

# Interface

## 9325 USB Communication Details



9325

Portable Sensor Display

|  |          |
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## Introduction/overview

The 9325 allows simple display of strain bridge-based measurements such as load cells and pressure gages with sensitivity up to  $\pm 480$  mV/V.

For details on configuration and use, see the Quick Start Guide and User Manual available at [interfaceforce.com](http://interfaceforce.com). This manual is intended to show how to read basic information from the 9325 via the USB connection using a virtual com port.

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## Getting started

If you do not install the 9325 Toolkit (with the drivers) the 9325 will simply appear as a virtual com port. After toolkit installation, it will appear as a **9325 Serial Device**.

The toolkit is available at [interfaceforce.com](http://interfaceforce.com). All setup/configuration should be carried out using the Toolkit, the instructions in this manual are for reading measured values.

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## Communication overview

Communication is via an ASCII protocol.

The ASCII protocol uses only printable characters and carriage-return ('<CR>'), which allows a "dumb" terminal device or a PC programme like Hyper-Terminal or Tera Term to interrogate the device.

The protocol allows you to

- Read a parameter or result
- Execute a command

If you want to perform other communication functionality such as performing calibration you will need to refer to the 9325 User Manual and the 9325 Toolkit.

Communication settings for the virtual COM port are as follows:

- Baud rate 115200 (autosensing, others can be used)
  - no parity
  - 8 data bits
  - 1 stop bit
- 

## Commands

We have two available command types, **READ** and trigger **COMMAND**.

To **read** a parameter, enter the parameter number, followed by a question mark and carriage return. For instance, to read the **GROSS** value of the currently selected calibration range:

```
A204? <CR>
```

Which will return a message in this format:

```
A204=4499CA8F
```

(This is the 4 byte value (MSB first) held in the **GROSS** register in IEEE 754 floating point format. In this case, the decoded value is 1230.320)

To trigger a **command**, enter the command parameter number followed by an equals sign and carriage return.

For instance, to trigger the command, **NEXT RANGE**:

```
A3B0= <CR>
```

Which will return the message:

```
A3B0=
```

And the next available range will be selected on the display and for the readings.

**!** **Do not put anything after the equals sign or use any commands not listed as you could break the device which may require a return to factory and associated costs to fix.**

See appendix 1 for error codes.

## Parameters in Access Order

| Command           | Name              | Format | Permissions | Description  |
|-------------------|-------------------|--------|-------------|--|
| Time & Date       |                   |        |             |  |
| 2007              | DATE AND TIME     | DATE   | RO          | Real-time clock in Epoch Unix format   |
| Alarms            |                   |        |             |  |
| A100              | ALARM STATE       | UINT8  | RO          | 0 = Alarm inactive<br>1 = Alarm active   |
| Labels            |                   |        |             |  |
| A010              | RANGE NAME        | STRING | RO          | Current selected range name string   |
| Measurement Flags |                   |        |             |  |
| A120              | TARE ACTIVE       | UINT8  | RO          | 0 = No tare value applied<br>1 = Tare value applied                                  |
| A122              | MV/V LOW          | UINT8  | RO          | 0 = mV/V input above minimum value<br>1 = mV/V input below minimum value             |
| A123              | MV/V HIGH         | UINT8  | RO          | 0 = mV/V input below maximum value<br>1 = mV/V input above maximum value             |
| A124              | GROSS LOW         | UINT8  | RO          | 0 = GROSS above minimum value<br>1 = GROSS below minimum value                       |
| A125              | GROSS HIGH        | UINT8  | RO          | 0 = GROSS below maximum value<br>1 = GROSS above maximum value                       |
| A126              | SCALE STEADY      | UINT8  | RO          | 0 = Scale not steady<br>1 = Scale steady   |
| A127              | GROSS POLARITY    | UINT8  | RO          | 0 = GROSS value is negative<br>1 = GROSS value is positive                           |
| A128              | NET POLARITY      | UINT8  | RO          | 0 = NET value is negative<br>1 = NET value is positive                               |
| A12A              | FOUR WIRE ACTIVE  | UINT8  | RO          | 0 = 6 wire measurement active<br>1 = 4 wire measurement active                       |
| A12B              | SHUNT CAL ACTIVE  | UINT8  | RO          | 0 = Shunt cal inactive<br>1 = Shunt cal active                                       |
| A12C              | CALIBRATION ERROR | UINT8  | RO          | 0 = No calibration error detected<br>1 = Calibration error detected                  |
| TEDS Flags        |                   |        |             |  |
| A160              | TEDS PRESENT      | UINT8  | RO          | 0 = TEDS not present<br>1 = TEDS present   |
| A161              | TEDS OVERRIDE     | UINT8  | RO          | 0 = TEDS enabled<br>1 = TEDS disabled  |
| A162              | TEDS ERROR        | UINT8  | RO          | 0 = No TEDS error detected<br>1 = TEDS error detected<br>(See D050 below for detail) |
| Measurements      |                   |        |             |  |
| A201              | MV/V              | FLOAT  | RO          | The factory calibrated input in mV/V   |
| A202              | ENG               | FLOAT  | RO          | The calibrated value in Engineering units  |
| A203              | GROSS HOLD        | FLOAT  | RO          | The GROSS value for 'Hold' & 'Run' mode  |
| A204              | GROSS             | FLOAT  | RO          | The GROSS value (after system zero)  |
| A205              | GROSS MAX         | FLOAT  | RO          | The maximum GROSS load measurement   |
| A206              | GROSS MIN         | FLOAT  | RO          | The minimum GROSS load measurement   |
| A207              | GROSS DELTA       | FLOAT  | RO          | The difference between GROSS max and min values                                      |
| A208              | NET HOLD          | FLOAT  | RO          | The NET load for 'Hold' & 'Run' mode   |

|  |                       |        |     |  |
|--|-----------------------|--------|-----|--|
| A209   | NET                   | FLOAT  | RO  | The NET value  |
| A20A   | NET MAX               | FLOAT  | RO  | The maximum NET measurement  |
| A20B   | NET MIN               | FLOAT  | RO  | The minimum NET measurement  |
| A20C   | NET DELTA             | FLOAT  | RO  | The difference between NET max and min values  |
| Measurement Commands   |                       |        |     |  |
| A300   | RESET STATS           | EMPTY  | CMD | Reset the max/min statistics   |
| A302   | CAPTURE TARE          | EMPTY  | CMD | Capture a new TARE value   |
| A303   | ZERO TARE             | EMPTY  | CMD | Zero the TARE value  |
| Next Range Selection   |                       |        |     |  |
| Note: this cycles through the ranges made available in the toolkit                     |                       |        |     |  |
| A3B0   | SELECT NEXT RANGE     | EMPTY  | CMD | Select the next calibration  |
| A3B1   | SELECT PREV RANGE     | EMPTY  | CMD | Select the previous calibration  |
| Direct Range Selection   |                       |        |     |  |
| Note: this allows access to all ranges, even if they have been disabled in the toolkit |                       |        |     |  |
| A3C0   | SELECT RANGE 1        | EMPTY  | CMD | Select the 1st calibration range   |
| A3C1   | SELECT RANGE 2        | EMPTY  | CMD | Select the 2nd calibration range   |
| A3C2   | SELECT RANGE 3        | EMPTY  | CMD | Select the 3rd calibration range   |
| A3C3   | SELECT RANGE 4        | EMPTY  | CMD | Select the 4th calibration range   |
| A3C4   | SELECT RANGE 5        | EMPTY  | CMD | Select the 5th calibration range   |
| A3C5   | SELECT RANGE 6        | EMPTY  | CMD | Select the 6th calibration range   |
| TEDS Calibration Tables  |                       |        |     |  |
| A3E0   | SELECT TEDS TABLE STD | EMPTY  | CMD | Select the standard 2-point TEDS calibration table   |
| A3E1   | SELECT TEDS TABLE 1   | EMPTY  | CMD | Select the 1st TEDS calibration table  |
| A3E2   | SELECT TEDS TABLE 2   | EMPTY  | CMD | Select the 2nd TEDS calibration table  |
| A3E3   | SELECT TEDS TABLE 3   | EMPTY  | CMD | Select the 3rd TEDS calibration table  |
| A3E4   | SELECT TEDS TABLE 4   | EMPTY  | CMD | Select the 4th TEDS calibration table  |
| A3E5   | SELECT TEDS TABLE 5   | EMPTY  | CMD | Select the 5th TEDS calibration table  |
| Alarms   |                       |        |     |  |
| A400   | CANCEL ALARM          | EMPTY  | CMD | Cancel latched alarm   |
| Unit of Measure  |                       |        |     |  |
| D011   | CALIBRATED UNITS      | UINT8  | RO  | The calibrated unit ID for measurements<br>(See appendix 3 for decoding)   |
| Information  |                       |        |     |  |
| D020   | SELECTED RANGE        | UINT8  | RO  | The currently-selected calibration range<br>0-Range 1 or TEDS Table STD<br>1-Range 2 or TEDS Table 1<br>2-Range 3 or TEDS Table 2<br>3-Range 4 or TEDS Table 3<br>4-Range 5 or TEDS Table 4<br>5-Range 6 or TEDS Table 5 |
| TEDS Diagnostic Information  |                       |        |     |  |
| D050   | TEDS ERROR FLAGS      | UINT32 | RO  | The TEDS errors last detected<br>(See appendix 2 for decoding)   |

|      |             |        |    |  |
|------|-------------|--------|----|--|
| D051 | TEDS TABLES | UINT16 | RO | The available TEDS calibration tables<br>Bit |
|      |             |        |    | 0 TEDS Table STD                             |
|      |             |        |    | 1 TEDS Table 1                               |
|      |             |        |    | 2 TEDS Table 2                               |
|      |             |        |    | 3 TEDS Table 3                               |
|      |             |        |    | 4 TEDS Table 4                               |
|      |             |        |    | 5 TEDS table 5                               |

Formats

| Type   | Description                          |
|--------|--------------------------------------|
| DATE   | Epoch timestamp, 32-bit hexadecimal  |
| UINT8  | Unsigned 8-bit integer               |
| UINT16 | Unsigned 16-bit integer              |
| UINT32 | Unsigned 32-bit integer              |
| FLOAT  | IEEE 754 4-byte floating point (MSB) |
| STRING | ASCII string                         |
| EMPTY  | No data to read                      |

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## Examples

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### Check Current Date and Time

DATE AND TIME

2007? <CR>

Returns

2007=6336CD7E

Friday, 30 September 2022 11:05:34

---

### Check selected range, calibrated unit and read gross value

D020? <CR>

SELECTED RANGE Returns

D020=01

Range 2 currently selected

CALIBRATED UNITS

D011? <CR>

Returns

D011=2D

kg

GROSS

A204? <CR>

Returns

A204=4411CE46

GROSS=583.2230

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### Check and select Range 4

SELECTED RANGE

D020? <CR>

Returns

D020=01

Range 2 currently selected

SELECT RANGE 4

A3C3= <CR>

Returns

A3C3=

Range 4 selected

SELECTED RANGE

D020? <CR>

Returns

D020=03

Range 4 currently selected

---



---

## Check Current Selected Range Name

### RANGE NAME

A010? <CR>

### Returns

A010=54454453205354440000

TEDS STD

---

## Tare

### NET

A209? <CR>

### Returns

A209=41400000

NET=12.00000

### CAPTURE TARE

A302= <CR>

### Returns

A302=

### NET

A209? <CR>

### Returns

A209=00000000

NET=0.000000

### TARE ACTIVE

A120? <CR>

### Returns

A120=01

Tare value applied

### ZERO TARE

A303= <CR>

### Returns

A303=

### TARE ACTIVE

A120? <CR>

### Returns

A120=00

No tare value applied

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# Appendices

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## Appendix 1- Communication error codes

| Error code | Error Description    |
|------------|----------------------|
| 1          | Invalid parameter    |
| 2          | Not readable         |
| 3          | Value too long       |
| 4          | Value too short      |
| 5          | Not writable         |
| 6          | Not authorised       |
| 7          | Exceeds lower limit  |
| 8          | Exceeds higher limit |
| 9, 10, 11  | General error        |

---

## Appendix 2- TEDS error codes

| Bit | Error Description   |
|-----|---|
| 0   | 1-wire EEPROM not supported                                 |
| 1   | Read from 1-wire EEPROM failed                              |
| 4   | TEDS decoding failed on a read                              |
| 5   | CRC in TEDS read failed                                     |
| 6   | Read from TEDS failed                                       |
| 7   | Error reading from standard TEDS template                   |
| 8   | Error reading from calibration TEDS template                |
| 9   | TEDS contains too many calibration templates (>5)           |
| 10  | Template 40 contains too many calibration points (>10)      |
| 11  | Template 41 contains too many polynomial coefficients (>10) |
| 12  | Template 41 contains too many segments (>1)                 |
| 13  | Template 42 contains too many entries (>10)                 |

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## Appendix 3- Units

| Category             | ID   | Unit            | Symbol |
|----------------------|------|-----------------|--------|
| <b>Voltage Ratio</b> |      |                 |        |
|                      | 0x00 | milliVolts/Volt | mV/V   |
|                      | 0x01 | Volts/Volt      | V/V    |
|                      | 0x02 | microVolts/Volt | µV/V   |
| <b>Angle</b>         |      |                 |        |
|                      | 0x03 | radians         | rad    |
|                      | 0x04 | degrees         | °      |
|                      | 0x05 | circumference   |        |
|                      | 0x06 | grade           |        |
|                      | 0x07 | minutes         | '      |
|                      | 0x08 | seconds         |        |
|                      | 0x09 | revolutions     | rev    |

| <b>Length</b> |                    |         |  |
|---------------|--------------------|---------|--|
| 0x0F          | meters             | m       |  |
| 0x10          | angstrom           | Å       |  |
| 0x11          | astronomical unit  | AU      |  |
| 0x12          | centimeters        | cm      |  |
| 0x13          | chains gunters     | ch      |  |
| 0x14          | ell                | ell     |  |
| 0x15          | em                 | em      |  |
| 0x16          | fathoms            | fm      |  |
| 0x17          | feet               | ft      |  |
| 0x18          | furlongs           | fur     |  |
| 0x19          | inches             | in      |  |
| 0x1A          | kilometers         | km      |  |
| 0x1B          | league             | lea     |  |
| 0x1C          | leagues            | league  |  |
| 0x1D          | light years        | ly      |  |
| 0x1E          | lines              | ln      |  |
| 0x1F          | microns            | μ       |  |
| 0x20          | miles nautical     | mi n    |  |
| 0x21          | miles              | mi      |  |
| 0x22          | millimeters        | mm      |  |
| 0x23          | mils               | mil     |  |
| 0x24          | nanometers         | nm      |  |
| 0x25          | parsec             | pc      |  |
| 0x26          | yards              | yd      |  |
| <b>Mass</b>   |                    |         |  |
| 0x2D          | kilograms          | kg      |  |
| 0x2E          | drams              | dr av   |  |
| 0x2F          | grains             | gr      |  |
| 0x30          | grams              | g       |  |
| 0x31          | milligrams         | mg      |  |
| 0x32          | ounces             | oz      |  |
| 0x33          | pennyweights       | pwt     |  |
| 0x34          | pounds             | lb      |  |
| 0x35          | kilopounds         | klb     |  |
| 0x36          | scruples           | scruple |  |
| 0x37          | slug               | slug    |  |
| 0x38          | tons long          | ton     |  |
| 0x39          | tons metric        | T       |  |
| 0x3A          | tonnes             | tonne   |  |
| 0x3B          | tons short         | sh tn   |  |
| 0x3C          | newtons            | N       |  |
| 0x3D          | kilo newtons       | kN      |  |
| <b>Force</b>  |                    |         |  |
| 0x41          | newtons            | N       |  |
| 0x42          | kilonewtons        | kN      |  |
| 0x43          | millinewtons       | mN      |  |
| 0x44          | meganewtons        | MN      |  |
| 0x45          | crinals            | crinal  |  |
| 0x46          | dynes              | dyne    |  |
| 0x47          | grams force        | gf      |  |
| 0x48          | joules per cm      | J/cm    |  |
| 0x49          | kilograms force    | kgf     |  |
| 0x4A          | kilograms force kp | kp      |  |

|                            |      |  |                    |
|----------------------------|------|--|--------------------|
|                            | 0x4B | kilograms<br>meter/second <sup>2</sup> | kg ms <sup>2</sup> |
|                            | 0x4C | ounces force                           | ozf                |
|                            | 0x4D | pounds force                           | lbf                |
|                            | 0x4E | poundals                               | pdl                |
|                            | 0x4F | tons force long                        | tonfl              |
|                            | 0x50 | tons force short                       | tonfs              |
|                            | 0x51 | tons force metric                      | tonfm              |
|                            | 0x52 | kilopounds force                       | klbf               |
| <b>Pressure</b>            |      |  |                    |
|                            | 0x5F | bar                                    | bar                |
|                            | 0x60 | atmosphere techn                       | at                 |
|                            | 0x61 | atmosphere phys                        | atm                |
|                            | 0x62 | dyne/cm <sup>2</sup>                   | dyncm <sup>2</sup> |
|                            | 0x63 | foot of water (39°F)                   | ftH2O              |
|                            | 0x64 | inch of water (39°F)                   | inH2O              |
|                            | 0x65 | gigapascal                             | GPa                |
|                            | 0x66 | hectopascal                            | hPa                |
|                            | 0x67 | kg force / cm <sup>2</sup>             | kgfcm <sup>2</sup> |
|                            | 0x68 | kg force / m <sup>2</sup>              | kgf/m <sup>2</sup> |
|                            | 0x69 | microbar                               | μbar               |
|                            | 0x6A | pascal                                 | Pa                 |
|                            | 0x6B | newton/m <sup>2</sup>                  | N/m <sup>2</sup>   |
|                            | 0x6C | ounce(avdp)/square<br>inch             | oz/in <sup>2</sup> |
|                            | 0x6D | pounds per square<br>foot              | lb/ft <sup>2</sup> |
|                            | 0x6E | pounds per square<br>inch              | psi                |
|                            | 0x6F | tonne per square cm                    | T/cm <sup>2</sup>  |
|                            | 0x70 | meters of water                        | mH2O               |
|                            | 0x71 | millibar                               | mbar               |
| <b>Speed</b>               |      |  |                    |
|                            | 0x78 | meter/sec                              | m/s                |
|                            | 0x79 | centimeters/sec                        | cm/s               |
|                            | 0x7A | feet/min                               | ft/min             |
|                            | 0x7B | feet/sec                               | ft/s               |
|                            | 0x7C | kilometers/hr                          | km/h               |
|                            | 0x7D | kilometers/min                         | km/min             |
|                            | 0x7E | kilometers/sec                         | km/s               |
|                            | 0x7F | knots                                  | kn                 |
|                            | 0x80 | meters/hr                              | m/h                |
|                            | 0x81 | meters/min                             | m/min              |
|                            | 0x82 | miles/hr                               | mph                |
|                            | 0x83 | miles/min                              | mpm                |
|                            | 0x84 | miles/sec                              | mps                |
|                            | 0x85 | nautical miles/hr                      | n mph              |
|                            | 0x86 | nautical miles/min                     | n mpm              |
|                            | 0x87 | nautical miles/sec                     | n mps              |
| <b>Angular velocity</b>    |      |  |                    |
|                            | 0x8C | radians/sec                            | rad/s              |
|                            | 0x8D | degrees/sec                            | °/s                |
|                            | 0x8E | revolutions/minute                     | rpm                |
| <b>Torsional stiffness</b> |      |  |                    |
|                            | 0x94 | newton meter/radian                    | Nm/rad             |

|                     |      |                    |               |
|---------------------|------|--------------------|---------------|
| <b>Torque</b>       |      |                    |               |
|                     | 0x96 | newton meter       | Nm            |
|                     | 0x97 | meter kilogram     | m kg          |
|                     | 0x98 | foot pound         | ft lbf        |
|                     | 0x99 | foot poundal       | ft pdl        |
|                     | 0x9A | inch pound         | in lbf        |
|                     | 0x9B | ounce inch         | oz-in         |
|                     | 0x9C | milli newton meter | mNm           |
|                     | 0x9D | gram centimeter    | g cm          |
| <b>RMS Voltages</b> |      |                    |               |
|                     | 0xA0 | volts RMS          | V RMS         |
|                     | 0xA1 | milli volts RMS    | mV RMS        |
|                     | 0xA2 | micro volts RMS    | $\mu$ V RMS   |
|                     | 0xA3 | nano volts RMS     | nV RMS        |
|                     | 0xA4 | kilo volts RMS     | kV RMS        |
| <b>Voltages</b>     |      |                    |               |
|                     | 0xA5 | volts              | V             |
|                     | 0xA6 | milli volts        | mV            |
|                     | 0xA7 | micro volts        | $\mu$ V       |
|                     | 0xA8 | nano volts         | nV            |
|                     | 0xA9 | kilo volts         | kV            |
| <b>RMS current</b>  |      |                    |               |
|                     | 0xAC | amps RMS           | A RMS         |
|                     | 0xAD | milli amps RMS     | mA RMS        |
|                     | 0xAE | micro amps RMS     | $\mu$ A RMS   |
|                     | 0xAF | nano amps RMS      | nA RMS        |
|                     | 0xB0 | kilo amps RMS      | kA RMS        |
| <b>Current</b>      |      |                    |               |
|                     | 0xB1 | amps               | A             |
|                     | 0xB2 | milli amps         | mA            |
|                     | 0xB3 | micro amps         | $\mu$ A       |
|                     | 0xB4 | nano amps          | nA            |
|                     | 0xB5 | kilo amps          | kA            |
| <b>RMS power</b>    |      |                    |               |
|                     | 0xB8 | wattsrms           | W rms         |
|                     | 0xB9 | milliwattsrms      | mW rms        |
|                     | 0xBA | microwattsrms      | $\mu$ W rms   |
|                     | 0xBB | kilowattsrms       | kW rms        |
| <b>Power</b>        |      |                    |               |
|                     | 0xBC | Watts              | W             |
|                     | 0xBD | milli Watts        | mW            |
|                     | 0xBE | micro Watts        | $\mu$ W       |
|                     | 0xBF | kilo Watts         | kW            |
|                     | 0xC0 | horsepower         | hp            |
| <b>Temperature</b>  |      |                    |               |
|                     | 0xC3 | degrees Celsius    | $^{\circ}$ C  |
|                     | 0xC4 | degrees Fahrenheit | $^{\circ}$ F  |
|                     | 0xC5 | Kelvin             | K             |
| <b>Counts</b>       |      |                    |               |
|                     | 0xC8 | counts             | counts        |
| <b>Strain</b>       |      |                    |               |
|                     | 0xC9 | strain             | $\epsilon$    |
|                     | 0xCA | microstrain        | $\mu\epsilon$ |
| <b>Percent</b>      |      |                    |               |
|                     | 0xCC | Percentage         | %             |

|                           |      |  |                                  |
|---------------------------|------|--|----------------------------------|
| <b>Humidity</b>           |      |  |                                  |
|                           | 0xCD | Relative Humidity                      | %RH                              |
| <b>Frequency</b>          |      |  |                                  |
|                           | 0xCF | Hertz                                  | Hz                               |
|                           | 0xD0 | kiloHertz                              | kHz                              |
|                           | 0xD1 | MegaHertz                              | MHz                              |
|                           | 0xD2 | rpm                                    | rpm                              |
| <b>Resistance</b>         |      |  |                                  |
|                           | 0xD4 | ohms                                   | $\Omega$                         |
|                           | 0xD5 | kiloohms                               | k $\Omega$                       |
|                           | 0xD6 | megaohms                               | M $\Omega$                       |
| <b>Density</b>            |      |  |                                  |
|                           | 0xD8 | kilograms/m <sup>3</sup>               | kg/m <sup>3</sup>                |
|                           | 0xD9 | grams/litre                            | g/l                              |
|                           | 0xDA | pounds/ft <sup>3</sup>                 | lb/ft <sup>3</sup>               |
| <b>Flow volume</b>        |      |  |                                  |
|                           | 0xDD | liters/sec                             | L/s                              |
|                           | 0xDE | meters <sup>3</sup> /sec               | m <sup>3</sup> /s                |
|                           | 0xDF | meters <sup>3</sup> /hour              | m <sup>3</sup> /hour             |
|                           | 0xE0 | US gallon/minute                       | g/m                              |
|                           | 0xE1 | feet <sup>3</sup> /minute              | cf/m                             |
|                           | 0xE2 | litres/minute                          | L/min                            |
| <b>Flow</b>               |      |  |                                  |
|                           | 0xE4 | kilograms/s                            | kg/s                             |
|                           | 0xE5 | pounds/s                               | lbs/s                            |
| <b>Concentration</b>      |      |  |                                  |
|                           | 0xE7 | meter <sup>3</sup> /meter <sup>3</sup> | m <sup>3</sup> /m <sup>3</sup>   |
|                           | 0xE8 | litre/litre                            | l/l                              |
|                           | 0xE9 | foot <sup>3</sup> /foot <sup>3</sup>   | ft <sup>3</sup> /ft <sup>3</sup> |
| <b>Concentration mole</b> |      |  |                                  |
|                           | 0xEB | moles/meter <sup>3</sup>               | mol/m <sup>3</sup>               |
|                           | 0xEC | moles/litre                            | mol/l                            |
| <b>Acceleration</b>       |      |  |                                  |
|                           | 0xEE | meters/sec <sup>2</sup>                | m/s <sup>2</sup>                 |
|                           | 0xEF | g-force                                | ga                               |
|                           | 0xF0 | foot/second <sup>2</sup>               | ft/sec <sup>2</sup>              |
| <b>Custom</b>             |      |  |                                  |
|                           | 0xFB | custom unit 1                          | custom1                          |
|                           | 0xFC | custom unit 2                          | custom2                          |
|                           | 0xFD | custom unit 3                          | custom3                          |
|                           | 0xFE | custom unit 4                          | custom4                          |

Document Title: **9325 USB Communications Details**  
Applies To: **9325 Portable Sensor Display**  
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*In the interests of continued product development, Interface, Inc. reserves the right to alter product specifications without prior notice.*

