

1.1. Loss in Weight Commands – PL1 to PL5, LC, LI, GF, GR, GM, SL

Remark: These commands are only available in **firmware version 88.185**.

Note: All setups should be stored with the **SL** command before power off.

The mass flow control / status commands are used to control the mass flow measurement functions.

LC Mass flow control

[\[2C00sub01 \]](#)

The lower bits (0...3) are set by plc for control the digital outputs 0 ... 3.

Bit 4 is set by plc for "start/stop" .

Bit 5 is set by plc for "flow froozen", for example while shaking process.

Request / Setting

Master (PC / PLC) sends	Device responds	Result
LC	C:016	Active bit 4 (decimal 16)
LC_48	OK	Set bit 4+bit 5 (dec. 16 + 32 = 48)

LI Mass flow status

[\[2C00sub02 \]](#)

The lower bits (0...3) show actual status of the digital inputs 0 ...3.

Bit 4 shows status of "start/stop" .

Bit 5 shows status of "flow froozen", for example while refill the silo.

Bit 6 shows status "flow" [OK="high", not OK="low"]

Request

Master (PC / PLC) sends	Device responds	Result
LI	I:048	Active bit 4+bit 5 (decimal 48)

GF Mass flow

[\[2A00sub01 \]](#)

Get the actual mass flow in the choosen scaling.

Request

Master (PC / PLC) sends	Device responds	Result
GF	F:+00.000	Get actual mass flow

[\[When LIW is started mass flow value is permanent available @ Net weight index/subindex\]](#)

GR Mass flow trend

[\[2A00sub02 \]](#)

Get the actual mass flow trend (= total mass divided by total time).

Request

Master (PC / PLC) sends	Device responds	Result
GF	F:+00.000	Get actual mass flow

GM Total mass

[\[2A00sub03 \]](#)

Get the total mass in the choosen scale g or kg or t.

Request

Master (PC / PLC) sends	Device responds	Result
GM	L+00.000	Get actual total mass

The mass flow parameters can be read or set by the following commands.

PLn Read/modify loss in weight parameters

Issuing the PL command with one parameter (PLn) will return the value of the n'th parameter in the format **Pn:+00500**. Issuing the PL command with two parameters (PLn x) will change the n'th parameter to the value x.

Note: In this version of software all the parameters will be set to zero by the factory default (FD) command.

Available parameters:

“_” means Space button on keyboard

PL1 Position decimal point for scaling of LIW

[\[2B00sub01 \]](#)

Request / Setting

Master (PC / PLC) sends	Device responds	Result
PL1	P1:+00001	Decimal point in position 100.0
PL1_2	OK	Set decimal point in pos. 10.00

Range: 0 .. 5

PL2 Scaling LIW in weight per timebase [2B00sub02]

Request / Setting

Master (PC / PLC) sends	Device responds	Result
PL2	P2:+00005	Active scale is 1000kg/hour
PL2_2	OK	Set scale to kg/hour

The following scales setup is possible:

0 : kg / sec
 1 : kg / min
 2 : kg / h
 3 : 1.000 kg / sec or 1 t / sec
 4 : 1.000 kg / min or 1 t / min
 5 : 1.000 kg / h or 1 t / h
 6 : 1.000 t / sec
 7 : 1.000 t / min
 8 : 1.000 t / h

PL3 Delta time [2B00sub03]

Delta time has to setup in increments; 1 increment means 10 milli-seconds. The delta time is the time base for calculating the mass flow. Range: 1 ... 262143.

Remark: A long delta time leads to more accuracy and but to a slower update. A short delta time leads to the opposite.

Request / Setting

Master (PC / PLC) sends	Device responds	Result
PL3	P3:+01000	Active delta time is 10000 msec or 10 sec
PL3_02000	OK	Set delta time to 20 sec

[When LIW is started mass flow value is permanent available @ Net weight index/subindex]

PL4 Delta weight [2B00sub04]

If whilst delta time the “process delta weight” becomes greater than the setup of delta weight, the firmware of LDM88.1 automatic fits the delta time for calculation of mass flow. The setup of delta time will not be changed and stored. Range: 0 .. 131071 d.

This functions as a 2nd dimension to the PL3 if the time exceeds PL3 or weight exceeds PL4 from last measurement a new measurement is made, and the mass flow is updated.

Request / Setting

Master (PC / PLC) sends	Device responds	Result
PL4	P4:+99999	Active delta weight is 99999
PL4_1000	OK	Set delta weight to 1000 d

PL5 Delay Time for mass flow calculation [2B00sub05]

The delay time starts at the end of a refill period or shaking process. Delta time has to setup in increments, 1 increment means 10 milli-seconds. Range: 0 ... 262143.

Request / Setting

Master (PC / PLC) sends	Device responds	Result
PL5	P5:+00300	Active delta time 300 msec
PL5_200	OK	Set delta time to 2000 msec

SL Save the loss in weight setup parameters

[\[2004sub04 \]](#)

With this command the settings of the “Dosing Parameters” will be saved in the EEPROM.

Request / Setting

Master (PC / PLC) sends	Device responds	Result
SD	OK	Dosing parameters saved
SD	ERR	Error

1.1.1. Loss in weight process

The LIW process is controlled by the loss in weight commands. All other standard commands are available too.

The filling process is started by a 'Start' via bit 4 from the CAN gateway once the LDM 88.1 loss in weight parameters have been loaded.

Note: The 'gross weight' field always holds the actual gross value. But the 'net weight' field shows the 'net weight' if the 'Loss-In-Weight' calculation is not running or the 'net weight' field holds the flow value when the 'Loss-in-weight' calculation is started.

Whilst dosing/filling process the values of the actual mass flow, mass flow trend and total mass are permanent available.

In case of an more or less getting emptying silo a refill is necessary. Whilst a refill procedure the mass flow becomes automatically "frozen" by the firmware of LDM88.1. After detecting an end of refill the mass flow delay time starts. At the end of mass flow delay time the actual values become updated again. The same situation will happen whilst a shaker process is running.

The mass flow control bits are set by plc. Only in refill mode the LDM sets automatic bit 5.

The mass flow status is shown as the status of digital inputs.

Remark: The setups of filter mode FM, filter frequency FL and update rate UR have an influence on the mass flow values.