

DL50 Hi

Distance Sensor with
RS-422 interface and display



GB

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1 DL50 Hi – RS-422 Interface description

Connect Sensor to operating voltage (see type label)

1.1 RS-422 Interface

The serial data transmission by the DL50 Hi distance sensor allows the distance values and other defined operating data to be read out. All data is transmitted as ASCII-Characters, enclosed in <STX> (0x02) and <ETX> (0x03). Operating data (such as the adjustment of the multifunctional in- and output) is transmitted following a request command. Position values are either transmitted on request (request mode) or in a continuous data stream (continuous mode). In the default setting the data is transmitted with 8 databit, no parity, and 1 stopbit at 115,200 Baud.

Note The default setting of the DL50 Hi distance sensor is the “request mode”, protocol type “standard”.

1.1.1 Measurement output

The DL50 Hi distance sensor transmits the measurement values as follows:

Tab. 1: Measurement output

Data format	Protocol structure
Standard	<STX>8107<±7*[0...9]><ETX> (request) <STX>0302<±7*[0...9]><ETX> (continuous)

Note The default setting of the DL50 Hi distance sensor is the “request mode”, protocol type “standard”.

1.1.2 Measurement Commands

Tab. 2: Measurement commands

Commands for the measurement output	
Request measurement value	<STX>0107<ETX>
Continuous measurement “on” ¹⁾	<STX>050201<ETX>
Continuous measurement “off” ¹⁾	<STX>050200<ETX>
Request signal level	<STX>0105<ETX>

Tab. 3: Request commands

Request parameter adjustment	
Request Q1 switching threshold setting	<STX>0123<ETX>
Request Q2 switching threshold setting	<STX>0124<ETX>
Request Q1 and Q2 logic setting	<STX>0122<ETX>
Request Q1 hysteresis setting	<STX>0125<ETX>
Request Q2 hysteresis setting	<STX>0126<ETX>
Request multifunctional in- and output (MF) setting	<STX>0129<ETX>

¹⁾ The setting is immediately active non permanently. For a permanent storage the command “activate and save parameter” has to be sent.

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Table 4:
Request commands

Responses from sensor		
Switching threshold Q1		<STX>8223<8*[0...F]><ETX>
Switching threshold Q2		<STX>8224<8*[0...F]><ETX>
Output logic	Q1&Q2	<STX>812200<ETX>
	/Q1&Q2	<STX>812201<ETX>
	Q1&/Q2	<STX>812204<ETX>
	/Q1&/Q2	<STX>812205<ETX>
Hysteresis Q1		<STX>8225<4*[0...F]><ETX>
Hysteresis Q2		<STX>8226<4*[0...F]><ETX>
MF-function	Laser off	<STX>822900<ETX>
	ExternTeach	<STX>822901<ETX>
	Q2	<STX>822902<ETX>
	inactive	<STX>822903<ETX>

Tab. 5: Parameter
commands

Commands for changing the parameter values		
Set Q1 switching threshold [mm as integer * 16 and convert into hex] ¹⁾		<STX>0223<8*[0...F]><ETX>
Set Q2 switching threshold [mm as integer * 16 and convert into hex] ¹⁾		<STX>0224<8*[0...F]><ETX>
Set Q1&Q2 switching output logic ¹⁾		<STX>022200<ETX>
Set /Q1&Q2 switching output logic ¹⁾		<STX>022201<ETX>
Set Q1&/Q2 switching output logic ¹⁾		<STX>022204<ETX>
Set /Q1&/Q2 switching output logic ¹⁾		<STX>022205<ETX>
Set Q1 hysteresis [mm as integer * 16 and convert into hex] ¹⁾		<STX>0225<4*[0...F]><ETX>
Set Q2 hysteresis [mm as integer * 16 and convert into hex] ¹⁾		<STX>0226<4*[0...F]><ETX>
Set multifunctional in-/output as "laser off" ¹⁾		<STX>022900<ETX>
Set multifunctional in-/output as "external Teach" ¹⁾		<STX>022901<ETX>
Set multifunctional in-/output as "Q2" ¹⁾		<STX>022902<ETX>
Deactivate multifunctional in-/output ¹⁾		<STX>022903<ETX>
Moving averaging "FAST" ¹⁾		<STX>021E00<ETX>
Moving averaging "MEDIUM" ¹⁾		<STX>021E01<ETX>
Moving averaging "SLOW" ¹⁾		<STX>021E02<ETX>
Set Baudrate 19,200 Bd ²⁾		<STX>022B00<ETX>
Set Baudrate 38,400 Bd ²⁾		<STX>022B01<ETX>
Set Baudrate 57,600 Bd ²⁾		<STX>022B02<ETX>
Set Baudrate 115,200 Bd ²⁾		<STX>022B03<ETX>
Set Parity "None" ²⁾		<STX>022C00<ETX>

¹⁾ The setting is immediately active non permanently. For a permanent storage the command "activate and save parameter" has to be sent.

²⁾ For activating the adjustment after a change, the command "activate and save parameter" has to be sent.

Commands for changing the parameter values	
Set Parity “Even” ²⁾	<STX>022C01<ETX>
Set Parity “Odd” ²⁾	<STX>022C02<ETX>
Activate and save parameter	<STX>0306<ETX>
Reset to default settings ¹⁾	<STX>0307<ETX>

Tab. 6: Responses

Responses	
Adjustment change OK	<STX>82<2*[0...F]>00<ETX>
Adjustment change not allowed	<STX>82<2*[0...F]>01<ETX>
Adjustment change not accepted (e.g. not within valid range)	<STX>82<2*[0...F]>02<ETX>
Request OK	<STX>04<2*[0...F]>0001<ETX>
Request not allowed	<STX>04<2*[0...F]>0101<ETX>
Continuous measurement output activated	<STX>85<2*[0...F]>01<ETX>
Continuous measurement output deactivated	<STX>85<2*[0...F]>00<ETX>

1.1.3 Command examples

Request measurement:

To DL50 Hi	<STX>0107<ETX>
From DL50 Hi	<STX>8107<±7*[0...9]><ETX>
Example: 18135.5 mm	<STX>8107±0181355<ETX>

Continuous output of measurement values:

To DL50 Hi	<STX>050201<ETX>
From DL50 Hi	<STX>850201<ETX>
Continuously from DL50 Hi after that	<STX>0302<±7*[0...9]><ETX>
Example: 18135.5 mm	<STX>0302±0181355<ETX>

Stop continuous output of measurement values:

To DL50 Hi	<STX>050200<ETX>
From DL50 Hi	<STX>850200<ETX>

Request Q2 switching threshold:

To DL50 Hi	<STX>0124<ETX>
From DL50 Hi	<STX>8124<8*[0...F]><ETX>
Example: 18135 mm (*16=290168)	<STX>812400046D78<ETX>

Change Q2 switching threshold:

To DL50 Hi	<STX>0224<ETX>
From DL50 Hi	<STX>8224<8*[0...F]><ETX>
Example: 22001 mm (*16=352016)	<STX>822400055F10<ETX>

¹⁾ The setting is immediately active non permanently. For a permanent storage the command “activate and save parameter” has to be sent.

²⁾ For activating the adjustment after a change, the command “activate and save parameter” has to be sent.

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Change Q1 hysteresis:

To DL50 Hi	<STX>0225<ETX>
From DL50 Hi	<STX>8225<4*[0...F]><ETX>
Example: 20 mm (*16=320)	<STX>82270140<ETX>

Change multifunctional in-/output to “External Teach” functionality:

To DL50 Hi	<STX>022901<ETX>
From DL50 Hi	<STX>822900<ETX>
To DL50 Hi (activate and save parameter)	<STX>0306<ETX>
From DL50 Hi	<STX>04060001<ETX>

Change Baudrate to 19,200 Bd:

To DL50 Hi	<STX>022B00<ETX>
From DL50 Hi	<STX>822B00<ETX>
To DL50 Hi (activate and save parameter)	<STX>0306<ETX>
From DL50 Hi	<STX>04060001<ETX>

Reset to default setting:

To DL50 Hi	<STX>0307<ETX>
Confirmation from DL50 Hi	<STX>04070001<ETX>

Note In case no measurement is possible “0” is given out by the DL50 Hi.

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