

# DNP V3.0

## DEVICE PROFILE DOCUMENT

Vendor Name: Licht Eletro Eletrônica Ltda.

Device Name: MFC100/T, MFC200/T, MFC300/T or MFC400/T

Highest DNP Level Supported:  
For Requests: Level 1  
For Resposes: Level 1

Device Function:  
 Master  
 Slave

Notable objects, functions, and/or qualifiers supported in addition to the Highest DNP Levels Supported (the complete list is described in the attached table):

For static object READ (function 1) requests, qualifier codes 0x00 and 0x01 (range), 0x06 (all values), 0x07 and 0x08 (limited quantity), 0x17 and 0x28 (index) are supported.

For static object WRITE (function 2) requests, qualifier codes 0x00 and 0x01 (range), 0x17 and 0x28 (index) are supported. Exceptionally, qualifier codes 0x07 and 0x08 (limited quantity) are supported for the Time and Date (object group 50, variation 1) objects, with quantity=1.

Maximum Data Link Frame Size (octets):  
Transmitted: 292  
Received: 292

Maximum Application Fragment Size (octets):  
Transmitted: 249  
Received: 249

Maximum Data Link Re-tries:  
 None  
 Fixed  
 Configurable

Maximum Application Layer Retries:  
 None  
 Configurable

Requires Data Link Layer Confirmation:

- Never  
 Always  
 Sometimes  
 Configurable

Requires Application Layer Confirmation:

- Never  
 Always  
 When reporting event data  
 When sending multi-fragment responses  
 Sometimes  
 Configurable between event data/multi-fragment and always

Timeouts while waiting for:

- Data Link Confirm:  None  Fixed at \_\_\_\_  Variable  Configurable  
Complete Appl. Fragment:  None  Fixed at \_\_\_\_  Variable  Configurable  
Application Confirm:  None  Fixed at \_\_\_\_  Variable  Configurable  
Complete Appl. Response:  None  Fixed at \_\_\_\_  Variable  Configurable

Sends/Executes Control Operations:

- WRITE Binary Outputs  Never  Always  Sometimes  Configurable  
SELECT/OPERATE  Never  Always  Sometimes  Configurable  
DIRECT OPERATE  Never  Always  Sometimes  Configurable  
DIRECT OPERATE - NOACK  Never  Always  Sometimes  Configurable  
Count > 1  Never  Always  Sometimes  Configurable

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Pulse On Pulse Off Latch On Latch Off  Queue Clear Queue	<input checked="" type="checkbox"/> Never <input type="checkbox"/> Always <input type="checkbox"/> Sometimes <input type="checkbox"/> Configurable <input checked="" type="checkbox"/> Never <input type="checkbox"/> Always <input type="checkbox"/> Sometimes <input type="checkbox"/> Configurable <input checked="" type="checkbox"/> Never <input type="checkbox"/> Always <input type="checkbox"/> Sometimes <input type="checkbox"/> Configurable <input checked="" type="checkbox"/> Never <input type="checkbox"/> Always <input type="checkbox"/> Sometimes <input type="checkbox"/> Configurable  <input checked="" type="checkbox"/> Never <input type="checkbox"/> Always <input type="checkbox"/> Sometimes <input type="checkbox"/> Configurable <input checked="" type="checkbox"/> Never <input type="checkbox"/> Always <input type="checkbox"/> Sometimes <input type="checkbox"/> Configurable
Reports Binary Input Change Events when no specific variation requested: <input checked="" type="checkbox"/> Never <input type="checkbox"/> Only time-tagged <input type="checkbox"/> Only non-time-tagged <input type="checkbox"/> Configurable	Reports time-tagged Binary Input Change Events when no specific variation requested: <input checked="" type="checkbox"/> Never <input type="checkbox"/> Binary Input Change With Time <input type="checkbox"/> Binary Input Change With Relative Time <input type="checkbox"/> Configurable
Sends Unsolicited Responses: <input checked="" type="checkbox"/> Never <input type="checkbox"/> Configurable <input type="checkbox"/> Only certain objects <input type="checkbox"/> ENABLE/DISABLE UNSOLICITED	Sends Static Data in Unsolicited Responses: <input checked="" type="checkbox"/> Never <input type="checkbox"/> When Device Restarts <input type="checkbox"/> When Status Flags Change
Default Counter Object/Variation: <input checked="" type="checkbox"/> No Counters Reported <input type="checkbox"/> Configurable <input type="checkbox"/> Default Object: Default Variation: <input type="checkbox"/> Point-by-point list attached	Counters Roll Over at: <input checked="" type="checkbox"/> No Counters Reported <input type="checkbox"/> Configurable <input type="checkbox"/> 16 Bits <input type="checkbox"/> 32 Bits <input type="checkbox"/> Other Value _____ <input type="checkbox"/> Point-by-point list attached
Sends Multi-Fragment Responses: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	

### Level 1 Implementation Table

OBJECT			REQUEST (slave must parse)		RESPONSE (master must parse)	
Obj	Var	Description	Func Codes (dec)	Qual Codes (hex)	Func Codes (dec)	Qual Codes (hex)
1	0	Binary Input – All Variations	1	00, 01, 06, 07, 08, 17, 28		
1	2	Binary Input with Status	1	00, 01, 06, 07, 08, 17, 28	129	00, 01
10	0	Binary Output – All Variations	1	00, 01, 06, 07, 08, 17, 28		
10	2	Binary Output with Status	1	00, 01, 06, 07, 08, 17, 28	129	00, 01
10	2	Binary Output with Status	2	00, 01, 17, 28		
30	0	Analog Input – All Variations	1	00, 01, 06, 07, 08, 17, 28		
30	2	16-Bit Analog Input	1	00, 01, 06, 07, 08, 17, 28	129	00, 01
40	0	Analog Output with Status – All Variations	1	00, 01, 06, 07, 08, 17, 28		
40	2	16-Bit Analog Output with Status	1	00, 01, 06, 07, 08, 17, 28	129	00, 01
40	2	16-Bit Analog Output with Status	2	00, 01, 17, 28		
50	0	Time and Date – All Variations	1	00, 01, 06, 07, 08, 17, 28		
50	1	Time and Date	1	00, 01, 06, 07, 08, 17, 28	129	07, 08 (quantity = 1)
50	1	Time and Date	2	00, 01, 17, 28		
50	1	Time and Date	2	07, 08 (quantity = 1)		
60	1	Class 0 Data	1	06		
60	2	Class 1 Data	1	06, 07, 08		
60	3	Class 2 Data	1	06, 07, 08		
60	4	Class 3 Data	1	06, 07, 08		
80	1	Internal Indications	2	00, 01, 17, 28 (index = 7)		
No object			13			

Binary Input Objects (Binary Input with Status) (Object 1, Variation 2)		
Point	Description	Range
0-11	Relay State[1-12]	0: open 1: closed

Binary Output Objects (Binary Output Status) (Object 10, Variation 2)		
Point	Description	Range
0-11	Forced Activation[1-12]	0: disabled 1: enabled
20-31	Activation Logic[1-12]	0: normal 1: inverted

Analog Input Objects (16-Bit Analog Input) (Object 30, Variation 2)		
Point	Description	Range
0-2	Coil[1-3] Temperature	0.0 to 255.0 °C
3-5	Coil[1-3] Sampled Current (A)	0.00 to 5.00 A
6-8	Coil[1-3] Sampled Current (%)	0.0 to 200.0 %
9	RTD1/Oil Temperature	0.0 to 255.0 °C
10	RTD1 Resistance	0.0 to 255.0 Ω
11	RTD2 Temperature	0.0 to 255.0 °C
12	RTD2 Resistance	0.0 to 255.0 Ω
13	RTD3 Temperature	0.0 to 255.0 °C
14	RTD3 Resistance	0.0 to 255.0 Ω
15	RTD4 Temperature	0.0 to 255.0 °C
16	RTD4 Resistance	0.0 to 255.0 Ω
17	RTD5 Temperature	0.0 to 255.0 °C
18	RTD5 Resistance	0.0 to 255.0 Ω
19	RTD6 Temperature	0.0 to 255.0 °C
20	RTD6 Resistance	0.0 to 255.0 Ω

<b>Analog Output Objects</b> (16-Bit Analog Output Status) (Object 40, Variation 2)		
<b>Point</b>	<b>Description</b>	<b>Range</b>
0-11	Set Point (°C)[1-12]	0 to 255 °C
20-31	Hysteresis (°C)[1-12]	1 to 255 °C
40-51	Timeout[1-12]	0.1 to 25.5 min.
60-71	Associated Channel[1-12]	0 to 3
80-91	Set Point (I%)[1-12]	0: disabled 1 to 150 %
100-111	Hysteresis (I%)[1-12]	1 to 255 %
120-131	Associated Function[1-12]	0: alarm 1: cooling
200	Indication Type	0: temperature 1: measured unit 2: percentage
201-203	$\Delta T$ [1-3]	0 to 200 °C
204-206	$I_N$ [1-3]	0.2 to 5.0 A
207	Alternate Activation	0: disabled 1: 9-10 only 2: 11-12 only 3: 9-10 and 11-12
208	Time Constant ( $\tau$ )	0.0 or 3.0-20.0 min.
209	m	0.0 or 0.5-1.0
210	Operating Frequency	0: 60 Hz 1: 50 Hz
211	Daily Cooling Start Time	00:00 to 23:59, expressed in minutes
212	Daily Cooling Duration	0 to 999 minutes
220	Current Loop – Output Scale	0: 0-1 mA 1: 0-5 mA 2: 0-10 mA 3: 0-20 mA 4: 4-20 mA
221	Current Loop – $T_{FS}$ (Oil)	0 to 255 °C

<b>Time and Date Objects</b> (Time and Date) (Object 50, Variation 1)	
<b>Point</b>	<b>Description</b>
0	Local Date/Time