

Installation Note

Restoring CL31/CL51 Factory Software

Restoring CL31/CL51 factory software

This instruction describes how to restore the factory software if the original ceilometer software has been corrupted or lost, for example due to power outage during software upload.



CAUTION! Only qualified service personnel may perform service procedures.



- Screwdriver



For ceilometer documentation, see docs.vaisala.com.

- ▶ 1. Switch off all 3 switches (**F1**, **F2**, and battery).
2. Disconnect the AC (mains) power cable from connector **J2**.
3. Remove the ceilometer engine board CLE321.
 - a. Detach the transmitter ribbon cable, receiver ribbon cable, and coaxial cable from the engine board CLE321.
 - b. Pay attention to the position of the data line connector in front of the CLE321 board, then detach the connector.
 - c. Loosen the hand screws to release the CLE321 board from the frame.
Gently pull the engine board halfway out of the measurement unit and detach the battery cable and the CLM311 laser monitor board cable, then remove the entire CLE321 board.



4. Locate jumper **J26** on the rear side of the CLE321 board and close it.

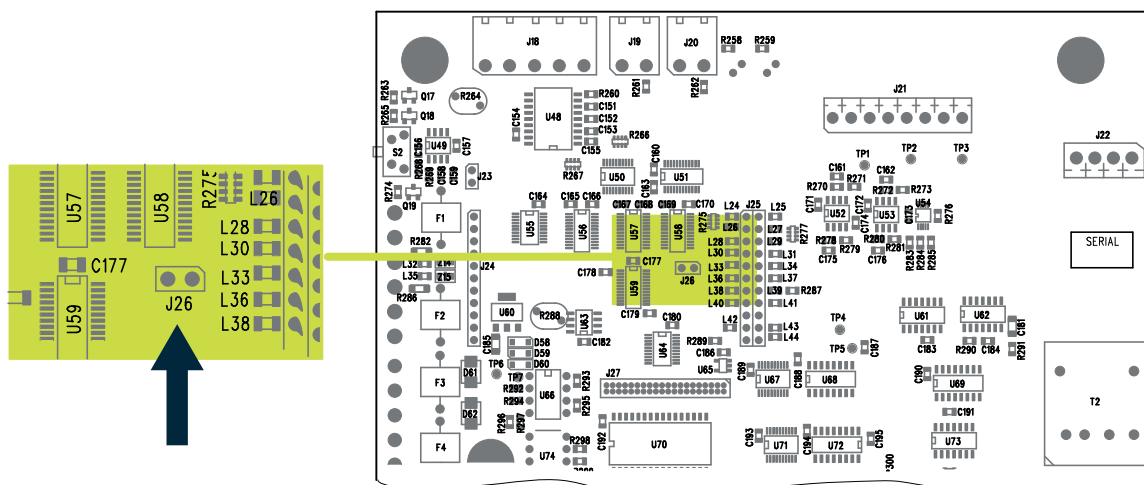


Figure 1 Location of jumper J26 on CLE321



Make sure that proper contact is formed, especially if there is lacquer residue on the pins.

5. Reinstall the engine board CLE321 on the frame.
 - a. Place the engine board CLE321 on the frame and reconnect the battery cable and the CLM311 cable.
 - b. When the board is halfway inserted, reattach the receiver ribbon cable, transmitter ribbon cable, and coaxial cable.
 - c. Push the CLE321 board fully in so that it connects to the backplane connector, then tighten the hand screws to lock the board in position.
 - d. Reconnect the data line connector to the same position as before.
6. Connect the AC (mains) power cable to connector **J2**.
7. Power up the unit with the 3 switches (**F1**, **F2**, and battery).
8. To check the software version, type **version** in the terminal software.



Verify that the unit powers up and that the software responds. If the unit does not power up properly, send the engine board CLE321 to Vaisala for software reinstallation.

9. To download the new software as a text file, type **SERVICE SW_UPDATE**.
10. Switch off the power and remove the AC (mains) power cable.
11. Remove the CLE321 engine board.
12. Open the factory software jumper **J26** on the engine board CLE321.
13. Reinstall the engine board CLE321 into the unit.
14. Power up the ceilometer and check the software version with command **version**.

15. To get the full parameter listing from the unit, type **DUMP**.

Send the parameter listing of the ceilometer to Vaisala for cross-checking that the calibration parameters are not corrupted. Use the termination hood, if possible. The ceilometer may issue warnings or alarms if operated indoors without optical termination.

An example of the output. This sample output is from CL31, and the CL51 output follows the same format.

```
CEILO > SYSTEM
```

```
Vaisala Ceilometer CL31
```

```
Unit ID:      0
Serial Nro: 421203
SW Version: 2.027
```

```
HW Options
```

```
Modem:        N/A
Humitter:     N/A
```

```
CEILO > GET PARAMS DATA_ACQ
```

```
Oper Mode:    normal    Autoadj: on
Meas Mode:    standard  Interval: 2.0 s
Power Save:   disabled  Sleep Int: 60 s
```

```
Transmitter      Receiver
Pulse Len: long   Gain:    high
Inlaser: 1773     Bandwidth: narrow
Pulse Cnt: 16384  Smpl Rate: 15 MHz
Pulse Frq: 10.0 kHz
```

```
CEILO > GET PARAMS FACTORY
```

```
Target Outlaser: 490
Factory Inlaser: 1765
```

```
Inclinometer
```

```
Sens
```

```
1: 22.728      2: -0.0335      3: 1.990e-5
4: -5.636e-9   5: 6.199e-13
```

```
A: Bias
```

```
1: -1643.89    2: 6.745         3: -4.700e-3
4: 1.458e-6     5: -1.668e-10
```

```
Sens sc: 1.011
```

```
B: Bias
```

```
1: 2035.80     2: 0.0           3: 0.0
4: 0.0         5: 0.0
```

```
Sens sc: 1.009
```

```
Window Cond.: 7.531e4
```

```
Cross-Talk: 4.720e5
```

```
Opt. Sensit.: 93 %
```

```
CEILO > GET PARAMS MESSAGE
```

```
Type:          msg2_20x385
Port:          data
Transmission:  periodic
Interval:      2 s
Transm Delay:  N/A
Manual Msg:    disabled
Units:         feet
Height Offs:   0 ft
Angle Corr:    on
Sky Cond:      disabled
```

```
Profile
```

```
Scale:         1.00
Noise h2:      on
```

```
VV Limit
```

```
Ceiling:       19685 ft
Reporting:     50 %
```

```
CEILO > GET PARAMS PORT
```

```
Port Settings
```

```
Maintenance:  9600    bps, 8n1
Data:          19.2k   bps, 8n1, rs-232
```

```
Modem
```

```
Type:         N/A
Status:        N/A
```

```
UI
```

```
Port:         maintenance
Timeout:      30 min
```

```
Message Port: data
```

```
CEILO > SERVICE SELF_CHECK
```

```
Running self-check.
```

```
Temperatures: OK
Voltages:      OK
Humidity:      N/A
```

```
Profile
```

```
Noise:         OK
DC Offset:     OK
Crosstalk:     OK
```

```
Transmitter
```

```
Power:         OK
Pulse Len:     OK
```

```
Receiver
```

```
Gain Ctrl:     OK
Test Pulse:     OK
Inheater:       OK
```

Blower: OK

System Status: OK

Suspect Module: none

CEILO > STATUS

00 ///// ///// ///// 00000000C000

Alarms

Tmit Shutoff	OK	Transmitter	OK
Receiver	OK	Voltages	OK
Alignment	OK	Ext Memory	OK
Light Pth Obs	OK	Rec Saturat	OK
Coaxial Cable	OK	Engine	OK

Oper Mode: normal Autoadj: on
Meas Mode: standard Interval: 2.0 s
Power Save: disabled Sleep Int: 60 s

Transmitter	Receiver
Pulse Len: long	Gain: high
Inlaser: 1773	Bandwidth: narrow
Pulse Cnt: 16384	Smpl Rate: 15 MHz
Pulse Frq: 10.0 kHz	

Window Cnd: 100 %	Outlaser: 485
Backg Rad: 8.5	99 %

Tilt Angle: 1.1	Humidity: N/A
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Temperatures

Internal: 41.1	External: 29.6
DC Power: 44.7	Inclinom: 42.1
Laser: 37.0	Blower: 38.7

Heater: off (auto)	Outheater: on
Blower: on (auto)	Batt Use: off

System Status: OK

Suspect Module: none

CEILO > GET FAILURE STATUS

Alarms

Tmit Shutoff	OK	Transmitter	OK
Receiver	OK	Voltages	OK
Alignment	OK	Ext Memory	OK
Light Pth Obs	OK	Rec Saturat	OK
Coaxial Cable	OK	Engine	OK

Warnings

Window Contam	OK	Battery Low	OK
Transm Expire	OK	Humid High	OK
Blower	OK	Humid Sensor	OK

Int Heater	OK	High Rad	OK
Engine	OK	Battery	OK
Laser Monitor	OK	Receiver	OK
Tilt Angle	OK		

System Status: OK
Suspect Module: none

CEILO > GET FAILURE DIAG

Device Failures

Laser Temp	OK	Laser Power	OK
Window Cont	OK	Int Heater	OK
Ext Heater	OK	Humidity	N/A
Humid Sensor	N/A	Blower	OK
Radiance	OK	Alignment	OK
Receiver	OK	Ext Memory	OK
Light Satur	OK	Rec Saturat	OK
Rec Gain	OK	Pulse Len	OK
Noise Level	OK	Bang Level	OK
Near 0 Sgnl	FAIL-L	Laser Ctrl	OK
DC Offset	OK	EEPROM Main	OK
EEPROM Optic	OK	Tilt Angle	OK

Temperature Failures

Intern Temp	OK	Incl Temp	OK
DC-Pwr Temp	OK		

Voltage Failures

+12V	OK	VIN	OK	+13V R	OK
+5V R	OK	BAT	OK	+90V D	OK
+5V A	OK	+5V	OK	-5V R	OK
-13VR	OK	+2.5V	OK	+3.3V	OK
RHVD	OK	PFB	OK	-10V	OK
+12VO	OK	+12VF	OK	+3.3VA	OK
+3.3C	OK				

CEILO > GET UPTIME

Uptime: 00:077:11:06:44 (y:d:h:m:s)