

**JTL TRANSCRITICAL CO2 VALVE AND
GAS COOLER CONTROLLER
ITEMS NUMBERS**

HP150

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ITEM	DESCRIPTION	CODE	CODE MEANING	RANGE	ITEM 9 VALUE
1. Jnet NETWORK IDENTIFICATION					
0	Unit type	hP15	Unit type		
19	Software version number				
1	Unit number			0.1 - 899.9	
2. PRESSURES					
Note: Pressures are shown in psi Average pressures are averaged over last hour and are updated every 4 minutes. Pressures can be displayed on the Maintenance Unit in psi, bar or MPa. The choice is made on item 179.					
22	Cooler pressure				
148	Average cooler pressure over 1 hour				
122	Cooler pressure transducer selection	OFF d.t.En	Disabled Enabled	0 - 100	Dt.En
422	Full scale transducer value (at 20mA)			1450 - 1750	1740
23	Liquid pressure				
149	Average liquid pressure over 1 hour				
123	Liquid pressure transducer selection	oFF L.P.En	Disabled Enabled	0 - 1	L.P.En
423	Full scale transducer value (at 20mA)			1450 - 1750	1740
3. PRESSURE ALARMS					
3.1 SUBCRITICAL					
52	High cooler pressure alarm level			725 - 1200	1000
51	Low cooler pressure alarm level			300 - 600	500
3.2 TRANSCRITICAL					
62	High cooler pressure alarm level			1200 - 1600	1450
61	Low cooler pressure alarm level			600 - 1200	800
3.3 LIQUID					
72	High liquid pressure alarm level			650 - 800	725
71	Low liquid pressure alarm level			200 - 650	300

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ITEM	DESCRIPTION	CODE	CODE MEANING	RANGE	ITEM 9 VALUE
4. TEMPERATURES					
Note: Temperatures are shown is Celcius. Temperatures can be displayed on the Maintenance Unit in Celsius or Fahrenheit. The choice is made on item 178.					
178	Temperature display choice	CELS FAhr	Celsius Fahrenheit	0 - 1	CELS
31	Cooler exit temperature				
131	Cooler exit temperature Sensor enable	OFF t1.En	Not selected Selected	0 - 1	t1.En
32	Ambient temperature				
132	Outside air temperature sensor enable	OFF t2.En	Not selected Selected	0 - 1	t2.En
897	Site temperature (from broadcast)				
898	Site relative humidity (from broadcast)				
896	Site absolute humidity (from broadcast)				
899	Outside temperature				
5. CO2 STATE CONTROL					
20	Operating state	0 1 2	oFF Subc trnc		
36	Adjusted ambient temperature factor (Item calculated as a value between ambient and cooler exit temperature using this factor)			20 - 80	50
37	Adjusted ambient setpoint			21 - 26	24.0
38	Adjusted ambient deadband			1 - 4	2.0
35	Adjusted ambient temperature (calculated from the ambient and cooler exit temperature)				
6. COOLER PRESSURE CONTROL					
50	Minimum pressure setpoint			575 - 725	650
350	Maximum pressure set point			1300 - 1600	1525
370	Operational pressure set point				
22	Cooler pressure				
192	Cooler pressure control integral term (I)				
194	Cooler pressure control proportional term (P) (from v0.00.1)				
55	Discharge pressure safety level to reduce capacity			1200 - 1600	1450

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6.1 SUBCRITICAL COOLER PRESSURE CONTROL					
In subcritical mode the cooler acts as a conventional condenser where the transcritical valve speed is controlled by PI control against an optimised pressure setpoint calculated using the external ambient temperature and for the condenser and the design differential temperature for the condenser.					
363	Floating temperature differential			5 - 15	7.0
364	Floating temperature setpoint				
365	Operating temperature				
395	Valve gain			5 - 200	10
54	Valve control time constant			1 - 250	10
6.2 TRANSCRITICAL COOLER PRESSURE CONTROL					
In transcritical mode the transcritical valve is controlled by PI control against a calculated pressure setpoint calculated using a formula which takes a multiple of the external ambient temperature and adds a constant.					
63	OAT multiplier			16 - 36	27
64	OAT constant			400 - 800	610
377	Valve gain (from v0.00.1)			5 - 200	10
376	Valve time constant (from v0.00.1)			1 - 250	10
6.3 TRANSCRITICAL VALVE OUTPUT					
371	Output (%)	0 - 100			
372	Forced output			0 - 100	
379	Valve output smoothing (from v0.00.3)	0	disabled	0 - 5	3
7. COOLER EXIT TEMPERATURE CONTROL					
140	Cooler exit temperature setpoint				
31	Cooler exit temperature				
193	Cooler temperature integral term (I)				
195	Cooler temperature proportional term (P) (from v0.00.1)				
7.1 SUBCRITICAL COOLER TEMPERATURE CONTROL					
In subcritical mode the cooler fans are controlled by PI control against a calculated temperature setpoint which endeavours to maintain the liquid level at a set level of subcooling.					
141	Cooler superheat (sub cooling)				
144	Cooler subcooling setpoint			-1 to -8	-3.0
22	Cooler pressure				
375	Fan speed gain			5 - 200	25
374	Fan speed time constant			1 - 250	30

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7.2 TRANSCRITICAL COOLER TEMPERATURE CONTROL					
In transcritical mode the cooler acts as a gas cooler where the fan speed is controlled by PI control against a calculated temperature setpoint calculated using a formula which takes a multiple of the external ambient temperature and adds a constant.					
146	OAT multiplier			1.2 - 1.6	1.4
147	OAT constant			0 - 3	1.0
396	Fan speed gain (from v0.00.1)			5 - 200	25
56	Fan speed control time constant (from v0.00.1)			1 - 250	10
7.3. COOLER FAN OUTPUT					
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
369	Select network timer for nighttime operation	0 1 - 8	Disabled Timer number	0 - 8	0
391	Output (%)	0 - 100			
397	Backup output (%)			0 - 100	100
392	Forced output (%)			0 - 100	
393	Input status	Fn.Ft Hty	Fan Fault Fan ok		
389	Fan output smoothing (from v0.00.3)	0	Disabled	0 - 5	3
8. INPUTS AND OUTPUTS					
20	Operating mode	oFF sub trnc	Manual Subcritical Transcritical		
170	Inputs	Graphical	See display data bit1 = input 1		
171	Valve fault (IP-1)	Hty tn.Ft	Valve ok Valve fault		
172	Fan fault (IP-2)	Hty Fn.Ft	Fans ok Fan fault		
173	Low liquid (IP-3)	Hty Lo.Li	Liquid ok Low liquid level		
174	Auto/manual (IP-4)	OFF Auto	Manual controller dormant Auto mode		
160	Outputs	Graphical	See display data bit1 = output 1		
162	Enable flash gas valve (LN/LD-2)	oFF FG-En	Valve off Valve enabled		
163	Watchdog output (LN/LD-3)	OFF On	Watchdog valve Watchdog healthy		
164	High discharge pressure (LN/LD-4)	clr HidP	Discharge ok High pressure		

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ITEM	DESCRIPTION	CODE	CODE MEANING	RANGE	ITEM 9 VALUE
9. 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			2013 - 2034	
18	Daylight saving enable	Stnd dAY.S	Standard time Daylight saving time	0 - 1	Stnd
10. DISPLAY FUNCTIONS					
178	Temperature display unit choice	CELS FAhr	Celsius Fahrenheit	0 - 1	CELS
179	Pressure display unit choice	0 PASC 1 PSI 2 bAr 3 none	MPa p.s.i bar Not selectable	0 - 3	PSI
189	Backlight control	0 B.oFF 1 BL.on 2 BL.F.F 3 BL.n.F	Backlight off Backlight on Backlight off, flashes for alarm Backlight on, flashes for alarm		B.oFF
11. RESTORE FACTORY DEFAULTS					
966	Virtual bitswitch setting				
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 immediately		

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ITEM	DESCRIPTION	CODE	CODE MEANING	RANGE	ITEM 9 VALUE
12. RESTORE PARAMETERS FROM NETWORK					
<p>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.</p>					
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 FAIL	Restore function possible Restore requested Restore in progress Restore complete Restore fault		
959	Requested template	0 1-9999	As commissioned Template number	0 - 9999	
13. SYSTEM ALARMS					
80	Group alarm 81 - 88	Graphical	See display data		
83	Low cooler exit pressure	CLr Lo.dP	No fault Fault		
84	High cooler exit pressure	CLr Hi.dP	No fault Fault		
85	Low liquid level	Clr Lo.Li	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		
910	Group alarm 911-918	Graphical	See display data		
915	Plant fault	Clr P.Ft	No Fault Fault		
916	Low liquid pressure	Clr Lo.L.P	No fault Fault		
918	High liquid pressure	Clr H.i.L.P	No fault Fault		

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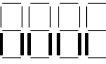






ITEM	DESCRIPTION	CODE	CODE MEANING	RANGE	ITEM 9 VALUE
14. DIAGNOSTIC & TEST FUNCTIONS					
6	JTL Network communications speed	4.8	Kilo Baud		
7	Communications method	HALF	2 wire		
8	Bitswitch setting				
954	Current zone no				
967	Latest unit no polled on zone				
973	Latest polling interval This time 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)		
976	Network receive bad character counter. The counter counts down from a preset number. When the counter reaches 0 the communications module is reset.		(counts down to 0)		
977	Transmit control line status for the operation of the Jnet network communications.	Hi Lo	Transmit Receive		
99	Test digital displays	CLr SEt	Not active Test active	0 - 1	
100	Test inputs	- - - - 1 - - - - 2 - - - - 3 - - - - 4	No inputs Input 1 on Input 2 on Input 3 on Input 4 on		
199	Test relay outputs	clr SEt	Not active Active	0 - 1	
411	Transducer 1 reading				
412	Transducer 2 reading				
431	Sensor 1 reading				
432	Sensor 2 reading				
10	Processor alarms (11 - 17)	Graphical	See display data		
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		

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16	NVRAM fault	CLr n.Ft	No fault Fault		
17	Instruction TRAP fault	CLr tP.Ft	No fault Fault		

DISPLAY DATA		HP150
NORMAL DISPLAY		
999.9	Pressure in bar	
-	Not selected	
ALARM TEXT (in descending priority order)		
Hi.dP	High cooler exit pressure	
FAn	Cooler fan problem	
OTHER TEXT		
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.

Bit	Graphic
None	
1	
2	
3	
4	
5	
6	
7	
8	