

L0MW0401 Solenoid Module Obelix Intrinsically Safe I/O Ratiometric 12 Bit Type A

The Obelix Mining PLC I.S. I/O Module provides intrinsically-safe (Group I Ex ib) input and output resources in a single, compact unit.

A unique fibre-optic communications interface means that the module and dedicated I.S. power supply, can be conveniently segregated into it's own isolated zone.

The fibre-optic link between the module and an Obelix processor module provides real-time control and monitoring of all I/O points.

This solution is ideal for mobile mining equipment where limited installation space must be managed.

Uniquely Keyed Type Connectors to prevent incorrect machine installation.

The module is Dual Obelix Type which complies with AS/NZS 4240 standard.

As per standard every output includes two switches A&B in series with monitoring feedbacks from both.

Extra safety is achieved by using two potted boards where each includes main and watchdog processors monitoring correctness of executed main software code.

Module Primary board - A18_B0L32

Module Secondary board - A19_A20_B0MWJ



Mounting options can vary depending on customer requirements.

Specifications

- **Module Type:** Intrinsically Safe Input / Output with Display
- **Supply:** 12VDC (+/- 10%) / 20 Watts (Max) from Approved I.S. Power Supply
- **Data Communications:** CAN interface over Obelix Fibre
- **Operating Temperature:** -20°C to +85°C all industrial components
- **Inputs 1:** 24 x I.S. Digital Inputs (12VDC)
- **Inputs 2:** 8 x I.S. Analog Inputs (4-20 mA)
- **Inputs 3:** 16 x I.S. Namur Inputs
- **Inputs 4:** 4 x I.S. Ratiometric Inputs (4 Field Transducers where everyone uses a pair of high impedance 12 Bit Analog input 0-4V) Every pair is used for "ratiometric" input to precisely measure the change in an external potentiometer-based Field Transducer. One measure SUPPLY and the second one SIGNAL. Transducer VALUE is calculated as SIGNAL/SUPPLY
- **Outputs:** 24 x I.S. 12VDC On/Off Outputs (1A Maximum for each Output)
- **Connector 1:** Obelix Fibre
- **Connector 2:** Obelix A18 (12VDC I.S. Supply and Solenoid Outputs)
- **Connector 3:** Obelix A19 (12VDC I.S. Supply and 12 Bit resolution Namur Inputs)
- **Connector 4:** Obelix A20 (Digital Inputs, 12 Bit resolution Analog Inputs and Ratiometric Inputs)

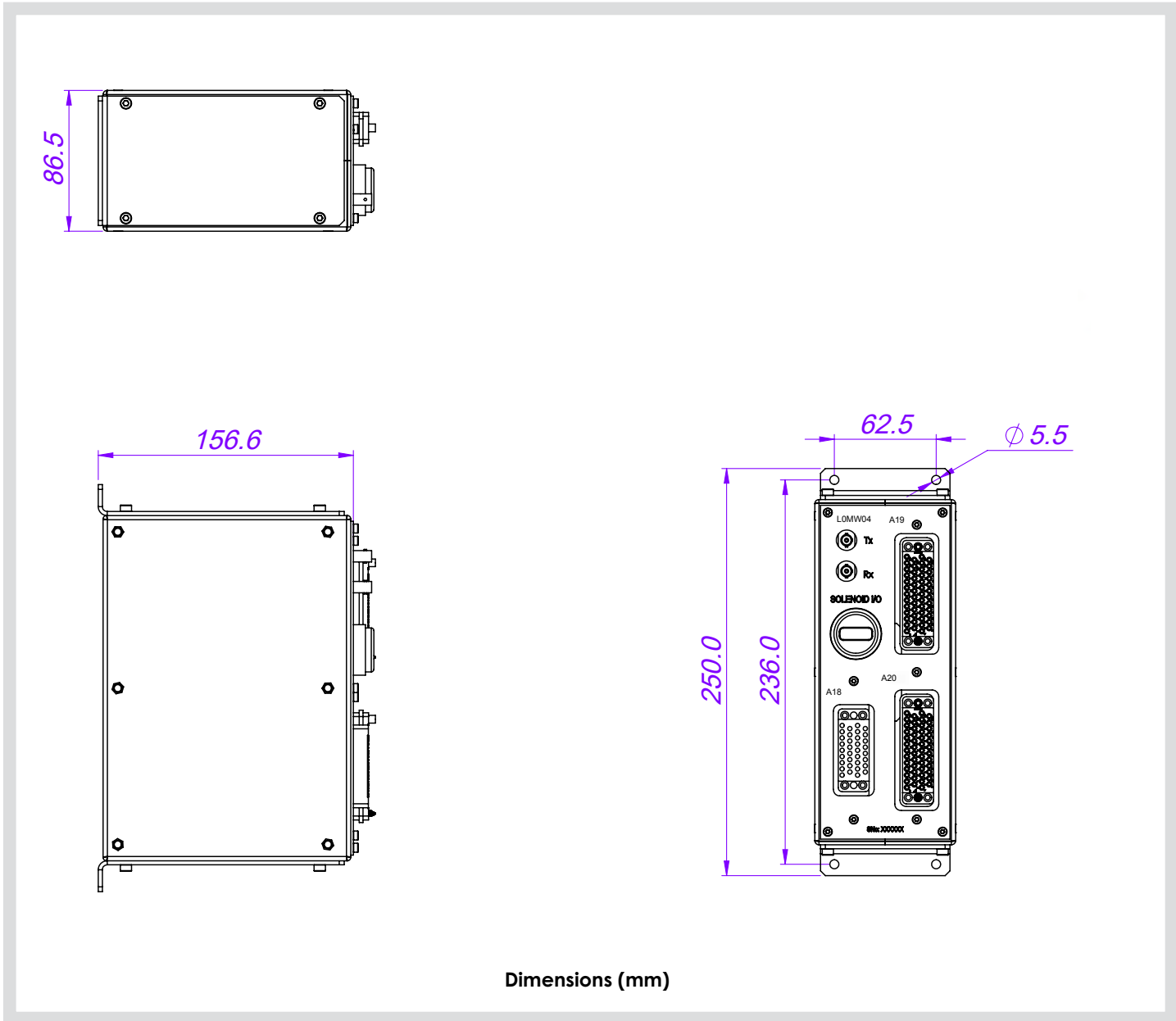
Heavy Duty Enclosure

- Electroless Nickel Plated
- Rugged Construction

Mass

- 6.5kg (14.3lb)

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Dimensions (mm)

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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:

- ON** - No Faults
- FEBK** - Outputs Feedback Fault
- SHRT** - Output Short Fault
- CAN** - Fibre-optic CAN Bus Fault

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

FEBK
Indicates that internal 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



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CONNECTOR A18

Number	Unit / PCB VMCT-34F Female Board Mount PIN	L0MW0401 Name
1	A	SOLENOID-5
2	B	SOLENOID-11
3	C	SOLENOID-2
4	D	SOLENOID-8
5	E	SOLENOID-4
6	F	SOLENOID-10
7	H	SOLENOID-1
8	J	SOLENOID-7
9	K	SOLENOID-3
10	L	SOLENOID-9
11	M	MODULE SELECT-1
12	N	SOLENOID-6
13	P	SOLENOID-12
14	R	SOLENOID-13
15	S	MODULE SELECT-2
16	T	SOLENOID-14
17	U	SOLENOID-15
18	V	SOLENOID-16
19	W	MODULE SELECT-3
20	X	SOLENOID-17
21	Y	SOLENOID-18
22	Z	SOLENOID-19
23	AA	MODULE SELECT-4
24	BB	SOLENOID-20
25	CC	
26	DD	SOLENOID-21
27	EE	
28	FF	SOLENOID-22
29	HH	
30	JJ	SOLENOID-23
31	KK	
32	LL	SOLENOID-24
33	MM	OVIS
34	NN	12VIS



Image depict coding pins required

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CONNECTOR A19

Number	Unit / PCB GMCT50F Female Board Mount PIN	L0LW0101 Name
1	A	SUPPLY-PROX-SW-1
2	B	ANALOG-1
3	C	SUPPLY-PROX-SW-2
4	D	ANALOG-2
5	E	SUPPLY-PROX-SW-3
6	F	ANALOG-3
7	H	
8	J	
9	K	SUPPLY-PROX-SW-4
10	L	ANALOG-4
11	M	
12	N	
13	P	SUPPLY-PROX-SW-5
14	R	ANALOG-5
15	S	
16	T	
17	U	SUPPLY-PROX-SW-6
18	V	ANALOG-6
19	W	SUPPLY-PROX-SW-7
20	X	ANALOG-7
21	Y	SUPPLY-PROX-SW-8
22	Z	ANALOG-8
23	a	
24	b	
25	c	SUPPLY-PROX-SW-9
26	d	ANALOG-9
27	e	
28	f	
29	h	SUPPLY-PROX-SW-10
30	j	ANALOG-10
31	k	
32	m	
33	n	SUPPLY-PROX-SW-11
34	p	ANALOG-11
35	r	SUPPLY-PROX-SW-12
36	s	ANALOG-12
37	t	SUPPLY-PROX-SW-13
38	u	ANALOG-13
39	v	
40	w	
41	x	SUPPLY-PROX-SW-14
42	y	ANALOG-14
43	z	
44	AA	
45	BB	SUPPLY-PROX-SW-15
46	CC	ANALOG-15
47	DD	SUPPLY-PROX-SW-16
48	EE	ANALOG-16
49	FF	OVIS
50	HH	12VIS



Image depict coding pins required

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CONNECTOR A20

Number	Unit / PCB GMST50F Female Board Mount PIN	L0MW0401 Name
1	A	INP1
2	B	INP2
3	C	INP3
4	D	INP4
5	E	INP5
6	F	INP6
7	H	INP7
8	J	INP8
9	K	INP9
10	L	INP10
11	M	INP11
12	N	INP12
13	P	INP13
14	R	INP14
15	S	INP15
16	T	INP16
17	U	INP17
18	V	INP18
19	W	INP19
20	X	INP20
21	Y	INP21
22	Z	INP22
23	a	INP23
24	b	INP24
25	c	
26	d	MODULE SELECT-4
27	e	
28	f	MODULE SELECT-3
29	h	
30	j	MODULE SELECT-2
31	k	
32	m	MODULE SELECT-1
33	n	AN17
34	p	AN18
35	r	AN19
36	s	AN20
37	t	AN21
38	u	AN22
39	v	AN23
40	w	AN24
41	x	AN25 Ratiometric Supply Input 0-4V
42	y	AN26 Ratiometric Signal Input 0-4V
43	z	AN27 Ratiometric Supply Input 0-4V
44	AA	AN28 Ratiometric Signal Input 0-4V
45	BB	AN29 Ratiometric Supply Input 0-4V
46	CC	AN30 Ratiometric Signal Input 0-4V
47	DD	AN31 Ratiometric Supply Input 0-4V
48	EE	AN32 Ratiometric Signal Input 0-4V
49	FF	
50	HH	OVIS



Image depict coding pins required

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Fibre Optic Patch Cables

Part Number	Description
H0LW0401	Fibre Optic Patch ST-ST Multi-Mode
H0M10101	Connector Assembly Fibre 8 way 7m
H0M10201	Connector Assembly Fibre 8 way 10m
H0M10301	Connector Assembly Fibre 8 way 1m
H0M10401	Connector Assembly Fibre 8 way 4m
H0M10801	Connector Assembly Fibre 8 way 8m
H0M10901	Connector Assembly Fibre 8 way 11m
H0M11001	Fibre Optic Patch Assembly 8 way 3m
H0M11201	Connector Assembly Fibre 8 way 12.5m



Image above Fibre Optic Patch ST-ST Multi-Mode

Specifications

- **Product Type:** Pre-manufactured cable assembly
- **Construction:** Fibre Optic with ST terminations
- **Connector 1 :** Fibre Optic Tx
- **Connector 2:** Fibre-optic Rx
- **Pin Type:** ST Fibre Plugs
- **Conductor Type:** Multi-mode Fibre-optic
- **Insulation Rating:** N/A
- **Temperature Rating:** -40°C to 85°C

Connector Assembly

Part Number	Description
H0LW0101	Connector Assembly A18 2.2m
H0LW0201	Connector Assembly A19 2.2m
H0LW0301	Connector Assembly A20 2.2m
H0LW0801	Connector Assembly A18 1.5m
H0LW0802	Connector Assembly A18 1.5m Small Plug
H0LW0803	Connector Assembly A18 1.5m Fully Populated
H0LW0901	Connector Assembly A20 5m
H0LW0902	Connector Assembly A20 1.5m
H0LW0903	Connector Assembly A20 Fully Populated 1.5m



Specifications

- **Product Type:** Pre-manufactured cable assembly
- **Construction:** Connector with flying leads (pigtail)
- **Pin Type:** Male (Gold-plated)
- **Conductor Type:** PVDF Tinned Stranded Wire
- **Insulation Rating:** 600 volts
- **Temperature Rating:** -65 to 105 C
- **Recommended Tools:** PVDF / Teflon Insulation Stripping Tool

Cable options can vary depending on customer requirements.