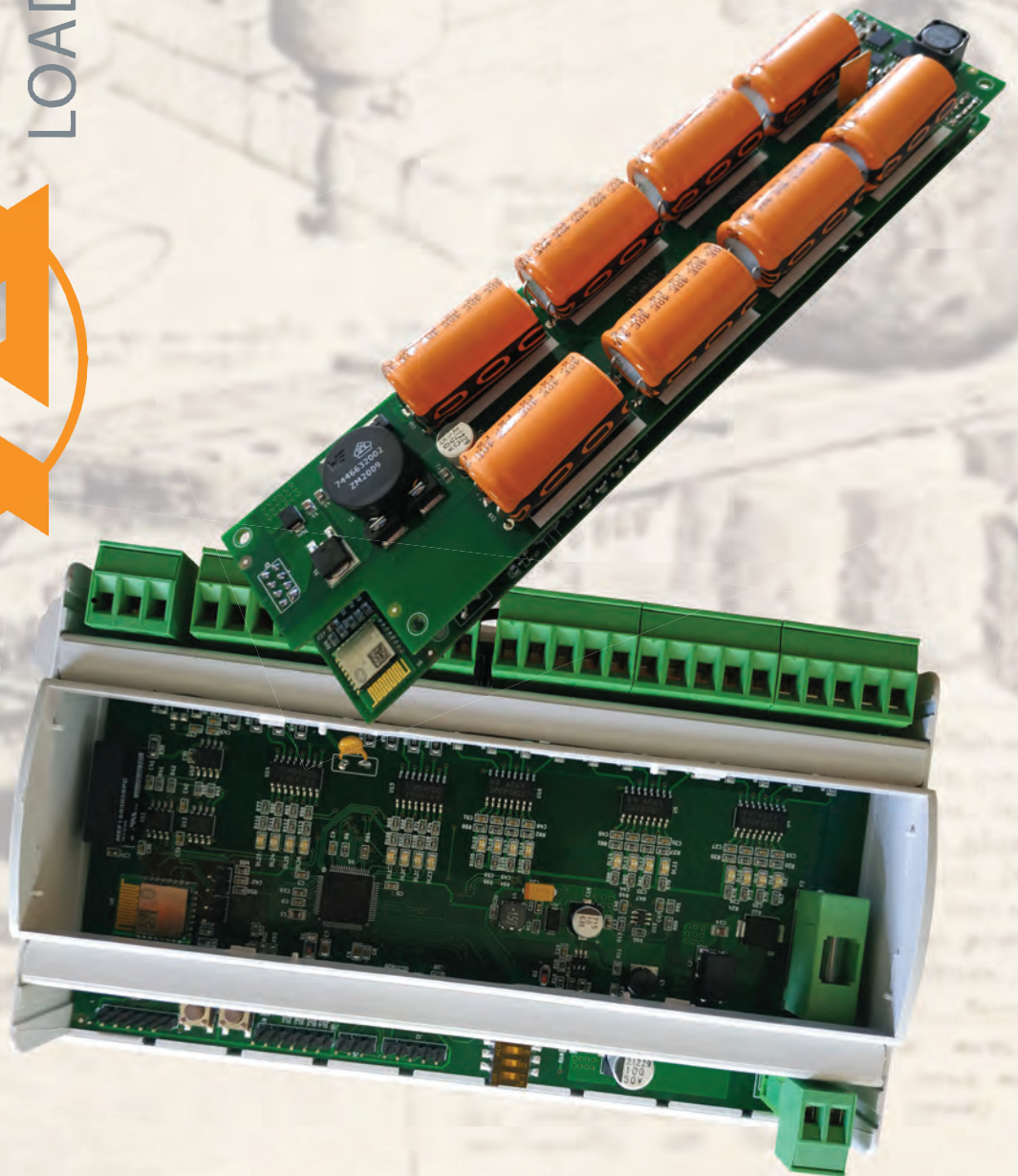


LHD[®]

LOAD HANDLING DEVICES



DEMETRA & KORA SYSTEM BOARDS



2020-DK-04



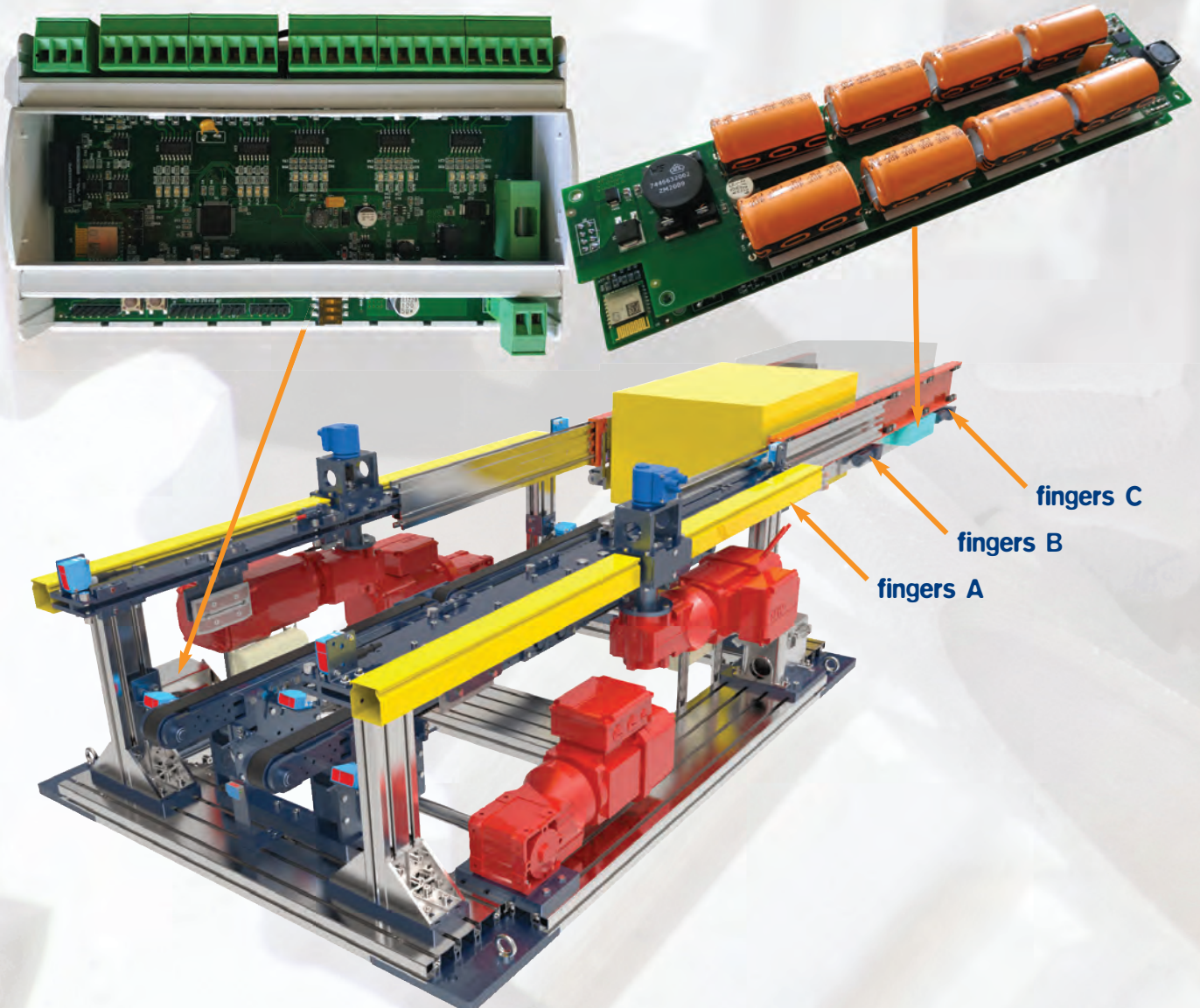


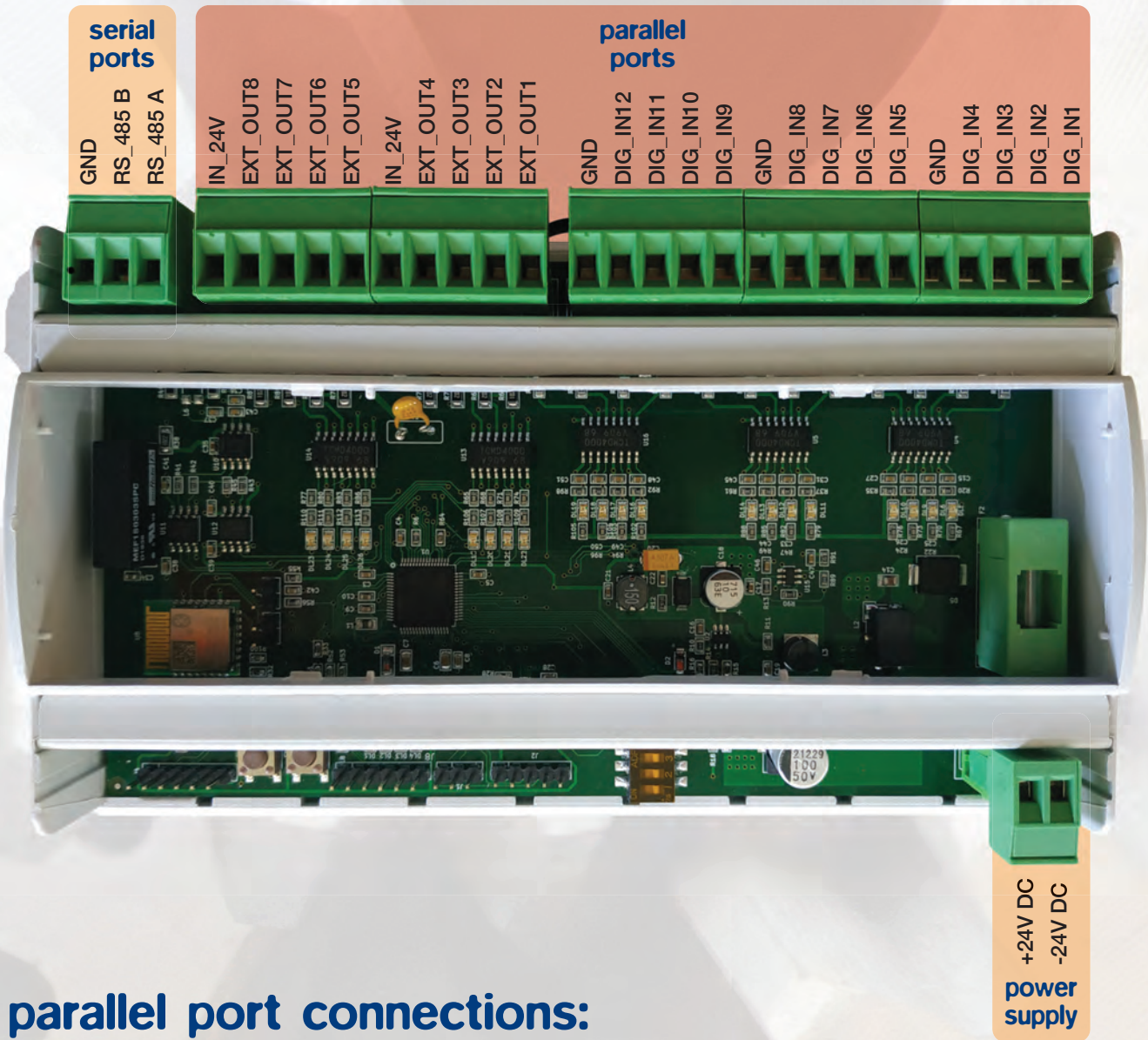
DEMETRA & KORA (motherboard and daughterboard)

In case of a capacitor transmission system, a electronic boards are used to control the fingers; the first one (Demetra) is located on the fixed structure of the ARACHNE and receives the power supply and the impulses for the movement of the fingers, whereas the second one (Kora) is placed on the upper slide, and receives the control impulses from the first one via Bluetooth protocol. This allows getting rid of the cable carrier, thus saving space.

DEMETRA
motherboard

KORA
daughterboard





parallel port connections:

port	function	port	function
DIG_IN1:	opening command for fingers A	DIG_IN11:	unused
DIG_IN2:	closing command for fingers A	DIG_IN12:	unused
DIG_IN3:	opening command for fingers B	DIG_OUT1:	inactive Bluetooth connection warning
DIG_IN4:	closing command for fingers B	DIG_OUT2:	insufficient supercap voltage warning
DIG_IN5:	opening command for fingers C (if present)	DIG_OUT3:	handling error warning
DIG_IN6:	closing command for fingers C (if present)	DIG_OUT4:	busy motor warning
DIG_IN7:	opening command for fingers D (if present)	DIG_OUT5:	busy motor warning (7 seconds delay)
DIG_IN8:	closing command for fingers D (if present)	DIG_OUT6:	unused
DIG_IN9:	unused	DIG_OUT7:	unused
DIG_IN10:	unused	DIG_OUT8:	unused



serial port connections:

Settings (RS485)

The default settings for serial communication are as follows:

- 19200 baud
- 8bit, no parity, 1bit stop
- Slave mode
- Modbus RTU protocol

ModBus

Up to 16 different interface cards can be connected on the same bus. To address the cards, it is necessary to set the DIP switch to 4 positions, selecting one of the possible addresses from 1 to 16:

address	DIP1 status	DIP2 status	DIP3 status	DIP4 status
1	off	off	off	off
2	on	off	off	off
3	off	on	off	off
4	on	on	off	off
5	off	off	on	off
6	on	off	on	off
7	off	on	on	off
8	on	on	on	off
9	off	off	off	on
10	on	off	off	on
11	off	on	off	on
12	on	on	off	on
13	off	off	on	on
14	on	off	on	on
15	off	on	on	on
16	on	on	on	on



Supported functions

The card manages the following functions for accessing internal data:

function	description
4 (0x04)	register reading
6 (0x06)	register writing

Register map

register	name	description	destination unit	flash writing	access
0	register_board_version	firmware version of interface board	interface	no	r
1	register_command	finger operation commands: <ul style="list-style-type: none">• bit0: 1 to request opening of finger a• bit1: 1 to request closing of finger a• bit2: 1 to request opening of finger b• bit3: 1 to request closing of finger b• bit4: 1 to request opening of finger c• bit5: 1 to request closing of fingers c• bit6: 1 to request opening of finger d• bit7: 1 to request closing of fingers d	interface	no	r/w
2	register_alim	interface board power supply (in mV)	interface	no	r
3	register_bt	number of engine boards now bluetooth-connected to the interface board. value range: 0, 1, 2	interface	no	r



register	name	description	destination unit	flash writing	access
4	register_dig_in	<p>current status of the 12 dig_in inputs on the interface board:</p> <ul style="list-style-type: none"> • bit0: dig_in_1 input status (0=off, 1=on) • bit(n) • bit11: dig_in_12 input status (0=off, 1=on) 	interface	no	r
5	register_dig_out	<p>current status of the 12 dig_out inputs on the interface board:</p> <ul style="list-style-type: none"> • bit0: dig_out_1 output status (0=off, 1=on) • bit(n) • bit7: dig_out_8 output status (0=off, 1=on) 	interface	no	r
6 to 13		reserved			
14 to 28		available for future purposes			
29	register_board1_stm_version	firmware version on micro stm of motor board 1	motor_1	no	r
30	register_board1_supply	motor_1 board power supply (in mV)	motor_1	no	r
31	register_board1_status	<p>motor_1 board status:</p> <ul style="list-style-type: none"> • bit0: photocell_1 status (0=off, 1=on) • bit1: photocell_2 status (0=off, 1=on) 	motor_1	no	r
32	register_board1_motors	number of fingers motor_1 board must manage (1...4)	motor_1	yes	r/w



register	name	description	destination unit	flash writing	access
33	register_board1_motors_direction	opening/closing direction of each finger set: <ul style="list-style-type: none">• bit0: direction of finger a (0=standard, 1 =inverted)• bit1: direction of finger b (0=standard, 1=inverted)• bit2: direction of finger c (0=standard, 1=inverted)• bit03: direction of finger d (0=standard, 1=inverted)	motor_1	yes	r/w
34 to 39		reserved			
40	register_board2_stm_version	firmware version on micro stm of motor board 2	motor_2	no	r
41	register_board2_supply	motor_2 board power supply (in mV)	motor_2	no	r
42	register_board2_status	motor_2 board status: <ul style="list-style-type: none">• bit0: photocell_1 status (0=off, 1=on)• bit1: photocell_2 status (0=off, 1=on)	motor_2	no	r
43	register_board2_motors	number of fingers motor_2 board must manage (1...4)	motor_2	yes	r/w
44	register_board2_motors_direction	opening/closing direction of each finger set: <ul style="list-style-type: none">• bit0: direction of finger a (0=standard, 1 =inverted)• bit1: direction of finger b (0=standard, 1=inverted)• bit2: direction of finger c (0=standard, 1=inverted)• bit03: direction of finger d (0=standard, 1=inverted)	motor_2	yes	r/w
45 to 50		reserved			



follow us on



HeadQuarter - LHD S.p.A.

Europe production site

Mr. Giuliano Rivoir

Mobile +39 345 187 9559

Phone/Fax +39 011 908 62 70

g.rivoir@lhd.co.com

info@lhd.co.com

Via Piosasco-Rivalta 30-32

10090 Bruino (TO), Italy

Skype lhd.spa

LHD China/ 太仓艾拉德

Taicang LHD Co., Ltd.

China production site

Mr. James Li/ 李泽俭

No. 68, East Luoyang Road,

Taicang Economic Development Area,

215400 Taicang, Jiangsu, China

Mobile/ 手机 +86 138 1781 2271

Phone/ 座机 +86 512 5354 7892

james.li@lhd.co.com

LHD Deutschland,

Österreich & Schweiz

Mr. Stefano Mereu

Mobile +39 391 763 55 79

s.mereu@lhd.co.com

LHD USA

Mr. Kyle VanOphem

Carlson - Dimond & Wright, Inc.

25201 Terra Industrial Drive (Suite B)

Chesterfield, Michigan, 48051 USA

Mobile +1 (586) 320 3087

k.vanophem@lhd.co.com

LHD South Korea

Mr. Ryang Park

G&S Seojin Co., Ltd.

Seoul, South Korea

Mobile +82 10 2951 4960

rpark@gs-seojin.com

LHD India

Mr. Mahmood Haider

Noida, New Delhi, India

Mobile +91 98910 98818

m.haider@lhd.co.com

LHD Vietnam

Ms. Alice Nguyen

Phuc An Automation Co., Ltd.

Hồ Chí Minh, Việt Nam

Mobile +84 28 3620 5731/5732

info@phucanvn.com

LHD Western Europe

Mr. Jacopo Trivero

Mobile +39 391 350 64 30

j.trivero@lhd.co.com

LHD Thailand

Mr. Teeradon Anumas

Master Automation Co., Ltd.

Phra Nakhon Si Ayutthaya, Thailand

Mobile +66 8 5516 2777

teeradon.anumas@ma-thailand.com

LHD South East Asia

Mr. Roger Chen/ 陈雁

Mobile/ 手机 +86 133 0622 8955

roger.chen@lhd.co.com

LHD Managing Director

Mr. Daniele Ribetto

Mobile +39 346 727 46 78

d.ribetto@lhd.co.com

LHD After-sales Service

Mr. Davide Gomez

Mobile +39 392 429 61 63

d.gomez@lhd.co.com