

## EL731 PROFIBUS INTERFACE

Revision 0-A-032816



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## 1. GENERAL

This document describes the AC700-CUA-02 Communications Upgrade Adapter Profibus-DP-V1 features supported by the EL731.

## 2. INSTALLATION

To field-install an AC700-CUA Communications Upgrade Adapter, disconnect the EL731 supply voltage, remove the adapter-access cover, insert the adapter, and retain with the supplied screws. Apply the supply voltage.

## 3. PROFIBUS

### 3.1 INTERFACE CONNECTOR

A 9-pin DB9 connector provides connection to the Profibus network. See Table 1.

TABLE 1. DB9 PIN FUNCTION

PIN	SIGNAL	DESCRIPTION
1		
2		
3	B Line	Positive RxD/TxD, RS485 Level
4	RTS	Request to Send
5	GND Bus	Ground (Isolated)
6	+5 V Bus Output	+5 V Termination Power (Isolated, Short-Circuit Protected)
7		
8	A Line	Negative RxD/TxD, RS485 Level
9		
Housing	Cable Shield	Internally connected to the Anybus protective earth via cable shield filters according to the PROFIBUS standard.

### 3.2 SETTINGS

The Profibus address is set through communications.

No baud rate selection is required because the Profibus interface has automatic baud rate detection for the baud rates shown in Table 2.

TABLE 2. BAUD RATE

BAUD RATES
9.6 kbits/s
19.2 kbits/s
93.75 kbits/s
187.5 kbits/s
500 kbits/s
1.5 Mbits/s
3 Mbits/s
6 Mbits/s
12 Mbits/s

## 3.3 LED INDICATION

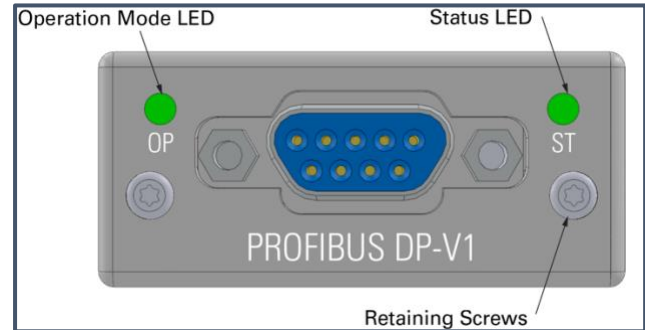


FIGURE 1. LED Indicators.

TABLE 3. OP - OPERATION MODE LED

STATE	DESCRIPTION
Off	Not Online / No Power
Green	Data Exchange
Flashing Green	Clear
Red (1 Flash)	Parametrization Error
Red (2 Flashes)	PROFIBUS Configuration Error

TABLE 4. ST – STATUS LED

STATE	DESCRIPTION
Off	Not Initialized
Green	Initialized
Flashing Green	Initialized, diagnostic event(s) present
Red	Exception Error

## 4. CONFIGURATION FILE

A configuration tool uses the standard Anybus GSD file to configure the master to access the interface module on the EL731. The input and output area sizes defined by the EL731 trip and alarm values and CT Enable commands must be setup within the configuration phase. Setup the configuration such that the total EL731 Input and Output sizes are 4 bytes.

The default Profibus address is 126.

## 5. DATA

### Input Area

BYTE	DESCRIPTION	TYPE
0	Trip State	T12
1		
2	Alarm State	T13
3		

### Output Area

BYTE	DESCRIPTION	TYPE
0	CT1 Enable	T3
1	Command Register	T14
2	CT2 Enable	T3
3	Command Register	T14

### Slot 0

INDEX NUMBER	NAME	DATA TYPE	SERVICES	VALUE
0	Model Code	UINT16	Get	T1
1	Firmware Revision	UINT16	Get	T1
2	Serial Number	UINT32	Get	T2
3	Model Option	UINT32	Get	T2
4	Reserved		Get	
5	CT1 Enable	UINT16	Get/Set	T3
6	CT1 Primary Turns	UINT16	Get/Set	T1
7	CT1 Trip Time	UINT32	Get/Set	T2
8	CT1 Trip Level	UINT32	Get/Set	T2
9	Reserved		Get	
10	CT1 Alarm Level	UINT32	Get/Set	T2
11	CT1 Calibrate	UINT16	Set	T4
12	Reserved		Get	
13	Reserved		Get	
14	CT2 Enable	UINT16	Get/Set	T3
15	CT2 Primary Turns	UINT16	Get/Set	T1
16	CT2 Trip Time	UINT32	Get/Set	T2
17	CT2 Trip Level	UINT32	Get/Set	T2
18	Reserved		Get	
19	CT2 Alarm Level	UINT32	Get/Set	T2
20	CT2 Input Filter	UINT16	Get/Set	T5
21	Reserved		Get	
22	Reserved		Get	
23	Reserved		Get	
24	Reserved		Get	
25	PTC Trip Action	UINT16	Get/Set	T3
26	PTC Alarm Action	UINT16	Get/Set	T3
27	Reserved		Get	
28	Reserved		Get	
29	RTD Trip Action	UINT16	Get/Set	T3
30	RTD Trip Level	UINT32	Get/Set	T2
31	RTD Alarm Action	UINT16	Get/Set	T3
32	RTD Alarm Level	UINT32	Get/Set	T2
33	Reserved		Get	
34	Reserved		Get	
35	Relay 1 Function	UINT16	Get/Set	T6
36	Relay 1 Mode	UINT16	Get/Set	T7
37	Relay 2 Function	UINT16	Get/Set	T6
38	Relay 2 Mode	UINT16	Get/Set	T7

**Slot 0(continued)**

INDEX NUMBER	NAME	DATA TYPE	SERVICES	VALUE
39	Relay 3 Function	UINT16	Get/Set	T6
40	Relay 3 Mode	UINT16	Get/Set	T7
41	Reserved		Get	
42	Reserved		Get	
43	Analog Out CT Select	UINT16	Get/Set	T8
44	Analog % Select	UINT16	Get/Set	T3
45	Output Filter	UINT16	Get/Set	T3
46	Reserved		Get	
47	Reserved		Get	
48	Temp. Sensor	UINT16	Get/Set	T10
49	Reserved		Get	
50	Reserved		Get	
51	Display Filter	UINT16	Get/Set	T3
52	Reserved		Get	
53	Reserved		Get	
54	CT1 Current	SINT32	Get	T11
55	CT2 Current	SINT32	Get	T11
56	Full Current	SINT32	Get	T11
57	Internal Temp.	SINT32	Get	T11
58	PTC Temp.	SINT32	Get	T11
59	RTD Temperature	SINT32	Get	T11
60	Reserved		Get	
61	Reserved		Get	
62	Clear Counters	UINT16	Set	T4
63	Load Defaults	UINT16	Set	T4
64	Restart System	UINT16	Set	T4
65	Reserved		Get	
66	Reserved		Get	
67	Trip State	UINT16	Get	T12
68	Alarm State	UINT16	Get	T13
69	Trip Counter	UINT16	Get	T1
70	Alarm Counter	UINT16	Get	T1
71	System Uptime	UINT32	Get	T2
72	Reserved		Get	
73	Reserved		Get	
74	Running Time (s)	UINT32	Get	T2
75	External Reset	UINT16	Set	T4

**Attribute 5 Data Format**

TYPE	DESCRIPTION
T1	16-Bit Integer
T2	32-Bit Unsigned Integer
T3	0 = Disable 1 = Enable
T4	Command 1 = Send Command
T5	CT2 Input Filter 0 = None 1 = Full Range 2 = 90 Hz Low Pass 3 = 190 Hz High Pass 4 = 3 kHz Low Pass
T6	Relay Functions 0 = Trip 1 = Alarm 2 = Watchdog 3 = Current
T7	Relay Mode 0 = Non-Fail-Safe 1 = Fail-Safe
T8	Analog Out CT Select 0 = CT1 1 = CT2 2 = Both CT's
T9	Analog % Level 0 = 0 – 5A Normal Mode 1 = 0 – Trip Level (% Trip Level Mode)
T10	Temp. Sensor 0 = Disabled 1 = RTD Sensor 2 = PTC Sensor
T11	32-Bit Signed Integer, (High) Bits 31..16, (Low) Bits 15..0
T12	Trip Status Bit0: 1 = System Running Bit1: 1 = Trip Current CT1 Bit2: 1 = Trip Current CT2 Bit3: 1 = Trip User Test Bit4: 1 = Trip CT1 Detect Bit5: 1 = Trip CT2 Detect Bit6: 1 = Trip NVRAM Error Bit7: 1 = Calibrate Bit8: 1 = Calibrate Init Bit9: 1 = Trip Calibrate Bit10: 1 = Trip PTC Sensor Bit11: 1 = Trip RTD Sensor Bit12: 1 = System Disabled
T13	Alarm Status Bit0: 1 = No Alarms Bit1: 1 = CT1 Current Bit2: 1 = CT2 Current Bit3: 1 = PTC Sensor Bit4: 1 = RTD Sensor Bit5: 1 = System Disabled
T14	Command Register: Sends Command when changed from 0 to 3.



**APPENDIX A**  
**EL731 PROFIBUS INTERFACE REVISION HISTORY**

<b>MANUAL RELEASE DATE</b>	<b>MANUAL REVISION</b>
March 28, 2016	0-A-032816

**MANUAL REVISION HISTORY**  
**REVISION 0-A-032816**

Initial release.

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