

TROVE™

TM1

Trove1M1

TM2

Trove2M2

TMV2

TM3 *(not evaluated by UL)*

Trove3M3 *(not evaluated by UL)*

Combine Lenel Access Controllers with Altronix Power and Accessories

Installation Guide

SECURITY SECURITY SIGNALING



LISTED



LISTED



LISTED

Rev. TMERC101817



More than just power.™

Overview:

Altronix Trove1M1, Trove2M2 and Trove3M3 accommodate various combinations of Lenel boards with or without Altronix power supplies and sub-assemblies for access systems.

Specifications:

Trove1M1

Trove1 enclosure with TM1 Altronix/Lenel backplane.

- 16 Gauge grey enclosure with ample knockouts for convenient access.
 - Includes: tamper switch, cam lock, lock nuts and mounting hardware.
- Enclosure Dimensions (H x W x D): 18" x 14.5" x 4.625" (457mm x 368mm x 118mm).

TM1

Altronix/Lenel backplane.

- 16 Gauge backplane.
 - Includes mounting hardware.
- Dimensions (H x W x D): 16.625" x 12.5" x 0.3125" (422.3mm x 317.5mm x 7.9mm).

See *TM1 Sub-Assembly Position Chart on Pg. 3* for the list of compatible sub-assemblies.

Trove2M2

Trove2 enclosure with TM2 Altronix/Lenel backplane.

- 16 Gauge grey enclosure with ample knockouts for convenient access.
 - Includes: tamper switch, cam lock, lock nuts and mounting hardware.
- Enclosure Dimensions (H x W x D): 27.25" x 21.75" x 6.5" (692.2mm x 552.5mm x 165.1mm).

TM2

Altronix/Lenel backplane only.

- 16 Gauge backplane.
 - Includes: lock nuts and mounting hardware.
- Dimensions (H x W x D): 25.375" x 19.375" x 0.3125" (644.5mm x 492.1mm x 7.9mm).

See *TM2 Sub-Assembly Position Charts on Pgs. 5, 7, 8* for the list of compatible sub-assemblies.

TMV2 - Optional Door Backplane

- Fits Altronix Trove2 enclosure.
- Dimensions (H x W x D): 23.75" x 18.125" x 0.3125" (603.3mm x 460.4mm x 7.9mm).
- See *TMV2 Sub-Assembly Position Chart on Pg. 9* for the list of compatible sub-assemblies.

Trove3M3

Trove2 enclosure with TM2 Altronix/Lenel backplane.

- 16 Gauge grey enclosure with ample knockouts for convenient access.
 - Includes: two (2) tamper switches, cam lock, lock nuts and mounting hardware.
- Enclosure Dimensions (H x W x D): 36.12" x 30.125" x 7.06" (917.5mm x 768.1mm x 179.3mm).

TM3

Altronix/Lenel backplane only.

- 16 Gauge backplane.
 - Includes: lock nuts and mounting hardware.
- Dimensions (H x W x D): 34" x 28" x 0.3125" (863.6mm x 711.2mm x 7.9mm).

See *TM3 Sub-Assembly Position Charts on Pgs. 10, 12* for the list of compatible sub-assemblies.

Agency Listings (When Using Altronix and Lenel Sub-Assemblies)*:

- UL 294 - 6th edition. Trove1M and Trove2M Power Controllers: Line Security I, Destructive Attack I, Endurance IV, Stand-by Power II*.
*Stand-by Power Level I if no battery is supplied.
- This Class B digital apparatus complies with Canadian ICES-003.
Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

*Trove3M3 and TM3 are not evaluated by UL.

Environmental:

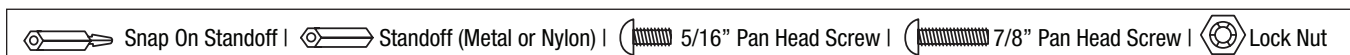
- Humidity and Temperature conditions as tested by UL (85%, +/-5% @ 30°C +/-2°C), ULC (93%, +/-2% @ 32°C +/-2°C).

Battery Backup:

- Trove1 enclosure accommodates up to two (2) 12VDC/7AH batteries.
- Trove2 enclosure accommodates up to two (2) 12VDC/12AH batteries.
- Trove3 enclosure accommodates up to four (4) 12VDC/12AH batteries.

For more detailed information refer to *Trove Installation Guide, Rev. 101817*.

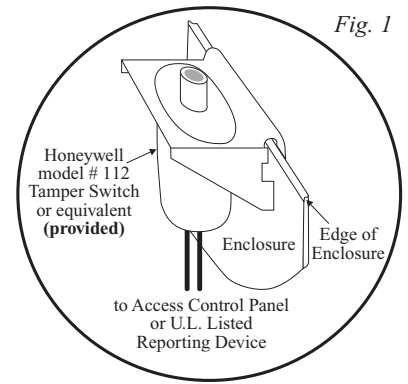
Hardware:



Installation Instructions for Trove1, Trove2, Trove3:

Wiring methods shall be in accordance with the National Electrical Code/NFPA 70/ANSI, and with all local codes and authorities having jurisdiction. Product is intended for indoor use only.

1. Remove backplane from enclosure. Do not discard hardware.
2. Mark and predrill holes in the wall to line up with the top three keyholes in the enclosure. Install two/three upper fasteners and screws in the wall with the screw heads protruding. Place the enclosure's upper keyholes over the two/three upper screws, level and secure. Mark the position of the lower two/three holes. Remove the enclosure. Drill the lower holes and install the two/three fasteners. Place the enclosure's upper keyholes over the two/three upper screws. Install the two/three lower screws and make sure to tighten all screws.
3. Mount included UL Listed tamper switch (Honeywell Model 112 or equivalent) in desired location, opposite hinge. Slide the tamper switch bracket onto the edge of the enclosure approximately 2" from the right side (*Fig. 1, pg. 2*). Connect tamper switch wiring to the Access Control Panel input or the appropriate UL Listed reporting device. To activate alarm signal open the door of the enclosure.



TM1 Sub-Assembly Position Chart for the Following Models:

Lenel Sub-Assemblies*			
Sub-Assembly	Pem Mounting	Current Draw	Refer to
LNL-2220	Ⓐ	12-24VDC 500mA max.	LNL-2220 Quick Reference (QR50L-1002E — revision 2.022)
LNL-4420		12-24VDC 500mA max.	LNL-4420 Quick Reference (QR50L-1024E-LNL-4420— revision 1.001)
LNL-1100		12-24VDC 350mA max. (12VDC/300mA nom., 24VDC/220mA nom.)	LNL-1100 Series 2 Quick Reference (QR50L-1010E — revision 1.019)
LNL-1200		12-24VDC 1100mA max. (12VDC/850mA nom., 24VDC/450mA nom.)	LNL-2220 Series 2 Quick Reference (QR50L-1009E — revision 1.019)
LNL-1320		12-24VDC 550mA max. (12VDC/450mA nom., 24VDC/270mA nom.)	LNL-1320 Series 2 Quick Reference (QR50L-1007E — revision 1.020)
LNL-2210	Ⓓ	12VDC 900mA max.	LNL-2210 Series 2 Quick Reference (QR50L-1003E — revision 1.021)
LNL-1300e		12VDC 1100mA max.	LNL-1300e Quick Reference (QR50L-1023E — revision 1.000)
LNL-1300	Ⓔ	12-24VDC 150mA max. (12VDC/110mA nom., 24VDC/60mA nom.)	LNL-1300 Series 2 Quick Reference (QR50L-1008E — revision 1.020)

Altronix Sub-Assemblies			
Sub-Assembly	Pem Mounting	Current Draw	Refer to
ACM4(CB)	Ⓒ	12VDC @ 0.4A max. or 24VDC @ 0.2A max.	ACM4/ACM4CB Installation Instructions Rev. 051311
MOM5		12-24VDC @ 55mA max.	MOM5 Installation Instructions Rev. 042811
PD4UL(CB)		N/A	PD4UL Installation Instructions IIPD4UL Rev. 051311 PD4ULCB Installation Instructions IIPD4ULCB Rev. 051311
PD8UL(CB)		N/A	PD8UL Installation Instructions IIPD8UL Rev. 051311 PD8ULCB Installation Instructions IIPD8ULCB Rev. 051311
PD16W(CB)		N/A	PD16W/PD16WCB Installation Instructions IIPD16W Rev. 051311
PDS8(CB)		N/A	PDS8/PDS8CB Installation Instructions Rev. 070116
VR6		24VDC @ 1.75A or 3.5A (Output: 5VDC or 12VDC @ 6A)	VR6 Installation Instructions Rev. 050517
LINQ2**	Ⓕ	12-24VDC @ 100mA max.	LINQ2 Installation Instructions Rev. 060514

Altronix Power Supplies/Sub-Assemblies				
Sub-Assembly	Pem Mounting	Input Rating	Output Rating	Refer to
AL400ULXB2	Ⓑ	115VAC, 60Hz, 3.5A	12VDC @ 4A or 24VDC @ 3A	ULXB Installation Instructions Rev. ULXB-10182016
AL600ULXB		115VAC, 60Hz, 3.5A	12VDC or 24VDC @ 6A	ULXB Installation Instructions Rev. ULXB-10182016
AL1012ULXB		115VAC, 60Hz, 2.6A	12VDC @ 10A	ULXB Installation Instructions Rev. ULXB-10182016
AL1024ULXB2		115VAC, 60Hz, 4.2A	24VDC @ 10A	ULXB Installation Instructions Rev. ULXB-10182016
eFlow4NB**		120VAC, 60Hz, 3.5A	12VDC or 24VDC @ 4A	eFlow Installation Instructions Rev. EFNB-10182016
eFlow6NB**		120VAC, 60Hz, 3.5A	12VDC or 24VDC @ 6A	eFlow Installation Instructions Rev. EFNB-10182016
eFlow102NB**		120VAC, 60Hz, 3.5A	12VDC @ 10A	eFlow Installation Instructions Rev. EFNB-10182016
eFlow104NB**		120VAC, 60Hz, 4.5A	24VDC @ 10A	eFlow Installation Instructions Rev. EFNB-10182016

* For detailed information, refer to the Lenel Hardware Installation Guide, DOC-600, revision 30.034.

** LINQ2 can be installed when utilizing eFlow power supply/charger boards.

Installation Instructions for Sub-Assemblies to TM1:

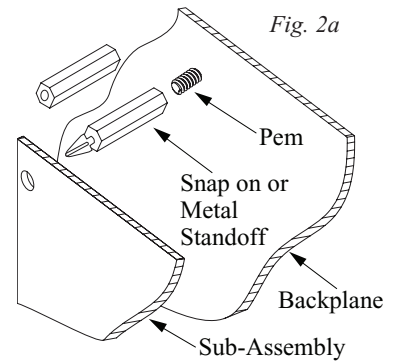
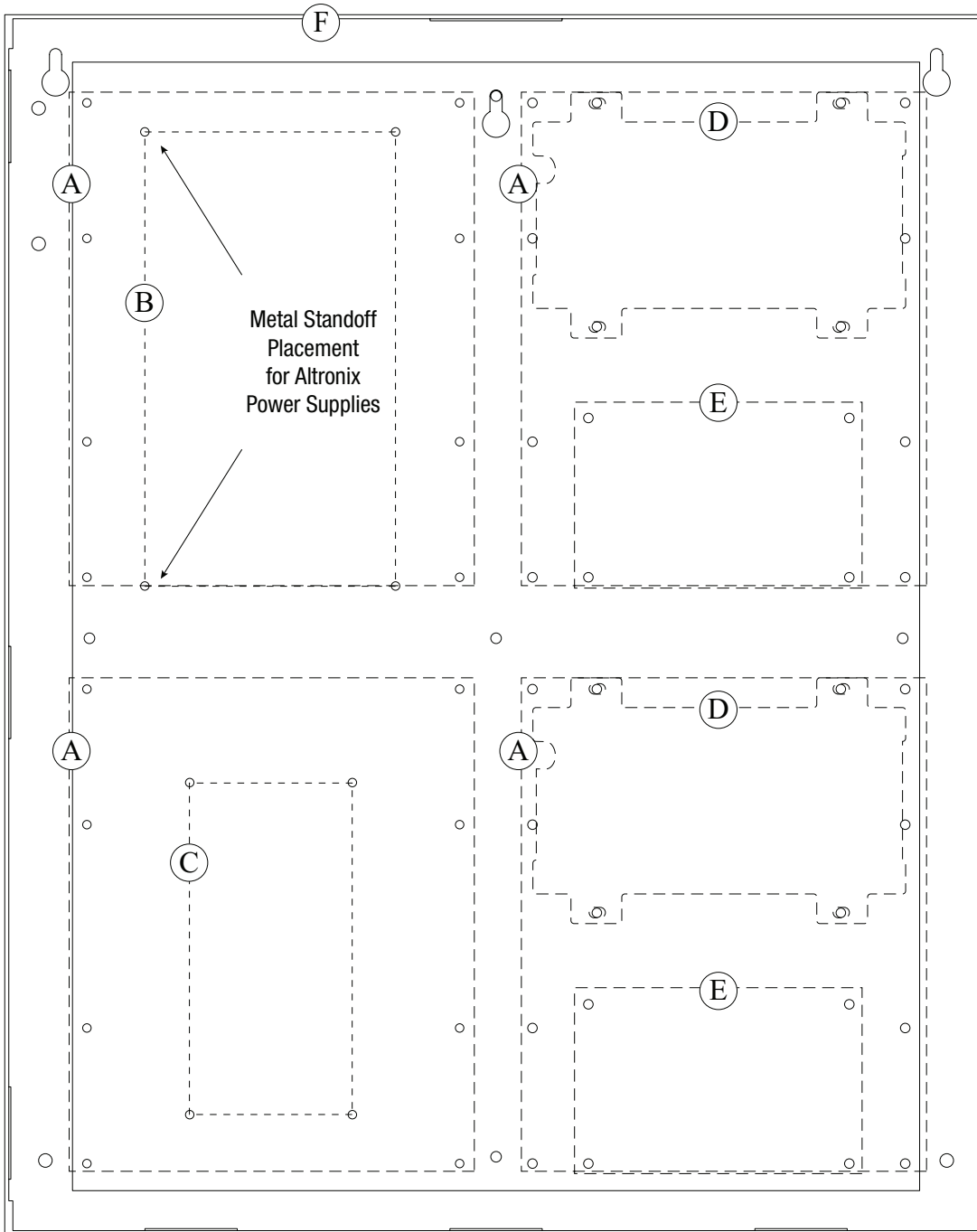
Altronix Power Supplies/Chargers and/or Sub-Assemblies:

1. Fasten standoffs (provided) to pems that match the hole pattern for Altronix Power Supply/Chargers or Altronix Sub-Assembly boards (positions (B) and (C), *Fig. 2, pg. 4*). Use snap on nylon standoffs for the upper two mounting holes in the board. Use metal standoffs for the bottom mounting holes to provide sufficient grounding for the board.
2. Affix boards to standoffs (*Fig. 2, pg. 4*) by pressing down the upper mounting holes onto nylon standoffs. Use provided mounting screws to affix the lower mounting holes. Make sure that boards are locked onto standoffs.
3. For detailed information about installing and connecting Altronix sub-assemblies refer to the individual Installation Instructions listed in the *Sub-Assembly Position Chart, pg. 2* and *Trove Installation Guide, Rev. 101817*.

Lenel Sub-Assemblies:

4. Fasten standoffs onto metal pems configuration (A), (D) or (E) of enclosure depending on the sub-assembly module (*Fig. 2, pg. 4*).
5. Position sub-assembly module over corresponding standoffs and secure module into enclosure with four (4) pan head screws supplied (*Fig. 2, pg. 4*).
6. Fasten backplane to Trove1 enclosure utilizing lock nuts (provided).

Fig. 2



TM2 Sub-Assembly Position Chart for the Following Models:

Altronix Power Supplies/Chargers				
Altronix	Pem Mounting	Input Rating	Output Rating	Refer to
AL400ULXB2	Ⓐ	115VAC, 60Hz, 3.5A	12VDC @ 4A or 24VDC @ 3A	ULXB Installation Instructions Rev. ULXB-10182016
AL600ULXB		115VAC, 60Hz, 3.5A	12VDC or 24VDC @ 6A	ULXB Installation Instructions Rev. ULXB-10182016
AL1012ULXB		115VAC, 60Hz, 2.6A	12VDC @ 10A	ULXB Installation Instructions Rev. ULXB-10182016
AL1024ULXB2		115VAC, 60Hz, 4.2A	24VDC @ 10A	ULXB Installation Instructions Rev. ULXB-10182016
eFlow4NB*		120VAC, 60Hz, 3.5A	12VDC or 24VDC @ 4A	eFlow Installation Instructions Rev. EFNB-10182016
eFlow6NB*		120VAC, 60Hz, 3.5A	12VDC or 24VDC @ 6A	eFlow Installation Instructions Rev. EFNB-10182016
eFlow102NB*		120VAC, 60Hz, 3.5A	12VDC @ 10A	eFlow Installation Instructions Rev. EFNB-10182016
eFlow104NB*		120VAC, 60Hz, 4.5A	24VDC @ 10A	eFlow Installation Instructions Rev. EFNB-10182016

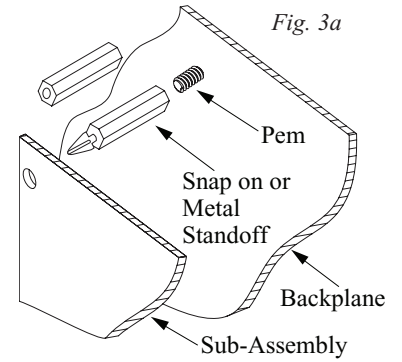
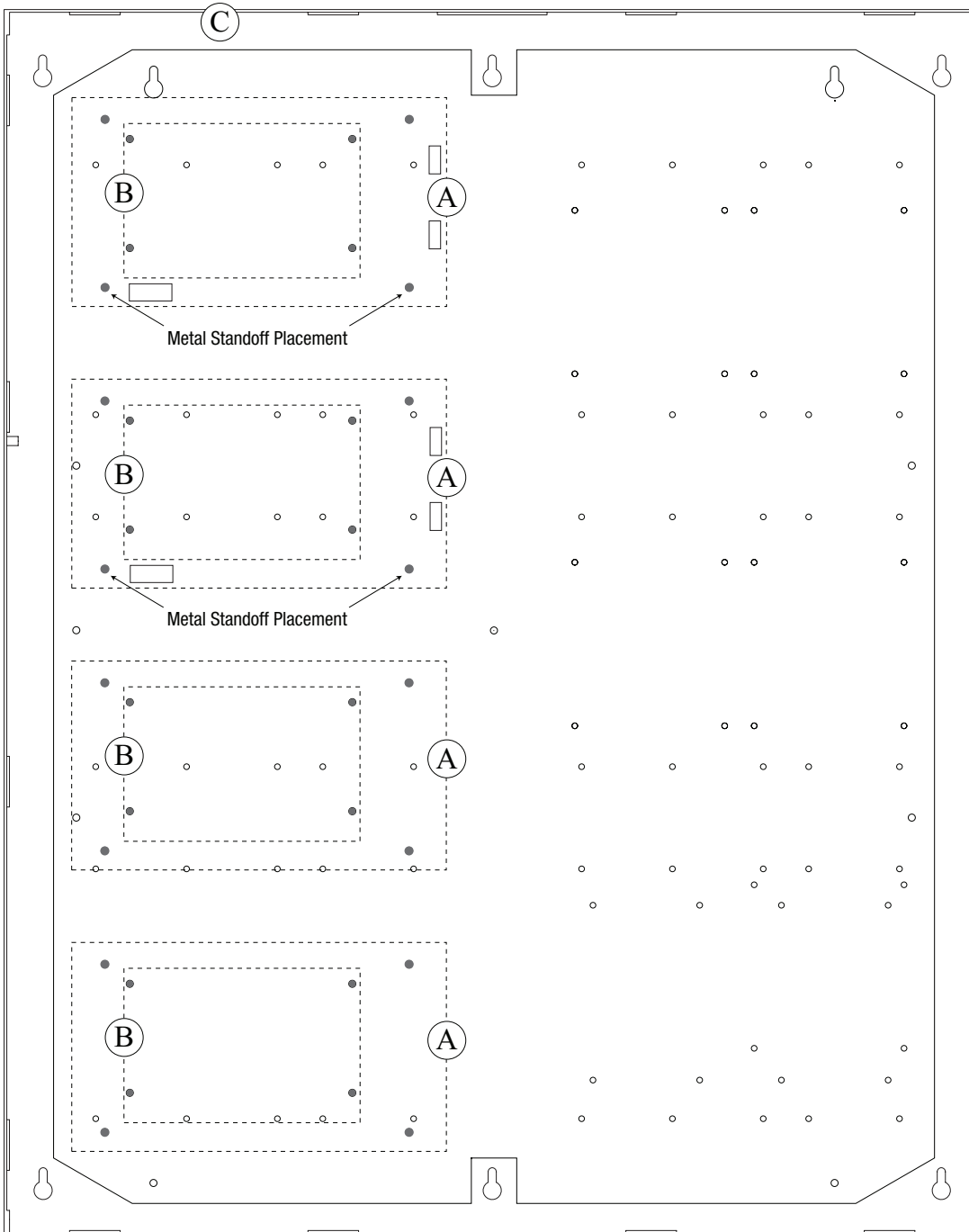
Altronix Sub-Assemblies			
Altronix	Pem Mounting	Current Draw	Refer to
ACM4(CB)	Ⓑ	12VDC @ 0.4A max. or 24VDC @ 0.2A max.	ACM4/ACM4CB Installation Instructions Rev. 051311
ACM8(CB)		12VDC @ 0.5A max. or 24VDC @ 0.3A max.	ACM8/ACM8CB Installation Instructions Rev. 042811
MOM5		12-24VDC 55mA max.	MOM5 Installation Instructions Rev. 042811
PD4UL(CB)		N/A	PD4UL Installation Instructions IIPD4UL Rev. 051311 PD4ULCB Installation Instructions IIPD4ULCB Rev. 051311
PD8UL(CB)		N/A	PD8UL Installation Instructions IIPD8UL Rev. 051311 PD8ULCB Installation Instructions IIPD8ULCB Rev. 051311
PD16W(CB)		N/A	PD16W/PD16WCB Installation Instructions IIPD16W Rev. 051311
PDS8(CB)		N/A	PDS8/PDS8CB Installation Instructions Rev. 070116
VR6		24VDC @ 1.75A or 3.5A (Output: 5VDC or 12VDC @ 6A)	VR6 Installation Instructions Rev. 050517
LINQ2*	Ⓒ	12-24VDC 100mA max.	LINQ2 Installation Instructions Rev. 060514

* LINQ2 can be installed when utilizing eFlow power supply/charger boards.

Installation Instructions for Altronix Power Supplies and/or Sub-Assemblies to TM2:

1. Fasten standoffs (provided) to pems that match the hole pattern for Altronix Power Supply/Chargers or Altronix Sub-Assembly boards (Fig. 3, pg. 6).
Use snap on nylon standoffs for the upper two mounting holes in the board.
Use metal standoffs for the bottom mounting holes to provide sufficient grounding for the board.
2. Affix boards to standoffs (Fig. 3, pg. 6) by pressing down the upper mounting holes onto nylon standoffs.
Use provided mounting screws to affix the lower mounting holes. Make sure that boards are locked onto standoffs.
3. For detailed information about installing and connecting Altronix sub-assemblies refer to the individual Installation Instructions listed in the *Sub-Assembly Position Chart, pg. 2* and *Trove Installation Guide, Rev. 101817*.
4. Fasten backplane to Trove2 enclosure utilizing lock nuts (provided).

Fig. 3



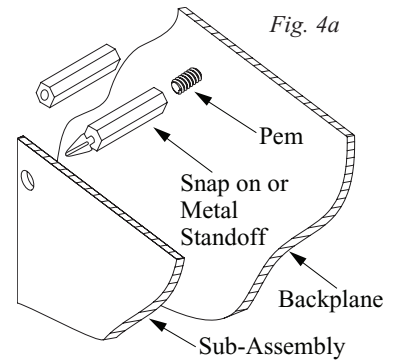
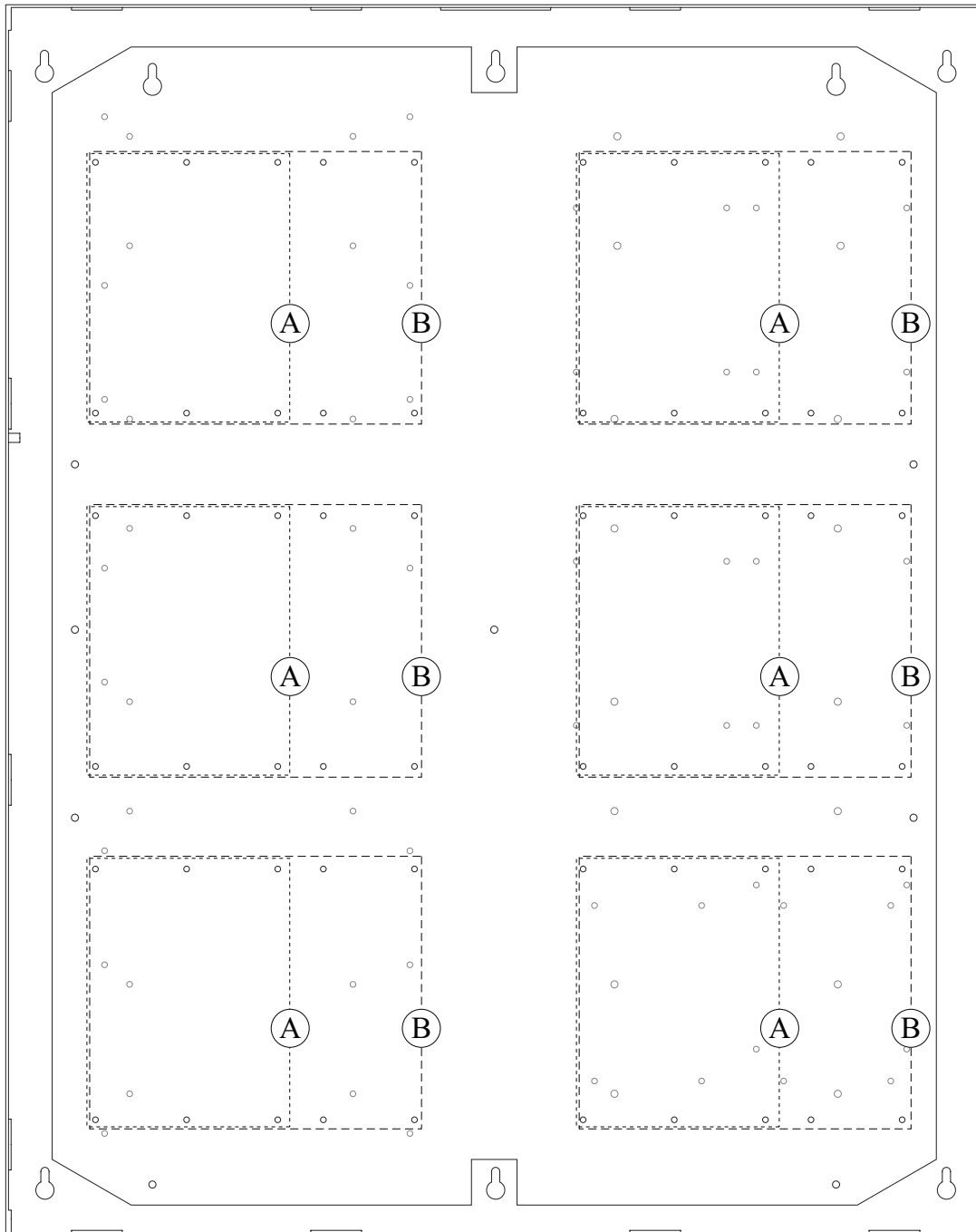
Installation Instructions for Lenel Access Controllers to TM2:

1. Fasten snap on standoffs onto metal pems configuration (A) (B) of backplane depending on the access controller (Fig. 4, pg. 7).
2. Position access controller module over corresponding standoffs and depress onto snap on standoffs (Fig. 4a, pg. 7).
3. Mount backplane to enclosure with hardware.

Access Controller Position Chart for the Following Models:

Lenel	Pem Mounting	Current Draw
LNL-3300	Ⓐ	12-24VDC 300mA max.
LNL-8000		12VDC 250mA max.
LNL-2220	Ⓑ	12-24VDC 500mA max.
LNL-4420		12-24VDC 500mA max.
LNL-1100		12-24VDC 350mA max. (12VDC @ 300mA nom., 24VDC @ 220mA nom.)
LNL-1200		12-24VDC 1100mA max. (12VDC @ 850mA nom., 24VDC @ 450mA nom.)
LNL-1320		12-24VDC 550mA max. (12VDC @ 450mA nom., 24VDC @ 270mA nom.)

Fig. 4



Installation Instructions for Lenel Access Controllers to TM2:

1. Fasten snap on standoffs onto metal pems configuration (A) (B) of backplane depending on the access controller (Fig. 5, pg. 8).
2. Position access controller module over corresponding standoffs and depress onto snap on standoffs (Fig. 5a, pg. 8).
3. Mount backplane to enclosure with hardware.

Access Controller Position Chart for the Following Models:

Lenel	Pem Mounting	Current Draw
LNL-2210	Ⓐ	12VDC 900mA max.
LNL-1300e		12VDC 1100mA max.
LNL-1300	Ⓑ	12-24VDC 150mA max. (12VDC @ 110mA nom., 24VDC @ 60mA nom.)

Fig. 5

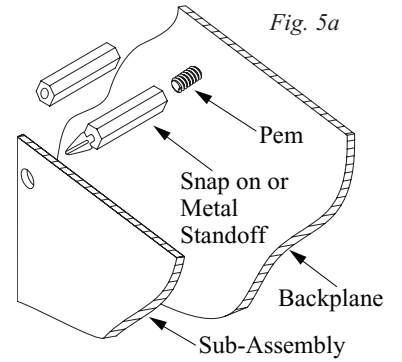
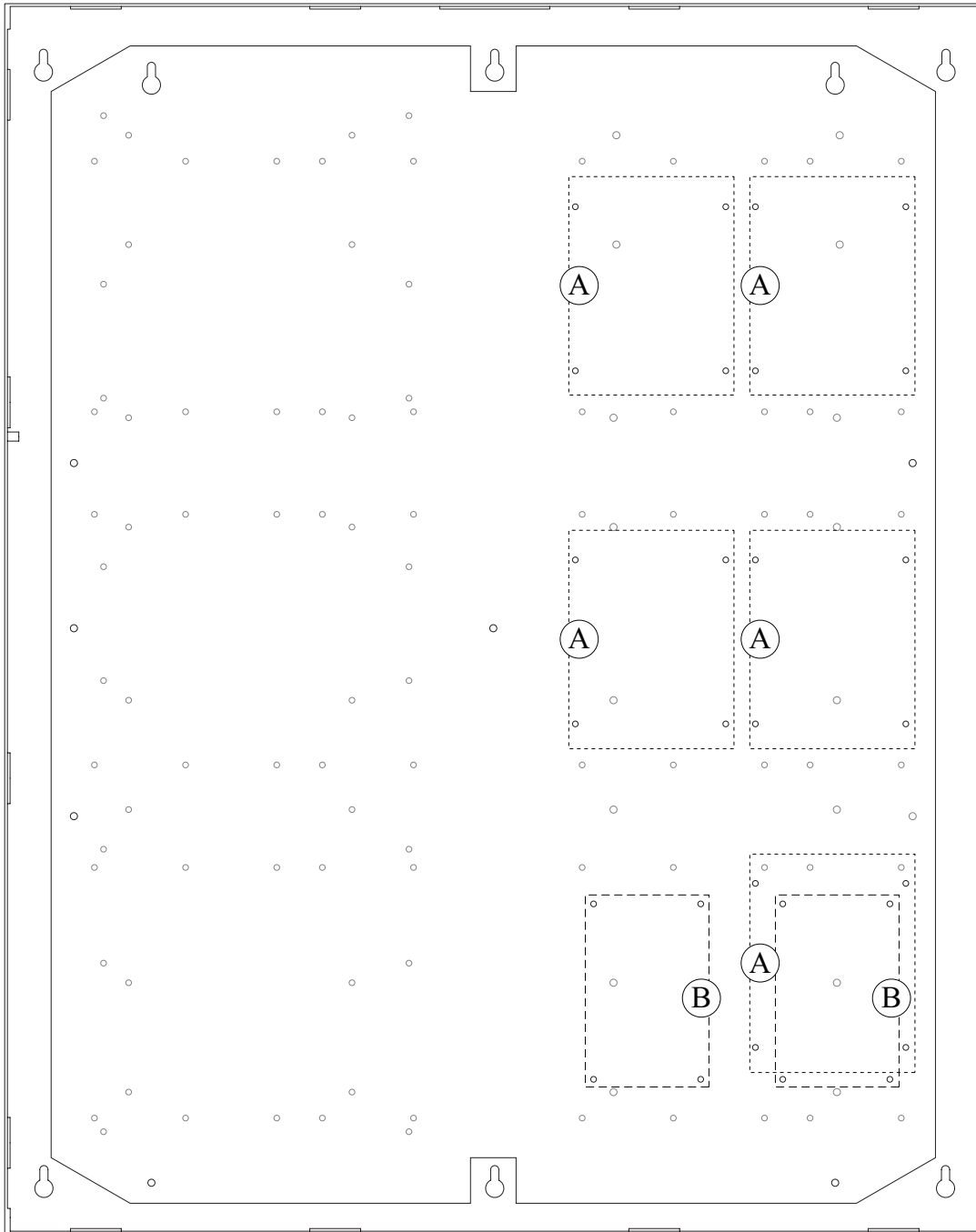


Fig. 5a

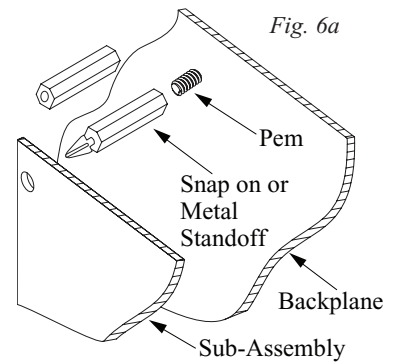
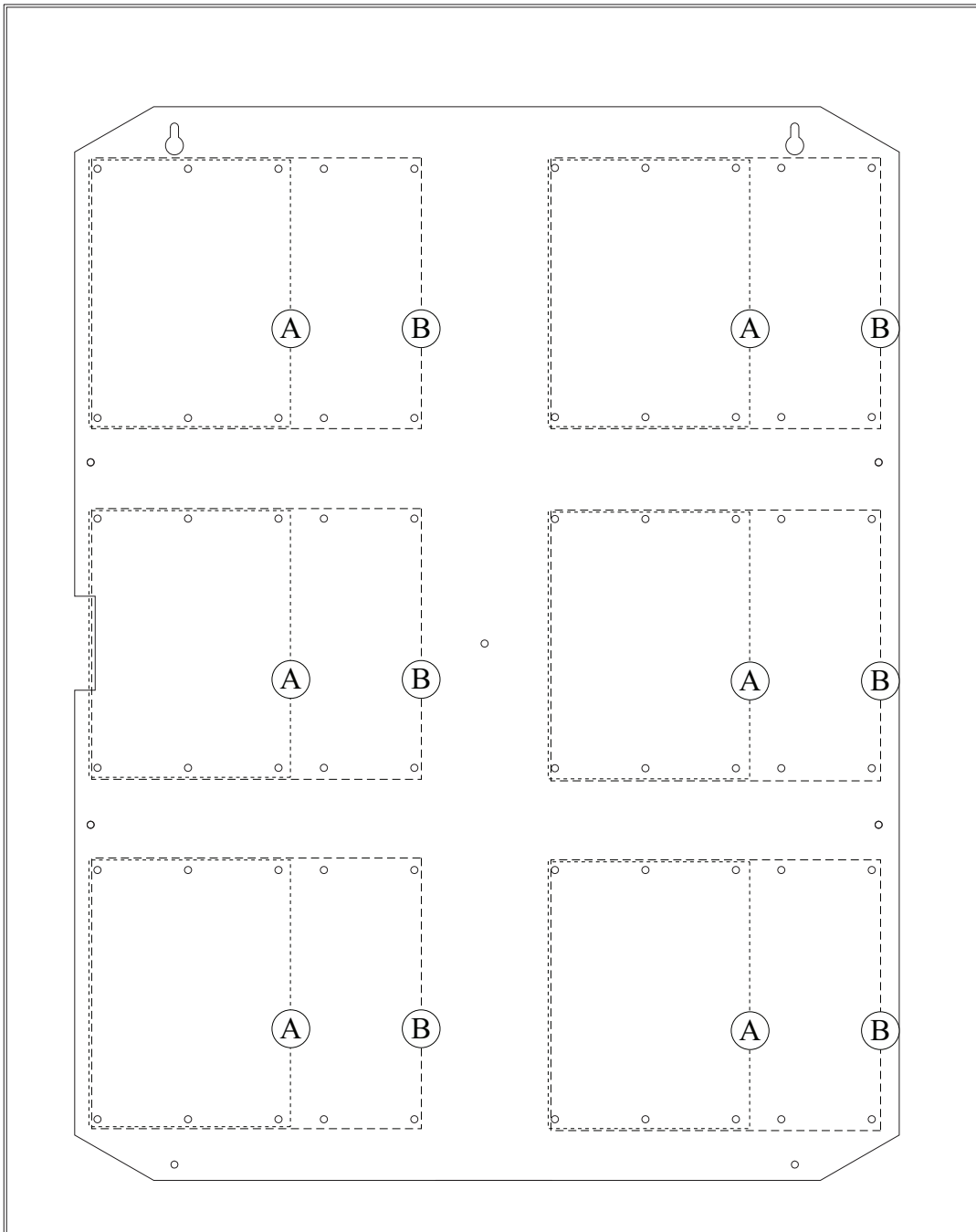
Installation Instructions for Lenel Access Controllers to TMV2 (Door Backplane):

1. Fasten snap on standoffs onto metal pems configuration (A) (B) of backplane depending on the access controller (Fig. 6, pg. 9).
2. Position access controller module over corresponding standoffs and depress onto snap on standoffs (Fig. 6a, pg. 9).
3. Mount backplane to enclosure with hardware.

Access Controller Position Chart for the Following Models:

Lenel	Pem Mounting	Current Draw
LNL-3300	Ⓐ	12-24VDC 300mA max.
LNL-8000		12VDC 250mA max.
LNL-2220	Ⓑ	12-24VDC 500mA max.
LNL-4420		12-24VDC 500mA max.
LNL-1100		12-24VDC 350mA max. (12VDC @ 300mA nom., 24VDC @ 220mA nom.)
LNL-1200		12-24VDC 1100mA max. (12VDC @ 850mA nom., 24VDC @ 450mA nom.)
LNL-1320		12-24VDC 550mA max. (12VDC @ 450mA nom., 24VDC @ 270mA nom.)

Fig. 6



TM3 Sub-Assembly Position Chart for the Following Models:

Altronix Power Supplies/Chargers				
Altronix	Pem Mounting	Input Rating	Output Rating	Refer to
AL400ULXB2	Ⓐ	115VAC, 60Hz, 3.5A	12VDC @ 4A or 24VDC @ 3A	ULXB Installation Instructions Rev. ULXB-10182016
AL600ULXB		115VAC, 60Hz, 3.5A	12VDC or 24VDC @ 6A	ULXB Installation Instructions Rev. ULXB-10182016
AL1012ULXB		115VAC, 60Hz, 2.6A	12VDC @ 10A	ULXB Installation Instructions Rev. ULXB-10182016
AL1024ULXB2		115VAC, 60Hz, 4.2A	24VDC @ 10A	ULXB Installation Instructions Rev. ULXB-10182016
eFlow4NB*		120VAC, 60Hz, 3.5A	12VDC or 24VDC @ 4A	eFlow Installation Instructions Rev. EFNB-10182016
eFlow6NB*		120VAC, 60Hz, 3.5A	12VDC or 24VDC @ 6A	eFlow Installation Instructions Rev. EFNB-10182016
eFlow102NB*		120VAC, 60Hz, 3.5A	12VDC @ 10A	eFlow Installation Instructions Rev. EFNB-10182016
eFlow104NB*		120VAC, 60Hz, 4.5A	24VDC @ 10A	eFlow Installation Instructions Rev. EFNB-10182016

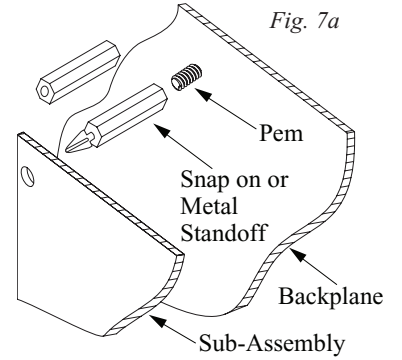
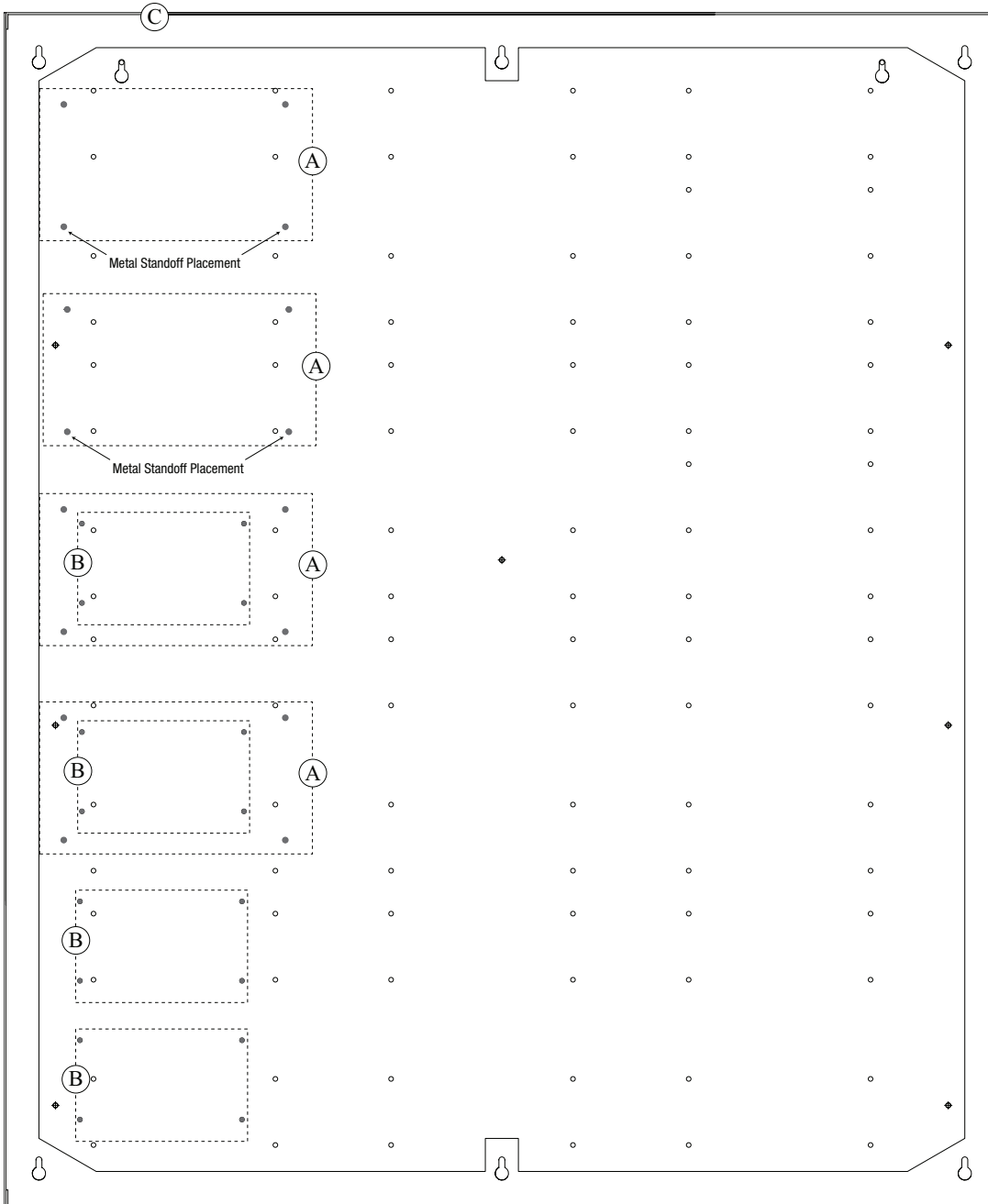
Altronix Sub-Assemblies			
Altronix	Pem Mounting	Current Draw	Refer to
ACM4(CB)	Ⓑ	12VDC @ 0.4A max. or 24VDC @ 0.2A max.	ACM4/ACM4CB Installation Instructions Rev. 051311
ACM8(CB)		12VDC @ 0.5A max. or 24VDC @ 0.3A max.	ACM8/ACM8CB Installation Instructions Rev. 042811
MOM5		12-24VDC 55mA max.	MOM5 Installation Instructions Rev. 042811
PD4UL(CB)		N/A	PD4UL Installation Instructions IIPD4UL Rev. 051311 PD4ULCB Installation Instructions IIPD4ULCB Rev. 051311
PD8UL(CB)		N/A	PD8UL Installation Instructions IIPD8UL Rev. 051311 PD8ULCB Installation Instructions IIPD8ULCB Rev. 051311
PD16W(CB)		N/A	PD16W/PD16WCB Installation Instructions IIPD16W Rev. 051311
PDS8(CB)		N/A	PDS8/PDS8CB Installation Instructions Rev. 070116
VR6		24VDC @ 1.75A or 3.5A (Output: 5VDC or 12VDC @ 6A)	VR6 Installation Instructions Rev. 050517
LINQ2*	Ⓒ	12-24VDC 100mA max.	LINQ2 Installation Instructions Rev. 060514

* LINQ2 can be installed when utilizing eFlow power supply/charger boards.

Installation Instructions for Altronix Power Supplies and/or Sub-Assemblies to TM3:

1. Fasten standoffs (provided) to pems that match the hole pattern for Altronix Power Supply/Chargers or Altronix Sub-Assembly boards (Fig. 7, pg. 11).
Use snap on nylon standoffs for the upper two mounting holes in the board.
Use metal standoffs for the bottom mounting holes to provide sufficient grounding for the board.
2. Affix boards to standoffs (Fig. 7, pg. 11) by pressing down the upper mounting holes onto nylon standoffs.
Use provided mounting screws to affix the lower mounting holes. Make sure that boards are locked onto standoffs.
3. For detailed information about installing and connecting Altronix sub-assemblies refer to the individual Installation Instructions listed in the *Sub-Assembly Position Chart, pg. 2* and *Trove Installation Guide, Rev. 101817*.
4. Fasten backplane to Trove3 enclosure utilizing lock nuts (provided).

Fig. 3



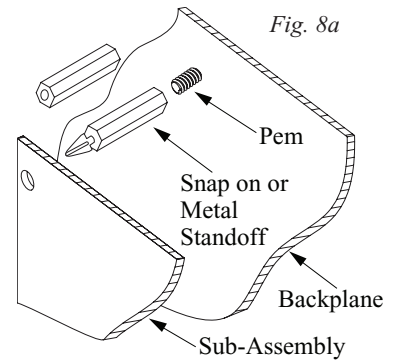
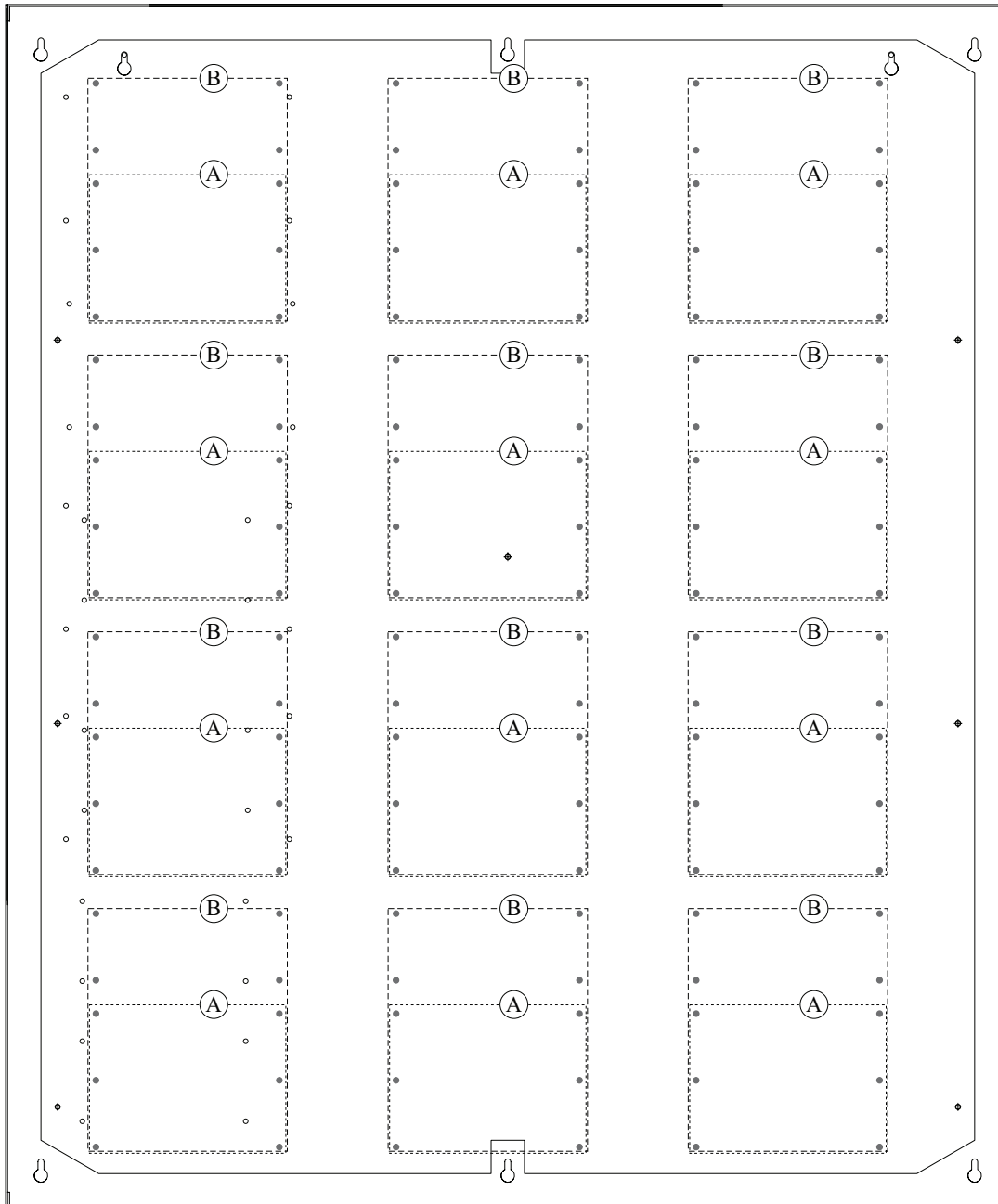
Installation Instructions for Lenel Access Controllers to TM3:

1. Fasten snap on standoffs onto metal pems configuration (A) (B) of backplane depending on the access controller (Fig. 8, pg. 12).
2. Position access controller module over corresponding standoffs and depress onto snap on standoffs (Fig. 8a, pg. 12).
3. Mount backplane to enclosure with hardware.

Access Controller Position Chart for the Following Models:

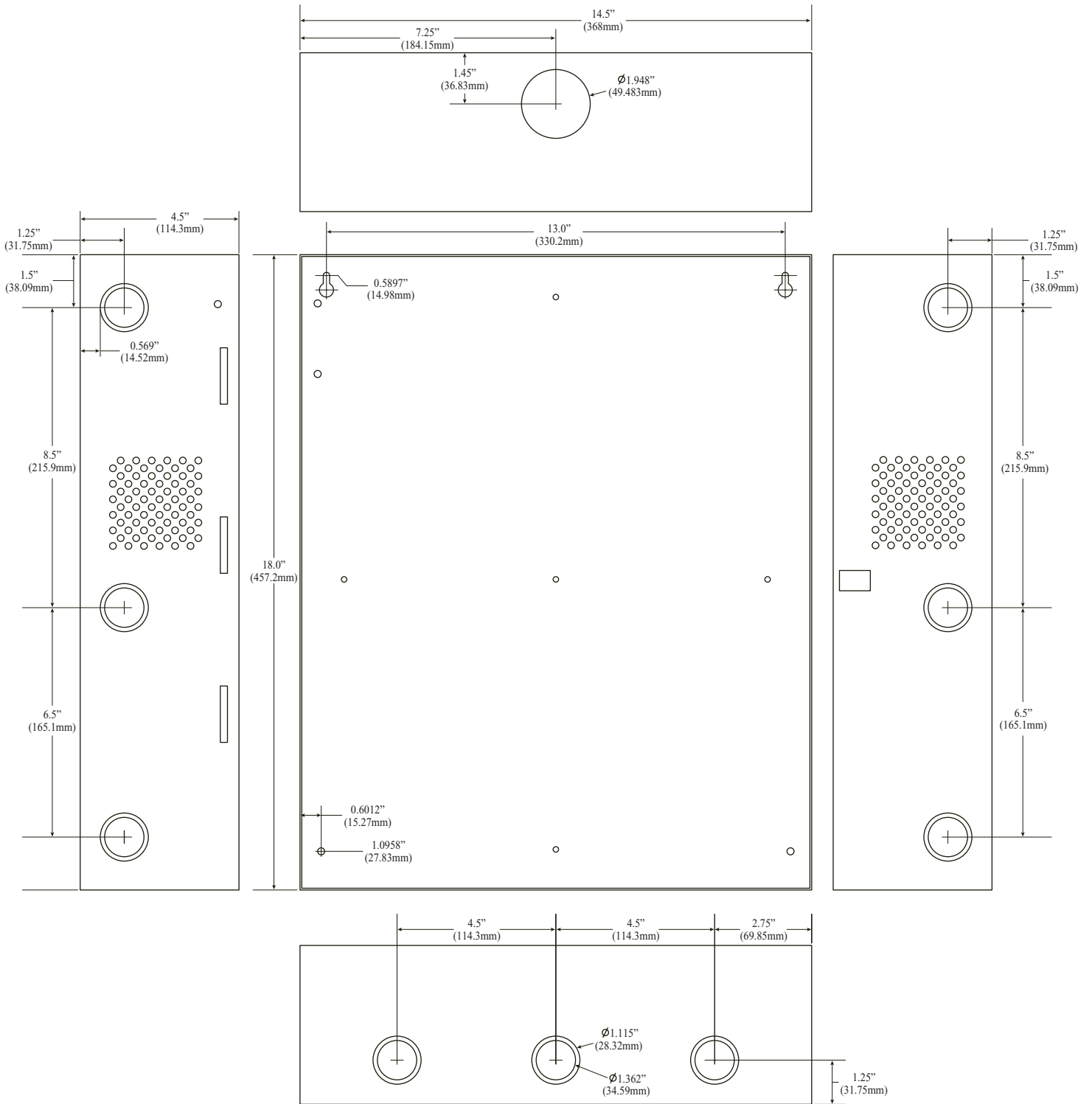
Lenel	Pem Mounting	Current Draw
LNL-3300	Ⓐ	12-24VDC 300mA max.
LNL-8000		12VDC 250mA max.
LNL-2220	Ⓑ	12-24VDC 500mA max.
LNL-4420		12-24VDC 500mA max.
LNL-1100		12-24VDC 350mA max. (12VDC @ 300mA nom., 24VDC @ 220mA nom.)
LNL-1200		12-24VDC 1100mA max. (12VDC @ 850mA nom., 24VDC @ 450mA nom.)
LNL-1320		12-24VDC 550mA max. (12VDC @ 450mA nom., 24VDC @ 270mA nom.)

Fig. 4

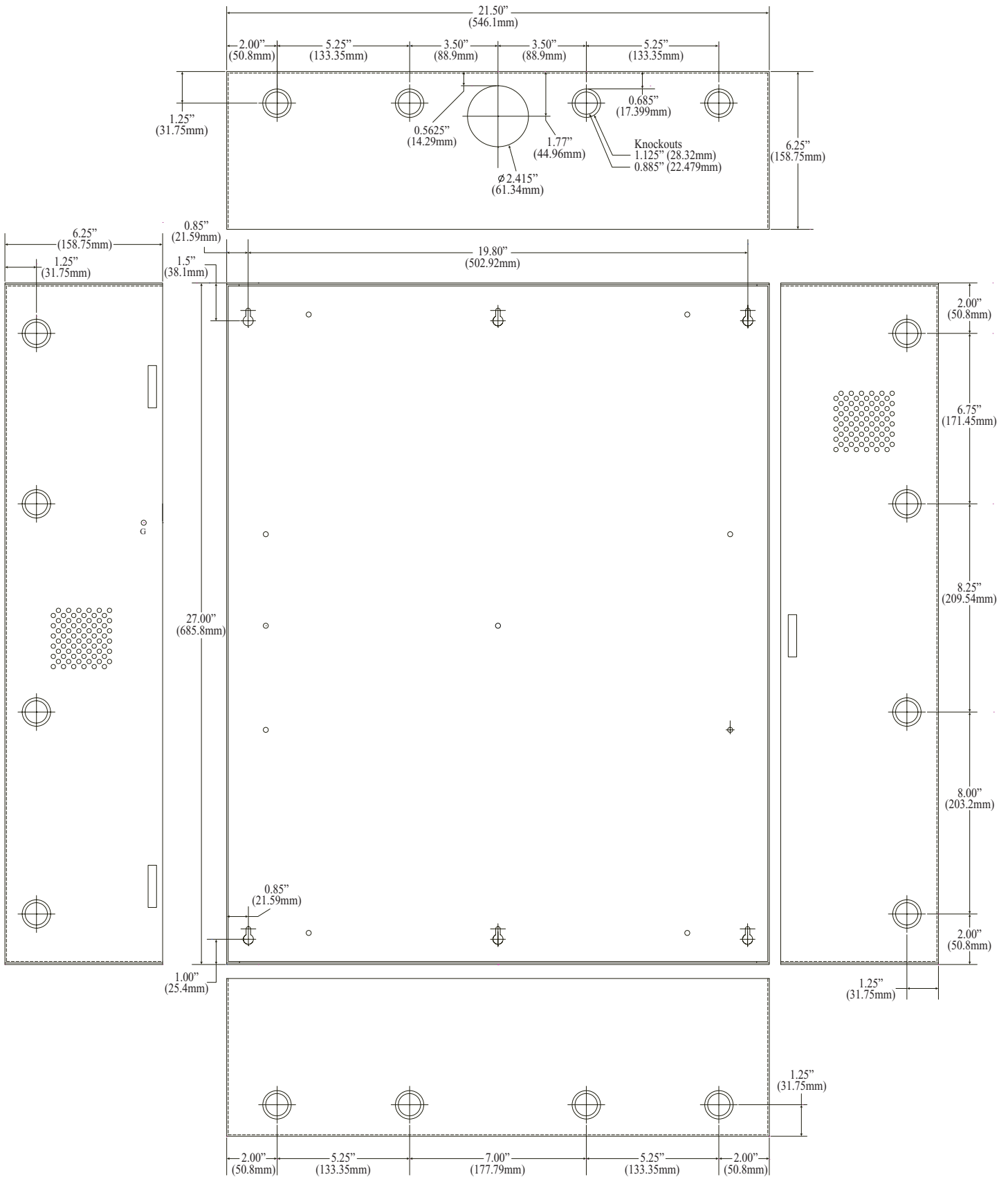


Notes:

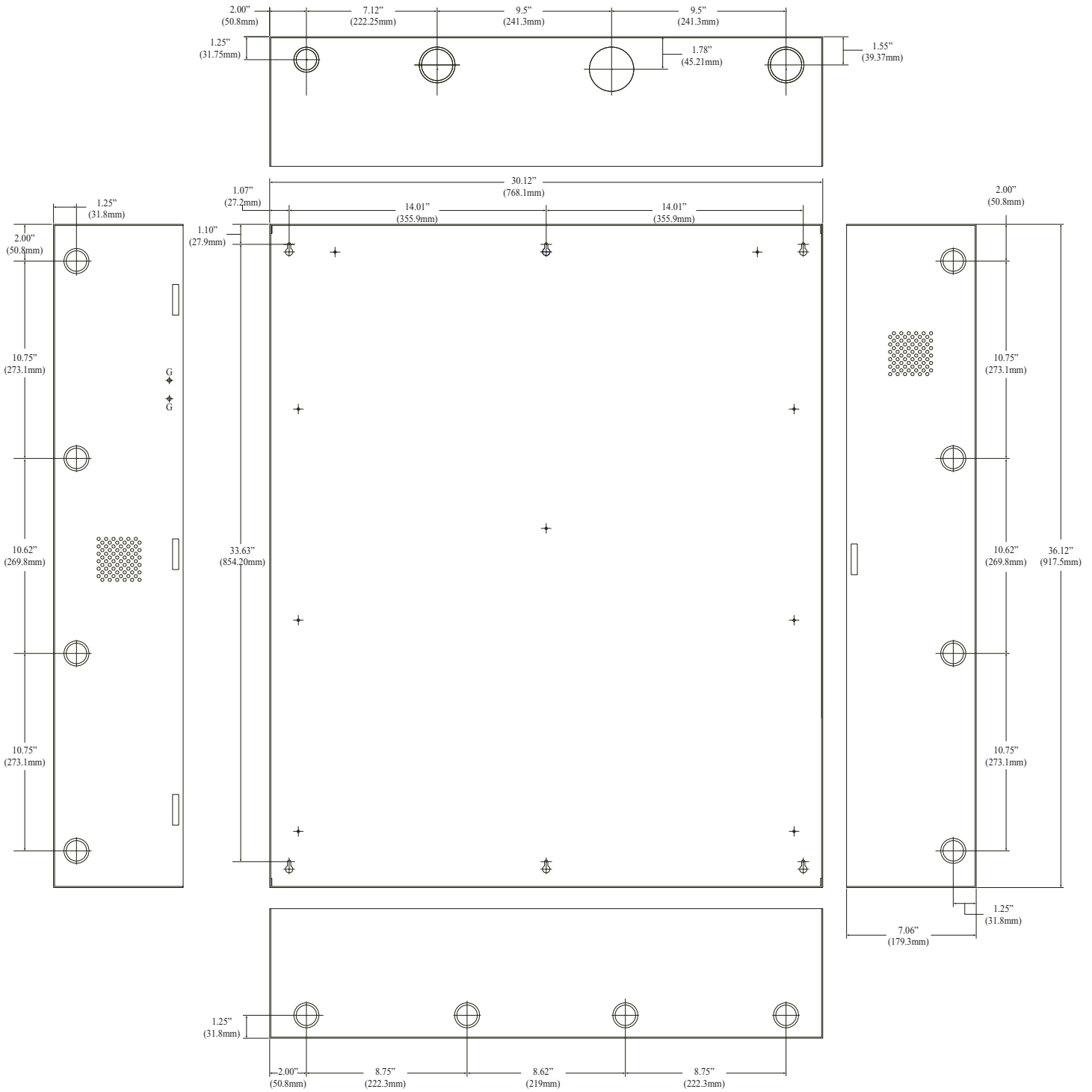
Trove1 Enclosure Dimensions (H x W x D approximate):
 18" x 14.5" x 4.625" (457mm x 368mm x 118mm)



Trove2 Enclosure Dimensions (H x W x D approximate):
 27.25" x 21.75" x 6.5" (692.2mm x 552.5mm x 165.1mm)



Trove3 Enclosure Dimensions (H x W x D approximate):
 36.12" x 30.125" x 7.06" (917.5mm x 768.1mm x 179.3mm)



Altronix is not responsible for any typographical errors.

140 58th Street, Brooklyn, New York 11220 USA | phone: 718-567-8181 | fax: 718-567-9056
 web site: www.altronix.com | e-mail: info@altronix.com | Made in U.S.A.

II Trove / Lenel

D09R

