PROFIBUS

Communication Protocol of PUE HY10 Indicator

SOFTWARE MANUAL

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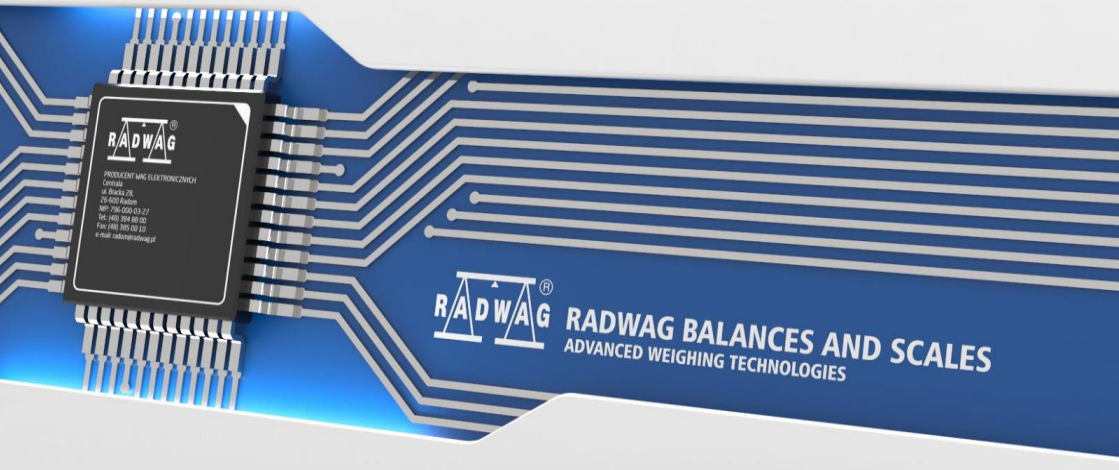

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"The drawings, photos and graphics used are for illustrative purposes only."

CONTENTS

1. GENERAL INFORMATION

Profibus Communication Module ensures data exchange between a supervising controlling device (master) and a scale (Slave) in accordance with the Profibus DP protocol.

The supervising unit enables:

- Cyclic reading in input signals from an indicator PUE HY10 series,
- Cyclic saving outputs status to an indicator PUE HY10 series.

Profibus communication functionality with the indicator PUE HY10 enables:

- Operation of four weighing platforms,
- Tarring,
- Zeroing,
- Setting tare value,
- Setting the value of LO limit,
- Setting the value of Min threshold,
- Setting the value of Max threshold,
- Reading inputs status,
- Setting outputs,
- Selecting an operator,
- Selecting a product,
- Selecting a client,
- Selecting a packaging,
- Selecting a source warehouse,
- Selecting a destination warehouse,
- Selecting a formulation,
- Setting lot number,
- Process stopping,
- Process starting,
- Saving / Printing,
- Statistics zeroing.

2. MEMORY MAP

2.1. Output address

Address / Offset	0	1	2	3	4	5	6	7	8	9
0	M 1	M 1	M 1	M 1	T 1	T 1	T 1	T 1	J 1	J 1
1	S 1	S 1	LO 1	LO 1	LO 1	LO1	M 2	M 2	M 2	M 2
2	T 2	T 2	T 2	T 2	J 2	J 2	S 2	S 2	LO 2	LO 2
3	LO 2	LO 2	M 3	M 3	M 3	M 3	T 3	T 3	T 3	T 3
4	J 3	J 3	S 3	S 3	LO 3	LO 3	LO 3	LO 3	M 4	M 4
5	M 4	M4	T 4	T 4	T 4	T 4	J 4	J 4	S 4	S 4
6	LO 4	LO 4	LO 4	LO 4	ST	ST	SW	SW	MIN	MIN
7	MIN	MIN	MAX	MAX	MAX	MAX	-	-	-	-
8	-	-	-	-	LOT	LOT	LOT	LOT	O	O
9	A	A	K	K	OK	OK	MZ	MZ	MD	MD
10	RC	RC	-	-	-	-	-	-	-	-

Where:

M	Mass of a weighing platform, 4 bytes, float
T	Tare of a weighing platform, 4 bytes, float
J	Measuring unit of a weighing platform, 2 bytes, word
S	Status of a weighing platform, 2 bytes, word
LO	Lo limit of a weighing platform, 4 bytes, float
MIN	MIN threshold, 4 bytes, float
MAX	MAX threshold, 4 bytes, float
LOT	Lot, 4 bytes, word
O	Operator, 2 bytes, word
A	Product, 2 bytes, word
K	Client, 2 bytes, word
OK	Packages, 2 bytes, word
MZ	Source warehouse, 2 bytes, word
MD	Destination warehouse, 2 bytes, word
RC	Formulation, 2 bytes, word

2.2. Input address

Address / Offset	0	1	2	3	4	5	6	7	8	9
0	C	C	CP	CP	P	P	T	T	T	T
1	LO	LO	LO	LO	SW	SW	MIN	MIN	MIN	MIN
2	MAX	MAX	MAX	MAX	-	-	-	-	-	-
3	-	-	LOT	LOT	LOT	LOT	O	O	A	A
4	K	K	OK	OK	MZ	MZ	MD	MD	RC	RC

Where:

C	Command, 2 bytes, word
CP	Command with a parameter, 2 bytes, word
P	Active weighing platform, 2 bytes, word
T	Tare of a weighing platform, 4 bytes, float
LO	Lo limit of a weighing platform, 4 bytes, float
SW	Inputs/Outputs statuses, 2 bytes, word
MIN	MIN threshold, 4 bytes, float
MAX	MAX threshold, 4 bytes, float
LOT	Lot, 4 bytes, word
O	Operator, 2 bytes, word
A	Product, 2 bytes, word
K	Client, 2 bytes, word
OK	Packages, 2 bytes, word
MZ	Source warehouse, 2 bytes, word
MD	Destination warehouse, 2 bytes, word
RC	Formulation, 2 bytes, word

3. DESCRIPTION OF VARIABLES

3.1. Output variables

Reading the output variables enables obtaining data on device status.

List of output variables:

Variable	Address	Length [word]	Data type
Mass of platform 1	0	2	float
Tare of platform 1	4	2	float
Measuring unit of platform 1	8	1	word
Status of platform 1	10	1	word
Lo limit of platform 1	12	2	float
Mass of platform 2	16	2	float
Tare of platform 2	20	2	float
Measuring unit of platform 2	24	1	word
Status of platform 2	26	1	word
Lo limit of platform 2	28	2	float
Mass of platform 3	32	2	float
Tare of platform 3	36	2	float
Measuring unit of platform 3	40	1	word
Status of platform 3	42	1	word
Lo limit of platform 3	44	2	float
Mass of platform 4	48	2	float
Tare of platform 4	52	2	float
Measuring unit of platform 4	56	1	word
Status of platform 4	58	1	word
Lo limit of platform 4	60	2	float
Process status (Stop, Start)	64	1	word
Inputs status	66	1	word
Min	68	2	float
Max	72	2	float
Lot number	84	2	word
Operator	88	1	word
Product	90	1	word
Client	92	1	word
Packaging	94	1	word
Source warehouse	96	1	word
Destination warehouse	98	1	word
Formulation	100	1	word

Mass of platform – response is mass on a weighing platform in current measuring unit.

Tare of platform – response is the value of tare on a weighing platform in adjustment unit.

Measuring unit of a platform – determines current (displayed) measuring unit set for a weighing platform.

Measuring unit bits	
0	gram [g]
1	kilogram [kg]
2	carat [ct]
3	pound [lb]
4	ounce [oz]
5	Newton [N]

Example:

Bit no.	**B5**	**B4**	**B3**	**B2**	**B1**	**B0**
Value	0	0	0	0	1	0

The scale measures with a unit: kilogram [kg].

Status of a platform – determines status of a weighing platform

Bity statusu	
0	correct measurement (the scale does not report an error)
1	stable measurement
2	scale in precise zero
3	scale tarred
4	scale in 2nd measuring range
5	scale in 3rd measuring range
6	scale reports NULL error
7	scale reports LH error
8	scale reports FULL error

Example:

Bit no.	**B8**	**B7**	**B6**	**B5**	**B4**	**B3**	**B2**	**B1**	**B0**
Value	0	0	0	0	1	0	0	1	1

The scale does not report an error, the measurement is stabilized in the 2nd measuring range.

LO – response is the value of **LO** limit in an adjustment unit of a given weighing platform.

Process status – determines status of a process:

Decimal value of a variable	Process status	Bit no.	
		B1	B0
0	Process inactive	0	0
1	Process start	0	1
2	Process stop	1	0
3	Process end	1	1

Inputs status – response is the status of set inputs:

Input no.	12	11	10	9	8	7	6	5	4	3	2	1
OFF	0	0	0	0	0	0	0	0	0	0	0	0
ON	1	1	1	1	1	1	1	1	1	1	1	1

Example:

Mask of set inputs 2 and 4: 0000 0000 0000 1010

MIN – response is the value of set **MIN** threshold (in a measuring unit of an enabled working mode).

MAX - response is the value of set **MAX** threshold (in a measuring unit of an enabled working mode).

Lot number – response is the value of lot number.

Operator – response is the value of a logged operator.

Product – response is the value of a selected product.

Client – response is the value of a code of a selected client.

Packaging – response is the value of a code of a selected packaging.

Source warehouse – response is the value of a code of a source warehouse.

Destination warehouse – response is the value of a code of a destination warehouse.

Formulation – response is the value of a code of a selected formulation.

3.2. Input variables

Saving input variables in an indicator PUE HY10 series enables influencing its operation.

List of input variables:

Variable	Address	Length [word]	Data type
Command	0	1	word
Command with a parameter	2	1	word

List of parameters of a complex command:

Parameter	Address	Length [word]	Data type
Platform	4	1	word
Tare	6	2	float
LO limit	10	2	float
Output status	14	1	word
Min	16	2	float
Max	20	2	float
Lot number	32	2	word
Operator	36	1	word
Product	38	1	word
Client	40	1	word
Packaging	42	1	word
Source warehouse	44	1	word
Destination warehouse	46	1	word
Formulation	48	1	word

basic command – Setting a bit causes carrying out a task as specified in a below table:

Command bit	Command
0	Zero platform
1	Tare platform
3	Clear statistics
4	Save / Print
5	Start
6	Stop

Example:

0000 0000 0010 0000 – the command carries out process start.

complex command - Setting a bit causes carrying out a task as specified in a below table:

Command bit	Command
0	Setting tare value of a weighing platform
1	Setting the value of LO limit of a weighing platform
2	Setting outputs status
3	Setting the value of MIN threshold
4	Setting the value of MAX threshold

A complex command requires setting an appropriate parameter (addresses from 4 to 48. – see table "List of parameters in a complex command").

Example:

0000 0000 0000 0010 – a command carries out setting of the LO limit for a value given in parameter LO (address 10 – see table "List of parameters in a complex command").

Platform – complex command parameter: number of a weighing platform.

Tare – complex command parameter: tare value (in an adjustment unit).

LO – complex command parameter: the value of LO limit (in an adjustment unit).

Outputs status – complex command parameter: determines outputs status of an indicator.

Output no.	12	11	10	9	8	7	6	5	4	3	2	1
OFF	0	0	0	0	0	0	0	0	0	0	0	0
ON	1	1	1	1	1	1	1	1	1	1	1	1

Example:

Mask of active outputs 2 and 4: 0000 0000 0000 1010

MIN - complex command parameter: the value of MIN threshold (in a measuring unit of an enabled working mode).

MAX - complex command parameter: the value of MAX threshold (in a measuring unit of an enabled working mode).

Lot number - complex command parameter: the value of lot number.

Operator - complex command parameter: the value of a code of a logged operator.

Product - complex command parameter: the value of a code of a selected product.

Client - complex command parameter: he value of a code of a selected client.

Packaging - complex command parameter: he value of a code of a selected packaging.

Source warehouse - complex command parameter: he value of a code of a selected source warehouse.

Destination warehouse - complex command parameter: he value of a code of a selected destination warehouse.

Formulation - complex command parameter: response is the value of a code of a selected formulation.

A command or a command with a parameter is carried out once on detecting the setting of a corresponding bit. If it is necessary to repeat a command with the same bit, then first it has to be zeroed.

Example:

Command	**address 1**	**address 0**
Tarring	0000 0000	0000 0010
Zeroing command bits	0000 0000	0000 0000
Tarring	0000 0000	0000 0010

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