

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

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

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 62 (Selector settings)

The selector enables the gate to 'select' a passenger in a given direction for a given percentage

Master:	001i.iiii	Address of peripheral to be updated (20 - 3F)
	0110.0010	Comand
	1000.dddd	Selecting percentage (high)
	1000.dddd	Selecting percentage (low)
	1000.dddd	Type direction A
	1000.dddd	Type direction B
	1010.ssss	Check sum Hi
	1011.ssss	Check sum Lo
	1100.0000	End
	010i.iiii	Address of the updated peripheral (41 - 5F)
	111y.yyyy	Message recieved

COMAND 63 (Temperature alarm settings)

Master:	001i.iiii	Address of peripheral to be updated (20 - 3F)
	0110.0011	Comand
	1000.dddd	Low temperature alarm setting (High)
	1000.dddd	Low temperature alarm setting (low)
	1000.dddd	High temperature alarm setting (High)
	1000.dddd	High temperature alarm setting (low)
	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 6F (Parameter block setting) (only from v3.60)

Master:	001 i.iii	Address of peripheral to be interrogated(21 - 3F)
	0110.1111	Command
	1001.rrrr	Position of first Parameter to be set (Hi)
	1001.rrrr	Position of first Parameter to be set (Lo)
	1001.rrrr	Number of Parameters to be sent (Hi)
	1001.rrrr	Number of Parameters to be sent (Lo)
	1000.rrrr	1 st Parameter sent (Hi)
	1000.rrrr	1 st Parameter sent (Lo)
		Data (no. of data depends on number of parameters sent)
	1000.rrrr	n th Parameter sent (Hi)
	1000.rrrr	n th Parameter sent (Lo)
	1010.ssss	Check sum Hi
	1011.ssss	Check sum Lo
	1100.0000	End

- Note Number of parameters must be ≤ 31 (0x1F hex); first parameter must be ≤ 127 (0x7F hex)

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

- Note If the request contains an error (too many parameters etc...) you will have no answer from the peripheral.
- The answer to this message may take up to 1000mS so please wait....

COMMAND 70 (Registers request)

Master: 001i.iiii Address of peripheral to be interrogated(21 - 3F)
 0111.0000 Command

~~Block A: 1001.rrrr Register to be requested (Hi)~~
~~1001.rrrr Register to be requested (Lo)~~

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

~~Note: Block A is optional, more that 1 can be transmitted.~~

Slave: 010i.iiii Address of peripheral interrogated (41 - 5F)
 0111.0000 Command

Block B: 1001.rrrr Register ~~requested or~~ changed (Hi)
 1001.rrrr Register ~~requested or~~ changed (Lo)
 1000.dddd Datum (4 bit)

..... Data (no. of data depends on requested register)

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

Note: Block B varies according to the parameters ~~requested or~~ changed.

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

COMANDO 72 (Selector settings request)

Master:	001i.iiii	Address of peripheral to be interrogated(21-3F)
	0111.0010	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
	1000.dddd	Selecting percentage (high)
	1000.dddd	Selecting percentage (low)
	1000.dddd	Type direction A
	1000.dddd	Type direction B
	1010.ssss	Check sum Hi
	1011.ssss	Check sum Lo
	111y.yyyy	End

COMAND 73 (Temperature settings request)

Master:	001i.iiii	Address of peripheral to be interrogated(21-3F)
	0111.0011	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
	1000.dddd	Low temperature alarm setting (High)
	1000.dddd	Low temperature alarm setting (low)
	1000.dddd	High temperature alarm setting (High)
	1000.dddd	High temperature alarm setting (low)
	1010.ssss	Check sum Hi
	1011.ssss	Check sum Lo
	111y.yyyy	End

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

<u>Block A</u> :	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

COMMAND 7F (Parameter block request) (only from v3.60)

Master:	001 i.iiii	Address of peripheral to be interrogated(21 - 3F)
	0111.1111	Command
	1001.rrrr	First Parameter to be requested (Hi)
	1001.rrrr	First Parameter to be requested (Lo)
	1001.rrrr	Number of Parameters requested (Hi)
	1001.rrrr	Number of Parameters requested (Lo)
	1010.ssss	Check sum Hi
	1011.ssss	Check sum Lo
	1100.0000	End

- Note Number of parameters must be ≤ 31 (0x1F hex); first parameter must be ≤ 127 (0x7F hex)

Slave:	010i.iiii	Address of peripheral interrogated (41 - 5F)
	0111.1111	Command
	1000.rrrr	First Parameter to be requested (Hi)
	1000.rrrr	First Parameter to be requested (Lo)
	1000.rrrr	Number of Parameters requested (Hi)
	1000.rrrr	Number of Parameters requested (Lo)
	1000.rrrr	Parameter requested 1 st (Hi)
	1000.rrrr	Parameter requested 1 st (Lo)
		Data (no. of data depends on number of parameters requested)
	1000.rrrr	Parameter requested n th (Hi)
	1000.rrrr	Parameter requested n th (Lo)
	1010.ssss	Check sum Hi
	1011.ssss	Check sum Lo
	111y.yyyy	End

- Note If the request contains an error (too many parameters etc...) you will have no answer from the peripheral.

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.