CONTENTS

JTL CABINET CONTROLLER ITEM NUMBERS						LCPL
ITEM	**DESCRIPTION**	**CODE**	**CODE MEANING**	**BIT** 4321	**RANGE**	**ITEM 9 VALUE**
1. Jnet NETWORK IDENTIFICATION						
0	Unit type	LcPL	Unit type			
19	Software version number					
1	Unit number				0.1 - 899.9	
2. TEMPERATURES Note: temperatures can be displayed on the maintenance unit in degrees Celsius or Fahrenheit. The choice is made on item 132. All setpoint ranges in this document are shown in Celsius.						
2.1 CABINET 1 TEMPERATURE DATA (WELL CASE)						
110	Estimated cabinet 1 temperature (calculated from items 111 and 112)					
33	Cabinet 1 temperature ratio (well case) (Item 110 calculated as value between Air off and Air on 1 using this ratio)				20 - 80	50
111 (21)	Air on 1 temperature					
105 (36)	Air on 1 sensor selection (well case)	OFF A.1.En	Disabled Enabled		0 - 1	A.1.En
112 (22)	Air off temperature					
107 (37)	Air off sensor selection	OFF A.F.En	Disabled Enabled		0 - 1	A.F.En
113 (23)	Evaporator temperature					
108 (38)	Evaporator sensor selection	OFF E.P.En	Disabled Enabled		0 - 1	E.P.En
114 (24)	Suction line temperature					
109 (39)	Suction line sensor selection	OFF S.L.En	Disabled Enabled		0 - 1	S.L.En
115	Superheat (Evaporator temp - suction line temp)					

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2.2 CABINET 2 TEMPERATURE DATA (HGD CASE)						
120	Estimated cabinet 2 temperature (calculated from items 121 and 122)					
34	Cabinet 2 temperature ratio (Item 120 calculated as value between Air off and Air on 2 using this ratio)				20 - 100	75
121 (25)	Air on 2 temperature					
106	Air on 2 sensor selection	OFF A.2.En	Disabled Enabled		0 - 1	A.2.En
122 (22)	Air off temperature					
107 (37)	Air off sensor selection	OFF A.F.En	Disabled Enabled		0 - 1	A.F.En
123 (23)	Evaporator temperature					
108 (38)	Evaporator sensor selection	OFF E.P.En	Disabled Enabled		0 - 1	E.P.En
124 (24)	Suction line temperature					
109 (39)	Suction line sensor selection	OFF S.L.En	Disabled Enabled		0 - 1	S.L.En
125	Superheat (Evaporator temp - suction line temp)					
2.3 COMMON TEMPERATURE INFORMATION						
247	Site temperature (v0.00.3 on)					
248	Site humidity (v0.00.3 on)					
132	Temperature display unit choice	CELS FAhr	Celsius Fahrenheit		0 - 1	CELS

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3. TEMPERATURE ALARMS						
47	Period over which averages are taken				00:30 - 03:00	01:00
3.1 WELL CABINET TEMPERATURE						
116	Average cabinet 1 temperature error					
32	Cabinet overtemperature alarm tolerance	0.0	Disable HT alarm		0 - 20	10
3.2 HGD CABINET TEMPERATURE						
126	Average cabinet 2 temperature error					
32	Cabinet overtemperature alarm tolerance	0.0	Disable HT alarm		0 - 20	10
3.3 AIR OFF TEMPERATURE						
127 (27)	Average Air off temperature error					
26	Air off temperature tolerance	0.0	Disable HT alarm		0 - 30	15
4. TEMPERATURE CONTROL						
30	Cabinet temperature setpoint (target for items 110 and 120)			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
48	Max starts/hour (Anti-shortcycling timer when using liquid valve relay to control a condensing unit)	0 1 2 3	0 10.PH 15.PH 20.PH	No limit 10 starts per hour 15 starts per hour 20 starts per hour	0 - 3	0
28 (118) (128)	Current Air off temperature setpoint (calculated by controller)					
29 (119) (129)	Current Evaporator temperature setpoint (calculated by controller)					
240	Liquid line valve open percentage for last sample period					
241	Average liquid line valve open percentage over data logging interval period					

ITEM	DESCRIPTION	CODE		CODE MEANING	BIT 4321	RANGE	ITEM 9 VALUE
5. EXPANSION VALVE CONTROL Note: The 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.							
5.1 OPERATIONAL SUPERHEAT							
161	Control strategy	1 2	2t Pt1	2 temperature Pressure transducer		1 - 2	Pt1
156	Operational Superheat (determined by strategy set on item 161)						
152	Suction line temperature						
151	Evaporator temperature						
155	Suction pressure in psi (gauge)						
158	Pressure transducer zero offset (psi)					-10.0 to +10.0	0.0
159	Auto zero pressure transducer offset (psi)						
177	Pressure transducer calibration method Note: Auto zero adjustment is shown on item 159. Network zero adjustment is shown on item 206	0 1 2	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 (°C/min)					1.0 - 10.00	3.0
179	Pressure display unit choice	0 1 2 3	nonE PSI bAr PASC	Not selected (kPa) p.s.i bar kPa		0 - 3	PSI
157	Refrigerant type	0 1 2 3 4 5 6 7	0 22 502 404 407A 407b 507 408A	None R22 R502 R404 R407A R407B R507 R408A		1 - 7	404A
5.2 Jnet NETWORK AUTOMATIC PRESSURE TRANSDUCER CALIBRATION							
204	Unadjusted suction pressure						
205	Network zero adjustment status	FroZ LivE		Adjustment frozen Adjustment live			
206	Network zero adjustment						
207	Average suction pressure over last hour at evaporator (defrosts are discounted)						
208	Average suction pressure from plant via network						
209	Suction line pressure drop					0.0 - 10.0	4.0
154	Force average pressure to current pressure	CLr F.Av.P		Off Force pressure		0 - 1	

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				4321		
5.3 ELECTRONIC EXPANSION VALVE CONTROL DATA						
160	Select expansion valve control	OFF E.C.En	OFF Expansion valve control		0 - 1	0
168	Current opening % ((PI x modifier) OR override)					
172	PI output (before modification)					
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
162	Minimum Superheat for pressure control				0 - 10.0	6.0
186	Minimum superheat for 2 temperature control				0 - 5.0	4.0
163	Maximum Valve opening % (PI)				10 - 100	100
164	Minimum Valve opening % (PI) for pressure control				0 - 50	0
187	Minimum valve opening % for 2 temperature control				5 - 50	5
165	Valve period control	2 3.1 3 4.7 4 6.25 5 7.8 6 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	
169	Current Valve status	OFF PE.on	OFF ON			
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
5.4 ELECTRONIC EXPANSION VALVE 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)					

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ITEM	**DESCRIPTION**	**CODE**	**CODE MEANING**	**BIT** **4321**	**RANGE**	**ITEM 9 VALUE**
5.5 ELECTRONIC EXPANSION VALVE MODIFIER DATA						
194	Average temperature error over past 5 mins					
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
195	Modifier increase time constant				1 - 100	10
196	Modifier integral term output					
6. INPUTS & 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	IP_ _ IP_ _ IP2 _ IP12	No inputs Defrost input on Lighting override input on Both inputs on			
72	Defrost relay (function depends on item 75)	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	OFF Fn.on	Off Fans on			
75	Defrost relay mode selection	d.tEr d.Con	Defrost termination Defrost control		0 - 1	d.Con

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ITEM	**DESCRIPTION**	**CODE**	**CODE MEANING**	**BIT**	**RANGE**	**ITEM 9 VALUE**
				4321		
7. SUCTION OPTIMISER DATA						
200	Disable suction optimisation for this unit when all air sensors are faulty	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	nonE Lt Ht SAt	Not selected Low temperature High temperature Satellite			
211	Evaporator suction group - Plant data to network (v0.00.3 on)	0 nonE 1 Lt 2 Ht 3 SAt	Not selected Low temperature High temperature Satellite		0 - 3	nonE
70 (212)	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			
217	Plant data to network (binary value) (v0.00.3 on)					
8. DEFROST CONTROL						
8.1 DATA & STRATEGIES						
40	Duration of last defrost					
41	Time since end of last defrost					
42	Duration of current defrost					
137	Defrost strategy	0 nonE 1 SL.in 2 ni.Lb 3 rt.in 4 iP.in 5 6 7 ni.Fb	None Suction initiated Network initiated (learned backup) Internal clock initiated External clock initiated Unused Unused Network initiated (fixed schedule backup)		0 - 7	nonE
69	No of defrosts expected per day	0 1 - 6	Function disabled No of defrosts		0 - 6	3
61	Pump down time				00:00 - 00:10	00:00

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ITEM	**DESCRIPTION**	**CODE**	**CODE MEANING**	**BIT** **4321**	**RANGE**	**ITEM 9 VALUE**
8.2 REAL TIME INITIATED DEFROST 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) 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".						
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
60	Defrost schedule selection	24 hr 12 hr	24 hour schedule 12 hour schedule		0 - 1	24 hr
43	Time next defrost is due					
8.3 SUCTION INITIATED DEFROST						
58	Defrost initiation temperature (suction line sensor)				-5 - +20	0
8.4 CONTACT INITIATED DEFROST						
65	Invert defrost inputs	no YES	Input=defrost No input=defrost		0 - 1	no
8.5 Jnet NETWORK INITIATED DEFROST						
46	Comms unit initiated defrost command status	P.dEF F.dEF nonE	Pack on defrost Pack on forced defrost Pack not on defrost			
261 to 272	Defrost schedule (12 times starting at item 261 through to 272)					

ITEM	DESCRIPTION	CODE	CODE MEANING	BIT 4321	RANGE	ITEM 9 VALUE
8.6 DEFROST METHOD DATA (v0.00.3 on) This information is for use by defrost schedulers.						
211	Evaporator suction group - Plant data to network	0 nonE 1 Lt 2 Ht 3 SAt	Not selected Low temperature High temperature Satellite		0 - 3	nonE
213	Electric circuit choice - Plant data to network	0 1 - 7	Not electric Circuit choice		0 - 7	0
214	Electric defrost heater phase choice - Plant data to network	0 rEd 1 YELL 2 bLuE 3 3 - Ph	Red phase Yello phase Blue phase 3 phase		0 - 3	rEd
215	Comms unit initiated defrost command status	P.dEF F.dEF nonE	Pack on defrost Pack on forced defrost Pack not on defrost			
217	Plant data to network (binary value)					
219	Network defrost arrangement	nonE PrEd dEF.S	None PREDICT defrost scheduler present on network Timed defrost scheduler present on network			
8.7 DEFROST TERMINATION						
136	Termination method selection	1 EuAP 2 A.OFF 4 tot	Evaporator sensor Air off sensor Time only		1 - 4	EuaP
50	Defrost termination temperature				0 - 20	15
130	Minimum defrost time (Defrost heater cycles on termination temperature (item 50) as required during this time)				00:00 - 00:30	00:10
57	Defrost termination time limit				00:05 - 00:50	00:15
59	Drain down time				00:00 - 00:10	00:05
49	Liquid hold off time (starts when drain down completed)				00:00 - 00:10	00:00
8.8 DEFROST 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 137 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	

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ITEM	**DESCRIPTION**	**CODE**		**CODE MEANING**	**BIT**	**RANGE**	**ITEM 9 VALUE**
					4321		
9. FAN CONTROL							
138	Fan control	1 2	F.on F.oFF	Fan runs always Fan off during defrost		1 - 2	F.on
139	Fan delay after defrost	00:00		Fans cycle on evap. temperature		00:00 - 00:10	00:00
10. Jnet NETWORK LIGHTING CONTROL Forced functions remain forced if the Maintenance Unit remains plugged in. They are automatically cancelled 30 minutes after the Maintenance Unit is unplugged.							
140	Select lighting control	OFF LC.on		off Lighting control function selected		0 - 1	LC.on
143	Lights and blinds	on L.OFF		Lights on and blinds up Lights off and blinds down			
141	Lighting unit command	LU.Co 0		Lighting off command Clear			
142	Over ride input	OFF L.O.IP		No input Over ride input on			
148	Lighting contactor type selection (shown for lights-on state)	n.o n.c		normally open normally closed		0 - 1	n.c
149	Lights off during shutdown selection	OFF En.L.S		Off Lights off during shutdown		0 - 1	Off
150	Lighting override timer (time delay before lighting off/blinds close on network control)					00:30 - 02:00	02:00
146	Manual lights on	OFF P.on		OFF Lights on			
147	Manual lights off	OFF P.off		OFF Lights off			
144	Force lights on	OFF L.on		Off Lights on		0 - 1	
145	Force lights off	OFF L.OFF		Off Lights off		0 - 1	
11. Jnet COMMAND FUNCTIONS							
62	Network controlled Shutdown selection	oFF Sh.dn		Disabled Enabled		0 - 1	oFF
63	Network command for shutdown	run Sh.dn		Run Shutdown			
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			

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ITEM	**DESCRIPTION**	**CODE**		**CODE MEANING**	**BIT** **4321**	**RANGE**	**ITEM 9 VALUE**
12. DISPLAY FUNCTIONS							
131	Display type selection	2 3	Lcd.1 Lcd.8	LCD1-7 types LCD8 type		2 - 3	Lcd.1
132	Temperature display unit choice	CELS FAhr		Celsius Fahrenheit		0 - 1	CELS
13. CLOCK CALENDAR Note, 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	Sun - Sat		0=Sunday 1=Monday etc			
4	Date					01:01 - 31:12	
5	Year					1992 - 2022	
18	Daylight saving enable	Stnd dAY.S		Standard time Daylight saving time		0 - 1	Stnd
14. RESTORE FACTORY DEFAULTS To set the factory defaults into the memory of the controller, first set the bitswitches as shown, then set item 9 to the set default value of "1234". This should be done on initial commissioning of the unit or when the unit is being installed as a replacement part.							
9	Set default values selected by Bitswitch	1234		Set default values	xxxC xxxO	Frozen food Ice cream where C = CLOSED or ON O = OPEN or OFF x = Don't care For unmarked switches C = dot visible O = dot not visible	
		1066		Write to NVRAM without delay			

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15. 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 sensor fault	CLr A1.Pr	No fault Fault			
85	Air on 2 sensor fault	CLr A2.Pr	No fault Fault			
86	Air off sensor fault	CLr AF.Pr	No fault Fault			
87	Sensor power supply fault	CLr PS.Ft	No fault Fault			
88	All sensors faulty, deselected or disconnected	CLr t.SEn	No fault Fault			
90	Group alarm 91 - 98	CLr dEF.F	No alarms Check 91 - 98			
91	Evaporator sensor fault	CLr E.P.Pr	No fault Fault			
92	Suction line sensor fault	CLr SL.Pr	No fault Fault			
93	Expected defrosts have not been detected	CLr dEF.F	No fault Fault			
96	Excessive Superheat fault	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			
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			
258	Backup defrost strategy in operation	CLr d.bAc	No fault Backup defrost			

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ITEM	**DESCRIPTION**	**CODE**	**CODE MEANING**	**BIT** **4321**	**RANGE**	**ITEM 9 VALUE**
16. DIAGNOSTIC & TEST FUNCTIONS						
44	Power off duration					
6	Communications speed (in kilo baud)	4.8 38.4	Baud rate Baud rate			
7	2/4 wire Communications Choice (Half / Full duplex) (up to v0.00.2)	HALF FuLL	2 wire 4 wire		0 - 1	HALF
	Communications (v0.00.3 on)	HALF	2 wire			
8	Bitswitch setting					
89	Sensor excitation value (Factory test)		Not used			
99	Test digital displays	CLr SEt	Not active Test active		0 - 1	
101	Test output relays	CLr SEt	Not active Test active		0 - 1	
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			

DISPLAY DATA	LCPL
NORMAL DISPLAY	
- 99^{c}	Cabinet temperatures (items 110 & 120 rounded)
dEF	Defrost
dEFr	Defrost recovery
OFF	Shut down or fans only mode
--	Display data error
ALARM TEXT (in descending priority order)	
t.SEn	All sensors faulty, deselected or disconnected
Ht	High cabinet or air off temperature
OTHER TEXT	
JTL	Start-up text