Features

- **Industrial Intrinsically Safe I/O Module**
  - AUS Ex / ATEX Approved
  - Fibre Optic Network Isolation
  - Single I.S. 12VDC Supply
  - 24 x 12VDC Solenoid Outputs
  - 24 x 12VDC Digital Inputs
  - 16 x 4-20mA Analog Inputs
  - 16 x Proximity Sensor Inputs
  - Industrial Keyed Connectors

- **Embedded Industrial Microcontroller x 2**
  - Intel 51
  - Integral Flash / RAM
  - Site Programmable

- **CAN 2.0B Network**
  - Fibre Optic Interface
  - Multi-Master
  - 500Kbits/s

- **Operates -20°C to +85°C**
  - All industrial components

- **Heavy Duty Enclosure**
  - Electroless Nickel Plated
  - Rugged Construction

Description

The L0LW Intrinsically Safe Input / Output Module is an industrial I/O module of the Obelix genus designed to support Intrinsically Safe solenoids and a multitude of Intrinsically Safe discrete and analog transducer inputs.

Note: all electronic components are potted in a high temperature silicone compound maximising failure-to-safe characteristics.

Obelix

Intrinsically Safe I/O Module

Type L0LW

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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 Intrinsically Safe Switching Application

Ordering Information

Part Number	Description
L0LW0101	I.S. I/O Module #1 (VAB) (Front Mount)
L0LW0201	I.S. I/O Module #2 (VAB) (Front Mount)
L0LW0501	I.S. I/O Module (Roadheader)
L0LW5001	I.S. I/O Module (DBT)
L0LW5101	I.S. I/O Module #1 (Generic)
L0LW5201	I.S. I/O Module #1 (VAB) (Foot Mount)
L0LW5301	I.S. I/O Module #2 (VAB) (Foot Mount)
L0LW5401	I.S. I/O Module #2 (Generic)
H0LW0101	Connector Assembly A18 2.2m
H0LW0201	Connector Assembly A19 2.2m
H0LW0301	Connector Assembly A20 2.2m
H0LW0401	Connector Assembly Fibre Optic Patch (62.5uM ST-ST Duplex)
H0LW0501	Connector Assembly B18 2.2m
H0LW0601	Connector Assembly B19 2.2m
H0LW0701	Connector Assembly B20 2.2m
H0LW0801	Connector Assembly A18 5m (Fully Pin Populated)
H0LW0901	Connector Assembly A19 5m (Fully Pin Populated)
H0LW1001	Connector Assembly A19 5m (Fully Pin Populated)

Interface Description

The Type L0LW I.S. 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 A18 V35 Female 34 Way	
PIN	**Description**	**Signal**
A18-A	Solenoid Output 5	12VDC Output
A18-B	Solenoid Output 11	12VDC Output
A18-C	Solenoid Output 2	12VDC Output
A18-D	Solenoid Output 8	12VDC Output
A18-E	Solenoid Output 4	12VDC Output
A18-F	Solenoid Output 10	12VDC Output
A18-H	Solenoid Output 1	12VDC Output
A18-J	Solenoid Output 7	12VDC Output
A18-K	Solenoid Output 3	12VDC Output
A18-L	Solenoid Output 9	12VDC Output
A18-M	Module Select Input 1	12VDC Digital Input
A18-N	Solenoid Output 6	12VDC Output
A18-P	Solenoid Output 12	12VDC Output
A18-R	Solenoid Output 13	12VDC Output
A18-S	Module Select Input 2	12VDC Digital Input
A18-T	Solenoid Output 14	12VDC Output
A18-U	Solenoid Output 15	12VDC Output
A18-V	Solenoid Output 16	12VDC Output
A18-W	Module Select Input 3	12VDC Digital Input
A18-X	Solenoid Output 17	12VDC Output
A18-Y	Solenoid Output 18	12VDC Output
A18-Z	Solenoid Output 19	12VDC Output
A18-AA	Module Select Input 4	12VDC Digital Input
A18-BB	Solenoid Output 20	12VDC Output
A18-CC	-	-
A18-DD	Solenoid Output 21	12VDC Output
A18-EE	-	-
A18-FF	Solenoid Output 22	12VDC Output
A18-HH	-	-
A18-JJ	Solenoid Output 23	12VDC Output
A18-KK	-	-
A18-LL	Solenoid Output 24	12VDC Output
A18-MM	0VDC Supply Input	0VDC I.S. Input
A18-NN	12VDC Supply Input	12VDC I.S. Input

Wiring Assignments Continued

	Connector A19 GAPL 50 Female 50 Way	
PIN	**Description**	**Signal**
A19-A	Proximity Switch 1 Supply	12VDC Supply Output
A19-B	Proximity Input 1	4-20mA Input
A19-C	Proximity Switch 2 Supply	12VDC Supply Output
A19-D	Proximity Input 2	4-20mA Input
A19-E	Proximity Switch 3 Supply	12VDC Supply Output
A19-F	Proximity Input 3	4-20mA Input
A19-H	-	-
A19-J	-	-
A19-K	Proximity Switch 4 Supply	12VDC Supply Output
A19-L	Proximity Input 4	4-20mA Input
A19-M	-	-
A19-N	-	-
A19-P	Proximity Switch 5 Supply	12VDC Supply Output
A19-R	Proximity Input 5	4-20mA Input
A19-S	-	-
A19-T	-	-
A19-U	Proximity Switch 6 Supply	12VDC Supply Output
A19-V	Proximity Input 6	4-20mA Input
A19-W	Proximity Switch 7 Supply	12VDC Supply Output
A19-X	Proximity Input 7	4-20mA Input
A19-Y	Proximity Switch 8 Supply	12VDC Supply Output
A19-Z	Proximity Input 8	4-20mA Input
A19-a	-	-
A19-b	-	-
A19-c	Proximity Switch 9 Supply	12VDC Supply Output
A19-d	Proximity Input 9	4-20mA Input
A19-e	-	-
A19-f	-	-
A19-h	Proximity Switch 10 Supply	12VDC Supply Output
A19-j	Proximity Input 10	4-20mA Input
A19-k	-	-
A19-m	-	-
A19-n	Proximity Switch 11 Supply	12VDC Supply Output
A19-p	Proximity Input 11	4-20mA Input
A19-r	Proximity Switch 12 Supply	12VDC Supply Output
A19-s	Proximity Input 12	4-20mA Input
A19-t	Proximity Switch 13 Supply	12VDC Supply Output
A19-u	Proximity Input 13	4-20mA Input
A19-v	-	
A19-w	-	
A19-x	Proximity Switch 14 Supply	12VDC Supply Output
A19-y	Proximity Input 14	4-20mA Input
A19-z	-	
A19-AA	-	
A19-BB	Proximity Input 15	4-20mA Input
A19-CC	Proximity Switch 15 Supply	12VDC Supply Output
A19-DD	Proximity Input 16	4-20mA Input
A19-EE	Proximity Switch 16 Supply	12VDC Supply Output
A19-FF	0VDC Supply Input	0VDC I.S. Supply Input
A19-HH	12VDC Supply Input	12VDC I.S. Supply Input

Wiring Assignments Continued

	Connector A20 GAPL 50 Female 50 Way	
PIN	**Description**	**Signal**
A20-A	Digital Input 1	12VDC Input
A20-B	Digital Input 2	12VDC Input
A20-C	Digital Input 3	12VDC Input
A20-D	Digital Input 4	12VDC Input
A20-E	Digital Input 5	12VDC Input
A20-F	Digital Input 6	12VDC Input
A20-H	Digital Input 7	12VDC Input
A20-J	Digital Input 8	12VDC Input
A20-K	Digital Input 9	12VDC Input
A20-L	Digital Input 10	12VDC Input
A20-M	Digital Input 11	12VDC Input
A20-N	Digital Input 12	12VDC Input
A20-P	Digital Input 13	12VDC Input
A20-R	Digital Input 14	12VDC Input
A20-S	Digital Input 15	12VDC Input
A20-T	Digital Input 16	12VDC Input
A20-U	Digital Input 17	12VDC Input
A20-V	Digital Input 18	12VDC Input
A20-W	Digital Input 19	12VDC Input
A20-X	Digital Input 20	12VDC Input
A20-Y	Digital Input 21	12VDC Input
A20-Z	Digital Input 22	12VDC Input
A20-a	Digital Input 23	12VDC Input
A20-b	Digital Input 24	12VDC Input
A20-c	-	-
A20-d	Module Select Input 4	
A20-e	-	-
A20-f	Module Select Input 3	
A20-h	-	-
A20-j	Module Select Input 2	
A20-k	-	-
A20-m	Module Select Input 1	
A20-n	Analogue Input 1	4-20mA Input
A20-p	Analogue Input 2	4-20mA Input
A20-r	Analogue Input 3	4-20mA Input
A20-s	Analogue Input 4	4-20mA Input
A20-t	Analogue Input 5	4-20mA Input
A20-u	Analogue Input 6	4-20mA Input
A20-v	Analogue Input 7	4-20mA Input
A20-w	Analogue Input 8	4-20mA Input
A20-x	Analogue Input 9	4-20mA Input
A20-y	Analogue Input 10	4-20mA Input
A20-z	Analogue Input 11	4-20mA Input
A20-AA	Analogue Input 12	4-20mA Input
A20-BB	Analogue Input 13	4-20mA Input
A20-CC	Analogue Input 14	4-20mA Input
A20-DD	Analogue Input 15	4-20mA Input
A20-EE	Analogue Input 16	4-20mA Input
A20-FF	-	-
A20-HH	0VDC Input	0VDC I.S. Input

CAN Definitions

RX				
Message	Byte	Type	Mask	Description
0x0748[1]	1	UINT8	0x01	Solenoid 1 A (1 = ON, 0 = OFF)
			0x02	Solenoid 2 A (1 = ON, 0 = OFF)
			0x04	Solenoid 3 A (1 = ON, 0 = OFF)
			0x08	Solenoid 4 A (1 = ON, 0 = OFF)
			0x10	Solenoid 5 A (1 = ON, 0 = OFF)
			0x20	Solenoid 6 A (1 = ON, 0 = OFF)
			0x40	Solenoid 7 A (1 = ON, 0 = OFF)
			0x80	Solenoid 8 A (1 = ON, 0 = OFF)
	2	UINT8	0x01	Solenoid 9 A (1 = ON, 0 = OFF)
			0x02	Solenoid 10 A (1 = ON, 0 = OFF)
			0x04	Solenoid 11 A (1 = ON, 0 = OFF)
			0x08	Solenoid 12 A (1 = ON, 0 = OFF)
			0x10	Solenoid 13 A (1 = ON, 0 = OFF)
			0x20	Solenoid 14 A (1 = ON, 0 = OFF)
			0x40	Solenoid 15 A (1 = ON, 0 = OFF)
			0x80	Solenoid 16 A (1 = ON, 0 = OFF)
	3	UINT8	0x01	Solenoid 17 A (1 = ON, 0 = OFF)
			0x02	Solenoid 18 A (1 = ON, 0 = OFF)
			0x04	Solenoid 19 A (1 = ON, 0 = OFF)
			0x08	Solenoid 20 A (1 = ON, 0 = OFF)
			0x10	Solenoid 21 A (1 = ON, 0 = OFF)
			0x20	Solenoid 22 A (1 = ON, 0 = OFF)
			0x40	Solenoid 23 A (1 = ON, 0 = OFF)
			0x80	Solenoid 24 A (1 = ON, 0 = OFF)
	4	UINT8	0x01	Solenoid 1 B (1 = ON, 0 = OFF)
			0x02	Solenoid 2 B (1 = ON, 0 = OFF)
			0x04	Solenoid 3 B (1 = ON, 0 = OFF)
			0x08	Solenoid 4 B (1 = ON, 0 = OFF)
			0x10	Solenoid 5 B (1 = ON, 0 = OFF)
			0x20	Solenoid 6 B (1 = ON, 0 = OFF)
			0x40	Solenoid 7 B (1 = ON, 0 = OFF)
			0x80	Solenoid 8 B (1 = ON, 0 = OFF)
	5	UINT8	0x01	Solenoid 9 B (1 = ON, 0 = OFF)
			0x02	Solenoid 10 B (1 = ON, 0 = OFF)
			0x04	Solenoid 11 B (1 = ON, 0 = OFF)
			0x08	Solenoid 12 B (1 = ON, 0 = OFF)
			0x10	Solenoid 13 B (1 = ON, 0 = OFF)
			0x20	Solenoid 14 B (1 = ON, 0 = OFF)
			0x40	Solenoid 15 B (1 = ON, 0 = OFF)
			0x80	Solenoid 16 B (1 = ON, 0 = OFF)

Message 0x0748 Continued Over…

[1] Plus Internal PCB ID

CAN Definitions Continued

RX				
Message	**Byte**	**Type**	**Mask**	**Description**
0x0748	6	UINT8	0x01	Solenoid 17 B (1 = ON, 0 = OFF)
			0x02	Solenoid 18 B (1 = ON, 0 = OFF)
			0x04	Solenoid 19 B (1 = ON, 0 = OFF)
			0x08	Solenoid 20 B (1 = ON, 0 = OFF)
			0x10	Solenoid 21 B (1 = ON, 0 = OFF)
			0x20	Solenoid 22 B (1 = ON, 0 = OFF)
			0x40	Solenoid 23 B (1 = ON, 0 = OFF)
			0x80	Solenoid 24 B (1 = ON, 0 = OFF)
	7	UINT8	0x01	-
			0x02	-
			0x04	-
			0x08	-
			0x10	-
			0x20	-
			0x40	-
			0x80	Master Enable (1 = ON, 0 = OFF)
	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**
0x01E0[2]	1	UINT8	N/A	Software Revision PCB Solenoid PCB
	2	UINT8	N/A	Board Status
	3	INT8	N/A	Temperature -55˚C (-67˚F)..+125˚C(+257˚F)
	4	UINT8	0x01	Solenoid 1 (A&B) Feedback (1 = ON, 0 = OFF)
			0x02	Solenoid 2 (A&B) Feedback (1 = ON, 0 = OFF)
			0x04	Solenoid 3 (A&B) Feedback (1 = ON, 0 = OFF)
			0x08	Solenoid 4 (A&B) Feedback (1 = ON, 0 = OFF)
			0x10	Solenoid 5 (A&B) Feedback (1 = ON, 0 = OFF)
			0x20	Solenoid 6 (A&B) Feedback (1 = ON, 0 = OFF)
			0x40	Solenoid 7 (A&B) Feedback (1 = ON, 0 = OFF)
			0x80	Solenoid 8 (A&B) Feedback (1 = ON, 0 = OFF)
	5	UINT8	0x01	Solenoid 9 (A&B) Feedback (1 = ON, 0 = OFF)
			0x02	Solenoid 10 (A&B) Feedback (1 = ON, 0 = OFF)
			0x04	Solenoid 11 (A&B) Feedback (1 = ON, 0 = OFF)
			0x08	Solenoid 12 (A&B) Feedback (1 = ON, 0 = OFF)
			0x10	Solenoid 13 (A&B) Feedback (1 = ON, 0 = OFF)
			0x20	Solenoid 14 (A&B) Feedback (1 = ON, 0 = OFF)
			0x40	Solenoid 15 (A&B) Feedback (1 = ON, 0 = OFF)
			0x80	Solenoid 16 (A&B) Feedback (1 = ON, 0 = OFF)
	6	UINT8	0x01	Solenoid 17 (A&B) Feedback (1 = ON, 0 = OFF)
			0x02	Solenoid 18 (A&B) Feedback (1 = ON, 0 = OFF)
			0x04	Solenoid 19 (A&B) Feedback (1 = ON, 0 = OFF)
			0x08	Solenoid 20 (A&B) Feedback (1 = ON, 0 = OFF)
			0x10	Solenoid 21 (A&B) Feedback (1 = ON, 0 = OFF)
			0x20	Solenoid 22 (A&B) Feedback (1 = ON, 0 = OFF)
			0x40	Solenoid 23 (A&B) Feedback (1 = ON, 0 = OFF)
			0x80	Solenoid 24 (A&B) Feedback (1 = ON, 0 = OFF)
	7	UINT8	0x01	Module Select Number 1 Feedback
			0x02	Module Select Number 2 Feedback
			0x04	Module Select Number 3 Feedback
			0x08	Module Select Number 4 Feedback
			0x10	-
			0x20	-
			0x40	-
			0x80	-
	8	UINT8	N/A	Total Solenoid Current mA (MSB) (0-255 = 2550mA)

[2] Plus Internal PCB ID

CAN Definitions Continued

TX				
Message	**Byte**	**Type**	**Mask**	**Description**
0x6C8	1	UINT8	N/A	Proximity Sensor Type (0=Default, 1=Spool, 2=Thresholds)
	2	UINT8	N/A	Threshold 1
	3	UINT8	N/A	Threshold 2
	4	UINT8	N/A	Threshold 3
	5	UINT8	N/A	Threshold 4
	6	UINT8	N/A	Threshold 5
	7	UINT8	N/A	Threshold 6
	8	UINT8	N/A	Threshold 7

TX				
Message	**Byte**	**Type**	**Mask**	**Description**
0x0248	1	UINT8	N/A	Software Revision PCB Solenoid PCB
	2	INT8	N/A	Temperature -55˚C (-67˚F)..+125˚C(+257˚F)
	3	UINT8	0x01	Proximity Switch Input 1 (1=ON, 0 =OFF)
			0x02	Proximity Switch Input 2 (1=ON, 0 =OFF)
			0x04	Proximity Switch Input 3 (1=ON, 0 =OFF)
			0x08	Proximity Switch Input 4 (1=ON, 0 =OFF)
			0x10	Proximity Switch Input 5 (1=ON, 0 =OFF)
			0x20	Proximity Switch Input 6 (1=ON, 0 =OFF)
			0x40	Proximity Switch Input 7 (1=ON, 0 =OFF)
			0x80	Proximity Switch Input 8 (1=ON, 0 =OFF)
	4	UINT8	0x01	Proximity Switch Input 9 (1=ON, 0 =OFF)
			0x02	Proximity Switch Input 10 (1=ON, 0 =OFF)
			0x04	Proximity Switch Input 11 (1=ON, 0 =OFF)
			0x08	Proximity Switch Input 12 (1=ON, 0 =OFF)
			0x10	Proximity Switch Input 13 (1=ON, 0 =OFF)
			0x20	Proximity Switch Input 14 (1=ON, 0 =OFF)
			0x40	Proximity Switch Input 15 (1=ON, 0 =OFF)
			0x80	Proximity Switch Input 16 (1=ON, 0 =OFF)
	5	UINT8	0x01	Module Select Number 1 Feedback
			0x02	Module Select Number 2 Feedback
			0x04	Module Select Number 3 Feedback
			0x08	Module Select Number 4 Feedback
			0x10	-
			0x20	-
			0x40	-
			0x80	-
	6	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)

Message 0x0248 Continued Over…

CAN Definitions Continued

TX				
Message	**Byte**	**Type**	**Mask**	**Description**
0x0248	7	UINT8	0x01	Digital Input 9 (1=ON, 0=OFF)
			0x02	Digital Input 10 (1=ON, 0=OFF)
			0x04	Digital Input 11 (1=ON, 0=OFF)
			0x08	Digital Input 12 (1=ON, 0=OFF)
			0x10	Digital Input 13 (1=ON, 0=OFF)
			0x20	Digital Input 14 (1=ON, 0=OFF)
			0x40	Digital Input 15 (1=ON, 0=OFF)
			0x80	Digital Input 16 (1=ON, 0=OFF)
	8	UINT8	0x01	Digital Input 17 (1=ON, 0=OFF)
			0x02	Digital Input 18 (1=ON, 0=OFF)
			0x04	Digital Input 19 (1=ON, 0=OFF)
			0x08	Digital Input 20 (1=ON, 0=OFF)
			0x10	Digital Input 21 (1=ON, 0=OFF)
			0x20	Digital Input 22 (1=ON, 0=OFF)
			0x40	Digital Input 23 (1=ON, 0=OFF)
			0x80	Digital Input 24 (1=ON, 0=OFF)

TX				
Message	**Byte**	**Type**	**Mask**	**Description**
0x0250	1	UINT8	N/A	Analog Input 1 (0-255 = 0-26mA)
	2	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)

TX				
Message	**Byte**	**Type**	**Mask**	**Description**
0x0258	1	UINT8	N/A	Analog Input 9 (0-255 = 0-26mA)
	2	UINT8	N/A	Analog Input 10 (0-255 = 0-26mA)
	3	UINT8	N/A	Analog Input 11 (0-255 = 0-26mA)
	4	UINT8	N/A	Analog Input 12 (0-255 = 0-26mA)
	5	UINT8	N/A	Analog Input 13 (0-255 = 0-26mA)
	6	UINT8	N/A	Analog Input 14 (0-255 = 0-26mA)
	7	UINT8	N/A	Analog Input 15 (0-255 = 0-26mA)
	8	UINT8	N/A	Analog Input 16 (0-255 = 0-26mA)

TX				
Message	**Byte**	**Type**	**Mask**	**Description**
0x0260	1	UINT8	N/A	Proximity Switch Analog Input 1 (0-255 = 0-2550mV)
	2	UINT8	N/A	Proximity Switch Analog Input 2 (0-255 = 0-2550mV)
	3	UINT8	N/A	Proximity Switch Analog Input 3 (0-255 = 0-2550mV)
	4	UINT8	N/A	Proximity Switch Analog Input 4 (0-255 = 0-2550mV)
	5	UINT8	N/A	Proximity Switch Analog Input 5 (0-255 = 0-2550mV)
	6	UINT8	N/A	Proximity Switch Analog Input 6 (0-255 = 0-2550mV)
	7	UINT8	N/A	Proximity Switch Analog Input 7 (0-255 = 0-2550mV)
	8	UINT8	N/A	Proximity Switch Analog Input 8 (0-255 = 0-2550mV)

CAN Definitions Continued

TX				
Message	**Byte**	**Type**	**Mask**	**Description**
0x0268	1	UINT8	N/A	Proximity Switch Analog Input 9 (0-255 = 0-2550mV)
	2	UINT8	N/A	Proximity Switch Analog Input 10 (0-255 = 0-2550mV)
	3	UINT8	N/A	Proximity Switch Analog Input 11 (0-255 = 0-2550mV)
	4	UINT8	N/A	Proximity Switch Analog Input 12 (0-255 = 0-2550mV)
	5	UINT8	N/A	Proximity Switch Analog Input 13 (0-255 = 0-2550mV)
	6	UINT8	N/A	Proximity Switch Analog Input 14 (0-255 = 0-2550mV)
	7	UINT8	N/A	Proximity Switch Analog Input 15 (0-255 = 0-2550mV)
	8	UINT8	N/A	Proximity Switch Analog Input 16 (0-255 = 0-2550mV)

TX				
Message	**Byte**	**Type**	**Mask**	**Description**
0x02F0	1	UINT8	0x01	Spool Sensor Value 1 LSB
			0x02	Spool Sensor Value 1
			0x04	Spool Sensor Value 1
			0x08	Spool Sensor Value 1 MSB
			0x10	Spool Sensor Value 2 LSB
			0x20	Spool Sensor Value 2
			0x40	Spool Sensor Value 2
			0x80	Spool Sensor Value 2 MSB
	2	UINT8	0x01	Spool Sensor Value 3 LSB
			0x02	Spool Sensor Value 3
			0x04	Spool Sensor Value 3
			0x08	Spool Sensor Value 3 MSB
			0x10	Spool Sensor Value 4 LSB
			0x20	Spool Sensor Value 4
			0x40	Spool Sensor Value 4
			0x80	Spool Sensor Value 4 MSB
	3	UINT8	0x01	Spool Sensor Value 5 LSB
			0x02	Spool Sensor Value 5
			0x04	Spool Sensor Value 5
			0x08	Spool Sensor Value 5 MSB
			0x10	Spool Sensor Value 6 LSB
			0x20	Spool Sensor Value 6
			0x40	Spool Sensor Value 6
			0x80	Spool Sensor Value 6 MSB
	4	UINT8	0x01	Spool Sensor Value 7 LSB
			0x02	Spool Sensor Value 7
			0x04	Spool Sensor Value 7
			0x08	Spool Sensor Value 7 MSB
			0x10	Spool Sensor Value 8 LSB
			0x20	Spool Sensor Value 8
			0x40	Spool Sensor Value 8
			0x80	Spool Sensor Value 8 MSB

Message 0x02F0 Continued Over…

CAN Definitions Continued

TX				
Message	**Byte**	**Type**	**Mask**	**Description**
0x02F0	5	UINT8	0x01	Spool Sensor Value 9 LSB
			0x02	Spool Sensor Value 9
			0x04	Spool Sensor Value 9
			0x08	Spool Sensor Value 9 MSB
			0x10	Spool Sensor Value 10 LSB
			0x20	Spool Sensor Value 10
			0x40	Spool Sensor Value 10
			0x80	Spool Sensor Value 10 MSB
	6	UINT8	0x01	Spool Sensor Value 11 LSB
			0x02	Spool Sensor Value 11
			0x04	Spool Sensor Value 11
			0x08	Spool Sensor Value 11 MSB
			0x10	Spool Sensor Value 12 LSB
			0x20	Spool Sensor Value 12
			0x40	Spool Sensor Value 12
			0x80	Spool Sensor Value 12 MSB
	7	UINT8	0x01	Spool Sensor Value 13 LSB
			0x02	Spool Sensor Value 13
			0x04	Spool Sensor Value 13
			0x08	Spool Sensor Value 13 MSB
			0x10	Spool Sensor Value 14 LSB
			0x20	Spool Sensor Value 14
			0x40	Spool Sensor Value 14
			0x80	Spool Sensor Value 14 MSB
	8	UINT8	0x01	Spool Sensor Value 15 LSB
			0x02	Spool Sensor Value 15
			0x04	Spool Sensor Value 15
			0x08	Spool Sensor Value 15 MSB
			0x10	Spool Sensor Value 16 LSB
			0x20	Spool Sensor Value 16
			0x40	Spool Sensor Value 16
			0x80	Spool Sensor Value 16 MSB

Display Diagnostics

The integral 4 character LED Matrix display provides the end user with some basic diagnostics as to the operation of the module. These messages are as follows:

Message	Explanation	Result
ON ▯ Omni Flashing	Indicates nominal operation and signifies that CAN communications has been established with a host.	Normal Operation Permitted
CAN	Indicates CAN Communication has not been established or has been lost.	Outputs Disabled
FDBK	Indicates that internal inputs are NOT congruent with requested outputs. This typically occurs when an output has been requested but has failed to operate indicating a supply failure or wiring error.	Outputs Disabled
SHRT	Indicates that a short-circuit condition has been detected a requested output. This short-circuit could be external (most probable) or internal.	Outputs Disabled

Electrical Characteristics

Supply	
Voltage	12VDC Nominal
Wattage MIN	1.7W
Wattage MAX	24.0W

Solenoid Outputs	
Installed	24
Voltage	12VDC
Maximum Load	1000mA

Digital Inputs	
Installed	24
Voltage	12VDC
Minimum Load	2mA

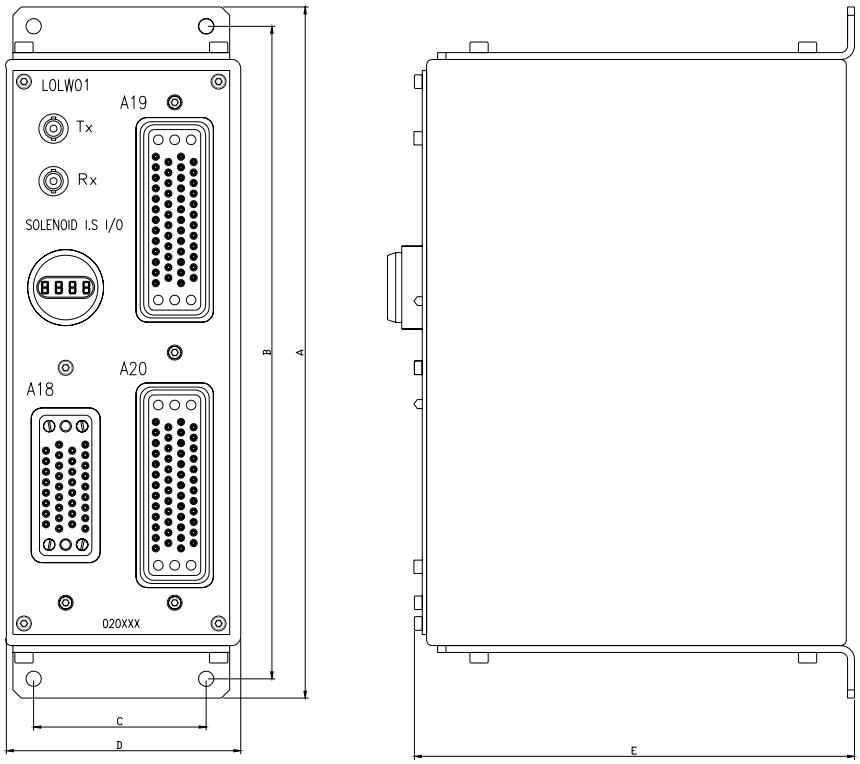
Analog Inputs	
Installed	16
Type	4-20mA
Resolution	8 bits (255 units)

Proximity Inputs	
Installed	16
Type	0-2550mV
Resolution	8 bits (255 units)

Communications	
Interface	CAN 2.0B
Throughput	500kbs (Supports Autobaud)
Protocol(s)	Message Oriented
Medium	Fibre Optic ST/ST Duplex 62.5µm

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

Mechanical Characteristics



Dimension	Measurement	Description
A	250	Height
B	236	Height Mounting Centre
C	62.5	Width Mounting Centre
D	86.5	Width
E	159.5	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 8

Mass
- 6.5kg (14.3lb) (Potted)