measured according to EN14511

TO: Outdoor temperature (DB°C)
LWT: Leaving water temperature (°C)
dT: Delta temperature (°C)
Return water temperature - leaving water temperature

Cooling capacity and power input
HWS-P805H8R-E

Capacity (kW)		LWT (°C)				
		7	10	13	15	18
TO (°C)	20	7,82	8,41	8,99	8,99	8,99
	27	7,53	8,01	8,50	8,82	9,30
	30	7,41	7,96	8,51	8,88	9,43
	35	7,20	7,91	8,62	9,03	9,65
	40	6,50	7,14	7,77	8,20	8,84
	43	6,08	6,69	7,31	7,72	8,35

Power input (kW)		LWT (°C)				
		7	10	13	15	18
TO (°C)	20	1,32	1,31	1,30	1,30	1,30
	27	1,69	1,69	1,69	1,69	1,69
	30	1,85	1,85	1,85	1,85	1,85
	35	2,11	2,12	2,13	2,13	2,12
	40	2,34	2,35	2,37	2,38	2,40
	43	2,47	2,50	2,53	2,55	2,56

COP		LWT (°C)				
		7	10	13	15	18
TO (°C)	20	5,94	6,42	6,90	6,90	6,90
	27	4,46	4,75	5,04	5,23	5,52
	30	4,01	4,30	4,60	4,80	5,10
	35	3,40	3,73	4,05	4,25	4,54
	40	2,78	3,03	3,28	3,44	3,68
	43	2,46	2,68	2,88	3,03	3,26

- Cooling capacity and power input are the data at rated compressor operating frequency of rated condition 1
- Power input without water pump power
- Cooling capacity and power input are measured according to EN14511

TO: Outdoor temperature (DB°C)
LWT: Leaving water temperature (°C)

Outdoor unit HWS-P1105H8R-E
Hydro unit HWS-P1105XWH**-E

Rated heating capacity and power input

Rated condition LWT=35°C dT= 5°C	Capacity	kW	11,2
	Power input	kW	2,34
	COP	W/W	4,80
	Nominal flow rate	l/min	32,0

- Rated heating capacity and power input are the data at rated compressor operating frequency
- Power input without water pump power
- Heating capacity and power input are measured according to EN14511

TO: Outdoor temperature (DB°C)
LWT: Leaving water temperature (°C)
dT: Delta temperature (°C)
Leaving water temperature - return water temperature

Heating peak capacity and power input
HWS-P1105H8R-E

Capacity (kW)		LWT (°C)						
		30	35	40	45	50	55	60
TO (°C)	-25	7,63	7,00	6,59	-	-	-	-
	-20	8,29	8,13	7,97	7,80	-	-	-
	-15	9,59	9,26	8,92	8,59	8,25	-	-
	-7	12,0	11,6	11,0	10,5	10,0	10,9	-
	-2	14,7	14,3	13,9	13,5	13,1	12,6	12,2
	2	17,1	16,5	15,9	15,2	14,6	14,0	13,4
	7	18,6	18,0	17,4	16,9	16,3	15,7	13,5
	10	21,5	20,7	19,9	19,2	18,4	17,6	16,9
	12	23,4	22,5	21,6	20,7	19,8	18,9	-
	15	25,0	24,1	23,2	22,4	21,5	20,6	-
	20	27,6	26,8	26,0	25,1	24,3	23,4	-

Power input (kW)		LWT (°C)						
		30	35	40	45	50	55	60
TO (°C)	-25	3,71	3,93	3,91	-	-	-	-
	-20	3,67	4,02	4,47	5,06	-	-	-
	-15	3,92	4,10	4,30	4,55	4,85	-	-
	-7	4,06	4,23	4,32	4,48	4,68	5,62	-
	-2	4,24	4,55	4,78	5,15	5,60	6,18	6,95
	2	4,50	4,76	5,07	5,45	5,94	6,59	7,47
	7	4,17	4,49	4,88	5,39	5,79	6,30	6,36
	10	4,66	4,95	5,30	5,75	6,22	6,57	6,99
	12	4,96	5,23	5,56	5,97	6,49	6,73	-
	15	5,03	5,31	5,65	6,06	6,58	6,87	-
	20	5,13	5,42	5,77	6,19	6,72	7,06	-

COP		LWT (°C)						
		30	35	40	45	50	55	60
TO (°C)	-25	2,06	1,78	1,68	-	-	-	-
	-20	2,26	2,02	1,78	1,54	-	-	-
	-15	2,45	2,26	2,07	1,89	1,70	-	-
	-7	2,95	2,75	2,55	2,35	2,15	1,94	-
	-2	3,48	3,15	2,91	2,62	2,33	2,05	1,76
	2	3,80	3,46	3,13	2,80	2,46	2,13	1,79
	7	4,46	4,01	3,57	3,13	2,81	2,49	2,12
	10	4,61	4,18	3,76	3,33	2,96	2,69	2,41
	12	4,71	4,30	3,88	3,47	3,06	2,81	-
	15	4,96	4,54	4,12	3,69	3,27	3,00	-
	20	5,39	4,94	4,50	4,06	3,62	3,32	-

- Heating capacity and power input are shown peak value during operation
- Heating capacity and power input are shown at maximum compressor operating frequency
- Power input without water pump power

TO: Outdoor temperature (DB°C) RH85%
LWT: Leaving water temperature (°C)

Outdoor unit HWS-P1105H8R-E
Hydro unit HWS-P1105XWH**-E

Rated cooling capacity and power input

Rated condition LWT=7°C dT=5°C	Capacity	kW	10,0
	Power input	kW	3,33
	EER	W/W	3,00
	Nominal flow rate	l/min	28,9

- Rated cooling capacity and power input are the data at rated compressor operating frequency
- Power input without water pump power
- Cooling capacity and power input are measured according to EN14511

TO: Outdoor temperature (DB°C)
LWT: Leaving water temperature (°C)
dT: Delta temperature (°C)
Return water temperature - leaving water temperature

Cooling capacity and power input
HWS-P1105H8R-E

Capacity (kW)		LWT (°C)				
		7	10	13	15	18
TO (°C)	20	11,2	12,0	12,9	13,4	14,1
	27	10,7	11,4	12,2	12,7	13,5
	30	10,4	11,2	12,0	12,5	13,2
	35	10,1	10,9	11,7	12,1	12,8
	40	8,75	9,57	10,4	10,9	11,8
	43	7,97	8,83	9,69	10,3	11,1

Power input (kW)		LWT (°C)				
		7	10	13	15	18
TO (°C)	20	2,09	2,09	2,10	2,10	2,09
	27	2,65	2,67	2,69	2,70	2,72
	30	2,90	2,92	2,95	2,97	3,00
	35	3,30	3,35	3,39	3,42	3,45
	40	3,52	3,60	3,67	3,71	3,76
	43	3,66	3,77	3,87	3,93	4,02

COP		LWT (°C)				
		7	10	13	15	18
TO (°C)	20	5,37	5,75	6,14	6,39	6,77
	27	4,02	4,28	4,54	4,71	4,96
	30	3,60	3,83	4,06	4,20	4,42
	35	3,05	3,24	3,44	3,55	3,71
	40	2,48	2,66	2,83	2,95	3,12
	43	2,18	2,34	2,50	2,61	2,77

- Cooling capacity and power input are the data at rated compressor operating frequency of rated condition 1
- Power input without water pump power
- Cooling capacity and power input are measured according to EN14511

TO: Outdoor temperature (DB°C)
LWT: Leaving water temperature (°C)

Outdoor unit HWS-P1405H8R-E
Hydro unit HWS-P1105XWH**-E

Rated heating capacity and power input

Rated condition LWT=35°C dT= 5°C	Capacity	kW	14,0
	Power input	kW	3,16
	COP	W/W	4,44
	Nominal flow rate	l/min	40,1

- Rated heating capacity and power input are the data at rated compressor operating frequency
- Power input without water pump power
- Heating capacity and power input are measured according to EN14511

TO: Outdoor temperature (DB°C)
LWT: Leaving water temperature (°C)
dT: Delta temperature (°C)
Leaving water temperature - return water temperature

Heating peak capacity and power input
HWS-P1405H8R-E

Capacity (kW)		LWT (°C)						
		30	35	40	45	50	55	60
TO (°C)	-25	8,54	7,84	7,37	-	-	-	-
	-20	9,88	9,27	8,66	8,05	-	-	-
	-15	11,9	10,7	9,54	8,39	7,23	-	-
	-7	13,7	13,4	13,2	12,9	12,6	12,4	-
	-2	16,8	16,1	15,4	14,7	14,0	13,3	12,6
	2	19,2	18,2	17,1	16,1	15,1	14,0	13,0
	7	22,1	21,1	20,1	19,0	18,0	17,0	13,5
	10	24,6	23,5	22,5	21,5	20,5	18,8	17,1
	12	26,2	25,2	24,2	23,2	22,2	20,1	-
	15	28,0	27,0	25,9	24,9	23,9	21,6	-
	20	31,1	30,0	28,9	27,8	26,7	24,3	-

Power input (kW)		LWT (°C)						
		30	35	40	45	50	55	60
TO (°C)	-25	4,20	4,44	4,42	-	-	-	-
	-20	4,33	4,68	5,16	5,84	-	-	-
	-15	4,91	4,87	4,82	4,76	4,69	-	-
	-7	4,71	5,19	5,23	5,56	5,95	6,33	-
	-2	5,29	5,46	5,65	5,88	6,15	6,48	6,89
	2	5,49	5,63	5,80	6,01	6,27	6,59	7,01
	7	5,19	5,67	5,94	6,28	6,55	6,89	6,36
	10	5,55	5,82	6,16	6,57	7,04	7,08	7,14
	12	5,61	5,92	6,29	6,75	7,33	7,20	-
	15	5,70	6,00	6,37	6,82	7,38	7,28	-
	20	5,83	6,13	6,48	6,91	7,45	7,40	-

COP		LWT (°C)						
		30	35	40	45	50	55	60
TO (°C)	-25	2,04	1,76	1,67	-	-	-	-
	-20	2,28	1,98	1,68	1,38	-	-	-
	-15	2,41	2,20	1,98	1,76	1,54	-	-
	-7	2,91	2,59	2,52	2,32	2,12	1,95	-
	-2	3,17	2,94	2,72	2,50	2,27	2,05	1,83
	2	3,50	3,23	2,95	2,68	2,40	2,13	1,85
	7	4,26	3,72	3,38	3,03	2,75	2,47	2,12
	10	4,43	4,04	3,66	3,28	2,92	2,66	2,40
	12	4,66	4,26	3,85	3,44	3,03	2,79	-
	15	4,91	4,49	4,08	3,66	3,24	2,97	-
	20	5,33	4,89	4,46	4,02	3,58	3,28	-

- Heating capacity and power input are shown peak value during operation
- Heating capacity and power input are shown at maximum compressor operating frequency
- Power input without water pump power

TO: Outdoor temperature (DB°C) RH85%
LWT: Leaving water temperature (°C)

Outdoor unit HWS-P1405H8R-E
Hydro unit HWS-P1105XWH**-E

Rated cooling capacity and power input

Rated condition LWT=7°C dT=5°C	Capacity	kW	11,0
	Power input	kW	3,90
	EER	W/W	2,82
	Nominal flow rate	l/min	31,5

- Rated cooling capacity and power input are the data at rated compressor operating frequency
- Power input without water pump power
- Cooling capacity and power input are measured according to EN14511

TO: Outdoor temperature (DB°C)
LWT: Leaving water temperature (°C)
dT: Delta temperature (°C)
Return water temperature - leaving water temperature

Cooling capacity and power input
HWS-P1405H8R-E

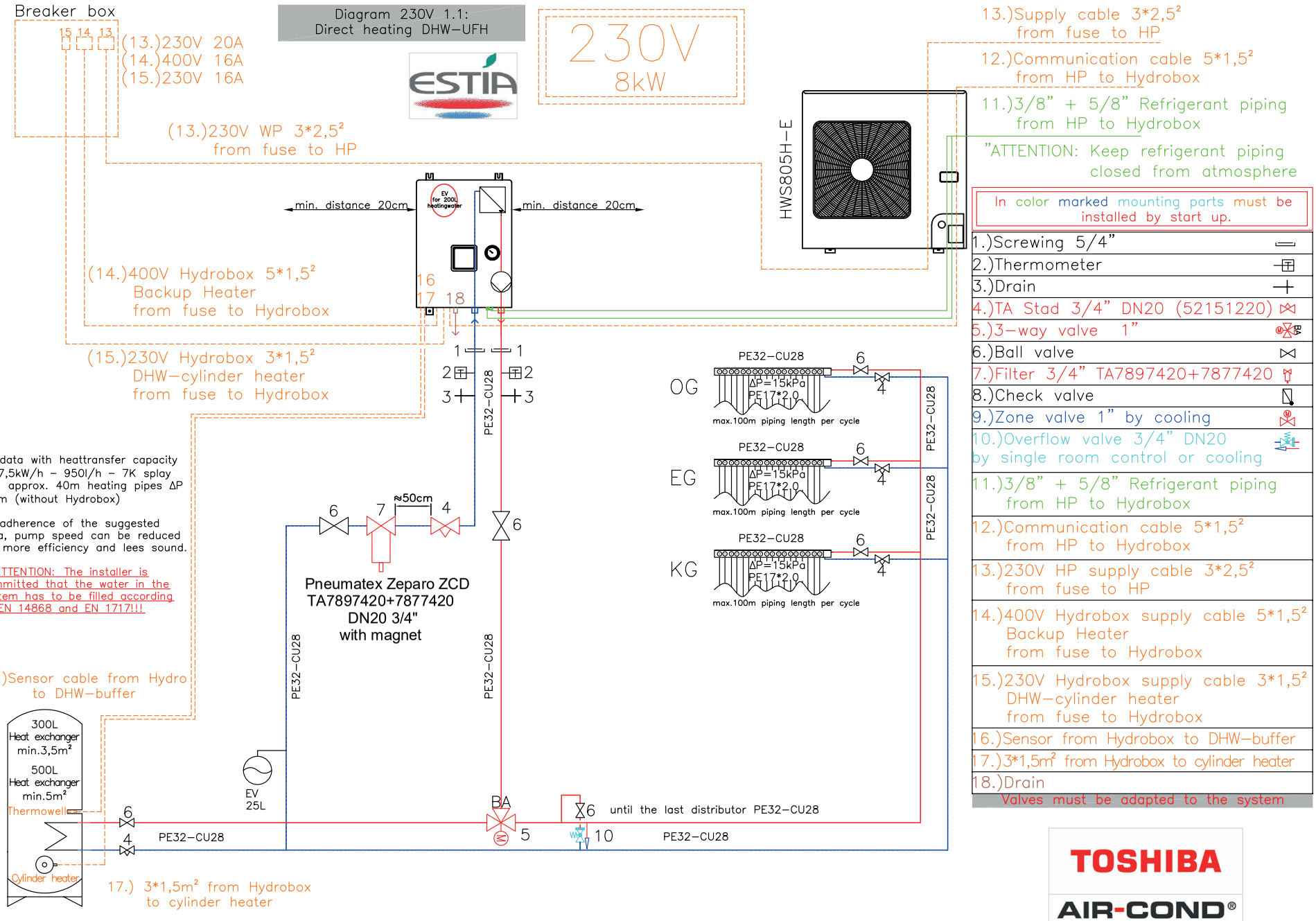
Capacity (kW)		LWT (°C)				
		7	10	13	15	18
TO (°C)	20	12,6	13,6	14,6	15,3	16,3
	27	13,7	14,5	15,3	15,8	16,6
	30	12,8	13,6	14,5	15,1	15,9
	35	11,2	12,2	13,2	13,8	14,8
	40	9,68	10,8	11,8	12,5	13,6
	43	8,75	9,89	11,0	11,8	12,9

Power input (kW)		LWT (°C)				
		7	10	13	15	18
TO (°C)	20	2,82	2,87	2,92	2,94	2,98
	27	3,91	3,90	4,01	4,08	4,18
	30	4,01	4,03	4,14	4,21	4,31
	35	4,21	4,33	4,43	4,50	4,58
	40	4,51	4,65	4,78	4,85	4,95
	43	4,77	4,93	5,06	5,14	5,25

COP		LWT (°C)				
		7	10	13	15	18
TO (°C)	20	4,45	4,73	5,01	5,19	5,47
	27	3,50	3,72	3,82	3,88	3,98
	30	3,19	3,38	3,50	3,58	3,70
	35	2,67	2,82	2,97	3,07	3,22
	40	2,15	2,31	2,47	2,58	2,75
	43	1,83	2,01	2,18	2,29	2,46

- Cooling capacity and power input are the data at rated compressor operating frequency of rated condition 1
- Power input without water pump power
- Cooling capacity and power input are measured according to EN14511

TO: Outdoor temperature (DB°C)
LWT: Leaving water temperature (°C)



13.)Supply cable 3*2,5²
from fuse to HP

12.)Communication cable 5*1,5²
from HP to Hydrobox

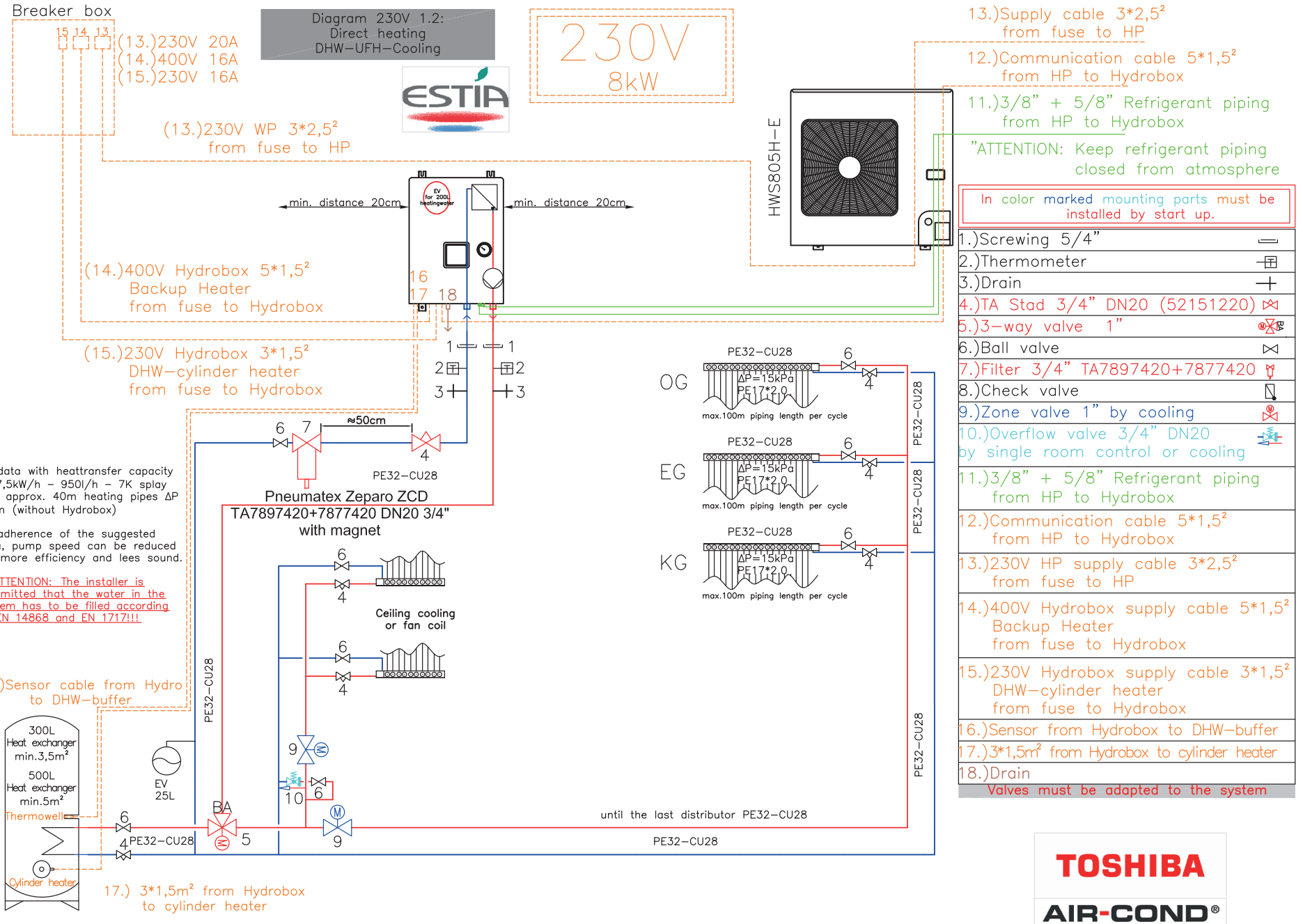
11.)3/8" + 5/8" Refrigerant piping
from HP to Hydrobox

"ATTENTION: Keep refrigerant piping
closed from atmosphere

In color marked mounting parts must be installed by start up.

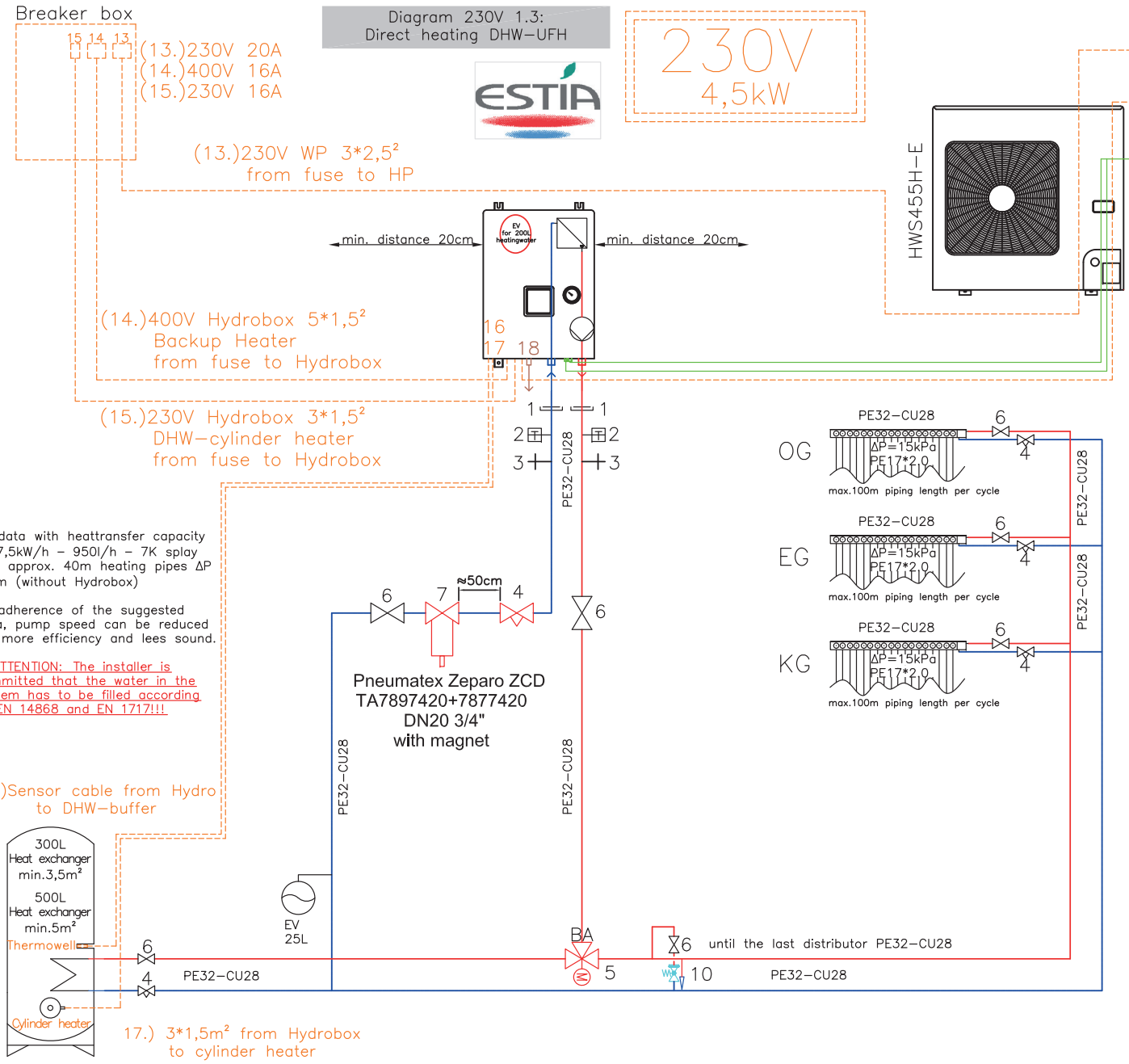
1.)Screwing 5/4"
2.)Thermometer
3.)Drain
4.)TA Stad 3/4" DN20 (52151220)
5.)3–way valve 1"
6.)Ball valve
7.)Filter 3/4" TA7897420+7877420
8.)Check valve
9.)Zone valve 1" by cooling
10.)Overflow valve 3/4" DN20
by single room control or cooling
11.)3/8" + 5/8" Refrigerant piping
from HP to Hydrobox
12.)Communication cable 5*1,5²
from HP to Hydrobox
13.)230V HP supply cable 3*2,5²
from fuse to HP
14.)400V Hydrobox supply cable 5*1,5²
Backup Heater
from fuse to Hydrobox
15.)230V Hydrobox supply cable 3*1,5²
DHW–cylinder heater
from fuse to Hydrobox
16.)Sensor from Hydrobox to DHW–buffer
17.)3*1,5m² from Hydrobox to cylinder heater
18.)Drain
Valves must be adapted to the system

TOSHIBA
AIR-COND®
Klimaanlagen-Handelsgesellschaft m.b.H.
AUSTRIA - CENTRAL EUROPE



In color marked mounting parts must be installed by start up.
1.)Screwing 5/4"
2.)Thermometer
3.)Drain
4.)TA Stad 3/4" DN20 (52151220)
5.)3–way valve 1"
6.)Ball valve
7.)Filter 3/4" TA7897420+7877420
8.)Check valve
9.)Zone valve 1" by cooling
10.)Overflow valve 3/4" DN20 by single room control or cooling
11.)3/8" + 5/8" Refrigerant piping from HP to Hydrobox
12.)Communication cable 5*1,5² from HP to Hydrobox
13.)230V HP supply cable 3*2,5² from fuse to HP
14.)400V Hydrobox supply cable 5*1,5² Backup Heater from fuse to Hydrobox
15.)230V Hydrobox supply cable 3*1,5² DHW–cylinder heater from fuse to Hydrobox
16.)Sensor from Hydrobox to DHW–buffer
17.)3*1,5m² from Hydrobox to cylinder heater
18.)Drain
Valves must be adapted to the system

TOSHIBA
AIR-COND®
Klimaanlagen-Handelsgesellschaft m.b.H.
AUSTRIA - CENTRAL EUROPE



13.)Supply cable 3*2,5²
from fuse to HP

12.)Communication cable 5*1,5²
from HP to Hydrobox

11.)1/4" + 1/2" Refrigerant piping
from HP to Hydrobox

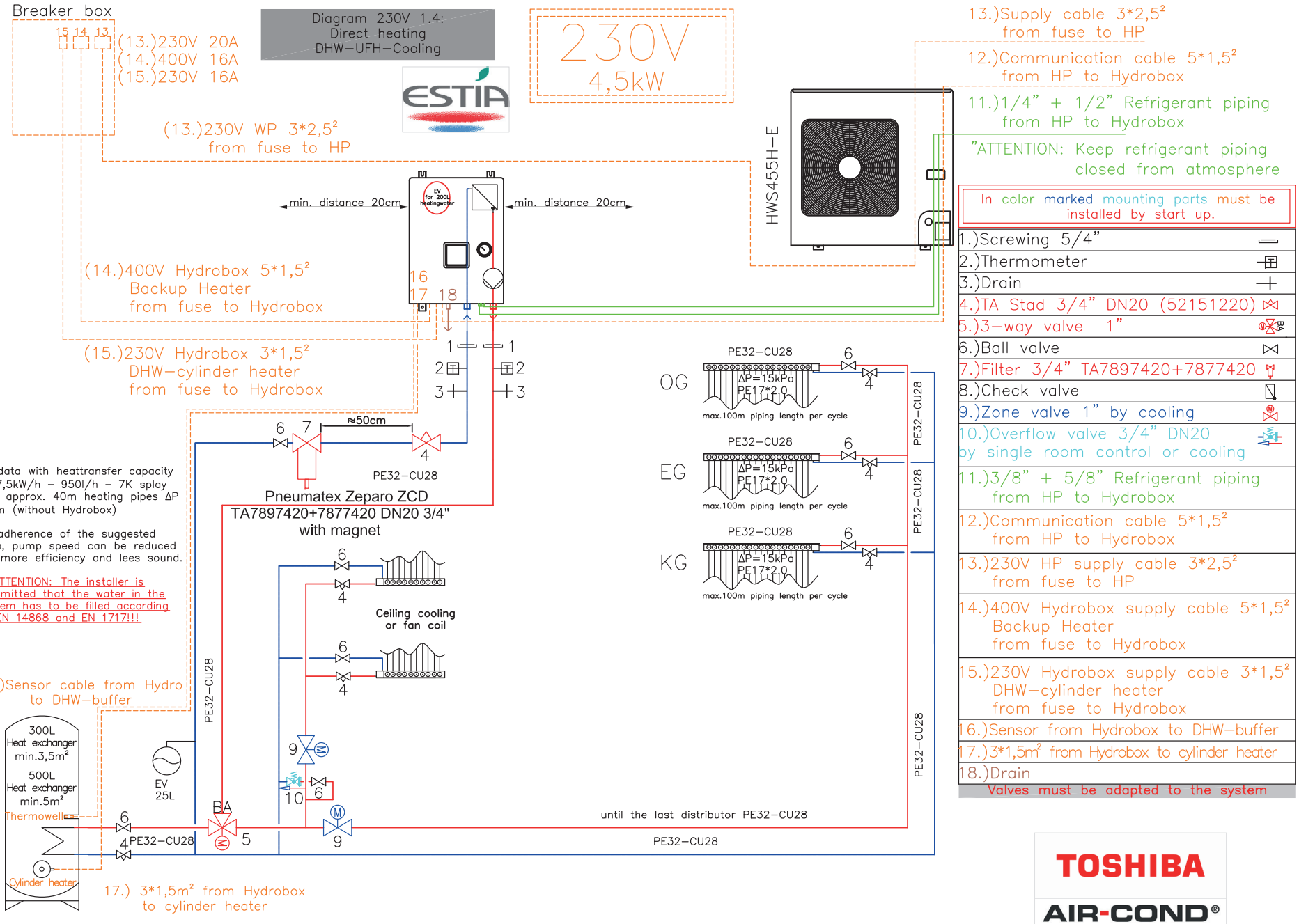
"ATTENTION: Keep refrigerant piping
closed from atmosphere

In color marked mounting parts must be installed by start up.

1.)Screwing 5/4"
2.)Thermometer
3.)Drain
4.)TA Stad 3/4" DN20 (52151220)
5.)3–way valve 1"
6.)Ball valve
7.)Filter 3/4" TA7897420+7877420
8.)Check valve
9.)Zone valve 1" by cooling
10.)Overflow valve 3/4" DN20
by single room control or cooling
11.)3/8" + 5/8" Refrigerant piping
from HP to Hydrobox
12.)Communication cable 5*1,5²
from HP to Hydrobox
13.)230V HP supply cable 3*2,5²
from fuse to HP
14.)400V Hydrobox supply cable 5*1,5²
Backup Heater
from fuse to Hydrobox
15.)230V Hydrobox supply cable 3*1,5²
DHW–cylinder heater
from fuse to Hydrobox
16.)Sensor from Hydrobox to DHW–buffer
17.)3*1,5m² from Hydrobox to cylinder heater
18.)Drain

Valves must be adapted to the system

TOSHIBA
AIR-COND®
Klimaanlagen-Handelsgesellschaft m.b.H.
AUSTRIA - CENTRAL EUROPE

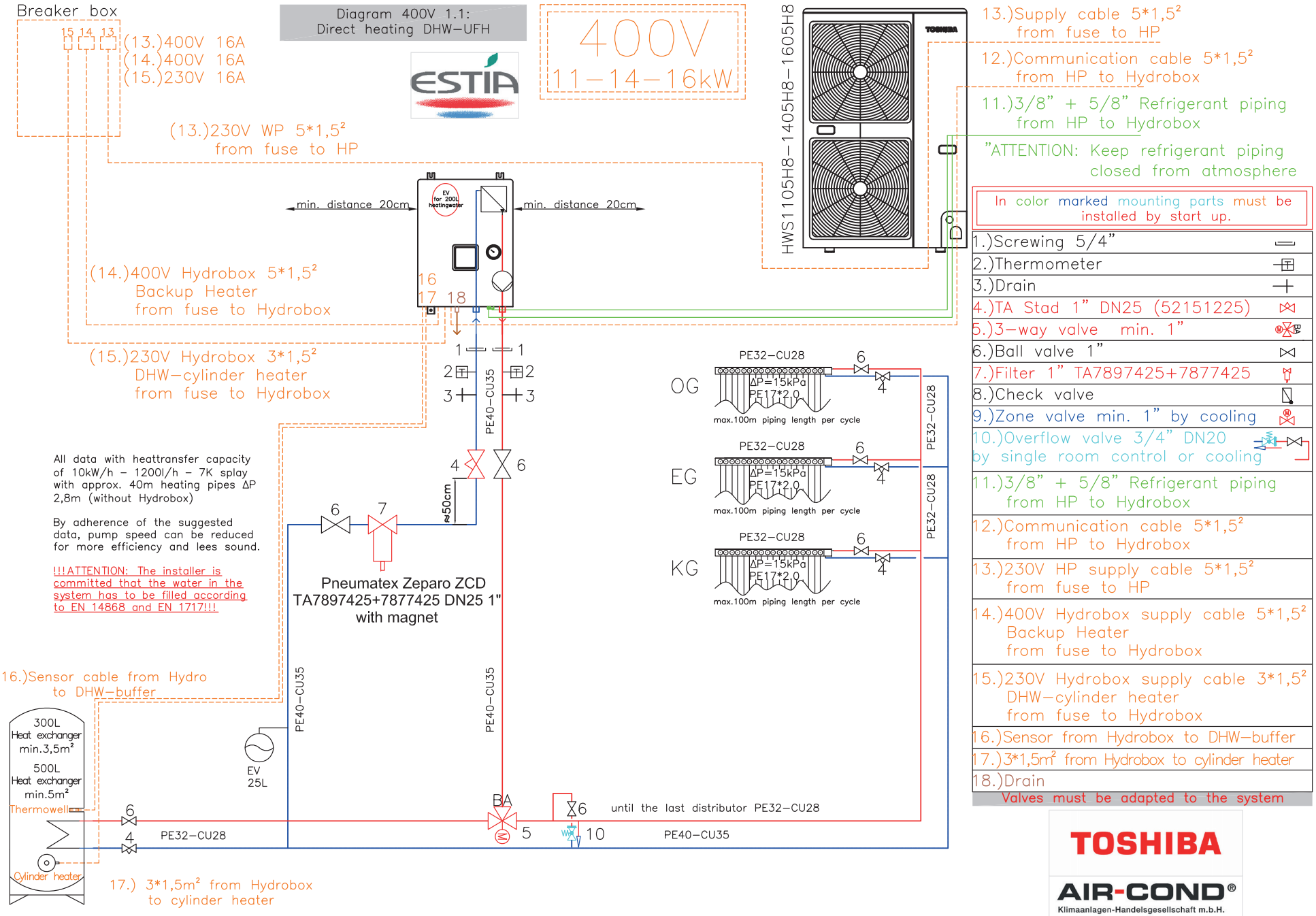


In color marked mounting parts must be installed by start up.

1.)Screwing 5/4"	
2.)Thermometer	
3.)Drain	
4.)TA Stad 3/4" DN20 (52151220)	
5.)3–way valve 1"	
6.)Ball valve	
7.)Filter 3/4" TA7897420+7877420	
8.)Check valve	
9.)Zone valve 1" by cooling	
10.)Overflow valve 3/4" DN20 by single room control or cooling	
11.)3/8" + 5/8" Refrigerant piping from HP to Hydrobox	
12.)Communication cable 5*1,5² from HP to Hydrobox	
13.)230V HP supply cable 3*2,5² from fuse to HP	
14.)400V Hydrobox supply cable 5*1,5² Backup Heater from fuse to Hydrobox	
15.)230V Hydrobox supply cable 3*1,5² DHW–cylinder heater from fuse to Hydrobox	
16.)Sensor from Hydrobox to DHW–buffer	
17.)3*1,5m² from Hydrobox to cylinder heater	
18.)Drain	

Valves must be adapted to the system

TOSHIBA
AIR-COND®
Klimaanlagen-Handelsgesellschaft m.b.H.
AUSTRIA - CENTRAL EUROPE



13.)Supply cable 5*1,5² from fuse to HP

12.)Communication cable 5*1,5² from HP to Hydrobox

11.)3/8" + 5/8" Refrigerant piping from HP to Hydrobox

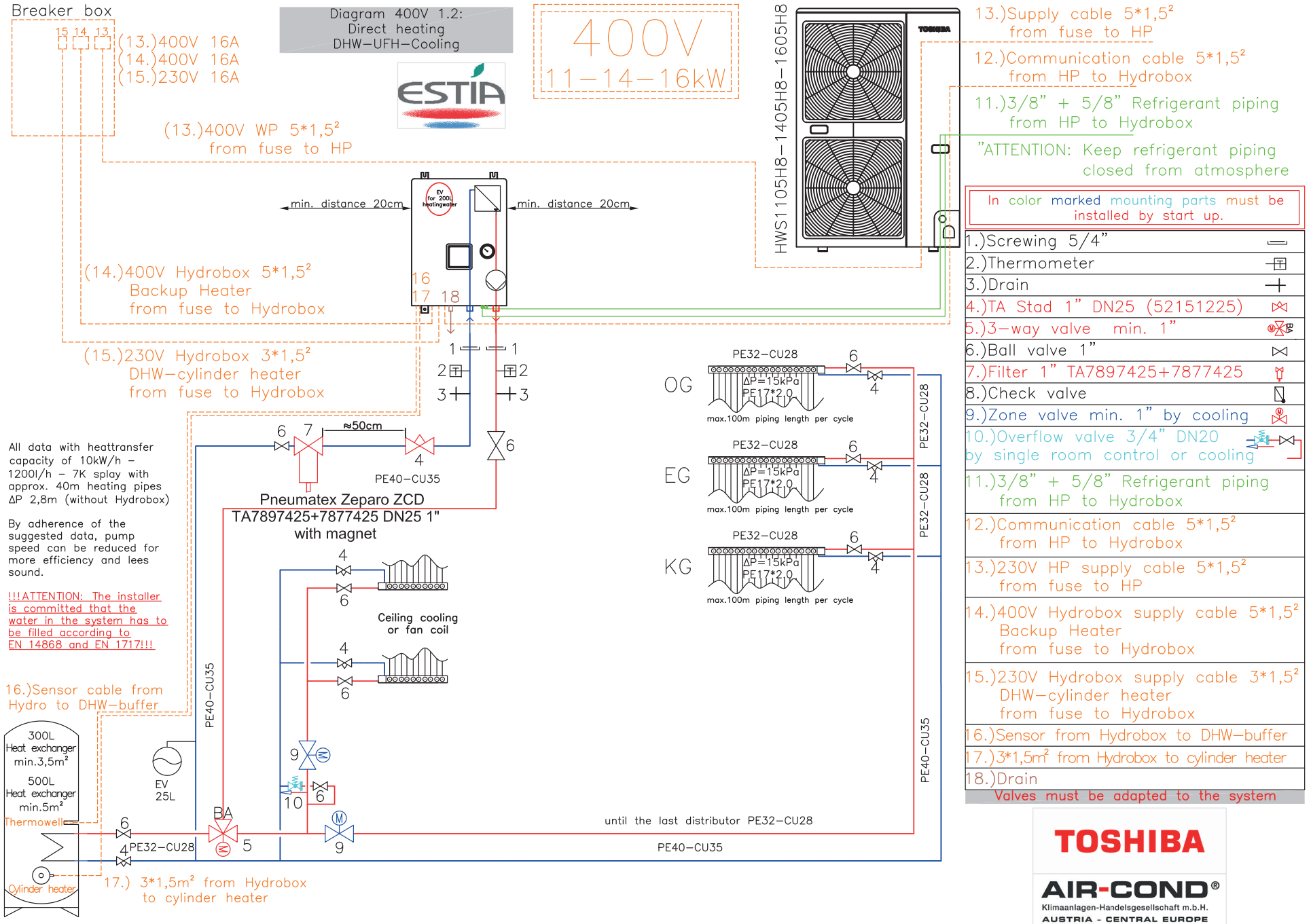
"ATTENTION: Keep refrigerant piping closed from atmosphere

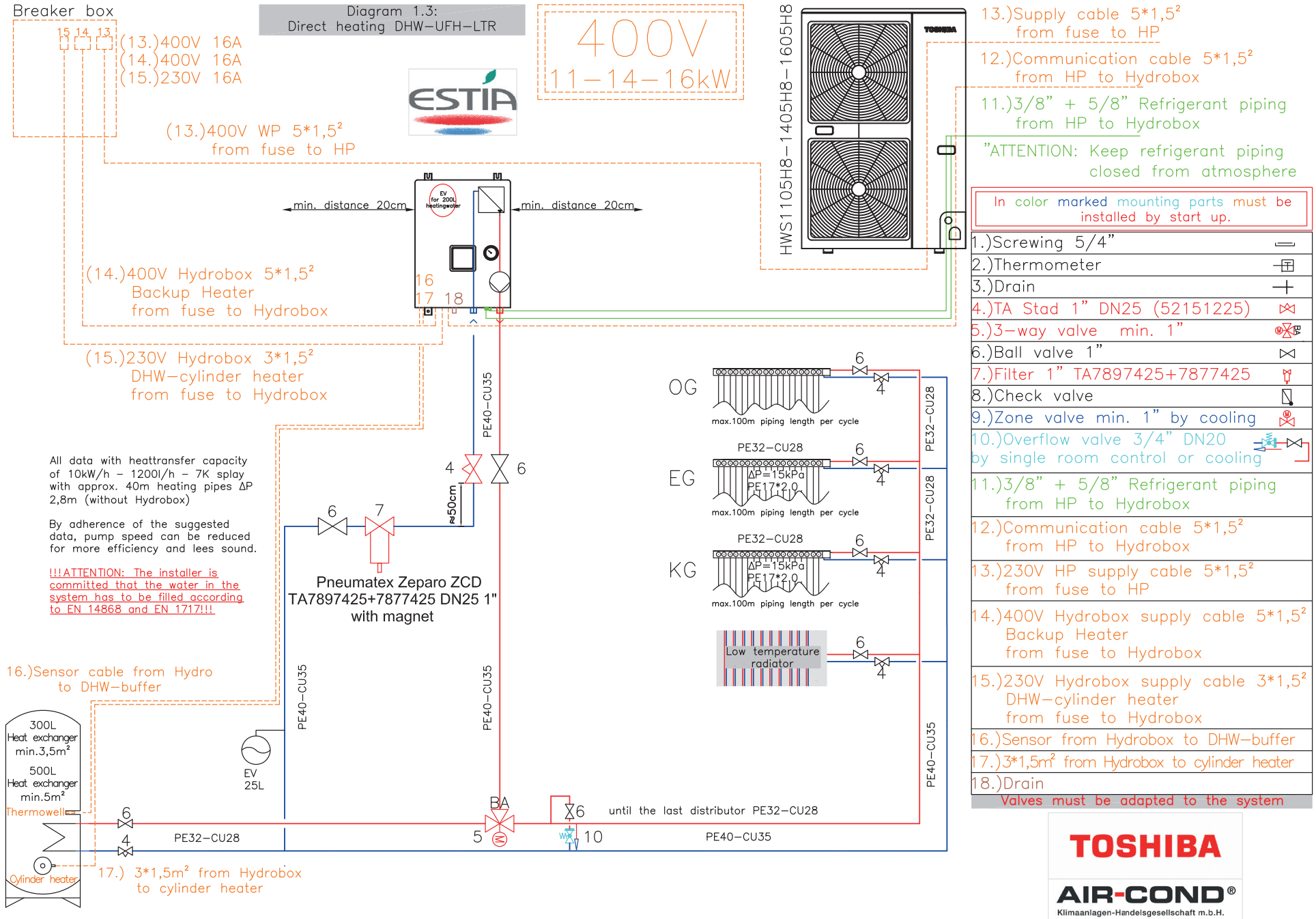
In color marked mounting parts must be installed by start up.

1.)Screwing 5/4"
2.)Thermometer
3.)Drain
4.)TA Stad 1" DN25 (52151225)
5.)3–way valve min. 1"
6.)Ball valve 1"
7.)Filter 1" TA7897425+7877425
8.)Check valve
9.)Zone valve min. 1" by cooling
10.)Overflow valve 3/4" DN20 by single room control or cooling
11.)3/8" + 5/8" Refrigerant piping from HP to Hydrobox
12.)Communication cable 5*1,5² from HP to Hydrobox
13.)230V HP supply cable 5*1,5² from fuse to HP
14.)400V Hydrobox supply cable 5*1,5² Backup Heater from fuse to Hydrobox
15.)230V Hydrobox supply cable 3*1,5² DHW–cylinder heater from fuse to Hydrobox
16.)Sensor from Hydrobox to DHW–buffer
17.)3*1,5m² from Hydrobox to cylinder heater
18.)Drain

Valves must be adapted to the system

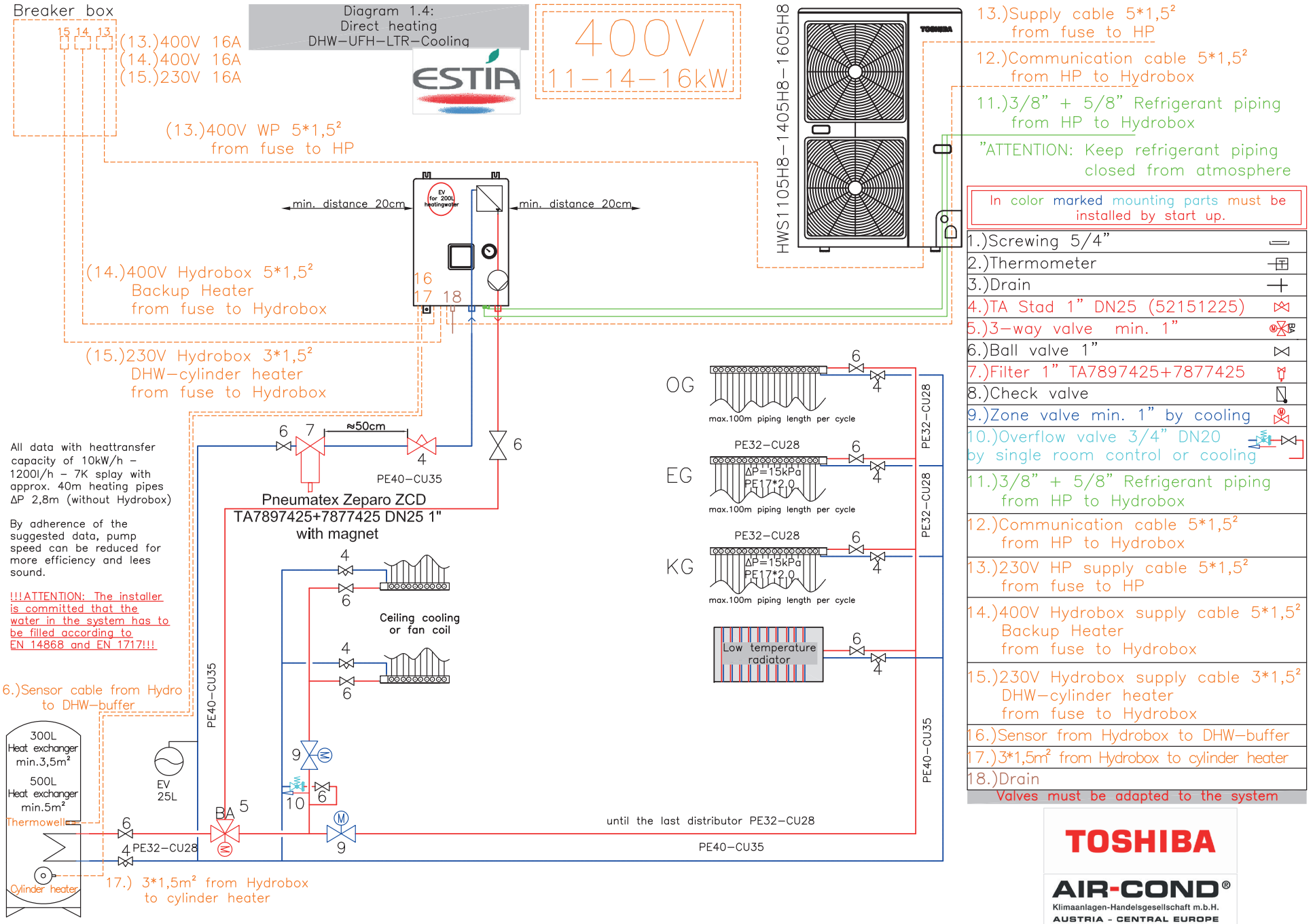
TOSHIBA
AIR-COND®
Klimaanlagen-Handelsgesellschaft m.b.H.
AUSTRIA - CENTRAL EUROPE


Breaker box
15 14 13
(13.)400V 16A
(14.)400V 16A
(15.)230V 16A
Diagram 400V 1.2:
Direct heating
DHW–UFH–Cooling
400V
11–14–16kW
(13.)400V WP 5*1,5²
from fuse to HP
HWS1105H8–1405H8–1605H8
13.)Supply cable 5*1,5²
from fuse to HP
12.)Communication cable 5*1,5²
from HP to Hydrobox
11.)3/8" + 5/8" Refrigerant piping
from HP to Hydrobox
"ATTENTION: Keep refrigerant piping
closed from atmosphere
min. distance 20cm
min. distance 20cm
EV for 200L heatingwater
16
17 18
(14.)400V Hydrobox 5*1,5²
Backup Heater
from fuse to Hydrobox
(15.)230V Hydrobox 3*1,5²
DHW–cylinder heater
from fuse to Hydrobox
All data with heattransfer capacity of 10kW/h – 1200l/h – 7K splay with approx. 40m heating pipes ΔP 2,8m (without Hydrobox)
By adherence of the suggested data, pump speed can be reduced for more efficiency and lees sound.
!!!ATTENTION: The installer is committed that the water in the system has to be filled according to EN 14868 and EN 1717!!!
≈50cm
PE40–CU35
Pneumatex Zeparo ZCD
TA7897425+7877425 DN25 1"
with magnet
Ceiling cooling
or fan coil
PE32–CU28
ΔP=15kPa
PE17*2,0
max.100m piping length per cycle
OG
EG
KG
PE32–CU28
PE32–CU28
PE40–CU35
16.)Sensor cable from
Hydro to DHW–buffer
300L
Heat exchanger
min.3,5m²
500L
Heat exchanger
min.5m²
Thermowell
Cylinder heater
EV
25L
BA
PE32–CU28
PE40–CU35
until the last distributor PE32–CU28
17.) 3*1,5m² from Hydrobox
to cylinder heater
In color marked mounting parts must be installed by start up.
1.)Screwing 5/4"
2.)Thermometer
3.)Drain
4.)TA Stad 1" DN25 (52151225)
5.)3–way valve min. 1"
6.)Ball valve 1"
7.)Filter 1" TA7897425+7877425
8.)Check valve
9.)Zone valve min. 1" by cooling
10.)Overflow valve 3/4" DN20
by single room control or cooling
11.)3/8" + 5/8" Refrigerant piping
from HP to Hydrobox
12.)Communication cable 5*1,5²
from HP to Hydrobox
13.)230V HP supply cable 5*1,5²
from fuse to HP
14.)400V Hydrobox supply cable 5*1,5²
Backup Heater
from fuse to Hydrobox
15.)230V Hydrobox supply cable 3*1,5²
DHW–cylinder heater
from fuse to Hydrobox
16.)Sensor from Hydrobox to DHW–buffer
17.)3*1,5m² from Hydrobox to cylinder heater
18.)Drain
Valves must be adapted to the system
TOSHIBA
AIR-COND®
Klimaanlagen-Handelsgesellschaft m.b.H.
AUSTRIA - CENTRAL EUROPE



TOSHIBA

AIR-COND®
Klimaanlagen-Handelsgesellschaft m.b.H.
AUSTRIA - CENTRAL EUROPE

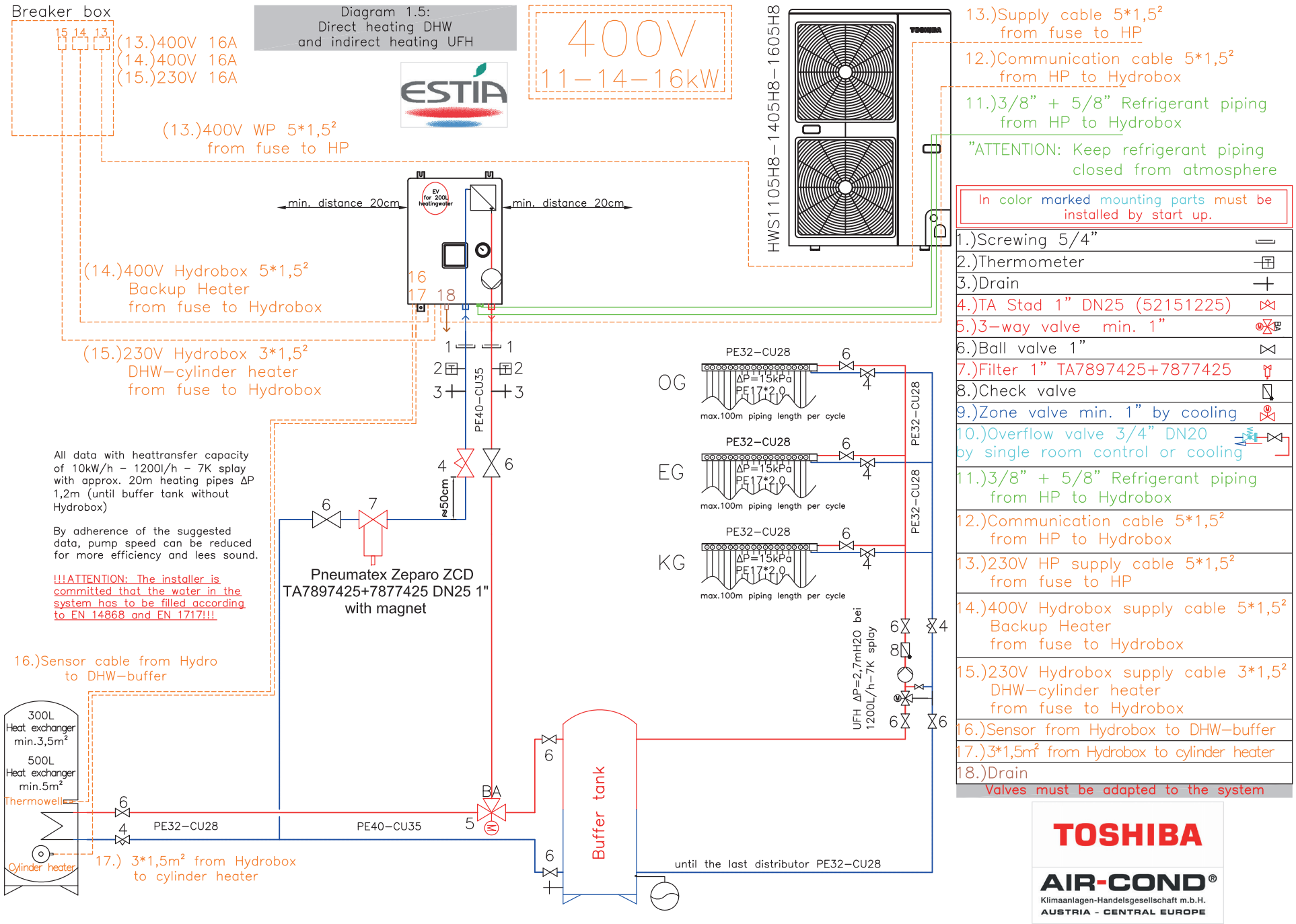


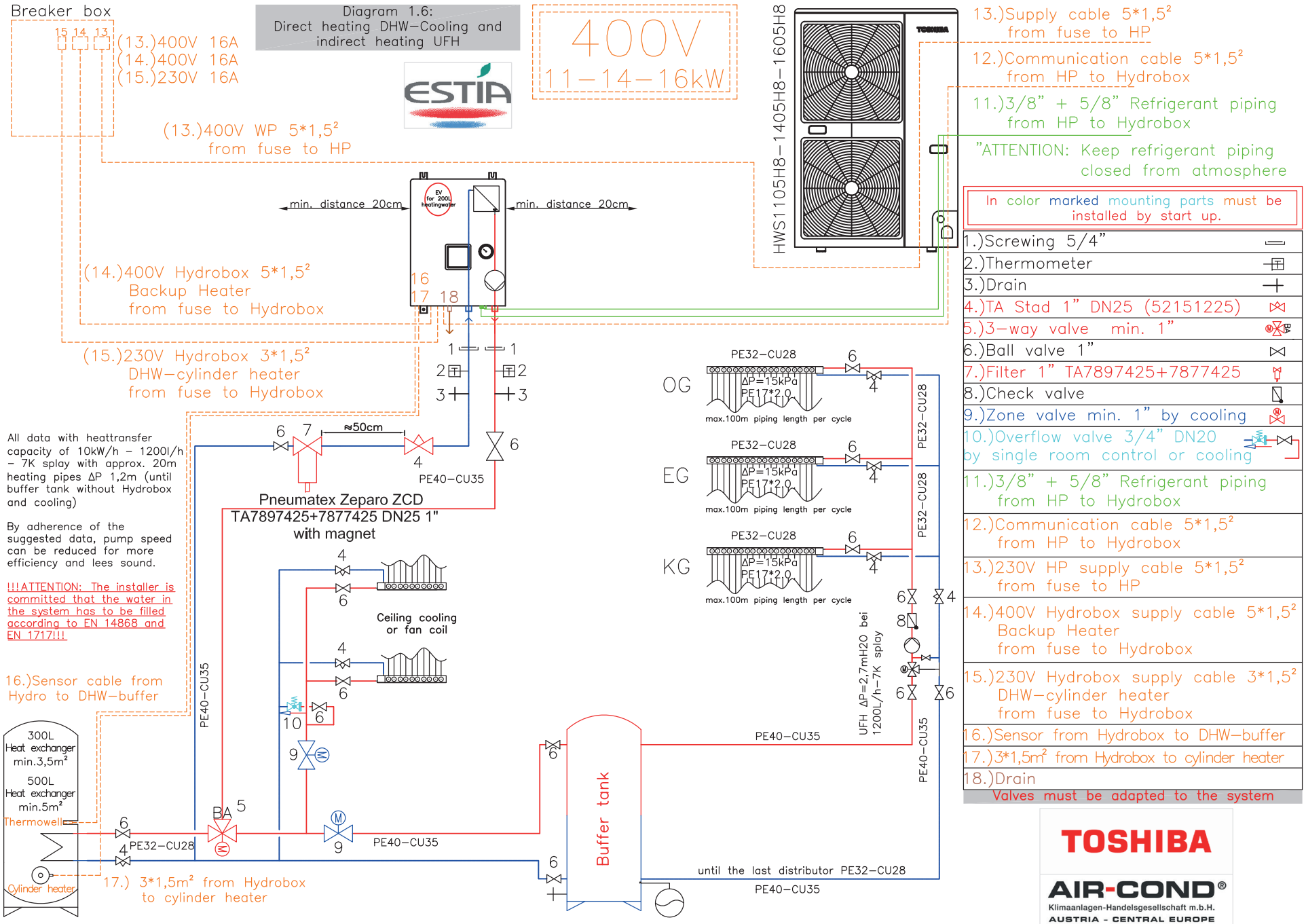
In color marked mounting parts must be installed by start up.

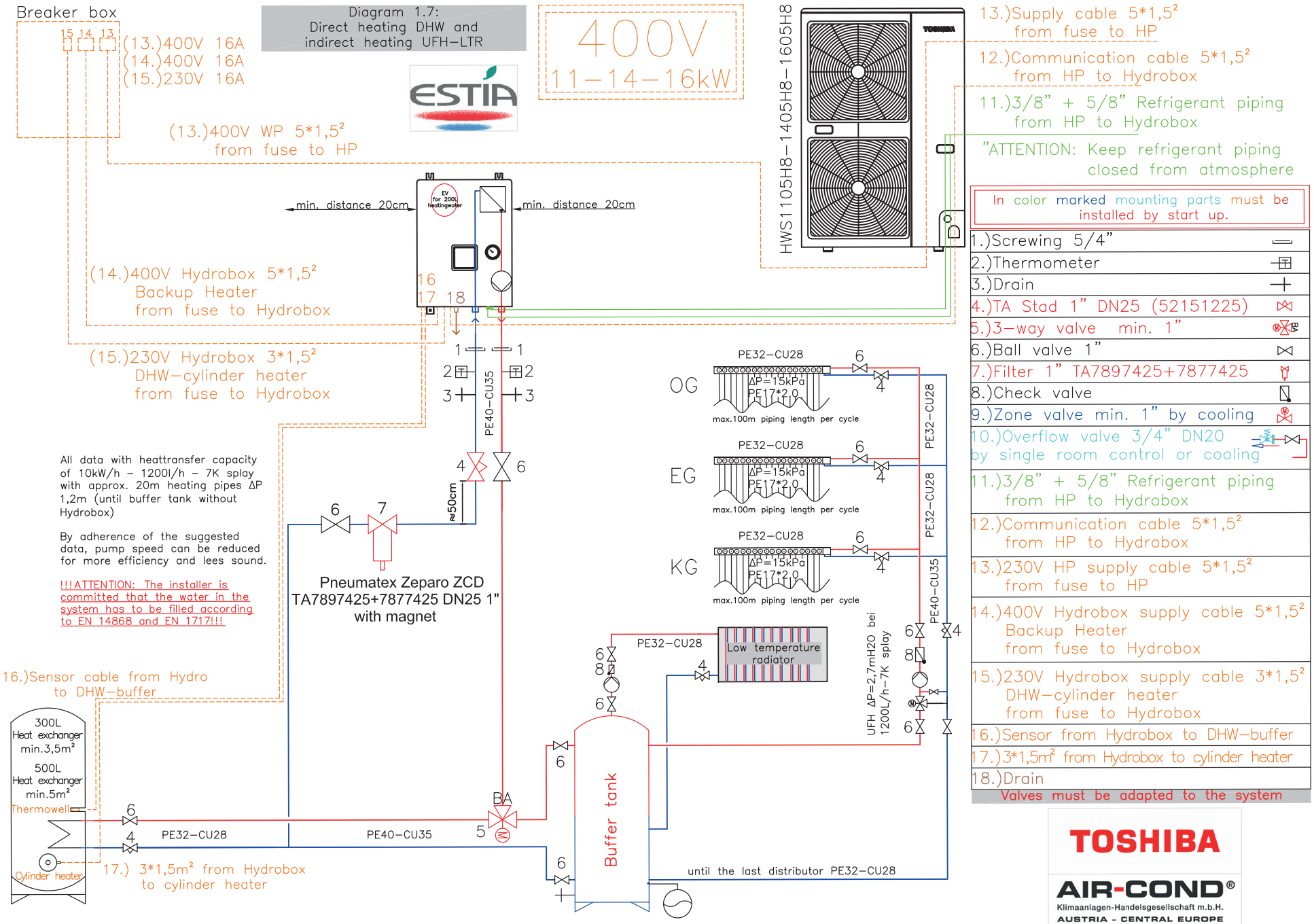
1.)Screwing 5/4"	
2.)Thermometer	
3.)Drain	
4.)TA Stad 1" DN25 (52151225)	
5.)3–way valve min. 1"	
6.)Ball valve 1"	
7.)Filter 1" TA7897425+7877425	
8.)Check valve	
9.)Zone valve min. 1" by cooling	
10.)Overflow valve 3/4" DN20 by single room control or cooling	
11.)3/8" + 5/8" Refrigerant piping from HP to Hydrobox	
12.)Communication cable 5*1,5² from HP to Hydrobox	
13.)230V HP supply cable 5*1,5² from fuse to HP	
14.)400V Hydrobox supply cable 5*1,5² Backup Heater from fuse to Hydrobox	
15.)230V Hydrobox supply cable 3*1,5² DHW–cylinder heater from fuse to Hydrobox	
16.)Sensor from Hydrobox to DHW–buffer	
17.)3*1,5m² from Hydrobox to cylinder heater	
18.)Drain	

Valves must be adapted to the system

TOSHIBA
AIR-COND®
Klimaanlagen-Handelsgesellschaft m.b.H.
AUSTRIA - CENTRAL EUROPE


Breaker box
15 14 13
(13.)400V 16A
(14.)400V 16A
(15.)230V 16A
Diagram 1.5:
Direct heating DHW
and indirect heating UFH
400V
11–14–16kW
ESTIA
(13.)400V WP 5*1,5² from fuse to HP
HWS1105H8–1405H8–1605H8
13.)Supply cable 5*1,5² from fuse to HP
12.)Communication cable 5*1,5² from HP to Hydrobox
11.)3/8" + 5/8" Refrigerant piping from HP to Hydrobox
"ATTENTION: Keep refrigerant piping closed from atmosphere
min. distance 20cm
min. distance 20cm
EV for 200L heatingwater
16
17 18
(14.)400V Hydrobox 5*1,5² Backup Heater from fuse to Hydrobox
(15.)230V Hydrobox 3*1,5² DHW–cylinder heater from fuse to Hydrobox
PE40–CU35
≈50cm
All data with heattransfer capacity of 10kW/h – 1200l/h – 7K splay with approx. 20m heating pipes ΔP 1,2m (until buffer tank without Hydrobox)
By adherence of the suggested data, pump speed can be reduced for more efficiency and lees sound.
!!! ATTENTION: The installer is committed that the water in the system has to be filled according to EN 14868 and EN 1717!!!
Pneumatex Zeparo ZCD
TA7897425+7877425 DN25 1"
with magnet
OG
EG
KG
PE32–CU28
ΔP=15kPa
PE17*2,0
max.100m piping length per cycle
UFH ΔP=2,7mH2O bei 1200L/h–7K splay
16.)Sensor cable from Hydro to DHW–buffer
300L Heat exchanger min.3,5m²
500L Heat exchanger min.5m²
Thermowell
Cylinder heater
17.) 3*1,5m² from Hydrobox to cylinder heater
PE32–CU28
PE40–CU35
BA
Buffer tank
until the last distributor PE32–CU28
In color marked mounting parts must be installed by start up.
1.)Screwing 5/4"
2.)Thermometer
3.)Drain
4.)TA Stad 1" DN25 (52151225)
5.)3–way valve min. 1"
6.)Ball valve 1"
7.)Filter 1" TA7897425+7877425
8.)Check valve
9.)Zone valve min. 1" by cooling
10.)Overflow valve 3/4" DN20 by single room control or cooling
11.)3/8" + 5/8" Refrigerant piping from HP to Hydrobox
12.)Communication cable 5*1,5² from HP to Hydrobox
13.)230V HP supply cable 5*1,5² from fuse to HP
14.)400V Hydrobox supply cable 5*1,5² Backup Heater from fuse to Hydrobox
15.)230V Hydrobox supply cable 3*1,5² DHW–cylinder heater from fuse to Hydrobox
16.)Sensor from Hydrobox to DHW–buffer
17.)3*1,5m² from Hydrobox to cylinder heater
18.)Drain
Valves must be adapted to the system
TOSHIBA
AIR-COND®
Klimaanlagen-Handelsgesellschaft m.b.H.
AUSTRIA - CENTRAL EUROPE


Breaker box
15 14 13
(13.)400V 16A
(14.)400V 16A
(15.)230V 16A
Diagram 1.6:
Direct heating DHW–Cooling and indirect heating UFH
400V
11–14–16kW
ESTIA
(13.)400V WP 5*1,5²
from fuse to HP
HWS1105H8–1405H8–1605H8
TOSHIBA
13.)Supply cable 5*1,5²
from fuse to HP
12.)Communication cable 5*1,5²
from HP to Hydrobox
11.)3/8" + 5/8" Refrigerant piping
from HP to Hydrobox
"ATTENTION: Keep refrigerant piping
closed from atmosphere
min. distance 20cm
min. distance 20cm
EV for 200L heatingwater
16
17 18
(14.)400V Hydrobox 5*1,5²
Backup Heater
from fuse to Hydrobox
(15.)230V Hydrobox 3*1,5²
DHW–cylinder heater
from fuse to Hydrobox
1
2
3
1
2
3
6 7
≈50cm
4
6
PE40–CU35
Pneumatex Zeparo ZCD
TA7897425+7877425 DN25 1"
with magnet
OG
EG
KG
PE32–CU28
ΔP=15kPa
PE17*2,0
max.100m piping length per cycle
6
4
PE32–CU28
PE32–CU28
All data with heattransfer capacity of 10kW/h – 1200l/h – 7K splay with approx. 20m heating pipes ΔP 1,2m (until buffer tank without Hydrobox and cooling)
By adherence of the suggested data, pump speed can be reduced for more efficiency and lees sound.
!!!ATTENTION: The installer is committed that the water in the system has to be filled according to EN 14868 and EN 1717!!!
Ceiling cooling
or fan coil
4
6
10
9
16.)Sensor cable from
Hydro to DHW–buffer
PE40–CU35
UFH ΔP=2,7mH2O bei
1200L/h–7K splay
6
8
4
6
6
300L
Heat exchanger
min.3,5m²
500L
Heat exchanger
min.5m²
Thermowell
Cylinder heater
BA 5
6
4 PE32–CU28
9
PE40–CU35
Buffer tank
PE40–CU35
until the last distributor PE32–CU28
PE40–CU35
17.) 3*1,5m² from Hydrobox
to cylinder heater
In color marked mounting parts must be installed by start up.
1.)Screwing 5/4"
2.)Thermometer
3.)Drain
4.)TA Stad 1" DN25 (52151225)
5.)3–way valve min. 1"
6.)Ball valve 1"
7.)Filter 1" TA7897425+7877425
8.)Check valve
9.)Zone valve min. 1" by cooling
10.)Overflow valve 3/4" DN20
by single room control or cooling
11.)3/8" + 5/8" Refrigerant piping
from HP to Hydrobox
12.)Communication cable 5*1,5²
from HP to Hydrobox
13.)230V HP supply cable 5*1,5²
from fuse to HP
14.)400V Hydrobox supply cable 5*1,5²
Backup Heater
from fuse to Hydrobox
15.)230V Hydrobox supply cable 3*1,5²
DHW–cylinder heater
from fuse to Hydrobox
16.)Sensor from Hydrobox to DHW–buffer
17.)3*1,5m² from Hydrobox to cylinder heater
18.)Drain
Valves must be adapted to the system
TOSHIBA
AIR-COND®
Klimaanlagen-Handelsgesellschaft m.b.H.
AUSTRIA - CENTRAL EUROPE


Breaker box
15 14 13
(13.)400V 16A
(14.)400V 16A
(15.)230V 16A
Diagram 1.7:
Direct heating DHW and
indirect heating UFH–LTR
400V
11–14–16kW
ESTIA
(13.)400V WP 5*1,5² from fuse to HP
(14.)400V Hydrobox 5*1,5² Backup Heater from fuse to Hydrobox
(15.)230V Hydrobox 3*1,5² DHW–cylinder heater from fuse to Hydrobox
HWS1105H8–1405H8–1605H8
TOSHIBA
min. distance 20cm
min. distance 20cm
EV for 200L heatingwater
16
17 18
1
2
3
PE40–CU35
4
6
≈50cm
6
7
Pneumatex Zeparo ZCD
TA7897425+7877425 DN25 1"
with magnet
All data with heattransfer capacity of 10kW/h – 1200l/h – 7K splay with approx. 20m heating pipes ΔP 1,2m (until buffer tank without Hydrobox)
By adherence of the suggested data, pump speed can be reduced for more efficiency and lees sound.
!!! ATTENTION: The installer is committed that the water in the system has to be filled according to EN 14868 and EN 1717!!!
16.)Sensor cable from Hydro to DHW–buffer
300L
Heat exchanger
min.3,5m²
500L
Heat exchanger
min.5m²
Thermowells
Cylinder heater
6
4
PE32–CU28
PE40–CU35
BA
5
17.) 3*1,5m² from Hydrobox to cylinder heater
6
Buffer tank
6
until the last distributor PE32–CU28
OG
EG
KG
PE32–CU28
ΔP=15kPa
PE17*2,0
max.100m piping length per cycle
6
4
PE32–CU28
PE32–CU28
PE40–CU35
PE32–CU28
Low temperature radiator
4
6
8
6
UFH ΔP=2,7mH2O bei 1200L/h–7K splay
6
8
6
4
13.)Supply cable 5*1,5² from fuse to HP
12.)Communication cable 5*1,5² from HP to Hydrobox
11.)3/8" + 5/8" Refrigerant piping from HP to Hydrobox
"ATTENTION: Keep refrigerant piping closed from atmosphere
In color marked mounting parts must be installed by start up.
1.)Screwing 5/4"
2.)Thermometer
3.)Drain
4.)TA Stad 1" DN25 (52151225)
5.)3–way valve min. 1"
6.)Ball valve 1"
7.)Filter 1" TA7897425+7877425
8.)Check valve
9.)Zone valve min. 1" by cooling
10.)Overflow valve 3/4" DN20 by single room control or cooling
11.)3/8" + 5/8" Refrigerant piping from HP to Hydrobox
12.)Communication cable 5*1,5² from HP to Hydrobox
13.)230V HP supply cable 5*1,5² from fuse to HP
14.)400V Hydrobox supply cable 5*1,5² Backup Heater from fuse to Hydrobox
15.)230V Hydrobox supply cable 3*1,5² DHW–cylinder heater from fuse to Hydrobox
16.)Sensor from Hydrobox to DHW–buffer
17.)3*1,5m² from Hydrobox to cylinder heater
18.)Drain
Valves must be adapted to the system
TOSHIBA
AIR-COND®
Klimaanlagen-Handelsgesellschaft m.b.H.
AUSTRIA - CENTRAL EUROPE

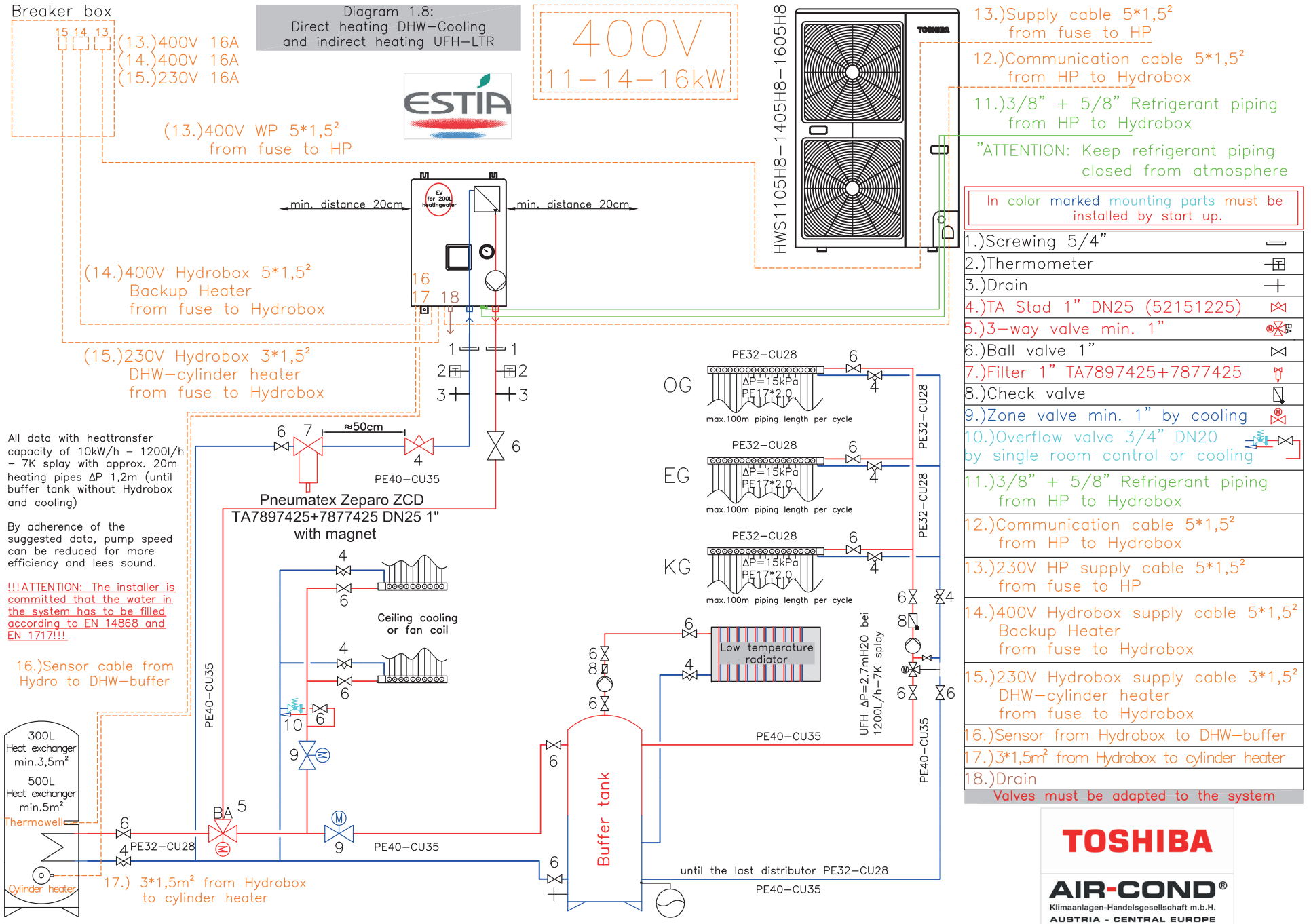
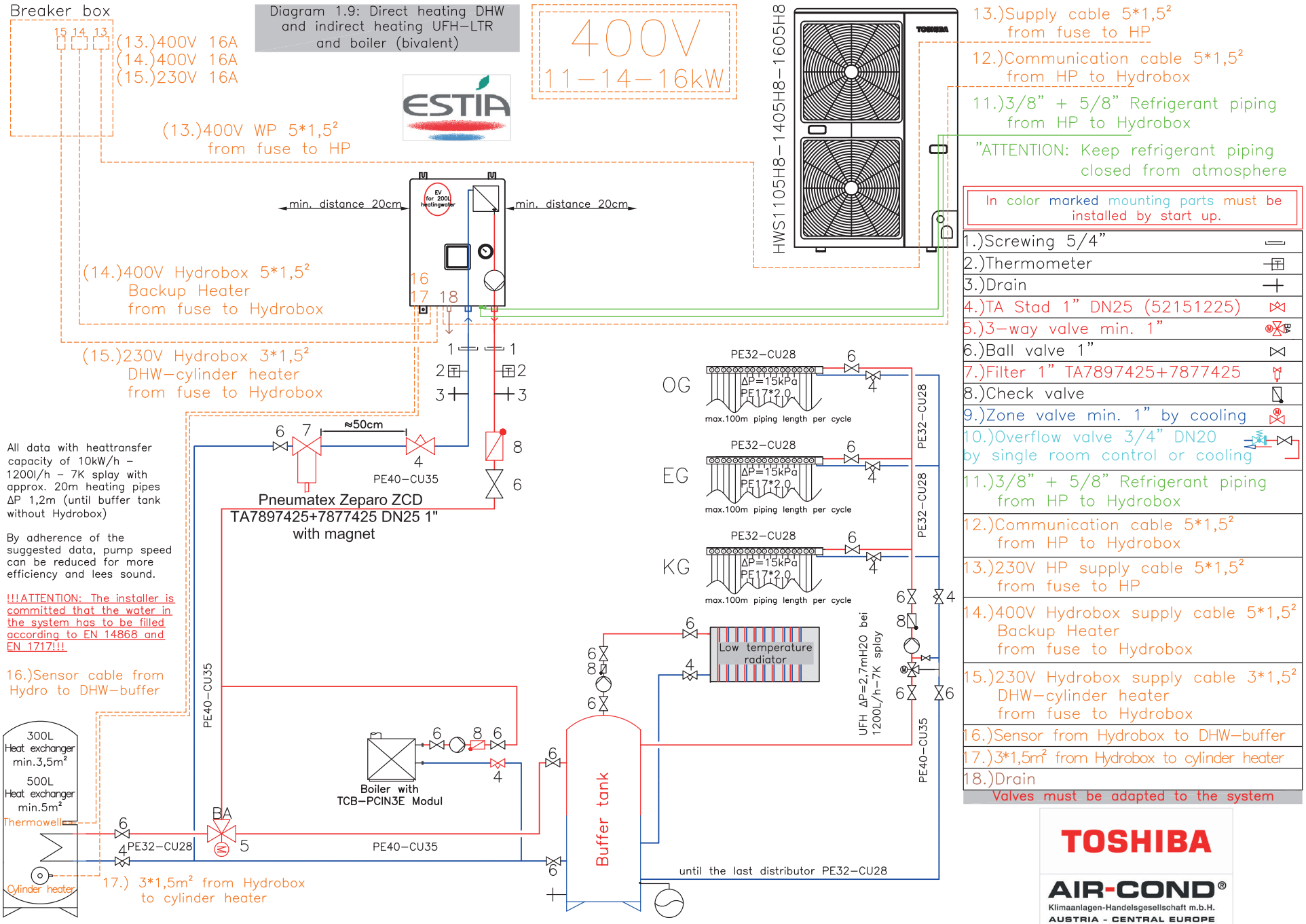

Breaker box
15 14 13
(13.)400V 16A
(14.)400V 16A
(15.)230V 16A
Diagram 1.8:
Direct heating DHW–Cooling
and indirect heating UFH–LTR
400V
11–14–16kW
ESTIA
(13.)400V WP 5*1,5²
from fuse to HP
HWS1105H8–1405H8–1605H8
TOSHIBA
13.)Supply cable 5*1,5²
from fuse to HP
12.)Communication cable 5*1,5²
from HP to Hydrobox
11.)3/8" + 5/8" Refrigerant piping
from HP to Hydrobox
"ATTENTION: Keep refrigerant piping
closed from atmosphere
min. distance 20cm
min. distance 20cm
EV for 200L heatingwater
16
17 18
(14.)400V Hydrobox 5*1,5²
Backup Heater
from fuse to Hydrobox
(15.)230V Hydrobox 3*1,5²
DHW–cylinder heater
from fuse to Hydrobox
All data with heattransfer capacity of 10kW/h – 1200l/h – 7K splay with approx. 20m heating pipes ΔP 1,2m (until buffer tank without Hydrobox and cooling)
By adherence of the suggested data, pump speed can be reduced for more efficiency and lees sound.
!!!ATTENTION: The installer is committed that the water in the system has to be filled according to EN 14868 and EN 1717!!!
16.)Sensor cable from Hydro to DHW–buffer
≈50cm
PE40–CU35
Pneumatex Zeparo ZCD
TA7897425+7877425 DN25 1"
with magnet
Ceiling cooling
or fan coil
PE40–CU35
300L
Heat exchanger
min.3,5m²
500L
Heat exchanger
min.5m²
Thermowell
Cylinder heater
PE32–CU28
PE40–CU35
17.) 3*1,5m² from Hydrobox
to cylinder heater
Buffer tank
OG
EG
KG
PE32–CU28
ΔP=15kPa
PE17*2,0
max.100m piping length per cycle
PE32–CU28
PE32–CU28
PE32–CU28
Low temperature
radiator
UFH ΔP=2,7mH2O bei
1200L/h–7K splay
PE40–CU35
PE40–CU35
until the last distributor PE32–CU28
PE40–CU35
In color marked mounting parts must be installed by start up.
1.)Screwing 5/4"
2.)Thermometer
3.)Drain
4.)TA Stad 1" DN25 (52151225)
5.)3–way valve min. 1"
6.)Ball valve 1"
7.)Filter 1" TA7897425+7877425
8.)Check valve
9.)Zone valve min. 1" by cooling
10.)Overflow valve 3/4" DN20
by single room control or cooling
11.)3/8" + 5/8" Refrigerant piping
from HP to Hydrobox
12.)Communication cable 5*1,5²
from HP to Hydrobox
13.)230V HP supply cable 5*1,5²
from fuse to HP
14.)400V Hydrobox supply cable 5*1,5²
Backup Heater
from fuse to Hydrobox
15.)230V Hydrobox supply cable 3*1,5²
DHW–cylinder heater
from fuse to Hydrobox
16.)Sensor from Hydrobox to DHW–buffer
17.)3*1,5m² from Hydrobox to cylinder heater
18.)Drain
Valves must be adapted to the system
TOSHIBA
AIR-COND®
Klimaanlagen-Handelsgesellschaft m.b.H.
AUSTRIA - CENTRAL EUROPE

Diagram 1.9: Direct heating DHW and indirect heating UFH–LTR and boiler (bivalent)

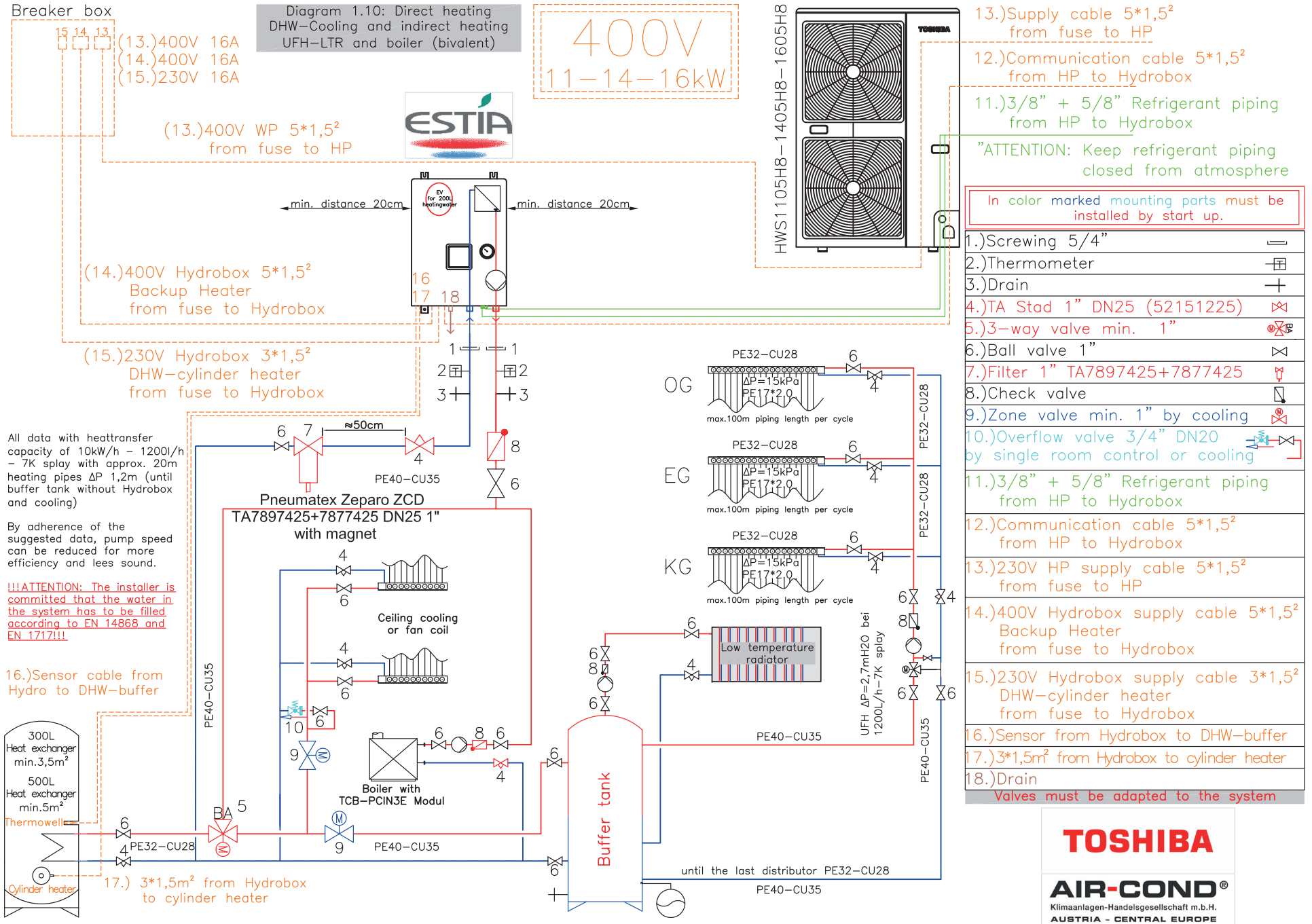


In color marked mounting parts must be installed by start up.

1.)Screwing 5/4"	
2.)Thermometer	
3.)Drain	
4.)TA Stad 1" DN25 (52151225)	
5.)3–way valve min. 1"	
6.)Ball valve 1"	
7.)Filter 1" TA7897425+7877425	
8.)Check valve	
9.)Zone valve min. 1" by cooling	
10.)Overflow valve 3/4" DN20 by single room control or cooling	
11.)3/8" + 5/8" Refrigerant piping from HP to Hydrobox	
12.)Communication cable 5*1,5² from HP to Hydrobox	
13.)230V HP supply cable 5*1,5² from fuse to HP	
14.)400V Hydrobox supply cable 5*1,5² Backup Heater from fuse to Hydrobox	
15.)230V Hydrobox supply cable 3*1,5² DHW–cylinder heater from fuse to Hydrobox	
16.)Sensor from Hydrobox to DHW–buffer	
17.)3*1,5m² from Hydrobox to cylinder heater	
18.)Drain	

Valves must be adapted to the system

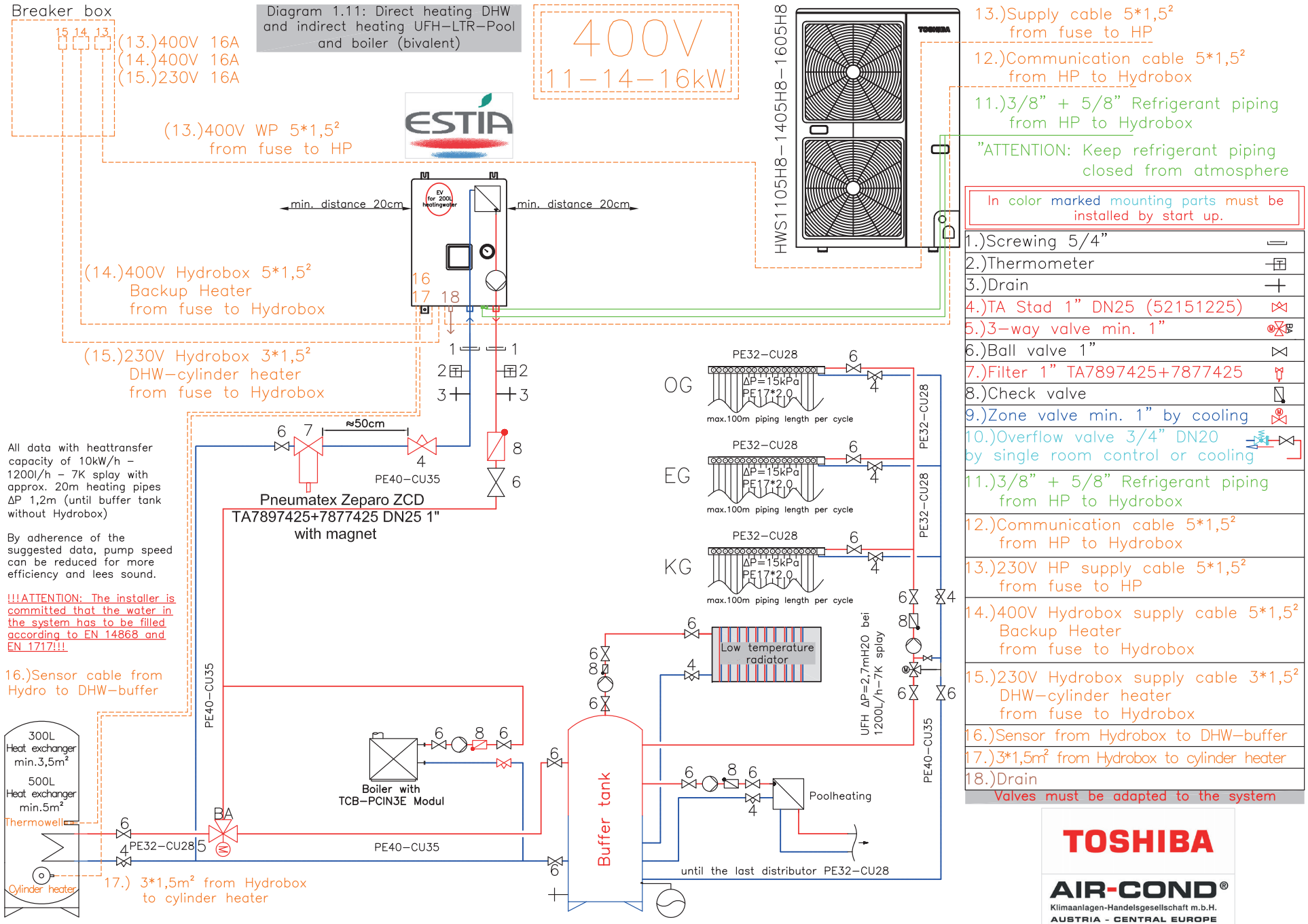
TOSHIBA
AIR-COND®
Klimaanlagen-Handelsgesellschaft m.b.H.
AUSTRIA - CENTRAL EUROPE



In color marked mounting parts must be installed by start up.	
1.)Screwing 5/4"	
2.)Thermometer	
3.)Drain	
4.)TA Stad 1" DN25 (52151225)	
5.)3–way valve min. 1"	
6.)Ball valve 1"	
7.)Filter 1" TA7897425+7877425	
8.)Check valve	
9.)Zone valve min. 1" by cooling	
10.)Overflow valve 3/4" DN20 by single room control or cooling	
11.)3/8" + 5/8" Refrigerant piping from HP to Hydrobox	
12.)Communication cable 5*1,5² from HP to Hydrobox	
13.)230V HP supply cable 5*1,5² from fuse to HP	
14.)400V Hydrobox supply cable 5*1,5² Backup Heater from fuse to Hydrobox	
15.)230V Hydrobox supply cable 3*1,5² DHW–cylinder heater from fuse to Hydrobox	
16.)Sensor from Hydrobox to DHW–buffer	
17.)3*1,5m² from Hydrobox to cylinder heater	
18.)Drain	
Valves must be adapted to the system	

TOSHIBA
AIR-COND®
Klimaanlagen-Handelsgesellschaft m.b.H.
AUSTRIA - CENTRAL EUROPE

Diagram 1.11: Direct heating DHW and indirect heating UFH–LTR–Pool and boiler (bivalent)



13.)Supply cable 5*1,5² from fuse to HP

12.)Communication cable 5*1,5² from HP to Hydrobox

11.)3/8" + 5/8" Refrigerant piping from HP to Hydrobox

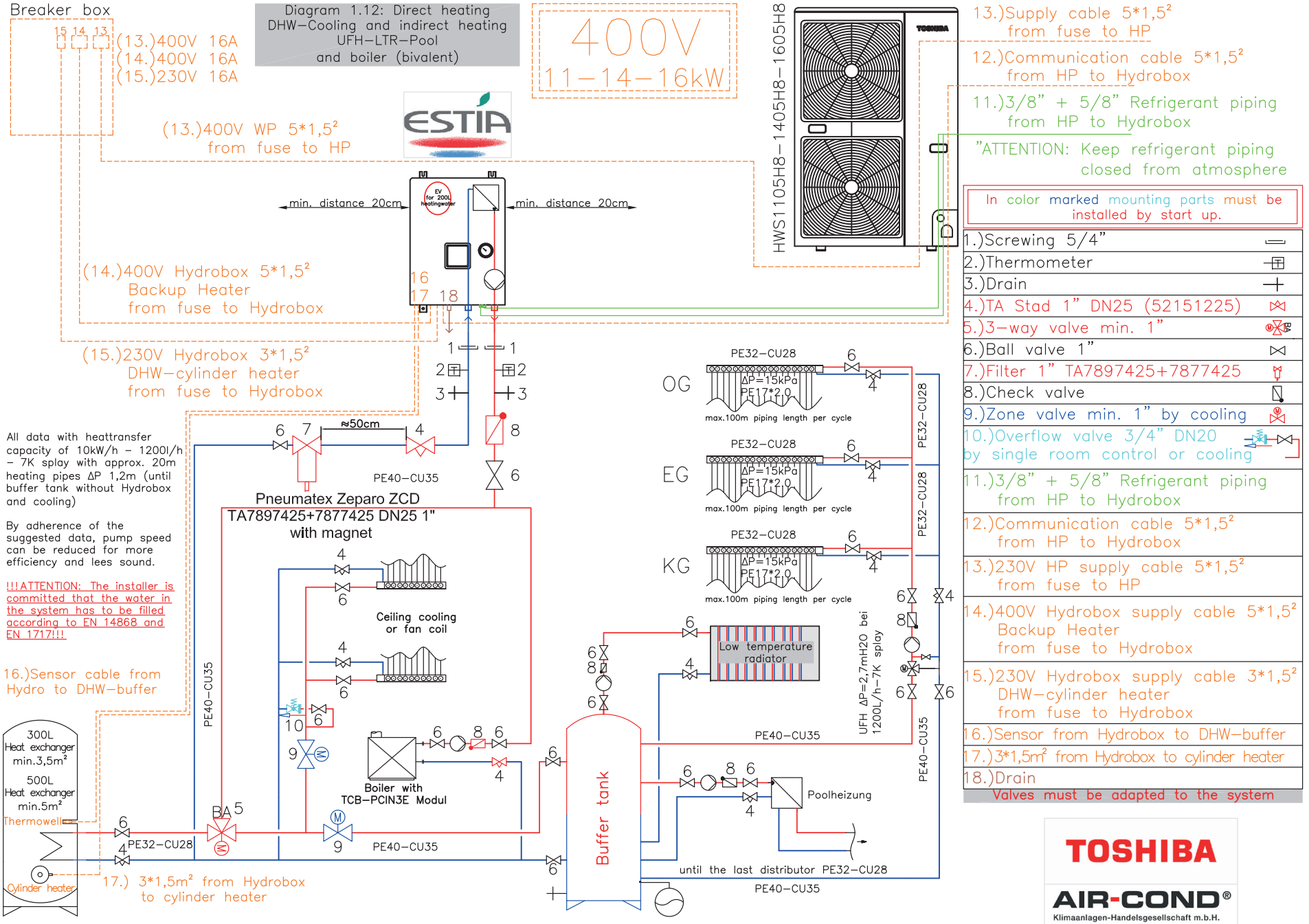
"ATTENTION: Keep refrigerant piping closed from atmosphere

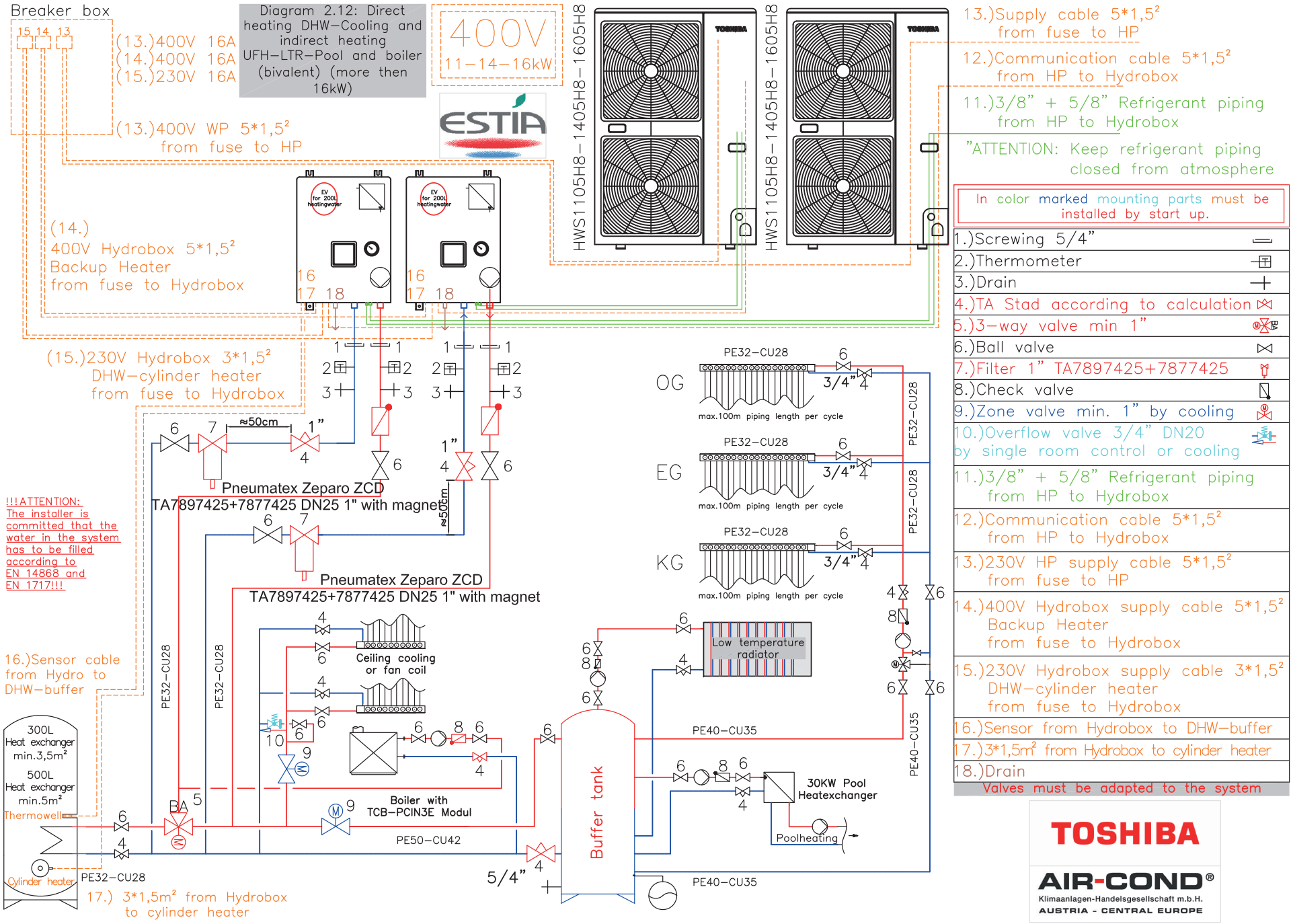
In color marked mounting parts must be installed by start up.

1.)Screwing 5/4"
2.)Thermometer
3.)Drain
4.)TA Stad 1" DN25 (52151225)
5.)3–way valve min. 1"
6.)Ball valve 1"
7.)Filter 1" TA7897425+7877425
8.)Check valve
9.)Zone valve min. 1" by cooling
10.)Overflow valve 3/4" DN20 by single room control or cooling
11.)3/8" + 5/8" Refrigerant piping from HP to Hydrobox
12.)Communication cable 5*1,5² from HP to Hydrobox
13.)230V HP supply cable 5*1,5² from fuse to HP
14.)400V Hydrobox supply cable 5*1,5² Backup Heater from fuse to Hydrobox
15.)230V Hydrobox supply cable 3*1,5² DHW–cylinder heater from fuse to Hydrobox
16.)Sensor from Hydrobox to DHW–buffer
17.)3*1,5m² from Hydrobox to cylinder heater
18.)Drain

Valves must be adapted to the system

TOSHIBA
AIR-COND®
Klimaanlagen-Handelsgesellschaft m.b.H.
AUSTRIA - CENTRAL EUROPE


Breaker box
15 14 13
(13.)400V 16A
(14.)400V 16A
(15.)230V 16A
Diagram 1.12: Direct heating
DHW–Cooling and indirect heating
UFH–LTR–Pool
and boiler (bivalent)
400V
11–14–16kW
HWS1105H8–1405H8–1605H8
(13.)400V WP 5*1,5²
from fuse to HP
(14.)400V Hydrobox 5*1,5²
Backup Heater
from fuse to Hydrobox
(15.)230V Hydrobox 3*1,5²
DHW–cylinder heater
from fuse to Hydrobox
min. distance 20cm
min. distance 20cm
EV for 200L heatingwater
16
17 18
13.)Supply cable 5*1,5²
from fuse to HP
12.)Communication cable 5*1,5²
from HP to Hydrobox
11.)3/8" + 5/8" Refrigerant piping
from HP to Hydrobox
"ATTENTION: Keep refrigerant piping
closed from atmosphere
In color marked mounting parts must be installed by start up.
1.)Screwing 5/4"
2.)Thermometer
3.)Drain
4.)TA Stad 1" DN25 (52151225)
5.)3–way valve min. 1"
6.)Ball valve 1"
7.)Filter 1" TA7897425+7877425
8.)Check valve
9.)Zone valve min. 1" by cooling
10.)Overflow valve 3/4" DN20
by single room control or cooling
11.)3/8" + 5/8" Refrigerant piping
from HP to Hydrobox
12.)Communication cable 5*1,5²
from HP to Hydrobox
13.)230V HP supply cable 5*1,5²
from fuse to HP
14.)400V Hydrobox supply cable 5*1,5²
Backup Heater
from fuse to Hydrobox
15.)230V Hydrobox supply cable 3*1,5²
DHW–cylinder heater
from fuse to Hydrobox
16.)Sensor from Hydrobox to DHW–buffer
17.)3*1,5m² from Hydrobox to cylinder heater
18.)Drain
Valves must be adapted to the system
All data with heattransfer capacity of 10kW/h – 1200l/h – 7K splay with approx. 20m heating pipes ΔP 1,2m (until buffer tank without Hydrobox and cooling)
By adherence of the suggested data, pump speed can be reduced for more efficiency and lees sound.
!!!ATTENTION: The installer is committed that the water in the system has to be filled according to EN 14868 and EN 1717!!!
16.)Sensor cable from Hydro to DHW–buffer
≈50cm
PE40–CU35
Pneumatex Zeparo ZCD
TA7897425+7877425 DN25 1"
with magnet
Ceiling cooling
or fan coil
Boiler with
TCB–PCIN3E Modul
300L
Heat exchanger
min.3,5m²
500L
Heat exchanger
min.5m²
Thermowell
Cylinder heater
PE32–CU28
17.) 3*1,5m² from Hydrobox
to cylinder heater
Buffer tank
OG
EG
KG
PE32–CU28
ΔP=15kPa
PE17*2,0
max.100m piping length per cycle
Low temperature
radiator
UFH ΔP=2,7mH2O bei
1200L/h–7K splay
Poolheizung
until the last distributor PE32–CU28
PE40–CU35



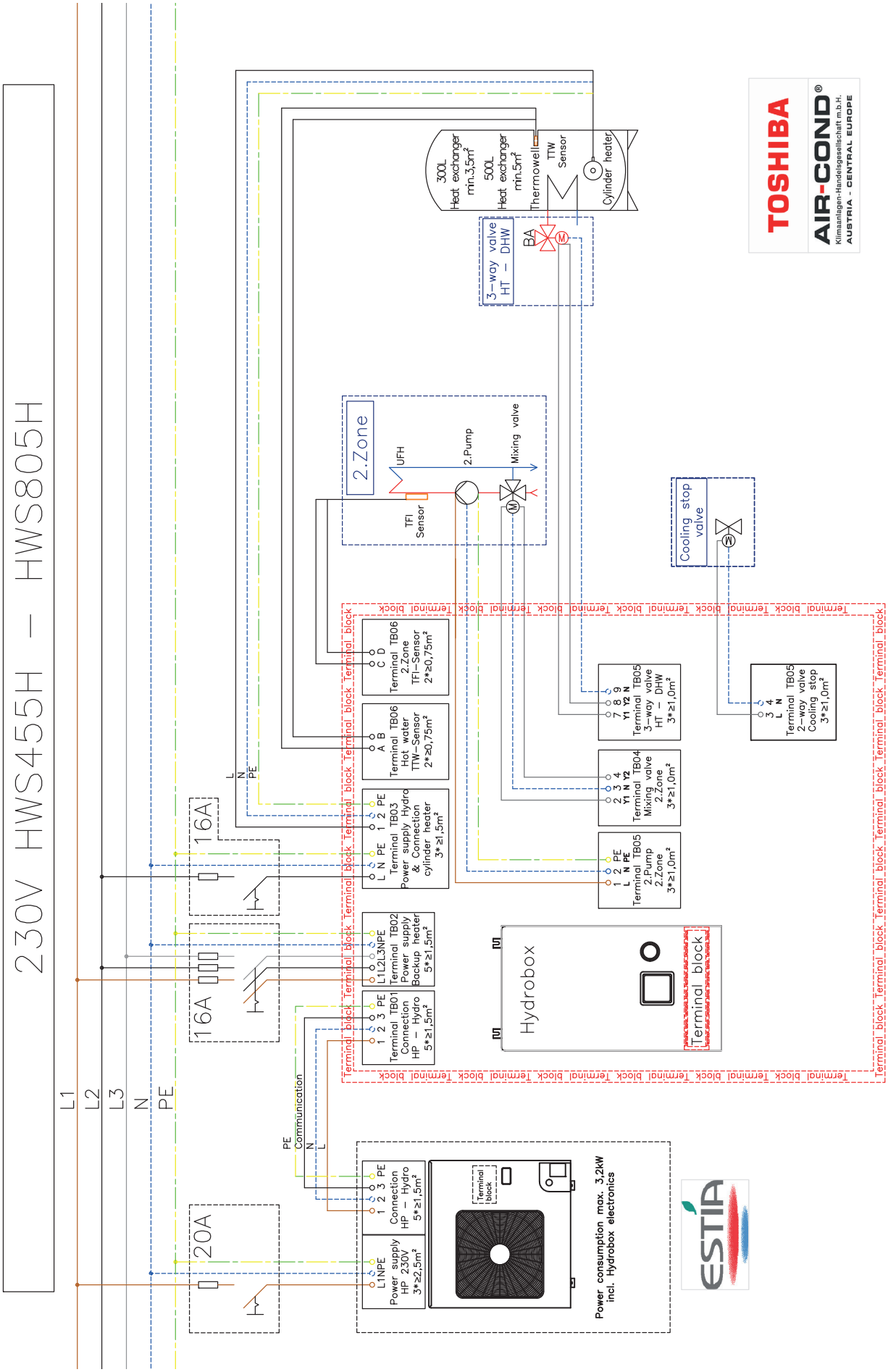
In color marked mounting parts must be installed by start up.

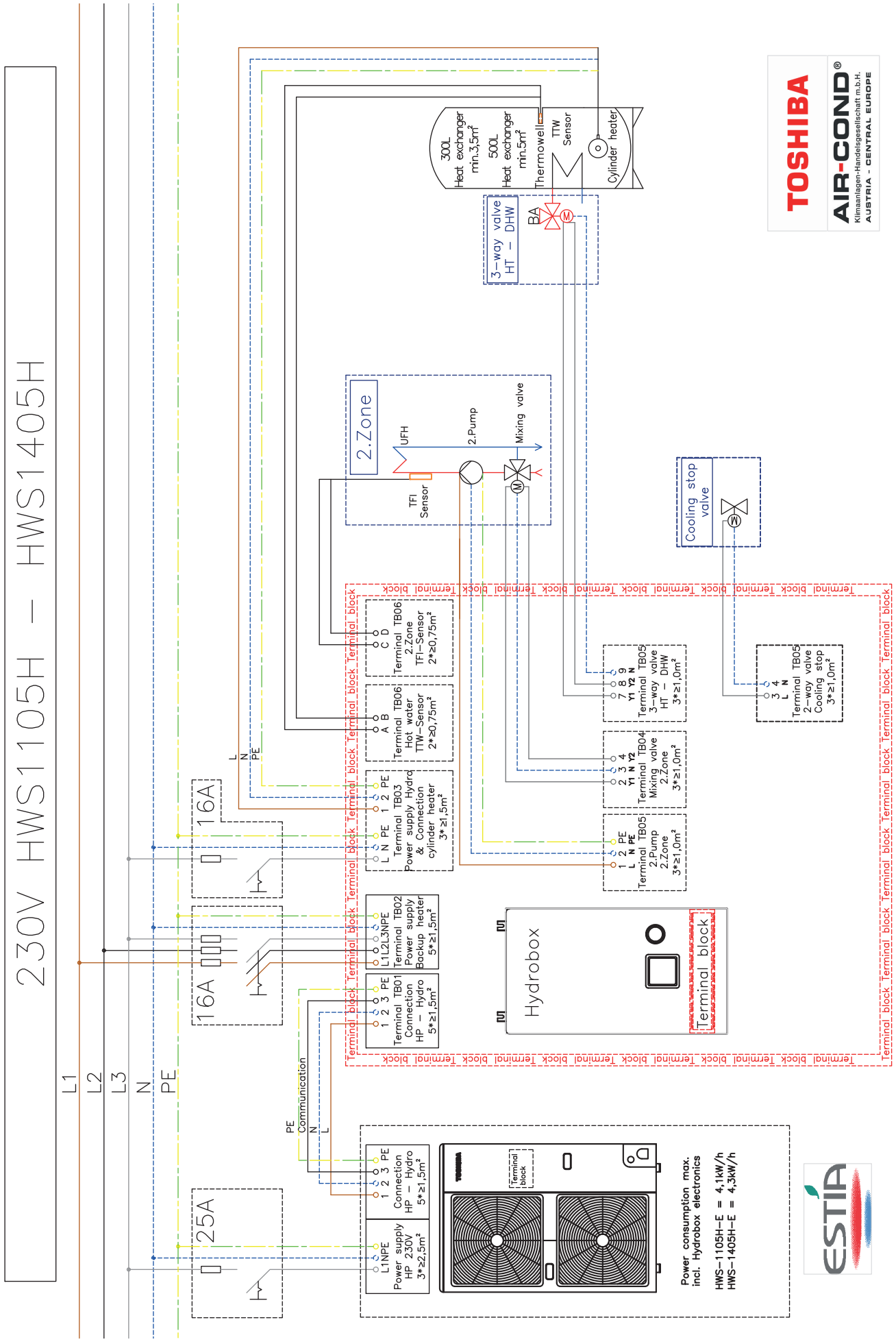
1.)Screwing 5/4"	
2.)Thermometer	
3.)Drain	
4.)TA Stad according to calculation	
5.)3–way valve min 1"	
6.)Ball valve	
7.)Filter 1" TA7897425+7877425	
8.)Check valve	
9.)Zone valve min. 1" by cooling	
10.)Overflow valve 3/4" DN20 by single room control or cooling	
11.)3/8" + 5/8" Refrigerant piping from HP to Hydrobox	
12.)Communication cable 5*1,5² from HP to Hydrobox	
13.)230V HP supply cable 5*1,5² from fuse to HP	
14.)400V Hydrobox supply cable 5*1,5² Backup Heater from fuse to Hydrobox	
15.)230V Hydrobox supply cable 3*1,5² DHW–cylinder heater from fuse to Hydrobox	
16.)Sensor from Hydrobox to DHW–buffer	
17.)3*1,5m² from Hydrobox to cylinder heater	
18.)Drain	

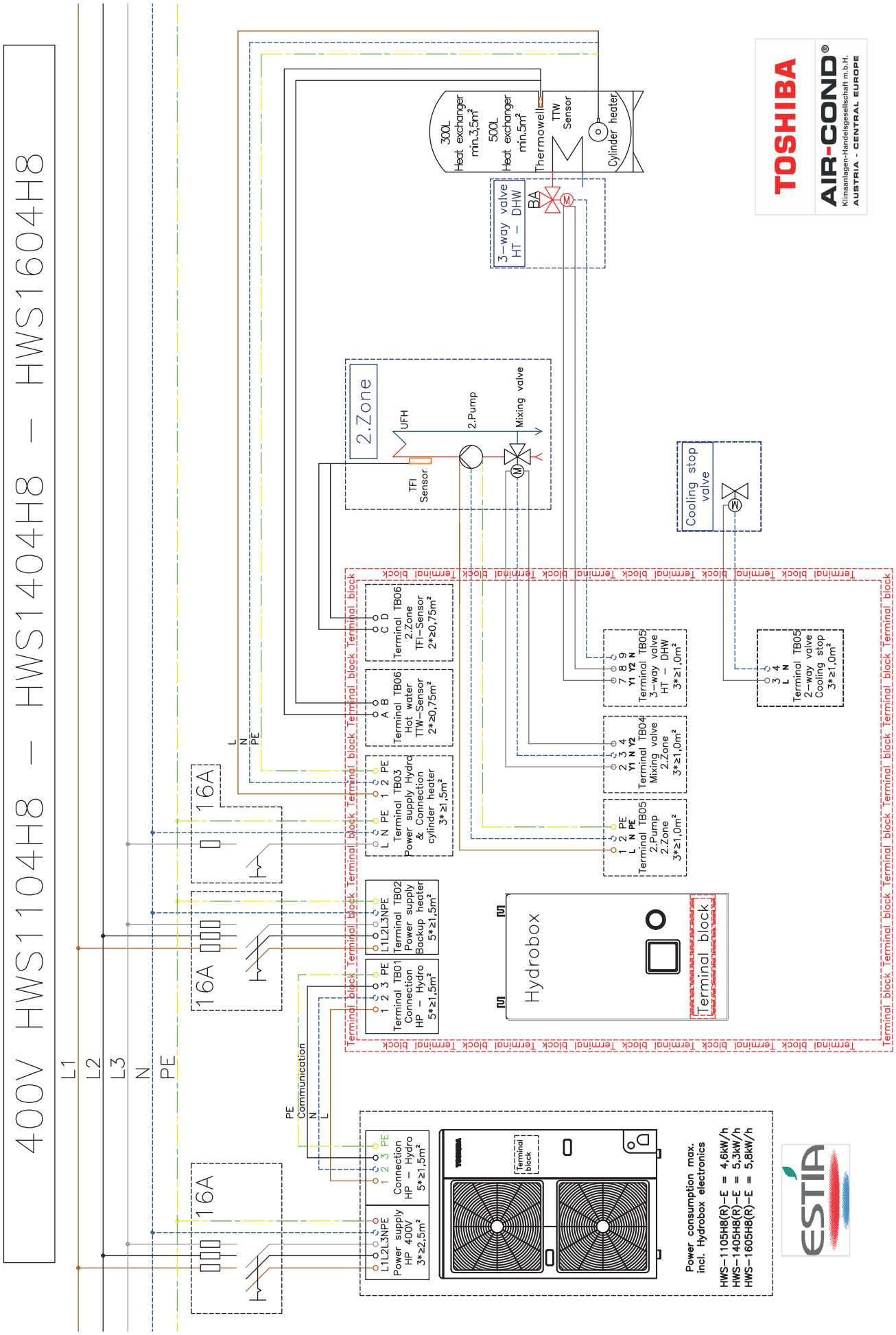
Valves must be adapted to the system

TOSHIBA
AIR-COND®
Klimaanlagen-Handelsgesellschaft m.b.H.
AUSTRIA - CENTRAL EUROPE

Main circuit outdoor unit / hydro unit




230V HWS1105H – HWS1405H
L1
L2
L3
N
PE
25A
16A
16A
PE
Communication
N
L
L1N PE
Power supply HP 230V 3*≥2,5m²
1 2 3 PE
Connection HP – Hydro 5*≥1,5m²
Terminal block
Power consumption max. incl. Hydrobox electronics
HWS–1105H–E = 4,1kW/h
HWS–1405H–E = 4,3kW/h
Terminal block Terminal block Terminal block Terminal block Terminal block
L1L2L3NPE
Terminal TB02
Power supply Backup heater
5*≥1,5m²
1 2 3 PE
Terminal TB01
Connection HP – Hydro
5*≥1,5m²
Hydrobox
Terminal block
L N PE 1 2 PE
Terminal TB03
Power supply Hydro & Connection cylinder heater
3*≥1,5m²
A B
Terminal TB06
Hot water TTW–Sensor
2*≥0,75m²
C D
Terminal TB06
2.Zone TFI–Sensor
2*≥0,75m²
1 2 PE L N PE
Terminal TB05
2.Pump 2.Zone
3*≥1,0m²
2 3 4 Y1 N Y2
Terminal TB04
Mixing valve 2.Zone
3*≥1,0m²
7 8 9 Y1 Y2 N
Terminal TB05
3–way valve HT – DHW
3*≥1,0m²
3 4 L N
Terminal TB05
2–way valve Cooling stop
3*≥1,0m²
2.Zone
UFH
TFI Sensor
2.Pump
Mixing valve
3–way valve HT – DHW
BA
300L Heat exchanger min.3,5m²
500L Heat exchanger min.5m²
Thermowell
TTW Sensor
Cylinder heater
Cooling stop valve
TOSHIBA
AIR-COND®
Klimaanlagen-Handelsgesellschaft m.b.H.
AUSTRIA - CENTRAL EUROPE
ESTIA


400V HWS1104H8 – HWS1404H8 – HWS1604H8
L1
L2
L3
N
PE
16A
16A
16A
PE
Communication
N
L
Power supply HP 400V 3*≥2,5m²
L1L2L3NPE
Connection HP – Hydro 5*≥1,5m²
1 2 3 PE
Terminal block
Power consumption max. incl. Hydrobox electronics
HWS-1105H8(R)-E = 4,6kW/h
HWS-1405H8(R)-E = 5,3kW/h
HWS-1605H8(R)-E = 5,8kW/h
Terminal block Terminal block Terminal block Terminal block Terminal block Terminal block Terminal block Terminal block Terminal block Terminal block Terminal block Terminal block
Hydrobox
Terminal block
Terminal TB01 Connection HP – Hydro 5*≥1,5m²
1 2 3 PE
Terminal TB02 Power supply Backup heater 5*≥1,5m²
L1L2L3NPE
Terminal TB03 Power supply Hydro & Connection cylinder heater 3*≥1,5m²
L N PE 1 2 PE
Terminal TB06 Hot water TTW–Sensor 2*≥0,75m²
A B
Terminal TB06 2.Zone TFI–Sensor 2*≥0,75m²
C D
Terminal TB04 Mixing valve 2.Zone 3*≥1,0m²
2 3 4
Y1 N Y2
Terminal TB05 2.Pump 2.Zone 3*≥1,0m²
1 2 PE
L N PE
Terminal TB05 3–way valve HT – DHW 3*≥1,0m²
7 8 9
Y1 Y2 N
Terminal TB05 2–way valve Cooling stop 3*≥1,0m²
3 4
L N
2.Zone
UFH
2.Pump
Mixing valve
TFI Sensor
3–way valve HT – DHW
BA
Cooling stop valve
300L Heat exchanger min.3,5m²
500L Heat exchanger min.5m²
Thermowell
TTW Sensor
Cylinder heater
TOSHIBA
AIR-COND®
Klimaanlagen-Handelsgesellschaft m.b.H.
AUSTRIA - CENTRAL EUROPE
ESTIA

3-way valve (diverter) for preparation of domestic hot water

3-way valve (diverter) connection

Required valve specification:

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

- Valve diameter: Port A, Port B: ⌀ 1 1/4“
- Return mechanism: 3 types of 3-way valve (diverter) can be used.
- Set the 3-way valve in use with the DIP switch SW13-1 on the Hydro unit board.

		SW13-1
Typ 1	2-wire spring return	OFF
Typ 2	3-wire SPST	OFF
Typ 3	3-wire SPDT	ON

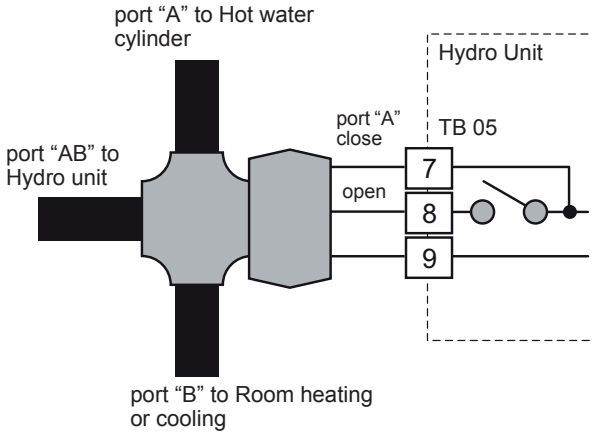
NOTE

Continuous operation of the valve motor at the fully open position is not recommended.

- The 3-way diverter valve is used to select either domestic hot water or space heating.
- Connect the 3-way diverter valve to terminals 7, 8 and 9 on Terminal Block 05.
- Connect the 3-way diverter valve in accordance with the diagram below:

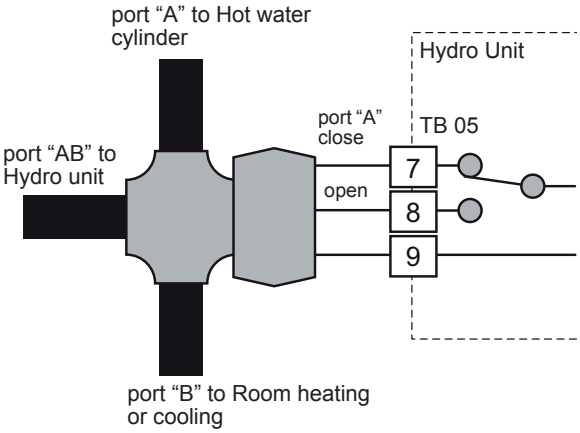
NOT recommended!

Type 2: SPST



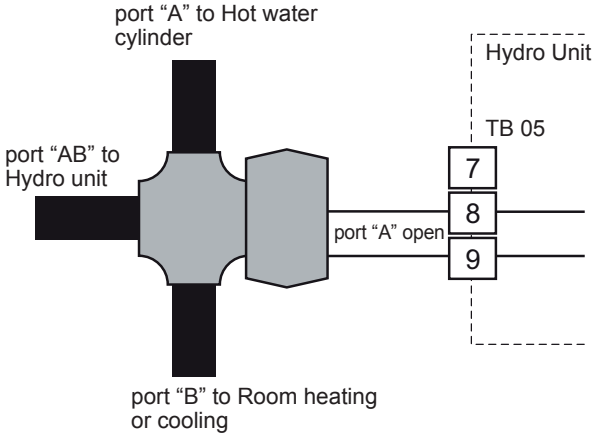
Recommended!

Type 3: SPDT



Recommended!

Type 1: SPRING RETURN



3-way mixing valve for second zone

3-way mixing valve connection

Required actuator specification:

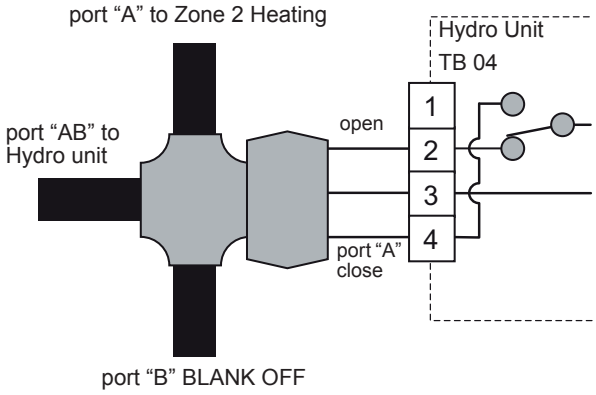
Electrical specification: 230V; 50 Hz; <100 mA

The 3-way mixing valve is used to achieve the temperature differential needed in a 2-zone heating system.

- Connect the 3-way mixing valve to terminals 2, 3 and 4 on Terminal Block 04 (for Type 1 mixing valve) or on terminals 1, 2 and 3 on Terminal Block 04 (for Type 2 mixing valve).
- Connect the 3-way mixing valve in accordance with the diagrams below:

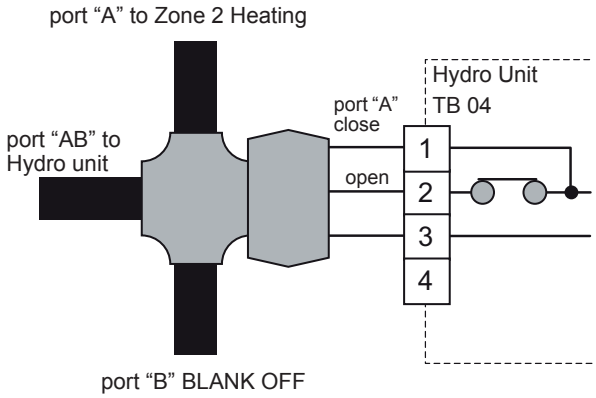
Recommended!

Type 1: SPDT



NOT recommended!

Type 2: SPST

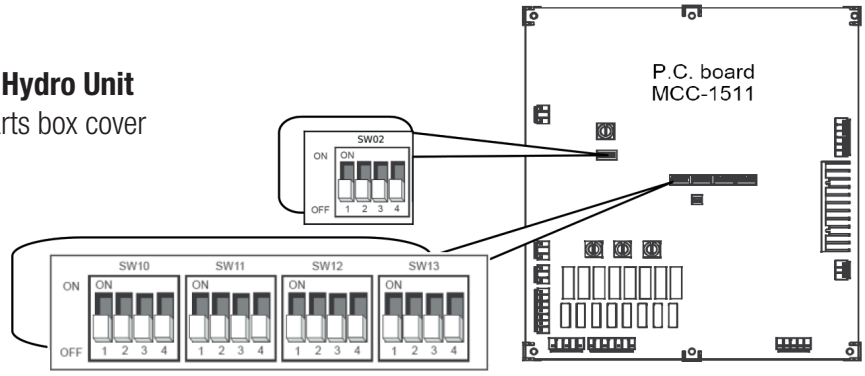


Dip switch settings

Start up and Configuration

Setting DIP switches on the board in the Hydro Unit

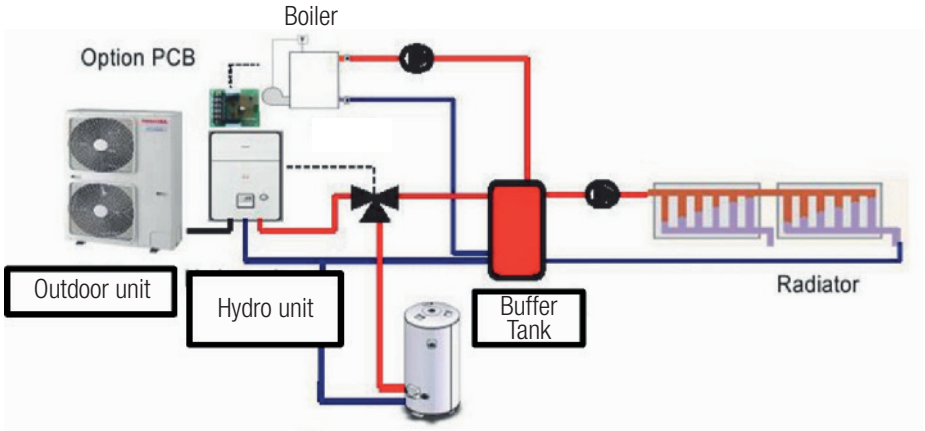
- Detach the front cover and the electric parts box cover of the Hydro Unit.
- Set the DIP switches on the main board.



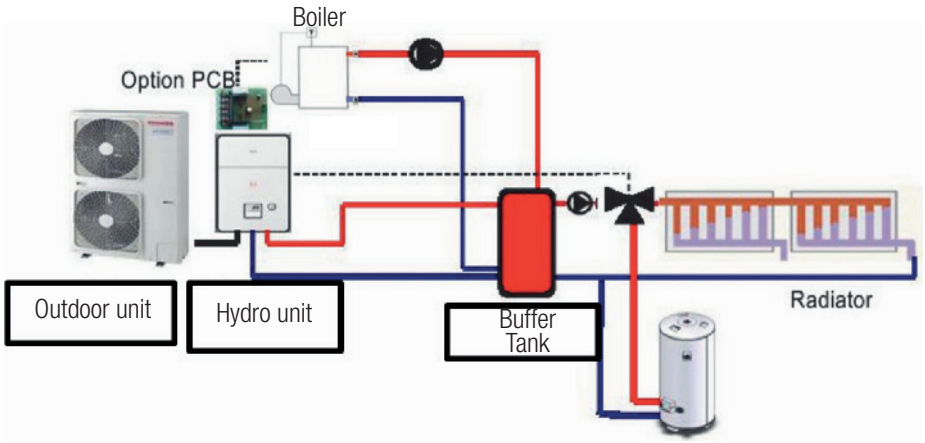
SW No.	DIP No.	Description	Default	Additional information
02	1	Determines the position of the auxiliary boiler in the system installation: OFF = Boiler positioned after the 3-way valve ON = Boiler installed before the 3-way valve	OFF	For bivalent heating system only (oil, gas, etc.) Explanation based on the schemes next page
	2	Not used	-	-
	3	Used, when an external hot water thermostat is connected OFF = No external hot water thermostat connected ON = External hot water thermostat connected	OFF	Using of an external hot water thermostat, always in connection with additional board TCB-PCMO3E (TTW sensor not necessary)
	4	Used, when an external room thermostat is connected OFF = No external room thermostat ON = External room thermostat connected	OFF	Only by using an external room thermostat, always in connection with additional board TCB-PCMO3E
10	1	P1-pump operation for hot water OFF = P1 runs only during hot water supply operation ON = P1 runs continuousely	OFF	Synchronizes pump 1 and outdoor unit during hot water supply operation
	2	P1-pump operation for heating OFF = P1 runs continuousely ON = When outside temperature is above 20°C, P1 switches off	OFF	ON = If the outdoor temperature is more than 20°C, pump turns off. Temperature can be changed with the DN-Code 9E!
	3	Synchronisation of pump P2 OFF = Pump 2 runs in parallel with pump 1 ON = Continuous operation pump 2	OFF	Attention: new function only for Series 4-E1 OFF: In bivalent heating system when 5B is set to 3, P2 and mixing valve control remains active ON: P2 turns off during hot water supply operation
	4	Pump 1 ON/OFF cycling (during long periods of system OFF) OFF = Pump 1 normal operation ON = Pump 1 on for 10 minutes (if system has been stopped for 72 hours)	OFF	For temporary water circulation
11	1	Used to enable the hydro unit back up heaters OFF = Back up heater control enabled ON = Back up heater control disabled	OFF	Back up heaters in the hydro box: Connector TB02 3,6 or 9 KW power
	2	Used to enable the hot water cylinder electric heater OFF = Hot water cylinder heater control enabled ON = Hot water cylinder heater control disabled	OFF	Connector TB03 Should always be set to OFF
	3	Used to enable the external booster heater output control OFF = External booster heater control enabled (TO must be ≤ -20°C) ON = External booster heater control disabled	OFF	If the outdoor temperature is below -20°C, the contact on connector TB05 / 5+6 (230V/1A) will be activated!
	4	Not used	-	-
12	1	Used to determine hot water cylinder connection to the system OFF = Hot water cylinder connected to the system ON = Hot water cylinder not connected to the system	OFF	
	2	Used to enable Zone 1 operation OFF = Zone 1 control enabled ON = Zone 1 control disabled	OFF	Has to be set to ON if the heat pump is only used for hot water supply operation.
	3	Used to enable Zone 2 operation OFF = Zone 2 control disabled ON = Zone 2 control enabled	OFF	E.g. when using radiators and underflow heating
	4	Not used	-	-
13	1	Used to determine type of 3-way diverting valve connected to system OFF = 2 wire spring return or 3 wire SPST valve connected ON = 3 wire SPDT valve connected	OFF	SPDT type valve preferred
	2	Used to enable the external boiler output control (used with FC23) OFF = External boiler output control disabled ON = External boilder output control enabled	OFF	Only at bivalent heating system and in conjunction with the circuit board TCB-PCIN3E
	3	Used to enable system auto restart after system power failure OFF = Auto restart control enabled ON = Auto restart control disabled	OFF	
	4	PCB configuration for HiPower model	ON	Note: only for HWS-P804-1104XWHM*-E and E1, set always to ON

Integrating external heating system (bivalent heating)

SW 2 / DIP 1 „OFF“ = Integration after 3-way valve

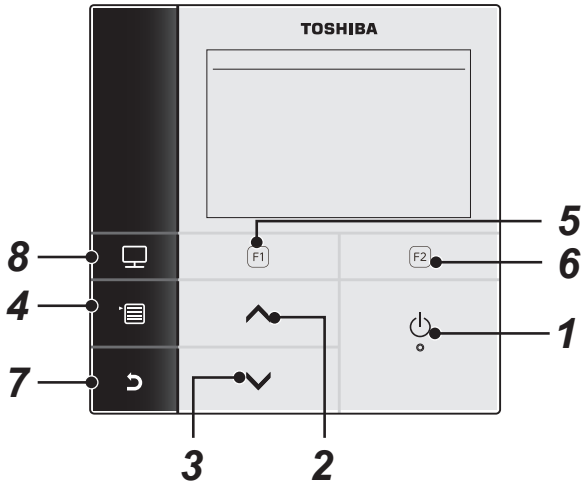


SW 2 / DIP 1 „ON“ = Integration before 3-way valve



Name and function of parts

Buttons



1 [ON/OFF] button

2 [^] button
On the top screen: Adjusts the temperature.
On the menu screen or other screen: Selects a menu item or ON/OFF of each function or moves a cursor, etc.

3 [v] button
On the top screen: Adjusts the temperature.
On the menu screen or other screen: Selects a menu item or ON/OFF of each function or moves a cursor, etc.

4 [MENU] button
On the top screen: Displays the MENU screen.
On the other screen: Fixes or copies the settings of parameter value.

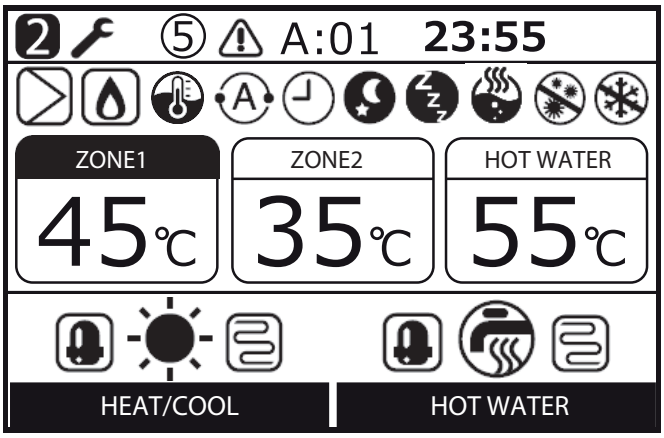
5 [F1] button
On the top screen: Select the heating or cooling mode.
On the other screen: Varies its function according to the screen.

6 [F2] button
On the top screen: Select the hot water mode.
On the other screen: Varies its function according to the screen.

7 [RETURN] button
Returns to the previous screen, etc.

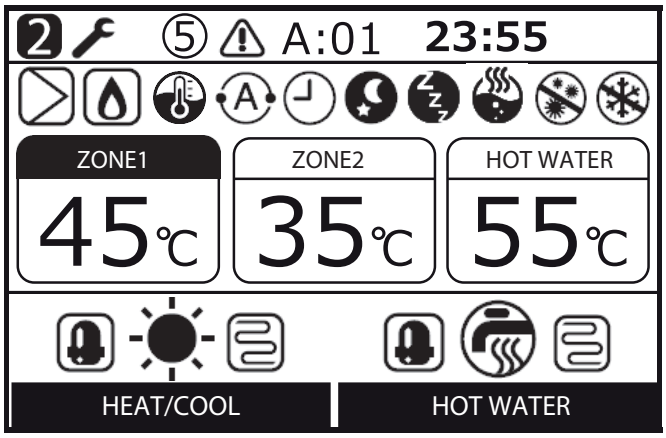
8 [MODE] button
On the top screen: Select the mode for which to change the temperature.
On the other screen: Resets the setting parameter value.

Meaning of indication on the top screen



Display	Description
ZONE1	Lights when floor heater or radiator is connected (when the system has floor heater or radiator).
ZONE2	Lights when controlling the second temperature (It may not light depending on the system).
HOT WATER	Lights when hot water supply system is connected (when the system has hot water supply).
ZONE1	The painted mark lights for operation mode for which temperature is to be changed.
HEAT/COOL	Lights when the compressor is acting for heating or cooling operation.
HEAT/COOL	Lights while the electric heater inside the hydro unit is energized during a heating operation.
HOT WATER	Lights while the compressor is acting for hot water supply operation.
HOT WATER	Lights while the electric cylinder heater is energized during hot water operation.
	Lights when heating is selected.
	Lights when cooling is selected..
	Lights during hot water supply is selected.
	Lights while internal pump (pump 1) or expansion pump (pump 2) is driven.
	Lights when the auxiliary boiler or external booster heater supports the heat pump operation.
/	Lights during water temperature control mode / room temperature control mode.
	Lights during Auto mode operation.
	Lights when Schedule timer or Floor drying is set to “ON”.

Meaning of indication on the top screen



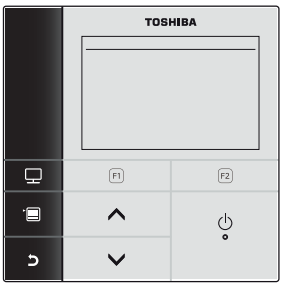
Display	Description
	Lights when Night setback operation is set to “ON” and heating or cooling is selected.
	Lights while Silent mode operation is actually running.
	Lights while hot water boost is actually running.
	Lights when Anti bacteria operation is set to “ON” and hot water operation is selected.
	Lights while Frost protection operation is actually running.
	Lights when Test mode or Floor drying is set to “ON”.
2	Displays when the remote control is set as Second remote control.
	Lights when an error occurs and goes out when the error is cleared.
⑤	Lights when an error occurs. This number is unit number.

Function Code Setting

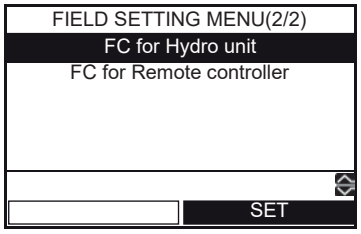
- Hydro unit function code setting is available only for the master remote control.
- Set function codes for various operation modes with the remote control.

Perform the following when no operation is in progress.

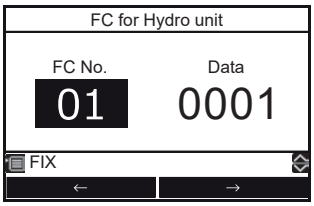
1 Press the [▣] button and the [∨] button at same time for 4 seconds or longer on the top screen to display the „FIELD SETTING MENU“.



2 Press the [∧] / [∨] button to select „FC for Hydro unit“ on the FIELD SETTING screen, then press the [F2] button.



3 Press the [F1] / [F2] button to select FC number or Data, then press the [∨] / [∧] button to set the value.



4 Press the [▣] button. The set value is registered.

*HB= Hydrobox EEPROM
*RC= Remote control

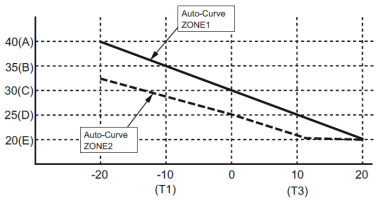
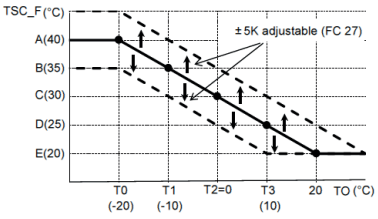
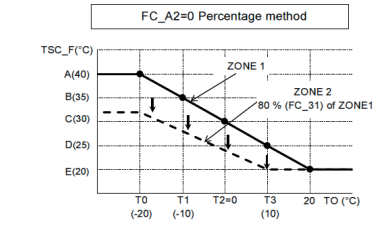
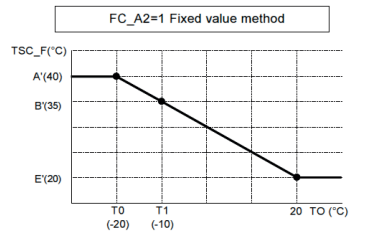
		FC Description	Location & FC No. HB*	RC*	Range	Default	Additional information
Basic configuration	Hydro Unit Capacity Setting	0012 = 805XWH**-E, P805XWH**-E 0015 = P1105XWH**-E 0017 = 1405XWH**-E Factory set, but is required for a PCB change	01	-	0012 or 0017	Depends on Hydro Unit	If board has to be replaced, the type of outer part has to be set as FC-Code before start-up
	Remote Control Indication	24h or 12h Time indication 0 = 24h; 1 = 12h	-	05	0~1	0	If on remote control a 24 or 12 hour format should be displayed
	Alarm Tone	Tone 0 = Off; 1 = On	-	11	0~1	1	Whether a disturbance plays a sound
	Setting Water Temperature Range	Heating Upper Limit Zone 1	1A	-	37-55 °C	55	Is also stop temperature at room temperature control
		Heating Lower Limit Zone 1	1B	-	20-37 °C	20	
		Heating Upper Limit Zone 2	1C	-	37-55 °C	55	
		Heating Lower Limit Zone 2	1D	-	20-37 °C	20	Min. and max. setting on the remote control
		Cooling - Upper Limit	18	-	20-30 °C	25	
		Cooling - Lower Limit	19	-	7-20 °C	10	Limit if using concrete core cooling to +17°C
		Hot Water - Upper Limit	1E	-	60-75 °C	75	
		Hot Water - Lower Limit	1F	-	40-60 °C	40	
Domestic water preparation	Domestic Water Preparation	Heat Pump Start Temperature	20	-	20-45 °C	38	At which temperature, measured at the TTW sensor, the domestic hot water is required. Should be set to +42°C!
		Heat Pump Stop Temperature	21	-	40-50 °C	45	At which return water temperature, measured at TWI sensors, the domestic water preparation is stopped. Should be set to +50°C!
	Hot Water changeover	Changeover priority for heating / DHW subordinated	22	-	-20-20 °C	0	At what outside temperature the domestic water should be produced solely by means of supporting heating
	Hot Water Temperature Compensation	Temperature Compensation Outside Air Temperature (°C)	24	-	-20-10 °C	0	If the outdoor temperature drops below the set value, the domestic water temperature will be increased by the correction factor
		Compensation Temperature (°C)	25	-	0-15 °C	3	Should be set to 0
	Maximum Operation Time Domestic Water Preparation	Maximum operation time of heat pump for domestic water preparation (min.)	07	-	1~120	30	Maximum time that may need the heat pump for domestic water heating NOTE: after 30 min. the support heater in domestic water tank always switches on, only till Series 3
	Domestic Water Electric Heater Timing	0 = 30 minutes 1 = 60 minutes 2 = 90 minutes 3 = 120 minutes	73	-	0-3	0	Specifies the time that must elapse after the heat pump has switched to the electric heating element is activated in the water heater NOTE: only from Series 4
	Hot Water Boost	Operation Time (x10 min.)	08	-	3-18	6	How long the unit remains in the mode when pressing the boost button on the remote control (electric heating element in the domestic water heater active).
		Setting Temperature (°C)	09	-	40-75 °C	75	Max. temp. which will be reached in boost operation
	Anti Bacterial (legionella)	Setting Temperature (°C)	0A	-	65-80 °C	75	Temp. which will be reached in anti bacteria mode
		Start Cycle (Day)	-	0D	1-10	7	Cycle after anti-bacteria mode should be repeated (in days)
		Start Time (Hour)	-	0C	0-23	22	At which daytime the mode will be started
		Operation Time (min.)	0B	-	0-60	30	
	Hydro 3-way Diverting Valve Operation Control	Reversal of the switching logic 3-way valve / domestic water	54	-	0~1	0	0 = Voltage during hot water production 1 = Power off during hot water production
Bivalent heating	Shift priority	Switching for external heating system	23	-	-20-20 °C	-10	Bivalent switching to oil, gas, etc. Only in connection with circuit board TCB-PCIN3E
	Synchronisation Control at Low Ambient Temperature TO ≤ of set value FC 23	0 = heat pump + hot water preparation 1 = only hot water preparation 2 = only electrical heater function up to 60 min. 3 = heat pump + circulation pump STOP	5B	-	0~2	0	0 = After switching to external heating ESTIA continues for heating and hot water supply operation 1 = ESTIA only produces hot water (pump 1 remains turned on) 3 = only external heating in operation (ESTIA turns off) *Attention: new function from Series 4-E1 If SW10 Dip3 is OFF, P2 and mixing valve control remains active
	External Heating	External heating/heat pump synchronisation 0 = synchronized 1 = not synchronized	3E	-	0~1	0	In synchronized operation, the heat pump regulates both systems. If TWI sensor reaches the set target temperature, the hydro box turns off the external heating output. For non-synchronized operation control regulates heat pump and external heating system for each, if TWI sensor reaches the set target temperature, external heating output remains on.

*HB= Hydrobox EEPROM
*RC= Remote control

Bivalent heating

External heating system is installed (DPSW13_2)	ZONE2 operation is used (DPSW12_3)	P2 synchronize with P1 (DPSW10_3)	FC5B Coordination of the external heating system and heat pump	2 zone temperatur control P1/P2/Mixing Valve control
ON	ON	OFF (No synchronization, P2 continuous operation)	0 (External heating system and heat pump)	ON / ON / ON
			1 (External heating system only)	
			2 (Electrical heater only)	
			3 (External heating system only (P1 OFF)	OFF / ON / ON (if ESTIA is turned off, ESTIA continues controlling zone 2)
		ON (P1 + P2 synchronized)	0 (External heating system and heat pump)	ON / ON / ON
			1 (External heating system only)	
			2 (Electrical heater only)	
			3 (External heating system only (P1 OFF)	OFF / OFF / OFF

Setting automatic heat-curve

	FC Description	Location & FC No. HB*	RC*	Range	Default	Additional information
Series 2-4	AUTO TEMP. outside Temperature T1 (°C)	29	-	-15-0 °C	-10	
	AUTO TEMP. outside Temperature T2 (°C)	-	-	0	0	
	AUTO TEMP. outside Temperature T3 (°C)	2B	-	0-15 °C	10	
	Setting Temperature A at OAT -20C (°C)	2C	-	20-55 °C	40	
	Setting Temperature B at OAT T1 (°C)	2D	-	20-55 °C	35	
	Setting Temperature C at OAT T2 (°C)	2E	-	20-55 °C	30	
	Setting Temperature D at OAT T3 (°C)	2F	-	20-55 °C	25	
	Setting Temperature E at OAT 20°C (°C)	30	-	20-55 °C	20	
	Ratio of zone 2 in zone 1 Auto Mode (%)	31	-	0-100%	80	
	AUTO TEMP.: Auto Curve - Temperature Shift (°C)	27	-	-5-5 °C	0	
Only Series 4-E1 and HiPower units	Setting temperature A at T0	2C	-	20~60 °C	40	Zone 1  Zone 1+2
	Setting temperature B at T1	2D	-	20~60 °C	35	
	Setting temperature C at T2 (= 0 °C)	2E	-	20~60 °C	30	
	Setting temperature D at T3	2F	-	20~60 °C	25	
	Setting temperature E at 20 °C	30	-	20~60 °C	20	
	Outside temperature T0	A1	-	-30~20 °C	-20	
	Outside temperature T1	29	-	-15~0 °C	-10	
	Outside temperature T3	2B	-	0~15 °C	10	
	Set temperature shift with heating set to auto	27	-	-5 to 5 K	0	
						 Auto-Curve in ZONE2 shows 80% (FC31) of ZONE1, the water temperature setting does not fall below 20 °C.
	Choice how to set ZONE2 0 = percentage (FC31) 1 = fixed temperature (A3-A5)	A2	-	0 or 1	0	
	Setting temperature A' at T0	A3	-	20~60 °C	40	
	Setting temperature B' at T1	A4	-	20~60 °C	35	
	Setting temperature E' at 20 °C	A5	-	20~60 °C	20	
	Auto-Curve ratio of ZONE2	31	-	0~100 %	80	
						Zone 2:  The ZONE2 set temperature A' °C with the outside temperature T0 °C, B' °C with T1 °C, E' °C with 20 °C.

*HB= Hydrobox EEPROM
*RC= Remote control

		FC Description	Location & FC No. HB*	RC*	Range	Default	Additional information
Room temperature control	Room Temperature Control setting with second remote control or ext. room thermostat (with use of external room thermostat always in connection with TCB-PCMO3E)	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 upper limit	92	-	15~30	29	Settings on remote control
		Cooling lower limit	93	-	15~30	18	
		Heating upper limit	94	-	15~30	29	
		Heating lower limit	95	-	15~30	18	
		Room temperature offset: Heating: room offset value (Sensor temp. Control temp. ,K)	-	02	-10~10	-1	Adjusted measurement difference between room temperature sensor on the remote controller and the actual room temperature
		room temperature offset: Cooling: room offset value (Sensor temp. Control temp., K)	-	03	-10~10	-1	Adjusted measurement difference between room temperature sensor on the remote controller and the actual room temperature
		Starting temp. in the cooling mode, either with room temperature sensor of the remote control or external room temperature sensor	96	-	10~25	20	With which leaving water temperature the heat pump starts; = 20 ° C, is the set temperature on the external room thermostat or second remote control not reached, every 1/2 hour flow temp. is lowered by 1 °C till maximum temperature (FC 19) or the setpoint temperature is reached
		Starting temp. in the heating mode, either with room temperature sensor of the remote control or external room temperature	9D	-	20~55	40	With which leaving water temperature the heat pump starts; =40°C, is the set temperature on the external thermostat or second remote control not achieved (room sensor), every 1/2 hour flow temp. is raised by 1 °C till maximum temperature (FC 1A) or setpoint temperature is reached
	Only Series 4-E1 and HiPower	HP restart water temperature in A zone (Valid only room temperature control using 2nd remote control)	B2	-	20~37	25	A zone = Thermo off; however, if TWi <25 ° C heat pump starts again so that the floor heating does not cool
		Initial water temperature setting method in heating mode with room temperature remote control or room temperature thermostat	B5	-	0~1	0	0 = fixed value according FC 9D 1 = calculated value for auto curve
Water pump control	Control Water Pump 1 + 2	0 = 100% 3 = 70% 1 = 90% 4 = 60% 2 = 80% 5 = 50%	A0	-	0~5	0	Pump 1 can be regulated in 6 different speed steps Attention: from Series 4
		0 = Pump 1 stops when turned off in the hot water mode when heat pump and electrical heating have turned in the tank and no heating request is pending 1 = Pump 1 runs continuously	5A	-	0~1	0	Pump control during hot water preparation
		Synchronises pump P1 with thermostat: 0 = P1 runs continuously 1 = P1 synchronized with room temperature sensor. If a room temperature sensor (AMS-11) or an external room thermostat is used. P1 is stopped if in heat pump thermo-OFF mode	65	-	0~1	0	If thermostat is present; control over room temperature (only to be used for radiators, not with floor heating)
		Pump P2 operation in cooling mode: 0 = P2 runs continuously 1 = P2 stops in cooling mode	64	-	0~1	0	
		Pump P1 operation: Upper outdoor temperature limit in heating mode P1 stops > setpoint for the switch-off	9E	-	10~30	20	At what outdoor temperature heat pump switches off DIP switch SW10 Bit2 must be set to ON
		TO different temperature if P1 stops	6E	-	1-5	2	In connection with 9E, Hysteresis if pump 1 switches on again NOTE: only HiPower model and Series 4-E1
		Pump P2 Display	42	-	0~1	0	0 = P2 is not shown on display 1 = P2 is shown on display
		P1 Interval function heating 0= continuous function 1= 20°C 3= 10°C 5= 0°C 2= 15°C 4= 5°C 6= -5°C	BA	-	0-6	0	From which outdoor temperature ESTIA switches from thermo off status P1 to interval mode
		P1 Interval function cooling 0= continuous operation 2= 30°C 1= 35°C 3= 25°C	BB	-	0-3	0	From which outdoor temperature ESTIA switches from thermo off status P1 to interval mode
		P1 from interval 0= 5 min. 2= 15 min. 4= 25 min. 1= 10 min. 3= 20 min. 5= 30 min.	BC	-	0-5	0	Sets the interval time for P1 if ESTIA is in Thermo off status (pump downtime)

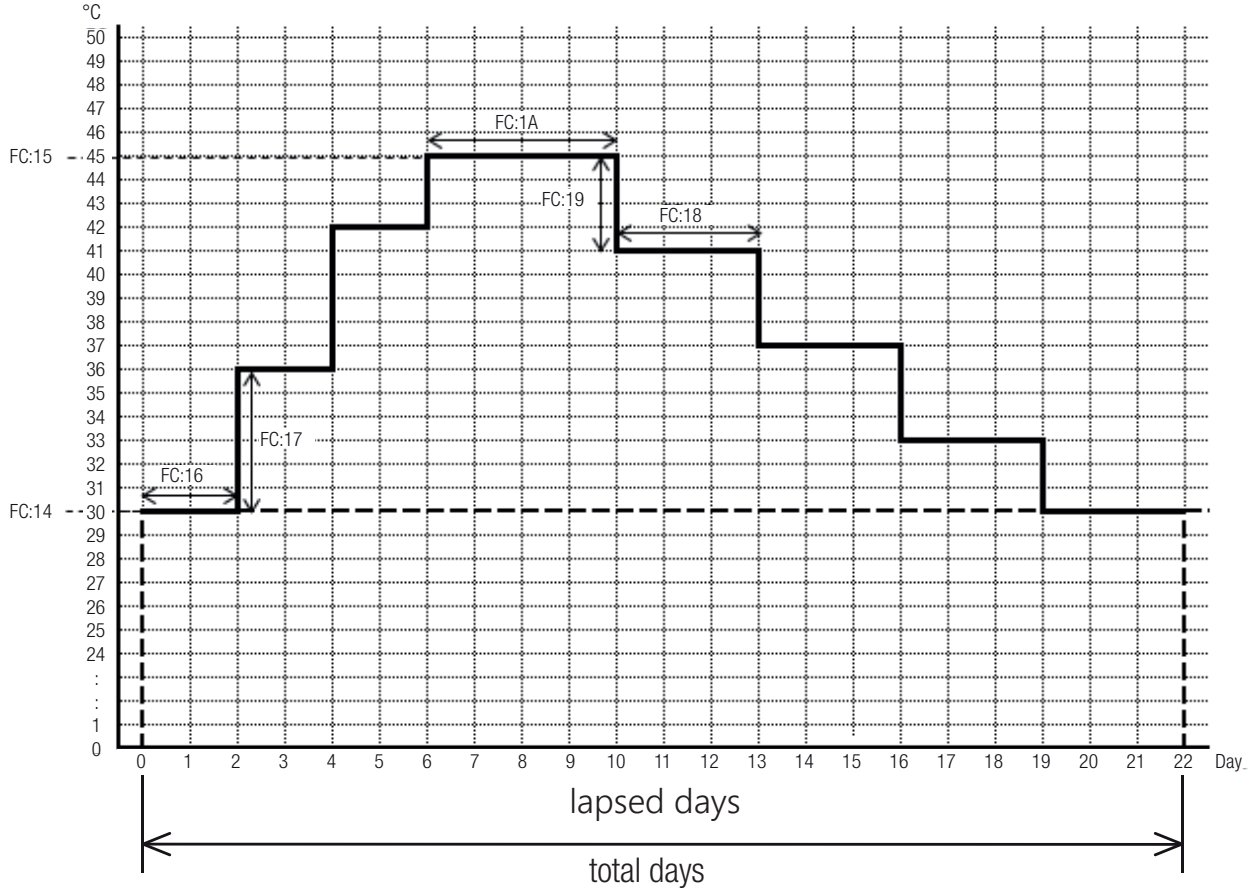
*HB= Hydrobox EEPROM
*RC= Remote control

		FC Description	Location & FC No. HB*	RC*	Range	Default	Additional information
Hydrobox back up heater	Back Up Heater Control in Hydro unit (3 kW, 6 kW, 9 kW)	Downtime Back Up Heater 0 = 5 min; 1 = 10 min; 2 = 15 min; 3 = 20 min	33	-	0-3	1	Up- or downwards adjustment of supporting heating steps in relation to the difference between compound setpoint temperature and leaving water temperature (sensor THO)
		Uptime Back Up Heater 0 = 10 min; 1 = 20 min 2= 30 min; 3 = 40 min	34	-	0-3	0	If using a buffer, set to 3
	Restriction of back up heater in heating mode	0= no restriction 1= 20°C 3= 10°C 5= 0°C 2= 15°C 4= 5°C 6= -5°C	B8	-	0-6	0	From which outdoor temperature the back up heater is not turned on (as measured by the sensor TO) Attention: only HiPower and Series 4-E1
	Restriction of back up heater during defrosting	0= 0K 2= 20K 4= 40K 1= 10K 3= 30K	B9	-	0-4	0	At which temperature difference between TSC-F (heating setpoint, eg Zone 1 +40 °C) - THO (sensor after backup heater eg +10 °C) = 30 K (if, eg B9 = 3 is set, would at +10 °C THO temperature the backup heater switch on with 3 kW) Attention: only HiPower and Series 4-E1
Cooling	Cooling Operation	0 = Cooling & Heating 1 = Only heating operation	02	-	0~1	1	To activate the cooling mode
	Hydro 2-way Valve Operation Control (cooling mode)	Reversal of the switching logic for the 2-way cooling stop valve	3C	-	0~1		0 = Output with 230V occupied for cooling 1 = Output deenergized during cooling
	Shift-priority for cooling or water heating	Priority selection: 0 = Cooling priority; domestic water produced by electric heater 1 = Domestic water priority; domestic water produced by heat pump	0F	-	0-1	0	Priority mode in cooling operation
2 zone	2 Zone Mixing Valve Drive Time	Drive time 3-way mixing valve (x 10 sec)	0C	-	3~24	6	Drive time of the engine valve between fully open and closed, depending on the brand differently. Must be set before commissioning! Use only valves with 10-second steps, e.g. 90 sec, 100 sec, etc.
		Control 3-way mixing valve (min)	59	-	1~30	4	Interval in which the valve readjusts (Recommendation at 1 min.)
Additional PCBs	External On/Off control with TCB-PCM03E	0 = Contact closed > system stop, restart the system with the remote control 1 = Contact open > system stop, restart the system with the remote control 2 = Contact closed > system stop contact open > system restart 3 = Contact closed > system stop contact open > (second) system restart	52	-	0~3	0	External ON/OFF with module TCB-PCM03E over contact 1 (heat) and 3 (com) Function over pulse contact (key function)
		0 = Restart in heating and hot water mode 1 = Restart in the same mode as at stop mode 2 = Restart only hot water preparation 3 = Restart only heating mode 4 = TEMPO Control 1: All electric heaters are disabled 5 = TEMPO Control 2: Heat pump and all electric heaters disabled	61	-	0~5	0	How ESTIA should start again after TCB-PCM03E has stopped the system
		Control of Off / On by an external signal (CN210 - connection S1 and S2 contact if FC 61 = 3 and dip switch SW2_3 to off)	B6	-	0~1	0	0 = disabled 1 = Hot Water Control is active if S1 (2-3) is closed Heating control is active if S2 (1-3) is closed Caution: only HiPower and Series 4-E1
	A02 Error detection (if external heating output is activated) with TCB-PCIN3E	A02 error detection to be enabled / disabled when hot water production output is active 0 = A02 enabled if TWI, TWO or THO sensor ≥ 70 ° C then external heating output is OFF 1 = A02 disabled when TWI, TWO or THO sensor ≥ 70 ° C then external heating output is ON	62	-	0~1	0	In bivalent heating if hot water is produced by external heating and above +60 ° C hot water from the tank through the plate heat exchanger of the indoor hydro flows (always in conjunction with PCIN3E board, if DIP switch 13, BIT2 is ON)
	Output signals with TCB-PCIN3E	0 = Terminal 1/2 during defrosting closed Terminal 3/4 during compressor „ON“ closed 1 = Terminal 1/2 during error closed Terminal 3/4 closed while remote control is ON	67	-	0~1	0	Sets for additional board PCIN3E the outputs when used in hydro box slot CN209

*HB= Hydrobox EEPROM
*RC= Remote control

		FC Description	Location & FC No. HB*	RC*	Range	Default	Additional information
Additional functions	Night Setback (do not use for floor heating)	Night setback temperature	26	-	3-20 °C	5	By how many Kelvin is lowered
		Zone selection 0= Zone 1&2; 1= Zone 1 only	58	-	C0~1	0	Which zones will be lowered
		Starttime (hour)	-	0E	0~23	22	At what time of the night setback starts
		Endtime (hour)	-	0F	0~23	6	At what time of the night setback ends
	Night Time low noise operation	Night time low noise operation 0 = invalid; 1 = valid	-	09	0~1	0	Throttles the maximum of the heat pump at 75%, thus achieves a noise reduction
		Starttime (Hour)	-	0A	0~23	22	
		Endtime (Hour)	-	0B	0~23	6	
	Antifreeze	Antifreeze 0=invalid 1=valid	3A	-	0-1	1	Antifreeze ON/OFF
		Antifreeze Setting Temp. (°C)	3B	-	10-20 °C	15	Setpoint leaving water temperature in antifreeze mode should be +20°C
		Schedule date	-	12	0-20	0	How many days the mode is working
		Schedule time	-	13	0-23	0	Daytime when the mode stops working
	Manual Defrost	0 = deactivated; 1 = activated	46	-	0~1	0	After activation turn on heating; Deactivation = automatically after defrosting
	Screed-Floor heating	Setting start and end temperature (°C)	-	14	20~55	0	
		Setting max temperature (°C)	-	15	20~55	0	
		Continuation days for every step up to max. temperature (days)	-	16	1~7	0	
		Temperature difference for every step up to max. temperature (K)	-	17	1~10	0	
		Continuation days for every step down to end temperature (days)	-	18	1~7	0	
		Temperature difference for every step down to end temperature (K)	-	19	1~10	0	
		Continuation days in max. temperature (days)	-	1A	1~30	0	

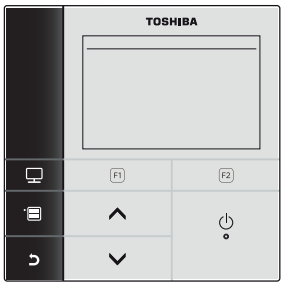
Screed-chart



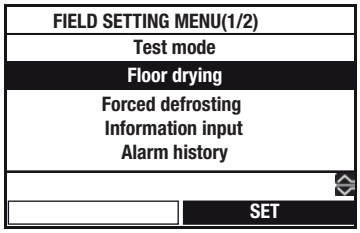
Floor drying

- This function is available only for the header remote control.
- This function is used for drying concrete etc.
- Service personnel must operate the unit after setting the related function code.
- Operation is not started unless all the related function codes are set.
- Refer to the following for the settings of the related items.
  Please setup on the responsibility for an installer. An unsuitable setup may cause a crack of concrete etc.
- When the operation starts, the unit operates as follows.

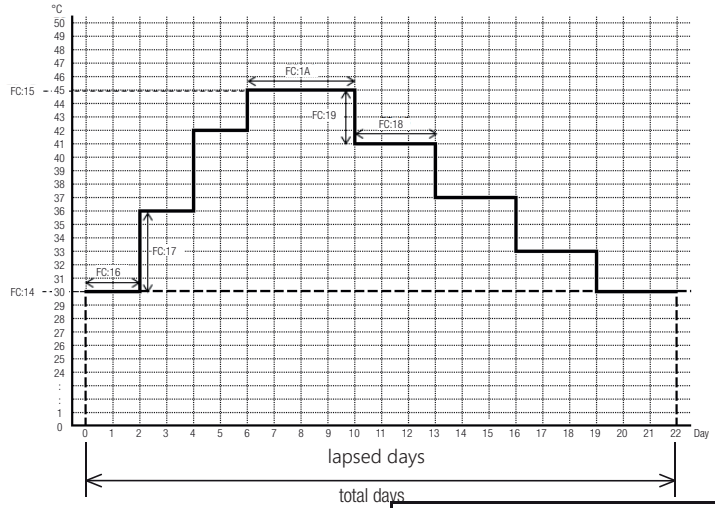
1 Press the [▣] button and the [∨] button at same time for 4 seconds or longer on the top screen to display „FIELD SETTING MENU“.



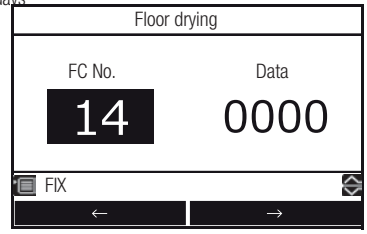
2 Press the [∧] / [∨] button to select „Floor drying“ on the FIELD SETTING MENU, then press the [F1] button for 4 seconds or longer.



FC:14 Setting start and end temperature [20-55°C]
FC:15 Setting max. temperature [20-55°C]
FC:16 Continuation days for every step up to max. temperature [1-7 days]
FC:17 Temperature difference for every step up to max. temperature [1-10 K]
FC:18 Continuation days for every step down to end temperature [1-7 days]
FC:19 Temperature difference for every step down to end temperature [1-10 K]
FC:1A Continuation days in max. temperature [1-30 days]



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



4 Press the [▣] button. The set value is registered.

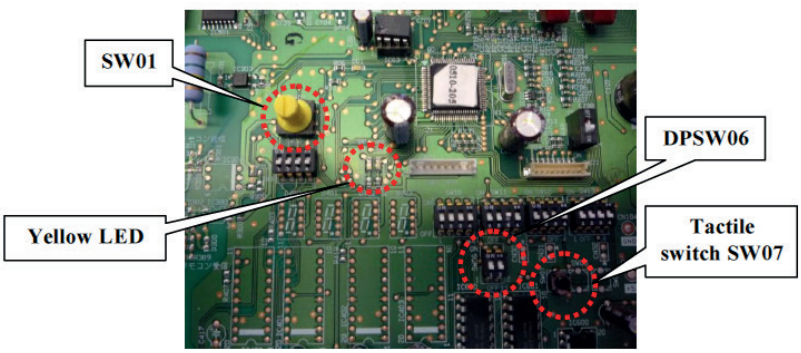
Test run of the components in Hydro unit

This mode allows the commissioning engineer to check the operation of various components (pump, 2-way valve, 3-way valve etc.) installed in the heating circuit.

1. Turn the ESTIA system OFF using the ESTIA remote control
2. Turn OFF the power supply to the ESTIA system
3. Remove the hydro unit front cover and the cover to the hydro unit electrical box
4. Set DPSW06_2 to ON
5. Turn ON the electrical supply to the ESTIA system
6. Turn rotary switch SW01 to position 1 and press and hold the switch SW07 for 8 seconds
7. The operation of the heating circuit components can be checked by rotating SW01 to the relevant position detailed in the table below
8. Set DPSW06_2 back to OFF after completion of component testing
9. Turn the power off
10. Turn the power on again
11. Mount the cover to the hydro unit electrical box and the front cover for the hydro unit

SW01 Pos	Heating Circuit Component	Component Operation Using Check Mode	Comments
1	-		
2	2-way valve	Cycle: valve ON for 2 sec ~ valve OFF for 3 sec	
3	3-way diverting valve		
4	Mixing valve	Cycle: Drive valve OPEN 30 sec ~ Drive valve CLOSED 30 sec	
5	Hydro unit pump (P1)	Pump ON 20 sec	
6	External water pump (P2)	Pump ON 20 sec	
7	- (reserved)		
8	Hydro unit back up heaters	Cycle: stage 1 ON, stage 2 ON, all OFF every 20 sec	Hydro unit pump will operate
9	DHW cylinder electrical heater	Cycle: Heater ON 10 sec ~ heater OFF 10 sec	
10	Booster heater output	Cycle: Heater output ON 10 sec ~ heater output OFF 10 sec	Hydro unit pump will operate
11	Alarm output	Cycle: Output ON 10 sec ~ output OFF 10 sec	
12	Boiler output	Cycle: Output ON 10 sec ~ output OFF 10 sec	
13	Defrost output	Cycle: Output ON 10 sec ~ output OFF 10 sec	
14	Compressor ON output	Cycle: Output ON 10 sec ~ output OFF 10 sec	
15	-	-	
16	Hydro unit pump (P1) continuous operation	Continuous operation of hydro unit pump (P1)	Do not operate the hydro unit pump continuously if there is no water in the heating circuit

SW01, SW07 & DPSW06 Location

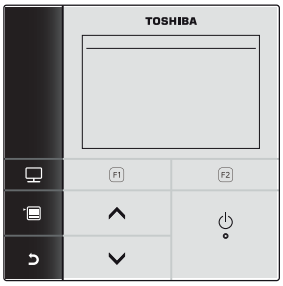


Monitoring

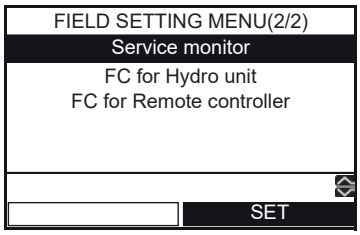
Display function of set temperature and other settings

- The sensor sensing temperature is displayed on the remote control.
- This function allows you to make sure whether the sensor is installed properly.

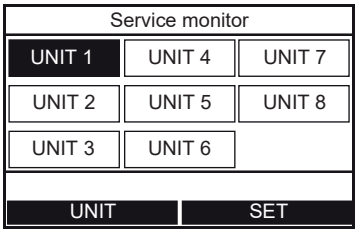
1 Press the [▤] button and the [∨] button at the same time for 4 seconds or longer on the top screen to display the „FIELD SETTING MENU“.

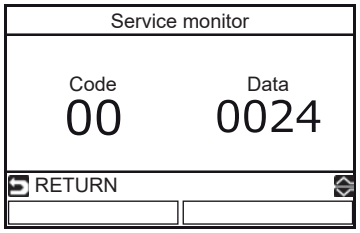


2 Press the [∧] / [∨] button to select „Service Monitor“ on the FIELD SETTING MENU screen, then press the [F2] button.



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



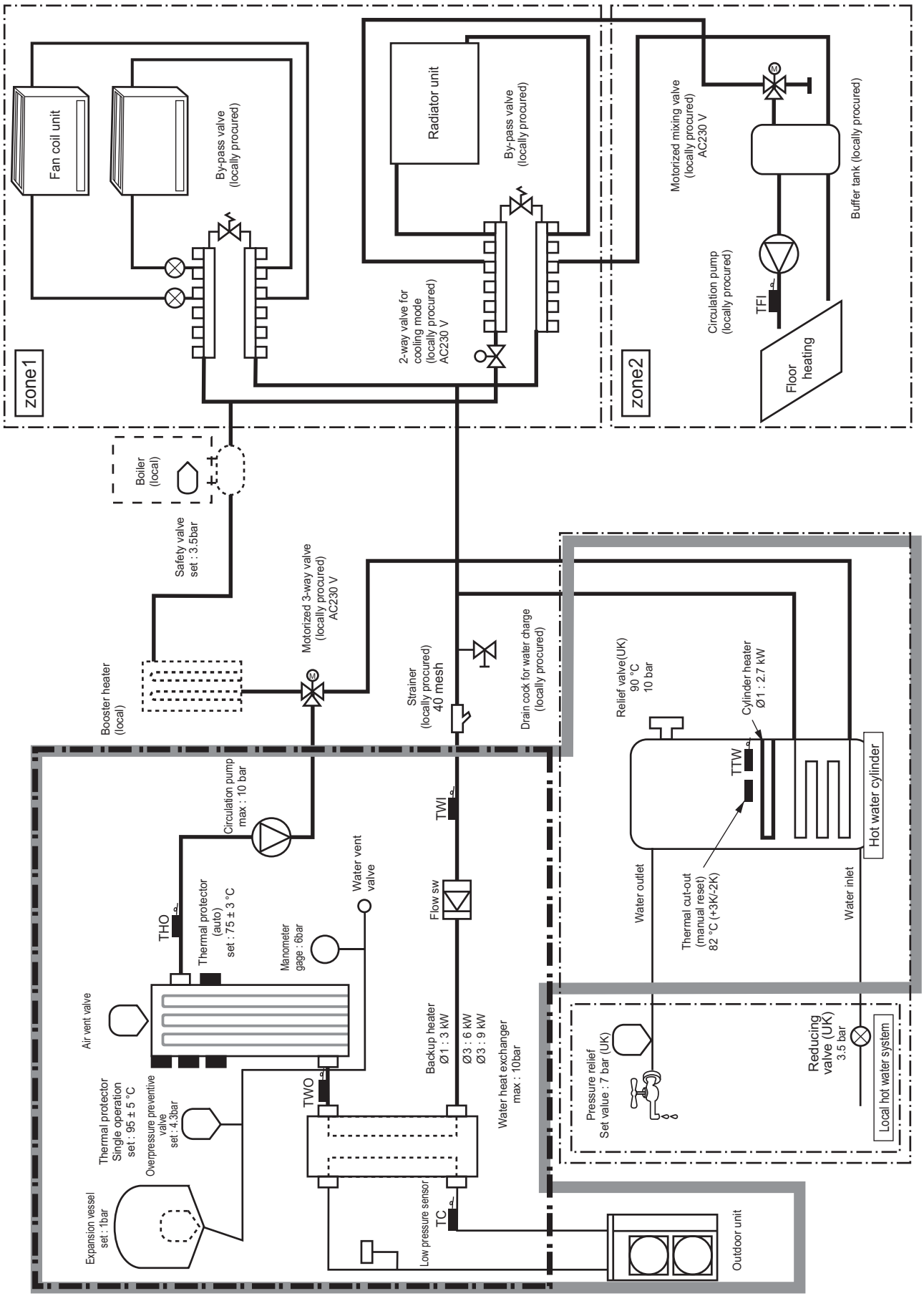


	Item Code	Data name	Unit
Hydro unit data	00	Control temperature (domestic water tank, TTW)	°C
	01	Control temperature (Zone 1)	°C
	02	Control temperature (Zone 2)	°C
	03	Remote control sensor temperature	°C
	04	Condensed temperature (TC)	°C
	06	Water inlet temperature (TWI)	°C
	07	Water outlet temperature (TWO)	°C
	08	Backup heater outlet temperature (THO)	°C
	09	2. Zone inlet temperature (TFI)	°C
	0A	Domestic water temperature (TTW)	°C
	0B	Mixing valve position	step
	0E	Low pressure (Ps) x 100	MPa

	Item Code	Data name	Unit
Outdoor unit data	60	Heat exchange temperature after PMV (TE)	°C
	61	Outside air temperature (TO)	°C
	62	Discharge temperature (TD)	°C
	63	Suction temperature (TS)	°C
	65	Heat sink temperature (THS)	°C
	6A	Current consumption inverter	A
	6D	Heat exchanger temperatur in package (TL)	°C
	70	Compressor operation Hz	Hz
	72	Number of revolutions of outdoor fan (below)	rpm
	73	Number of revolutions of outdoor fan (above)	rpm
	74	Outdoor PMV position x 1/10	pls

	Item Code	Data name	Unit
Hydro unit data	F0	Operation time micro computer	x 100 h
	F1	Operation time compressor ON domestic water preparation	x 100 h
	F2	Operation time compressor ON Cooling	x 100 h
	F3	Operation time compressor ON Heating	x 100 h
	F4	Operation time pump 1	x 100 h
	F5	Operation time electric heater domestic water tank	x 100 h
	F6	Operation time backup heater	x 100 h
	F7	Operation time booster heater	x 100 h

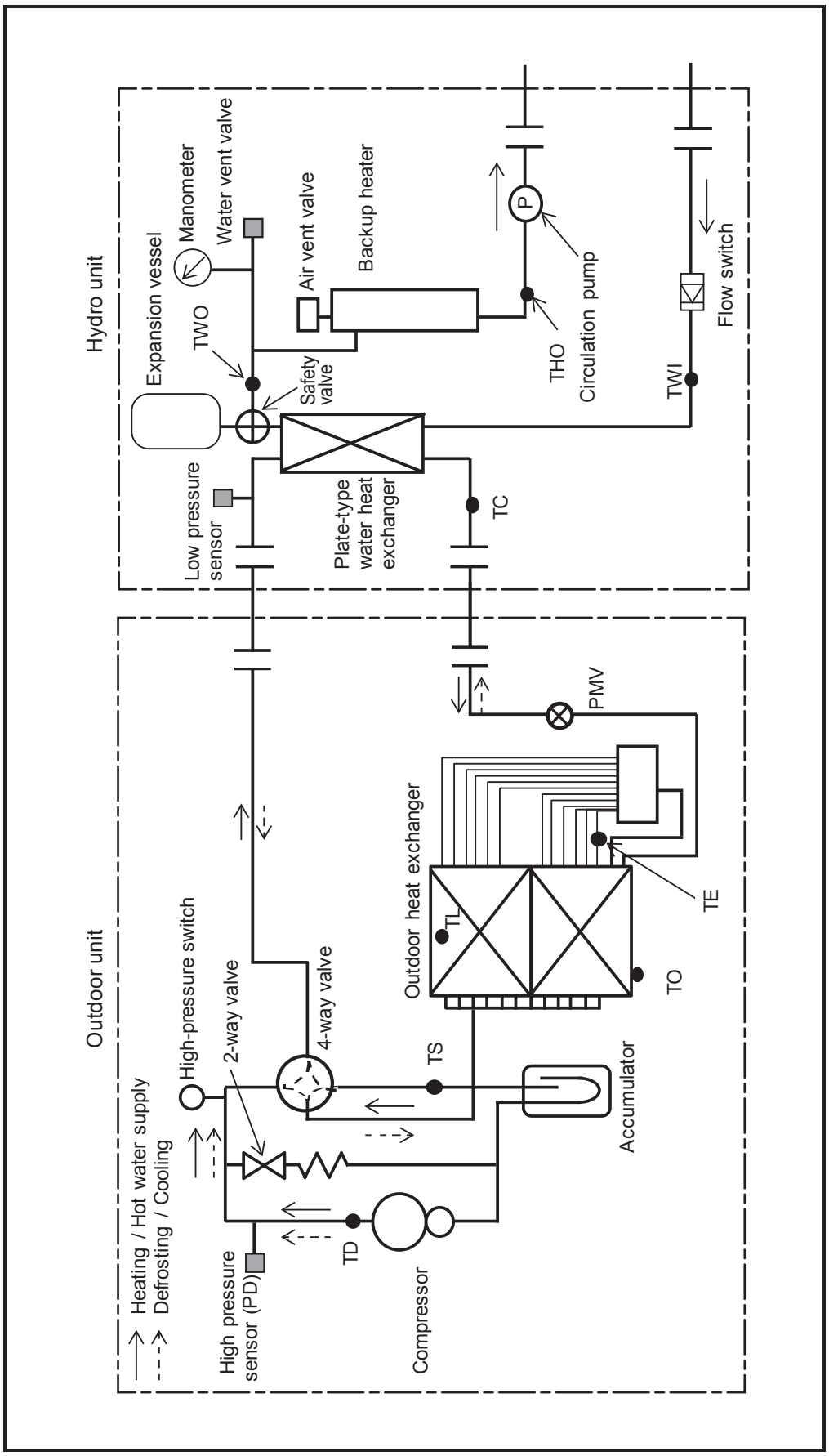
Water circuit and sensor placement



Refrigerant circuit and sensor placement

Series 5 HiPower

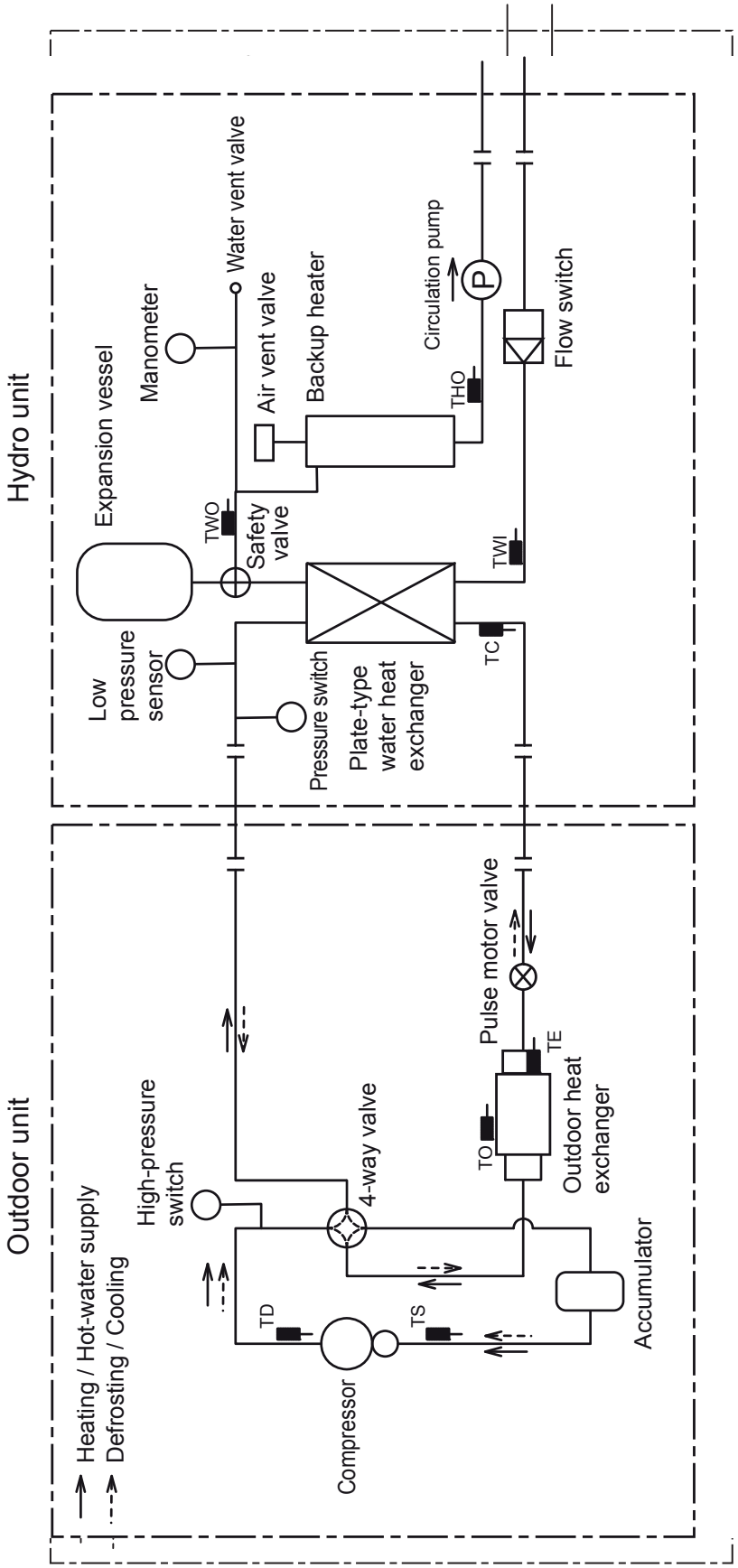
HWS-Pxxx5XWH*-E, HWS-Pxxx5HR-E



Refrigerant circuit and sensor placement

Series 5

HWS-xxx5XWHM*-E, HWS-xxx5H(8)-E



Reset hydro function code

How to reset hydro function code to factory setting:

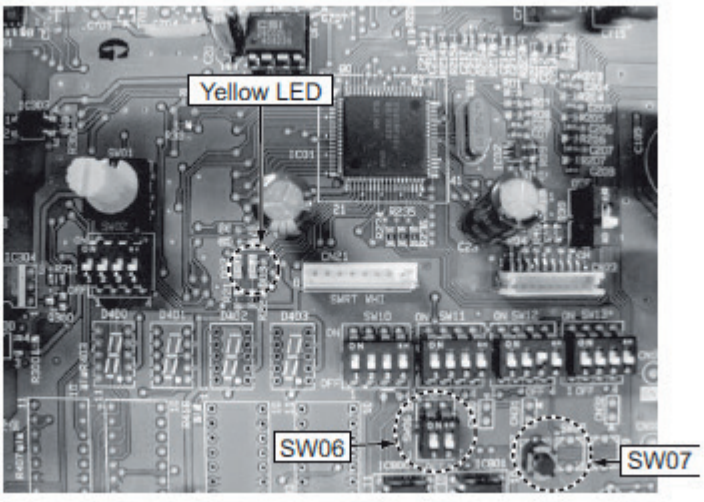
If the hydro unit PCB has been replaced, it is necessary to change the FC 01 (capacity setting)

Preparation

1. Turn all of the remote controls „OFF“ for the hot water supply [HOTWATER] and heating [ZONE1,2].
2. Turn off the power supply of the hydro unit and the outdoor unit.
3. Remove the front panel of the hydro unit and cover to the hydro unit electrical box.
4. Set SW06, Bit1 and 2 „ON“.

Procedure

1. Turn on the power supply of the hydro unit and the outdoor unit.
   - The small yellow LED located near the MCU should be flashing slowly.
2. Press tactile switch SW07 until the yellow LED turns off.
   - When the tactile switch SW07 has been pressed for 5 sec., flashing becomes quicker. And when the switch will be pressed further 5 sec. the yellow LED will turn off. When the SW07 is released, the yellow LED starts to flash quickly again.
3. Turn off the power supply of the hydro unit and the outdoor unit.
4. Set SW06, Bit1 and 2 to „OFF“.
5. Replace the electrical box cover and front panel on the hydro unit.
6. All FC codes are now reset to factory settings.



Add-on boards

TCB-PCIN3E

Interface for external outputs
(2 different uses)

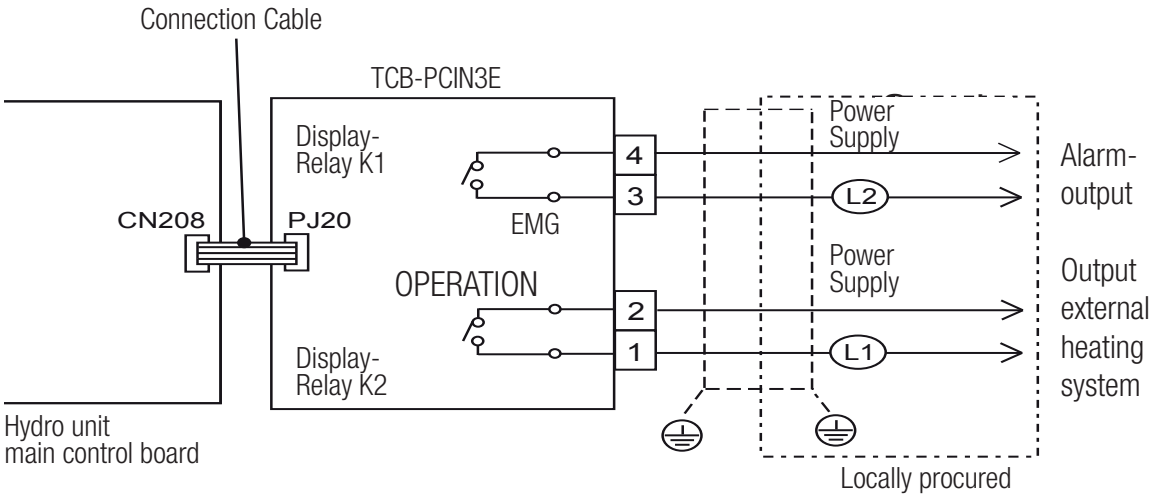
Version 1: Connection cable connected to slot CN208 (motherboard Hydro unit)

Output L1: Activation of external heating system (Bivalent)

- Contact closed if eg outdoor ambient temperature <-10°C (over FC 23 adjustable).
  This feature is enabled with dip switch SW13 Bit2 to ON.
- Potential-free contact – specification:
  AC 230 V; 0,5 A (max.)
  DC 24 V; 1 A (max.)
- Connection details: Terminals 1 and 2

Output L2: Alarm output

- Contact closed if the system is in alarm/fault condition.
- Potential-free contact – specification:
  AC 230 V; 0,5 A (max.)
  DC 24 V; 1 A (max.)
- Connection details: Terminals 3 and 4



⚠ CAUTION

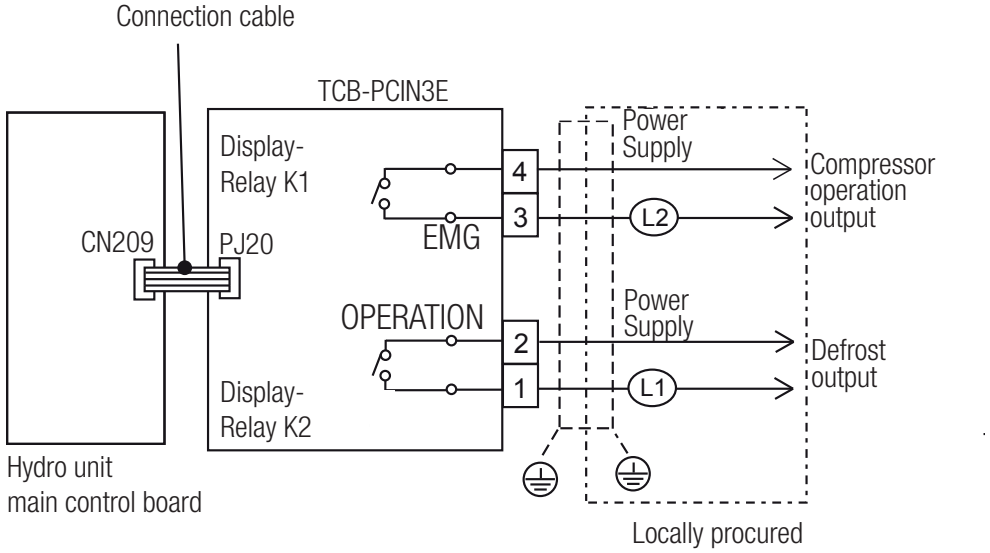
- Be sure to prepare a Potential-free contact for each terminal!
- Supplementary insulation must be added to user touchable part of switsches!
- Display Relay capacity of „EMG“ and „OPERATION“.
  Below AC 230V 0,5 A (COS Ø = 100%):
  If load connection, connect the relay coil to „L1, L2“.
  Below DC 24 V 1 A (Non-inductive load):
  If load connection, connect the relay coil to „L1, L2“.

Add-on boards

Version 2: Connection cable connected to slot CN209 (motherboard Hydro unit)

Defrost output L1:
Contact closed if the system defrost.
Potential-free contact - specification:
AC 230 V; 0,5 A (max.)
DC 24 V; 1 A (max.)
Connection details: Terminals 1 and 2 (OPERATION)

Compressor operation output L2:
Contact closed if compressor in operation.
Potential-free contact - specification:
AC 230 V; 0,5 A (max.)
DC 24 V; 1 A (max.)
Connection details: Terminals 3 and 4 (EMG)



⚠ CAUTION

- Be sure to prepare a potential-free contact for each terminal!
- Supplementary insulation must be added to user touchable part of switsches!
- Display Relay capacity of „EMG“ and „OPERATION“.
  Below AC 230V 0,5 A (COS ∅ = 100%):
  If load connection, connect the relay coil to „L1, L2“.
  Below DC 24 V 1 A (Non-inductive load):
  If load connection, connect the relay coil to „L1, L2“.

Add-on boards

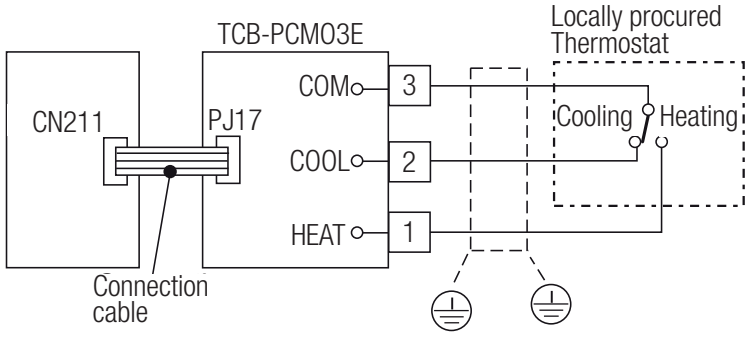
TCB-PCM03E

Interface for external outputs
2 different uses

Version 1: Connection cable connected to slot CN211 (motherboard Hydro unit)

Room Thermostat Input: for room temperature control, activate with dip switch SW2 Bit4 to ON.
Start temperature adjustable with FC96 or 9D.
1-3: Room thermostat input for heating mode, terminals 3 (COM) and 1 (HEAT)
2-3: Room thermostat input for cooling mode, terminals 3 (COM) and 2 (COOL)

- Input closed when there is either a heating or cooling request.
  With this function switching from cooling to heating mode and vice versa is not possible.
- Potential-free contacts



Thermostat operation

	Cooling		Heating	
	on	off	on	off
2 - 3	open	close	-	-
1 - 3	-	-	close	open

⚠ CAUTION

- Be sure to prepare a potential-free contact for each terminal!
- Supplementary insulation must be added to user touchable part of switsches!

Add-on boards

Version 2: Connection cable connected to slot CN210 (motherboard Hydro unit)

Input domestic water tank thermostat: activate with dip switch SW2 Bit3 to ON.
Connect the external domestic water tank thermostat (S1) to terminals 2 (COOL) and 3 (COM).
When the hot water cylinder thermostat contact S1 is CLOSED, there is a hot water demand and the system switches to hot water production.

External ON/OFF

Input for external ON/OFF, terminals 3 (COM) and 1 (HEAT)
This function can be set by using FC52 and FC61. It determines what (open S2) after an external shutdown should happen if contact S2 is closed again.

- Potential-free contacts

The following settings are possible

Setting the control method
Select a control method by setting FC52.

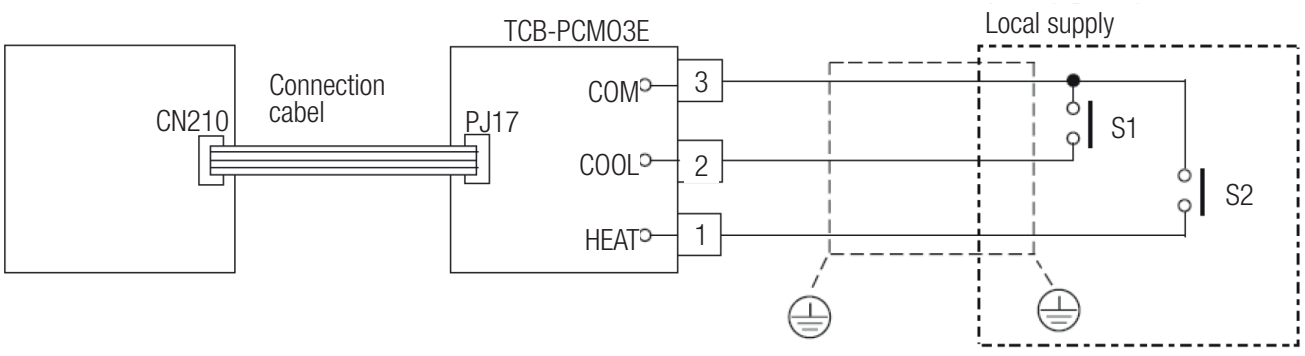
- FC52="0": Stops ESTIA as the circuit between the terminals (1) and (3) is closed. (Default)
- FC52="1": Stops ESTIA as the circuit between the terminals (1) and (3) is opened.
- FC52="2": Starts ESTIA as the circuit between the terminals (1) and (3) is closed.
  Stops ESTIA as the circuit between the terminals (1) and (3) is opened.
- FC52="3": Starts / Stops ESTIA as the circuit between the terminals (1) and (3) is received closed plus.

Setting the object to control
Select an operation mode by setting FC61.

- FC61="0": Hot water supply and heating (Default)
- FC61="1": Follows the setting on the remote control (If the hot water supply operation, heating operation, or hot water supply + heating operation is started manually after the unit was stopped with an external input, the new status is reflected to the setting on the remote control.)
- FC61="2": Hot water supply only
- FC61="3": Heating only

It is possible to control each of the heating and hot water supply with the following settings:

- FCB6="1": (Default „0") and FC61="3" and DP_SW02_3="OFF" (Default „OFF")
  The terminals (1) and (3) is the heating control.
  The terminals (2) and (3) is the hot water supply control.
  Both of control method is selected by FC52.

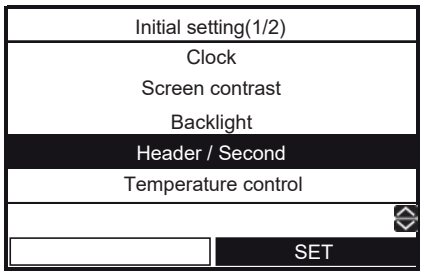


Second remote control

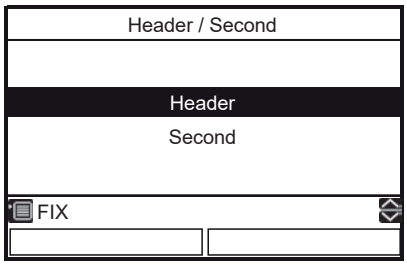
Header / Second

- For a dual remote control system.
- Set one of remote controller as the header remote control.
- Set another remote controller as the second remote control.

Press the [^] / [v] button to select "Header / Second" on the Initial setting screen, then press the [F2] button.



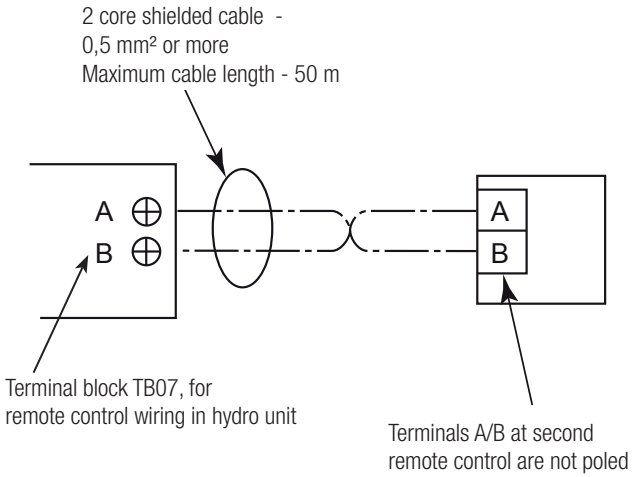
Press the [^] / [v] button to select Header / Second, then press the [▪] button.

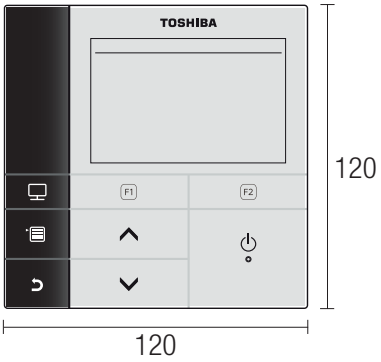


- Some function are not available when the remote control is set as the "Second remote control".
- In the dual remote control system, the latter operation overrides the former.
- The factory default is "Header remote control".

Disable function with second remote control

- Schedule timer
- Silent mode
- Schedule setting



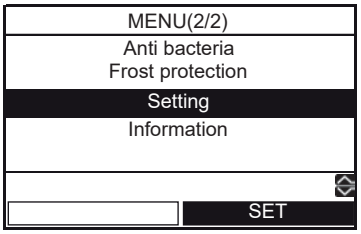


Scheduled Operation Setting

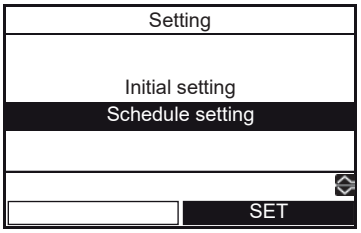
- This function is available only for the header remote control.
- Schedule setting makes the following modes to be flexibly set: hot water supply, heating, cooling, hot water supply and heating, hot water supply and cooling, and stop, and set temperature.
- Set the unit clock and the schedule condition setting before schedule timer setting.

<Preparation>
Set the remote control time at first.

1 Press the [^] / [v] button to select "Setting" on the MENU screen, then press the [F2] button.



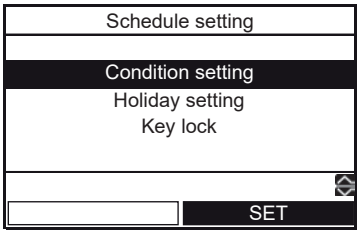
2 Press the [^] / [v] button to select "Schedule setting" on the setting screen, then press the [F2] button.



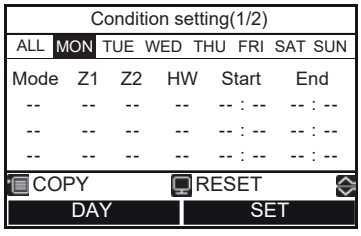
Condition setting

- Up to 6 different running patterns per day can be programmed.

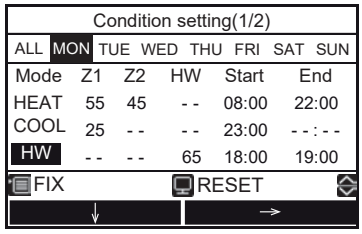
1 Press the [^] / [v] button to select „Condition setting" on the Schedule setting screen, then press the [F2] button.



2 Press the [F1] button to select the day, then press the [F2] button to input running pattern.

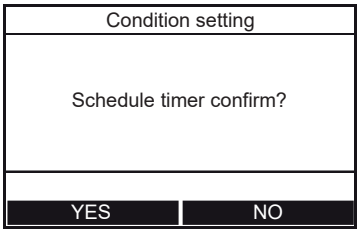


3 Press [F1] / [F2] button to select the change item, then press the [^] / [v] button.



Scheduled Operation Setting

4 Press the [▤] button.



5 Press the [F1] button to fix.

Mode: Operation mode (HEAT, COOL, HW (Hot water))
Z1: ZONE1 setting temperature
Z2: ZONE2 setting temperature
HW: Hot water supply operation setting temperature
Start: Operation start time (0:00 ~ 23:59)
End: Operation end time (0:00 ~ 24:00, -- : --)

- „-- : --“ means the operation continues.

If End time is set earlier than Start time, an error is displayed.

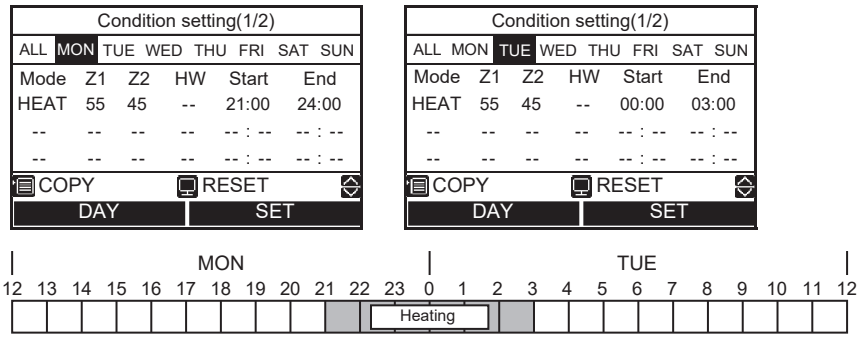
To set up ranging over a day

There are two methods.

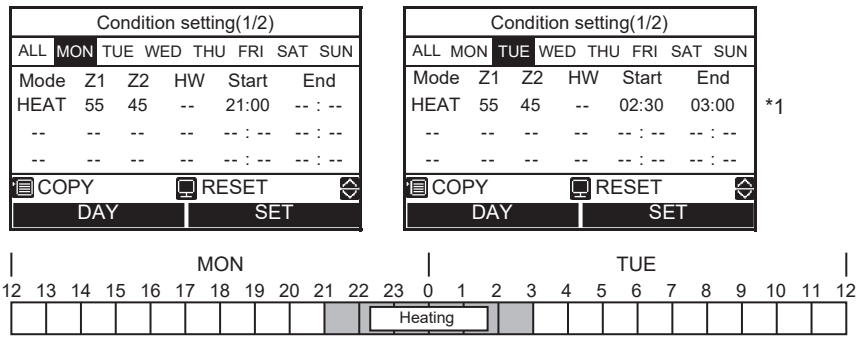
If „24:00“ is set to „ENDE“ and „00:00“ is set to „START“ next day, the previous operation status will be continued. And set the time you want to stop to „END“.
If “--” is set to “END”. the previous operation status will be continued next day. And set the time you want to stop to „END“. Any „START“ time is sufficient if it is earlier then „END“ time.

In the case of heating operation from 21:00 of Monday night to 03:00 of Tuesday morning.

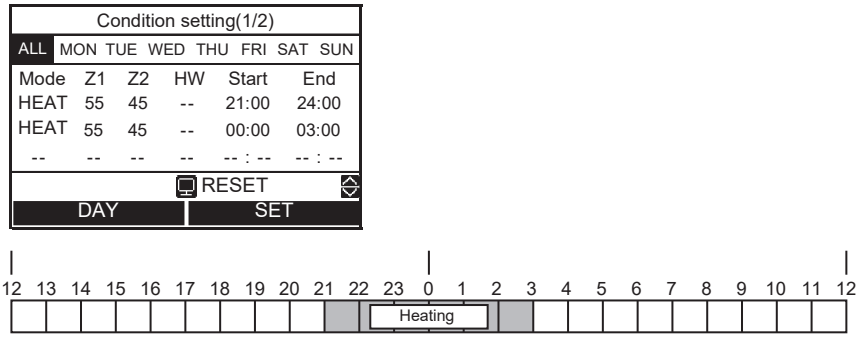
Example to set up (1)



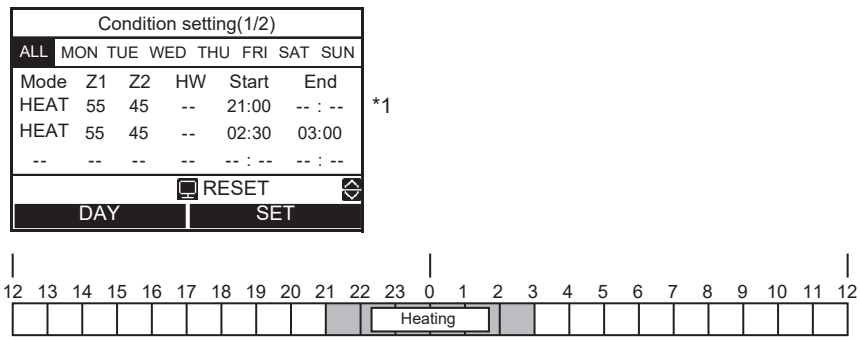
Example to set up (2)



Example to set up (3) (ALL DAY)



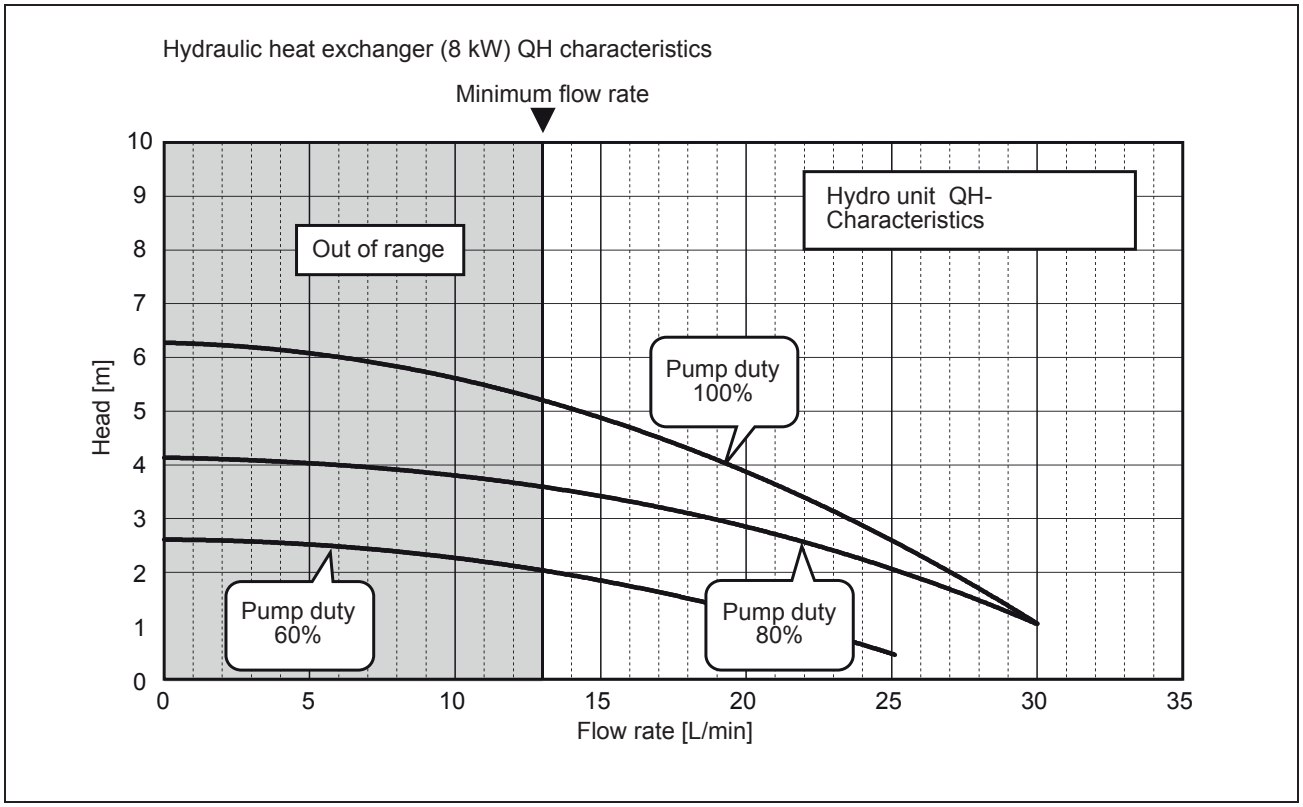
Example to set up (4) (ALL DAY)



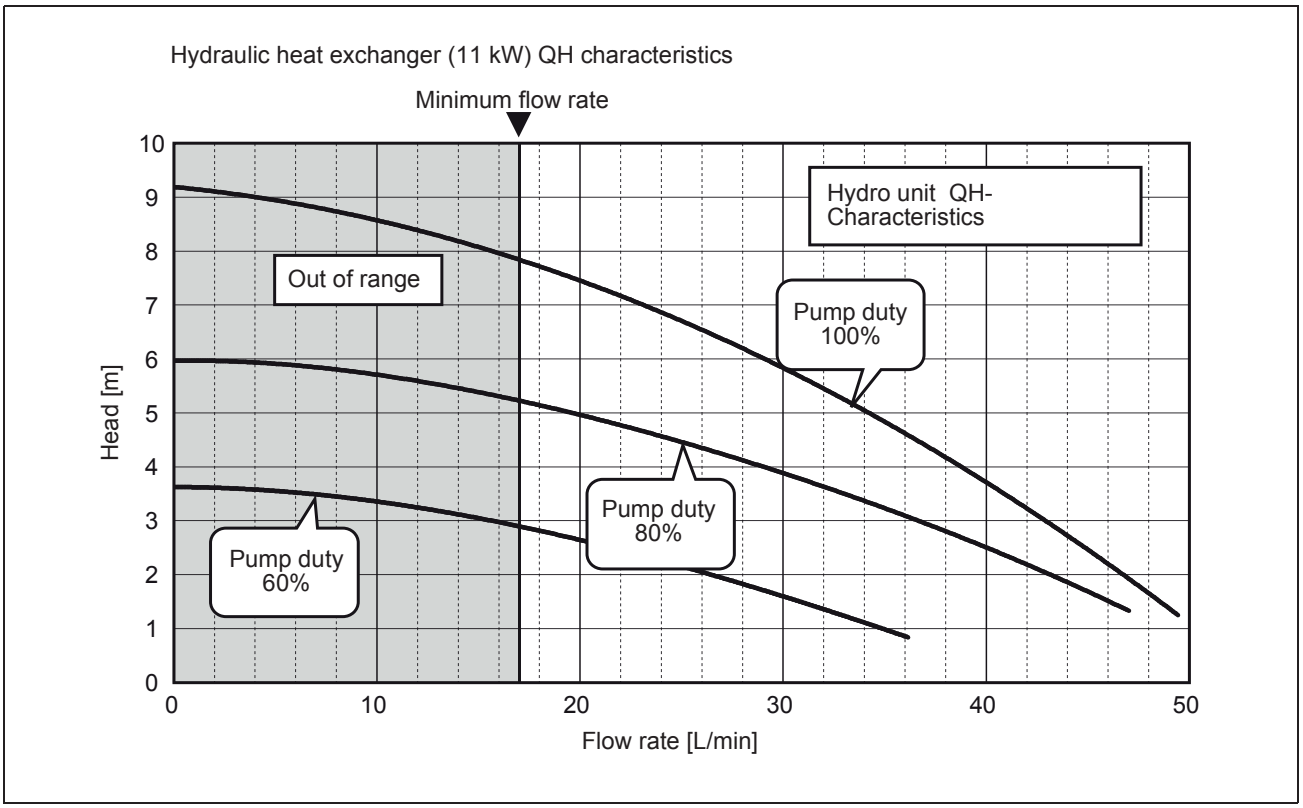
*1: „START“ time is permissible 00:00 ~ 02:59 in this example.

Pump QH-curves

HWS-804XWHM*-E1
HWS-P804XWHM*-E1



HWS-1404XWHM*-E1
HWS-P1104XWHM*-E1



Temperature sensor characteristics

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

Typical value

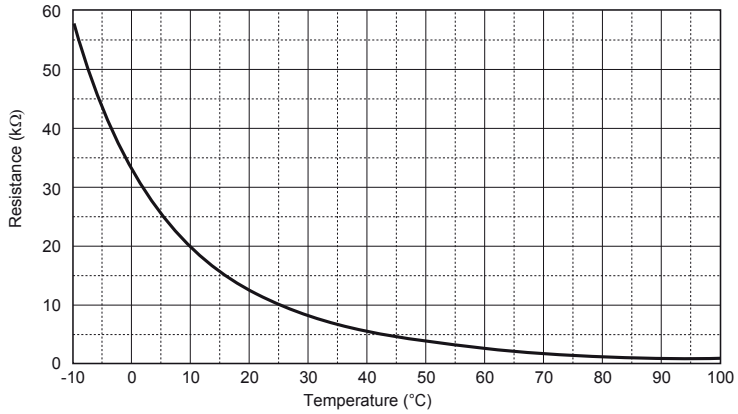
Temperature (°C)	Resistance value (kΩ)		
	Minimum	Standard	Maximum
-10	55,42	55,73	60,04
0	32,33	33,80	35,30
10	19,63	20,35	21,09
20	12,23	12,59	12,95
25	9,75	10,00	10,25
30	7,764	7,990	8,218
40	5,013	5,192	5,375
50	3,312	3,451	3,594
60	2,236	2,343	2,454
70	1,540	1,623	1,709
80	1,082	1,146	1,213
90	0,7740	0,8237	0,8761
100	0,5634	0,6023	0,6434

TD, TL sensors

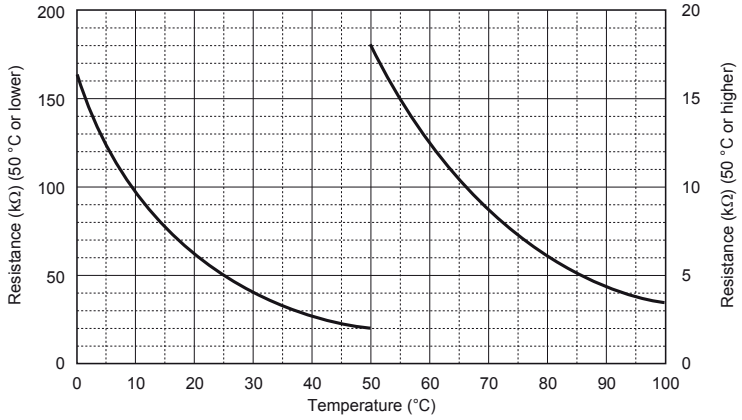
Typical value

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

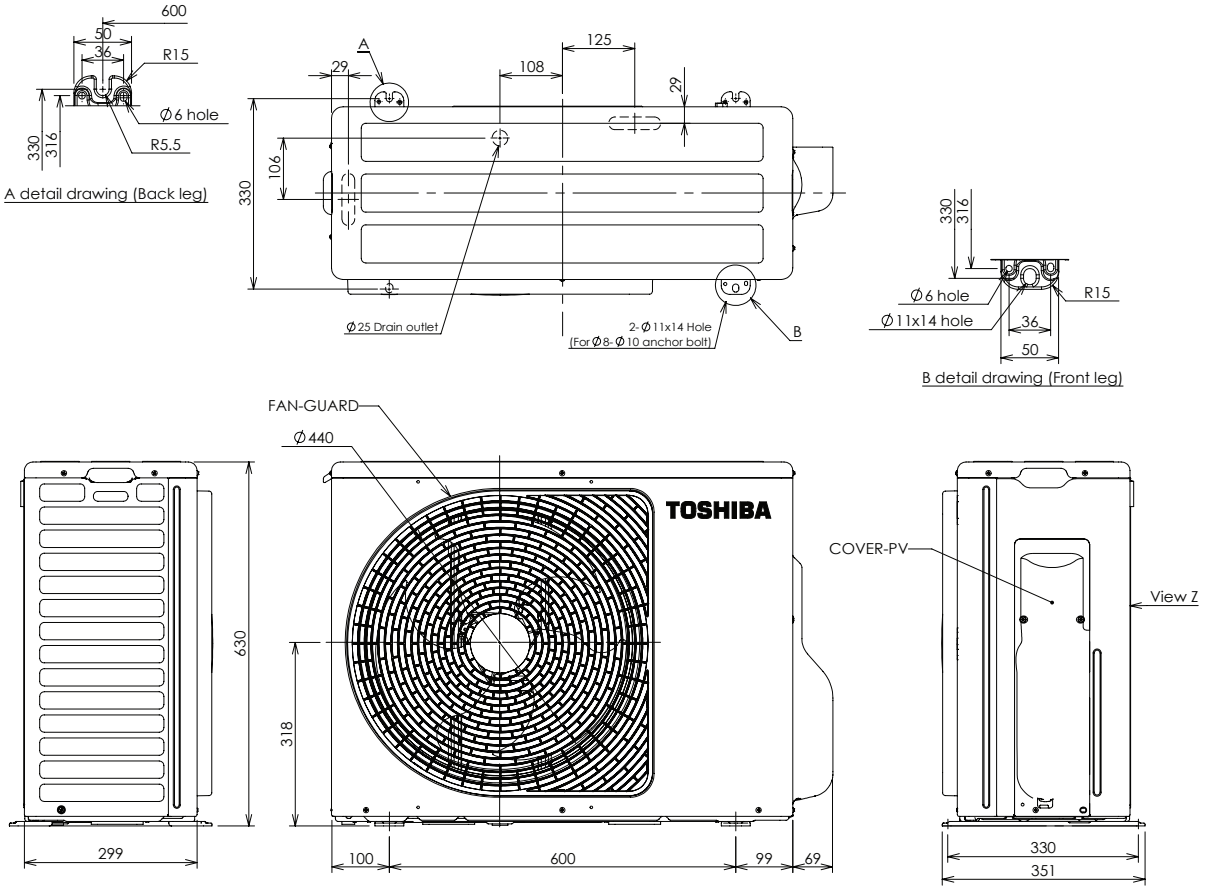


* Since the TH sensor (outdoor unit heat-sink temperature sensor) is built in the outdoor control board, the resistance value cannot be measured.

Dimensions (in mm)

Outdoor unit

HWS-455H-E

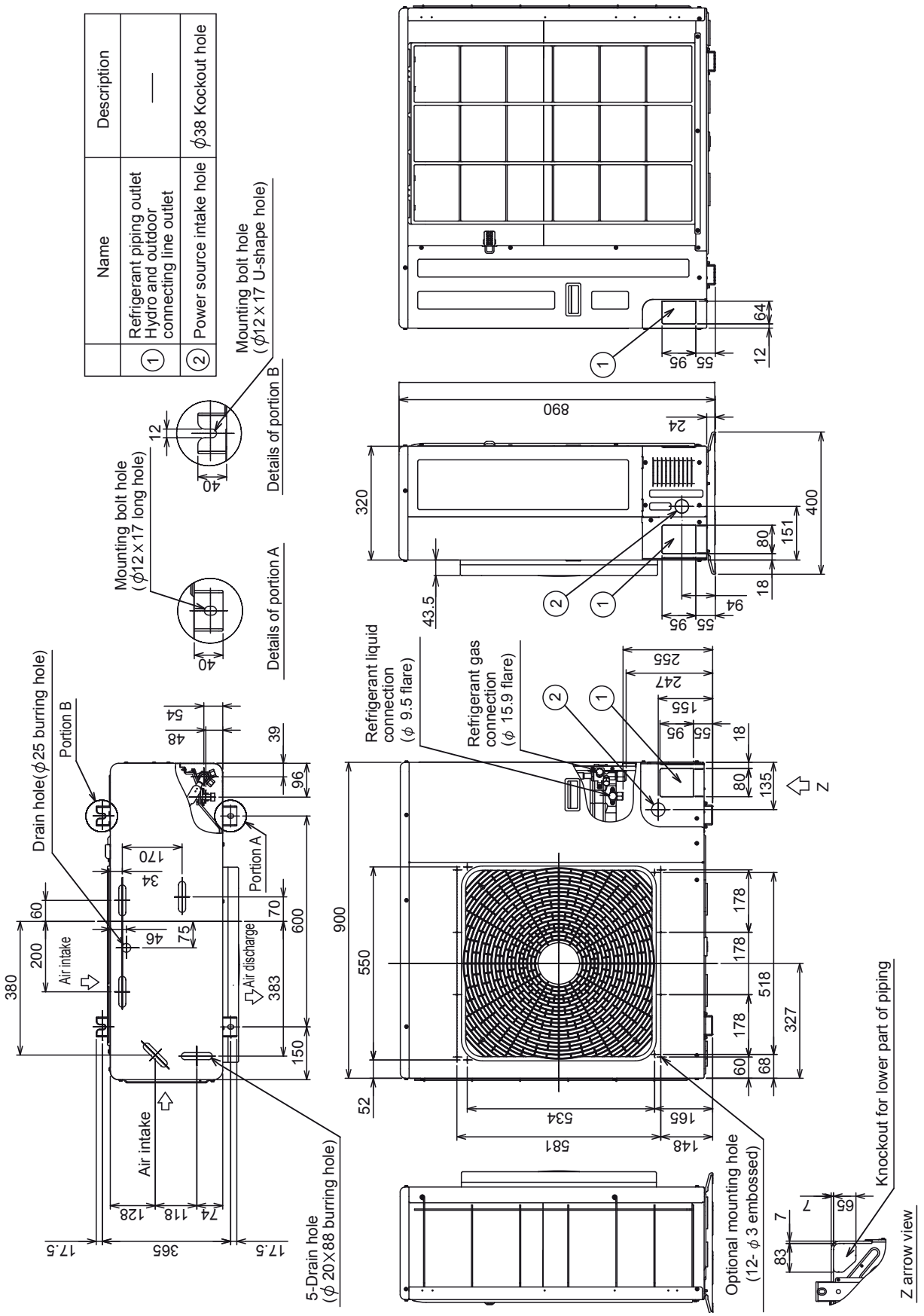


Installation dimension

Dimensions (in mm)

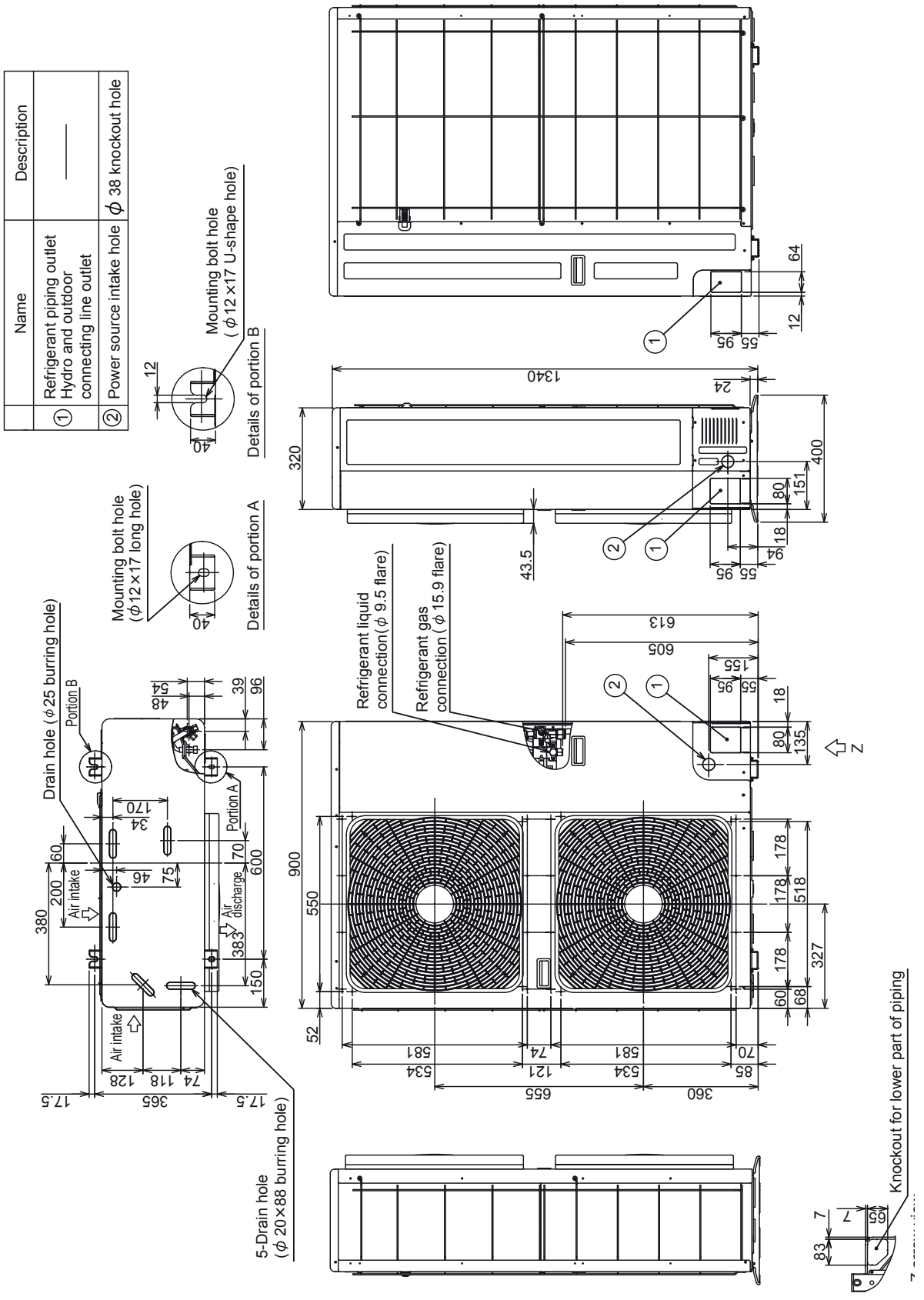
Outdoor unit

HWS-805H-E



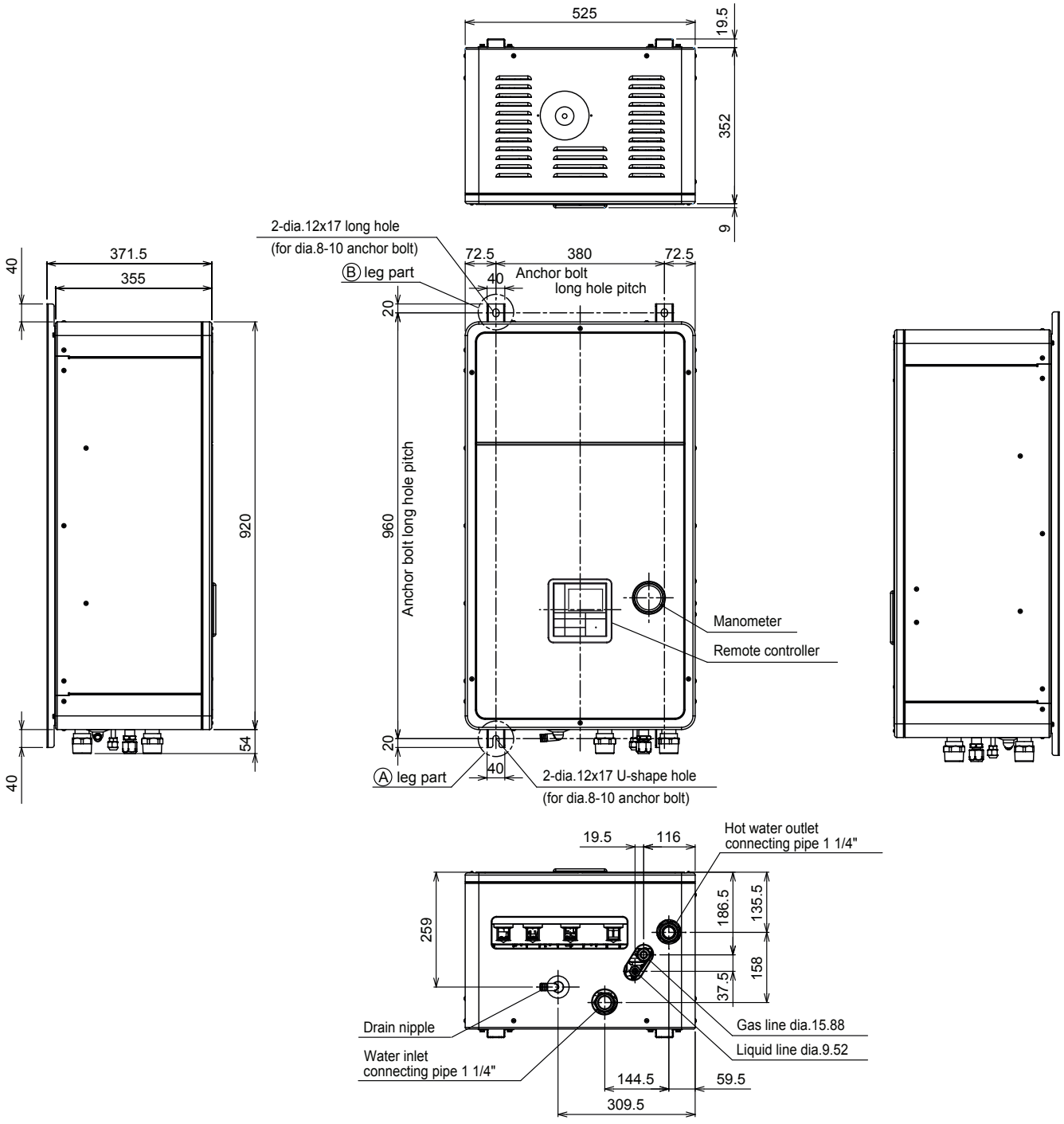
Dimensions (in mm)

HWS-1105H-E, HWS-1405H-E
HWS-1105H8-E, HWS-1405H8-E, HWS-1605H8-E
HWS-P805HR-E, HWS-P1105HR-E



Dimensions (in mm)

Hydro unit



Fault Symptoms

Symptom	Possible cause	Corrective action
Room is not heated or cooled, water is not warm or cold enough	Incorrect remote control setting	Check remote control operation and temperature setting
	Incorrect function code setting	Check function code setting with the function code table
	Backup heater disconnected	Check backup heater and bimetal thermostat
	Insufficiant capacity	Check selection of equipment
	Sensor defect	Check if temperature sensor is installed at the normal position
Nothing is displayed on the remote control	Power is not supplied	Check power supply wiring
	Incorrect setting	Check DIP switch setting on the hydro unit board. Check the setting with the function code table
Flow rate switch is activated Check code [A01]	Air bite in the pump	Release air completely according to the procedure
	Low hydraulic pressure	Set hydraulic pressure considering pipe height, and replenish water until manometer shows a value of set hydraulic pressure or more
	Strainer is clogged	Clean the strainer
	Large resistance on the hydro side	Widen water path to the hydro unit or adopt a bypass valve
	Malfunction of motorized 3-way diverter valve for hot water supply	Check wiring and parts
Hot water leaks from pressure relief valve	Excessive hydraulic pressure	Set hydraulic pressure considering pipe height, and replenish water until manometer shows a value of set hydraulic pressure or more
	Insufficient capacity of expansion tank	Check expansion tank capacity compared to total water amount. If it is insufficient, install another expansion tank
	Expansion tank failure	Check the air pressure

Defect mode detected by water heat exchange or outdoor unit

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

Check Code	Diagnostic functional operation			Determination and action
	Operational cause	Backup present	Automatic reset	
A01	**Pump or flowing quantity error** 1) Detected by TC sensor TC≥63°C is detected in the heating or hot water supply heat pump operation (except for defrosting)	Heating X Hot water O	X	Almost no or little water flow - Not enough vent air - Dirt clogging in the water piping system - Water piping is too long - Installation of buffer tank and secondary pump
	2) Detected by flow switch abnormality If no signal of the flow switch is showing 2 min. after the built-in pump operation started			
	3) Detection of chattering abnormality in the flow switch input Chattering detection: Detects input changes (OFF⇔ON) 4 times within 10 seconds during operation			
	4) Disconnection of the flow switch connector If the stopped built-in pump starts its operation, the flow switch status is detecting „water flow“			1. Disconnection of the flow switch connector 2. Defect of the flow switch
A02	**Temperature increase error** (heating) If one of the TWI, TWO and THO sensors exceeds 70°C	Heating O Hot water X	O	1. Check the water inlet, water outlet and heater outlet (TWI, TWO, THO) sensors 2. Defect of the backup heater (defect automatic reset thermostat)
A03	**Temperature increase error** (hot water supply) If the TTW sensor exceeds 85°C	Heating O Hot water X	O	1. Check the hot water cylinder sensor (TTW) 2. Check the hot water cylinder thermal cut-out
A04	**Antifreeze operation** (1) 1) TWO>20°C condition: 2x TC+TWO≤-12°C is detected 2) TWO≤20°C condition: TC+TWO≤4°C is detected 3) TWI≤10°C is detected during defrosting	O	X	1. Almost no or little water flow - Dirt clogging in the water piping system - The water piping is too long or too short 2. Check the heater power circuit - Power supply voltage, breaker, power supply connection 3. Set the presence of the backup heater 4. Check the water inlet, water outlet and heat exchange (TWI, TWO, TC) sensors and Flow Switch
A05	**Piping antifreeze operation** Activating the heater under the condition of TWO<4orTWI<4orTHO<4 does not achieve TWO, TWI, THO≥5°C after 30 min. elapsed	O	O	1. Check the heater power circuit - Power supply voltage, breaker, power supply connection 2. Check the water inlet, water outlet and heater outlet sensors (TWI, TWO, THO) 3. Disconnection of the backup heater
A07	**Pressure switch operation** The pressure switch operates for 300 sec. continuously during the heat pump operation.	O	X	1. Almost no or little water flow 2. Defect of the flow switch 3. On-load operation under the above conditions 3. Defect in the pressure switch
A07 Hi Power	**Combination error** Model name of the hydro unit is different	O	X	Check DP_SW13_4 s set to „ON“
A08	**Low pressure sensor operation error** The low pressure sensor detected 0,2MPa or less	O	X	1. Almost no or little water flow 2. Defect of the flow switch 3. On-load cooling or prolonged defrosting (a lot of frost formation) under the above conditions 4. Defect in the lower pressure sensor 5. Check the refrigeration cycle (gas leak)

Check Code	Diagnostic functional operation			Determination and action
	Operational cause	Backup present	Automatic reset	
A09	**Overheat protection operation** - If the thermostat of the backup heater activates during the operation of the heat pump or backup heater. - If the thermostat operation is activated while it has been stopped	Heating X Hot water O	X	1. No water (heating without water) or no water flow 2. Defect of the flow switch 3. Defect of the backup heater (poor automatic reset thermostat)
A10	**Antifreeze operation** (2) If TC-TWO<-15K detected in cooling mode	O	X	1. Almost no water flow 2. Defect of the flow switch 3. Low refrigerant
A11	**Operation of the release protection** If the TWO release counts to 10	Heating Cooling X Hot water O	X	1. Almost no water flow 2. Defect of the flow switch 3. Check the water outlet temperature sensor (TWO)
A12	**Heating, hot water heater** The antifreeze control is detected under the condition of TWI<15°C while TWI≥15°C, TTW≥20°C is not detected after the heater backup	O	O	1. Activated by a large load of heating or hot water supply 2. Check the heater power circuit (backup or hot water cylinder heater) - Power supply voltage, breaker, power supply connection
A13	**Pump error**	Heating X Hot water O	X	1. Pump has stopped by a certain cause - Low supply voltage - High humidity around the electric box of the pump - Dew condensation to the electric board of the pump - Once turn off the power supply to the system and turn on again and operate the system 2. Check the flow switch in the Hydro unit
E03	**Regular communication error between hydro unit and remote control** If there is no regular communication from the remote control for 3 min. or when no remote control is equipped	X	O	1. Check remote control connection 2. Defect in the remote control
E04	**Regular communication error between hydro unit and outdoor unit** The serial signal cannot be received from outdoor	O	O	Check the serial circuit - Miswiring of the crossover between the water heat exchanger and the outdoor unit
E08	**Duplicate address of Hydro unit or duplicate master Hydro unit during group control**	X	O	Set the address No. of the rotary switch „SW01“ correctly for each Hydro unit
E18	**Regular communication error between master Hydro unit and slave Hydro unit during group control**	X	O	Check the Hydro unit connection. - Miswiring of the master and slave Hydro unit
F03	**TC sensor error** Open or short circuit in the heat exchange temperature sensor	O	O	Check the resistance value and connection of the heat exchanger temperature sensor (TC)
F04	**TD sensor error** Open or short circuit in the discharge temperature sensor	O	X	Check the resistance value and connection of the discharge sensor (TD)
F06	**TE sensor error** Open or short circuit in the heat exchange temperature sensor	O	X	Check the resistance value and connection of the heat exchange temperature sensor (TE)
F07	**TL sensor error** Open or short circuit in the heat exchange temperature sensor	O	X	Check the resistance value and connection of the heat exchange temperature sensor (TL)
F08	**TO sensor error** Open or short circuit in the outdoor temperature sensor	O	X	Check the resistance value and connection of the outdoor temperature sensor (TO)

Check Code	Diagnostic functional operation			Determination and action
	Operational cause	Backup present	Automatic reset	
F10	**TWI sensor error** Open or short circuit in the water inlet temperature sensor	O	O	Check the resistance value and connection of the water inlet temperature sensor (TWI)
F11	**TWO sensor error** Open or short circuit in the water outlet temperature sensor	Heating X Hot water O	O	Check the resistance value and connection of the water outlet temperature sensor (TWO)
F12	**TS sensor error** Open or short circuit in the suction temperature sensor	O	X	Check the resistance value and connection of the suction temperature sensor (TS)
F13	**TH sensor error** Open or short circuit in the heat-sink temperature sensor	O	X	Check the resistance value and connection of the heat-sink temperature sensor (TH)
F14	**TTW sensor error** Open or short circuit in the hot water cylinder sensor	Heating O Hot water X	O	Check the resistance value and connection of the hot water cylinder sensor (TTW)
F15	**TE-/TS sensor error** TE, TS sensor connections are opposite	O	X	Check for any wrong installation of the heat exchange temperature sensor (TE) and the suction temperature sensor (TS)
F17	**TFI sensor error** Open or short circuit in the floor temperature sensor	Heating X Hot water O	O	Check the resistance value and connection of the floor-inlet temperature sensor (TFI)
F18	**THO sensor error** Open or short circuit in the heater outlet temperature sensor	Heating X Hot water O	O	Check the resistance value and connection of the heater outlet temperature sensor (THO)
F19	**Detection of THO disconnection error** If TWO-THO>15K is detected and 30 sec. elapsed	Heating X Hot water O	X	1. Check for any disconnection of the heater outlet temperature sensor (THO) 2. Defect of the flow switch
F20	**TFI sensor error** If TWO-TFI>40K is detected and TFI<TWI-5K is detected 60 sec.	Heating X Hot water O	X	Check the connection of the floor-inlet temperature sensor (TFI)
F23	**Low pressure sensor error** - If PS<0,07 MPa is detected for 90 sec. or more (cooling, defrosting) - If PS<0,07 MPa is detected for 10 min. or more (hot water supply, heating)	O	O	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 refrigeration cycle (gas leak)
F24	**PD sensor error** Open or short circuit in the high pressure sensor	O	X	Check the value of PD sensor by the remote control
F29	**EEPROM error** If the data sent to the EEPROM (for example function code changes) is corrupted and there is no verification from the internal acknowledgement / check sum	X	X	Replace the water heat exchange control board
F30	**Extended IC error** If the extended IC is abnormal	X	X	Replace the water heat exchange control board
F31	**EEPROM error**	O	X	

Check Code	Diagnostic functional operation			Determination and action
	Operational cause	Backup present	Automatic reset	
H01	**Compressor breakdown** 1. If the operation frequency lowers due to the current release 40 sec. or later after the compressor activation and it stops by underrunning the minimum frequency 2. If the operation frequency lowers due to the current limit control and it stops by underrunning the minimum frequency 3. If an excess current is detected 0,8 sec. or later after the compressor activation	0	X	1. Check the power supply voltage (AC220-230 V±10 %: single phase type) (AC380-400 V±10 %: 3 phase type) 2. Over-loaded condition of the refrigeration cycle 3. Check, if the service valve is fully open
H02	**Compressor lock** If the input current is more than zero 20 sec. or later after the compressor activation and the activation has not been completed	0	X	1. Defect of compressor (lock) - Replace the compressor! 2. Defect of compressor wiring (open phase)
H03	**Defect in the current** Detection circuit	0	X	Replace the outdoor inverter control board
H04	**Operation of case thermostat** If the case thermostat exceeds 125°C	0	X	1. Check the refrigeration cycle (gas leak) 2. Check the case thermostat and connector 3. Check if the service valve is fully open 4. Defect of the pulse motor valve 5. Check for kinked piping
L02	**Combination error** Model name of the outdoor unit is different	X	X	1. Check the model name of the outdoor unit 2. Check DP_SW13_4 is set to „OFF“
L07	**Communication error** Individual hydro units have a group line	X	X	Replace the water heat exchange control board
L09	**Communication error** The capability code for the hydro unit has not been set	X	X	Check the setting of the FC01 capability specifications 0012 = 805XWH**-E, P805XWH**-E 0015 = P1105XWH**-E 0017 = 1405XWH**-E
L10	**Replace PC board jumper** Jumpers J800-J803 have not been cut	0	X	Cut J800-J803
L15	**Combination error** Model name of the Hydro unit is different	X	X	1. Check the model name of the Hydro unit 2. Check DP_SW13_4 is set ot „ON“
L16	**Setting error** If ZONE 1 has not been set, while ZONE2 has been set	X	X	Check the body SW12_2,3
L29	**The communication between the outdoor PC board MUCs error** No communication signal between IPDU and CDB	0	X	Replace the outdoor control board
P03	**Outlet temperature error** If the discharge temperature sensor (TD) exceeds 111°C	0	X	1. Check the refrigeration cycle (gas leak) 2. Defect of the pulse motor valve 3. Check the resistance value of the discharge temperature sensor (TD)
P04	**The high pressure switch error**	0	X	
P05	**The power supply voltage error** If the power supply voltage is extremely high or low	0	X	Check the power supply voltage (AC220-230 V±10 %: single phase type) (AC380-400 V±10 %: 3 phase type)
P07	**Overheating of heat-sink error** If the heat-sink exceeds 105°C	0	X	1. Check the thread fastening and heat-sink grease between the outdoor control board and the heat-sink 2. Check the heat-sink fan duct 3. Check the resistance value of the heat-sink temperature sensor (TH)

Check Code	Diagnostic functional operation			Determination and action
	Operational cause	Backup present	Automatic reset	
P15	**Detection of gas leak** - If the discharge temperature sensor (TD) exceeds 106°C for consecutive 10 min. - If the suction temperature sensor (TS) exceeds 60°C for cooling or 40°C for heating for 10 consecutive min. - If TG≤TC-10K is detected and TG≤ TWI-15K is detected 10 min. (hot water supply, heating) - If TG≤TE-12K is detected for 10 min. (cooling)	0	X	1. Check the refrigeration cycle (gas leak) 2. Check that the service valve is fully open 3. Defect on the pulse motor valve 4. Check for kinked piping 5. Check the resistance value of the discharge temperature sensor (TD) and the suction temperature sensor (TS) 6. Check the PD sensor by remote control
P19	**4-way valve inversion error** If the heat exchange temperature sensor (TE) exceeds 30°C or the suction temperature sensor (TS) exceeds 50°C during the heat pump operation	0	X	1. Check the operation of the 4-way valve unit or the coil characteristics 2. Defect of the pulse motor valve 3. Check the resistance value of the heat exchange temperature sensor (TE) and the suction temperature sensor (TS)
P20	**High pressure protection operation** - If an abnormal stop occurs due to the high pressure release control - If the high pressure sensor (PD) detects 4,05 MPa - If the heat exchange temperature sensor (TL) detects 63 °C during the cooling operation - If the water outlet sensor (TWO) detects 60 °C during the heating or hot water supply operation	0	X	1. Check that the service valve is fully open 2. Defect of the pulse motor valve 3. Check the outdoor fan system (including clogging) 4. Over-filling of 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. The water piping is too short. Install a buffer tank or set the setting temperature lower
P22	**Outdoor fan system error** If the DC fan rotor initial position referencing fails, motor winding short circuit, loss of rotor synchronisation due to motor drive failure or abnormal motor current occurs (i.e. locked rotor situation)	0	X	1. Check the lock status of the motor fan 2. Check the connection of the fan motor cable connector 3. Check the power supply voltage (AC220-230 V±10 %: single phase type) (AC380-400 V±10 %: 3 phase type)
P26	**Short circuit of the compressor driver element error** If an abnormal short circuit of IGBT is detected	0	X	1. P26 abnormality occurs if operating with the compressor wiring disconnected - Check the control board 2. No abnormality occurs if operating with the compressor wiring disconnected - Compressor winding short circuit
P29	**Compressor rotor position error** The rotor position in the compressor cannot be detected	0	X	1. Even if the connection lead wire of the compressor is disconnected, it stops due to an abnormality in the position detection - Replace the inverter control board 2. Check the wire wound resistor of the compressor. Short circuit - Replace the compressor

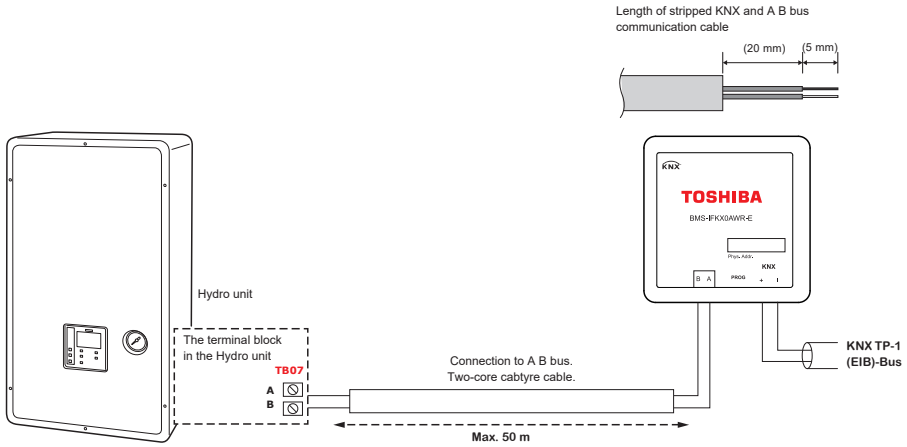
Defect mode detected by the remote control

Check Code	Diagnostic functional operation			Determination and action
	Operational cause	Backup present	Automatic reset	
Not displayed at all (cannot operate by the remote control)	**No communication between hydro unit and remote control** - The remote control wiring is not connected correctly - The hydro unit has not been turned on	Stop	-	Defect in the remote control power supply 1. Check the remote control wiring 2. Check the remote control 3. Check the hydro unit power supply wiring 4. Check the water heat exchange control board
E01	**No communication between hydro unit and remote control** Disconnection of the cross-over between the remote control and the base unit of the indoor unit (detected on the remote control side)	Stop (Automatic reset)	Displayed if abnormality is detected	Defect in the reception of the remote control 1. Check the remote control crossover 2. Check the remote control 3. Check the hydro power supply wiring 4. Check the water heat exchanger board
E02	**Defect in the signal transmission to the hydro unit** (Detected on the remote control side)	Stop (Automatic reset)	Displayed if abnormality is detected	Defect in the transmission of the remote control 1. Check the transmitter circuit inside the remote control 2. Replace the remote control
E09	**Several remote control master units** (Detected on the remote control side)	Stop (The slave units continues)	Displayed if abnormality is detected	Check several master remote controls Only one remote control can be set as master unit. All other remote controls must be set as slave units

KNX Modul

IMPORTANT:

- Use only one remote control. A sub-remote control cannot be connected when connecting this interface.
- It is not possible to mix and connect Hydro unit Series 4 and Series 5.



Specifications

Item	Specification value
Power supply	KNX line 29 VDC / 8 mA AW line 14 VDC / 20 mA
Operating temperature and humidity ranges	0 °C to 40 °C 10 to 80% RH (non-condensing)
Storage temperature and humidity ranges	-20 °C to 60 °C 10 to 80% RH (non-condensing)
Housing material	Sheet metal box Galvanized sheet iron (SGCC-CSC) Base 0,8 t; Cover 0,6 t; No paint finish; Mold 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 Mold unit 28 (H) x 70 (W) x 70 (D) mm
Weight	225 g (including sheet metal box) 70 g (mold unit)

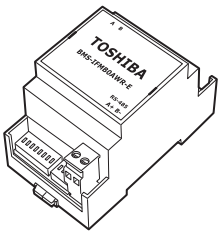
Supplied items

No.	Part name	Quantity	Remark
1	KN Interface (mold unit)	1	
2	User manual	1	
3	Sheet metal box	1	Cover, Base
4	Fixing screws		

Use the following wiring materials to connect the signal lines. (Procure locally)

No.	Kabel	Teil	Wert
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

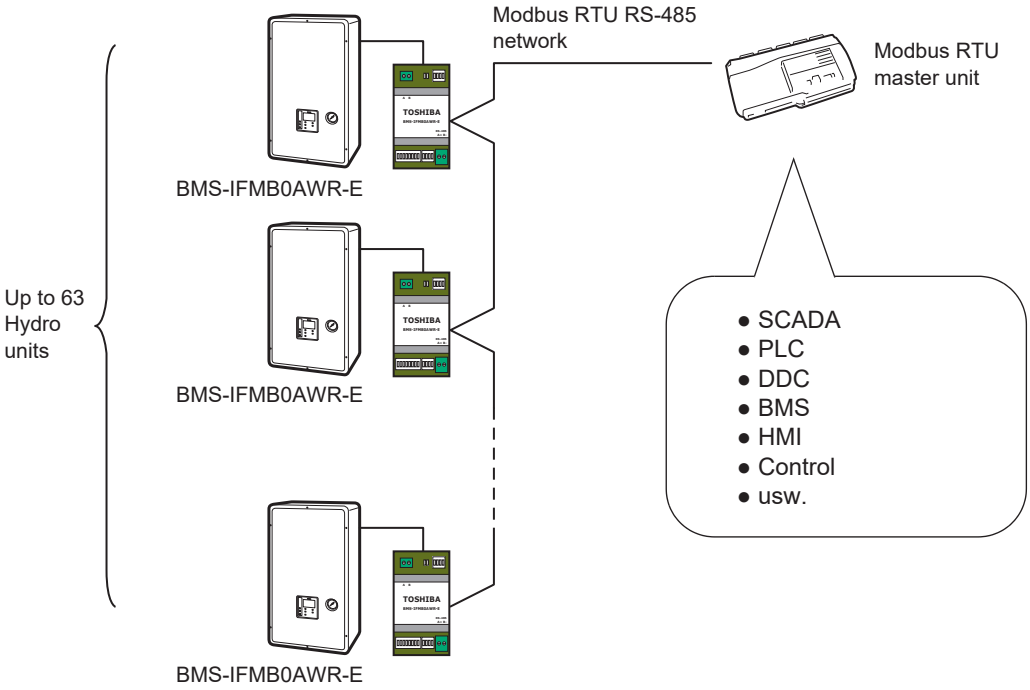
MODBUS Modul



The BMS-IFMB0AWR-E interface allows a complete and natural integration of Toshiba air conditioners into 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.
  Mountable on DIN rail, wall
- External power not required.
- Direct connection to Modbus RTU (RS-485) networks.
  BMS-IFMB0AWR-E is a Modbus slave unit
- Direct connection to the Hydro unit.
- Configuration from both on-board DIP-switches and Modbus RTU.
- Total control and supervision.
- Real states of the Hydro unit‘s internal variables.
- Allows using simultaneously the remote control and Modbus RTU.



Installation instructions

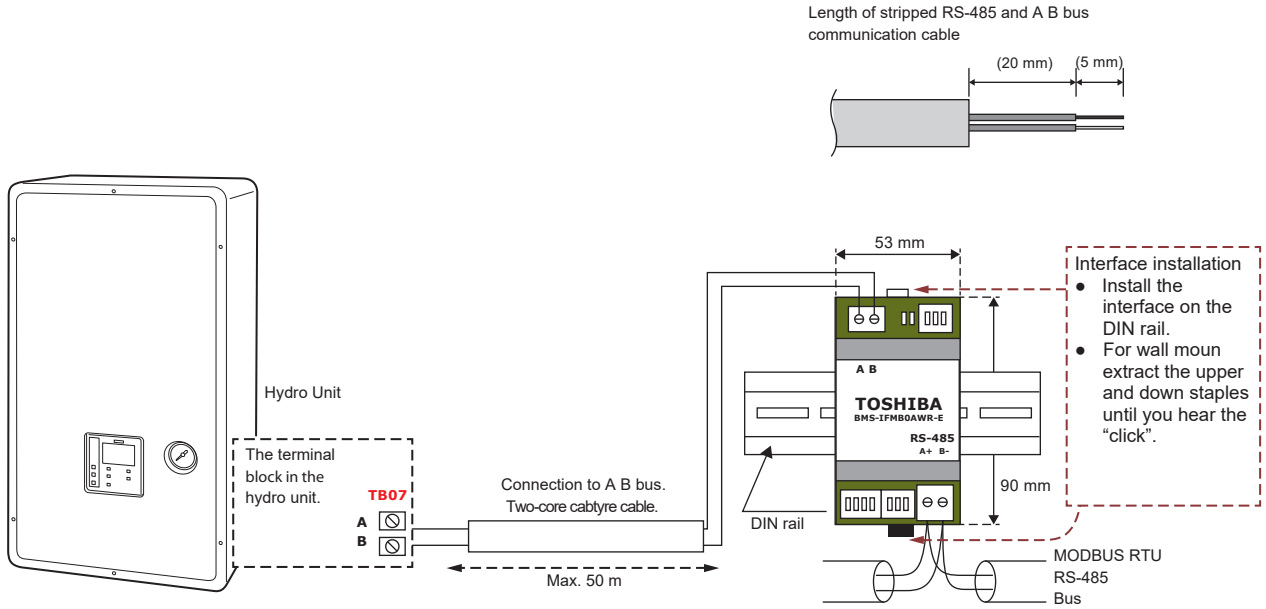
- Disconnect the Hydro unit from Mains Power.
- Fix the interface beside the Hydro unit (wall mounting) following the instructions in the diagram below or install it inside the Hydro unit (respect the safety instructions given above).
- Connect the interface to A B bus in any point of the bus. The A B bus is the bus that connects the Hydro unit and the wired remote controller, is a two-wire bus connecting terminals A B of both, this A B connection has no specific polarity.
- Connect the RS-485 bus to the connector RS-485 of the interface.
- Close the Hydro unit and reconnect it to Mains Power.
- Follow the instructions on the user manual for configuring and commissioning the interface.
- Follow the instructions of the next page to configure the interface through on-board DIP-switches.

NOTE

The cable used for connection of BMS-IFMB0AWR-E to A B bus can be any two-core cabtyre cable, the maximum distance for bus A B is 50 meters, consult the manual of the Hydro unit for more details.
Respect the maximum distance of 500 meters for the bus, no loop or star topologies are allowed for RS-485 bus, a terminator resistor of 120 Ω must be present at each end of the bus to avoid signal reflections and also a fail-safe biasing mechanism.

IMPORTANT

- Use only one remote control. A sub-remote control cannot be connected when connecting this interface.
- It is not possible to mix and connect Hydro unit Series 4 and Series 5.



TOSHIBA

Kumanovska 14, 11000 Beograd
Tel.: 011 383 68 86, 308 57 40, Faks: 011 344 41 13
e-mail: gobrid@eunet.rs, office@kovent.rs
www.toshiba-klima.rs, www.toshiba-estia.rs
www.airtrend.rs, www.kovent.rs

APPENDIX

MANUAL OF ESTIA AIR-TO WATER HEAT PUMP

Version 3.0

Better Air Solutions

Subject to typographical and other errors. EN / APPENDIX / 01.2019.