H424V3
User manual

Contents

1 Parameter list

Rem.	Parameter	Description	Minimum	Maximum	Default	Unit
	S_ _	Functions about storage				
	St_	Functions about storage temperature				
	_t0	storage room temperature	-55.0	145.0	2.0	°C
	_td	differential	0.0	50.0	0.2	K
	Fd_	Functions about defrost duration and timing				
	Fd0	immediate delay before next defrost	0	194 4:20:15	0	dd hh:mm:ss
	Fdd	on-time duration of the defrost	0	194 4:20:15	30:00	dd hh:mm:ss
	Fdg	dripping time after defrost	0	194 4:20:15	2:00	dd hh:mm:ss
	FdE	evaporator fan activation delay after the defrost	0	194 4:20:15	7:00	dd hh:mm:ss
1	FdP	overall period of the defrost	0	194 4:20:15	4:00:00	dd hh:mm:ss
	FdY	temperature display timeout after end of defrost - resets IA1=OS4=OS5	0	194 4:20:15	20:00	dd hh:mm:ss
	FF_	Functions about forced defrost				
	FFh	enable forced defrost by keyboard short cut	oFF	_on	_on	/
	FFd	forced defrost duration	0	194 4:20:15	30:00	dd hh:mm:ss
2	FFo	start immediate forced defrost	oFF	_on	oFF	/
	FP_	Functions about defrost preference				
	FPt	defrost type: 0=none / 1=pause / 2=air / 3=electric / 4=hot gas / 5=heat pump / 6=heat pump by hp	0	4	2	/
3	FPc	use door closure input as start command for remote defrost	oFF	_on	oFF	/
	FPM	this side is defrost master (the instrument is divided in two sides)	oFF	_on	oFF	/
	FPS	this side is defrost slave	oFF	_on	oFF	/
	FPX	this side is defrost slave from aux master (0 means from main master - 255 whatever)	0	255	0	/
	FPY	this side is defrost slave from side nr. (255 means whatever)	1	255	1	/
	Ft_	Functions about defrost temperature				
	Ftt	defrost stop temperature	-55.0	145.0	6.0	°C
	n_ _	Functions about fans				
	nE_	Functions about evaporator fans				
	nEH	force evaporator fans when refrigeration is off	oFF	_on	oFF	/
	nEF	enable evaporator fans during defrost	oFF	_on	oFF	/
	nEg	enable evaporator fans during dripping	oFF	_on	oFF	/
	c_ _	Functions about door and light				
	cP_	Door switch and evaporator fan				
	cPH	stop evaporator fans when door is open	oFF	_on	_on	/
	cPF	pause defrost timer when air defrost is suspended by evaporator fan stop	oFF	_on	_on	/
	cPd	delay of fan automatic switch on	0	194 4:20:15	30:00	dd hh:mm:ss
	cl_	Functions about light				
	clH	switch on the light when the door is open and off when closed	oFF	_on	_on	/
4	clo	switch off the light automatically if it has been switched on from outside	oFF	_on	_on	/
	cld	delay of light automatic switch off	0	194 4:20:15	30	dd hh:mm:ss
	v_ _	Functions about electronic expansion valve				
	vP_	Functions about electronic expansion valve preference				
5	vPH	enable electronic expansion valve	oFF	_on	_on	/
	vPP	refrigerant gas type: 0=R134A / 1=R404A / 2=R507A / 3=R22 / 4=R407C	0	4	0	/
6	vPd	network originating address of the pressure broadcast	0	255	0	/
	vt_	Functions about electronic expansion valve temperature				
7	vtt	wanted overheating (similar to Danfoss thermostatic overheating spring regulation)	-999.0	999.0	8.0	K
8	vtH	maximum overheating	-999.0	999.0	99.0	K
9	vtL	minimum overheating	-999.0	999.0	6.0	K
	vtU	maximum pressure allowed in the suction line (similar to Danfoss MOP)	0.0	999.0	10.0	(gauge) bar
	vd_	Functions about electronic expansion valve timing				
10	vd1	on-off duty cycle duration	0	194 4:20:15	8	dd hh:mm:ss
11	vd2	on duty cycle duration at refrigeration start (set to 0 for previous stop value)	0	194 4:20:15	5	dd hh:mm:ss
12	vdd	on duty cycle adaptation speed (low value for slow adaptation and small swinging)	0	255	8	/
	b_ _	Functions about probe calibration				
	b1_	Probe nr. 1				
	b1C	room temperature	-999.0	999.0	0.0	K
	b1A	enable probe	oFF	_on	_on	/
	b2_	Probe nr. 2				
	b2C	defrost temperature	-999.0	999.0	0.0	K
	b2A	enable probe	oFF	_on	_on	/
	b3_	Probe nr. 3				
	b3C	suction temperature	-999.0	999.0	0.0	K
	b3A	enable probe	oFF	_on	_on	/
	b4_	Probe nr. 4				
	b4C	unused temperature - eventually used by Id4	-999.0	999.0	0.0	K
	b4A	enable probe	oFF	_on	_on	/
	L_ _	Functions about alarm and stand-by				
	Lt_	Temperature alarm				
13	LtL	low temperature alarm set point	-55.0	145.0	-2.0	°C
14	LtH	high temperature alarm set point	-55.0	145.0	14.0	°C
	Ltd	alarm delay	0	194 4:20:15	30:00	dd hh:mm:ss
	LO_	Door alarm				

Rem.	Parameter	Description	Minimum	Maximum	Default	Unit
	LOH	enable door alarm	oFF	_on	_on	/
	LOd	door alarm delay	0	194 4:20:15	30:00	dd hh:mm:ss
	LOt	temperature alarm minimum delay after door opening	0	194 4:20:15	15:00	dd hh:mm:ss
	Lo_	On / stand-by status				
	Loo	actual status: stand-by or on	oFF	_on	oFF	/
	P__	Functions about master preferences				
	Pd_	Functions about network address				
	PdM	master address for global network communication	0	254	1	/
	PdS	number of slaves connected to this master	1	2	2	/
	PdX	number of aux masters connected to this master - 0 means no aux connected	0	31	0	/
	PdY	this master is the auxiliary nr. - 0 means it is not aux	0	31	0	/
	I__	Functions about input-output and machine state (read only)				
	IA_	Analog inputs				
	IA1	room temperature	-55.0	145.0	-55.0	°C
	IA2	defrost temperature	-55.0	145.0	-55.0	°C
	IA3	suction temperature	-55.0	145.0	-55.0	°C
	IA4	unused temperature - eventually used by Id4	-55.0	145.0	-55.0	°C
	Id_	Digital input				
	Id2	evaporator hardware safety	oFF	_on	oFF	/
	Id3	defrost hardware safety	oFF	_on	oFF	/
	Id4	digital input 4 (door closure / remote defrost) - read by IA4	oFF	_on	oFF	/
	Id5	phase software safety	oFF	_on	oFF	/
	OS_	Machine status				
	OS1	low pressure (LP)	0.0	999.0	0.0	(gauge) bar
	OS2	refrigerant saturation temperature corresponding to the low pressure	-55.0	145.0	-55.0	°C
	OS3	refrigerant overheating at the evaporator outlet	-999.0	999.0	-999.0	K
	OS4	temperature before defrost - reads IA1 at range reentering after defrost	-55.0	145.0	-55.0	°C
	OS5	set point temperature during defrost - reads IA1 at range reentering after defrost	-55.0	145.0	-55.0	°C
	OSn	evaporator fan stopped by door opening or manual control	oFF	_on	oFF	/
	OSS	defrost status: 1=normal / 2=defr / 3=drip / 4=fan delay / 5=forced / 6=wait	0	6	0	/
	OSF	defrost timer (in countdown-mode)	0	194 4:20:15	0	dd hh:mm:ss
	OSb	special defrost display in progress - affects OS4 and OS5 (see FdY)	oFF	_on	oFF	/
	OSY	timer of the temperature display timeout, after the end of defrost (see FdY)	0	194 4:20:15	0	dd hh:mm:ss
	OSX	communication alarm: 0=normal / 87=out of range / 88=no link / 89=lost link	0	255	0	/
	LLA	actual alarm - read only (0 means no alarm)	0	255	0	/
	Od_	Digital output				
15	Od1	solenoid	oFF	_on	oFF	/
15	Od3	light	oFF	_on	oFF	/
15	Od5	evaporator	oFF	_on	oFF	/
15	Od6	defrost	oFF	_on	oFF	/
	E__	Functions about slave preferences				
	Ed_	Functions about network address				
	EdS	slave address for local network communication	1	254	1	/
	EdX	auxiliary master served by this slave - 0 means it is not aux	0	255	0	/
	EY_	Functions about display				
	EYY	input to show on display: 1=IA1 / 2=IA2 ... / 5=OS1 / 6=OS2 ...	1	9	1	/
	EYr	enable display rotation: 0=off / 1=all / 2=selected	0	2	0	/
	EYF	display special text during defrost	0	1	0	/
	EYt	label of special text during defrost	000	yyy	dEF	/
	E0_	Functions about display rotation, when EYr=1				
	E0d	duration of label display during rotation	0	255	1	/
	E0E	duration of value display during rotation	0	255	2	/
	E1_	Functions about display rotation, when EYr=2 (repeated for each parameter)				
	E1d	duration of label display during rotation	0	255	0	/
	E1t	label text during rotation	000	yyy	rM=	/
	E1E	duration of value display during rotation	0	255	6	/
	E2_	Functions about display rotation, when EYr=2 (repeated for each parameter)				
	E2d	duration of label display during rotation	0	255	1	/
	E2t	label text during rotation	000	yyy	dE=	/
	E2E	duration of value display during rotation	0	255	0	/
	E3_	Functions about display rotation, when EYr=2 (repeated for each parameter)				
	E3d	duration of label display during rotation	0	255	1	/
	E3t	label text during rotation	000	yyy	SU=	/
	E3E	duration of value display during rotation	0	255	0	/
	E4_	Functions about display rotation, when EYr=2 (repeated for each parameter)				
	E4d	duration of label display during rotation	0	255	1	/
	E4t	label text during rotation	000	yyy	do=	/
	E4E	duration of value display during rotation	0	255	0	/
	E5_	Functions about display rotation, when EYr=2 (repeated for each parameter)				
	E5d	duration of label display during rotation	0	255	1	/
	E5t	label text during rotation	000	yyy	LP=	/
	E5E	duration of value display during rotation	0	255	4	/
	E6_	Functions about display rotation, when EYr=2 (repeated for each parameter)				
	E6d	duration of label display during rotation	0	255	1	/

Rem.	Parameter	Description	Minimum	Maximum	Default	Unit
	E6t	label text during rotation	000	yyy	Lt=	/
	E6E	duration of value display during rotation	0	255	0	/
	E7_	Functions about display rotation, when EYr=2 (repeated for each parameter)				
	E7d	duration of label display during rotation	0	255	1	/
	E7t	label text during rotation	000	yyy	oh=	/
	E7E	duration of value display during rotation	0	255	0	/
	E8_	Functions about display rotation, when EYr=2 (repeated for each parameter)				
	E8d	duration of label display during rotation	0	255	1	/
	E8t	label text during rotation	000	yyy	bF=	/
	E8E	duration of value display during rotation	0	255	0	/
	E9_	Functions about display rotation, when EYr=2 (repeated for each parameter)				
	E9d	duration of label display during rotation	0	255	1	/
	E9t	label text during rotation	000	yyy	SF=	/
	E9E	duration of value display during rotation	0	255	0	/
	Eb_	Functions about buzzer				
	EbH	enable buzzer	0	1	1	/
	S__	Functions about storage				
	St_	Functions about storage temperature				
	_t0	storage room temperature	-55.0	145.0	2.0	°C
	_td	differential	0.0	50.0	0.2	K
	Fd_	Functions about defrost duration and timing				
	Fd0	immediate delay before next defrost	0	194 4:20:15	0	dd hh:mm:ss
	Fdd	on-time duration of the defrost	0	194 4:20:15	30:00	dd hh:mm:ss
	Fdg	dripping time after defrost	0	194 4:20:15	2:00	dd hh:mm:ss
	FdE	evaporator fan activation delay after the defrost	0	194 4:20:15	7:00	dd hh:mm:ss
1	FdP	overall period of the defrost	0	194 4:20:15	4:00:00	dd hh:mm:ss
	FdY	temperature display timeout after end of defrost - resets IA1=OS4=OS5	0	194 4:20:15	20:00	dd hh:mm:ss
	FF_	Functions about forced defrost				
	FFh	enable forced defrost by keyboard short cut	oFF	_on	_on	/
	FFd	forced defrost duration	0	194 4:20:15	30:00	dd hh:mm:ss
2	FFo	start immediate forced defrost	oFF	_on	oFF	/
	FP_	Functions about defrost preference				
	FPt	defrost type: 0=none / 1=pause / 2=air / 3=electric / 4=hot gas / 5=heat pump / 6=heat pump by hp	0	4	2	/
3	FPc	use door closure input as start command for remote defrost	oFF	_on	oFF	/
	FPM	this side is defrost master (the instrument is divided in two sides)	oFF	_on	oFF	/
	FPS	this side is defrost slave	oFF	_on	oFF	/
	FPX	this side is defrost slave from aux master (0 means from main master - 255 whatever)	0	255	0	/
	FPY	this side is defrost slave from side nr. (255 means whatever)	1	255	1	/
	Ft_	Functions about defrost temperature				
	Ftt	defrost stop temperature	-55.0	145.0	6.0	°C
	n__	Functions about fans				
	nE_	Functions about evaporator fans				
	nEH	force evaporator fans when refrigeration is off	oFF	_on	oFF	/
	nEF	enable evaporator fans during defrost	oFF	_on	oFF	/
	nEg	enable evaporator fans during dripping	oFF	_on	oFF	/
	c__	Functions about door and light				
	cP_	Door switch and evaporator fan				
	cPH	stop evaporator fans when door is open	oFF	_on	_on	/
	cPF	pause defrost timer when air defrost is suspended by evaporator fan stop	oFF	_on	_on	/
	cPd	delay of fan automatic switch on	0	194 4:20:15	30:00	dd hh:mm:ss
	cl_	Functions about light				
	clH	switch on the light when the door is open and off when closed	oFF	_on	_on	/
4	clo	switch off the light automatically if it has been switched on from outside	oFF	_on	_on	/
	cld	delay of light automatic switch off	0	194 4:20:15	30	dd hh:mm:ss
	v__	Functions about electronic expansion valve				
	vP_	Functions about electronic expansion valve preference				
5	vPH	enable electronic expansion valve	oFF	_on	_on	/
	vPP	refrigerant gas type: 0=R134A / 1=R404A / 2=R507A / 3=R22 / 4=R407C	0	4	0	/
6	vPd	network originating address of the pressure broadcast	0	255	0	/
	vt_	Functions about electronic expansion valve temperature				
7	vtt	wanted overheating (similar to Danfoss thermostatic overheating spring regulation)	-999.0	999.0	8.0	K
8	vtH	maximum overheating	-999.0	999.0	99.0	K
9	vtL	minimum overheating	-999.0	999.0	6.0	K
	vtU	maximum pressure allowed in the suction line (similar to Danfoss MOP)	0.0	999.0	10.0	(gauge) bar
	vd_	Functions about electronic expansion valve timing				
10	vd1	on-off duty cycle duration	0	194 4:20:15	8	dd hh:mm:ss
11	vd2	on duty cycle duration at refrigeration start (set to 0 for previous stop value)	0	194 4:20:15	5	dd hh:mm:ss
12	vdd	on duty cycle adaptation speed (low value for slow adaptation and small swinging)	0	255	8	/
	b__	Functions about probe calibration				
	b1_	Probe nr. 1				
	b1C	room temperature	-999.0	999.0	0.0	K
	b1A	enable probe	oFF	_on	_on	/
	b2_	Probe nr. 2				

Rem.	Parameter	Description	Minimum	Maximum	Default	Unit
	b2C	defrost temperature	-999.0	999.0	0.0	K
	b2A	enable probe	oFF	_on	_on	/
	b3_	Probe nr. 3				
	b3C	suction temperature	-999.0	999.0	0.0	K
	b3A	enable probe	oFF	_on	_on	/
	b4_	Probe nr. 4				
	b4C	unused temperature - eventually used by Id4	-999.0	999.0	0.0	K
	b4A	enable probe	oFF	_on	_on	/
	L_ _	Functions about alarm and stand-by				
	Lt_	Temperature alarm				
13	LtL	low temperature alarm set point	-55.0	145.0	-2.0	°C
14	LtH	high temperature alarm set point	-55.0	145.0	14.0	°C
	Ltd	alarm delay	0	194 4:20:15	30:00	dd hh:mm:ss
	LO_	Door alarm				
	LOH	enable door alarm	oFF	_on	_on	/
	LOd	door alarm delay	0	194 4:20:15	30:00	dd hh:mm:ss
	LOt	temperature alarm minimum delay after door opening	0	194 4:20:15	15:00	dd hh:mm:ss
	Lo_	On / stand-by status				
	Loo	actual status: stand-by or on	oFF	_on	oFF	/
	I_ _	Functions about input-output and machine state (read only)				
	IA_	Analog inputs				
	IA1	room temperature	-55.0	145.0	-55.0	°C
	IA2	defrost temperature	-55.0	145.0	-55.0	°C
	IA3	suction temperature	-55.0	145.0	-55.0	°C
	IA4	unused temperature - eventually used by Id4	-55.0	145.0	-55.0	°C
	Id_	Digital input				
	Id2	evaporator hardware safety	oFF	_on	oFF	/
	Id3	defrost hardware safety	oFF	_on	oFF	/
	Id4	digital input 4 (door closure / remote defrost) - read by IA4	oFF	_on	oFF	/
	Id5	phase software safety	oFF	_on	oFF	/
	OS_	Machine status				
	OS1	low pressure (LP)	0.0	999.0	0.0	(gauge) bar
	OS2	refrigerant saturation temperature corresponding to the low pressure	-55.0	145.0	-55.0	°C
	OS3	refrigerant overheating at the evaporator outlet	-999.0	999.0	-999.0	K
	OS4	temperature before defrost - reads IA1 at range reentering after defrost	-55.0	145.0	-55.0	°C
	OS5	set point temperature during defrost - reads IA1 at range reentering after defrost	-55.0	145.0	-55.0	°C
	OSn	evaporator fan stopped by door opening or manual control	oFF	_on	oFF	/
	OSS	defrost status: 1=normal / 2=defr / 3=drip / 4=fan delay / 5=forced / 6=wait	0	255	0	/
	OSF	defrost timer (in countdown-mode)	0	194 4:20:15	0	dd hh:mm:ss
	OSb	special defrost display in progress - affects OS4 and OS5 (see FdY)	oFF	_on	oFF	/
	OSY	timer of the temperature display timeout, after the end of defrost (see FdY)	0	194 4:20:15	0	dd hh:mm:ss
	OSX	communication alarm: 0=normal / 87=out of range / 88=no link / 89=lost link	0	255	0	/
	LLA	actual alarm - read only (0 means no alarm)	0	255	0	/
	Od_	Digital output				
15	Od1	solenoid	oFF	_on	oFF	/
15	Od3	light	oFF	_on	oFF	/
15	Od5	evaporator	oFF	_on	oFF	/
15	Od6	defrost	oFF	_on	oFF	/

2 Parameter remarks

Nr.	Remark
1	The period of each cycle includes on-time + off-time, that is the overall duration of the cycle.
2	Following defrost cycles will be aligned to the end of forced one.
3	For defrost synchronization of refrigerated expositors.
4	No action if the light is switched on from inside the room.
5	When off, the refrigeration solenoid is steadily on during cooling.
6	The address of the central unit who is broadcasting pressure (usually 1). Use 0 for previous application H425V1 with no origin specification.
7	Caution! Low overheating causes liquid return and compressor damage.
8	Overheating over the maximum forces valve anticipated opening.
9	Overheating under the minimum delays valve opening.
10	Caution! Short duty cycle reduces valve life.
11	Caution! Low overheating causes liquid return and compressor damage.
12	Caution! High adaptation speed causes swing in the suction line and damage to the compressor.
13	The low temperature differential is fixed, and alarm status stops at 0.2 °C above the set point.
14	The high temperature differential is fixed, and alarm status stops at 0.2 °C under the set point.
15	The minus sign on display ("-") signals that output is going to start after a delay.

3 Alarm list

Display	Alarm	
A01	low temperature	Low temperature limit has been reached.
A02	high temperature	High temperature limit has been reached.
A03	door open	Time limit for door opening has been reached.
A04	RTC memory loss	Memory loss of real time clock [RTC] - timer reset.
A05	Side 1 lost defrost	Side 1 of the instrument is defrost slave and does not receive any message from the defrost master.
A06	Side 2 lost defrost	Side 2 of the instrument is defrost slave and does not receive any message from the defrost master.
A07	Bad defr. par. side 1	Bad defrost parameters for side 1 of the instrument, please ensure: Fdd+Fdg+FdE<FdP, 5 sec<FdP, not concurrent FPS and FPM, nor FPS and FPc, nor PdX and PdY. Put FPt=0 to avoid this check.
A08	Bad defr. par. side 2	Bad defrost parameters for side 2 of the instrument, please ensure: Fdd+Fdg+FdE<FdP, 5 sec<FdP, not concurrent FPS and FPM, nor FPS and FPc, nor PdX and PdY. Put FPt=0 to avoid this check.

4 Slave alarm list

Display	Alarm	
A96	slave EEPROM	Failed write operation onto the slave EEPROM.
A97	out of range	The slave address EdS might be out of the master range, the latter going from 1 to PdS.
A98	no link	The slave does not receive any message from the master.
A99	lost link	The slave lost the communication with the master.

5 Button list

Push button		Function
B1	esc - silence	Exit without saving from any menu - alarm buzzer silence.
B2	up	Up navigation in the menu.
B3	on/stand-by - pause	Toggle between on and stand-by - toggle evaporator fan stop.
B4	left - light	Left navigation in the menu - switch the light on and off.
B5	down - defrost	Down navigation in the menu - force immediate defrost.
B6	right - menu - set	Right navigation in the menu - display and modify the set point - enter menu.

6 Led list

Led		Function
L1	cooling	On during cooling.
L2	evaporator	On during evaporator run - blinking slowly during activation delay.
L3	defrost	On during defrost - blinking slowly during dripping.
L4	unused	Unused in this application.
L5	unused	Unused in this application.
L6	unused	Unused in this application.
L7	light	On when lighting is on - blinking slowly during deactivation delay.

7 Soft command list

Soft command	Function

8 How to ...

How to ...	Function
Switch between on and stand-by.	Keep pressed B3 button, to activate and deactivate stand-by. In stand-by every output is disabled except light, leds from L1 to L6 blink, timers continue to count.

How to ...	Function
Stop or restart evaporator fans.	Press shortly the B3 button. When the evaporator fans are stopped, the display blinks.
Program the menu.	Keep pressed B6 to enter the menu. Navigate up and down with B2 and B5. Select the submenu by B6. Change the parameter by B2 and B5, press B6 to confirm, or B4 to go back without saving. The changes will have effect after the exit from programming pressing B4 repeatedly. Press B1 to exit immediately without saving any parameter.
Show or change temperature set.	Press shortly B6 - the display shows the current set point - change it by B2 and B5, and confirm it by B6. As alternative, enter the menu program as explained above, modify the parameter _t0, then confirm it.
Force a defrost.	Keep pressed B5.

9 Shortcut list

Buttons to press	Shortcut description - keep pressed 5 seconds
B5	Force an immediate defrost.

10 Led and push button location