USER MANUAL

**Model UIO-256
Universal Input/ Output Frame**

RTS™

Warranty Information
See enclosed warranty card.

Customer Support
Technical questions should be directed to:

Customer Service Department
RTS/Telex
12000 Portland Avenue South
Burnsville, MN 55337 U.S.A
Telephone: (402) 467-5321
Fax: (402) 467-3279
Factory Service (800) 553-5992

Return Shipping Instructions Procedure for Returns
If a repair is necessary, contact the dealer where this unit was purchased.

If repair through dealer is not possible, obtain a RETURN AUTHORIZATION from:

Customer Service Department
Telex Communications, Inc.
Telephone: (402) 467-5321
Fax: (402) 467-3279
Factory Service (800) 553-5992

DO NOT RETURN ANY EQUIPMENT DIRECTLY TO THE FACTORY WITHOUT FIRST OBTAINING A RETURN AUTHORIZATION.

Be prepared to provide the company name, address, phone number, a person to contact regarding the repair, the type and quantity of equipment, a description of the problem, and the serial number(s).

Shipping to Manufacturer for Repair or Adjustment
All shipments of RTS products should be made via United Parcel Service or the best available shipper, prepaid. The equipment should be shipped in the original packing carton; if that is not available, use any suitable container that is rigid and of adequate size. If a substitute container is used, the equipment should be wrapped in paper and surrounded with at least four inches of excelsior or similar shock-absorbing material. All shipments must be sent to the following address and must include the Return Authorization.

Factory Service Department
Telex Communications, Inc.
8601 Cornhusker Hwy
Lincoln, NE 68507 U.S.A
Attn: Service

Upon completion of any repair the equipment will be returned via United Parcel Service or specified shipper, collect.

What's Included in this Box?
The UIO-256 shipping box should contain the following items:

1	UIO-256 System
1	Power Cord (110V or 220V)
2	50-pin Telco Connector (no cable)
1	User Manual
1	Serial Cable
1	Warranty Card

If anything is missing or damaged, contact the shipper or Telex immediately.
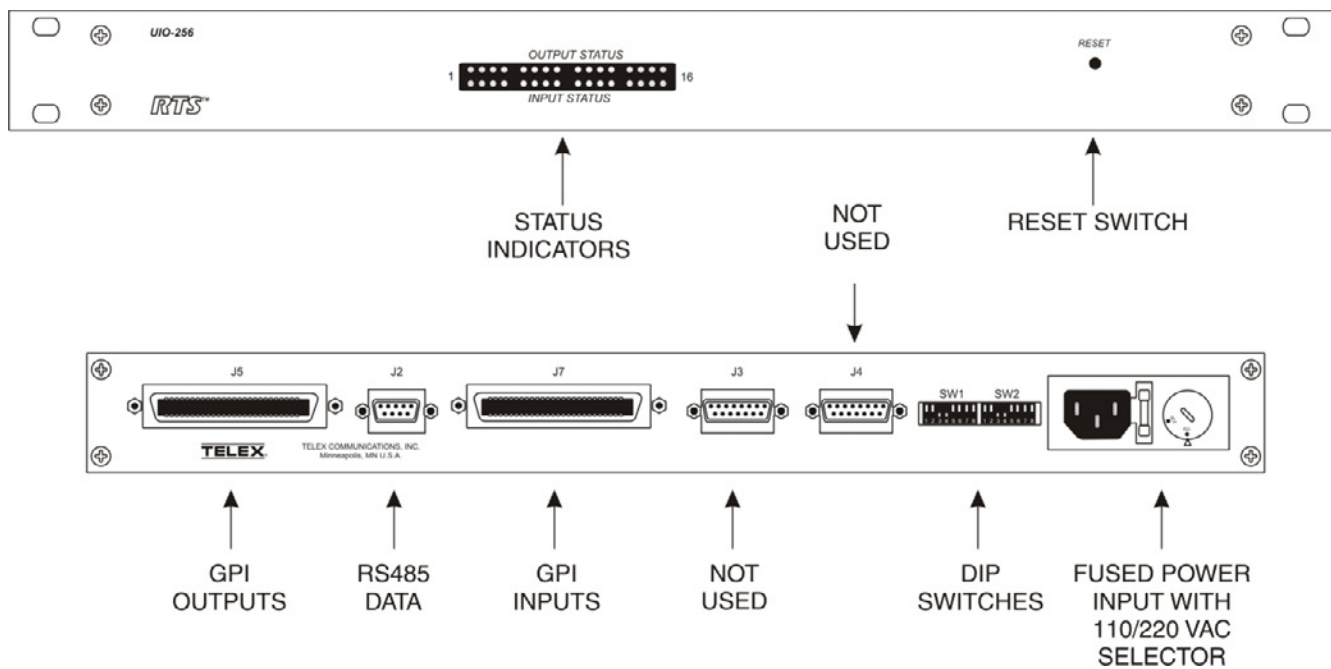
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Figure 1. UIO-256 Front and Rear Panel Features

1. Introduction

This manual describes the installation, programming, and operating procedures for the RTS Model UIO-256 Universal Input/Output Frame. Since the UIO-256 inputs and outputs are generally assigned using AZedit. For more information on AZedit, refer to the AZedit User Manual (9350-7532-000).

2. Description

Each UIO-256 provides 16 GPI inputs and 16 GPI outputs. The GPI inputs can be set up as remotely controlled keypanel keys to activate intercom ports, party lines, GPI outputs, etc. within the intercom system. The GPI outputs are typically assigned for activation from keypanel keys. They can be used to control lighting or to key remote transmitters, paging systems, etc.

3. Theory of Operation

The UIO-256 exchanges control signals with the intercom system via an RS-485 data connection. Multiple UIO-256's may also be interconnected using a multi-drop configuration. *Note, the multi-drop configuration requires version 2 of the UIO-256 firmware.*

GPI inputs are connected via a 50-pin telco connector on the back of the UIO-256. Each input requires =5 to +18 VDC for activation. The positive input and common connections may be provided from a remote source. Or, +18 VDC is supplied at the connector by the UIO-256, and may be used for input activation, with the user supplying the external switch.

4. Installation

4.1 Setting the DIP switches

There are two banks of DIP switches on the back panel. Only SW1 is currently used. There are slight differences between how UIO-256 units are configured based on the version of firmware they are programmed with and the ADAM or ADAM CS Firmware version. The current shipping version of the firmware is Version 2. If the intercom system (ADAM or ADAM CS) has Firmware version 9.2.1 or later, Version 2 of the UIO-256 firmware MUST be used. If the firmware in the intercom system is older than 9.2.1, then either Version 1 or 2 of the UIO-256 firmware may be used.

4.1.1 System Firmware 9.2.1 or Newer

The UIO-256 must be configured to work in Multi-Drop mode. Set DIP switch 1-2 to the CLOSED position. Up to 16 UIO-256 frames are allowed to be connected together.

4.1.2 System Firmware Older than 9.2.1

The UIO-256 must be configured to work in Token Ring mode. Set DIP switch 1-2 to the OPEN position. Up to four UIO-256 frames are allowed to be connected together.

4.1.3 DIP Switch Functions

SW1-1: Diagnostics mode. Leave in OPEN position for normal operation. If open, GPI outputs operate normally. If closed, GPI outputs track the corresponding GPI inputs

SW1-2: Communications Mode
    Open = Token Ring
    Closed = Multi-Drop (default)

SW1-3: Unused. Leave in OPEN position.

SW1-4 to SW1-7: Frame number

SW1-8: Baud rate for communication between UIO-256 and the intercom system. Must be closed (76.8K baud).

4.2 Voltage Section

Set the 110/220 VAC selector according to local power standards.

4.3 Mounting

UIO-256 Frames are generally mounted in the front of an equipment rack near a Master Controller Breakout Panel for ADAM intercom systems or near the matrix frame for ADAM CS intercom systems. When positioning a UIO-256, consideration should be given to the visibility of the front panel status indicators and access to the reset switch. Also, consider access to the rear panel for fuse replacement or changes to the DIP switch settings, etc. There are no ventilation requirements.

FRAME NUMBER	SW1-1	SW1-2	SW1-3	SW1-4	SW1-5	SW1-6	SW1-7	SW1-8	GPI INPUT / OUTPUT NUMBERS
1	Open	Open/Closed see text	Open	Open	Open	Open	Open	Closed	001-016
2	Open	Open/Closed see text	Open	Closed	Open	Open	Open	Closed	017-032
3	Open	Open/Closed see text	Open	Open	Closed	Open	Open	Closed	033-048
4	Open	Open/Closed see text	Open	Closed	Closed	Open	Open	Closed	049-064
5*	Open	Closed	Open	Open	Open	Closed	Open	Closed	065-080
6*	Open	Closed	Open	Closed	Open	Closed	Open	Closed	081-096
7*	Open	Closed	Open	Open	Closed	Closed	Open	Closed	097-112
8*	Open	Closed	Open	Closed	Closed	Closed	Open	Closed	113-128
9*	Open	Closed	Open	Open	Open	Open	Closed	Closed	129-144
10*	Open	Closed	Open	Closed	Open	Open	Closed	Closed	145-160
11*	Open	Closed	Open	Open	Closed	Open	Closed	Closed	161-176
12*	Open	Closed	Open	Closed	Closed	Open	Closed	Closed	177-192
13*	Open	Closed	Open	Open	Open	Closed	Closed	Closed	193-208
14*	Open	Closed	Open	Closed	Open	Closed	Closed	Closed	209-224
15*	Open	Closed	Open	Open	Closed	Closed	Closed	Closed	225-240
16*	Open	Closed	Open	Closed	Closed	Closed	Closed	Closed	241-256

NOTE: Frame numbers 5-16 are possible only when using multi-drop mode.

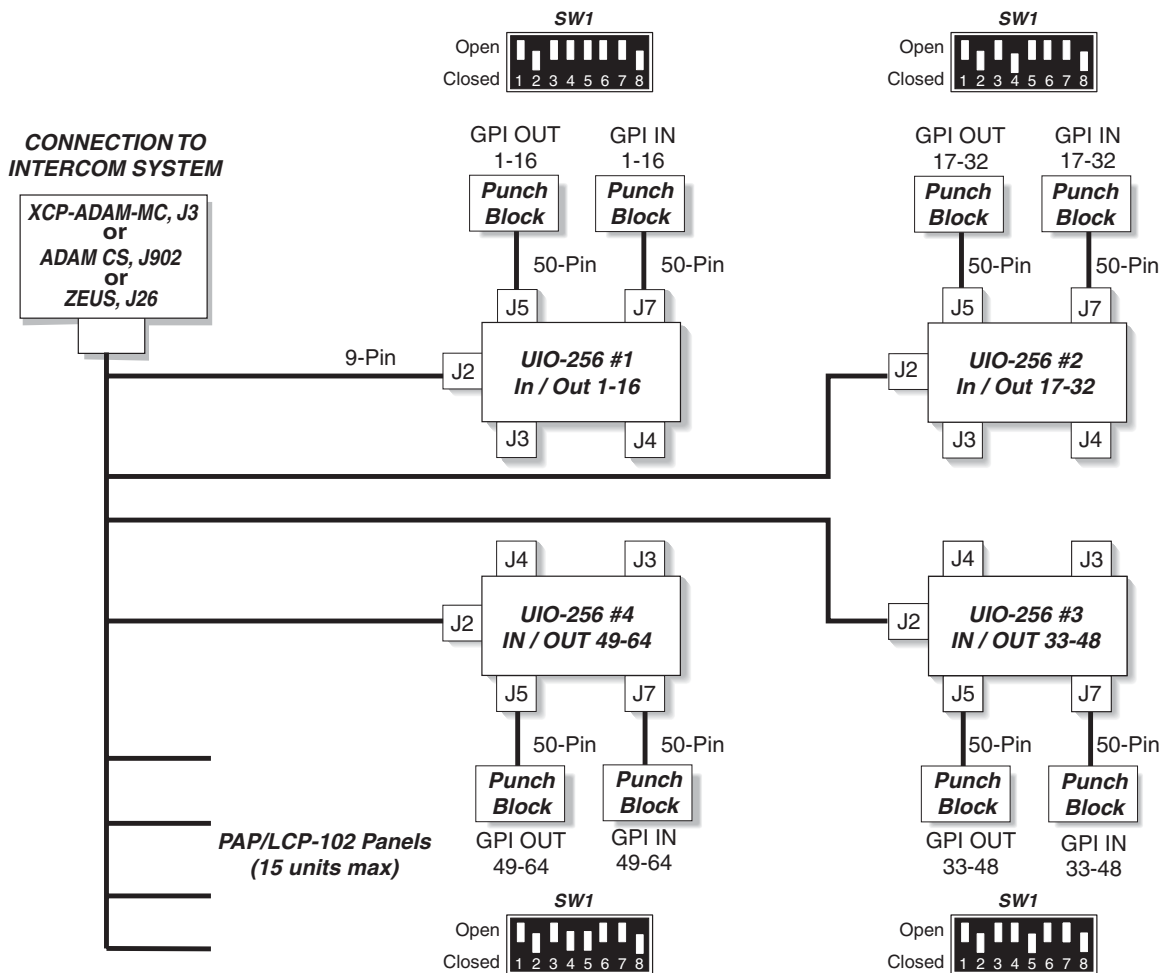*Table 1. UIO-256 DIP Switch 1 Configuration.*

Figure 2. Multi-Drop Connections

4.4 Multi-Drop Connections

See Figure 2 for typical connections and DIP settings.

4.4.1 UIO-256 to ADAM System

Connect the end of the 9-pin cable marked ADAM System to J3 of the XCP-ADAM-MC Master Controller Breakout Panel. Connect the end marked UIO-256 to J2 of the UIO-256 Frame. If you need a longer cable, you can construct one using the wiring diagram in Figure 5.

4.4.2 UIO-256 to ADAM CS System

For ADAM CS intercom systems, the connector marked "ADAM System" on the 9-pin cable must be replaced with the provided female connector. Disconnect the wires and reconnect them to the same pin numbers.

After modifying the cable, connect the newly attached female connector to J902 of the ADAM CS frame. Connect the end marked "UIO-256" to J2 of the UIO-256 frame. If you need a longer cable, you can construct one using the wiring diagram in Figure 6.

To connect a Program Assign Panel or additional UIO-256 units, construct a "Y" cable as shown in Figure 4. This cable replaces the supplied 9-pin cable.

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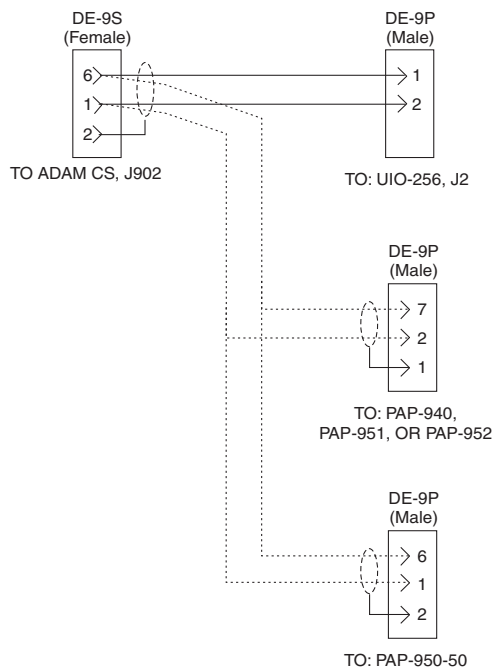
Figure 3. ADAM Y-Cable

Figure 4. ADAM CS Y-Cable

Figure 5. ADAM to UIO-256 Cable

Figure 6. ADAM CS to UIO-256 Cable

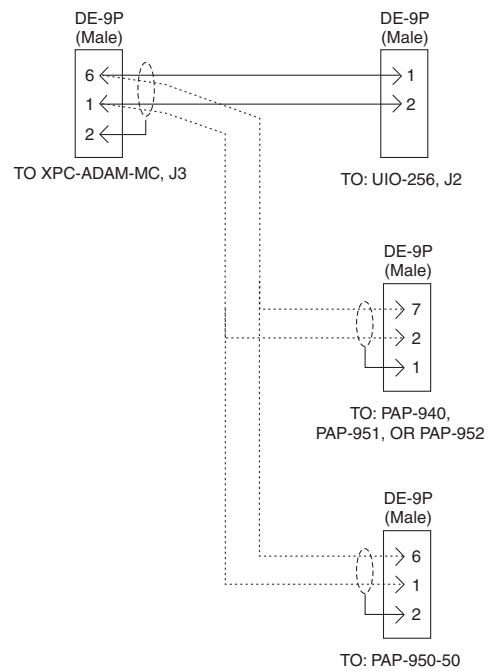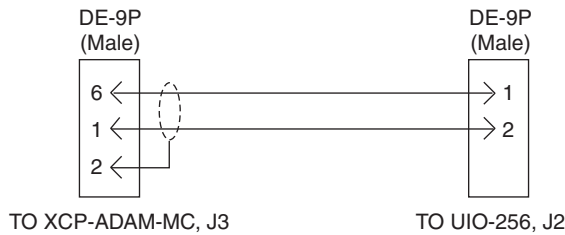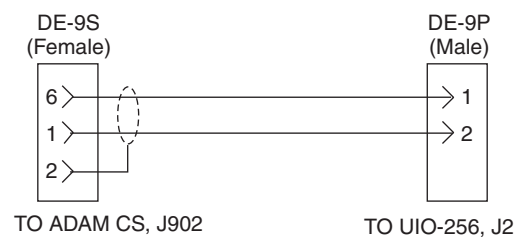### 4.4.3   UIO-256 Frame Interconnections

If more than one UIO-256 frame is used, construct a Y-cable as shown in Figure 3 or 4 with additional DB-9S connectors in parallel with the ADAM and ADAM CS connector. Connect the addition connectors to the J2 connector on each additional UIO-256.

4.4.4   UIO-256 to Zeus System

Zeus is compatible only with UIO-256 firmware Version 2 or later, and it supports only multi-drop connection.

Use the DIP switch information for ADAM and ADAM CS. Make sure DIP switch 2 is set for "multi-drop" connection. Also, Zeus is limited to 64 GPI inputs and 64 GPI outputs. Since each UIO-256 has 16 of each, this means that you can only use up to four UIO-256 frames with Zeus. When setting frame numbers, only frame numbers 1 through 4 are allowed.

Treat the Zeus the same as an ADAM for wiring purposes, except connect to J26 on the Zeus back panel instead of J3 of the XCP-ADAM -MC breakout panel.

4.5   GPI Output and Input Connections

Use 50-pin Telco cables to connect from the GPI input and output connectors to each UIO-256 to punch blocks or similar breakout devices. Pin-outs for the connectors and punch blocks are summarized in Tables 2 and 3.

4.6   Power Connection

Plug in the supplied power cord for each UIO-256. The UIO-256 does not have a power ON/OFF switch or indicator, so it may be convenient to use a switched power outlet.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	NC Contact	Common	NO Contact
1	17	33	49	65	81	97	113	129	145	161	177	193	209	225	241	38	13	40
2	18	34	50	66	82	98	114	130	146	162	178	194	210	226	242	39	14	15
3	19	35	51	67	83	99	115	131	147	163	179	195	211	227	243	41	16	43
4	20	36	52	68	84	100	116	132	148	164	180	196	212	228	244	42	17	18
5	21	37	53	69	85	101	117	133	149	165	181	197	213	229	245	44	19	46
6	22	38	54	70	86	102	118	134	150	166	182	198	214	230	246	45	20	21
7	23	39	55	71	87	103	119	135	151	167	183	199	215	231	247	47	22	49
8	24	40	56	72	88	104	120	136	152	168	184	200	216	232	248	48	23	24
9	25	41	57	73	89	105	121	137	153	169	185	201	217	233	249	26	1	28
10	26	42	58	74	90	106	122	138	154	170	186	202	218	234	250	27	2	3
11	27	43	59	75	91	107	123	139	155	171	187	203	219	235	251	29	4	31
12	28	44	60	76	92	108	124	140	156	172	188	204	220	236	252	30	5	6
13	29	45	61	77	93	109	125	141	157	173	189	205	221	237	253	32	7	34
14	30	46	62	78	94	110	126	142	158	174	190	206	222	238	254	33	8	9
15	31	47	63	79	95	111	127	143	159	175	191	207	223	239	255	35	10	37
16	32	48	64	80	96	112	128	144	160	176	192	208	224	240	256	36	11	12

* Dependent on UIO-256 DIP switch SW1 settings for Input/Output range as summarized in Table 1.

** The relay contacts are rated for 0.5A at 120 VAC; 1A at 24 VDC; 0.3A at 60 VDC

Table 3. UIO-256 Relay Output Connector (J5) Pinouts.

4.7 Assigning the GPI Inputs and Outputs

4.7.1 Using AZedit

Assign the GPI inputs by using the GPI Inputs setup screen. This is accessible by clicking the GPI Inputs button on the AZedit toolbar. Assign GPI outputs using the GPI Outputs setup screen (GPI Out button on the toolbar). For more information, see the AZedit User Manual.

NOTE: AZedit requires the number of GPI Ins and GPI Outs be set throughout the Intercom Configuration menu (select Options>Intercom Configuration from the menu bar). This will require the unit to be reset. All data will be lost. Be sure to save your setup **before** reconfiguring the frame.

4.7.2 Using Keypanel (Outputs Only)

On keypanels that permit key assignment, you can assign GPI outputs using the procedures for assigning relays. It is not possible to assign GPI inputs from keypanels.

5. Operation

5.1 Status Indicators

Activating a keypanel key that is assigned to a GPI output will cause the appropriate OUTPUT STATUS indicator on the UIO-256 front panel to light, and the relay contact for that output will activate. Activating a GPI input from an external device will cause the appropriate INPUT STATUS indicator to light, and the keypanel key assignment or other device within the intercom system that is assigned to that GPI input will activate.

When using multiple UIO-256 frames, the status of the first 16 GPI output and inputs will be indicated by the status indicators on the first UIO-256. The status indicators on the second UIO-256 will indicate status of outputs and inputs 17 to 32 and so forth as summarized in Table 1.

5.2 UIO-256 Frame Reset

The UIO-256 firmware has been designed to detect and recover from errors caused by such things as lost or bad data packets. However, in the extremely unlikely event the unit stops functioning during operation, try pressing the reset switch on the front panel of the UIO-256.5.3 Fuse Replacement

The fuse is accessible on the rear panel power module of the UIO-256. Remove the power cord from the power module and free the fuse cartridge as shown Figure 7. Be sure

Relay Input Numbers* / GPI Input Pin Numbers**

| 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	- Input	+ Input (5-18VDC)
1	17	33	49	65	81	97	113	129	145	161	177	193	209	225	241	9	34
2	18	34	50	66	82	98	114	130	146	162	178	194	210	226	242	10	35
3	19	35	51	67	83	99	115	131	147	163	179	195	211	227	243	11	36
4	20	36	52	68	84	100	116	132	148	164	180	196	212	228	244	12	37
5	21	37	53	69	85	101	117	133	149	165	181	197	213	229	245	13	38
6	22	38	54	70	86	102	118	134	150	166	182	198	214	230	246	14	39
7	23	39	55	71	87	103	119	135	151	167	183	199	215	231	247	15	40
8	24	40	56	72	88	104	120	136	152	168	184	200	216	232	248	16	41
9	25	41	57	73	89	105	121	137	153	169	185	201	217	233	249	1	26
10	26	42	58	74	90	106	122	138	154	170	186	202	218	234	250	2	27
11	27	43	59	75	91	107	123	139	155	171	187	203	219	235	251	3	28
12	28	44	60	76	92	108	124	140	156	172	188	204	220	236	252	4	29
13	29	45	61	77	93	109	125	141	157	173	189	205	221	237	253	5	30
14	30	46	62	78	94	110	126	142	158	174	190	206	222	238	254	6	31
15	31	47	63	79	95	111	127	143	159	175	191	207	223	239	255	7	32
16	32	48	64	80	96	112	128	144	160	176	192	208	224	240	256	8	33

* Dependent on UIO-256 DIP switch SW1 settings for Input/Output range as summarized in Table 1.
**Inputs will sink 100 mA maximum at a maximum input voltage of +18 VDC. For operation from an external DC voltage source, connect the external control voltage to the positive "+" input pin, and connect the external common to the negative "-" input pin. The UIO-256 also has an internal 18 VDC source, which is available at pins 18 and 22. Ground is available at pins 24 and 25. To use the internal 18 VDC source, ground the "-" input for the desired control input, then use an external switch to connect from the 18 VDC internal source to the "+" input pin.

Table 3. UIO-256 GPI Input Connector (J7) Pinouts

5.3   Fuse Replacement

The fuse is accessible on the rear panel power module of the UIO-256. Remove the power cord from the power module and free the fuse cartridge as shown Figure 7. Be sure to replace the fuse with a fuse of the same rating and type.
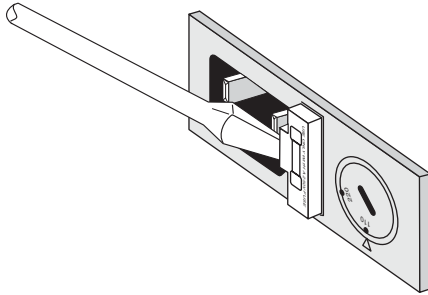
Figure 7. Fuse Replacement

6.   Specifications

Power

110/220 VAC, 50/60 Hz (selectable via backpanel)

Dimensions

1RU High x 7" (178mm) deep behind front panel

GPI Inputs

Type: Optically coupled

Input Requirements: 5-18 VDC

GPI Outputs

Type: DPDT Relays with common, normal-open and normal -closed contacts

Contact Ratings: 0.5A at 120 VAC; 1A at 24 VDC; 0.3A at 60 VDC

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