

Features

- **Embedded 24VDC Power Supply Module**
 - 110VAC (5A) Fused Input
 - 24VDC (5A) Fused Output
- **Embedded 110VAC Digital Input Module**
 - 8 x 110VAC Inputs
 - Embedded Temperature Sensor
 - Microprocessor Controlled Sampling
- **Embedded 4-20mA Analogue Input Module**
 - 8 x 4-20mA Inputs
 - Embedded Temperature Sensor
 - Microprocessor Controlled Sampling
- **Embedded 110VAC Relay Output¹ Module**
 - 2 x Dual Relay Contacts – 100K+ Operations
 - 4 x Single Relay Contacts – 100K+ Operations
 - 2 x Single Relay Contacts – Multi-Pole N/C & N/O
 - Multi-Stage Diagnostic Monitoring
 - 110VAC, 16A Switching Capacity
 - Sequential Switching Redundancy
 - Microprocessor Controlled
- **CAN Network**
 - Opto-Coupler Isolation
 - CAN 2.0B Compatible
- **Operates -10°C to +85°C**
 - All industrial components
- **Heavy Duty Enclosure**
 - Electros Nickel Plated
 - Rugged Construction

Description

The L0LU Industrial Power Supply Input / Output Module is of the Obelix genus designed to directly support industrial switching applications without interposing relays whilst providing support for digital and analogue inputs.

¹ Single Fault Tolerant



Obelix

Industrial Power Supply
I/O Module

Type L0LU



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Typical Applications

- Continuous Bolter/Miners
- Continuous Haulage
- Long Wall Shearers
- Mobile Bolters
- Mobile Roof Supports
- Remote Control Scoops
- Remote Control Loaders
- Any industrial switching application

Ordering Information

Part Number	Description
L0LU0101	Industrial Power Supply I/O Module (VAB)
L0LU0201	Industrial Power Supply I/O Module (DBT)
H0LU0101	Connector Assembly A7 (2.2 metres)
H0LU0201	Connector Assembly A13 (2.2 metres)

Interface Description

The Type L0LU Power Supply I/O Module utilizes industrial connectors that are unique when configured for use with the Obelix Control System via type, gender or keying physically preventing improper installation.



Wiring Assignments

Connector A7 V35 Female 34 Way		
PIN	Description	Signal
A7-A	-	-
A7-B	Relay 1 Input	110VAC Input
A7-C	Analog Input 8	4-20mA Input
A7-D	Analog Reference Supply	Supply Output
A7-E	Analog Input 7	4-20mA Input
A7-F	Relay 1 Output	110VAC Output
A7-H	Analog Input 7	4-20mA Input
A7-J	-	-
A7-K	Analog Input 5	4-20mA Input
A7-L	Relay 2 Input	110VAC Input
A7-M	Analog Input 4	4-20mA Input
A7-N	-	-
A7-P	Analog Input 3	4-20mA Input
A7-R	Relay 2 Output	-
A7-S	Analog Input 2	4-20mA Input
A7-T	-	-
A7-U	Analog Input 1	4-20mA Input
A7-V	Relay 3 Input	110VAC Input
A7-W	-	-
A7-X	-	-
A7-Y	-	-
A7-Z	Relay 3 Output	110VAC Output
A7-a	-	-
A7-b	-	-
A7-c	-	-
A7-d	Relay 4 Input	110VAC Input
A7-e	Digital Input Reference (Inputs 1..4)	110VAC Neutral Input
A7-f	-	-
A7-h	Digital Input Reference (Inputs 5..8)	110VAC Neutral Input
A7-j	Relay 4 Output	110VAC Output
A7-k	Relay Output Reference (Outputs 3..6)	-
A7-m	-	-
A7-n	Relay Output Reference (Outputs 1..2)	-
A7-p	Relay Input 5	110VAC Input
A7-r	Digital Input 1	110VAC Input
A7-s	-	-
A7-t	Digital Input 2	110VAC Input
A7-u	Relay Output 5	110VAC Output
A7-v	Digital Input 3	110VAC Input
A7-w	-	-
A7-x	Digital Input 4	110VAC Input
A7-y	Relay Input 6	110VAC Input
A7-z	Digital Input 5	110VAC Input
A7-AA	-	-
A7-BB	Digital Input 6	110VAC Input
A7-CC	Relay Output 6	110VAC Output
A7-DD	Digital Input 7	110VAC Input
A7-EE	-	-
A7-FF	Digital Input 8	110VAC Input
A7-HH	-	-



Wiring Assignments Continued

Connector A2 Burndy Female 8 Way		
PIN	Description	Signal
A2-A	Supply Input	24VDC Supply Input
A2-B	Supply Input	0VDC Supply Input
A2-C	CAN A (Positive)	Communications
A2-D	CAN A (Positive)	Communications
A2-E	CAN A (Negative)	Communications
A2-F	CAN A (Negative)	Communications
A2-G	Termination Link 1 - 1	Termination Link Input
A2-H	Termination Link 1 - 2	Termination Link Input

Connector A13 Burndy Male 8 Way		
PIN	Description	Signal
A13-A	110VAC Active Supply Input	110VAC Active Input
A13-B	110VAC Neutral Supply Input	110VAC Neutral Input
A13-C	Pilot Relay Input	110VAC Input
A13-D	Pilot Relay Output (Normally Closed)	110VAC Output
A13-E	Pilot Relay Output (Normally Open)	110VAC Output
A13-F	Control Relay Input	110VAC Input
A13-G	Control Relay Output (Normally Closed)	110VAC Output
A13-H	Control Relay Output (Normally Open)	110VAC Output



CAN Definitions

RX				
Message	Byte	Type	Mask	Description
0x0728 ²	1	UINT8	0x01	Relay 1 – A Output (1 = ON, 0 = OFF)
			0x02	Relay 2 – A Output (1 = ON, 0 = OFF)
			0x04	Pilot Output (1 = ON, 0 = OFF)
			0x08	Control Output (1 = ON, 0 = OFF)
			0x10	-
			0x20	-
			0x40	-
			0x80	-
	2	UINT8	0x01	Relay 1 – B Output (1 = ON, 0 = OFF)
			0x02	Relay 2 – B Output (1 = ON, 0 = OFF)
			0x04	Relay 3 – B Output (1 = ON, 0 = OFF)
			0x08	Relay 4 – B Output (1 = ON, 0 = OFF)
			0x10	Relay 5 – B Output (1 = ON, 0 = OFF)
			0x20	Relay 6 – B Output (1 = ON, 0 = OFF)
			0x40	-
			0x80	-
	3	UINT8	N/A	-
	4	UINT8	N/A	-
	5	UINT8	N/A	-
	6	UINT8	N/A	-
	7	UINT8	N/A	-
	8	UINT8	0x01	-
			0x02	-
			0x04	-
			0x08	-
			0x10	-
			0x20	-
			0x40	-
			0x80	Clear LATCHED Fault (1 = Clear, 0 = Normal Operation)



CAN Definitions Continued

TX				
Message	Byte	Type	Mask	Description
0x0070 ³	1	UINT8	N/A	Software Revision
	2	UINT8	N/A	Board Status
	3	INT8	N/A	Temperature -55°C (-67°F)..+125°C(+257°F)
	4	UINT8	0x01	Digital Input 1 (1 = ON, 0 = OFF)
			0x02	Digital Input 2 (1 = ON, 0 = OFF)
			0x04	Digital Input 3 (1 = ON, 0 = OFF)
			0x08	Digital Input 4 (1 = ON, 0 = OFF)
			0x10	Digital Input 5 (1 = ON, 0 = OFF)
			0x20	Digital Input 6 (1 = ON, 0 = OFF)
			0x40	Digital Input 7 (1 = ON, 0 = OFF)
			0x80	Digital Input 8 (1 = ON, 0 = OFF)
	5	UINT8	0x01	Relay 1 – A Feedback (1 = ON, 0 = OFF)
			0x02	Relay 2 – A Feedback (1 = ON, 0 = OFF)
			0x04	Pilot Feedback (1 = ON, 0 = OFF)
			0x08	Control Feedback (1 = ON, 0 = OFF)
			0x10	-
			0x20	-
			0x40	-
			0x80	-
	6	UINT8	0x01	Relay 1 – B Feedback (1 = ON, 0 = OFF)
			0x02	Relay 2 – B Feedback (1 = ON, 0 = OFF)
			0x04	Relay 3 – B Feedback (1 = ON, 0 = OFF)
			0x08	Relay 4 – B Feedback (1 = ON, 0 = OFF)
			0x10	Relay 5 – B Feedback (1 = ON, 0 = OFF)
			0x20	Relay 6 – B Feedback (1 = ON, 0 = OFF)
			0x40	Analog Supply (1 = Fault, 0 = OK)
			0x80	Relay Supply (1 = Fault, 0 = OK)
	7	UINT8	N/A	CAN REC Counter
	8	UINT8	N/A	CAN TEC Counter

³ Plus Internal PCB ID



CAN Definitions Continued

TX				
Message	Byte	Type	Mask	Description
0x0078 ⁴	1	UINT8	N/A	Analog Input 1 (0-255 = 0-26mA)
	3	UINT8	N/A	Analog Input 2 (0-255 = 0-26mA)
	3	UINT8	N/A	Analog Input 3 (0-255 = 0-26mA)
	4	UINT8	N/A	Analog Input 4 (0-255 = 0-26mA)
	5	UINT8	N/A	Analog Input 5 (0-255 = 0-26mA)
	6	UINT8	N/A	Analog Input 6 (0-255 = 0-26mA)
	7	UINT8	N/A	Analog Input 7 (0-255 = 0-26mA)
	8	UINT8	N/A	Analog Input 8 (0-255 = 0-26mA)

CAN Address Modifiers

There are multiple variants of the LOLU module permitting multiple modules per single configuration. This is determined by internal links which provide additional CAN address modifiers.

For example, LOLU Module 1 would support CAN Address 0x0728 whilst LOLU Module 2 would support CAN Address 0x729 and so on. Up to four modules per configuration are supported.

⁴ Plus Internal PCB ID



Electrical Characteristics

Supply	
Voltage Input	110VAC
Wattage Input	
Voltage Output	24VDC
Wattage Output	100W

Relay Outputs	
Installed	8
Voltage	110VAC
Minimum Voltage	75VAC
Maximum Voltage	145VAC

Digital Inputs	
Installed	8
Voltage	110VAC
Minimum Voltage	75VAC
Maximum Voltage	145VAC

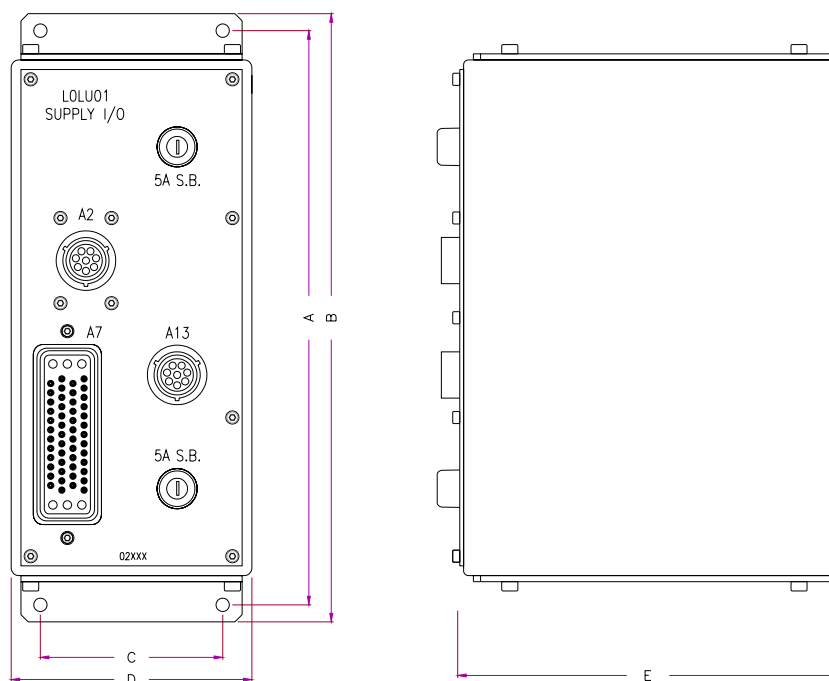
Analog Inputs	
Installed	8
Type	4-20mA
Resolution	8 bits (255 units)

Communications	
Interface	CAN 2.0B
Throughput	500kbs (Supports Autobaud)
Protocol(s)	Message Oriented
Medium	Copper

Environmental	
Operating Temperature	Minus 20°C to +85°C
Humidity	T.B.A.
MTBF	12,000 hours



Mechanical Characteristics



Dimension	Measurement	Description
A	236	Height Mounting Centre
B	250	Height
C	75	Width Mounting Centre
D	99	Width
E	156	Depth

Notes

- All dimensions are in millimetres.

Material

- Enclosure is Electroless nickel plated mild steel.
- Facia is stainless steel.
- Mounting brackets are stainless steel.

Fasteners

- M5 x 10mm x 4
- M4 x 10mm x 8
- M3 x 10mm x 12

Mass

- 4.5kg (10.1lb)