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<b>JTL VARIABLE SPEED CONDENSER FAN CONTROLLER ITEM NUMBERS</b>					<b>HP320</b>	
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>CODE</b>	<b>CODE MEANING</b>	<b>RANGE</b>	<b>ITEM 9 VALUE</b>	
<b>1. Jnet NETWORK IDENTIFICATION</b>						
0	Unit type	hP32	Unit type			
19	Software version number					
1	Unit number			0.1 - 899.9		
<b>2. PRESSURES</b>						
<p>Note: Pressures can be displayed on the maintenance unit in psi, bar or kPa. The choice is made on item 9393. All setpoint ranges are shown in psi.</p> <p>Average pressures are averaged over last hour and are updated every 4 minutes.</p>						
9393	Pressure display unit choice	0 1 2 3 4	MPa PSI bArt Kpa bArA	Mpa p.s.i. barg kPa bara	0 - 4	PSI
<b>2.1 DISCHARGE PRESSURE</b>						
22	Discharge pressure					
148	Average discharge pressure over 1 hour					
52	High discharge pressure alarm level			140 - 390	250	
51	Low discharge pressure alarm level			100 - 200	120	
362	Low discharge pressure alarm delay (mins)			0 - 20	0	
122	Discharge pressure transducer selection	OFF d.t.En	Disabled Enabled	0 - 1	Dt.En	
101	IP data set 1		0 - disabled	0 - 9999	0	
102	IP data set 2		0 - disabled	0 - 9999	0	
422	Full scale transducer value (at 20mA)			300 - 500	300.0	
427	Zero scale transducer value (at 4mA)			-15 - 0	0.0	
<b>2.2 LIQUID PRESSURE</b>						
23	Liquid pressure					
149	Average liquid pressure over 1 hour					
383	Liquid pressure differential					
384	Minimum liquid pressure differential			0 - 15.0	10.0	
123	Liquid pressure transducer selection	OFF L.t.En	Disabled Enabled	0 - 1	OFF	
103	IP data set 1		0 - disabled	0 - 9999	0	
104	IP data set 2		0 - disabled	0 - 9999	0	
423	Full scale transducer value (at 20mA)			300 - 500	300.0	
428	Zero scale transducer value (at 4mA)			-15 - 0	0.0	

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ITEM	DESCRIPTION	CODE	CODE MEANING	RANGE	ITEM 9 VALUE	
<b>3. DISCHARGE PRESSURE CONTROL</b>						
The discharge pressure setpoint can float if item 363 is set to a non zero value. The discharge pressure is item controlled to the appropriate temperature depending on the outside ambient temperature. Note temperatures can be displayed on the Maintenance Unit in Celsius or Fahrenheit. The choice is made on item 9392.						
9392	Temperature display unit choice	0 1	CELS FAhr	Celsius Fahrenheit	0 - 1	CELS
50	Discharge pressure set point				100 - 250	150
350	Maximum discharge pressure set point				175 - 380	200
351	Discharge pressure cut out (depends on item 352 being >0)				100 - 200	140
352	Minimum fan speed (%)				0 - 25	0
899 (up to v0.00.1)	Outside air temperature					
32 (from v0.00.2)						
363	Floating discharge temperature differential	0.0		Function disabled	0 - 15	0.0
364	Effective minimum discharge temperature					
365	Condenser operating temperature					
155	Refrigerant boiling point (dew) (from v0.00.2)					
156	Refrigerant boiling point (bubble) (from v0.00.2)					
370	Optimised discharge pressure set point					
386	Control pressure selection	0 1	diS.P Li.P	Discharge pressure Liquid pressure	0 - 1	diS.P
395	Analogue fan speed gain				0.01 - 99.99	10.0
54	Condenser control integral gain	0		Disables integral term	0.0 - 1.00	0.1
55	Discharge pressure to reduce capacity				140 - 400	300
192	Integral term (I)					
194	Proportional term (P)					
157	Refrigerant type	3 4 5 6 7 1 1 1 3 1 4 1 5	404A 407A 407b 507 408 407F 407C 448A 449A	R404A R407A R407B R507 R408A R407F R407C R448A R449A	3 - 15	R407A

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ITEM	DESCRIPTION	CODE	CODE MEANING	RANGE	ITEM 9 VALUE
<b>4. TEMPERATURES (from v0.00.2)</b>					
Note temperatures can be displayed on the Maintenance Unit in Celsius or Fahrenheit. The choice is made on item 9392.					
9392	Temperature display choice	CELS Fahr	Celsius Fahrenheit	0 - 1	CELS
31	Condenser exit temperature				
131	Condenser exit temperature Sensor enable	OFF t1-En	Not selected Selected	0 - 1	t1.En
22	Condenser pressure				
337	Condenser exit sub cooling				
105	Condenser exit temperature IP data set 5 (from v0.00.4)			0 - 9999	0
32	Ambient temperature				
137	Ambient temperature enable	OFF E.t.Sn	Disabled External sensor enabled	0 - 1	E.t.Sn
34	Sensor 2 temperature				
132	Sensor 2 enable	OFF t2.En	Not selected Selected	0 - 1	t2.En
135	Sensor 2 function	C.in.t Liq.t	Condenser inlet temperature Liquid temperature	0 - 1	Cin.t
33	Condenser inlet temperature				
106	Condenser inlet temperature IP data set 6 (from v0.00.4)			0 - 9999	0
43	Liquid temperature				
44	Liquid sub cooling temperature				
897	Site temperature (from broadcast)				
898	Site relative humidity (from broadcast)				
896	Site absolute humidity (from broadcast)				
899	Outside temperature (from broadcast)				
820	Outside ambient temperature from the Met Office				
821	Time since data from the Met Office received from the network controller				
39	Ambient temperature difference error			3 - 10	5

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<b>4.1 TEMPERATURES ALARMS (from v0.00.2)</b>					
336	Condenser exit temperature set point				
334	Minimum condenser exit temperature			5 - 15	10
335	Condenser exit temperature differential			0 - 10.0	5.0
31	Condenser exit temperature				
32	Ambient temperature				
158	Exit temperature alarm strategy	oFF E.t.Pr	Exit temperature sensor Condenser control temperature	0 - 1	oFF
151	Condenser exit temperature error				
159	Condenser control temperature error (from v0.00.3)				
152	Average condenser exit temperature error				
153	Condenser exit temperature tolerance			0 - 5.0	2.0
154	Condenser exit temperature alarm period			00:30 - 06:00	
<b>5. CONDENSER CONTROL</b>					
Forced functions remain forced if the Maintenance Unit remains plugged in. They are automatically cancelled 30 minutes after the Maintenance Unit is unplugged.					
368	Maximum speed at night (%)			50 - 100	100
369	Select network timer for nighttime operation	0 1 - 8	Disabled Timer number	0 - 8	0
391	Number of condenser steps running			0.0 - 100.0	
397	Number of condenser steps in backup analogue mode			0.0 - 100.0	100.0
366	Full circuit enable level (%)			0 - 100	80
367	Full circuit disable level (%)			0 - 100	0
392	Forced number of condenser steps			0.0 - 100.0	
388	Fan output voltage for zero speed (from v0.00.2)			0.0 - 2.0	1.0
393	Input status (up to v0.00.1)	In- - - - Fn plus any combination of above	Inverter ok Fan ok		
389	Fan output smoothing (from v0.00.2)	0	Disabled	0 - 5	3

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ITEM	DESCRIPTION	CODE	CODE MEANING	RANGE	ITEM 9 VALUE
<b>6. ADIABATIC COOLING CONTROL (from v0.00.2)</b>					
5170	Enable adiabatic cooling	oFF A.C.En		0 - 1	oFF
5171	Minimum off time (mins)			2 - 10	5
5172	Minimum run time (mins)			5 - 30	10
5173	Minimum ambient temperature to allow adiabatic cooling to run			2 - 10	5
31	Condenser exit temperature				
32	Ambient temperature				
335	Condenser exit temperature differential			0 - 10.0	5.0
336	Condenser exit temperature set point				
151	Condenser exit temperature error				
5174	Gas cooler exit temperature error to run adiabatic cooling			1 - 5	3
5175	Adiabatic cooling trigger delay (mins)			1 - 10	5
5180	Period between automatic test (weeks)	0	Test disabled	0 - 4	2
5181	Automatic test day of week	0 1 2 3 4 5 6 7	Sunday Monday Tuesday Wednesday Thursday Friday Saturday Any day	0 - 7	Mon
5182	Automatic test time of day			00:00 to 23:59	12.00
5183	Automatic test cycles			up to v0.00.3	
				0 - 5	0
				from v0.00.4	
5184	Force test	oFF F.tSt		0 - 1	
5185	Time since cooling last ran (hours)				

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ITEM	DESCRIPTION	CODE	CODE MEANING	RANGE	ITEM 9 VALUE	
<b>7. INPUTS AND OUTPUTS</b>						
20	Operating mode	oFF Auto	Manual Automatic			
170	Inputs	Graphical	see display data bit 1 = input 1			
171	Auto/manual (IP-1)	OFF Auto	Manual controller dormant Auto mode			
172	Plant fault (IP-2)	Hty PL.Ft	Plant Plant fault			
173	Fan fault (IP-3)	Hty Fn.Ft	Fans ok Fan fault			
174	Inverter fault (IP-4) (up to v0.00.1)	Hty In.Ft	Inverter ok inverter fault			
	Adiabatic cooling healthy IP-4 (from v0.00.2)	A.C.Ft Hty	Fault No fault			
160	Outputs	Graphical	see display data bit 1 = input 1			
161	Run fans/inverter (LN/LD-1)	Off (l.oFF) F.run (l.run)	Fans/Inverter off Run fans/inverter			
166	Relay 2 function	SP.ct G.A.En	Split circuit General Alarm	0 - 1	SP.ct	
162	Condenser split circuit (LN/LD-2)	PArT FuLL	Part circuit Full circuit			
165	Alarms healthy output (LN/LD-2)	oFF no.AL	Alarm Condition No Alarms			
5170	Enable adiabatic cooling (from v0.00.2)	oFF A.C.En		0 - 1	oFF	
163	Watchdog output (LN/LD-3)	oFF On	Watchdog fail Watchdog healthy			
167	Run adiabatic cooling LN/LD3 (from v0.00.2)	OFF En.A.C	OFF Enable adiabatic cooling			
164	High discharge pressure (LN/LD-4)	clr HidP	Discharge ok High pressure			
<b>8. DISPLAY FUNCTIONS</b>						
9393	Pressure display unit choice	1 2 3	PSI bAr PASC	p.s.i. bar kPa	1 - 3	PSI
189	Backlight control	0 1 2 3	B.oFF BL.on BL.F.F BL.n.F	Backlight off Backlight on Backlight off, flashes for alarm Backlight on, flashes for alarm		B.oFF

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ITEM	DESCRIPTION	CODE	CODE MEANING	RANGE	ITEM 9 VALUE
<b>9. CLOCK CALENDAR</b>					
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			2018 - 2099	
18	Daylight saving enable	Stnd dAY.S	Standard time Daylight saving time	0 - 1	Stnd
<b>10. RESTORE FACTORY DEFAULTS</b>					
966	virtual bitswitch setting (v0.00.1 on)		unused		
9	Set default values To set the factory defaults into the memory of the controller, 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.	1234 1066	Load default settings Write to NVRAM		
<b>11. RESTORE PARAMETERS FROM NETWORK</b>					
To restore the data from the network first set the virtual bitswitch on item 966 and the appropriate unit number on item 1. Then check item 965 to see if this facility is available on the network. The information on item 965 is received from a network broadcast every few minutes. If the restore parameter facility is available and operational then item 965 will be set to a non zero number e.g. 2. To request restore parameters set item 964 to 1234. Item 963 displays parameters restore progress. When all parameters are downloaded item 964 is cleared to 0.					
965	Master database port	0 1 - 4	Not in use NC port no		
964	Set restore parameters from network	1234	Request restore		
963	Parameter restore progress	rdy dnl.r din.p dnl.c FA.IL	Restore function possible Restore requested Restore in progress Restore complete Restore fault		
959	Requested template	0 1-9999	As commissioned Template number	0 - 9999	

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ITEM	DESCRIPTION	CODE	CODE MEANING	RANGE	ITEM 9 VALUE
<b>12. SYSTEM ALARMS</b>					
80	Group alarm 81 - 88	Graphical	See display data		
83	Low discharge pressure	CLr Lo.dP	No fault Fault		
84	High discharge pressure	CLr Hi.dP	No fault Fault		
87	High condenser exit temperature (from v0.00.2)	CLr Hi.C.E	No fault Fault		
88	Condenser fault	CLr Fn.Ft	No fault Fault		
90	Group alarm 91 - 98	Graphical	See display data		
91	Pressure transducer fault	CLr Pt.Ft	No fault Fault		
92	Temperature sensor fault (from v0.00.2)	CLr th.Ft	No fault Fault		
95	Adiabatic cooling fault (from v0.00.2)	CLr A.C.Ft	No fault Fault		
98	High ambient temperature differential (from v0.00.2)	CLr A.t.d.E	No fault Fault		
910	Group alarms 910 - 918	Graphical	See display data		
915	Plant fault	CLr P.Flt	No fault Fault		
916	Low liquid pressure	CLr LoLP	No fault Fault		

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ITEM	DESCRIPTION	CODE	CODE MEANING	RANGE	ITEM 9 VALUE
<b>13. DIAGNOSTIC &amp; TEST FUNCTIONS</b>					
6	JTL Network communications speed	4.8	Kilo Baud		
954	Current zone no				
967	Latest unit no polled on zone				
973	Latest polling interval This time shows the polling interval between the last two successful network awake messages to this unit.	min:sec			
974	Time since last awake message	min:sec			
975	Network receive timer Each time a message is read correctly the timer is set to 10 it counts down. If the timer reaches 0 then the communications module is reset.	seconds	(counts down to 0)		
989	Test digital displays	OFF tEST	Not active Test active	0 - 1	
100	Test inputs	Graphical	see display data		
199	Test relay outputs	clr SEt	Not active Active	0 - 1	
411	Transducer 1 reading				
412	Transducer 2 reading				
431	Temperature 1 reading				
432	Temperature 2 reading				
10	Processor alarms (11 - 17)	Graphical	See display data		
16	NVRAM fault	CLr n.Ft	No Fault Fault		

<b>DISPLAY DATA</b>		<b>HP320</b>
<b>NORMAL DISPLAY</b>		
999.9	Pressure in psi	
--	Not selected	
<b>ALARM TEXT (in descending priority order)</b>		
P.FLd	Plant failed	
Hi.dP	High discharge pressure	
FAn	Condenser fan problem	
<b>OTHER TEXT</b>		
JTL	Start-up text	

**GRAPHICAL DISPLAY OF BIT DATA**

Graphical display of bit data used on items where the data was shown previously as a decimal value	<b>bit</b>	<b>Graphic</b>
	None	
	1	
	2	
	3	
	4	
	5	
	6	
	7	
8		