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Title:

GC01 Gate Controller

NEP Platform

Serial protocol vers. 3.80

Document Number:	Date of issue by Author:
TE0008A00	**05 April 2006**

JOB: **N.E.P.**

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DOCUMENT EVOLUTION

Rev.	Date	Description	Page	Paragraph.
00	05th May 2006	Difference from C0000119-B (rev 3.70) -Loader packet support (CMD 0x77)	1- 19	

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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 exclusiveOR (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
62
63
64
65
66
67
68 Parameter settings
69
6A
6B
6C
6D
6E
6F. Parameter block setting

70 Registers request.
71.
72.
73.
74.
75.
76.
77. Loader packet
78. Parameter request
79.
7A.
7B.
7C.
7D.
7E.
7F. Parameter block request

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.			

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.			

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

7	6	5	4	3	2	1	0
				Read/Write	Read	Read/Write	Read
-	-	-	-	Serial Maintenance	Local Maintenance	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
-	-	-		Buzzer. 0= Off 1= On	-		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		Read	Read	Read		
Power-on (reserved)	Battery Fault		Motor fault	Sensor fault	-	-	-

7	6	5	4	3	2	1	0
						Read	
-	-	-			Incorrect Transit	Fraud	-

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		Motor fault	Sensor fault	-		

7	6	5	4	3	2	1	0
Read/Write	Read/Write	Read/Write	Read/Write	Read/Write	Read/Write	Read/Write	Read/Write
	-	-			Incorrect Transit	Fraud	

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

NOT AVAILABLE

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
-	Obstacle alarm	Photocell's alarm	Door's zero setting	Moving door	Door closed	Door open direction B	Door open direction A

Register number: 10
Register name: Auxiliary outputs
Byte number: 02
Access: Read

NOT AVAILABLE

Register number: 11
Register name: Auxiliary inputs
Byte number: 02
Access: Read

NOT AVAILABLE

Register number: 12
Register name: Aisle status
Byte number: 02
Access: Read

15	14	13	12	11	10	9	8
Passage authorization remaining in B direction				Passage authorization remaining in A direction			

7	6	5	4	3	2	1	0
	Read	Read	Read	Read	Read	Read	Read
Wrong way alert	Tailgate Alert	-	-	Engaged direction B	Engaged direction A	Passage Cancellation B	Passage Cancellation 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 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)

Master:	001 i.iiii	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	1st Parameter sent (Hi)
	1000.rrrr	1st Parameter sent (Lo)
	.....	Data (no. of data depends on number of parameters sent)
	1000.rrrr	nth Parameter sent (Hi)
	1000.rrrr	nth 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.iiii	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

COMAND 77 (Loader packet)

Master:	001i.iiii	Address of peripheral to be interrogated(21-3F)
	0111.0111	Command
Block A:	1000.dddd	Parameter Hi
	1000.dddd	Parameter Lo
	1010.ssss	Check sum Hi
	1011.ssss	Check sum Lo
	1100.0000	End
Slave:	010i.iiii	Address of interrogated peripheral (41 - 5F)
	0111.0111	Command
Block B:	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 and or Block B depending on Loader packets values.

Note: a loader answare may take several seconds (up to 15s for very hard loader commands). This means that, during a loader section, the not selected slaves may wait for a polling request over the timeout switching offline (see chapter 3).

COMAND 78 (Parameter request)

Note: This is an old command. With this command the Master can have only an amount of maximum 32 byte.

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, for a maximum of 32

COMMAND 7F (Parameter block request)

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 1st (Hi)
	1000.rrrr	Parameter requested 1st (Lo)
	.....	Data (no. of data depends on number of parameters requested)
	1000.rrrr	Parameter requested nth (Hi)
	1000.rrrr	Parameter requested nth (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.