EXPANSION MODULE 1U1S

The "EXPANSION 1U1S" module provides a mean to increase the FUSION monitoring capability from its nominal 1U rack space.

- The module requires -48Vdc Power and I/O channel terminations are at the back using 8-pin quick connect screw-type connectors (Same connectors as the FUSION unit).
- Multiple 1U1S (Up to 30) can be daisy chained using the MLINK network connector at the back panel.
- Each 1U1S module integrates one of the following intelligent I/O cards:
  - ➢ EVENT CARD – **48 Binary Input Channels** (Dry contact alarms ...)
  - ➢ ANALOG CARD – **18 Analog Channels** (Volt, Current, Temperature ...)
  - ➢ OUTPUT CARD – **32 Binary Output Channels** (Automation, relays, controls or issuing alarms)
- The 1U1S can be factory installed side by side with the FUSION unit to be mounted in a 19 or 23 inch rack or simply used as a stand-alone remote I/O device.
- Zinc Plated finished.

IMAGE OF THE EXPANSION 1U1S MODULE WITH A FUSION UNIT

For more detailed information on the intelligent I/O card operation, specifications, configuration and installation please refer to the FUSION - Expansion shelf user manual or the MIRADOR user manual.

I/O CARDS RELATED COMMANDS (TELNET)

COMMAND	DESCRIPTION / USE
<CTRL-A>	Repeat the last command
<CTRL-C>	Terminate the current command
<ESC>	Terminate the current command
ANALOG[X]	Sets parameters for an analog channel
ASTATE[-R][X]	Polls analog channel values in real time
C[X]	Sets card type (ANALOG, EVENT, OUTPUT)
CONFIG	Access the configuration mode
DISC	Ends a session (Disconnect)
ESTATE[-R][X]	Polls event channel status in real time
EVENT[X]	Sets parameters for an event channel
H[ELP]	Displays the list of commands with description
LOG	Begins a new session at another access level
OSTATE[-R][X]	Polls output channel status in real time
OUTPUT[X]	Sets parameters for an output channel
RESETOCC	Resets all occurrences counters
BM[X]	Sets parameters for a binary manual channel
BMSTATE[X]	Changes the state of a binary manual channel
VERSION	Displays card/software versions and numbers

DIMENSIONS
Height: 4.41 cm (1.74 in.)
Depth: 25.4 cm (10 in.)
Width: 15.24 cm (6 in.)

POWER SPECIFICATIONS
Typically : -40 to -60 Vdc @ 250 mA
See FUSION - Expansion shelf user manual for more detailed information on powering options.

COMMUNICATION PORTS

Two MLINK communication ports are located at the back panel and use a RJ12C modular type connector. The MLINK cable used to interconnect with the FUSION is provided with the installation kit.

POWER/FAIL LED

Color code	Problem Description
Solid Yellow	Ongoing software loading
Solid Green	Hardware and software functional
Flashes red once	No data received on the RS-485 link
Flashes red twice	Converter problem
Flashes red 3 times	Memory problem
Flashes red 4 times	Program not available
Flashes red 5 times	Problem with RS-485
Flashes red 6 times	Wrong configuration
Specific color code for the ANALOG CARD only	
Flashes red 7 times	Timer error
Flashes red 8 times	Low battery

I/O CARD NETWORK ADDRESSING – FACTORY SET

FUSION can support up to 30 intelligent I/O cards. When the EXANSION 1U1S module is shipped with a FUSION, by default it will be address to CARD#1. Jumpers located on the front panel of the I/O card will be configured accordingly at the Factory.

If you are retrofitting an existing MIRADOR or FUSION installation with intelligent I/O cards already configured, please contact Multitel technical support for assistance in setting the EXPANSION 1U1S module to work properly.

INSTALLATION

- The EXPANSION 1U1S module is assembled on the right side of the FUSION unit. (See picture).
- The FUSION and EXPANSION 1U1S module fit into 19 and 23 inch rack; mounting brackets are provided.

WIRING AND CONNECTIONS TO BACK PANEL

- All wiring terminates at the back of the 1U1S module.
- Run and connect frame ground stud to nearby frame ground.
- Refer to the following tables to wire the analog, binary or relay channels.
- Run and connect leads to female connectors for remote control and/or alarm points to output channels.
- Insert RS485 connector to the MLINK communication port using the furnished cable.
- Run and connect DC power cabling.
- Verify all wiring and cabling.

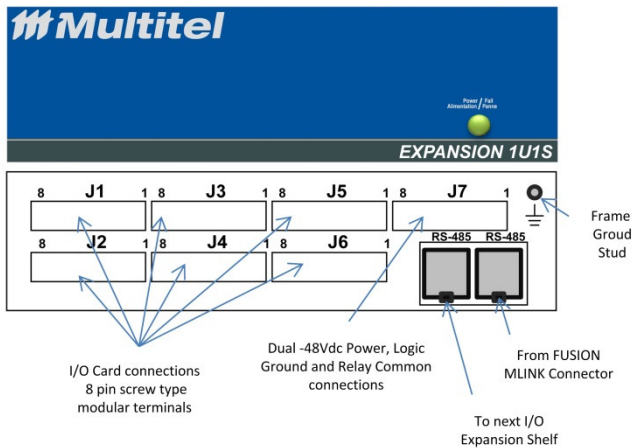For more information, refer to the FUSION Expansion Shelf User Manual.

START-UP

- Install fuses and/or circuit breakers to unit and monitoring points.
- Verify unit through local access procedure.

POWER SUPPLY CONNECTIONS

| NAME	CONN	PIN	DESCRIPTION	WIRING
BRG – FEED A	J7	5	Battery Return Ground (Positive)	Connect to the discharge ground bar – **FEED A**. Use a 20 AWG cable or bigger.
BRG – FEED B	J7	6	Battery Return Ground (Positive)	Connect to the discharge ground bar – **FEED B**. Use a 20 AWG cable or bigger.
BATT – FEED A	J7	7	-48Vdc Battery side	Connect to a fuse or circuit breaker on the distribution bay – **FEED A**. Use a 20 AWG cable or bigger.
BATT – FEED B	J7	8	-48Vdc Battery side	Connect to a fuse or circuit breaker on the distribution bay – **FEED B**. Use a 20 AWG cable or bigger.
FAIL	J7	4	Card fail relay contact	Connect an alarm input to the local alarm system. Use a 20 AWG cable.
FAIL COM	J7	3	Card fail relay common	Connect to the power plant BRG.
LRG	J7	2	Logic Return Ground for Event/Binary Channels operation	Connect to Battery Return Ground.
Card frame ground	J7	1	Not used	Do not connect.

DESCRIPTION OF THE BACK PANEL

I/O Card connections 8 pin screw type modular terminals

Dual -48Vdc Power, Logic Ground and Relay Common connections

From FUSION MLINK Connector

To next I/O Expansion Shelf

Frame Groud Stud

ANALOG CARD / ANALOG CHANNEL CONNECTIONS

CHANNEL	CONN	PIN	CHANNEL	CONN	PIN
CxA1-	J1	1	CxA10-	J4	1
CxA1+	J1	2	CxA10+	J4	2
CxA2-	J1	3	CxA11-	J4	3
CxA2+	J1	4	CxA11+	J4	4
CxA3-	J1	5	CxA12-	J4	5
CxA3+	J1	6	CxA12+	J4	6
EXCT1-	J1	7	EXCT4-	J4	7
EXCT1+	J1	8	EXCT4+	J4	8
CxA4-	J2	1	CxA13-	J5	1
CxA4+	J2	2	CxA13+	J5	2
CxA5-	J2	3	CxA14-	J5	3
CxA5+	J2	4	CxA14+	J5	4
CxA6-	J2	5	CxA15-	J5	5
CxA6+	J2	6	CxA15+	J5	6
EXCT2-	J2	7	EXCT5-	J5	7
EXCT2+	J2	8	EXCT5+	J5	8
CxA7-	J3	1	CxA16-	J6	1
CxA7+	J3	2	CxA16+	J6	2
CxA8-	J3	3	CxA17-	J6	3
CxA8+	J3	4	CxA17+	J6	4
CxA9-	J3	5	CxA18-	J6	5
CxA9+	J3	6	CxA18+	J6	6
EXCT3-	J3	7	EXCT6-	J6	7
EXCT3+	J3	8	EXCT6+	J6	8

REAR VIEW OF THE EXPANSION 1U1S MODULE
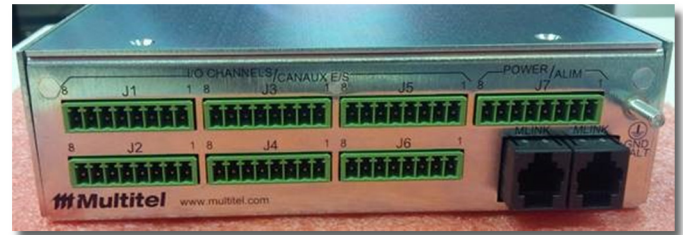
OUTPUT CARD / BINARY OUTPUT CHANNEL CONNECTIONS

CHANNEL	CONN	PIN	CHANNEL	CONN	PIN
CxO1	J1	1	CxO18	J3	2
CxO2	J1	2	CxO19	J3	3
CxO3	J1	3	CxO20	J3	4
CxO4	J1	4	CxO21	J3	5
CxO5	J1	5	CxO22	J3	6
CxO6	J1	6	CxO23	J3	7
CxO7	J1	7	CxO24	J3	8
CxO8	J1	8	CxO25	J4	1
CxO9	J2	1	CxO26	J4	2
CxO10	J2	2	CxO27	J4	3
CxO11	J2	3	CxO28	J4	4
CxO12	J2	4	CxO29	J4	5
CxO13	J2	5	CxO30	J4	6
CxO14	J2	6	CxO31	J4	7
CxO15	J2	7	CxO32	J4	8
CxO16	J2	8	COM 1-16	J5	1
CxO17	J3	1	COM 17-32	J5	2

EVENT CARD / Binary Input channel connections

CHANNEL	CONN	PIN	CHANNEL	CONN	PIN
CxE1	J1	1	CxE25	J4	1
CxE2	J1	2	CxE26	J4	2
CxE3	J1	3	CxE27	J4	3
CxE4	J1	4	CxE28	J4	4
CxE5	J1	5	CxE29	J4	5
CxE6	J1	6	CxE30	J4	6
CxE7	J1	7	CxE31	J4	7
CxE8	J1	8	CxE32	J4	8
CxE9	J2	1	CxE33	J5	1
CxE10	J2	2	CxE34	J5	2
CxE11	J2	3	CxE35	J5	3
CxE12	J2	4	CxE36	J5	4
CxE13	J2	5	CxE37	J5	5
CxE14	J2	6	CxE38	J5	6
CxE15	J2	7	CxE39	J5	7
CxE16	J2	8	CxE40	J5	8
CxE17	J3	1	CxE41	J6	1
CxE18	J3	2	CxE42	J6	2
CxE19	J3	3	CxE43	J6	3
CxE20	J3	4	CxE44	J6	4
CxE21	J3	5	CxE45	J6	5
CxE22	J3	6	CxE46	J6	6
CxE23	J3	7	CxE47	J6	7
CxE24	J3	8	CxE48	J6	8

Cx: x is the card position number.