

# TU-DP

(PROFIBUS-DP interface)

Firm V1.9

Rev. 06/2008



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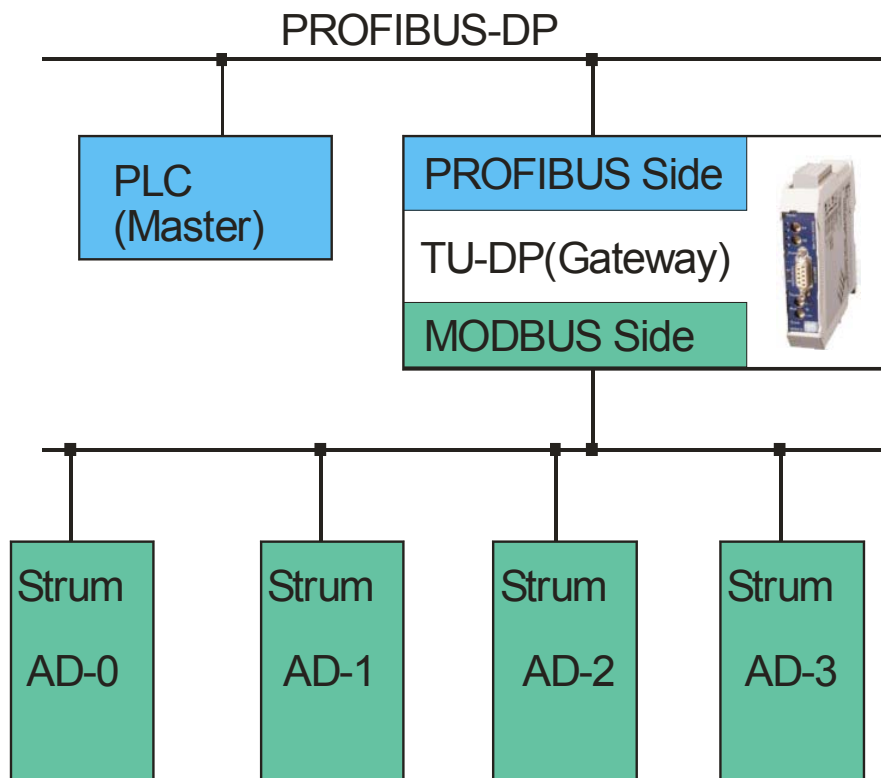
## 1 TECHNICAL SPECIFICATIONS

### 1.1 HOW IT WORK

A PROFIBUS-DP network are done of 1 master and many slave  
 Usually the PLC is a master and the other are slave (gateway, inverter...)  
 The TU-DP is a slave.

On TU-DP(gateway) you can set the DP address (by a rotary switch).  
 The PLC will find the address set on TU-DP and when will be "on-line" a green led will be on

On the side(MODBUS) will be wired the other instruments in a MODBUS network.



The maximum number of MODBUS instruments that we can connect are 32  
 Disable the instruments that you don't want read with word offset 2-3-4-7.

The read function are automatically and start with bit 0 of word offset 0.  
 The read value configured will be from word offset 6 to word offset 214 in read area

The write function are enable by bit 2 of word offset 0.  
 The write area are direct and depend of configuration.  
 The write area start from word offset 6 to word offset 214 in write area

If occur a communication error the bits from offset1 to offset 4 are set.  
 When the communication error disappear the bit are automatically resetted

The value on offset 5 is the actual MODBUS address quest.

### 1.2 Profibus data table exchange

Read (E)

Write (A)

OFFS Byte	Word	Meaning	OFFS Byte	word	Meaning																																				
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6	3	VAL 1/Bits 1-16	6	3	VAL 1/Bits 1-16
7			7		
8	4	VAL 2/Bits 17-32	8	4	VAL 2/Bits 17-32
9			9		
10	5	VAL 3/ Bits 33-48	10	5	VAL 3/ Bits 33-48
11			11		
12	6	VAL 4/Bits 47-64	12	6	VAL 4/Bits 47-64
13			13		
14	7	VAL 5	14	7	VAL 5
15			15		
16	8	VAL 6	16	8	VAL 6
17			17		
18	9	VAL 7	18	9	VAL 7
19			19		
20	10	VAL 8	20	10	VAL 8
21			21		
22	11	VAL 9	22	11	VAL 9
23			23		
24	12	VAL 10	24	12	VAL 10
25			25		
26	13	VAL 11	26	13	VAL 11
27			27		
28	14	VAL 12	28	14	VAL 12
29			29		
30	15	VAL 13	30	15	VAL 13
31			31		
32	16	VAL 14	32	16	VAL 14
33			33		
34	17	VAL 15	34	17	VAL 15
35			35		
36	18	VAL 16	36	18	VAL 16
37			37		
38	19	VAL 17	38	19	VAL 17
39			39		
40	20	VAL 18	40	20	VAL 18
41			41		
42	21	VAL 19	42	21	VAL 19
43			43		
44	22	VAL 20	44	22	VAL 20
45			45		
46	23	VAL 21	46	23	VAL 21
47			47		
48	24	VAL 22	48	24	VAL 22
49			49		
50	25	VAL 23	50	25	VAL 23
51			51		
52	26	VAL 24	52	26	VAL 24
53			53		
54	27	VAL 25	54	27	VAL 25
55			55		
56	28	VAL 26	56	28	VAL 26
57			57		

OFFS Byte	word	Meaning	OFFS Byte	word	Meaning
58	29	VAL 27	58	29	VAL 27
59			59		
60	30	VAL 28	60	30	VAL 28
61			61		
62	31	VAL 29	62	31	VAL 29
63			63		
64	32	VAL 30	64	32	VAL 30
65			65		
66	33	VAL 31	66	33	VAL 31
67			67		
68	34	VAL 32	68	34	VAL 32
69			69		
70	35	VAL 33	70	35	VAL 33
71			71		
72	36	VAL 34	72	36	VAL 34
73			73		
74	37	VAL 35	74	37	VAL 35
75			75		
76	38	VAL 36	76	38	VAL 36
77			77		
78	39	VAL 37	78	39	VAL 37
79			79		
80	40	VAL 38	80	40	VAL 38
81			81		
82	41	VAL 39	82	41	VAL 39
83			83		
84	42	VAL 40	84	42	VAL 40
85			85		
86	43	VAL 41	86	43	VAL 41
87			87		
88	44	VAL 42	88	44	VAL 42
89			89		
90	45	VAL 43	90	45	VAL 43
91			91		
92	46	VAL 44	92	46	VAL 44
93			93		
94	47	VAL 45	94	47	VAL 45
95			95		
96	48	VAL 47	96	48	VAL 47
97			97		
98	49	VAL 48	98	49	VAL 48
99			99		
100	50	VAL 48	100	50	VAL 48
101			101		
102	51	VAL 49	102	51	VAL 49
103			103		
104	52	VAL 50	104	52	VAL 50
105			105		
106	53	VAL 51	106	53	VAL 51
107			107		
108	54	VAL 52	108	54	VAL 52
109			109		

OFFS Byte	word	Meaning	OFFS Byte	word	Meaning
110	55	VAL 53	110	55	VAL 53
111			111		
112	56	VAL 54	112	56	VAL 54
113			113		
114	57	VAL 55	114	57	VAL 55
115			115		
116	58	VAL 56	116	58	VAL 56
117			117		
118	59	VAL 58	118	59	VAL 58
119			119		
120	60	VAL 58	120	60	VAL 58
121			121		
122	61	VAL 59	122	61	VAL 59
123			123		
124	62	VAL 60	124	62	VAL 60
125			125		
126	63	VAL 61	126	63	VAL 61
127			127		
128	64	VAL 62	128	64	VAL 62
129			129		
130	65	VAL 63	130	65	VAL 63
131			131		
132	66	VAL 64	132	66	VAL 64
133			133		
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135			135		
136	68	VAL 66	136	68	VAL 66
137			137		
138	69	VAL 67	138	69	VAL 67
139			139		
140	70	VAL 68	140	70	VAL 68
141			141		
142	71	VAL 69	142	71	VAL 69
143			143		
144	72	VAL 70	144	72	VAL 70
145			145		
146	73	VAL 71	146	73	VAL 71
147			147		
148	74	VAL 72	148	74	VAL 72
149			149		
150	75	VAL 73	150	75	VAL 73
151			151		
152	76	VAL 74	152	76	VAL 74
153			153		
154	77	VAL 75	154	77	VAL 75
155			155		
156	78	VAL 76	156	78	VAL 76
157			157		
158	79	VAL 77	158	79	VAL 77
159			159		
160	80	VAL 78	160	80	VAL 78
161			161		



OFFS Byte	word	Meaning	OFFS Byte	word	Meaning
162	81	VAL 79	162	81	VAL 79
163			163		
164	82	VAL 80	164	82	VAL 80
165			165		
166	83	VAL 81	166	83	VAL 81
167			167		
168	84	VAL 82	168	84	VAL 82
169			169		
170	85	VAL 83	170	85	VAL 83
171			171		
172	86	VAL 84	172	86	VAL 84
173			173		
174	87	VAL 85	174	87	VAL 85
175			175		
176	88	VAL 86	176	88	VAL 86
177			177		
178	89	VAL 87	178	89	VAL 87
179			179		
180	90	VAL 88	180	90	VAL 88
181			181		
182	91	VAL 89	182	91	VAL 89
183			183		
184	92	VAL 90	184	92	VAL 90
185			185		
186	93	VAL 91	186	93	VAL 91
187			187		
188	94	VAL 92	188	94	VAL 92
189			189		
190	95	VAL 93	190	95	VAL 93
192			192		
193	96	VAL 94	193	96	VAL 94
194			194		
195	97	VAL 95	195	97	VAL 95
196			196		
197	98	VAL 96	197	98	VAL 96
198			198		
199	99	VAL 97	199	99	VAL 97
200			200		
201	100	VAL 98	201	100	VAL 98
202			202		
203	101	VAL 99	203	101	VAL 99
204			204		
205	102	VAL 100	205	102	VAL 100
206			206		
207	103	VAL 101	207	103	VAL 101
208			208		
209	104	VAL 102	209	104	VAL 102
210			210		
211	105	VAL 103	211	105	VAL 103
212			212		
213	106	VAL 104	213	106	VAL 104
214			214		

## 1.3 PLC Configuration

To work right the PLC configurator need a GSD file that are supplied with TU-DP  
You need to use only the universal module with

Input:

length = 3+Number of read word

Unit = Word – Format

Output

length = 3+Number of read word

Unit = Word – Format

### 1.3.1 To read data in continuous mode

To start the read data function set the bit 0 offset 0 to 1

To stop the read data function set the bit 0 offset 0 to 0

When the communication on RS485 side is active the led 1, 2 and 3 will scroll.

When the communication on RS485 side is not active the led 1, 2 and 3 will stop scroll.

If a communication error (time out) is active the led State (near led 8) on RS485 side will light red otherwise will light green

### 1.3.2 To write data when date change

To be enabled to write data set the bit 2 offset 0 to 1

To be disabled to write data set the bit 2 offset 0 to 0

When a data are sent to a MODBUS device the led 1, 2, 3 and 4 will flash both

### 1.3.3 To write data ciclic

The data will be sent to device everytime

To be enabled to write data set the bit 4 offset 0 to 1

To be disabled to write data set the bit 4 offset 0 to 0

When a data are sent to a MODBUS device the led 4 will flash.

### 1.3.4 To write the retransmit data table

To start the cyclic write retransmit data table set the bit 3 offset 0 to 1

To stop the cyclic write retransmit data table set the bit 3 offset 0 to 0

## 1.4 How to programming data exchange

### 1.4.1 Programming

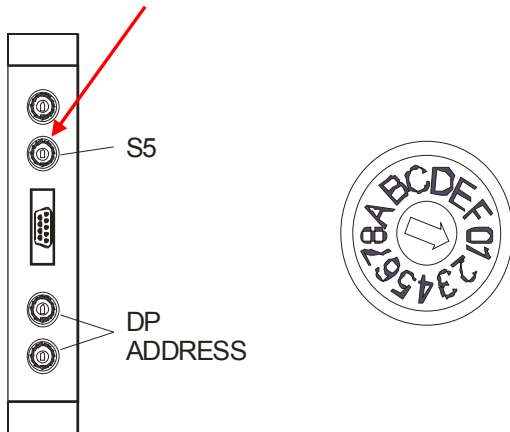
Remember to disconnect the device connected on RS485 port

### 1.4.2 Download

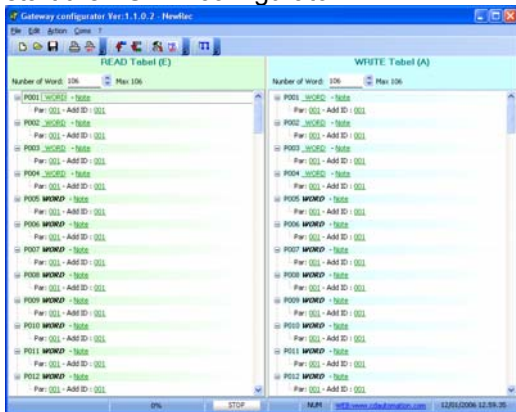
To program a TU-DP you need to set it in programming mode.

For programming a TU-DP:

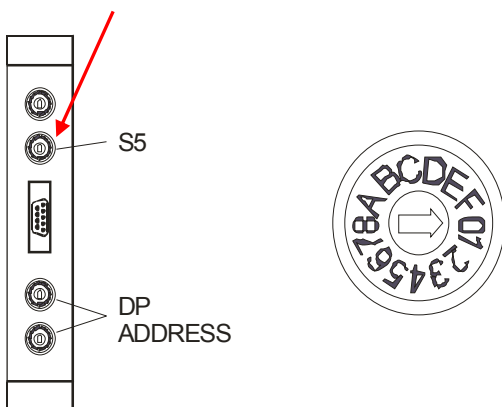
- switch-off the TU-DP
- set the switch S5 to 1



- switch-on the TU-DP
- start the TU-DP configurator



- make a configuration
- down load the configuration
- switch-off the TU-DP
- set the switch S5 to 0



- switch-on the TU-DP

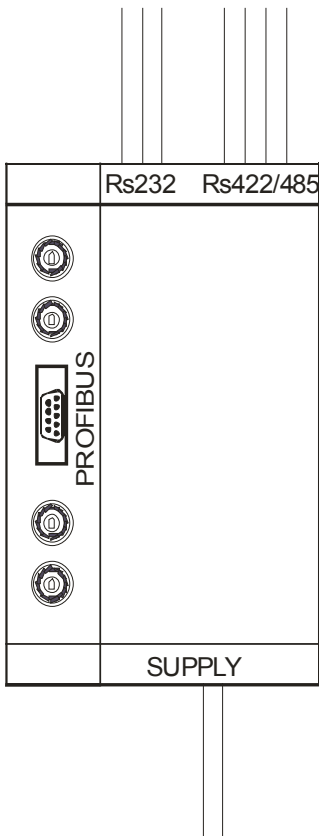
The TU-DP is configured.

### 1.5 Wiring

RS232 connector	
Terminal	Description
1	Rx
2	Tx
3	GND

RS485 connector	
Terminal	Description
4 link with 6	Rx/Tx +
5 link with 7	Rx/Tx -

RS422 connector	
Terminal	Description
4	Rx +
5	Rx -
6	Tx +
7	Tx -



SUPPLY connector	
Terminal	Description
1	24Vdc
2	0V

## 1.6 Parametri di configurazione

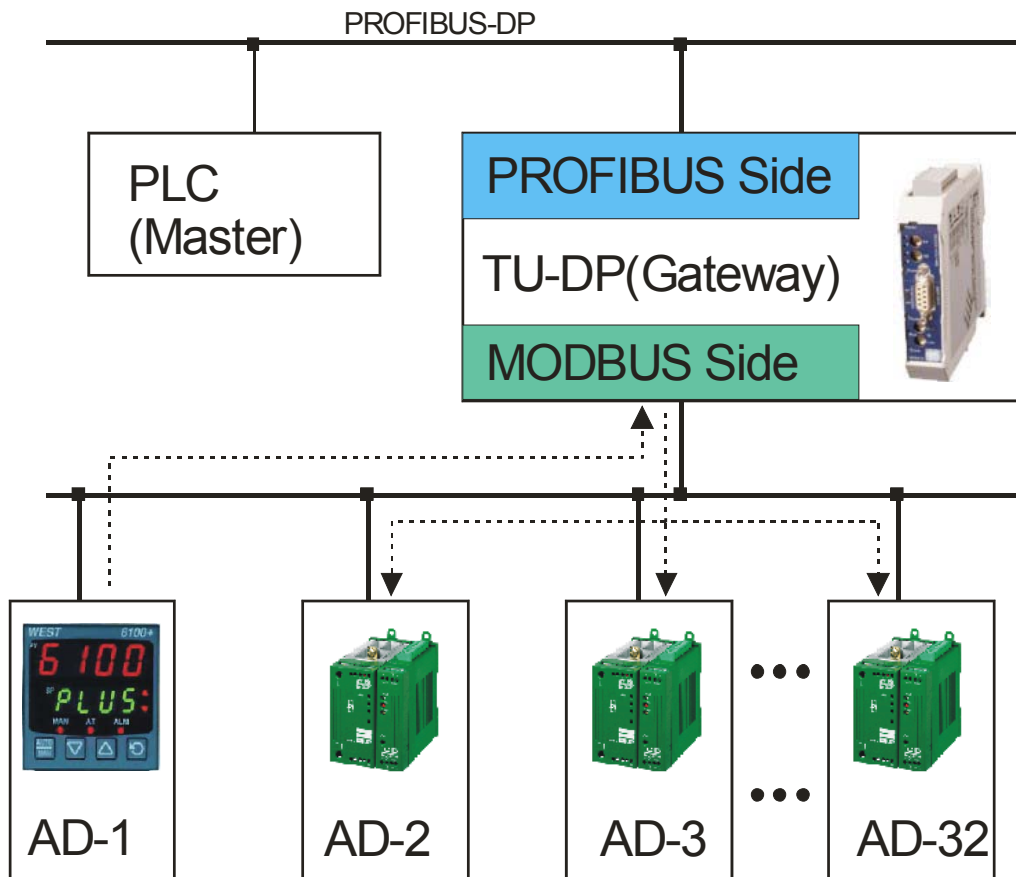
Par	Descrizione	
1-200	Parameter number to read Min= 0, max= 255	R/W
201-400	Intrument address to read Min= 0, max= 255	R/W
401-600	Parameter type to read 0 = WORD 1 = BIT	R/W
601-800	Parameter number to write Min= 0, max= 255	R/W
801-1000	Intrument address to write Min= 0, max= 255	R/W
1001-1200	Parameter type to write 0 = WORD 1 = BIT	R/W
1201	Gateway commands 1= Save cofig in EEPROM 2= Read cofig from EEPROM 3= Load default parameter	W
1202	Firmware Version HHLL = HH.LL  Ex: 0107(hex) = ver 1.7	R
1203	MODBUS Wait After a new call ( x10ms)	R/W
1204	MODBUS Baud Rate 0= 9600Baud 1= 19200Baud	R/W
1205	MODBUS Type 0= RS485 1= RS422 2= RS232	R/W
1401-1600	Bit Number to read Min= 0, max= 255	R/W
1601-1800	Bit address to read Min= 0, max= 255	R/W
1801-2000	Bit Number to write Min= 0, max= 255	R/W
2001-2200	Bit address to write Min= 0, max= 255	R/W
2201-2240	Address list for retransmission function	R/W

### 1.7 Retransmission function

The retransmission function read a value specified in read area (VAL Number in par 2201) and send the it on some parameters configurated in write area an listed in retransmission list (VAL Number in par from 2002 to 2233)

#### Example

The gateway read the power value of address 1 (controller) and send it on address 2-32 (31 thyristor unit)



## 2 Leds Status

### RS485 Side

LED	Status	Meaning
1,2,3	Scrolling	Communication Active
	Fixed	Communication Stopped
4	1 Flash	Write message sent on cyclic write function
	No flash	No data are sent
1,2,3,4	1 Flash	Write message sent on Write on data madific.
	No flash	No data are sent
Statust	Red	Communicatio error present
	Green	Communication OK

### PROFIBUS-DP

LED	Status	Meaning
Bus	Green	Profibus ok
	Red	Profibus error
State	Green	Profibus in state data exchange
	Flash green	Gateway waits for profibus comminication data
	Flash green/red	Gateway waits for profibus parametercommunication data
	Red	General profibus error

## 3 General technical data

Fixing	: DIN-rail module with integrated grounding
Interfaces	: RS232, RS422 and RS485 on board
Baud rates of the serial interface	: 9600,19200Baud
RS-connection and supply voltage	: Through screw-plug connector
Diagnosis	: 6 LEDs for diagnosis of the serial application interface
Bus termination	: Switchable
ID Adjustable through	: 2 rotary coding switches
Operating voltage	: 10.8 to 30 Volt
Protection type	: DIN-rail module IP24, with additional housing up to IP67
Dimensions	: 23 x 100 x 115 mm (B x H x D), connector not included
Temperature	: Range 0°C – 55°C
Certificates	: CE
Galvanic division	: Optional for the serial side for all versions available, standard on the bus-side
Bus connection	: 9pol. D-SUB socket
Bus data buffer	: 106Word Write, 106Word Read
Bus baud rate	: Automatic recognition
Bus termination resistor	: Switchable
Diagnosis	: LED