Cat Series Relay Expansion Module

Installation / Setup Manual

CATRLY8

Select
Engineered
Systems, Inc.

CAT Series Relay Expansion Module

Y2K Compliance Statement

Cat Series Control Access Equipment is designed to be used prior to, during, and after the calendar year 2000 A.D., and Cat Series Control Access Equipment will operate during each such time period without error relating to date data, specifically including any error relating to, or the product of, date data which represents or references different centuries or more than one century.

Cat Series Control Access Equipment will not abnormally end or provide invalid or incorrect results as a result of date data, specifically including date data which represents or references different centuries or more than one century;

Cat Series Control Access Equipment has been designed to ensure year 2000 compatibility, including, but not limited to, date data century recognition, calculations which accommodate same century and multi-century formulas and date values, and date data interface values that reflect the century;

This statement should not be taken to mean that Cat Series Control Access Equipment corrects any errors generated by your computer, it's BIOS (Basic In Out System), or your operating system or any other program or auxillary equipment attached to the Cat Series Control Access Equipment that you have or use.

Definitions

Four Digit Year Format

shall mean a format that allows entry or processing of a four digit year date: the first two digits will designate the century and the second two digits shall designate the year within the century. As an example, 1996 shall mean the 96th year of the 20th century.

Leap Year

shall mean the year during which an extra day is added in February (February 29th). Leap Year occurs in all years divisible by 400 or evenly divisible by 4 and not evenly divisible by 100. For example, 1996 is a Leap Year since it is divisible by 4 and not evenly divisible by 100. 2000 is a Leap Year since it is divisible by 400.

Year 2000 Compliant

shall mean that the data outside of the range 1990-1999 will be correctly processed by Selcom 2000 including application programs, files and databases.
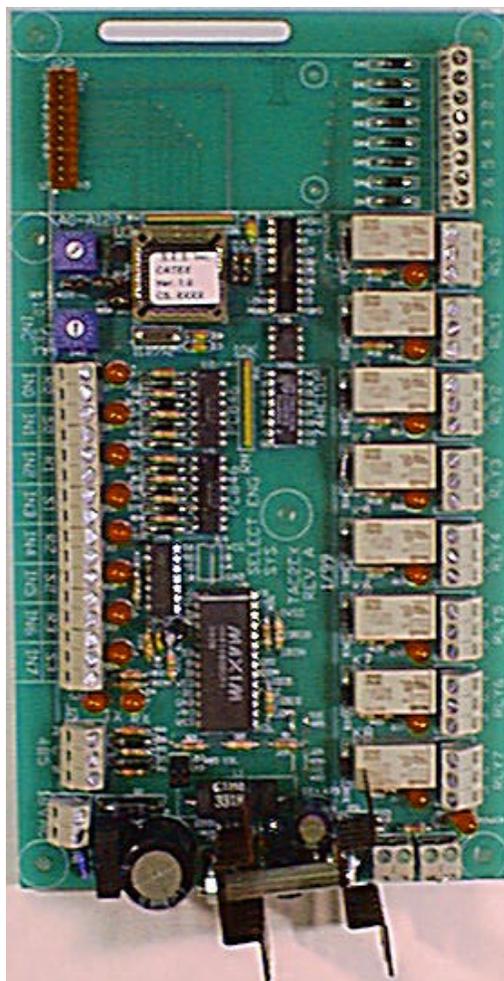
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Cat Series Auxiliary Relay Module

CAT Series Relay Expansion Module

The Select Engineered Systems Cat Series Relay Expansion Module.

The Cat Series Relay ExpansionModule operates as a remote relay controller,with commands sent through a RS485 three wire loop from a CAT SERIES Unit ONLY. Telephone Access Unit will activate each of the Form C relays. Each code activated in the CAT SERIES unit will send four relay activation codes to the Auxiliary Module(s). The board may be selected to Fail Secure or Fail Safe.

Fail Secure means the relays are normally de-energized and energize on command. When power fails the relays remain de-energized not allowing a command.

Fail Safe means the relays are normally energized and de-energize on command to open. When power fails the relays de-energize forcing the command to open.

The relay outputs maybe used to allow only certain elevator buttons to be used limiting access , additional doors to be unlocked controlling access and other functions as required.   A local terminal block provides for local activation of the relays and additional hard wire programming, if required.

Each Cat Series Relay ExpansionModule is individually assignable using simple rotary switches to an address range in steps of eight relays. The entire system allows for 32 boards to be connected for a maximum of 256 relays. Note: If two boards are set to the same address, the relays on BOTH boards would be activated.

The Cat Series Relay Expansion Module contains an timing selector 16 position rotary switch (SW2). If J23 & J24 are off, this switch set the activation time of all eight relays Switch Position 0 (shown) sets the activation time as 0 = 2 sec.
Note: All times are ± 1 sec or ±2% whichever is greater.

The selector sets the same time for all relays on this board unless separate programming is used (See Page 10).
The local terminal blocks provide opto-coupled control with the drive voltage provided. Terminals maybe pulled to Circuit Common using dry relay contacts or transistor pull downs with 100 ohms or less. LEDs (Light Emitting Diodes) are provided to indicate input and output conditions as well as RS485 activity.

The Cat Series Relay Expansion Module requires power at 18VAC / 40VA. The output relays are rated 3 amps at 24V ac/dc.

A 12"L x 11.5"W x 3.5"H NEMA 1 enclosure is standard.

Expansion Module
PC Board

Standard Features for Cat Series Relay Expansion Module.

The Cat Series Relay Expansion Module contains an addressing selector 16 position rotary switch (SW1) and an addressing jumper J4. These addressing means set the address of the first relay activation code on the board and the other relays follow in consecutive order (Example: Switch Position 0 (shown) and J4 on, sets the activation codes as RLY0=000, RLY1=001, RLY2=002, RLY3=003, RLY4=004, RLY5=005,RLY6=006 and RLY7=007). **Removing jumper J4** would change the addressing to RLY0=128, RLY1=129, RLY2=130, RLY3=131, RLY4=132, RLY5=133,RLY6=134 and RLY7=135)
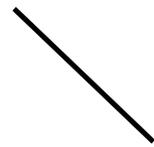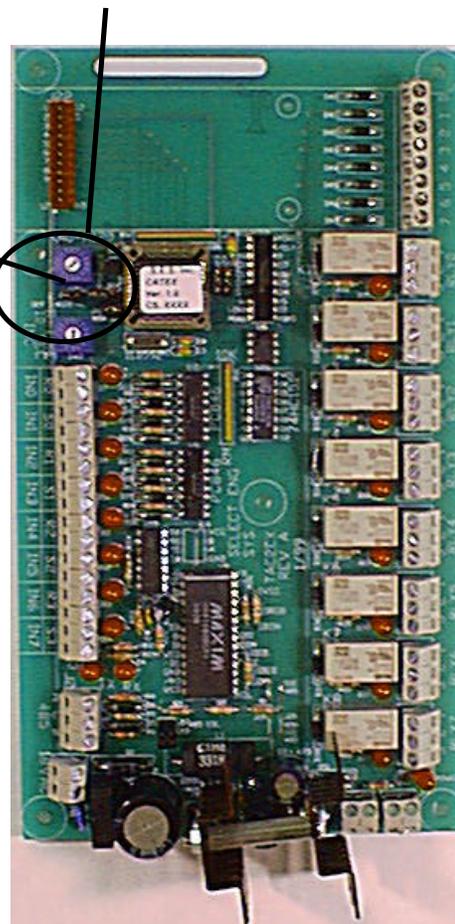
The Cat Series Relay Expansion Module contains eight relay Form C outputs. J5 set the relay action as J5-Off = Fail Secure (Relay is normally off and energizes on command) or J5-On = Fail Safe (Relay is normally on and de-energizes on command)
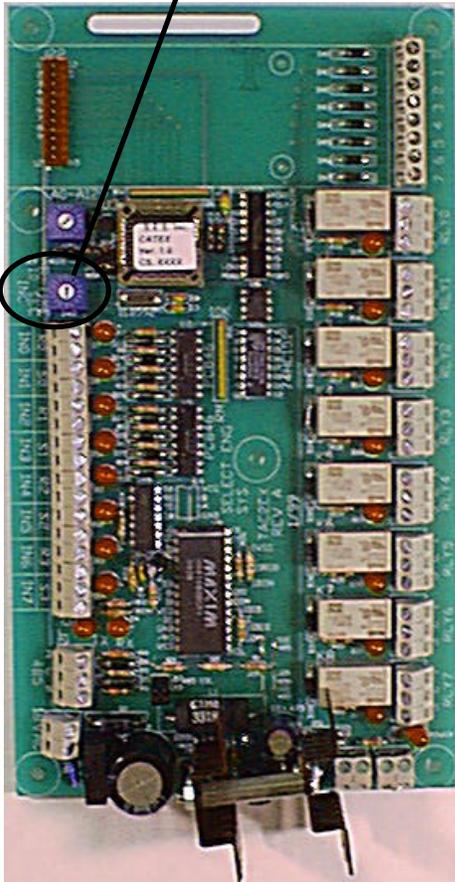
A0-A120

SW1

J4

J5 R-INV

A120-248
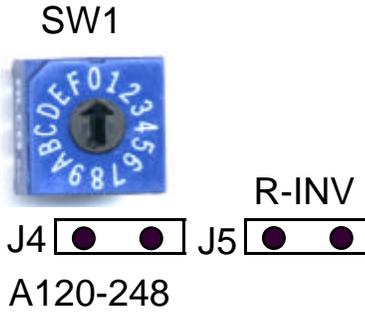
Addressing Selectors

Addressing Selector Switches		
J4	**On**	**Off**
Switch Position	First Relay Code	First Relay Code
0	000	128
1	008	136
2	016	144
3	024	152
4	032	160
5	040	168
6	048	176
7	056	184
8	064	192
9	072	200
A	080	208
B	088	216
C	096	224
D	104	232
E	112	240
F	120	248

CAT Series Relay Expansion Module

R-TIME
10 SEC
INC

SW2   J6

Timing Selector

Standard Features for Cat Series Relay Expansion Module.

The Cat Series Relay Expansion Module contains an timing selector 16 position rotary switch (SW2) This switch set the activation time of all eight relays Switch Position 0 (shown) sets the activation time as 0 = 2 sec.

Note: All times are ± 1 sec or ±2% whichever is greater.

The selector set the same time for all relays on this board. All relay outputs are one shot type activations. The relay will activate for the period of time indicated by the timing selector switch and then de-energize even if the input remains closed. The relay will not re-activate until the input is opened, then closed again.The input must remain closed for 150 ms min. for the relay to activate.

Timing Selector Switch	
Switch Position	Relay activate Time
0	2 sec
1	10 sec
2	20 sec
3	30 sec
4	40 sec
5	50 sec
6	60 sec
7	70 sec
8	80 sec
9	90 sec
A	100 sec
B	110 sec
C	120 sec
D	130 sec
E	140 sec
F	150 sec

Logical Output Block

J16

Standard Features for Cat Series Relay ExpansionModule.The CAT Series Something Module contains a terminal block (J16) that provides an logical low output for each relay output. They can be used to activate additional relay by connecting outputs to the IN(X) terminals.

The Cat Series Relay Expansion Module contains a terminal block (J3) to individually activate all of the eight relays Terminal IN0 activates Relay 0 (RLY0) when the terminals are shorted or pulled to common. You may use dry relay contacts or transistor pull-downs referenced to circuit common. Each input has a LED located just to the right of the terminals to indicate when that input is on.

When each input is closed the output relay will be activated for the time programmed by the Relay Timing Selector Switch and then the relay will return to its normal state *even if the input remains closed.*
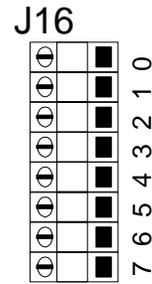
Relay Activation	
Terminal ID	Relay Activated
IN0	RLY0
IN1	RLY1
IN2	RLY2
IN3	RLY3
IN4	RLY4
IN5	RLY5
IN6	RLY6
IN7	RLY7

Logical Input Block

J3

J7 located at the bottom of the board on the right side maybe used to turn off all the relays at once by opening the connection. This connector is normally shipped with a Jumper installed. This could be used with dry contacts opening on an external signal in conjunction with J5 settings (J5 connected is fail safe) to de-energize the relays during emergencies.
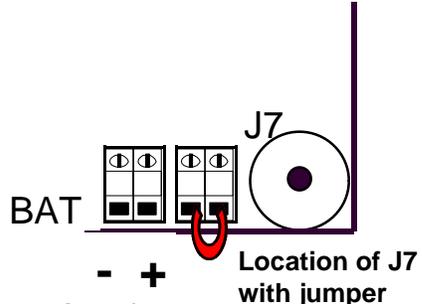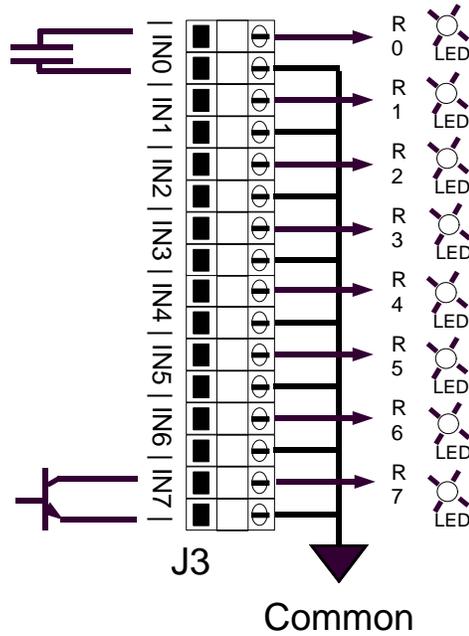
Common

J7

The relay outputs are type Form C (one normally open and one normally closed contact) rated at 3 amps 24 v ac/dc. Each relay has a LED (light emitting diode) next to it indicating when the relay is energized.

BAT

- +

Location of J7 with jumper

Location of J23 with Polarity Marks for backup

The BAT connections allow a backup battery to be connected. (SES Part No. B12V) This allows the unit to continue to operate during short power interruptions.
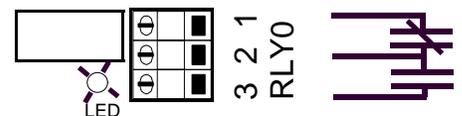
1-2 = N.C.
2-3 = N.O.

Example of relay output

CAT Series Relay Expansion Module

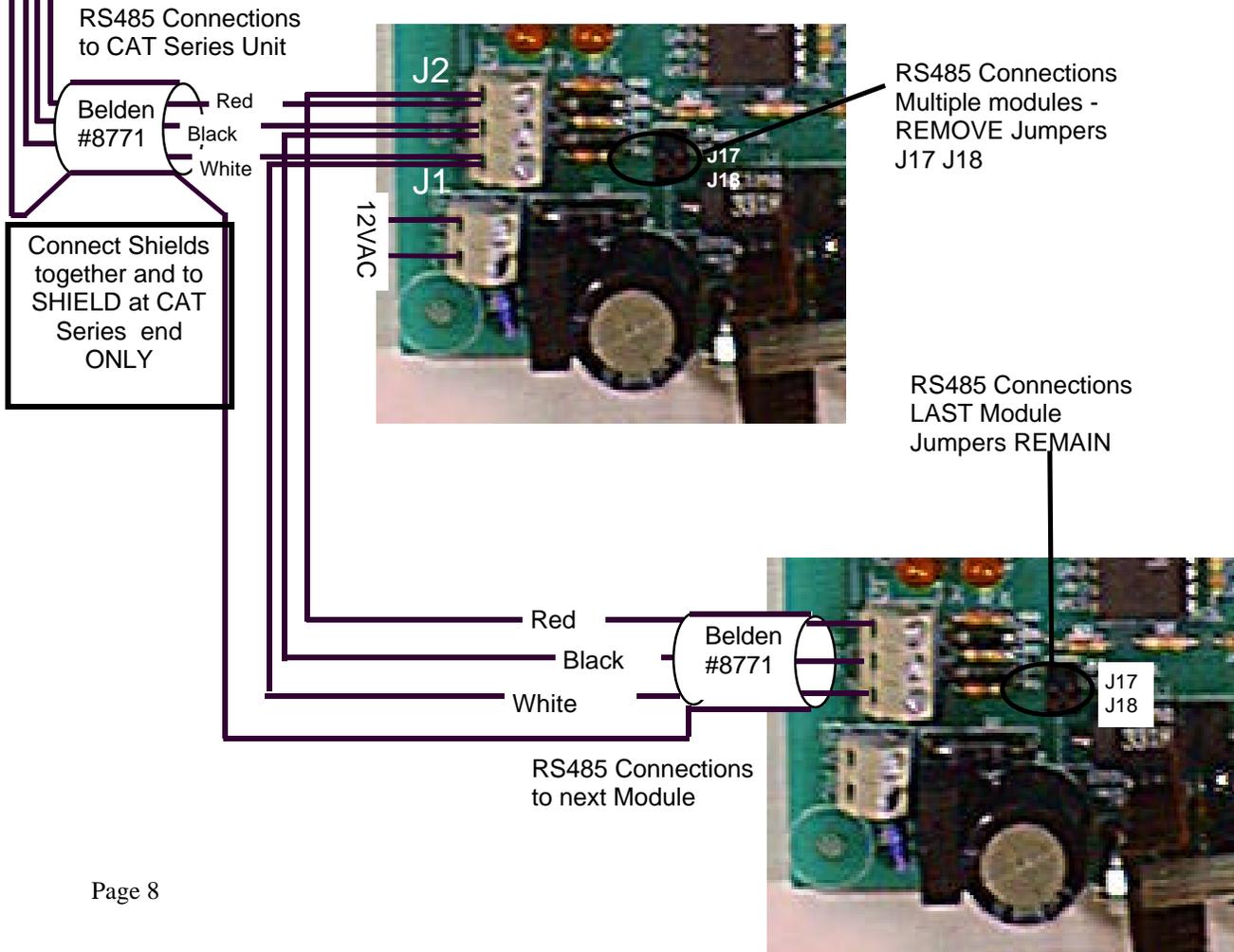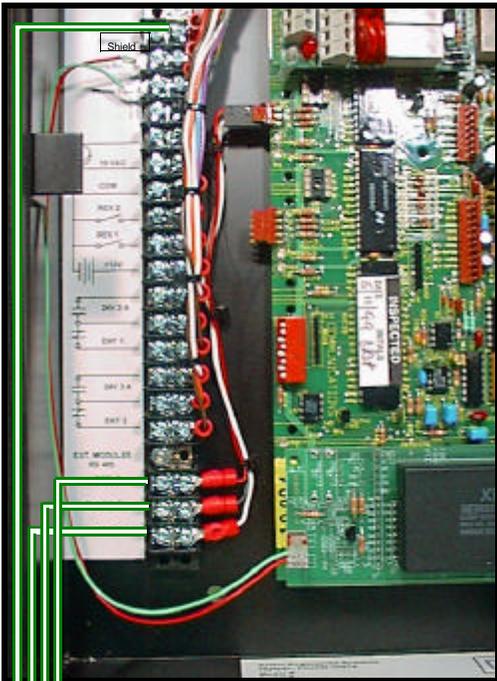Standard Features for Cat Series Relay Expansion Module.

Wiring and interconnections

Power: 18 vac at 40 va. Plug in transformer supplied with unit.
Connect at **J1** with 18 GA wire to a maximum of 100 ft and 14 - 16 GA to 200 ft.

RS485: the Cat Series Relay Expansion Module communicates with **CAT Series only**.
Recommended wire is Belden #8771. Attach from the CAT terminal barrier strip to J2 terminals as shown. Terminal 'A' is Red, Terminal 'C' is Black. Terminal 'B' is White. Note: Termination for the RS485 connections are provided. They must remain only on the LAST module connected. (If you are installing only one module, the Jumpers J17 J18 REMAIN).

Shield

RS485 Connections to CAT Series Unit

Belden #8771
Red
Black
White

Connect Shields together and to SHIELD at CAT Series end ONLY

J2
J1
12VAC

RS485 Connections Multiple modules - REMOVE Jumpers J17 J18

J17
J18

RS485 Connections LAST Module Jumpers REMAIN

Red
Black
White

Belden #8771

J17
J18

RS485 Connections to next Module

ADDRESS SELECT TABLE

0 = 0 - 7	8 = 64 - 71
1 = 8 - 15	9 = 72 - 79
2 = 16 - 23	A = 80 - 87
3 = 24 - 31	B = 88 - 95
4 = 32 - 39	C = 96 - 103
5 = 40 - 47	D = 104 - 111
6 = 48 - 55	E = 112 - 119
7 = 56 - 63	F = 120 - 127

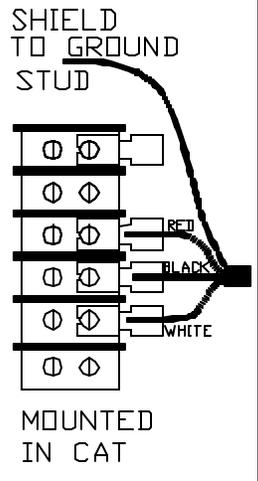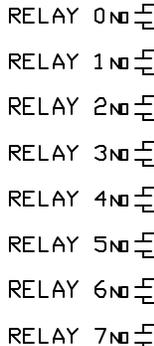CATRLY8 CONNECTIONS

ADDRESS SELECT FOR RELAYS

0-7   8-15   16-24
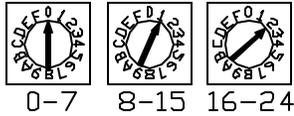
REMOVE FOR 128-255

INSTALL J5 TO INVERT RELAYS

0 = 2 sec	8 = 80 sec
1 = 10 sec	9 = 90 sec
2 = 20 sec	A = 100 sec
3 = 30 sec	B = 110 sec
4 = 40 sec	C = 120 sec
5 = 50 sec	D = 130 sec
6 = 60 sec	E = 140 sec
7 = 70 sec	F = 150 sec

CLOSURE ACTIVATES

RELAY 0 NO
RELAY 1 NO
RELAY 2 NO
RELAY 3 NO
RELAY 4 NO
RELAY 5 NO
RELAY 6 NO
RELAY 7 NO

NORMAL

INVERTED RELAY SELECTION

RELAY 0
RELAY 1
RELAY 2
RELAY 3
RELAY 4
RELAY 5
RELAY 6
RELAY 7

SELECT ENG SYS.
REV A 1/99

SHIELD TO GROUND STUD

RS485

BELDEN 8771

MOUNTED IN CAT

CONNECT SHIELDS TOGETHER AND GROUND IN CAT END ONLY

BELDEN 8771

TX RX

18VAC 20 VA

TO CATDR4 OR CATRLY8

BACKUP BATTERY+ BATTERY-

RS485 LINE TERMINATION REMOVE J17 & J18 ON ALL UNITS EXCEPT THE LAST ONE

MAXIMUM RS485 WIRE LENGTH IS 4000 FEET, TOTAL

CATRLY8_LABEL.DWG R0 6/00 RM
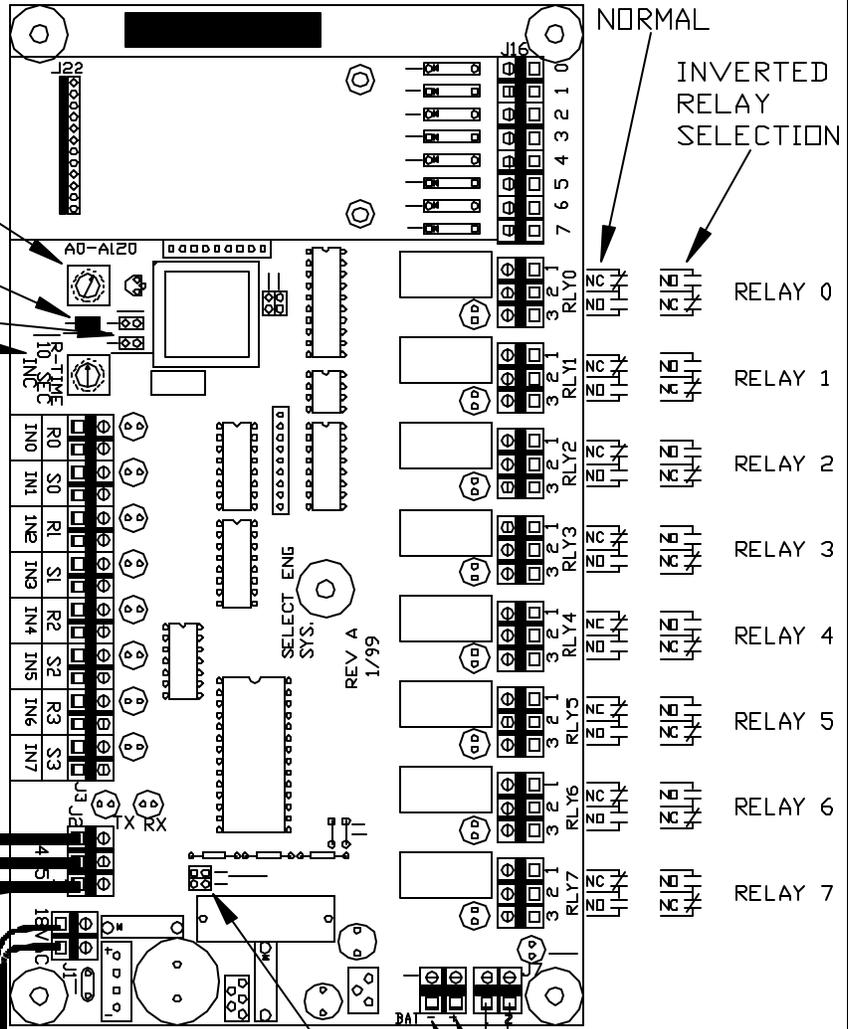
CAT Series Relay Expansion Module

Jumper Function Table	
Relay times follow R-Time SW2	J23 - Off J24 - Off
Relay Times follow stored value	J23 - Off J24 - On
Program Relay Times Module not functional	J23 - On J24 - Off

J23 J24
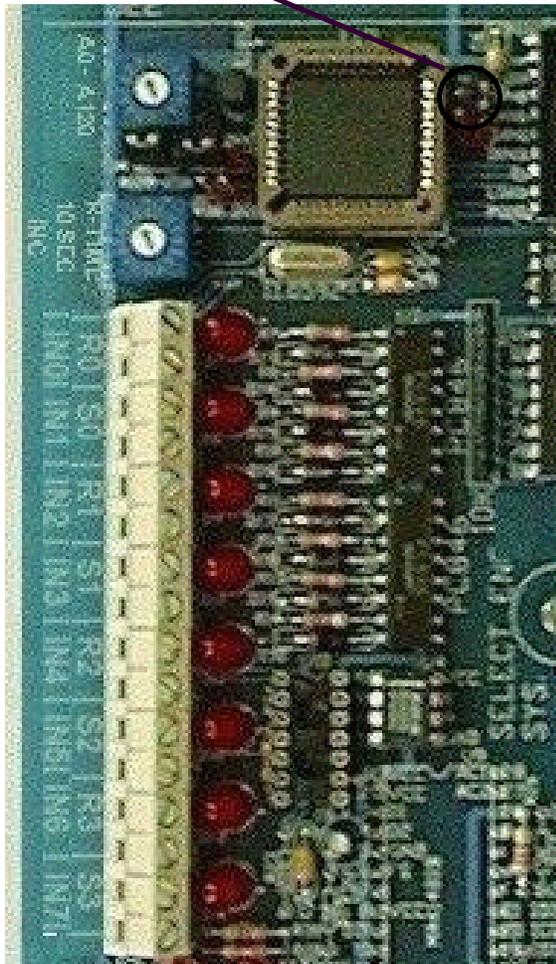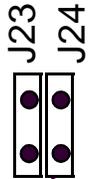
Standard Features for Cat Series Auxiliary Relay Module.

Individual Relay Times

The Cat Series Relay ExpansionModule allows for programming individual relay times.

Programming relay times may be accomplished with Jumpers J23 and J24.

When Jumper J24 is installed the relay activate times become the stored values. The module is shipped with the default values of:

RLY0 = 10 sec.
RLY1 = 20 sec.
RLY2 = 10 sec.
RLY3 = 20 sec.
RLY4 = 10 sec.
RLY5 = 20 sec.
RLY6 = 10 sec.
RLY7 = 20 sec.

In order to change these values, follow these steps:

1. Move the jumper to J23 (On) with no jumper on J24 (Off).
2. Select the time desired on the R-Time switch (SW2).
3. Momentarily place a jumper across the input for the Relay to be set. The input LED should light.
4. Repeat 2 and 3 for all relays to be changed.
5. Move the jumper to J24 (On) with no jumper on J23 (Off).
6. The relays will follow the new program times.

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CAT Series Relay Expansion Module

Timing Selector Switch	
Switch Position	Relay activate Time
0	2 sec
1	10 sec
2	20 sec
3	30 sec
4	40 sec
5	50 sec
6	60 sec
7	70 sec
8	80 sec
9	90 sec
A	100 sec
B	110 sec
C	120 sec
D	130 sec
E	140 sec
F	150 sec

Relay Activation	
Terminal ID	Relay Activated
IN0	R0
IN1	R1
IN2	R2
IN3	R3
IN4	R4
IN5	R5
IN6	R6
IN7	R7
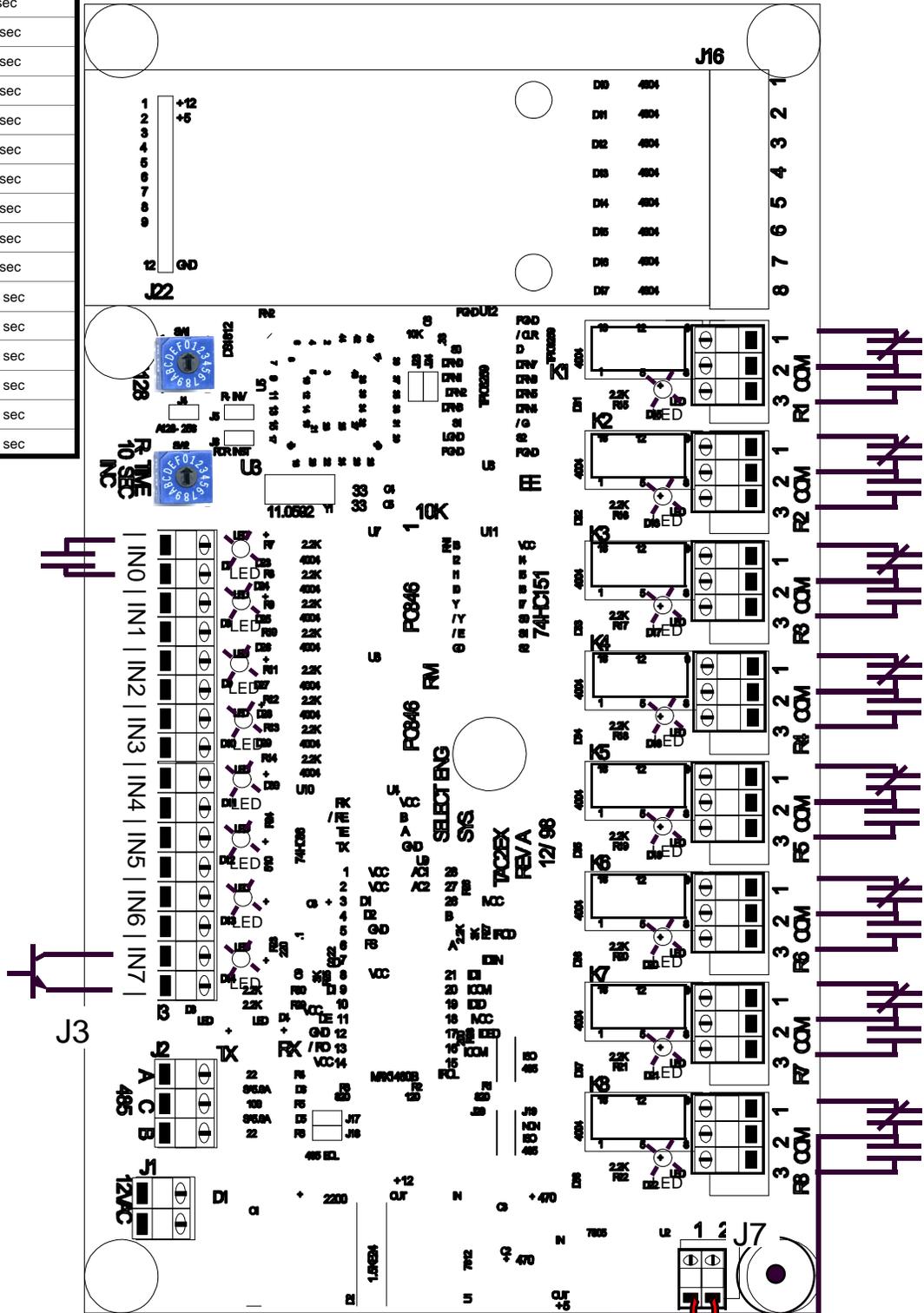
Location of J7 with jumper

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Model CATRLY8 Series Module

Terminal Locations and Wiring Connections

Relay Active Timing Selector Switch	
Sw Pos	Rly activate
0	2 sec
1	10 sec
2	20 sec
3	30 sec
4	40 sec
5	50 sec
6	60 sec
7	70 sec
8	80 sec
9	90 sec
A	100 sec
B	110 sec
C	120 sec
D	130 sec
E	140 sec
F	150 sec

Addressing Selector Switches			
J4	On	J4	Off
Sw Pos	First Relay Code	Sw Pos	First Relay Code
0	000	0	128
1	008	1	136
2	016	2	144
3	024	3	152
4	032	4	160
5	040	5	168
6	048	6	176
7	056	7	184
8	064	8	192
9	072	9	200
A	080	A	208
B	088	B	216
C	096	C	224
D	104	D	232
E	112	E	240
F	120	F	248

Optional Relay Activation	
Terminal ID	Relay Activated
IN0	RLY0
IN1	RLY1
IN2	RLY2
IN3	RLY3
IN4	RLY4
IN5	RLY5
IN6	RLY6
IN7	RLY7

Logical low outputs for each relay. May be used with optional inputs to provide additional control logic.

RLY0
1
2
3

1-2 = N.C.
2-3 = N.O.

Relay outputs rated at 3 amps 24v ac/dc

IN0
IN1
IN2
IN3
IN4
IN5
IN6
IN7

RS485 Termination Remove jumpers J17 J18 EXCEPT the last Module

RS485 Connections to CAT Series

Red
Black
White

Belden #8771

J3

Connect Shields together and to Ground at CAT Series end ONLY

18 Ga. Wire Min

18 VAC POWER

Red
Black
White

Belden #8771

RS485 Connections

RS485 Connections to next Module

Location of J7 with jumper

Backup Battery Connections
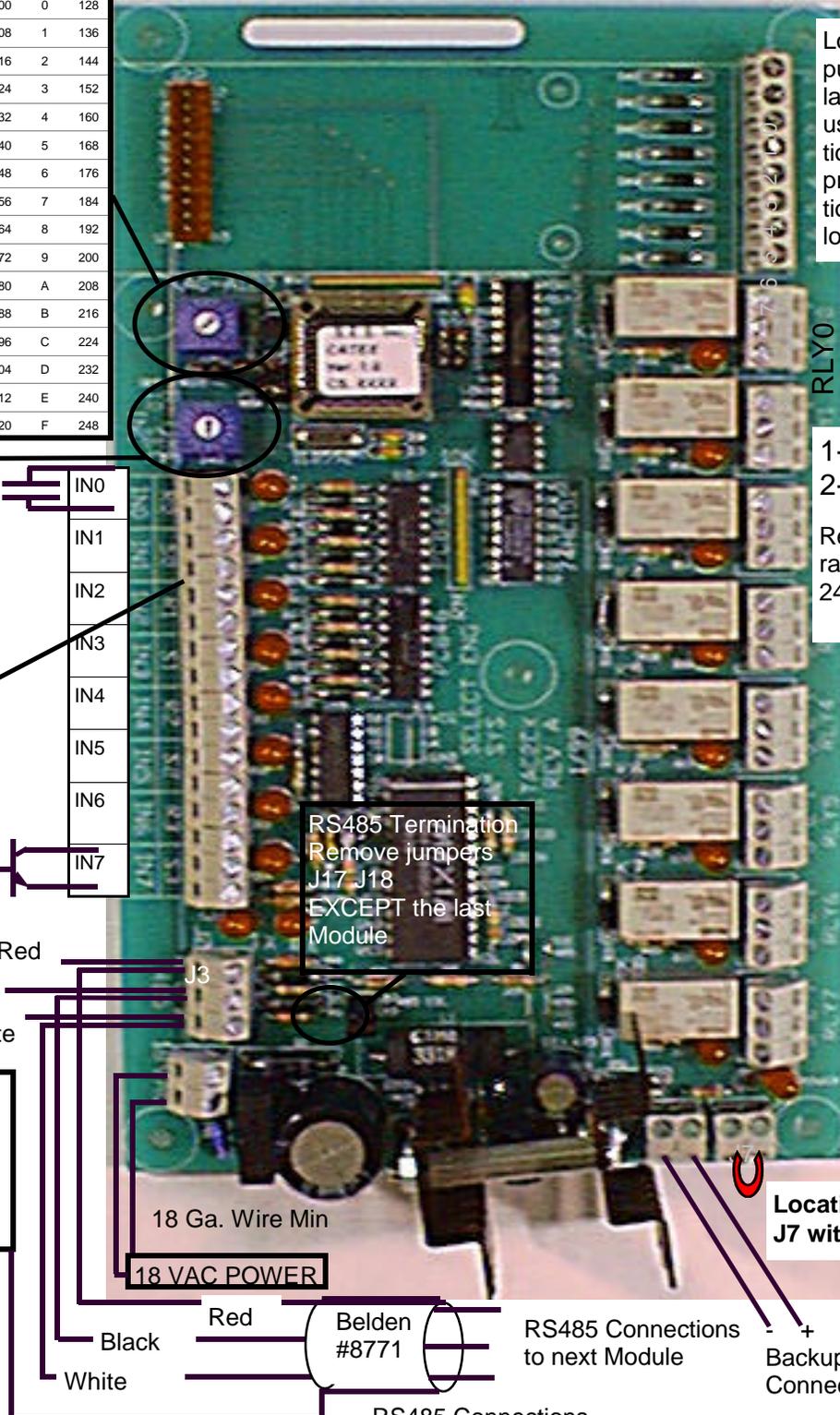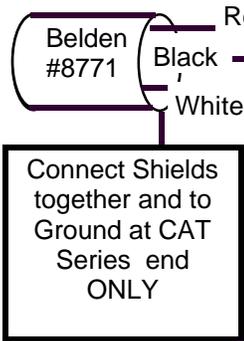
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In FL: 305-823-5410
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www.selectses.com

inner door label

CAT Series Relay Expansion Module

"BETTER TECHNOLOGY MAKES BETTER SYSTEMS"

8/99

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