ITALDIS SERIAL PROTOCOL SPECIFICATIONS v3.60

1 SERIAL LINE CHARACTERISTICS

- Data exchange: Half duplex
- Speed: 9600 baud
- Size of data unit: 8 bits
- Error checking: No Parity
- Stop bits: 1 stop bit

2 SERIAL DATA

The high nibble of the protocol is fixed and can only be one of the following:

000i.iiii	Polling (Master --> Slave) (Wake periph.)
001i.iiii	Start (Master --> Slave) (Wake periph.)
010i.iiii	Start (Slave --> Master)
0110.cccc	Set command
0111.cccc	Request command
1000.dddd	Datum
1001.rrrr	Register
1010.ssss	Hi Check sum
1011.ssss	Lo Check sum
1100.0000	End (Master --> Slave)
111y.yyyy	End (Slave --> Master)

```
    | ||||
    | |||Bit0 =1 -> Data to communicate (1 or more registers change)
    | ||Bit1  =1 -> RTX Error
    | |Bit2   =1 -> Power-On
    | Bit3    =1 -> Local mode(only requests, not settings)
    Bit4      =1 -> Device Engaged
```

3 POLLING

This is used to keep the peripheral 'online' this means in remote mode. If the peripheral for any reason should not receive a poll (or a command) within 7 seconds) it will go offline.

Master: 000i.iiii Address of peripheral to be tested (01-1F)

Slave:	010i.iiii	Address of peripheral tested (01 - 1F)
	111y.yyyy	End (Status of peripheral)

4 DATA TRANSMISSION

The format of data transmission from master to peripheral is as follows:

Master:	001i.iiii	Address of the peripheral to be updated (20-3F)
	0110.cccc	Command (60 - 6F)

BODY OF TRANSMISSION (SEE DESCRIPTION OF COMMANDS)

1010.ssss	Check sum Hi
1011.ssss	Check sum Lo
1100.0000	End

Slave:	010i.iiii	Address of updated peripheral (41 - 5F)
	111y.yyyy	Message received

5 DATA REQUEST

The format of data transmission from master to peripheral is as follows:

Master:	001i.iiii	Address of peripheral to be interrogated (21-3F)
	0111.cccc	Command (70 - 7F)

BODY OF REQUEST (SEE DESCRIPTION OF COMMANDS)

1010.ssss	Check sum Hi
1011.ssss	Check sum Lo
1100.0000	End

Slave:	010i.iiii	Address of peripheral interrogated (41 - 5F)
	0111.cccc	Command (70 - 7F)

BODY OF RESPONSE (SEE COMMANDS DESCRIPTION)

1010.ssss	Check sum Hi
1011.ssss	Check sum Lo
111y.yyyy	End

6 CHECK SUM CALCULATION

The checksum is the exclusive OR (XOR) of all the data, including start and end. Checksum bytes are not to be considered during calculation.

Example:	0010.0010	Wake peripheral Address=2
	0110.0000	Command= Register Transmission
	1001.0000	Register 1 (Hi) Mode B
	1001.0001	Register 1 (Lo)
	1000.0000	Datum (Hi) Mode B=Unlock
	1000.0010	Datum (Lo)
	1010.1000	Check sum Hi
	1011.0001	Check sum Lo
	1100.0000	End from master

7 COMMANDS DEFINED

Here is a list of commands implemented in this version of the protocol:

60	Registers setting.
61	Set Display
62	Selector settings
63	Temperature alarm settings
64	Movement
65	
66	
67	
68	Parameter settings
69	
6A	
6B	
6C	
6D	
6E	
6F.	Parameter block setting (only v3.60)
70	Registers request.
71.	Peripheral identification request.
72.	Selector settings request
73.	Temperature settings request
74.	
75.	
76.	
77.	
78.	Parameter request
79.	
7A.	
7B.	
7C.	
7D.	
7E.	
7F.	Parameter block request. (from v3.60)

8 REGISTERS DEFINED

Register number: 00
Register name: Mode A
Byte number: 01
Access: Read/Write

7	6	5	4	3	2	1	0
			Read/Write	Read/Write			
-	-	-	1=Single transit. When the transit is complete, only this bit is set to zero	1= Locked. 2= Unlocked. 3= Controlled. 4= Timed.			

Register number: 01
Register name: Mode B
Byte number: 01
Access: Read/Write

7	6	5	4	3	2	1	0
			Read/Write	Read/Write			
-	-	-	1=Single transit. When the transit is complete, only this bit is set to zero	1= Locked. 2= Unlocked. 3= Controlled. 4= Timed.			

Register number: 02
Register name: General
Byte number: 01
Access: Read/Write

7	6	5	4	3	2	1	0
						Read/Write	Read
-	-	-	-	-	-	Emergency from serial line	Local emergency

Register number: 03
Register name: Settings 1
Byte count: 01
Access: Read/Write

7	6	5	4	3	2	1	0
			Read/Write	Read/Write	Read/Write		Read/Write
-	-	-	Safety photocell 0= disabled 1= enabled	Buzzer. 0= Off 1= On	Lighting. bit 2 bit 1 value 0 0 Off 0 1 On 1 0 Automatic		Door position 0= N.O. 1= N.C.

Register number: 04
Register name: Alarms
Byte number: 02
Access: Read/Write

15	14	13	12	11	10	9	8
Read/Write	Read/Write	Read/Write	Read/Write	Read/Write	Read/Write	Read/Write	Read/Write
Power-on (reserved)	Battery Fault	Aux 2	Motor fault	Sensor fault	Temperature alarm	Anti-panic (drop arm)	Time-out positioning

7	6	5	4	3	2	1	0
Read/Write	Read/Write	Read/Write	Read/Write	Read/Write	Read/Write	Read/Write	Read/Write
Aux 1	-	-	Cover	Random sort	Incorrect transit	Fraud	Climbing over

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Register number: 05
Register name: Alarms setting
Byte number: 02
Access: Read/Write

15	14	13	12	11	10	9	8
Read/Write	Read/Write	Read/Write	Read/Write	Read/Write	Read/Write	Read/Write	Read/Write
Power-on (reserved)	Battery Fault	Aux 2	Motor fault	Sensor fault	Temperature alarm	Anti-panic (drop arm)	Time-out positioning

7	6	5	4	3	2	1	0
Read/Write	Read/Write	Read/Write	Read/Write	Read/Write	Read/Write	Read/Write	Read/Write
Aux 1	-	-	Cover	Random sort	Incorrect transit	Fraud	Climbing over

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Register number: 06
Register name: Counter A
Byte number: 04
Access: Read/Write

Register number: 07
Register name: Counter B
Byte number: 04
Access: Read/Write

Register number: 08
Register name: Temperature
Byte number: 02
Access: Read

15	14	13	12	11	10	9	8
Read							
Temperature in °C with + or -							

7	6	5	4	3	2	1	0
						Read	Read
-	-	-	-	-	-	Upper threshold reached	Lower threshold reached

Register number: 09
Register name: Actuation
Byte number: 02
Access: Read

15	14	13	12	11	10	9	8
-	-	-	-	-	-	-	-

7	6	5	4	3	2	1	0
Read	Read	Read	Read	Read	Read	Read	Read
Time-out alarm	Obstacle alarm	Photocell's alarm	Door's zero setting	Moving door	Door closed	Door open direction B	Door open direction A

9 DESCRIPTION OF COMMANDS

COMMAND 60 (Set registers)

Master:	001i.iiii	Address of peripheral to be updated (20 - 3F)
	0110.0000	Command
Block A:	1001.rrrr	Register to be updated (Hi)
	1001.rrrr	Register to be updated (Lo)
	1000.dddd	Datum (4 bits)
	.....	Data (no. of data depends on the register to be updated)
	1010.ssss	Check sum Hi
	1011.ssss	Check sum Lo
	1100.0000	End

Note: More that one block A can be transmitted.

Slave:	010i.iiii	Address of updated peripheral (41 - 5F)
	111y.yyyy	Message received

COMAND 61 (Set Display)

Master:	001i.iiii	Address of peripheral to be updated (20 - 3F)
	0110.0001	Comand
	1000.dddd	Data to send to the Display (Parte alta)
	1000.dddd	Data to send to the Display
	1000.dddd	Data to send to the Display
	1000.dddd	Data to send to the Display
	1000.dddd	Data to send to the Display
	1000.dddd	Data to send to the Display
	1000.dddd	Data to send to the Display
	1000.dddd	Data to send to the Display (Parte bassa)
	1010.ssss	Check sum Hi
	1011.ssss	Check sum Lo
	1100.0000	End
Slave:	010i.iiii	Address of the updated peripheral (41 - 5F)
	111y.yyyy	Message recieved

//**********

COMAND 64 (Movement)

Master:	001i.iiii	Address of peripheral to be updated (20 - 3F)
	0110.0100	Command
	1000.dddd	Movement command (High) (see table)
	1000.dddd	movement command (Low)
	1010.ssss	Check sum Hi
	1011.ssss	Check sum Lo
	1100.0000	End

7	6	5	4	3	2	1	0
			Test	Timed command	Close door	Open toward B	Open toward A

Slave:	010i.iiii	Address of the updated peripheral (41 - 5F)
	111y.yyyy	Message recieved

COMAND 68 (Set parameters)

Master:	001i.iiii	Address of peripheral to be updated (20 - 3F)
	0110.1000	Command
Block A:	1000.dddd	Parameter High
	1000.dddd	Parameter Low
	1010.ssss	Check sum Hi
	1011.ssss	Check sum Lo
	1100.0000	End

Note: It is possible to send more than 1 Block A

Slave:	010i.iiii	Address of the updated peripheral (41 - 5F)
	111y.yyyy	Message recieved

COMMAND 71 (Peripheral identification request)

Master:	001i.iiii	Address of peripheral to be interrogated(21-3F)
	0111.0001	Command
	1010.ssss	Check sum Hi
	1011.ssss	Check sum Lo
	1100.0000	End
Slave:	010i.iiii	Address of interrogated peripheral (41 - 5F)
	0111.0001	Command
	1000.dddd	Type of peripheral (Hi)
	1000.dddd	Type of peripheral (Lo)
	1000.dddd	Firmware version (Hi)
	1000.dddd	Firmware version (Lo)
	1000.dddd	Firmware release (Hi)
	1000.dddd	Firmware release(Lo)
	1010.ssss	Check sum Hi
	1011.ssss	Check sum Lo
	111y.yyyy	End

Type:
- 01= Turnstile
- 02= Beam
- 03= Hidden gate
- 04= F-O-S
- 05= Season-ticket holders transit
- 06= POM Duplex
- 07= Serial Display
- 08= P.E.M.
- 09= PasSec ADP
- 0A= PasSec Standard
- 0B= HSPasSec

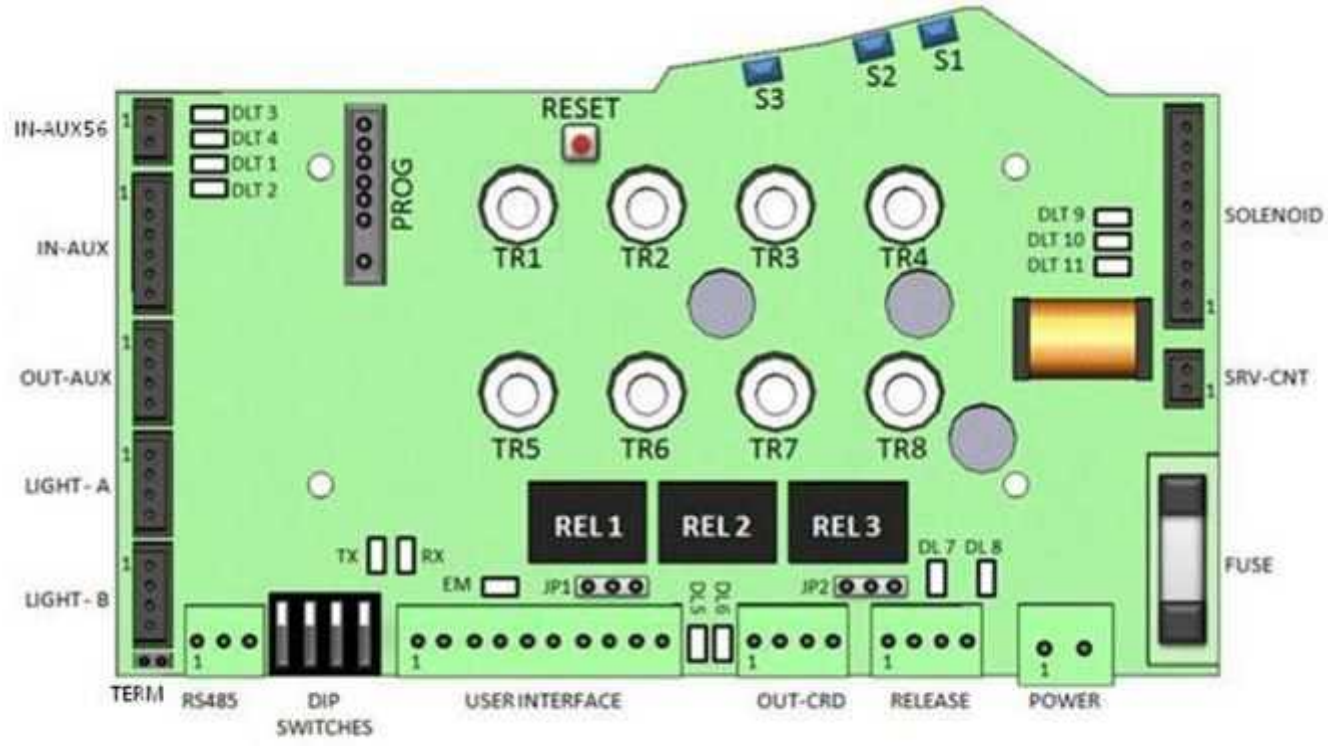
COMAND 78 (Parameter request)

Master:	001i.iiii	Address of peripheral to be interrogated(21-3F)
	0111.1000	Command
	1010.ssss	Check sum Hi
	1011.ssss	Check sum Lo
	1100.0000	End
Slave:	010i.iiii	Address of interrogated peripheral (41 - 5F)
	0111.0010	Command
Block A:	1000.dddd	Parameter Hi
	1000.dddd	Parameter Lo
	1010.ssss	Check sum Hi
	1011.ssss	Check sum Lo
	111y.yyyy	End

Note: you will receive more than 1 Block A

The serial port hardware specs on LL2001 board is as follows:

Connector on the bottom right, pin 1 is in the left:



Protocol usage example:

Please see the protocol document attached. Some explanations:
Basically you need to send a polling command at regular intervals to keep the unit in remote mode, and get as consequence the response with the status.

When you need to do some operations, for example “open direction A”, you will have to set bit 4 of register number 0 at “1”. As soon as the passage is performed, the bit will be automatically set back to “0”, and this can be used to have the passage acknowledgment confirmation.

The whole string to be transmitted will be like this (in Hex):
20 60 90 90 81 80 A8 B1 C0

Explanation of each byte:

20: in binary 0010 0000 - Wake peripheral address “0” (assuming that address dip switch on board is set to
0)
60: in binary 0110 0000 Command Register Transmission
90: in binary 1001 0000 Register Number (Hi) (to select register 0)
90: in binary 1001 0000 Register Number (low) (to select register 0)
81: in binary 1000 0001 Register Value (Hi) – sets register 0 4th bit at 1
80: in binary 1000 0000 Register Value (Low) –all bits to 0

A8 and B2 are the checksum calculations (XOR of all bytes including start and end, checksum byte not included in the calculation) and C0 (in binary 1100 0000) is the end-of –transmission byte.