FIELDBUS

Operative Manual

DINI ARGEO
Scales - Weighing systems

Manual_FIELDBUS_V1

INDEX

1. GENERALITIES

The Profibus communication protocol defines the structure of the messages and the communication mode between one or more “master” devices which manage the system and one or more “slave” devices which respond to the interrogations of a master (technical master-slave, of the multi-master type).
The masters, called also active devices, define the data traffic on the bus and periodically scan the slaves; when a master has an access permit (token), it can transmit data without external requests. The slaves, defined also as passive devices, do not have the access permit to the bus, but can only either confirm the received messages or transmit messages when requested by a master.
A master can either address single slaves or transmit a broadcast message to all (in the multi-master case each slave is linked to a master).

1.1 TECHNICAL DATA

- Power Supply: from 12 to 24 V;
- Max. absorption: 250 mA (with 12 V power supply);
- HUB configuration: simultaneous check up to 16 weighing scales at the same time;
- 485 communication opt isolated against electric or electrostatic discharges;
- Addressing:
  - Canopen: up to 127 different address (from 1 to 127);
  - Ethercat: automatic addressing (not settable);
  - Profinet: uses addressing through IPv4;
  - Devicenet: up to 64 different address (from 0 to 63 through MAC address);
  - Profibus: up to 99 different address (from 0 to 98);
- Baudrate:
  - Canopen: from 10 Kbit/s to 1 Mbit/s;
  - Ethercat: from 9600 bit/s to 115200 bit/s;
  - Profinet: depends on the network speed (up to 100 Mbit/s);
  - Devicenet: from 9600 bit/s to 115200 bit/s;
  - Profibus: from 9600 bit/s to 12 Mbit/s;

1.2 CONNECTION

Every DGT is provided with two parallel 485 ports with RJ45 connector, that port is used to connect DGT with the corresponding port on converter (profibus, ethercat, devicenet, etc.). Many DGTs can be connected in line (up to 16 weighing scales), to do this you need to connect a DGT to the next one and the first DGT to the converter and, after a proper modify of the setup, it will create a net that can be managed by one or more PC.

The converters differ for connection's method to PC:

- Ethercat: connection to PLC through RJ45;
- Canopen: connection to PLC through 3 wires;
- Devicenet: connection to PLC through 5 wires (only 2 if you have already the power supply);
- Profibus: connection to PLC through DB9 female connector;
- Profinet: connection to PLC through RJ45;

1.3 SELECTION OF THE PROFIBUS SERIAL COMMUNICATION MODE

To select the Profibus communication protocol one should enter the *SET-UP ENVIRONMENT* of the instrument (see Figure 1):

Input in the Set-up Environment

- Turn on the indicator, press the ZERO key or the TARE key during the countdown (the display shows the "tYPE" menu).
- Select "SEtuP" (using the ZERO or TARE keys) ⇨ press PRINT to confirm the step.
- Select "SEr iAL" (using the ZERO or TARE keys) ⇨ press PRINT to confirm the step.
- Select "Pc_SEL" (using the ZERO or TARE keys) ⇨ press PRINT to enter in the **Selection menu of the PC port**
  - ➢ Select "485" with DGT4PB indicator or "CON I" with DGTQPB indicator and press PRINT to confirm.
- Select "CoM_PC" (using the ZERO or TARE keys) ⇨ press PRINT to enter in the:

  Set-up menu of the Communication Parameters of the PC port:

  - ➢ The "PCModE" item appears ⇨ press PRINT to enter in this submenu and select the "ProF ibuS" item ⇨ press PRINT again to confirm.

    Now the setting of the instrument's serial address is requested.

    Instrument serial address

    ⇨ for a few instants the "Pro_Add" message is displayed ⇨ then type the serial address of the instrument (or slave) ⇨ confirm the entered value with PRINT.
  - ➢ Now the step "CoMPAt" is visible.

    Setting this step to "YES" you enable the compatibility of the profibus module communication with "**GSD.V.1**"file.

    Leaving it on "no" the profibus comunications is compatible with "**GSD.V.2**" file.

- Press various times the C key until the message "SAVEP" appears on the display.
- Press PRINT to confirm the changes made or another key for not saving.
- While turning on, check that the display shows "P_buS_ in" then "P_buS_OK";
- After profibus startup, the display shows the version of GSD file to use (GSD.V.1 or GSD.V.2), downloadable from www.diniargeo.com

CAREFUL: If you have made some changes to profibus communication parameters of DGT, it's necessary remove the power supply and restart the instrument.

1.4 DGT1 VERSION 7.13 AND FOLLOWING ONES

Since version 7.13 there's not a choice between ProF ib and Pb_MuLt but there is only the item Pb-MuLt_

Route → SEtuP/SEr iAL/CON PC/PC nOdE/FLd_buS

Once in FLd_buS we have :

1)buS_tYP selezione del tipo di bus fra:

- -ProF ib → Profibus
- -Eth_ iP → Ethernet/IP
- -ProF in → Profinet
- -Eth_CAt → Ethercat
- -CAnoPn → CANOpen
- -dEU_nEt → DeviceNet

After selecting the type of bus you must enter the appropriate parameters:

- **Profibus**: node ID (nodE_ id)
- **Ethernet/IP, Profinet:**
  - Aut_cFG: auto IP configuration (no/yes)
  - iP_: IP address
  - nEt_MSK: Subnet mask
  - GAt_WAY: Gateway
- **CANopen**:
  - nod_Add (1-127): node address
  - bAud_r: baud-rate, valori: 1MB, 800kB, 500kB, 250kB, 125kB, 100kB, 50kB, 20kB, 10kB
- **DeviceNet:**
  - MAc_ id (0-63): MAC ID
  - bAud_r baud-rate, valori: 500kB, 250kB, 125kB

2)nuM_SCA: number of the scales of the 485 sub-network managed by the hub device (1 to 16)

3) SCA_Add (visible if NUM.SCA is greater than 1): 485 address of the scale, if nuM_SCA is equal to 1 the 485 address is set equal to 1.

1.5 SERIAL COMMUNICATION PARAMETERS

In case you selected a protocol other than Profibus or have set more of a balance you can set the baud rate.
To get the best performance set the baud rate 115200.

2. INPUT AND OUTPUT DATA AREAS

There are two data areas, an input and an output one, defined in this way due to the master's point of view: while the input area is read by this device, the output one is written.
All the numeric values have the Big Endian format (the 1st byte is the most significant one) .

2.1 INPUT DATA AREA

The input data area is read by the master (is therefore read by the instrument) and is made up of 16 registers, each of 2 bytes (32 bytes overall).

Table 1: Input Data Area (if TYPE >> " ind_Ch" or "dEP_Ch" and DGT1)

N°Reg.	Input Registers			N° bytes
0	Gross Weight Value	(byte 3)		0
	Gross Weight Value	(byte 2)		1
1	Gross Weight Value	(byte 1)		2
	Gross Weight Value	(byte 0)		3
2	Net Weight Value	(byte 3)		4
	Net Weight Value	(byte 2)		5
3	Net Weight Value	(byte 1)		6
	Net Weight Value	(byte 0)		7
4	Input Status Register	(MSB)		8
	Input Status Register	(LSB)		9
5	Command Status Register	(MSB)		10
	Command Status Register	(LSB)		11
6	Output Status Register	(MSB)		12
	Output Status Register	(LSB)		13
7	N°last page read or written	(MSB)		14
	N°last page read or written	(LSB)		15
8	1st set-up page word			16
				17
	_ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _			
15	8th set-up page word			30
				31

Table 2: Input Data Area (if TYPE >> "trAnSM")

N°Reg.	Input Registers			N° bytes
0	Channel 1 Status Register	(MSB)		0
	Channel 1 Status Register	(LSB)		1
1	Channel 2 Status Register	(MSB)		2
	Channel 2 Status Register	(LSB)		3
2	Channel 3 Status Register	(MSB)		4
	Channel 3 Status Register	(LSB)		5
3	Channel 4 Status Register	(MSB)		6
	Channel 4 Status Register	(LSB)		7
4	Input Status Register	(MSB)		8

	Input Status Register (LSB)		9
5	Command Status Register (MSB)		10
	Command Status Register (LSB)		11
6	Output Status Register (MSB)		12
	Output Status Register (LSB)		13
7	N°last page read or written (MSB)		14
	N°last page read or written (LSB)		15
8	1st set-up page word		16
			17

– – – – – – – – – – – – – – – –

15	8th set-up page word		30
			31

NOTE: *GROSS WEIGHT and NET WEIGHT value format (0-3 registers)*Whole in absolute value (without decimals) ***Example:*** if 3 decimals are set, the 3,000 value is read 3000
If 2 decimals are set, the 3,00 value is read 300

Channel Status Register

Bit	**Description**	**Bit Meaning**	
		0	**1**
(LSB)			
0	Weight Polarity	+	--
1	Weight Stability	NO	YES
2	Underload Condition	NO	YES
3	Overload Condition	NO	YES
4	Gross weight zone	Out of Zone 0	In Zone 0
5(*)	*Not used*		
6(*)	*Not used*		
7(*)	*Not used*		
(MSB)			
8	*Not used*		
9	*Not used*		
10	*Not used*		
11	*Not used*		
12	*Not used*		
13	*Not used*		
14	*Not used*		
15	*Not used*		

(*) Version 7.10 and next

2.1.1 INPUT STATUS REGISTER (TABLE 2.1.1) (IF tYPE >> " ind.Ch" OR "dEP.Ch")

It is the input register number 4; two bytes defined in the following manner:

Bit	Description	Bit Meaning 0	1
(LSB)			
0	Net Weight Polarity	+	--
1	Gross Weight Polarity	+	--
2	Weight Stability	NO	YES
3	Underload Condition	NO	YES
4	Overload Condition	NO	YES
5	Entered Tare Condition	NO	YES
6	Manual Tare Condition	NO	YES
7	Gross ZERO zone	Out of Zone 0	In Zone 0
(MSB)			
8	Input 1	DISABLED	ENABLED
9	Input 2	DISABLED	ENABLED
10	*Not used*		
11	*Not used*		
12	*Not used*		
13	*Not used*		
14	Displayed Channel (low bit) **(1)**		
15	Displayed Channel (high bit)(from 0 to 3) **(1)**		

INPUT STATUS REGISTER (IF tYPE >> "trAnSM")

It is the input register number 4; two bytes defined in the following manner:

Bit	Description	Bit Meaning 0	1
(LSB)			
0	*Not used*		
1	*Not used*		
2	*Not used*		
3	*Not used*		
4	*Not used*		
5	*Not used*		
6	*Not used*		
7	*Not used*		
(MSB)			
8	Input 1	DISABLED	ENABLED
9	Input 2	DISABLED	ENABLED
10	*Not used*		
11	*Not used*		
12	*Not used*		
13	*Not used*		
14	Displayed Channel (low bit) **(1)**		
15	Displayed Channel (high bit)(from 0 to		

	3) **(1)**		

(1) : ***High bit, Low Bit:*** *0 0* → Channel 1 *0 1* → Channel 2
(15) (14) *1 0* → Channel 3 *1 1* → Channel 4

2.1.2 OUTPUT STATUS REGISTER (TABLE 2.1.2)

It is input register number 6; two bytes defined in the following way:

Bit	**Description**	**Means bit**	
		0	**1**
(LSB)			
0	RELE' 1	NOT EXCITED	EXCITED
1	RELE' 2	NOT EXCITED	EXCITED
2	RELE' 3 (DGTQ/DGTP/DGTPK)	NOT EXCITED	EXCITED
3	RELE' 4 (DGTQ/DGTP/DGTPK)	NOT EXCITED	EXCITED
4	RELE' 5 (DGTQ/DGTP/DGTPK)	NOT EXCITED	EXCITED
5	RELE' 6 (DGTQ/DGTP/DGTPK)	NOT EXCITED	EXCITED
6	*Not used*		
7	*Not used*		
(MSB)			
8	*Not used*		
9	*Not used*		
10	*Not used*		
11	*Not used*		
12	*Not used*		
13	*Not used*		
14	*Not used*		
15	*Not used*		

2.1.3 COMMAND STATUS REGISTER

It is input register number 5; two bytes defined in the following way:

High Byte → ***Last command received*** (see Table 2.2.1)
Low Byte: low nibble → ***Counting of processed commands*** (module 16)
high nibble → ***Result of last command received***

In which ***Result of last command received*** can take on the following values:

- OK = 0 Correct command and carried out
- ExceptionCommandWrong = 1 Wrong command
- ExceptionCommandData = 2 Wrong data in the command
- ExceptionCommandNotAllowed = 3 Not allowed command
- ExceptionNoCommand = 4 Inexistent command

2.2 OUTPUT DATA AREA

The output data area is written by the master (is therefore read by the instrument) and is made up of 16 registers, each of 2 bytes (32 bytes overall).

Tabella 2: Output Data Area

Reg. Nr.	Output Registers		N° bytes
0	Command Register	(MSB)	0
	Command Register	(LSB)	1
1	Parameter 1	(byte 3)	2
	Parameter 1	(byte 2)	3
2	Parameter 1	(byte 1)	4
	Parameter 1	(byte 0)	5
3	Parameter 2	(byte 3)	6
	Parameter 2	(byte 2)	7
4	Parameter 2	(byte 1)	8
	Parameter 2	(byte 0)	9
5	*Not used*		10
	Not used		11
6	*Not used*		12
	Not used		13
7	*Not used*		14
	Not used		15
8	1st set-up page word		16
			17
– – – – – – – – – – – – – – – –			
15	8th set-up page word		30
			31

2.2.1 COMMAND REGISTER

It is the output register number 0. It is made up of two bytes and can take on the following values, which correspond to the implemented commands described in the table.

Execution of a Command

The execution of a command is made when the contents of the Command Register vary (therefore in order to repeat the last command one should first set the Command register to the NO COMMAND value, and then to the command value).

The only exceptions are the READ_SETUP, WRITE_SETUP and CHANGE_PAGE commands, which are executed even upon just the varying of Parameter 1 (page nr. to be read/written). Therefore:

To read various set-up pages one just needs to set the READ_SETUP command with the first page that one intends to write in Param.1, then change each time Param.1 with the new page nr. to be read.

To write various pages one should set the WRITE_SETUP command with the nr. of the first page to be written in Param.1 and the data in registers 8-15 of the output area; then each time one varies the data of the registers 8-15 and the page nr. in Param.1.

TABLE 2.2.1: COMMAND REGISTER

Implemented Command	Command Register Value	Description
NO_COMMAND	0 (0000 Hex)	NO COMMAND
ZERO_REQUEST	1 (0001 Hex)	ZERO SCALE execution **(*)**
TARE_REQUEST	2 (0002 Hex)	AUTOMATIC TARE execution **(*)**
TAREMAN_REQUEST	3 (0003 Hex)	MANUAL TARE execution **(*)** (the value will be entered in Parameter 1 **(2)**)
NET_SWITCH_REQUEST	4 (0004 Hex)	Display Switch on the NET WEIGHT **(3) (*)**
GROSS_SWITCH_REQUEST	5 (0005 Hex)	Display Switch on the GROSS WEIGHT **(3) (*)**
CHANNEL_1_REQUEST	6 (0006 Hex)	Switching on CHANNEL 1
CHANNEL_2_REQUEST	7 (0007 Hex)	Switching on CHANNEL 2
CHANNEL_3_REQUEST	8 (0008 Hex)	Switching on CHANNEL 3
CHANNEL_4_REQUEST	9 (0009 Hex)	Switching on CHANNEL 4
WRITE_SETPOINT_1	10 (000A Hex)	Scrittura SETPOINT 1 (valore ON in Param. 1; valore OFF in Param. 2) (2)
WRITE_SETPOINT_2	11 (000B Hex)	SETPOINT 2 writing (ON value in Param. 1; OFF value in Param. 2) **(2)**
WRITE_SETPOINT_3	12 (000A Hex)	SETPOINT 3 writing (ON value in Param. 1; OFF value in Param. 2) **(2)**
WRITE_SETPOINT_4	13 (000B Hex)	SETPOINT 4 writing (ON value in Param. 1; OFF value in Param. 2) **(2)**
WRITE_SETPOINT_5	14 (000A Hex)	SETPOINT 5 writing (ON value in Param. 1; OFF value in Param. 2) **(2)**
WRITE_SETPOINT_6	15 (000B Hex)	SETPOINT 6 writing (ON value in Param. 1; OFF value in Param. 2) **(2)**
SET_OUTPUT	25 (0019 Hex)	Setting the RELAY **(4)**
READ_SETUP	26 (001A Hex)	SET-UP PAGE READING
WRITE_SETUP	27 (001B Hex)	SET-UP PAGE WRITING
WRITE_FLASH	28 (001C Hex)	SAVING THE SET-UP in FLASH
CHANGE_PAGE	29 (001D Hex)	ALIBI PAGE **(5)** or TRANSM PAGE **(7)** or COUNTING**(9)**
READ_ALIBI	30 (001E Hex)	WEIGH READING ON ALIBI **(6)**
WRITE_ALIBI	31 (001F Hex)	STORAGE OF WEIGH ON ALIBI **(5)**
HOLD_PEAK_WEIGHT	32 (0020 Hex)	BLOCK THE WEIGHT ON THE DISPLAY
UNLOCK_WEIGHT	33 (0021 Hex)	AFTER SECOND PEAK_HOLD_WEIGHT ALLOWS TO UNLOCK THE WEIGHT ON THE DISPLAY AND TO SEE THE EFFECTIVE WEIGHT
RESTART_INSTRUMENT	34 (0022 Hex)	RESTART THE INSTRUMENT
READ_CALIBRATION	35 (0023 Hex)	READ DATA OF CALIBRATION
WRITE_CALIBRATION	36 (0024 hex)	WRITE DATA OF CALIBRATION
POINT_ACQUISITION	37 (0025 hex)	ACQUISATION CALIBRATION POINT
ABORT_CALIBRATION	38 (0026 Hex)	CANCELLATION PROCEDURE CALIBRATION
KEYBOARD_ENABLE	40 (0028 Hex)	BLOCK KEYBOARD (PARAMETER 1 = 0) O UNLOCK KEYBOARD (PARAMETER 1 = 1)
NUMBER_OF_PIECES	41 (0029 Hex)	WRITE NUMBER OF PIECE WITH PARAMETER 1 THAT CORRESPONDING AT THE NUMBER OF PIECE
APW_INPUT	42 (002° Hex)	INPUNT DURING THE STATE OF INSERIMENT IN APW

		FROM KEYBOARD
APW_SET	43 (002B Hex)	SET THE AVERAGE PIECE WEIGHT , AND THE VALUE IS IN PARAMETER 1
SET_ZERO_TIMEOUT	44 (002C Hex)	SET THE MAX TIME OF EXECUTION OF THE ZERO FUNCTION (PARAMETER 1 = NEW VALUE IN SECONDI, MAX NUMBER OF SECONDO IS127)

(*) This command is not managed in the "trANSM" mode.

([2]) NOTE: ***Value format of Parameter 1 and Parameter 2:***

→ *For the MANUAL TARE (only Param1):*

→ *For SETPOINTS 1and 2:*

Whole in absolute value (without decimals)

Example: If 3 decimals are set, in order to enter the value 3,000 → one should write 3000
If 2 decimals are set, in order to enter the value 3,00 → one should write 300

([3]) : active functions only in NTGS mode (net / gross switch).

([4]) Setting of the RELAYS

The status of the relays is settable using Parameter 1:

Parameter 1:

bit 0 → RELAY 1 in which bit 0 = 1 → RELAY 1 CLOSED; bit 0 = 0 → RELAY 1 OPEN
bit 1 → RELAY 2 in which bit 1 = 1 → RELAY 2 CLOSED; bit 1 = 0 → RELAY 2 OPEN
OPTIONAL RELAYS (ONLY DGTQ PB)
bit 2 → RELAY 3 in which bit 2 = 1 → RELAY 3 CLOSED; bit 2 = 0 → RELAY 3 OPEN
bit 3 → RELAY 4 in which bit 3 = 1 → RELAY 4 CLOSED; bit 3 = 0 → RELAY 4 OPEN
bit 4 → RELAY 5 in which bit 4 = 1 → RELAY 5 CLOSED; bit 4 = 0 → RELAY 5 OPEN
bit 5 → RELAY 6 in which bit 5 = 1 → RELAY 6 CLOSED; bit 5 = 0 → RELAY 6 OPEN
bit 6 ÷15 (not used)

NOTES:

- ***Value format of Parameter 1 and Parameter 2 for the RELAYS:***

→ Bit configuration

In the case a relay is linked to a setpoint, the command, relative to that relay, is ignored.

- The writing of the setpoint values does not cause the automatic flash saving, but are set temporarily. In order to save these in flash one should execute the WRITE_FLASH command.

([5]) ALIBI PAGE

To go to the ALIBI page set the value 1000 in Parameter 1. With the writing command, if one wants to fill the page with the values described in the table below, one must first use this command and then transmit the writing command.

Format of the Parameter 1 value:

Whole in absolute value (without decimals)

Table 2.2.1.1: CONTENTS OF ALIBI PAGE

	Input Data Area (N° Byte)	Description
ALIBI PAGE (16 bytes)	16	Stored gross weight value (byte 3)
	17	Stored gross weight value (byte 2)
	18	Stored gross weight value (byte 1)
	19	Stored gross weight value (byte 0)
	20	Stored tare weight value (byte 3)
	21	Stored tare weight value (byte 2)
	22	Stored tare weight value (byte 1)
	23	Stored tare weight value (byte 0)
	24	ID: Weigh number (byte 3)
	25	ID: Weigh number (byte 2)
	26	ID: Weigh number (byte 1)
	27	ID: Weigh number (byte 0)
	28	Alibi status register (MSB)
	29	Alibi status register (LSB)
	30	*Not used*
	31	*Not used*

- ***Format of the* Alibi status register value:**
  2 bytes defined in the following way:

  BIT MEANING

  ---

  bit from 7 to 0 Number of rewritings (from 0 to 255).
  bit from 10 to 8 Number of scale (from 1 to 4).
  bit 11 Type of tare; bit 11 = 1 manual tare; bit 1 = 0 null or semiautomatic tare
  bit 12 Not used
  bit 13 Not used
  bit 14 Not used
  bit 15 Not used

(6) WEIGH READING ON ALIBI

To read a weigh stored in the ALIBI set the rewriting number in Parameter 1 and the weigh number (ID) in Parameter 2. The command automatically executes the change on the ALIBI page: see table 2.2.1.1.

Format of the Parameter 1 and Parameter 2 values:

Whole in absolute value (without decimals)

(7) TRANSM PAGE (only if TYPE >> TRANSM)

To go to the TRANSM page set the value 2000 in Parameter 1. With the writing command, if one wants to fill the page with the values described in the table below, one must first use this command and then transmit the writing command; after the start-up of the indicator, the value 2000 is set automatically as last page read.

Format of the Parameter 1 value:

Whole in absolute value (without decimals)

Table 2.2.1.2: CONTENTS OF TRANSM PAGE(2000)

	Input Data Area (N° Byte)	Description
TRANSM PAGE (16 byte)	16	Channel 1 weight value (byte 3)
	17	Channel 1 weight value (byte 2)
	18	Channel 1 weight value (byte 1)
	19	Channel 1 weight value (byte 0)
	20	Channel 2 weight value (byte 3)
	21	Channel 2 weight value (byte 2)
	22	Channel 2 weight value (byte 1)
	23	Channel 2 weight value (byte 0)
	24	Channel 3 weight value (byte 3)
	25	Channel 3 weight value (byte 2)
	26	Channel 3 weight value (byte 1)
	27	Channel 3 weight value (byte 0)
	28	Channel 4 weight value (byte 3)
	29	Channel 4 weight value (byte 2)
	30	Channel 4 weight value (byte 1)
	31	Channel 4 weight value (byte 0)

Table 2.2.1.3: CONTENT PAGE TRANSM, NET WEIGHT (2001), ver. 7.10 AND NEXT

	Input Data Area (N° Byte)	Description
TRANSM PAGE (16 byte)	16	Ch 1 net weight (byte 3)
	17	Ch 1 net weight (byte 2)
	18	Ch 1 net weight (byte 1)
	19	Ch 1 net weight (byte 0)
	20	Ch 2 net weight (byte 3)
	21	Ch 2 net weight (byte 2)
	22	Ch 2 net weight (byte 1)
	23	Ch 2 net weight (byte 0)
	24	Ch 3 net weight (byte 3)
	25	Ch 3 net weight (byte 2)
	26	Ch 3 net weight (byte 1)
	27	Ch 3 net weight (byte 0)
	28	Ch 4 net weight (byte 3)
	29	Ch 4 net weight (byte 2)
	30	Ch 4 net weight (byte 1
	31	Ch 4 net weight (byte 0)

Table 2.2.1.4: CONTENT TRANSM PAGE , TARE (2002), ver. 7.10 AND NEXT

	Input Data Area (N° Byte)	Description
PAGINA TRANSM (16 byte)	16	Ch 1 tare weight (byte 3)
	17	Ch 1 tare weight (byte 2
	18	Ch 1 net weight (byte 1)
	19	Ch 1 tare weight (byte 0)
	20	Ch 2 tare weight (byte 3)
	21	Ch 2 tare weight (byte 2)
	22	Ch 2 tare weight (byte 1)
	23	Ch 2 tare weight (byte 0
	24	Ch 3 tare weight (byte 3)
	25	Ch 3 tare weight (byte 2)
	26	Ch 3 tare weight (byte 1)
	27	Ch 3 tare weight (byte 0)
	28	Ch 4 tare weight (byte 3)
	29	Ch 4 tare weight (byte 2)
	30	Ch 4 tare weight (byte 1)
	31	Ch 4 tare weight (byte 0)

Tabella 2.2.1.5: CONTENT TRANSM PAGE, NET+TARE (2003), ver. 7.10 AND NEXT

	Input Data Area (N° Byte)	Description
TRANSM PAGE (16 byte)	16	*Ch 1* net *weight (byte 1)*
	17	*Ch 1* net *weight (byte 0)*
	18	*Ch 1 tare weight (byte 1)*
	19	*Ch 1 tare weight (byte 0)*
	20	*Ch 2* net *weight (byte 1)*
	21	*Ch 2* net *weight (byte 0)*
	22	*Ch 2 tare weight (byte 1)*
	23	*Ch 2 tare weight (byte 0)*
	24	*Ch 3* net *weight (byte 1)*
	25	*Ch 3* net *weight (byte 0)*
	26	*Ch 3 tare weight (byte 1)*
	27	*Ch 3 tare weight (byte 0)*
	28	*Ch 4* net *weight (byte 1)*
	29	*Ch 4* net *weight (byte 0)*
	30	*Ch 4 tare weight (byte 1)*
	31	*Ch 4 tare weight (byte 0)*

Commands that can be performed in the mode TRANSM (AFTER VERSION 7.10):

Modbus/Profibus Zero command (command 1) in Transm mode: there is the paramater 1 is to be set to a non zero value to indicate the scale channel that is to be zeroed.

Modbus/Profibus Tare command (command 2) in Transm mode there is the paramater 1 is to be set to a non zero value to indicate the scale channel that is to be tared.

Modbus/Profibus Preset tare command (command 3) in Transm mode: there is the paramater 2 is to be set to a non zero value to indicate the scale channel that is to be tared.

(9) COUNTER MODE

- **PAGE 6000,** only for DGT1 from ver. 7.11 and next in counter mode with values :

Tabella 2.2.1.6: CONTENT OF THE PAGE COUNTING

	Input Data Area (N° Byte)	Description
CONTING PAGE (16 byte)	16	APW decimals (byte 1)
	17	APW decimals (byte 0)
	18	APW unit (byte 1)
	19	APW unit (byte 0)
	20	PCS value (byte 3)
	21	PCS value (byte 2)
	22	PCS value (byte 1)
	23	PCS value (byte 0)
	24	APW value (byte 3)
	25	APW value (byte 2)
	26	APW value (byte 1)
	27	APW value (byte 0)
	28	
	29	
	30	

The command regarding the counting are : 41 (0x0029) - 42 (0x002A) - 43 (0x002B)

2.3 SET-UP AREA

The set-up area is the one stored in flash (1024 bytes) and is made up of 64 pages (from 0 to 63).
In the case of an approved instrument it's not possible to write the metric parameters which are between page 0 and the first half of page 38. It is possible to write only the data between the second half of page 38 and page 63.
By writing one of the pages between 0 and 37 when the instrument is approved, the result of the command is ExceptionCommandNotAllowed,by writing instead the others one obtains CommandOk. In any case page 38 is not copied completely, but only the second half.

	Input Data Area (Byte Nr)	Output Data Area (Byte Nr)	Description
Area Setup: PAGE 5 (16 bytes)	16	16	
	17	17	
	18	18	
	19	19	
	20	20	
	21	21	RANGE 1 channel 1 (LSB)
	22	22	RANGE 1 channel 1
	23	23	RANGE 1 channel 1
	24	24	RANGE 1 channel 1 (MSB)
	25	25	RANGE 2 channel 1 (LSB)
	26	26	RANGE 2 channel 1
	27	27	RANGE 2 channel 1
	28	28	RANGE 2 channel 1 (MSB)
	29	29	*Not used*
	30	30	*Not used*
	31	31	*Not used*

	Input Data Area (N° Byte)	Output Data Area (N° Byte)	Description
Area Setup: PAGE 6 (16 bytes)	16	16	*Not used*
	17	17	RANGE 1 channel 1 Division (LSB)
	18	18	RANGE 1 channel 1 Division (MSB)
	19	19	RANGE 2 channel 1 Division (LSB)
	20	20	RANGE 2 channel 1 Division (MSB)
	21	21	*Not used*
	22	22	*Not used*
	23	23	Channel 1 decimals
	24	24	Channel 1 Unit of Measure **([5])**
	25	25	
	26	26	
	27	27	
	28	28	
	29	29	
	30	30	
	31	31	

	Input Data Area (N° Byte)	Output Data Area (N° Byte)	Description
Area Setup: PAGE 14 (16 bytes)	16	16	RANGE 1 channel 2 (LSB)
	17	17	RANGE 1 channel 2
	18	18	RANGE 1 channel 2
	19	19	RANGE 1 channel 2 (MSB)
	20	20	RANGE 2 channel 2 (LSB)
	21	21	RANGE 2 channel 2
	22	22	RANGE 2 channel 2
	23	23	RANGE 2 channel 2 (MSB)
	24	24	*Not used*
	25	25	*Not used*
	26	26	*Not used*
	27	27	*Not used*
	28	28	RANGE 1 channel 2 Division (LSB)
	29	29	RANGE 1 channel 2 Division (MSB)
	30	30	RANGE 2 channel 2 Division (LSB)
	31	31	RANGE 2 channel 2 Division (MSB)

	Input Data Area (N° Byte)	Output Data Area (N° Byte)	Description
Area Setup: PAGE 15 (16 bytes)	16	16	*Not used*
	17	17	*Not used*
	18	18	Channel 2 decimals
	19	19	Unit of Measure channel 2 **([5])**
	20	20	
	21	21	
	22	22	
	23	23	
	24	24	
	25	25	
	26	26	
	27	27	
	28	28	
	29	29	
	30	30	
	31	31	

	Input Data Area (N° Byte)	Output Data Area (N° Byte)	Description
Area Setup: PAGE 22 (16 bytes)	16	16	
	17	17	
	18	18	
	19	19	
	20	20	
	21	21	
	22	22	
	23	23	
	24	24	
	25	25	
	26	26	
	27	27	RANGE 1 channel 3 (LSB)
	28	28	RANGE 1 channel 3
	29	29	RANGE 1 channel 3
	30	30	RANGE 1 channel 3 (MSB)
	31	31	RANGE 2 channel 3 (LSB)

	Input Data Area (N° Byte)	Output Data Area (N° Byte)	Description
Area Setup: PAGE 23 (16 bytes)	16	16	RANGE 2 channel 3
	17	17	RANGE 2 channel 3
	18	18	RANGE 2 channel 3 (MSB)
	19	19	*Not used*
	20	20	*Not used*
	21	21	*Not used*
	22	22	*Not used*
	23	23	RANGE 1 channel 3 Division (LSB)
	24	24	RANGE 1 channel 3 Division (MSB)
	25	25	RANGE 2 channel 3 Division (LSB)
	26	26	RANGE 2 channel 3 Division (MSB)
	27	27	*Not used*
	28	28	*Not used*
	29	29	Channel 3 decimals
	30	30	Channel 3 unit of measure **([5])**
	31	31	

	Input Data Area (N° Byte)	Output Data Area (N° Byte)	Description
Area Setup: PAGE 31 (16 bytes)	16	16	
	17	17	
	18	18	
	19	19	
	20	20	
	21	21	
	22	22	RANGE 1 channel 4 (LSB)
	23	23	RANGE 1 channel 4
	24	24	RANGE 1 channel 4
	25	25	RANGE 1 channel 4 (MSB)
	26	26	RANGE 2 channel 4 (LSB)
	27	27	RANGE 2 channel 4
	28	28	RANGE 2 channel 4
	29	29	RANGE 2 channel 4 (MSB)
	30	30	*Not used*
	31	31	*Not used*

	Input Data Area (N° Byte)	Output Data Area (N° Byte)	Description
Area Setup: PAGE 32 (16 bytes)	16	16	*Not used*
	17	17	*Not used*
	18	18	RANGE 1 channel 4 Division (LSB)
	19	19	RANGE 1 channel 4 Division (MSB)
	20	20	RANGE 2 channel 4 Division (LSB)
	21	21	RANGE 2 channel 4 Division (MSB)
	22	22	*Not used*
	23	23	*Not used*
	24	24	Channel 4 decimals
	25	25	Channel 4 unit of measure **([5])**
	26	26	
	27	27	
	28	28	
	29	29	
	30	30	
	31	31	

([5]) <u>NOTE</u>: ***Meaning of the numeric value in the Unit of Measure field:***

3.

0	→	Grams
1	→	Kilograms
2	→	Tons
3	→	Pounds

3. CALIBRATION SEQUENCE

The following pages content metrologic data ,that is possible read/write.

Page 5000

	Input Data Area (N° Byte)	Description
PAGINA DATI METROLOGICI (16 byte)	16	Unit of measure (byte 1)
	17	Unit of measure (byte 0)
	18	1st range division (byte 1)
	19	1st range division (byte 0)
	20	2nd range division. (byte 1)
	21	2nd range divisiion. (byte 0)
	22	Decimal (byte 1)
	23	Decimal (byte 0)
	24	1st range capacity (byte 3)
	25	1st range capacity (byte 2)
	26	1st range capacity (byte 1)
	27	1st range capacity (byte 0)
	28	2nd range capacity
	29	2nd range capacity
	30	2nd range capacity)
	31	2nd range capacity

Unit of measure

0	→	g
1	→	kg
2	→	T
3	→	L

Page 5001

	Input Data Area (N° Byte)	Description
PAGE CONTENT WEIGHT OF CALIBRATION (16 byte)	16	Calibration point (byte 1)
	17	Calibration point (byte 0)
	18	1st calibration weight (MSB)
	19	1st calibration weight
	20	1st calibration weight
	21	1st calibration weight (LSB)
	22	2nd calibration weight (MSB)
	23	2nd calibration weight
	24	2nd calibration weight
	25	2nd calibration weight (LSB)
	26	3rd calibration weight (MSB)
	27	3rd calibration weight
	28	3rd calibration weight
	29	3rd calibration weight (LSB)
	30	Calibration status (byte 1)
	31	Calibration status (byte 0)

State of Calibration:

Value	Denomination	Description
0	CALIBRATION_NOT_STARTED	Calibration not is in execution
1	CALIBRATION_ACQUISTION_UNDERWAY	Acquisition point calibration in progress
2	CALIBRATION_ACQUISTION_OK	Point calibration successfully acquired
3	CALIBRATION_ACQUISTION_ERROR	Error acquisation point calibration
4	CALIBRATION_OK	Calibration OK
5	CALIBRATION_ERROR	Error in Calibration

Page 5002

	Input Data Area (N° Byte)	Description
PAGE CALIBRATION POINT (16 byte)	16	Zero calibration ADC value (MSB)
	17	Zero calibration ADC value
	18	Zero calibration ADC value
	19	Zero calibration ADC value (LSB)
	20	1st calibration point ADC value (MSB)
	21	1st calibration point ADC value
	22	1st calibration point ADC value
	23	1st calibration point ADC value (LSB)
	24	2nd calibration point ADC value(MSB)
	25	2nd calibration point ADC value
	26	2nd calibration point ADC value
	27	2nd calibration point ADC value (LSB)
	28	3rd calibration point ADC value (MSB)
	29	3rd calibration point ADC value
	30	3rd calibration point ADC value
	31	3rd calibration point ADC value (LSB)

Calibration commands:

Number	Command	Note
35 (0023 Hex)	READ_CALIBRATION	Copy of calibration data of the channel equal to parameter 1 into temporary area (accessible via the pages 5000 to 5002)
36 (0024 Hex)	WRITE_CALIBRATION	Parameter 1=0 store of temporary data into calibration data (non-volatile memory) Parameter 1=5000 copy data output area values (byres 16 to 31)Into the temporary calibration area related to metrologic values Parameter 1= 5001 copy data output area values (byres 16 to 31)Into the temporary calibration area related to calibration weights values Parametro 1=5002 copy data output area values (bytes 16 to 31) into the temporary calibration area related to calibration ADC values
37 (0025 Hex)	POINT_ACQUISITION	Parameter 1 is the point to acquire
38 (0026 Hex)	ABORT_CALIBRATION	Abort the calibration under way

Calibration sequence

Passo	Description
A	Use command READ CALIBRATION with parameter 1 equal to the channel to calibrate (1st channel is zero). If type is equal to dependent channels parameter 1 can be equal to zero only.
B	If necessary , insert metrologic value on page 5000 and use the command WRITE_CALIBRATION with parameter 1 equal to 5000.
C	set up calibration point on page 5001, byte 16-17.
D	Set up the value of weigh(s) of calibration on page 5001 , i valori dei pesi di calibrazione alla pagina 5001, from byte 18 al 29, and use the command WRITE_CALIBRATION with parameter 1 equal to 5001
E	If a theoretical calibration is to be executed, insert the values ADC directly on the page 5002 and use th command WRITE_CALIBRATION with parameter 1 equal to 5002.
F	Otherwise set the page 5001 to be able to read the log calibration status (byte 30-31), so unload the platform and use the command POINT_ACQUISITION with parameter equal to 0.
G	wait for calibration status is equal to CALIBRATION_ACQUISTION_OK or CALIBRATION_ACQUISTION_ERROR
H	If you run into an error repeat from step F.
I	if successful, load the platform with 1st calibration weight and use command POINT_ACQUISITION with parameter equal to 1
J	wait for calibration status is equal to CALIBRATION_ACQUISTION_OK or CALIBRATION_ACQUISTION_ERROR
K	If you run into an error repeat from step J.
L	If successful repeat from step J-to- date calibration points (if any).
M	use command WRITE_CALIBRATION with parameter 1 equal to zero to store the new calibration
N	wait for calibration status is equal to CALIBRATION_OK or CALIBRATION_ERROR
O	on error repeat from step a

4. SETTING OPERATING MODE

For instruments DGT4, DGTP, DCTP, DGTP ver. 7.12 and later can read and set the operating mode between independent channels, channels and employees Transm remotely.

Page 5003

	Input Data Area (N° Byte)	Description
PAGE OF CALIBRATION POINT (16 byte)	16	Operating mode (MSB)
	17	Operating mode (LSB)
	18	Number of channels (MSB)
	19	Number of channels (LSB)
	20	
	21	
	22	
	23	
	24	
	25	
	26	
	27	
	28	
	29	
	30	
	31	

Operating mode:

Value	Mode
0	Independent channels
1	Dipendent channels
2	Transm

To set the operating mode, on a non approved instrument, it must be written in bytes 16-17 of the output mode you want to use, in bytes 18 to 19 the number of channels to be used and then use the command with parameter WRITE_CALIBRATION 1 equal to 5003. the instrument stores the new mode and automatically reboots.

5. HUB MODE

This mode can be is used whit the tools DGT1/DGT1S associated with one of following modules

-PROFIBUS1S
-PROFINET1S
-ETHERCAT1S
-DEVICENET1S
-CANOPEN1S

Versions of DGT1 prior to 7.13(only Profibus)
To use in this way set on DGT1/ DGT1S on the 485 network:

Step setup	Value
SEtuP → SEr iAL → PC SEL	485
SEtuP → SEr iAL → COM_PC → PCMOdE	Pb_MuLt
SEtuP → SEr iAL → COM_PC → PCMOdE → PrO_Add	Profibus ID of the module
SEtuP → SEr iAL → COM_PC → PCMOdE → SCA_Add	485 address of DGT1 (from 1 with consecutive values)
SEtuP → SEr iAL → COM_PC → PCMOdE → nuM_SCA	Number of DGT1s of the 485 network
SEtuP → SEr iAL → COM_PC → bAud	115200

Version of DGT1 7.13 and next
To use in this way set on DGT1/ DGT1S on the 485 network:

Step setup	Value
SEtuP → SEr iAL → PC SEL	485
SEtuP → SEr iAL → COM_PC → PCMOdE	Fld_buS
→ buS_tYP	ProF ib : Profibus Eth_ iP : Ethernet/IP ProF in : Profinet Eth_CAt : Ethercat CAnoPn : CANOpen dEU_nEt : DeviceNet
Other parameters depending on the protocol selected:	
SEtuP → SEr iAL → COM_PC → PCMOdE → nuM_SCA	Balance number on the 485 network
SEtuP → SEr iAL → COM_PC → PCMOdE → SCA_Add	Address 485 of the DGT (from 1 consecutive value)
SEtuP → SEr iAL → COM_PC → bAud	115200

Parameters dependent from selected protocol : read paragraph 1.2

Profinet NOTE: The name of the node to be used in Profinet project associated with the master node of the network is given by dini- <IP4>, where IP4 is the last byte of the IP address entered in the configuration of DGT1, even if you use the 'self-configuration of the IP address.
Eg. IP = 192.168.1.10, the node name will dini-010.

<u>To check from DGT1 if the 485 network works</u>: go to the configuration menu step
diAG → S_SCAn
The scale will execute a continuous cycle to check if the scales on the network work.

-Value 1 means that the selected scale is on-line.

-Value 0 means that the selected scale is off-line.

With arrow keys the instrument enters in the manual scan.
Press C key to exit.

When a DGT is connected to the 485 network shows on the led display, for a few seconds, the message PB.CONN, then there are no more messages about Profibus.
When the Profibus master connects the yellow led of the module will turn on.

5.1 OUTPUT DATA AREA

The area of Profibus output is composed of 32 bytes whose structure is that indicated by Table 1.

Byte	Data
1	Scale Command register(MSB) → to which scale send the command (7F Broadcast)
2	Scale Command register (LSB) → command
3	Data
…	…
32	Data

Table 1 Output data area

The Command Register has the structure:
MSB: to which scale of the 485 network send the data of the area (1 → scale 1, 2 → scale 2, …)
LSB: command, ignored by hub module.
The module will send to the selected scale the whole area as received by the Profibsus master, but with the MSB byte of the Command Register equal to zero.

Commands with MSB greater than 0x6F will be managed by the hub module.

Commands:

Command (Hex)	Description
F000	Fill in the Input Data Area with scale data system (Table 4)
F001	Fill in the Input Data Area with the data received from the scale 1
F002	Fill in the Input Data Area with the data received from the scale 2
…	…
F010	Fill Input Data Area with scale 16 data
F100	Fill Input Data Area with status data of the system (Tab. 2)
F200	Scan of the 485 network. Useful if some scales are not connected and want check if they returned on-line.
F300	Rereading network settings from the scale 1 and scanning network. It also allows the change in the number of scales in the network, whether it varies in scale 1.
7Fxx	Enter the Output data area in the broadcast, in all scales of the subsystem 485 (with Modbus address zero)

Nota: commands in broadcast not provide feedback from the balance so it is said they are actually carried out by all the scales, to ensure that they execute you must control the outcome of the controls and counter balances.

5.2 INPUT DATA AREA

In the Input data Area can be filled with different pages, see Table 2.

Page	Profibus command (hex) to change page
Network data page	F000
Scale 1 data	F001
...	...
Scale 16 data	F010
Network status	F100

Table 2 Input Data Area pages

5.2.1 NETWORK PAGE DATA

The page has the structure of Table 3.

Byte	Data
1	Scale 1 data (byte 1)
2	Scale 1 data (byte 2)
3	Scale 1 data (byte 3)
4	Scale 1 data (byte 4)
5	Scale 1 data (byte 5)
6	Scale 1 data (byte 6)
7	Scale 1 data (byte 7)
8	Scale 1 data (byte 8)
9	Scale 2 data (byte 1)
10	Scale 2 data (byte 2)
11	Scale 2 data (byte 3)
12	Scale 2 data (byte 4)
13	Scale 2 data (byte 5)
14	Scale 2 data (byte 6)
15	Scale 2 data (byte 7)
16	Scale 2 data (byte 8)
...	...
121	Scale 16 data (byte 1)
122	Scale 16 data (byte 2)
123	Scale 16 data (byte 3)
124	Scale 16 data (byte 4)
125	Scale 16 data (byte 5)
126	Scale 16 data (byte 6)
127	Scale 16 data (byte 7)
128	Scale 16 data (byte 8)

Table 3 Network page data

Single scale data

Byte	Data
1	Input/output status
2	Gross weight (B2)
3	Gross weight (B1)
4	Gross weight (B0)

5	Scale status
6	Net weight (B2)
7	Net weight (B1)
8	Net weight (B0)

Table 4 Single scale data in the network page data

Input/output status

Bit	Data
0	Input 1 status
1	Input 2 status
2	Output 1 status
3	Output 2 status
4	Last command result (0: ok, 1: error)
6-5	Command counter (modulo 4)
7	Always 1 (scale present bit)

Table 5 Input/output status

Scale status

Bit	Data
0	Net weight polarity
1	Gross weight polarity
2	Weight stability
3	Underload condition
4	Overload condition
5	Entered tare condition
6	Manual tare condition
7	Gross zero zone

Table 6 Scale status

5.2.2 SCALE 1…N PAGE DATA-

Data are the same of the 1 to 1 function mode.

5.2.3 NETWORK STATUS PAGE-

Byte	Data
1	Number of the scales of the system
2	Scale 1 state
3	Scale 2 state
…	…
17	Scale 16 state
…	0
128	0

Table 7 Network status page

Scale state

Value	Meaning
0	Scale not part of the network
1	Scale on-line
2	Scale off-line

To have a scale back on-line after it failed it is possible:

- Restart the module
- Execute by the Profibus master the command 0xF200
- Execute by the Profibus master the command 0xF300, after this command the module will read from scale 1 the network configuration and will set as Input Data Area the Network Data page

5.2.4 SCALES SCAN RATE

Table 9 shows the frequency, in the second reading, to update data in the input each balance when you have the page with the data condensed balances network.

	Number of the scale of the 485 network				
Baud rate	**1**	**2**	**4**	**8**	**16**
115200	54	27	13.6	6.8	3.6
57600	42	21.2	10.6	5.8	3
38400	40.8	20.4	10.2	5.2	2.6
19200	33	16.6	8.4	4.2	2.2
9600	20.4	10.2	5.2	2.6	1.4

Table 8 Scales scan rate

5.3 GSD FILE

Device name	DINIPB
Manufacturer ID	0DE1

Available GSD modules.

Module	Description
IN/OUT: 128 Byte (64 word)	128 input bytes + 128 output bytes

Table 9 GSD File module

5.4 FILE EDS ETHERNET/IP

Device name	DINI NIC 50-RE/EIS
Manufacturer ID	283
Product ID	0x10D

Modules

Module name	Number od modules	Description
Input (T→O)	1	128 byte input area module
Output (O→T)	1	128 byte output area module

T: target
O: originator

5.5 FILE GSDML PROFINET

Device name	dini-xxx
Manufacturer ID	011E
Product ID	010A

Modules

Name Module	Number module	Description
64byteinput	2	64 byte module for the input area
64byteoutput	2	64 byte module for the output area

5.2 FILE ESI ETHERCAT

Device name	DINI NIC 50-RE/ECS
Manufacturer ID	0xE0000044
Product ID	0x0000000B

Modules

Name Module	Number module	Description
Input	1	200 byte module for the input area
Output	1	200 byte module for the output area

5.3 FILE EDS CANOPEN

Device name	DINI NIC 50-COS
Manufacturer ID	0x00000044
Product ID	1541540

Modules

Name Module	Number module	Description
Input	64	8 bytes modules for the input area (TXPDU). Min. 4 TXPDU (32 byte)
Output	64	8 bytes module for the output area (RXPDU). Min. 4 RXPDU (32 byte)

5.4 FILE EDS DEVICENET

Device name	DINI Slim-DeviceNet NIC 50-DNS
Manufacturer ID	283
Product ID	35

Modules

Name Module	Number module	Description
Input (Production)	1	128 byte module for the input area
Output (Consumption)	1	32 byte module for the output area

5.5 MESSAGES DISPLAYED BY DGT1

Profibus

At the first interrogation DGT1 by the module ,the display shows the message PB.CONN, then you no longer have any message for the Profibus.

When the Profibus master connects illuminates the yellow LED module.

Other fieldbus

As soon as it is available to DGT1 This displays the firmware version of the Hub in the form fr.xx.yy where xx.yy is the release.

At the first interrogation DGT1 by the module the display shows the message Fb_COnn.

When communication between the module Hub and Fieldbus network is operational, on DGT1 the displays Fb_OK.

In case of errors the DGT1 displays every 5 seconds the message Fb_Err alternating error code.

In the event that there is communication between the module and DGT1 Hub after 30 seconds from the DGT1 display every 5 seconds the message F_bUS_Er.

Message	Meaning
FbUS_Er	No connection received from module Hub after 30 second since system start
F.R.xx.yy	Firmware version of the module hub
F_b_COnn	Start the communication between hub module and scale
F_b_OK	Communication on Fieldbus network configurated and running
F_b_Err + code	Error state , see table error codes

Table error code:

Code	Meaning
1000	Fatal error in Hub module
1001	Inconsistency between protocol type selected and the one managed by the Hub module, eg. Hub type DeviceNet module with Profinet protocol selected on DGT1
1-18	Other fatal error in Hub module
000001 and the following	Unrecoverable error module Hub

Some error of network:

Code	Meaning
000140	General network error
000141	Connection closed
000142	Time-out Connection
000143	Isolated network
000144	Duplicated node
000145	Network cable disconnected