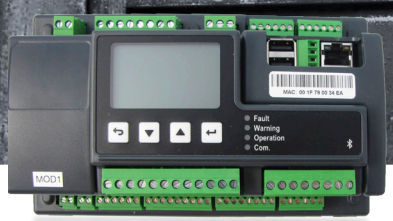
Lodam
BY BITZER GROUP

Lodam Condensing Unit Controller

Modbus Interface

Version 2.0



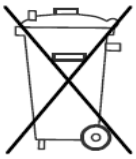
LMC341 DIWE

Contents

1. Read this first

The contents of this manual are subject to change without notice.

Lodam electronics holds the copyright to this user's manual. The user must follow any instructions given in this user manual entirely and not only partly. Any non-following of this user manual result in exclusion of all warranties, guarantees, and liabilities.



Disposing of the parts of the controller:

INFORMATION FOR USERS ON THE CORRECT HANDLING OF WASTE ELECTRICAL AND ELECTRONIC EQUIPMENT (WEEE)

In reference to European Union directive 2012/19/EU and the related national legislation, please note that:

1. WEEE cannot be disposed of as municipal waste and such waste must be collected and disposed of separately;
2. The public or private waste collection systems defined by local legislation must be used. In addition, the equipment can be returned to the distributor at the end of its working life when buying new equipment;
3. The equipment may contain hazardous substances: the improper use or incorrect disposal of such may have negative effects on human health and on the environment;
4. The symbol (crossed-out wheeled bin) shown on the product or on the packaging and on the instruction sheet indicates that the equipment must be disposed of separately;
5. In the event of illegal disposal of electrical and electronic waste, the penalties are specified by local waste disposal legislation.

1.1. Installation

Before installation, the user should be thoroughly familiarized with this technical manual, especially with purposes, installation, settings and operation.

Special care should be taken when installing and connecting external equipment (sensor, high voltage etc.) and handling the PCB's correctly according to protection against ESD.

Installation of the LMC341 DIWE Condensing Unit Controller must be performed by authorized personnel only. All warranties are excluded in case installation is performed by unauthorized personnel or in case the LMC341 DIWE has not been correctly installed.

Electrical plant failures are to be immediately solved, even though no immediate danger exists; the LMC341 DIWE must not be operating.

1.2. Safety

The LMC341 DIWE is not a safety component and cannot be used in "medical" or "life support" equipment.

The LMC341 DIWE is not a safety component according to the Machinery Directive.

Before commissioning, the service technician shall ensure that personal safety requirements are met in conformity with the Machinery Directive based on safety estimations.

The LDH105 should not be apart when operating.

Fuses can only be replaced and NOT left out.

Operation staff must in detail be informed about operating the LMC341 DIWE before operating the LMC341 DIWE.

Only use recommended parts/spare parts on the LMC341 DIWE. All warranties are excluded in case unoriginal part/spare parts are installed.

2. General

Lodam's Condensing Unit Controller, LMC341 DIWE enable you to gain total control of your condensing unit to deliver cooling to one or more evaporators – thereby optimizing your system to save energy, time and money.

Remote control of the controller is via Modbus over a RS485 connection and this document describes the settings for this.

3. Definitions

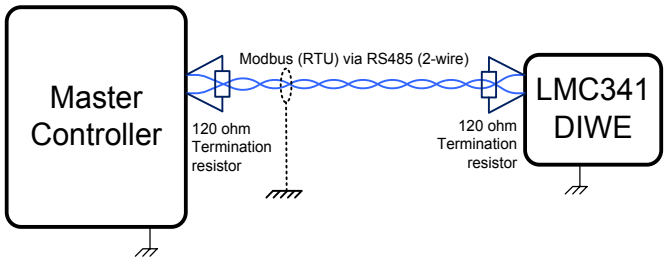
BEST	BEST software
HW	Hardware/electronics
LMT	Lodam Multi Tool (PC communication tool for Lodam controllers)
Modbus	Application-layer messaging protocol - http://www.modbus.org/specs.php
RS485	Hardware communication standard

4. How to ...

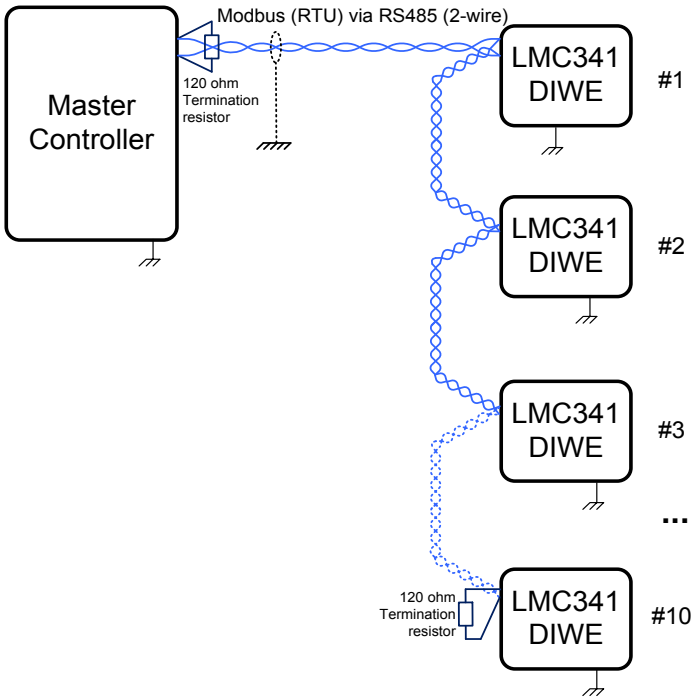
4.1. Connection samples

- The Modbus communication is connected using a shielded, 2-wired, twisted pair cable (RS485).The two signal wires must be in the same pair of wires.
- The connection can be multi-drop with up to 10 LMC341 DIWE controllers on the same communication line. For larger installations or from building to building, a RS-485 repeater with galvanic isolation must be used.
- The cable must be installed as a string, not a star.
- The LMC341 DIWE is always the client (slave unit).

One master controller and one LMC341 DIWE.



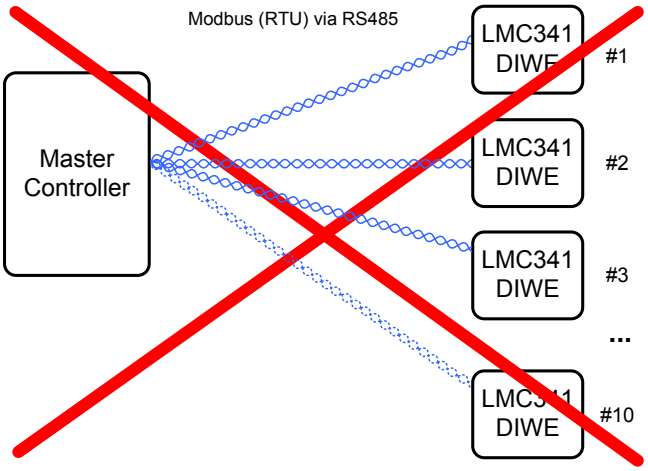
One master controller and several LMC341 DIWE.



The end points, first and last controller on the string must have a 120 ohm termination resistor.

All LMC341 DIWE controllers are grounded, the signal ground is not needed as PE (Protective Earth) is used as signal ground.

The following installation is not guaranteed to work!



4.2. Communication recommendations

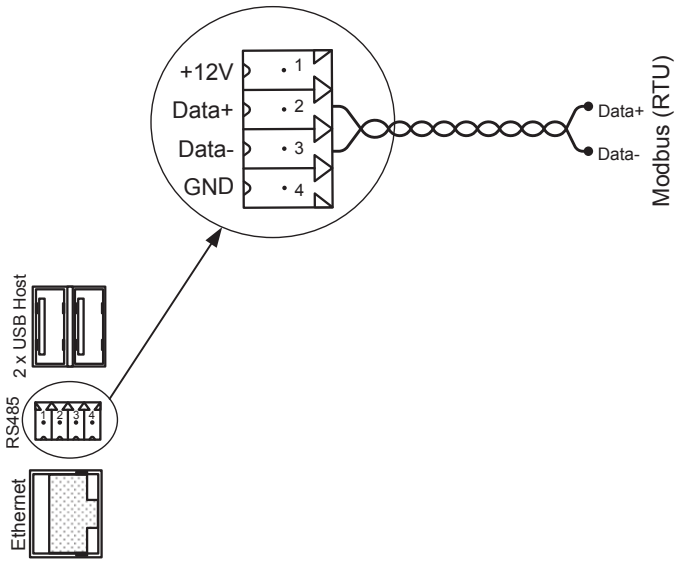
The poll-interval setting in the master controller must be considered. The processor of the LMC341 DIWE controller can only handle a certain amount of requests per second. Beyound this, request from the master controller will be lost.

The data in the LMC341 DIWE controller don't change very rapidly so a poll interval of seconds will be sufficient for the monitoring purpose.

5. Connections

All LMC341 DIWE controllers have internally connected signal ground and protective earth. The signal ground is hence not needed as protective earth is used as signal ground.

5.1. Connections on the LMC341 DIWE controller



Terminal	Description
CN32 - RS485	Modbus connection
GND:	Do not use as all LMC341 DIWE controllers are grounded(1). Protective earth is used as signal ground.
Data-	Inverted signal
Data+	Signal
+12V	Power supply for RS485 connection. Not used for Modbus communication!

Note (1): The LMC341 DIWE controller has internally connected signal ground to PE (Protective Earth).

5.2. Cable specification

Communication is half duplex.

- Use shielded, tinned copper, twisted-pair cable – twisted all the way to the controllers.
- Max 200 m cable length. Characteristic impedance between 100 Ohm and 130 Ohm
- Foil or braided shield – shield grounded at the master controller
- Shunt capacitance < 100 pF/m, AWG24, 2 * 120 Ohm termination.
- Receiver impedance >= 12 kOhm.

5.3. Configuration

There can be up to 10 LMC341 DIWE controllers on the same Modbus string.

If other equipment than LMC341 DIWE controllers are connected on the same string, the maximum current sourcing of the other equipment must be observed!

The network should be configured in sections, possible with RS 485 repeaters between sections in large installations and when connecting different buildings in one network. Up to 3 repeaters may be used.

5.4. RS485 Repeater

The repeater should be an isolated (galvaniccally isolated) RS485 repeater to separate the sections of the network.

The following products have been tested and verified to work right out of the box:

- ICP CON 7510AR
- ICP CON 7510A
- Moxa TCC-120/120I
- BLACK BOX ICD202A

Other RS485 repeater brands and models should be tested and verified before use in installations.

5.5. Recommended guidelines for cable routing

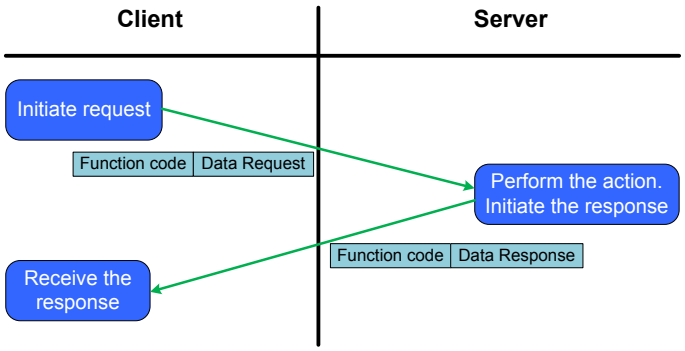
- Signal, control and communication cables should be shielded with braided shielding and the shield connected to the earth connection – preferrable at the master controller.
- Signal, control and communication cables should be routed so the influence from the power cables is minimized. When crossing power cables, an 90 degrees angle should be achieved
- Signal and power cables that run in parallel should be separated by the largest possible appropriate clearance distance, approx. 20 – 25 cm. A grounded shield plate or grounded metal duct can be used instead.
- The cable shielding must not be interrupted.
- The cables should be kept as short as possible.

Route cables using grounded, metal cable trays or cable ducts. Sections of cable tray or ducts must be connected together with as large areas as possible.

- Communication cables should be twisted pair for the data wires.

6. Setup

Communication with the LMC341 DIWE is via Modbus (RTU). Configuration and reading of settings and readings from the LMC341 DIWE is described in the following sections.



6.1. Modbus configuration

Specification of the protocol:

Protocol:

Modbus (RTU mode)
See http://www.modbus.org/specs.php

Modbus node address:

LMC341 DIWE uses default address 1; can be changed on the LUP200 display (option)

Baud rate:

Default 115200; 4800, 9600, 19200, 38400, 57600 are selectable

Number of data bits:

8

Parity:

Default Even; None and Odd parity are selectable

Number of stop bits:

Default 1; 2 (2 only if Parity is None)

Packet size:

Maximum 32 register in a row

Settings are configured on the LUP200 display of the LMC341 DIWE controller in the Service->LOM MB config menu.

Please observe that register numbers used in this manual are zero-based as the LMC341 DIWE uses PDU telegrams.

6.2. Data values, scaling and data types

Following is a description of used scaling and data types.

Scale 1, 10 and 100 refers to where the decimal point is implied, as a decimal value can't be transmitted via Modbus.

Scale 1:	The value is the exact value
Scale 10:	To transmit a value it must be multiplied by 10; i.e. 12.3 -> 123 A received value must be divided by 10; i.e. 123 -> 12.3
Scale 100:	To transmit a value it must be multiplied by 100; i.e. 1.23 -> 123 A received value must be divided by 100; i.e. 123 -> 1.23
uint8:	Unsigned 8-bit integer
uint16:	Unsigned 16-bit integer
sint16:	Signed 16-bit integer
uint32:	Unsigned 32-bit integer
sint32:	Signed 32-bit integer

6.3. Modbus function codes

Function	Code (hexadecimal)	Code (decimal)
Read Holding Registers	03	03
Read Input Register	04	04
Read/Write Multiple Registers	17	23

6.4. Modbus exception codes

Code	Name	Meaning
01	Illegal function	The function code is not valid.
02	Illegal data address	The specified register is not valid
03	Illegal data value	The value is not allowed

7. Functions

For all registers apply that a more specific description of the parameters are to be found in the User manual for the LMC341 DIWE.

The parameter names in brackets are the complete parameter name as listed in LMT or BEST.

7.1. Status information

This section contains status information parameters. Many are directly visible on the main menu of the LUP200 display (option).

Name	Possible Values	Default	Description	Register type	Address
2ndSetp	Unit None Scale 1 unit8	0	2nd Setpoint is active (Animation.2ndSetp) 0: Off 1: Active	Input register	1537
LowSound	Unit None Scale 1 unit8	0	LowSound fan mode is active (Animation.LowSound) 0: Off 1: Active	Input register	1538
WinterStart	Unit None Scale 1 unit8	0	WinterStart is enabled (Animation.WinterStart) 0: Off 1: Enabled	Input register	1539
HeatRecover	Unit None Scale 1 unit8	0	Heat recovery is enabled (Animation.HeatRecover) 0: Off 1: Enabled	Input register	1540
SetPointSrc	Unit None Scale 1 unit8	0	What setpoint is used right now (Animation.SetPointSrc) 0: User setpoint 1: 2nd Setpoint 2: Week program	Input register	1541
StatusIcon	Unit None Scale 1 unit8	0	Unit status - as on the displays main menu (Animation.StatusIcon) 0: Normal 1: Min run 2: Min pause 3: Oil return 4: Stopped 5: Li m Tc 6: Lim Tdis 7: Lim Tfc 8: Lim dp 9: Lim Psuc 10: Lim Ifc 11: Off 12: Manual 13: Restarting 14: FC Emergency 15: Psuc Emergency 16: Critical Stop	Input register	1542
MinRun	Unit None Scale 1 unit8	0	Min. compressor run time is active (Animation.MinRun) 0: Off 1: Active	Input register	1543
MinPause	Unit None Scale 1 unit8	0	Min. compressor pause is active (Animation.MinPause) 0: Off 1: Active	Input register	1544
LimTc	Unit None Scale 1 unit8	0	TC limiter is active (Animation.LimTc) 0: Off 1: Active	Input register	1545

Name	Possible Values	Default	Description	Register type	Address
LimTdis	Unit None Scale 1 unit8	0	Tdis limiter is active (Animation.LimTdis) 0: Off 1: Active	Input register	1546
LimTfi	Unit None Scale 1 unit8	0	Temp. FI limiter is active (Animation.LimTfi) 0: Off 1: Active	Input register	1547
LimdP	Unit None Scale 1 unit8	0	dP limiter is active (Animation.LimdP) 0: Off 1: Active	Input register	1548
LimPsuc	Unit None Scale 1 unit8	0	Psuc limiter is active (Animation.LimPsuc) 0: Off 1: Active	Input register	1549
LimIFI	Unit None Scale 1 unit8	0	FI current limiter is active (Animation.LimIfi) 0: Off 1: Active	Input register	1550

7.2. Inputs

The section lists analogue and digital readings from the LMC341 DIWE controller.

Name	Possible Values	Default	Description	Register type	Address
T0	Unit °C Scale 100 sint16	-	Saturated suction temperature (Input.T0) -10000 °C – 12000 °C	Input register	1552
Troom	Unit °C Scale 100 sint16	-	Room temperature (Input.Troom) -10000 °C – 12000 °C	Input register	1553
TC	Unit °C Scale 100 sint16	-	Saturated discharge (condenser) temperature (Input.TC) -10000 °C – 12000 °C	Input register	1554
Tdis	Unit °C Scale 100 sint16	-	Discharge temperature (Input.Tdis) -10000 °C – 12000 °C	Input register	1555
Tamb	Unit °C Scale 100 sint16	-	Ambient temperature (Input.Tamb) -10000 °C – 12000 °C	Input register	1556
Tsuc	Unit °C Scale 100 sint16	-	Suction temperature (Input.Tsuc) -10000 °C – 12000 °C	Input register	1557
Tsh	Unit °C Scale 100 sint16	-	Suction superheat temperature (Input.Tsh) -10000 °C – 12000 °C	Input register	1558
TFC	Unit °C Scale 100 sint16	-	Frequency inverter temperature (Input.TFC) -10000 °C – 12000 °C	Input register	1560
IFC	Unit A Scale 100 sint16	-	Frequency inverter current (Input.IFC) 000 A – 10000 A	Input register	1561
Ext_Ref	Unit None Scale 100 sint16	-	External input offset The offset range is set under capacity regulation (Input.Ext_Ref) -10000 °C – 10000 °C	Input register	1562
Psuc	Unit bar Scale 100 sint16	-	Suction pressure (Input.Psuc) 000 bar – 1300 bar	Input register	1563
Pdis	Unit bar Scale 100 sint16	-	Discharge pressure (Input.Pdis) 100 bar – 3300 bar	Input register	1564
Pressure switch input	Unit Boolean Scale 1 uint8	-	High pressure switch input (Input.HP_Switch) 0: Off 1: Active	Input register	1565

Name	Possible Values	Default	Description	Register type	Address
Oil_Sensor	Unit Boolean Scale 1 uint8	-	Oil level failure (Input.Oil_Switch) 0: Off 1: Active	Input register	1566
SE-B1	Unit Boolean Scale 1 uint8	-	Compressor overheated (Input.Cpr_OH) 0: Ok 1: Failure	Input register	1567
Fan1_Fault	Unit Boolean Scale 1 uint8	-	Fan1 failure (Input.Fan1_OH) 0: Ok 1: Failure	Input register	1568
Fan2_Fault	Unit Boolean Scale 1 uint8	-	Fan2 failure (Input.Fan2_OH) 0: Ok 1: Failure	Input register	1569
DigIn1	Unit Boolean Scale 1 uint8	-	Digital input 1 (Input.DigIn1) 0: Off 1: Active	Input register	1570
DigIn2	Unit Boolean Scale 1 uint8	-	Digital input 2 (Input.DigIn2) 0: Off 1: Active	Input register	1571
ExtOnOff	Unit Boolean Scale 1 uint8	-	External release input (Input.ExtOnOff) 0: Off 1: Active	Input register	1572
SC_Cpr1	Unit Boolean Scale 1 uint8	-	Security chain for compressor 1 (Only valid in dual compressor mode) (Input.SC_Cpr1) 0: Ok 1: Failure	Input register	1573
SC_Cpr2	Unit Boolean Scale 1 uint8	-	Security chain for compressor 2 (Only valid in dual compressor mode) (Input.SC_Cpr2) 0: Ok 1: Failure	Input register	1574

7.3. Outputs

Status of relay outputs.

Name	Possible Values	Default	Description	Register type	Address
RE1	Unit Boolean Scale 1 uint8	-	Contactor K1 for frequency inverter /compressor (Output.RE1) 0: Off 1: On	Input register	1584
RE2	Unit Boolean Scale 1 uint8	-	Liquid Line Valve / Oil Return signal (Output.RE2) 0: Off 1: On	Input register	1585
RE3	Unit Boolean Scale 1 uint8	-	Crankcase heater (Output.RE3) 0: Off 1: On	Input register	1586
RE4	Unit Boolean Scale 1 uint8	-	Power for ΔpII and SE-B1 (Output.RE4) 0: Off 1: On	Input register	1587
RE5	Unit Boolean Scale 1 uint8	-	Alarm relay (Output.RE5) 0: Off 1: On	Input register	1588
RE6	Unit Boolean Scale 1 uint8	-	RI (Refrigerant Injection) (Output.RE6) 0: Off 1: On	Input register	1589

Name	Possible Values	Default	Description	Register type	Address
RE7	Unit Boolean Scale 1 uint8	-	Fan 1 (Output.RE7) 0: Off 1: On	Input register	1590
RE8	Unit Boolean Scale 1 uint8	-	Fan 2 (Output.RE8) 0: Off 1: On	Input register	1591
RE9	Unit Boolean Scale 1 uint8	-	Compressor running for ΔpII (Output.RE9) 0: Off 1: On	Input register	1592

7.4. Alarms

Alarm section with up to 16 alarms at a time. The alarms are sorted with highest priority in Code1 parameter. When an alarm becomes inactive the priority is less and it is moved to a new parameter CodeNo > Code1.

An alarm number is coded, meaning status, severity level and alarm number are encoded in the number in the parameters Code1 – Code16.
Leftmost bit = Bit16; rightmost bit = Bit0.

Bit1 – Bit10:

Alarm number; 100 – 999. Code1 AND 1023_{dec} = alarm number.

Bit11 – Bit13:

Alarm level; 0 – 6 as listed for Level in the table below.
Code1 AND 7168_{dec} = level.

Bit16:

Alarm status; 1: Alarm active; 0: Alarm inactive.
Code1 AND 32768_{dec} = status.

Name	Possible Values	Default	Description	Register type	Address
Count	Unit None Scale 1 uint16	0	Number of alarms in the list, active and inactive (Alarm.Count) 0 - 16 alarms	Input register	1600
CountActive		0	Number of active alarms (Alarm.CountActive) 0 – 16	Input register	1601
Level	Unit None Scale 1 uint16	0	Highest alarm level of the active alarms (Alarm.Level) 0: None 1: Log 2: Event 3: Info 4: Warning 5: Critical 6: Fault	Input register	1602
Alarm Reset	Unit None Scale 1 uint16	-	Alarm reset command variable (Alarm.Reset) Range 0 – 65535 100 – 999: Resets the specific alarm – if the alarm is resettable 65535: Reset all resettable alarms	Holding register	1603

Name	Possible Values	Default	Description	Register type	Address
Code1	Unit None Scale 1 uint16	0	Alarm number of most severe alarm (Alarm.Code1) 0: No alarm 100 – 40935: Alarm number	Input register	1604
Code2	Unit None Scale 1 uint16	0	Alarm number of less severe alarm (Alarm.Code2) 0: No alarm 100 – 999: Alarm number	Input register	1605
Code3	Unit None Scale 1 uint16	0	Alarm number of less severe alarm (Alarm.Code3) 0: No alarm 100 – 999: Alarm number	Input register	1606
Code4	Unit None Scale 1 uint16	0	Alarm number of less severe alarm (Alarm.Code4) 0: No alarm 100 – 999: Alarm number	Input register	1607
Code5	Unit None Scale 1 uint16	0	Alarm number of less severe alarm (Alarm.Code5) 0: No alarm 100 – 999: Alarm number	Input register	1608
Code6	Unit None Scale 1 uint16	0	Alarm number of less severe alarm (Alarm.Code6) 0: No alarm 100 – 999: Alarm number	Input register	1609
Code7	Unit None Scale 1 uint16	0	Alarm number of less severe alarm (Alarm.Code7) 0: No alarm 100 – 999: Alarm number	Input register	1610
Code8	Unit None Scale 1 uint16	0	Alarm number of less severe alarm (Alarm.Code8) 0: No alarm 100 – 999: Alarm number	Input register	1611
Code9	Unit None Scale 1 uint16	0	Alarm number of less severe alarm (Alarm.Code9) 0: No alarm 100 – 999: Alarm number	Input register	1612
Code10	Unit None Scale 1 uint16	0	Alarm number of less severe alarm (Alarm.Code10) 0: No alarm 100 – 999: Alarm number	Input register	1613
Code11	Unit None Scale 1 uint16	0	Alarm number of less severe alarm (Alarm.Code11) 0: No alarm 100 – 999: Alarm number	Input register	1614
Code12	Unit None Scale 1 uint16	0	Alarm number of less severe alarm (Alarm.Code12) 0: No alarm 100 – 999: Alarm number	Input register	1615
Code13	Unit None Scale 1 uint16	0	Alarm number of less severe alarm (Alarm.Code13) 0: No alarm 100 – 999: Alarm number	Input register	1616
Code14	Unit None Scale 1 uint16	0	Alarm number of less severe alarm (Alarm.Code14) 0: No alarm 100 – 999: Alarm number	Input register	1617
Code15	Unit None Scale 1 uint16	0	Alarm number of less severe alarm (Alarm.Code15) 0: No alarm 100 – 999: Alarm number	Input register	1618
Code16	Unit None Scale 1 uint16	0	Alarm number of least severe alarm (Alarm.Code16) 0: No alarm 100 – 999: Alarm number	Input register	1619

7.5. Control

Parameters used to view and control operation of the LMC341 DIWE controller.

Name	Possible Values	Default	Description	Register type	Address
Mode	Unit None Scale 1 uint8	0	Overall unit mode (Control.PM_Mode) 0: Off 1: On 2: Manual	Holding register	1632
Control Mode	Unit Boolean Scale 1 uint8	0	Temperature control mode (Control.CapMode) 0: Suction pressure 1: Room temp control mode	Holding register	1633
Runtime Hours	Unit None Scale 1 uint16	-	Runtime in hours, wrap around after 7.5 years (Control.RuntimeHours)	Input register	1634
MBExtOnOff	Unit Boolean Scale 1 uint8	0	Same function as Input.ExtOnOff, but for Modbus (Control.MBExtOnOff) 0: Unit Stopped 1: Unit Released	Holding register	1635
TC Setpoint	Unit °C Scale 100 sint16	-	Condenser TC setpoint Only used if ambient compensation = Off (Condens.TC_set) 000 °C - 8500 °C	Holding register	1636
Fan Mode	Unit Boolean Scale 1 uint8	0	Fan control mode (Condens.Economy) 0: Eco 1: LowSound	Holding register	1637
Ambient Comp.	Unit Boolean Scale 1 uint8	1	Use ambient compensation or fixed condenser setpoint (Condens.AmbComp) 0: Off 1: On	Holding register	1638
Setpoint	Unit °C Scale 100 sint16	-	Capacity controller setpoint Range depends on compressor and refrigerant (Capacity.Tset) -4500 °C - 3500 °C	Holding register	1639
2nd Setpoint	Unit °C Scale 100 sint16	-	Secondary setpoint Activated by a digital input Range depends on compressor and refrigerant (Capacity.2ndTset) -4500 °C - 3500 °C	Holding register	1640
Act. Setpoint	Unit °C Scale 100 sint16	-	Actual setpoint (read only) (Capacity.ActTset) -4500 °C - 3500 °C	Holding register	1641
Cap. Request	Unit % Scale 100 sint16	-	Capacity request Calculated capacity request (Capacity.CapReq) 0 - 10000 %	Input register	1642
Cap. Actual	Unit % Scale 100 sint16	-	Actual capacity Actual capacity request – limiters might have reduced the requested capacity (Capacity.CapAct) 0 - 10000 %	Input register	1643
FI frequency	Unit Hz Scale 100 sint16	-	Actual FI frequency in Hz (Capacity.FrqAct) 0 - 10000 Hz	Input register	1644
Cpr. Running	Unit Boolean Scale 1 uint8	-	Future use	Input register	1645

7.6. Modbus sample communication

Note: The following sample is a general Modbus communication sample and is not for the LMC341 DIWE!

Request: 0b041000000e75a4
Response: 0b041cffff0000095008b0e4a-80014000b000108e108f1ffff000f0002fff39f8e

Request (Input register)		
0x0b	Slave address	1 byte
0x04	Function code	1 byte
0x1000	Start addr	2 bytes
0x000e	Quantity	2 bytes
0x75a4	CRC	2 bytes

Response		
0x0b	Address	1 byte
0x04	Function code	1 byte
0x1c	NB bytes of data	1 byte
0xffff	Value1	2 bytes
0x0000	Value2	2 bytes
0x0950	Value3	2 bytes
0x08b0	Value4	2 bytes
0xe4a8	Value5	2 bytes
0x0014	Value6	2 bytes
0x000b	Value7	2 bytes
0x0001	Value8	2 bytes
0x08e1	Value9	2 bytes
0x08f1	Value10	2 bytes
0xffff	Value11	2 bytes
0x000f	Value12	2 bytes
0x0002	Value13	2 bytes
0xfff3	Value14	2 bytes
0x9f8e	CRC	2 bytes

Request 0b03200000018f60
Response: 0b030200002045

Request (Holding register)		
0x0b	Slave address	1 byte
0x03	Function code	1 byte
0x2000	Address	2 bytes
0x0001	Quantity	2 bytes
0x8f60	CRC	2 bytes

Reponse		
0x0b	Slave address	1 byte
0x03	Function code	1 byte
0x02	Quantity	1 byte
0x0000	Value1	2 bytes
0x2045	CRC	2 bytes

8. Standards

The product is manufactured according to the following standards.

RoHS 2002/95/EC
Low voltage 206/95/EC
EMC 2004/108/EC
61000-6-x Generic EMC

The following standards have been used:

EN 61010-1
: Safety requirement for electrical equipment for measurement and control.

EN 61000-6-2
: Immunity standard for industrial environments.

EN 61000-6-3
: Emission standard for residential, commercial and lightindustrial environments.

CE approved.

9. Trouble shooting

- Check if there is power to the LMC341 DIWE, range 15 - 30 VDC/12 – 24 VAC.
- Check if Data+ and Data- wires have been switched.
- Check if the communication node adress setting matches the selected.

  Note: Node address should be between 1 and 247, both included.
- Check if the communication speed matches the selected.
- Check if communication is running. The LUP200 display will show readings and commands.

10. Index

11. Notes

Innovative and energy saving **climate control**

When it comes to climate control Lodam is one of the most experienced you can turn to. For more than four decades we have developed, produced and implemented electronic solutions dedicated to optimising applications like:

- Compressors
- Condensing units
- Heat pumps
- Air conditioning
- Refrigerated truck and trailer
- Reefer containers

We know the importance of reliable, energy-efficient operation – and constantly push technological boundaries to bring you the most innovative and forward-thinking solutions.

As part of the BITZER Group we are backed by one of the world's leading players in the refrigeration and air conditioning industry. This alliance provides us with extensive network and application knowhow and allows us to stay at the forefront of climate control innovation. And to help ensure comfortable surroundings for humans and reliable protection of valuable goods anywhere in the world.

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www.lodam.com

Lodam electronics a/s
Kærvej 77
6400 Sønderborg
Denmark

Tel. +45 7342 3737
Fax +45 7342 3730
lodam@lodam.com