Names of logical inputs/outputs

Each logical input and output may be related to any physical input or output of a load application device or the terminal.

The configuration of I/Os may be different for each of the measurement channels.

Logical outputs

No	Functions
Metrological:	
1	System available
2	Stability
Dosing:	
10	Cycle in progress
11	High loading speed
12	Low loading speed
13	Emptying
14	Outside minus tolerance
15	Outside plus tolerance
16	Threshold 1
17	Threshold 2
18	Flow fault
19	Set point fault
20	Pause
21	Dose ready
22	Authorisation to change big-bag
23	High unloading speed
24	Low unloading speed
25	Filling

Logical inputs

No	Functions
Metrological:	
51	Zero
52	Tare when stable
53	Tare without being stable
54	Return to gross
55	Print
56	Print statistics
57	Reset statistics
Dosing:	
60	Start cycle
61	Abort cycle
62	Big-Bag request made

Non contractual illustrations. Precia-Molen reserves the right to alter the characteristics of the equipment described in this brochure at any time.

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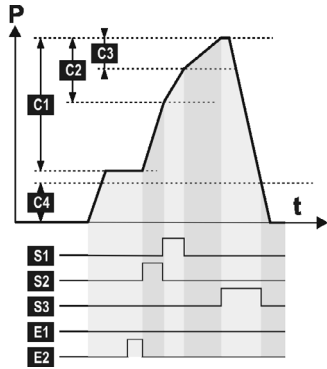E-MAIL   webmaster@preciamolen.com

RCS: 386 620 165 RCS Aubenas

Example printouts:

▼ Printout at the end of dosing

```
***** PRECIA MOLEN *****
    WORLDWIDE WEIGHING
       07000 PRIVAS

Channel: 2 SILO No 123

On 19/04/14 AT 07:40 WEIGHT no: 2/1063
REF 111111 : ABCDEFGHIJKL
REF 222222 : 123456789012
INFO 11111 : information 12345678
INFO 22222 : information 98765432



B: 25.35 kg T: 0 kg N: 25.350 kg


    Thank you for visiting us
*******************************************
```

▼ Printout after selection of the number of doses

```
***** PRECIA MOLEN *****
    WORLDWIDE WEIGHING
       07000 PRIVAS

Channel: 2 SILO No 123

On 19/04/14 AT 07:40 WEIGHT no: 2/1063
REF 111111 : ABCDEFGHIJKL
REF 222222 : 123456789012
INFO 11111 : information 12345678
INFO 22222 : information 98765432

    No OF DOSIS: 13

    NET TOTAL 2350.5 kg

    Thank you for visiting us
*******************************************
```

▼ Printout statistics

```
***** PRECIA MOLEN *****
    WORLDWIDE WEIGHING
       07000 PRIVAS

On 19/04/14              AT 17:40

Channel: 2 SILO No 123

REF 111111 : ABCDEFGHIJKL
REF 222222 : 123456789012
INFO 11111 : information 12345678
INFO 22222 : information 98765432

    No OF DOSES : 13
    TOTAL DOSES: 3254.50 kg

    AVERAGE WEIGHT: 250.35 kg
    STANDARD DEVIATION: 0.422 kg

    MIN : 249.00 kg
    MAX : 250.00 kg

    Thank you for visiting us
*******************************************
```

I 410 SDU
Single Dosing Unit

Applications

The I 410 SDU software satisfies most needs to produce a product dose by making a weight check in the industrial environment.

It enables simultaneous management of 1 to 4 single constituent dosing processes.

Independent parameter settings are possible for each process:
- metrological characteristics of the measurement channel,
- dosing type: *loading*, *unloading*, possible management of *big-bag unloading*,
- *assignment of inputs/outputs*,
- set points file,
- printed information,
- etc…

At the same time as the dosing functions, the I410 system checks and monitors thresholds and tolerances on each channel such as :
- the check on dosing as a function of the capacity and a full limit before starting dosing,
- the dosing check carried out on the gross or net value of the weight,
- tolerance check on doses made,
- dosing in automatic cycles (in loading mode),
- automatic correction of in-flight error,
- the tare type used to record the weight of the package or the container,
- the flow check.
- multi-cycle operation.

The I410 SDU system also manages two serial ports that can contain:
- One of the following types of printer (for ticket, summary, etc…):
  - P 255
  - P 360
  - P 140
  - P 955/P 985
- One or several addressable repeaters,
- An RS 232/422/485 link for MODBUS,
- A USB key module for archiving and storage,

Possible association of 2 file references and 2 free references.

Traceability of all doses made with possible transfer to USB key.

Possible complete check of the dosing process by PLC in MODBUS RTU link or Profibus, Profinet, DeviceNet, Ethernet TCP MODBUS or Ethernet/IP field bus.

Minimum configuration

- A user terminal,
- A weight load application device or a measurement option card in the terminal
- Not less than 2 inputs and 4 logical outputs on a load application device or terminal.

Operator interface

1. Application main screen (display the weight of the current channel and the step in the cycle).
2. F1: Target - select set point or direct input of dosing set points.
3. F2: Access input reference 1.
4. F3: Access input reference 2.
5. F4: Access input Information 1 : Free text.
6. F5: Access input Information 2 : Free text.
7. F6: Select the previous weighing channel.
8. F7: Select the next weighing channel.
9. F8: Determine the number of cycles to be automatically chained. (loading mode only)
10. F9: Display complementary information (statistics, flow).
11. F10: Access application files (configuration).
12. SF1 to SF4: Different function keys for each level.
13. Validation key.
14. STOP: Cycle
15. START: or Pause Cycle.

Function keys F1 to F10 and SF1 to SF4 are structured in several levels. They may perform a different function depending on the context.

Configuration

The many operating parameters of the I410 system, independently configurable on each channel, are structured in 8 files and four action levels protected by a password:
- Installer:
  Metrological setting up and configuration of Inputs/Outputs.
- Supervisor:
  Parameter setting of dosing cycles.
- Operator:
  Definition of dosing set points and access to results.
- User:
  Rights limited to starting dosing cycles.

This segmentation of parameters makes the I410 system modular so that it can easily be integrated into most industrial processes. This also makes operation of the application secure by preventing access to an unauthorised operator.

Dosing cycles

The operator or the communication protocol selects the dosing formula, and the operator, a logical input or the communication protocol controls starting the cycle.

Steps of the current dosing can be displayed on the screen in real time.

Loading mode :

This operating mode enables automated loading at two speeds.

The loading cycle is controlled by two external inputs :

▼ **E1**: STOP cycle. This information may originate from:
- the "STOP" key on the terminal,
- a logical input (to be configured),
- a command in the MODBUS protocol.

▼ **E2**: START - Pause cycle - This information may originate from:
- the "START" key on the terminal,
- a logical input (to be configured),
- a command in the MODBUS protocol.

The external device is controlled by three output contacts* :

▼ **S1**: Dosing in finishing flow - Low speed (LS),

▼ **S2**: Dosing in high flow - High speed (HS),

▼ **S3**: Authorisation to empty.

The cycle takes place in two distinct steps:

1. **1**: Dosing step by filling,
2. **2**: Emptying step.

These two steps may be inverted, by making a configuration choice.

The main set points necessary for the loading cycle are :

▼ **C1**: Target weight,

▼ **C2**: Deceleration set point: quantity of dosed material at finishing flow,

▼ **C3**: In-flight error: quantity of suspended material,
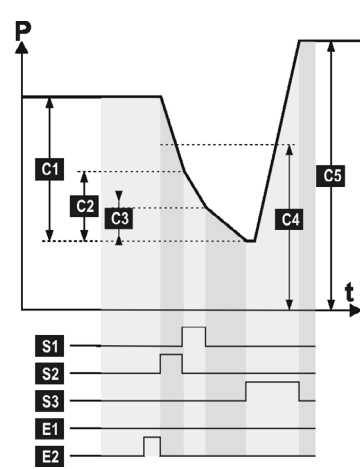
▼ **C4**: Emptying stop threshold.

They are used to define phase limits:
- Limit of the high speed step = C1 - (C2 + C3),
- Limit of the low speed step = C1 - C3,
- Limit of the emptying step = C4.

⚠ Caution with consistency of set points (in particular **C1 > C2 > C3**)

These set points are defined with respect to zero if gross dosing is selected.

Unloading mode :

Unloading mode is similar to loading mode except that the target weight is obtained by removing product.

The second step of this type of dosing (emptying for the loading mode) is a filling step :

▼ Set point **C5** is the maximum filling threshold set point,

▼ Contact **S3** becomes the filling request contact.

Set point **C4** defines a minimum filling threshold. When the product quantity at the beginning of the cycle is less than the minimum threshold **C4**, output **S3** (filling request) is activated.

If the product is packaged in Big-Bags, a special input may be used to indicate changing of the Big-Bag.

User data

▼ File characteristics

File	Capacity	Code	Label	Action level
Set point	100	2 num. char.	12 alpha. char.	Operator
Reference 1	100	12 alpha. char.	20 alpha. char.	Supervisor
Reference 2	100	12 alpha. char.	20 alpha. char.	Supervisor
Dosing results	500	-	-	Operator

- Result file structure :

Parameter	Format	Parameter	Format
Date	dd/mm/hh	Dosed quantity	Weight
Time	dd/mm/hh	Reference code 1	12 digits
Channel No	2 digits	Reference code 2	12 digits
Weighing or DSD No	Num.	Information 1	20 alpha. char.
Set point	Weight	Information 2	20 alpha. char.

▼ 2 available free input fields (information 1 and 2) on 20 characters maximum.

▼ Data storage device (DSD) :

Max number of records .... 48 000.

Stored values: DSD No, gross, tare, net weight, predetermined tare, weight type printed, weight type transmitted by protocol, unit, identification No.

Block diagram
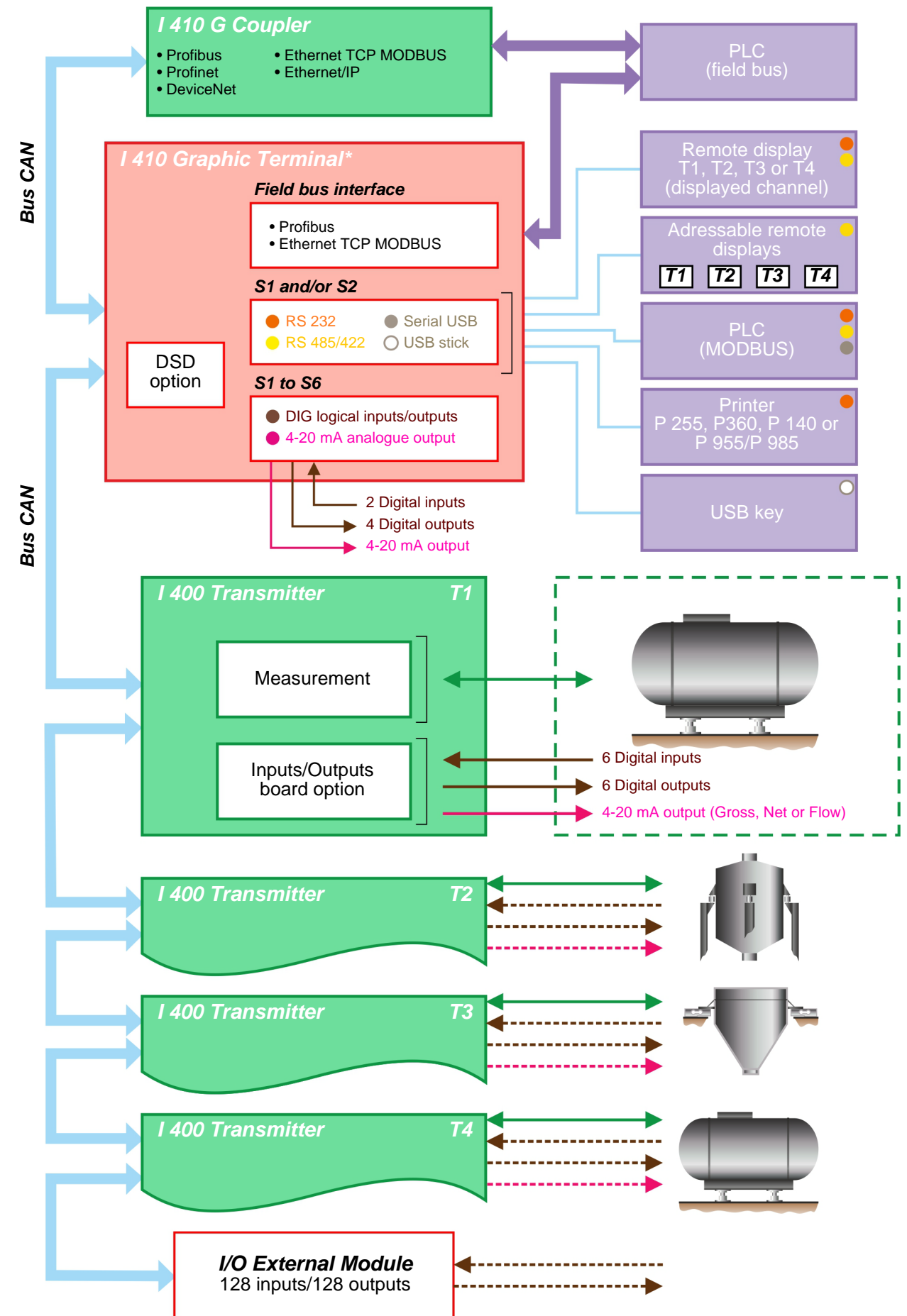
* Possibility of having a measurement channel directly in the graphic terminal, and in this case there are not more than 3 load application devices.