ENGINEERING
TOMORROW

Programming Guide

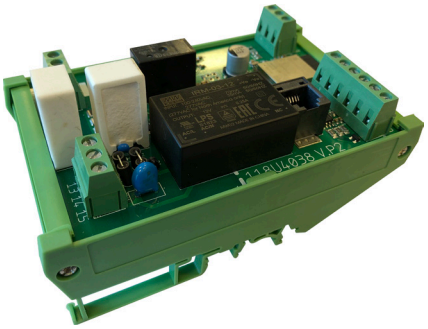
Basic Modbus parameter list
Optyma™ iCO₂ gateway
(OP MPAM005)

SW Ver. 1.0x



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Danfoss ICO2 4.6kW gateway Case controllers





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Danfoss iCO2 4.6kW - Modbus parameter list "RO" - Software V1.0

MMILDS	Parameter	Comments	PNU	RW or RO	Factory	Minimum	Maximum	Decimals	Unit	Remark
Par.No.	**text**				**value**	**value**	**value**	**0 or 1**		**all units in °C / bar(g)**
r12	r12 Main switch	Main switch for the controller	117	RW	0	0	2	0		-1 = Manual Mode, 0 = Standby, 1 = On, 2 = Vacuum Mode
u13	u13 NightCond	Day/Night mode, 0=Normal(day); 1=night	10002	RO	0	0	1	0		Depends on RTC + schedule or data from System Manager
-	- - - OpCond	Operation condition (error/ alarm/...)	10003	RO	-	0	205	0		CDU operation status
r23	r23 Ts Ref	Suction pressure Setpoint	100	RW	-10.0	-20.0	10.0	1	°C/°F	MBP CDU-ECU can receive only
r24	- - - Reference	Main reference temp. Suction pressure converted to temp.	120	RO	-10.0	-40.0	50.0	1	°C/°F	Not adjustable on main screen ! (shows on the value)
r43	r43 Night Offset	Value added to the reference r23 in the night	10004	RW	2	0	10	0	°C/°F	Night offset (Kelvin)
Fan parameters										
F07	F07 Fan Speed%	Actual Fan speed (read rpm and convert to % in gateway)	10014	RO	-	0	100	0	%	
Real time clock (Day/night operation)										
t17	t17 Day start h	Day time start for Day/Night function	10018	RW	0	0	23	0	h	
t18	t18 Night start h	Night time start for Day/Night function	10019	RW	0	0	23	0	h	
t07	t07 Clk Hours	Used to set RTC	15001	RW	0	0	24	0	h	
t08	t08 Clk Minutes	Used to set RTC	15002	RW	0	0	59	0	min	
Control parameters										
o08	o08 SW version	Software version of the CDU	10020	RO	0	0	9999			
Service										
u01	u01 Pc bar	Measured High pressure	10030	RO	-	-1.0	250.0	1	bar/ PSI	
u10	u10 DI1 Status	Status for digital input 1	10026	RO	-	0	1	0		
u21	u21 Superheat K	Calculated superheat	10027	RO	-	-10.0	50.0	1	K	
u37	u37 DI2 Status	Status for digital input 2	10028	RO	-	0	1	0		
u52	u 52 CompCap%	Readout of Compressor speed (read rpm and transfer it in the gateway to xxx%)	10029	RO	-	0	100	0	%	
U62	U62 Alarm Relay	Status for Alarm relay	10041	RO	-	0	1	0		

MMILDS	Parameter	Comments	PNU	RW or RO	Factory	Minimum	Maximum	Decimals	Unit	Remark
U05	U05 Sgc Temp	Gascooler refractory out temperature	10031	RO	-	-30.0	150.0	1	°C/°F	
U07	U07 Srec2 temp	Receiver refrigerant out temperature	10032	RO	-	-100.0	200.0	1	°C/°F	
U08	U08 Prec pressure	Measured receiver pressure	10033	RO	-	-1.0	99.0	1	bar/ PSI	
U09	U09 Trec temp	Receiver pressure converted	10034	RO	-	-50.0	50.0	1	°C/°F	
U22	U22 Tc	Converted High pressure	10035	RO	-	-50.0	100.0	1	°C/°F	
U23	U23 Po	Measured Suction pressure	10036	RO	-	-1.0	99.0	1	bar/ PSI	
U24	U24 To	Converted Suction pressure	10037	RO	-	-50.0	100.0	1	°C/°F	
U25	U25 T Ambient	Measured Ambient Temperature	10038	RO	-	-10.0	100.0	1	°C/°F	
U26	U26 T Discharge	Measured Discharge temperature	10039	RO	-	-10.0	250.0	1	°C/°F	
U27	U27 T Suction	Measured Suction temperature	10040	RO	-	-10.0	100.0	1	°C/°F	
U78	U78 DynLP OFF	Low pressure OFF	10054	RO	-	-25.0	30.0	1	°C/°F	
U79	U79 DynLP ON	Low pressure ON	10055	RO	-	-20.0	30.0	1	°C/°F	
U80	U80 FW Version	Firmware version for GW ECU	10044	RO	-	0.0	9.99	2	-	
---	--- FW Version	Firmware version for GW ECU, Danfoss format	2003	RO	-	0	999	0	-	High byte = Major version Low byte = Minor version Example: 258 = v1.02
U91	U91 Vhp %	High pressure valve OD	10042	RO	-	0	100	0	%	
U92	U92 Vrec %	Receiver pressure valve OD	10043	RO	-	0	100	0	%	
---	--- EKC Error	Summary alarm	2541	RO	-	0	1	0		
---	--- Ctrl. State	Remote readout of control state	2007	RO	0	0	104	0		0 = Normal control 10 = Standby 25 = Manual Mode 34 = Safety Stop 101 = Restart state (High pressure) 102 = Restart state (Fan motor) 103 = Restart state (Discharge temp.) 104 = Restart state (Receiver pressure)

Alarms			
E20	- - - TGas Sensor Err	TGascooler out sensor error	20000
E31	- - - TAmb Sensor Err	TAmbient sensor error	20001
E32	- - - TDis Sensor Err	TDischarge sensor error	20002
E33	- - - TSuc Sensor Err	TSuction sensor error	20003
E39	- - - PSuc Sensor Err	PSuction sensor error	20004
E40	- - - Srec Sensor Err	Sreceiver out sensor error	20005
E41	- - - PRec Sensor Err	Prec sensor error	20006
E42	- - - Pgc Sensor Err	Pgc sensor error	20011
E90	- - - MMILDS error	No communication to MMILDS error	20021
A2	- - - LP Alarm	Low Pressure Alarm	20007
A17	- - - HP Alarm	High Pressure Alarm	20008
A34	- - - Fan Alarm	Gascooler fan alarm	20009
A45	- - - Standby mode	Main Switch Off	20010
A85	- - - Prec alarm	High Prec Alarm	20012
A96	- - - Max Disc.Temp	Max Discharge Alarm	20013
A97	- - -Safety Alarm	Mechanical HP alarm	20014
H23	- - - Drive Alarm	Internal, change ECU, code for fault analyzis	20015
H24	- - - Drive Alarm	Internal, change ECU, code for fault analyzis	20016
H25	- - - Drive Alarm	Internal, change ECU, code for fault analyzis	20017
H26	- - - Drive Alarm	Internal, change ECU, code for fault analyzis	20018
H28	- - - Drive Alarm	Internal, change ECU, code for fault analyzis	20019
H29	- - - Drive Alarm	Internal, change ECU, code for fault analyzis	20020
E90	- - - MMILDS error	Communication error with MMILDS display	20021

Modbus RTU Information
Slave address is configured with parameter o03 on the MMILDS display All modbus registers are **16-bit holding registers**. The PNU column is modbus register address + 1. So PNU 100 should be requested as hex 0x63 (decimal 99).

Baudrate automatically switches between **19 200 and 38 400. Even parity, 8 data bits, 1 stop bit**. Parameters with 1 decimal are multiplied by 10, so a modbus value of 127 should be read as 12.7. The unit accepts writes over broadcast (slave address 0)

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