JTL CABINET CONTROLLER ITEM NUMBERS — LCIL

ITEM	DESCRIPTION	CODE	CODE MEANING	BIT 4321	RANGE	ITEM 9 VALUE
0	Unit type	LciL	Unit type			
1	Unit number				0.1 - 899.9	
CLOCK CALENDAR Note, from version 0.00.2 the time and date can be displayed as standard or daylight saving (summer) time. This choice is made on item 18. When daylight saving is chosen and the controller is connected to a JTL Network Controller supporting daylight saving operation, the change is made automatically to the current EU directive.						
2	Time of day				00:00 - 23:59	
3	Day of week (v0.00.2 on)	Sun - Sat	0=Sunday 1=Monday etc			
4	Date (v0.00.2 on)				01:01 - 31:12	
5	Year (v0.00.2 on)				1992 - 2022	
MISCELLANEOUS DATA						
6	Communications speed (in kilo baud)	4.8 38.4	Baud rate Baud rate			
7	2/4 wire Communications Choice (Half / Full duplex)	HALF FuLL	2 wire 4 wire		0 - 1	HALF
8	Bitswitch setting					
9	Set default values selected by Bitswitch	1	Set default values up to v0.00.1			
		1234	Set default values from v0.00.2			
		1066	Write to NVRAM without delay from v0.00.2			
PROCESSOR ALARMS						
10	Processor alarms (11 - 17)	0 1 - 255	No alarms Check 11 - 17			
11	Static RAM Fault	CLr rA.Ft	No fault Fault			
12	Program/counter fault	CLr PC.Ft	No fault Fault			
13	Stack pointer fault	CLr SP.Ft	No fault Fault			
14	Background loop fault	CLr bL.Ft	No fault Fault			
15	PROM checksum fault	CLr Pr.Ft	No fault Fault			
16	NVRAM fault	CLr n.Ft	No fault Fault			
17	Instruction TRAP fault	CLr tP.Ft	No fault Fault			
MISCELLANEOUS DATA						
18	Daylight saving enable (from v0.00.2 on)	Stnd dAY.S	Standard time Daylight saving time		0 - 1	Stnd

JTL CABINET CONTROLLER ITEM NUMBERS						LCIL
ITEM	**DESCRIPTION**	**CODE**	**CODE MEANING**	**BIT** **4321**	**RANGE**	**ITEM 9 VALUE**
19	Software Version number					
TEMPERATURES Note: From V0.0.2, temperatures can be displayed on the maintenance unit in degrees Celsius or Fahrenheit. The choice is made on item 122. All setpoint ranges in this document are shown in celsius.						
21	Air on temperature (well case)					
22	Air off temperature					
23	Evaporator temperature					
24	Suction line temperature					
25	Air on 2 temperature (HGD case)					
AIR OFF TEMPERATURE ALARM						
26	Air off temperature tolerance (v0.00.2 on)	0.0	Disable HT alarm		0 - 30	15
27	Average Air off temperature error					
AUTOMATICALLY ADJUSTED SETPOINTS						
28	Current Air off temperature setpoint (calculated by controller)					
29	Current Evaporator temperature setpoint (calculated by controller)					
PRIMARY TEMPERATURE SETPOINTS						
30	Cabinet temperature setpoint (target for items 210 and 220)			xxxC xxx0	- 30 to -18 - 30 to -18	- 20 - 26
31	Air off setpoint (starting point and lower limit for item 28)			xxxC xxx0	- 35 to -20 - 35 to -20	- 27 - 33
32	Cabinet overtemperature alarm tolerance	0.0	Disable HT alarm (from v0.00.2)		0 - 20	10
33	Cabinet 1 temperature ratio (well case) (Item 210 calculated as value between Air off and Air on 1 using this ratio)				20 - 80	50
34	Cabinet 2 temperature ratio (HDG case) (Item 220 calculated as value between Air off and Air on 2 using this ratio)				20 - 100	75
35	Defrost termination probe selection (up to version v0.00.1) (choice moved to item 144)	OFF E.t.En	Air off probe Evaporator			OFF
PROBE SELECTION						
36	Air on probe selection (well section)	OFF A1.En	Disabled Enabled		0 - 1	AO.En
37	Air off probe selection	OFF AF.En	Disabled Enabled		0 - 1	AF.En
38	Evaporator probe selection	OFF EP.En	Disabled Enabled		0 - 1	EP.En
39	Suction line probe selection	OFF SP.En	Disabled Enabled		0 - 1	SP.En

JTL CABINET CONTROLLER ITEM NUMBERS						LCIL
ITEM	**DESCRIPTION**	**CODE**	**CODE MEANING**	**BIT** **4321**	**RANGE**	**ITEM 9 VALUE**
DEFROST INFORMATION						
40	Duration of last defrost					
41	Time since end of last defrost					
42	Duration of current defrost					
43	Time next defrost is due					
44	Power off duration					
46	Comms unit initiated defrost command status	P.dEF F.dEF 0 or nonE	Pack on defrost Pack on forced defrost Pack not on defrost			
MISCELLANEOUS SETTINGS						
47	Period over which averages are taken				00:30 - 03:00	01:00
48	Max starts/hour (Anti-shortcycling timer when using liquid valve relay to control a condensing unit)	0 10.PH 15.PH 20.PH	No limit 10 starts per hour 15 starts per hour 20 starts per hour		0 - 3	0
49	Liquid hold off time (starts when drain down completed)				00:00 - 00:10	00:00

JTL CABINET CONTROLLER ITEM NUMBERS

LCIL

ITEM	DESCRIPTION	CODE	CODE MEANING	BIT 4321	RANGE	ITEM 9 VALUE
DEFROST SETPOINTS When a 12 hour schedule is selected (item 60) the defrosts repeat on a 12 hour cycle ie., if 08:00 is selected then a 2nd defrost occurs at 20:00 (and vice versa) Daylight saving operation added from v0.00.2. Time and defrost schedule can be automatically displayed as standard time or daylight saving (summer) time if desired. When daylight saving is operational the displayed schedule is automatically adjusted so that defrost still occur at the same "standard time".						
50	Defrost termination temperature				0 - 20	15
51	Defrost time 1	00:00 00:01 -23:59	Defrost disabled Defrost enabled	xxxC xxx0	00:00 - 23:59 00:00 - 23:59	01:00 02:00
52	Defrost time 2	00:00 00:01 - 23:59	Defrost disabled Defrost enabled	xxxC xxx0	00:00 - 23:59 00:00 - 23:59	07:00 08:00
53	Defrost time 3	00:00 00:01 - 23:59	Defrost disabled Defrost enabled	xxxC xxx0	00:00 - 23:59 00:00 - 23:59	13:00 14:00
54	Defrost time 4	00:00 00:01 - 23:59	Defrost disabled Defrost enabled	xxxC xxx0	00:00 - 23:59 00:00 - 23:59	19:00 20:00
55	Defrost time 5	00:00 00:01 - 23:59	Defrost disabled Defrost enabled		00:00 - 23:59	00:00
56	Defrost time 6	00:00 00:01 - 23:59	Defrost disabled Defrost enabled		00:00 - 23:59	00:00
57	Defrost termination time limit				00:05 - 00:50	00:15
58	Defrost initiation temperature (suction line probe)				-5 - +20	0
59	Drain down time				00:00 - 00:10	00:05
60	Defrost schedule selection	24 hr 12 hr	24 hour schedule 12 hour schedule		0 - 1	24 hr
61	Pump down time				00:00 - 00:10	00:00
62	Network controlled Shutdown selection	oFF Sh.dn	Disabled Enabled		0 - 1	oFF
63	Network command for shutdown	run Sh.dn	Run Shutdown			
65	Invert defrost inputs	no YES	Input=defrost No input=defrost		0 - 1	no
69	No of defrosts expected per day	0 1 - 6	Function disabled No of defrosts		0 - 6	3

JTL CABINET CONTROLLER ITEM NUMBERS						LCIL	
ITEM	**DESCRIPTION**	**CODE**		**CODE MEANING**	**BIT** **4321**	**RANGE**	**ITEM 9 VALUE**
MODES, INPUTS AND OUTPUTS							
70	Operating mode	rEFr dEFr dF.rc dr.dn Li.Ho Pu.dn Sh.dn		Refrigeration Defrost Defrost recovery Drain down Liquid hold off Pump down Shutdown			
71	Inputs	0 IP-1 IP-2 Both	IP_ _ IP_ _ IP2 _ IP12	No inputs Defrost input on Lighting override input on Both inputs on			
72	Defrost relay (function depends on item 75)	0 or OFF dt.on dc.on		Relay deenergised Defrost termination on Defrost control on			
73	Liquid solenoid relay	OFF LS.on		Off Demanding refrig.			
74	FANS	O or OFF Fn.on		Off Fans on			
75	Defrost relay mode selection	d.tEr d.Con		Defrost termination Defrost control		up to v0.00.1 0 - 1 v0.00.2 on 0 - 1	 d.tEr d.Con
FORCING FUNCTIONS Forced functions remain forced if the Maintenance Unit remains plugged in. They are automatically cancelled 30 minutes after the Maintenance Unit is unplugged.							
77	Forced defrost (Note: when item 107 is set to network initiated, forced defrost sends the command to the plant for action. It is NOT activated locally)	OFF Fd.on		Off Forced defrost on		0 - 1	
78	Inhibit defrost	OFF no.dF		Off No defrosts		0 - 1	
79	Forced refrigeration	OFF Fr.on		Off Forced refrigeration		0 - 1	

JTL CABINET CONTROLLER ITEM NUMBERS						LCIL
ITEM	**DESCRIPTION**	**CODE**	**CODE MEANING**	**BIT** **4321**	**RANGE**	**ITEM 9 VALUE**
SYSTEM ALARMS						
80	Group alarm 81 - 88	0 1 - 255	No alarms Check 81 - 88			
81	Cabinet 1 overtemperature	CLr C1.Ht	No fault Fault			
82	Cabinet 2 overtemperature	CLr C2.Ht	No fault Fault			
83	Air off overtemperature	CLr A.Ht	No fault Fault			
84	Air on 1 probe fault	CLr A1.Pr	No fault Fault			
85	Air on 2 probe fault	CLr A2.Pr	No fault Fault			
86	Air off probe fault	CLr AF.Pr	No fault Fault			
87	Thermistor power supply fault	CLr PS.Ft	No fault Fault			
88	All probes faulty, deselected or disconnected	CLr t.SEn	No fault Fault			
MISCELLANEOUS DATA						
89	Thermistor excitation value (Factory test)		Not used			
SYSTEM ALARMS						
90	Group alarm 91 - 98	CLr dEF.F	No alarms Check 91 - 98			
91	Evaporator probe fault	CLr E.P.Pr	No fault Fault			
92	Suction line probe fault	CLr SL.Pr	No fault Fault			
93	Expected defrosts have not been detected	CLr dEF.F	No fault Fault			
96	Excessive Superheat fault (v0.00.1 on)	CLr Hi.Sh	No fault Fault			
97	Pressure transducer fault	CLr Pt.FL	No fault Fault			
98	Unit shutdown by communications network command	CLr Sh.dn	No fault Shutdown			
UTILITY						
99	Test digital displays	CLr SEt	Not active Test active		0 - 1	
101	Test output relays (v0.00.2 on)	CLr SEt	Not active Test active		0 - 1	

JTL CABINET CONTROLLER ITEM NUMBERS — LCIL

ITEM	DESCRIPTION	CODE	CODE MEANING	BIT 4321	RANGE	ITEM 9 VALUE
	MISCELLANEOUS SETTINGS					
107	Defrost strategy	0 or nonE SL.in nc.in rt.in iP.in ni.Lb ni.Fb	None Suction initiated Network initiated Internal clock initiated External clock initiated Network initiated (learned backup) Network initiated (fixed schedule backup)	up to v0.00.1		
				xxCC xxCO xxOC xxOO	0 - 4 0 - 4 0 - 4 0 - 4	SL.in SL.in SL.in rt.in
				v0.00.2 on		
					0 - 6	nonE
108	Fan control (v0.00.2 on)	F.on F.oFF	Fan runs always Fan off during defrost		1 - 2	F.on
109	Fan delay after defrost (v0.00.2 on)	00:00	Fans cycle on evap. temperature		00:00 - 00:10	00:00
	LIGHTING CONTROL					
110	Select lighting control	OFF LC.on	off Lighting control function selected		0 - 1	LC.on
111	Lighting unit command	LU.Co 0	Lighting off command Clear			
112	Over ride input	OFF L.O.IP	No input Over ride input on			
113	Lights and blinds	on L.OFF	Lights on and blinds up Lights off and blinds down			
	FORCING FUNCTIONS Forced functions remain forced if the Maintenance Unit remains plugged in. They are automatically cancelled 30 minutes after the Maintenance Unit is unplugged.					
114	Force lights on	OFF L.on	Off Lights on		0 - 1	
115	Force lights off	OFF L.OFF	Off Lights off		0 - 1	
	LIGHTING CONTROL					
116	Manual lights on	OFF P.on	OFF Lights on			
117	Manual lights off	OFF P.off	OFF Lights off			
118	Lighting contactor type selection (shown for lights-on state)	n.o n.c	normally open normally closed		0 - 1	n.c
119	Lights off during shutdown selection (v0.00.2 on)	OFF En.L.S	Off Lights off during shutdown		0 - 1	Off
120	Lighting override timer (time delay before lighting off/blinds close on network control)				00:30 - 02:00	02:00

JTL CABINET CONTROLLER ITEM NUMBERS						LCIL
ITEM	**DESCRIPTION**	**CODE**	**CODE MEANING**	**BIT** **4321**	**RANGE**	**ITEM 9 VALUE**
DISPLAY PUSHBUTTONS (up to version v0.00.1)						
121	Display pushbutton 1 Status	OFF P1.IP	OFF button pressed			
122	Display pushbutton 2 Status	OFF P2.IP	OFF button pressed			
TEMPERATURE DISPLAY CHOICE						
122	Temperature display unit choice (v0.00.2 on)	CELS FAhr	Celsius Fahrenheit		0 - 1	CELS
DISPLAY TYPE SELECTION						
129	Display type selection (v0.00.2 on)	Lcd.1 Lcd.8	LCD1-7 types LCD8 type		2 - 3	Lcd.1
ADDITIONAL DEFROST CONTROLS v0.00.2 on						
144	Termination method selection	EuAP A.OFF tot	Evaporator sensor Air off sensor Time only	xxCx xxOC	1 - 4	EuaP
				xxOO	1 - 4	tot
145	Minimum defrost time (Defrost heater cycles on termination temperature (item 50) as required during this time)				00:00 - 00:30	00:10
NETWORK REFRIGERATION CONTROL						
133	Enable plant to override temperature control and run refrigeration regardless of the temperature setpoint	Off nrc.E	Disabled Enabled		0 - 1	Off
134	Enable network command to cut off refrigeration in event of plant fault	Off	Disabled		0 - 1	Off
135	Display network commands	O.S.df PL.Ft	Other associated systems on defrost Plant fault			

ITEM	DESCRIPTION	CODE	CODE MEANING	BIT 4321	RANGE	ITEM 9 VALUE
EXPANSION VALVE CONTROL						
Note: From version v0.00.2 on pressures can be displayed on the maintenance unit in psi, bar or kPa. The choice is made on item 179. All setpoint ranges in this document are shown in psi.						
OPERATIONAL SUPERHEAT						
151	Evaporator temperature					
152	Suction line temperature					
154	Force average pressure to current pressure (v0.00.2 on)	CLr F.Av.P	Off Force pressure			
155	Suction pressure in psi (guage)					
156	Operational Superheat (determined by strategy set on item 161)					
157	Refrigerant type	0 22 502 404 407A 407b 507 408A	None R22 R502 R404 R407A R407B R507 R408A		up to v0.00.1 1 - 6 v0.00.2 on 1 - 7	 404A 404A
158	Pressure transducer zero offset (psi)				-10.0 to +10.0	0.0
159	Auto zero pressure transducer offset (psi)					
VALVE CONTROL DATA						
160	Select expansion valve control	OFF E.C.En	OFF Expansion valve control		0 - 1	0
161	Control strategy	2t Pt1	2 temperature Pressure transducer		1 - 2	Pt1
162	Minimum Superheat				0 - 10.0	4.0
163	Maximum Valve opening % (PI)				10 - 100	100
164	Minimum Valve opening % (PI)				0 - 50	0
165	Valve period control	3.1 4.7 6.25 7.8 9.4	Pulse width period for valve (in seconds) (n/64 x 100 s) where n=setting		2 - 6	6.25
166	Forced Valve opening %				0 - 100	
167	Force valve shut	OFF F.Sht	OFF Forced Shut		0 - 1	
168	Current opening % ((PI x modifier) OR override)					
169	Current Valve status	OFF PE.on	OFF ON			
170	Valve control gain (proportional term)				1 - 100	20
171	Valve control time constant (integral term)	0 1 - 250	Integral disabled Time constant		0 - 250	20

JTL CABINET CONTROLLER ITEM NUMBERS						LCIL
ITEM	**DESCRIPTION**	**CODE**	**CODE MEANING**	**BIT** **4321**	**RANGE**	**ITEM 9 VALUE**
172	PI output (before modification)					
173	Maximum time at minimum output	00:00	Not used		00:00 - 00:10	00:05
174	High suction pressure shutdown selection	OFF HP.on	Disabled Enabled		0 - 1	HP.on
177	Pressure transducer calibration method Note: Auto zero adjustment is shown on item 159. Network zero adjustment is shown on item 286.	up to v0.00.1				
		OFF A.Pt.0	None Auto zero		0 - 1	OFF
		v0.00.2 on				
		nonE A.Pt.0 nEt.A	None Auto zero Network adjustment		0 - 2	nonE
178	Rate of fall of superheat to trigger auto zero sequence (EC/min)				1.0 - 10.00	3.0
179	Pressure display unit choice (v0.00.2 on)	0 or nonE PSI bAr PASC	Not selected (kPa) p.s.i bar kPa		0 - 3	PSI
OVERRIDE DATA						
180	Superheat Override status	OFF Or.on	Off Override on			
181	Time since last override (in hr:mn)					
182	Duration of last override (in secs)					
183	Duration of this override (in secs)					
184	Accumulated override time (in secs)					
185	Time since output last modified by override (in hr:mn)					
MODIFIER DATA						
190	Modifier value (%)					
191	Modifier error gain				1 - 100	10
192	Modifier error adjustment upper limit (%)				1 - 25	10
193	Time temperature above setpoint before modifier increased				00:01 - 00:20	00:05
194	Average temperature error over past 5 mins					
195	Modifier increase time constant				1 - 100	10
196	Modifier integral term output					

JTL CABINET CONTROLLER ITEM NUMBERS						LCIL
ITEM	**DESCRIPTION**	**CODE**	**CODE MEANING**	**BIT** **4321**	**RANGE**	**ITEM 9 VALUE**
SUCTION OPTIMISER DATA (v0.00.2 on)						
200	Disable suction optimisation for this unit	En.SO di.SO	Enable Disable		0 - 1	En.SO
201	Network data - evaporator excluded from suction optimisation	OFF in.SO	Off Inhibit from suction optimisation			
202	Network data for optimiser from plant					
203	Network data - evaporator suction group from plant	0 - nonE Lt Ht SAt	Not selected Low temperature High temperature Satellite			
SENSOR SELECTION						
205	Air on 1 sensor selection (well case)	OFF A.1.En	Disabled Enabled		0 - 1	A.1.En
206	Air on 2 sensor selection (hgd case)	OFF A.2.En	Disabled Enabled		0 - 1	A.2.En
207	Air off sensor selection	OFF A.F.En	Disabled Enabled		0 - 1	A.F.En
208	Evaporator sensor selection	OFF E.P.En	Disabled Enabled		0 - 1	E.P.En
209	Suction line sensor selection	OFF S.L.En	Disabled Enabled		0 - 1	S.L.En
CABINET 1 TEMPERATURE DATA (WELL CASE)						
210	Estimated cabinet 1 temperature (calculated from items 211 and 212)					
211	Air on 1 temperature					
212	Air off temperature					
213	Evaporator temperature					
214	Suction line temperature					
215	Superheat (Evaporator temp - suction line temp)					
216	Average cabinet 1 temperature error					
217	Average Air off temperature error					
218	Current Air off temperature setpoint (calculated by controller)					
219	Current Evaporator temperature setpoint (calculated by controller)					
CABINET 2 TEMPERATURE DATA (HGD CASE)						
220	Estimated cabinet 2 temperature (calculated from items 221 and 222)					
221	Air on 2 temperature					
222	Air off temperature					
223	Evaporator temperature					

JTL CABINET CONTROLLER ITEM NUMBERS						LCIL
ITEM	**DESCRIPTION**	**CODE**	**CODE MEANING**	**BIT** **4321**	**RANGE**	**ITEM 9 VALUE**
224	Suction line temperature					
225	Superheat (Evaporator temp - suction line temp)					
226	Average cabinet 2 temperature error					
227	Average Air off temperature error					
228	Current Air off temperature setpoint (calculated by controller)					
229	Current Evaporator temperature setpoint (calculated by controller)					
LIQUID LINE VALVE OPENING PERCENTAGES (v0.00.2 on)						
240	Liquid line valve open percentage for last sample period					
241	Average liquid line valve open percentage over data logging interval period					
SYSTEM ALARMS (v0.00.2 on)						
250	Group alarms 251 - 258	0 1 - 255	No alarms Check 251 - 258			
251	Forced defrost activated	CLr F.dEF	No fault Forced defrost			
252	Network communications failure	CLr FAIL	No fault Comms failure			
LEARNED DEFROST SCHEDULE (v0.00.2 on)						
261 to 272	Defrost schedule (12 times starting at item 261 through to 272)					
NETWORK PRESSURE TRANSDUCER CALIBRATION (v0.00.2 on)						
284	Unadjusted suction pressure					
285	Network zero adjustment status	FroZ LivE	Adjustment frozen Adjustment live			
286	Network zero adjustment					
287	Average suction pressure over last hour at evaporator (defrosts are discoounted)					
288	Average suction pressure from plant via network					
289	Suction line pressure drop			xxCx xxOc	0.0 - 10.0	4.0 6.0

BITSWITCH SETTINGS

4321
xxx**C** Frozen food
xxx**O** Ice cream

where **C** = **C**LOSED or ON
O = **O**PEN or OFF
x = Don't care

Note 1: For unmarked switches
C = dot visible
O = dot not visible
Note 2: Setting the bitswitches alone has no effect.
Use **ITEM 9** to set the default values after the switches are set.

DISPLAY DATA	**LCIL**
NORMAL DISPLAY	
- 99^{c}	Cabinet temperature (item 20 rounded)
dEF	Defrost
dEFr	Defrost recovery
FAns	Fans only mode
--	Display data error
ALARM TEXT (in descending priority order)	
t.SEn	All probes faulty, deselected or disconnected
Ht	High cabinet or air off temperature
Hi.At	High air off temperature (up to v0.00.1)
ISOL	Unit shutdown (v0.00.0 only)
OTHER TEXT	
JTL	Start-up text
LitE	Lighting status follows this text
A.on	Air on temperature follows this text
A.oFF	Air off temperature follows this text
EVAP	Evaporator temperature follows this text
Suct	Suction line temperature follows this text
FAn.C	Energy saving temperature follows this text
T.diF	Superheat temperature follows this text
L.dEF	Time since last defrost follows this text
n.dEF	Time of next defrost follows this text
SEt.P	Cabinet temperature setpoint follows this text