



## Level Developments Simplified Control Command Set

The purpose of this document is to support the use of Level Developments sensors that communicate using "Level Developments Simplified Control Command Set". The document contains both single and dual axis commands as well as the generic commands that can be sent to the device regardless of the configuration. This is suitable for our product ranges ending in RS232 or RS485. The complete list of relevant sensor ranges is displayed below:

SOLAR-2-XX-X-RS232 and SOLAR-2-XX-X-RS485

SOLAR-360-X-RS232 and SOLAR-360-X-RS485

SUBSEA-2-XX-RS232 and SUBSEA-2-XX-RS485

## Generic Control Command Set

Data is transmitted and received over RS232 in full duplex mode and for RS485 versions in half duplex mode. The default configuration is with the baud rate set to 38.4kbps, with 8 data bits, 1 stop bit and no parity. All commands are lower case and 7 bytes long. The time between each character of the command must be less than 100ms otherwise the device will discard the command. The settings are all stored in non volatile memory.

| Command                                                                              | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Response Length    | Response                                       |
|--------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|------------------------------------------------|
| gettemp                                                                              | Returns the temperature of the sensor as either:<br>- An INT16 value equal to the temperature x 100<br>- A fixed length ASCII string terminated with a carriage return depending on the setting of commands 'setoasc' or 'setoint'                                                                                                                                                                                                                             | 2 bytes<br>6 bytes | 0x XX XX<br>±tt.t<CR>                          |
| str9999                                                                              | Set continuous output transmission rate in milliseconds (25-9999ms)<br>- str0100 - 100ms (0.1s) between transmissions<br>- str8500 - 8500ms (8.5s) between transmissions                                                                                                                                                                                                                                                                                       | 2 bytes            | OK                                             |
| setcasc                                                                              | Sets the output to transmit the X and Y angle continuously in ASCII format at the rate defined by strXXXX.                                                                                                                                                                                                                                                                                                                                                     | 18 bytes           | ±xxx.xxx,±yyy.yyy<CR>                          |
| stpcasc                                                                              | Stops the continuous transmission of ASCII data                                                                                                                                                                                                                                                                                                                                                                                                                | 2 bytes            | OK                                             |
| get-flt                                                                              | Returns the value of the current filter time constant in ms as an INT16                                                                                                                                                                                                                                                                                                                                                                                        | 2 bytes            | 0x XX XX                                       |
| setzcure                                                                             | Tare function to set the current position to zero                                                                                                                                                                                                                                                                                                                                                                                                              | 2 bytes            | OK                                             |
| setzfacs                                                                             | Cancels tare function and resets zero to factory setting                                                                                                                                                                                                                                                                                                                                                                                                       | 2 bytes            | OK                                             |
| setoasc                                                                              | Sets the output to ASCII format                                                                                                                                                                                                                                                                                                                                                                                                                                | 2 bytes            | OK                                             |
| setoint                                                                              | Sets the output to Integer format                                                                                                                                                                                                                                                                                                                                                                                                                              | 2 bytes            | OK                                             |
| setflt1<br>setflt2<br>setflt3<br>setflt4<br>setflt5<br>setflt6<br>setflt7<br>setflt8 | Sets the low pass filter (damping) frequency to 0.125Hz<br>Sets the low pass filter (damping) frequency to 0.25Hz<br>Sets the low pass filter (damping) frequency to 0.5Hz<br>Sets the low pass filter (damping) frequency to 1Hz<br>Sets the low pass filter (damping) frequency to 2Hz<br>Sets the low pass filter (damping) frequency to 4Hz<br>Sets the low pass filter (damping) frequency to 8Hz<br>Sets the low pass filter (damping) frequency to 16Hz | 2 bytes            | OK                                             |
| set-br1<br>set-br2<br>set-br3<br>set-br4<br>set-br5<br>set-br6<br>set-br7            | Sets the BAUD rate to 2400bps<br>Sets the BAUD rate to 4800bps<br>Sets the BAUD rate to 9600bps<br>Sets the BAUD rate to 19200bps<br>Sets the BAUD rate to 38400bps<br>Sets the BAUD rate to 57600bps<br>Sets the BAUD rate to 115200bps                                                                                                                                                                                                                       | 2 bytes            | OK                                             |
| setnmea                                                                              | Exits LD mode and enters NMEA0183 mode.<br>(NMEA_Communication_Protocol Document)                                                                                                                                                                                                                                                                                                                                                                              | 35                 | \$PLDLB,±xxx.xxx,±yyy.yyy,±tt.t*<br>CS<CR><LF> |



## Single Axis Control Command Set

| Command            | Description                                                                                                                                                                                                                             | Response Length    | Response                       |
|--------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|--------------------------------|
| get-360            | Returns the angle as either:<br>- An INT32 value equal to the angle x 1000<br>- A fixed length ASCII string terminated with a carriage return depending on the setting of commands 'setoasc' or 'setoint'<br>Shipping default is INT32. | 4 bytes<br>9 bytes | 0x XX XX XX XX<br>+025.430<CR> |
| setdir5<br>setdir6 | Sets the measurement direction to positive clockwise<br>Sets measurement direction to negative clockwise                                                                                                                                | 2 bytes            | OK                             |

## Dual Axis Control Command Set

| Command                                  | Description                                                                                                                                                                                                                                                  | Response Length     | Response                                               |
|------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|--------------------------------------------------------|
| get---x                                  | Returns the X axis angle as either:<br>- An INT32 value equal to the angle x 1000<br>- A fixed length ASCII string terminated with a carriage return depending on the setting of commands 'setoasc' or 'setoint'                                             | 4 bytes<br>9 bytes  | 0x XX XX XX XX<br>+025.430<CR>                         |
| get---y                                  | Returns the Y axis angle as either:<br>- An INT32 value equal to the angle x 1000<br>- A fixed length ASCII string terminated with a carriage return depending on the setting of commands 'setoasc' or 'setoint'                                             | 4 bytes<br>9 bytes  | 0x YY YY YY YY<br>+025.430<CR>                         |
| get-x&y                                  | Returns the X and Y axis angle (X is transmitted first) as either:<br>- A pair of INT32 value equal to the angle x 1000<br>- A fixed length comma separated ASCII string terminated with <CR><br>depending on the setting of commands 'setoasc' or 'setoint' | 8 bytes<br>18 bytes | 0x XX XX XX XX<br>YY YY YY YY<br>±xxx.xxx,±yyy.yyy<CR> |
| setdir1<br>setdir2<br>setdir3<br>setdir4 | Sets the X axis measurement direction to positive clockwise<br>Sets the X axis measurement direction to negative clockwise<br>Sets the Y axis measurement direction to positive clockwise<br>Sets the Y axis measurement direction to negative clockwise     | 2 bytes             | OK                                                     |