

Dear ONE TOUCH® Profile® Meter User:

Thank you for requesting additional information regarding your ONE TOUCH Profile Blood Glucose Monitoring Meter. We hope the following **ONE TOUCH Profile Meter RS-232 Communication Specification** is helpful to you.

Please note that this specification is not intended to be a substitute for a complete data management software product. We are providing this specification to you with the understanding that you are very familiar with computers and computer programming and will be able to use the information appropriately.

For your information, we have found the use of most standard communications packages extremely helpful in establishing meter to computer communications and performing meter data downloading. Additionally, the use of a commercial spreadsheet program can be useful for data analysis.

If you are interested in obtaining the LifeScan Interface Cable described in this specification, please contact us. Within the U.S. please call the Data Management Professional Line at 1 800 382-7226, M-F, 8AM to 5PM, PST, or send us an e-mail at LifeScan@lfsus.jnj.com. In Canada please call our Customer Care Line at 1 800 663-5521. Outside of the U.S. and Canada, please contact your local country office for product availability information. A list of countries is available via the Around The World section of the LifeScan Web site.

Thank you for your interest in LifeScan products.

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The following information may be used when attempting to **upload** the ONE TOUCH Profile Meter memory to a computer while using a communications package and the LifeScan Interface Cable. The information may also be used to **erase** the Meter's data log. For additional technical information, see the following pages, call our Data Management Line at 1 800 382-7226, or send us an e-mail at LifeScan@lfsus.jnj.com.

EQUIPMENT NEEDED

Meter: ONE TOUCH Profile

Cable: LifeScan Interface Cable

Computer: IBM[®], IBM compatible or Macintosh[®]

Adapter: IBM or compatible: A 25-pin to 9-pin adapter if serial/com port is a 9-pin

Macintosh: Hayes Modem cable or equivalent

Software: A communications software package

PROCEDURE

Cable: Insert cable into meter data port and available serial/com port on computer.

Software: Select port settings in communications software:

Baud Rate = 9600 bps Data Bits = 8Stop Bits = 1 Parity = none

Flow Control = Xon/Xoff Com. Port = port # utilized

Initiate the terminal screen of your communications software package. Turn the meter on. The screen should mimic the content of the ONE TOUCH Profile display, for example:

```
0,"",0,"INSERT",""
0,"",0,"CODE 9",""
0,"",0,"STRIP ",""
```

The meter is now communicating with your computer. You may now issue the following commands to download and erase the results stored in the Meter's memory.

- To **download** data, type "**DMI**" displays results and insulin records stored in the Meter's memory. or type "**DMP**" displays only the results stored in the Meter's memory.
- To **erase** the data, type "**DMZ**" erases results and insulin records stored in the Meter's memory.

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RS-232 COMMUNICATION

The ONE TOUCH Profile Meter supports asynchronous, RS-232 communications via the data port at 9600 baud only. The "Data Manager" signaling scheme used by the ONE TOUCH and GlucoScan 3000 Meters, and the "DATA A" and "DATA B" data formats supported by the ONE TOUCH II Meter are NOT supported. Data are transferred as 8-bit characters with no parity and one stop bit. Communications is via three-wire (RS-232 designations of BA, BB, AB) cable with XON/XOFF handshaking supported on transmissions from the Meter, except for mimicked messages (see below).

MIMICKING

The ONE TOUCH Profile Meter "mimics" its LCD screen by transmitting comma delimited, ASCII text records. The minimum length record (blank screen except, possibly, one or more icons) is 14 bytes:

The maximum length record (all decimal points and colons) is 47 bytes:

The "normal" record is about 38 bytes:

where:

n encodes the Memory and Battery icons as:

- 0 neither icon displayed
- 1 Memory displayed
- 2 Battery displayed
- 3 Memory and Battery displayed

m encodes the UNITS, mg/dL, and mmol/L icons as:

- 0 none displayed
- 1 mmol/L displayed
- 2 mg/dL displayed
- 3 mmol/L and mg/dL displayed
- 4 UNITS displayed
- 5 mmol/L and UNITS displayed
- 6 mg/dL and UNITS displayed
- 7 mmol/L, mg/dL, and UNITS displayed

For example, the following screen will be mimicked as follows:



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RS-232 COMMAND SUMMARY

• DM? - send the Meter's software version and date

• DM@ - send the Meter's serial number

• DM^[nnn] - change or display the Meter's "new data marker"

• DMF - send date and time from the Meter's clock

• DMI - dump the data log from the Meter's memory

DMP - dump blood, control, and check strip records from the Meter's memory

• DMS... - change or display the Meter's Status

DMS? - send all options settings

DMSB'x' - change or display the current Beep setting

DMSC'x' - returns the Communications mode

DMSD'x' - change or display the Date display format

DMSE'x' - change or display the current Event Averages setting

DMSI'x' - change or display the current Insulin Prompt setting

DMSL'x' - change or display the current Language setting

DMSP'x' - change or display Punctuation symbol used with mmol/L or BOLUS insulin

DMSR'x' - display the baud Rate setting

DMSS'x' - change or display the Strip lot calibration code

DMST'x' - change or display the Time display format

DMSU'x' - change or display the glucose Units

DMSX'x' - display the translation status for new languages

• DMTmm/dd/yy hh:mm[:ss] - set the date and time of the Meter's clock

DMZ
 Zero the Meter's data log

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RS-232 "DM" COMMANDS

Serial commands and responses are encoded as ASCII characters. A checksum is generated for all non "mimicked" messages and the hexadecimal representation of the least significant 16 bits of the checksum (a blank followed by 4 characters) is placed at the end of each response message, just before the carriage return (<CR>), line feed (<LF>) pair.

In order to keep the meter from automatically powering down, the external device should periodically send "DMT<CR>". This causes the meter to respond with "T 0054" and to reset the automatic power-down time-out to 2 minutes. Note that the "DMS...", "DMP", "DMI", and "DM^" commands also reset the automatic power-down time-out to 2 minutes.

Commands are handled in the order they are received. All responses will be in English, regardless of the current language setting. Note that some commands require termination with a carriage return (<CR>) while others do not. Also note that brackets ("[]") denote optional parameters and are NOT part of the actual command. The 'DM' prefix is not echoed by the meter.

Note: It may take the meter a moment to respond. Please wait at least 2 seconds before sending another command. If the meter does not respond to a command after 2 seconds, re-send the command. For higher performance, wait about 50 milliseconds between sending each character of the command. If no response to command after about 100 milliseconds, then re-send the command.

Command	Action / Response		
DM?	Returns the software version number and creation date, where " x " is the calibration data block format code ("M" for example), "nn.nn.nn" is the software version number ("71.00.00" for example), and "mm/dd/yy" is the software creation date.		
	<pre>?xnn.nn mm/dd/yy cksm<cr><lf></lf></cr></pre>		
DM@	Returns the meter's unique, nine-digit serial number assigned during calibration. This command is intended to be used to identify the meter connected to an external device's serial port.		
	@ "XXX1234ZG" cksm <cr><lf></lf></cr>		
DM^[nnn] <cr></cr>	Changes the current "new-data-marker" to "nnn" (0 - 250) and returns the new value. If "nnn" is invalid or not specified, the current setting is returned. This value represents the number of readings taken since the "new-data-marker" was last set. For example, if only the most recent 100 results were desired, sending "DM^100" would effectively erase results older than the most recent 100 results. Sending "DM^250" recovers all the results. Sending "DM^0" erases all results. Note that this command manipulates the datalog information record, but does not affect any of the stored results.		
	^ nnn cksm <cr><lf></lf></cr>		
DMF	Returns the current date and time from the meter's clock in the selected time and date formats.		
	F "dow", "mm/dd/yy", "hh:mm:ss xM" cksm <cr><lf> for (M-D-Y, AM/PM) F "dow", "mm/dd/yy", "hh:mm:ss " cksm<cr><lf> for (M-D-Y, 24:00) F "dow", "dd/mm/yy", "hh:mm:ss xM" cksm<cr><lf> for (D-M-Y, AM/PM) F "dow", "dd/mm/yy", "hh:mm:ss " cksm<cr><lf> for (D-M-Y, AM/PM) F "dow", "dd/mm/yy", "hh:mm:ss " cksm<cr><lf> for (D-M-Y, 24:00)</lf></cr></lf></cr></lf></cr></lf></cr></lf></cr>		
	"dow" ("day-of-week") = SUN, MON, TUE, WED, THU, FRI, or SAT.		



Command Action / Response

DMI

Dumps the datalog from the meter's memory. The response is always transmitted in English in the selected units, date, and time formats. A header is sent first, which contains information about the format of the data and how many records will follow. Each datalog record is transmitted next. Leading zeros are suppressed.

HEADER

```
I nnn, "MeterSN ", "ENGL. ", "M.D.Y. ", "AM/PM", "MG/DL ", "! min",
   (1)   (2)   (3)   (4)   (5)   (6)   (7)

"! max" cksmCL
   (8)   RF
```

- (1) Number of datalog records to follow (0 250)
- (2) Meter serial number (9 characters)
- (3) Currently selected language
- (4) Date format (M-D-Y shown)
- (5) Time format (AM/PM shown)
- (6) Unit of measure for glucose values (mg/dL shown)
- (7) Meter's check strip range lower limit in selected units
- (8) Meter's check strip range upper limit in selected units

EACH DATALOG RECORD

- (9) Day-of-week (SUN, MON, TUE, WED, THU, FRI, SAT)
- (10) Date of reading or insulin record in selected format (M-D-Y shown)
- (11) Time of reading or insulin record in selected format (AM/PM shown)
- (12) Result format:

```
- blood test result (mg/dL)
" nnn "
                                   - blood test result (mmol/L)
"MMnn.n "
                                   - blood test result > 600 mg/dL
" HIGH "
                                   - check strip test result (mg/dL)
"! nnn "
                                   - check strip test result (mmol/L)
"! nn.n "
                                   - check strip test result > 600 mg/dL
"!HIGH "
                                   - control solution test result (mg/dL)
"C nnn "
"C nn.n "
                                   - control solution test result (mmol/L)
"CHIGH "
                                   - control solution test result > 600 mg/dL
            to "I 150 "
"I 000 "
                                   - CARB records
"I 00.0 " to "I 20.0 "
                                   - BOLUS insulin records
"I 00 "
            to "I 99 "
                                   - all other insulin records
```

(13) For check strip test results, nn is always 0.

For blood or control solution test results, nn indicates the event:

```
0 - None
                         6 - Pre Dinner
                                                12 - After Exercise
1 - Fasting
                         7 - After Dinner
                                                13 - Illness
                         8 - Different Food
2 - Pre Breakfast
                                                14 - Hypoglycemia
                         9 - Bedtime
                                                15 - Other
3 - After Breakfast
4 - Pre Noon Meal
                        10 - During Night
5 - After Noon Meal
                        11 - Pre Exercise
```

For insulin records, nn indicates the insulin type:

```
0 - REG 4 - 70/30 8 - BOLUS
1 - NPH 5 - 50/50 9 - CARB
2 - LENTE 6 - MIX 10 - 80/20
3 - ULENTE 7 - OTHER 11 - 60/40
```

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```
Action / Response
Command
DMP
                 Dumps the blood, control solution, and check strip records from the meter's memory in ASCII text format.
                 This command is intended to be compatible with the ONE TOUCH II Meter's "DMP" command.
                 Same response as the "DMI" command except insulin records are NOT sent and the leading character for
                 the header and each datalog record is a "P" instead of an "I".
DMSn
                 Invalid 'DMS' sub-command ("n") received. The valid 'DMS' sub-commands are (?, B, C, D, E, I, L, P,
                 R, S, T, U, and X)
                 S 0053<CR><LF>
DMS?
                 Return all user options settings.
                 S?, Sn, Ln, X0, Bn, Un, Pn, Dn, Tn, C0, R0, En, In cksm<CR><LF>
                                     : Strip Cal. Code (0 - 9 corresponds to 1 - 10, A - F corresponds to 11 - 16)
                         LO-LH, LJ : Selected language:
                                       0 - English
                                                                             E - Turkish
                                                         7 - German
                                       1 - Spanish
                                                         8 - Symbolic
                                                                             F - Czech
                                       2 - French
                                                         9 - Danish
                                                                             G - Greek
                                       3 - Italian
                                                         A - Finnish
                                                                             H - Russian
                                       4 - Dutch
                                                         B - Norwegian
                                                                             J - British
                                       5 - Portuguese
                                                         C - Polish
                                       6 - Swedish
                                                         D - Hungarian
                         Х0
                                     : Translation status (for compatibility with OT2, always ENGL.)
                         B0 | B1
                                     : Beeper (0 = ON, 1 = OFF)
                                     : Units (0 = mg/dL, 1 = mmol/L)
                         U0 | U1
                                     : Punctuation (0 = decimal point, 1 = comma)
                         P0 | P1
                         D0 | D1
                                     : Date format (0 = M-D-Y, 1 = D-M-Y)
                                     : Time format (0 = AM/PM, 1 = 24:00)
                         T0 | T1
                                     : Communications mode (for OT2 compatibility, always RS-232)
                         C0
                                     : RS-232 Baud Rate (for OT2 compatibility, always 9600)
                         R0
                                     : Event Averages (0 = OFF, 1 = ON)
                         E0 | E1
                         I0 | I1
                                     : Insulin Prompt (0 = OFF, 1 = ON)
DMSBx
                 Change and/or return the current Beep setting. Beeper sounds if turned ON or left ON.
                 SB0," BEEP " 0291<CR><LF>
                                                         - turn ON, return new setting
                                                         - turn OFF, return new setting
                 SB1, "NOBEEP" 02EF<CR><LF>
                                                         - toggle, return new setting
                 SB+, "xxxxxx" cksm<CR><LF>
                 SB?, "xxxxxx" cksm<CR><LF>
                                                         - invalid command, return current setting
DMSCx
                 Returns the Communications mode. Note that the communications mode CANNOT be changed.
                                                         - always set to RS-232
                 SC0, "RS-232" 029F<CR><LF>
                                                         - always set to RS-232
                 SC+, "RS-232" 029A<CR><LF>
                                                         - invalid command, return current state
                 SC?, "RS-232" 02AE<CR><LF>
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Command	Action / Response			
DMSDx	Change and/or return the Date format.			
	SD0, "M.D.Y. "030B <cr><lf>- select month/day/year, return new setting SD1, "D.M.Y. "030C<cr><lf>- select day/month/year, return new setting SD+, "xxxxxxx" cksm<cr><lf>- toggle, return new setting SD?, "xxxxxxx" cksm<cr><lf>- invalid command, return current setting</lf></cr></lf></cr></lf></cr></lf></cr>			
DMSEn	Change and/or return the current Event Averages setting.			
	SEO, "NOAVGS" 0306 <cr><lf> SE1, "AVGS" 02AA<cr><lf> SE+, "xxxxxx" cksm<cr><lf> SE?, "xxxxxxx" cksm<cr><lf> invalid command, return current setting</lf></cr></lf></cr></lf></cr></lf></cr>			
DMSIn	Change and/or return the current Insulin Prompt setting.			
	SIO, "NOINSL" 030F <cr><lf> SI1, "INSL" 02B3<cr><lf> SI+, "xxxxxx" cksm<cr><lf> SI?, "xxxxxxx" cksm<cr><lf> invalid command, return current setting</lf></cr></lf></cr></lf></cr></lf></cr>			
DMSLx	Change and/or return the current Language setting (SL0 - SLH compatible with OT2).			
	SLO, "ENGL. "02D3 <cr><lf> SL1, "ESPAN. "0305<cr><lf> Select English, return new setting SL2, "FRANC. "02F9<cr><lf> Select Spanish, return new setting SL3, "ITALIA" 02F6<cr><lf> Select Italian, return new setting SL4, "NEDER. "02FF<cr><lf> Select Dutch, return new setting SL5, "PORT. "02F7<cr><lf> Select Portuguese, return new setting SL6, "SVENS. "0322<cr><lf> Select Swedish, return new setting SL7, "DEUTS. "0319<cr><lf> Select German, return new setting SL8, "0X00X0" 0333<cr><lf> Select Symbolic, return new setting SL9, "DANSK "02D9<cr><lf> Select Danish, return new setting SLA, "SUOMI "02FD<cr><lf> Select Finnish, return new setting SLB, "NORSK "02FE<cr><lf> Select Norwegian, return new setting SLC, "POLSKI" 0324<cr><lf> Select Polish, return new setting SLC, "TURKCE" 0314<cr><lf> Select Hungarian, return new setting SLG, "E^^/KA" 0312<cr><lf> Select Turkish, return new setting SLG, "E^^/KA" 0312<cr><lf> Select Turkish, return new setting SLJ, "BRIT "02CA<cr><lf> Select Russian, return new setting SL+, "xxxxxxx" cksm<cr><lf> Select Russian, return new setting SL+, "xxxxxxxx" cksm<cr><lf> SEL+, "xxxxxxxx cksm<cr><lf> SEL+, "xxxxxxxx cksm<cr><lf> SEL+, "xxxxxxxx cksm<cr><lf> SEL+, "xxxxxxxx cksm<cr><lf> SEL+, "xxxxxxx cksm<cr><lf> SEL+</lf></cr></lf></cr></lf></cr></lf></cr></lf></cr></lf></cr></lf></cr></lf></cr></lf></cr></lf></cr></lf></cr></lf></cr></lf></cr></lf></cr></lf></cr></lf></cr></lf></cr></lf></cr></lf></cr></lf></cr></lf></cr></lf></cr></lf></cr></lf></cr></lf></cr></lf></cr></lf></cr></lf></cr></lf></cr></lf></cr></lf></cr></lf></cr></lf></cr></lf></cr></lf></cr></lf></cr>			

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Command	Action / Response			
DMSPx	Change and/or return the Punctuation symbol used with mmol/L or BOLUS insulin values.			
	SPO, "DEC PT" 02D3 <cr><lf> - select decimal point, return new setting SP1, "COMMA " 02D1<cr><lf> - select comma, return new setting SP+, "xxxxxx" cksm<cr><lf> - toggle, return new setting SP?, "xxxxxxx" cksm<cr><lf> - invalid command, return current setting</lf></cr></lf></cr></lf></cr></lf></cr>			
DMSRx	Returns the baud Rate setting. Note that the baud rate CANNOT be changed.			
	SR0," 9600" 0254 <cr><lf> - always set to 9600 SR+," 9600" 024F<cr><lf> - always set to 9600 - always set to 9600 SR?," 9600" 0263<cr><lf> - invalid command, return current setting</lf></cr></lf></cr></lf></cr>			
DMSSx	Change and/or return the current Strip lot calibration code (SCC).			
	SS0, "CODE 1" 02B2 <cr><lf> - set SCC = 1 : : : SS9, "CODE10" 02CB<cr><lf> - set SCC = 10 SSA, "CODE11" 02D4<cr><lf> - set SCC = 11</lf></cr></lf></cr></lf></cr>			
	: : : : : : : : : : : : : : : : : : :			
DMSTx	Change and/or return the Time format.			
	STO, "AM/PM" 02C1 <cr><lf> - select AM/PM, return new setting ST1, "24:00" 0288<cr><lf> - select 24 hour, return new setting ST+, "xxxxxx" cksm<cr><lf> - toggle, return new setting ST?, "xxxxxx" cksm<cr><lf> - invalid command, return current setting</lf></cr></lf></cr></lf></cr></lf></cr>			
DMSUx	Change and/or return the glucose Units setting.			
	SUO, "MG/DL" 02BB <cr><lf> - select mg/dL, return new setting SU1, "MMOL/L" 02F9<cr><lf> - select mmol/L, return new setting SU+, "xxxxxx" cksm<cr><lf> - toggle, return new setting SU?, "xxxxxx" cksm<cr><lf> - invalid command, return current setting</lf></cr></lf></cr></lf></cr></lf></cr>			
DMSXn	Returns the translate status for "DM" command responses. Note that the translate status CANNOT be changed.			
	SX0, "ENGL. " 02DF <cr><lf> - always set to English SX+, "ENGL. " 02DA<cr><lf> - always set to English SX?, "ENGL. " 02EE<cr><lf> - invalid command, return current status</lf></cr></lf></cr></lf></cr>			

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Command Action / Response

DMTmm/dd/yy
hh:mm[:ss]
<CR>

Sets the meter clock with the specified date (entered in M-D-Y format) and time (entered in 24 hour format). If seconds are not specified, seconds are set to zero. Returns the new meter clock date and time after the clock has been successfully set, or returns "T 0054" if the date and/or time specified was invalid. The date must be specified as "month-day-year", and the separator can be slash ("/") or dash ("-"). The clock setting range is 1/1/92, 00:00:00 through 12/31/22, 23:59:59. The date and time returned will be in the selected time and date formats. "dow" ("day-of-week") is always in English (SUN, MON, TUE, WED, THU, FRI, or SAT). This command will also reset the automatic shut-off time to 2 minutes.

DMZ

Zeros the meter's datalog stored in EEPROM and resets the meter.

Z 005A<CR><LF>

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CABLING

We recommend using the Interface Cable from LifeScan. This cable can be used to connect a ONE TOUCH Profile Meter to the serial port (communication port) of an IBM[®], or compatible, personal computer. The LifeScan Interface Cable may be adapted for use with a Macintosh[®] computer by using a Hayes Modem, or equivalent, cable which will interface the DB-25 connector to the Macintosh communication port.

For cable availability, please contact us. In the U.S., please call the LifeScan Data Management Line at 1 800 382-7226, M-F, 8AM-5PM, PST, or send us an e-mail at LifeScan@lfsus.jnj.com. In Canada, please call our Customer Care Line at 1 800 663-5521. For cable availability outside of the U.S. and Canada, please contact your local country office. A list of countries is available via the Around The World section of the LifeScan Web site.

LifeScan Interface Cable Pin-out:

DB-25 pin	RS-232 Signal	<u>Description</u>
2	TXD	transmitted data from computer to Meter
3	RXD	received data from Meter to computer
4	RTS	request to send from computer
6	DSR	data set ready to computer (connected to DTR)
7	GND	signal ground
20	DTR	data terminal ready from computer

The following conditions must be met to enable the LifeScan Interface Cable to work with the ONE TOUCH Profile Meter:

- 1. The computer must assert (apply a positive RS-232 voltage to) RTS and/or DTR. Either or both of these signals supply power to the cable circuitry.
- 2. The computer may leave RTS "open" but may not drive it to a negative RS-232 level.
- 3. The computer communications port must be set to 9600 baud, 8 data bits, no parity, and one stop bit.

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