

HELPFUL INSTRUCTIONS

GET ADDITIONAL INFORMATION AND YOUTUBE TUTORIAL AT:

<https://github.com/MakeltHackin/L33TBadge>

IT IS HIGHLY RECOMMENDED THAT YOU WATCH THE YOUTUBE TUTORIAL COMPLETELY BEFORE YOU START THE PROJECT. THEN WATCH IT AGAIN DURING YOUR ASSEMBLY OF THE PROJECT.

TIPS & TRICKS:

BEND LEGS OF COMPONENTS OR USE TAPE TO HELP HOLD THEM IN PLACE WHILE SOLDERING. SOLDERING IRON TEMPERATURE SHOULD BE AROUND 650-700 DEGREES FAHRENHEIT. HOLD SOLDER IN ONE HAND AND THE SOLDERING IRON IN YOUR OTHER HAND. USE THIN SOLDER (0.6mm IS RECOMMENDED). 63/37 (LEADED) SOLDER IS RECOMMENDED FOR BEGINNERS, HOWEVER YOU MAY CHOOSE TO USE LEAD-FREE SOLDER IF DESIRED. LEAD-FREE SOLDER REQUIRES HIGHER TEMPERATURE. CLEAN SOLDERING TIP OFTEN WITH WET SPONGE OR BRASS WOOL. PRACTICE MAKES PERFECT!

OPERATION:

INSERT AA BATTERY WITH “+” SIDE FACING RIGHT (TOWARDS RED WIRE). TURN ON POWER BY SLIDING SWITCH RIGHT. THE THREE 3mm LEDs WILL START CHANGING COLOR. THE 16 SEGMENT LED DISPLAYS WILL DISPLAY THE CHARACTERS OF YOUR CHOICE.

TROUBLESHOOTING:

MOST COMMON ISSUES OCCUR WHEN THERE IS EITHER TOO MUCH OR TOO LITTLE SOLDER ON A JOINT. IF YOU EXPERIENCE ISSUES, DOUBLE CHECK ALL JOINTS AND MAKE SURE THERE IS AN EVEN AMOUNT OF SOLDER AND THAT NO TWO JOINTS ARE CONNECTED. REFER TO THE FRONT AND BACK IMAGES ON GITHUB FOR COMPARISON.

TOOLS AND MATERIALS (LINKS AVAILABLE ON GITHUB)

REQUIRED:

- * SOLDERING IRON (YOU GET WHAT YOU PAY FOR. CHEAP SOLDERING IRONS CAN HAVE A HARD TIME HEATING UP. BUT THIS IS A GREAT INVESTMENT IF YOU PLAN TO CONTINUE. A DECENT SOLDERING IRON WILL COST AROUND \$80-\$100)**
- * SOLDER (63/37 LEADED IS RECOMMENDED)**
- * FLUSH CUTTERS (THESE ARE GREAT!)**

OPTIONAL:

- * ELECTRICAL TAPE**
- * MULTIMETER**
- * FUME EXTRACTOR**
- * BRASS SPONGE**
- * SILICONE SOLDERING MAT**
- * DESOLDERING WICK**
- * DESOLDERING PUMP**
- * TIP TINNER**
- * FLUX**

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RECOMMENDED ORDER OF SOLDERING:

RESISTORS:

100 Ohm RESISTOR GOES INTO R2 AND IS MARKED BROWN / BLACK / BROWN
68 Ohm RESISTOR GOES INTO R1 AND IS MARKED BLUE / GREY / BLACK

CAPACITOR:

SHORT LEG GOES THROUGH SQUARE HOLE,
LONGER LEG THROUGH ROUND HOLE.

NOTE: THE WHITE SIDE (WITH MINUS “-” SYMBOL SHOULD ALSO
BE ON THE SAME SIDE AS SHORTER LEG TO GO THROUGH THE SQUARE HOLE

3mm LEDs:

SHORT LEG GOES THROUGH SQUARE HOLE,
LONGER LEG THROUGH ROUND HOLE

SWITCH:

CAN BE INSERTED EITHER WAY.

BOOST CONVERTER:

YOU’LL NEED TO SOLDER THE 1x3 HEADER ON FIRST, THEN SOLDER THE BOOST MODULE
ONTO THE CIRCUIT BOARD. MATCH THE SQUARE PADS FOR ORIENTATION.

16 SEGMENT DISPLAYS:

MAKE SURE TO INSERT AS SEEN IN REFERENCE PICTURES AND VIDEO. THESE DISPLAYS
ILLUMINATE BASED ON WHICH PADS YOU SOLDER ON THE BACK OF THE CIRCUIT BOARD.
THERE ARE 16 SEPARATE PADS (AND ONE EXTRA FOR THE DECIMAL POINT). EACH PAD
CORRESPONDS TO ONE SEGMENT ON THE DISPLAY. REFER TO FURTHER ILLUSTRATIONS
AND TRUTH TABLE FOR WHICH PAD CORRESPONDS TO WHICH SEGMENT, AND HOW TO
SOLDER FOR A GIVEN LETTER, NUMBER, CHARACTER. SEE VIDEO FOR DETAILS

BATTERY HOLDER:

SOLDER BLACK WIRE TO SQUARE PAD AND RED WIRE TO ROUND PAD.

MINI-LANYARD:

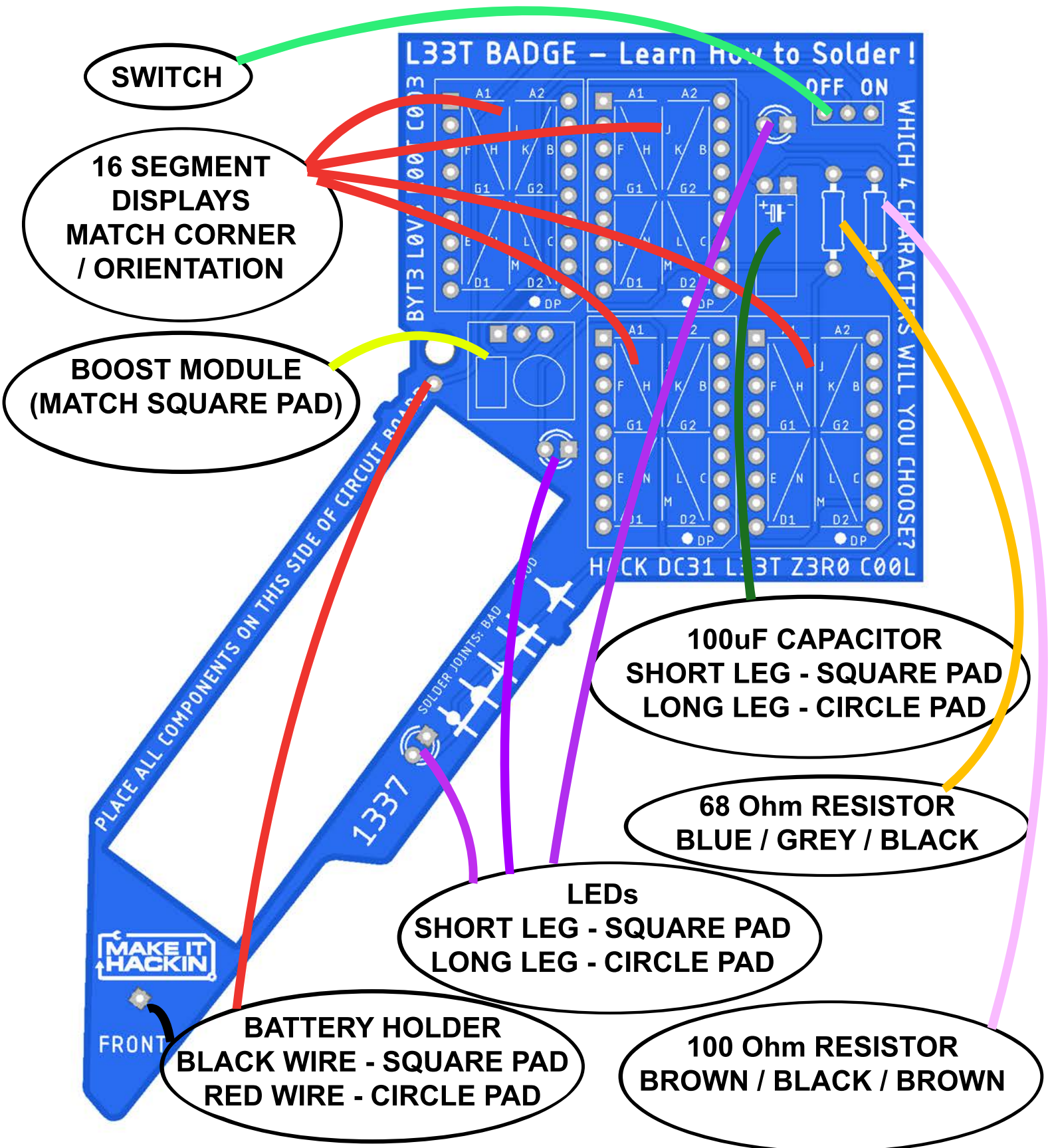
INSERT THROUGH DESIGNATED HOLE AND ATTACH TO YOUR MAIN DC31 BADGE

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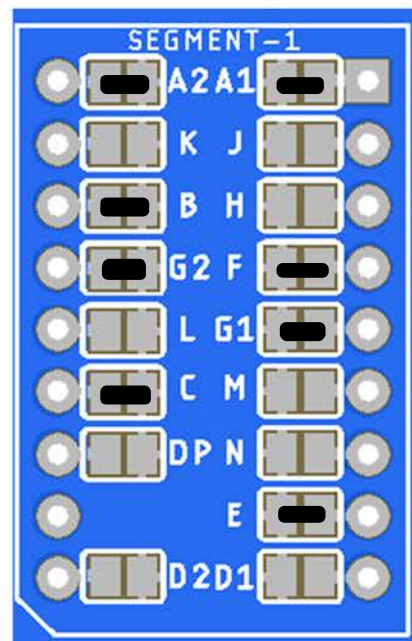
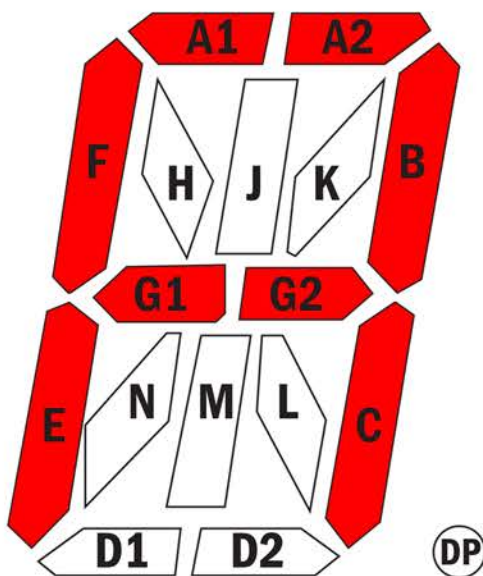
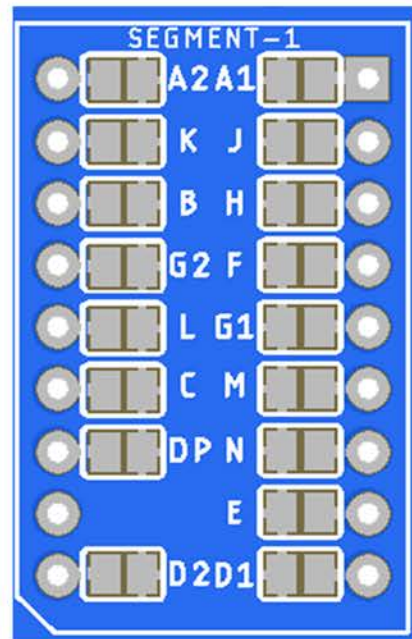
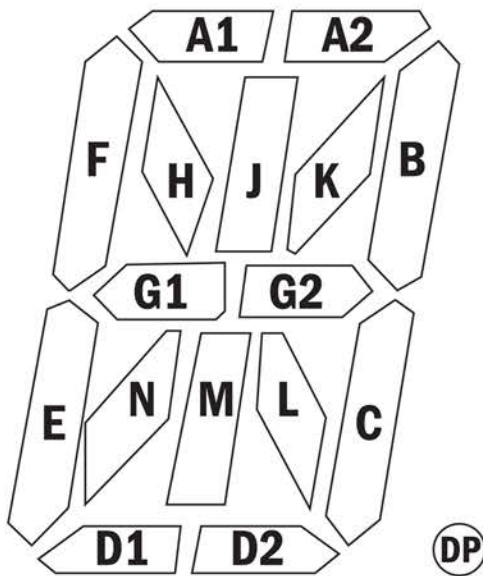
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HOW TO LIGHT A SEGMENT:

USE SOLDER TO CONNECT THE LEFT AND RIGHT PADS OF A GIVEN SEGMENT. THIS WILL CAUSE THE SEGMENT TO ILLUMINATE. REVIEW THE 'TRUTH TABLE' FOR A QUICK REFERENCE FOR WHICH SEGMENTS NEED TO BE SOLDERED IN ORDER TO CONFIGURE IT FOR A GIVEN LETTER, NUMBER, OR CHARACTER.

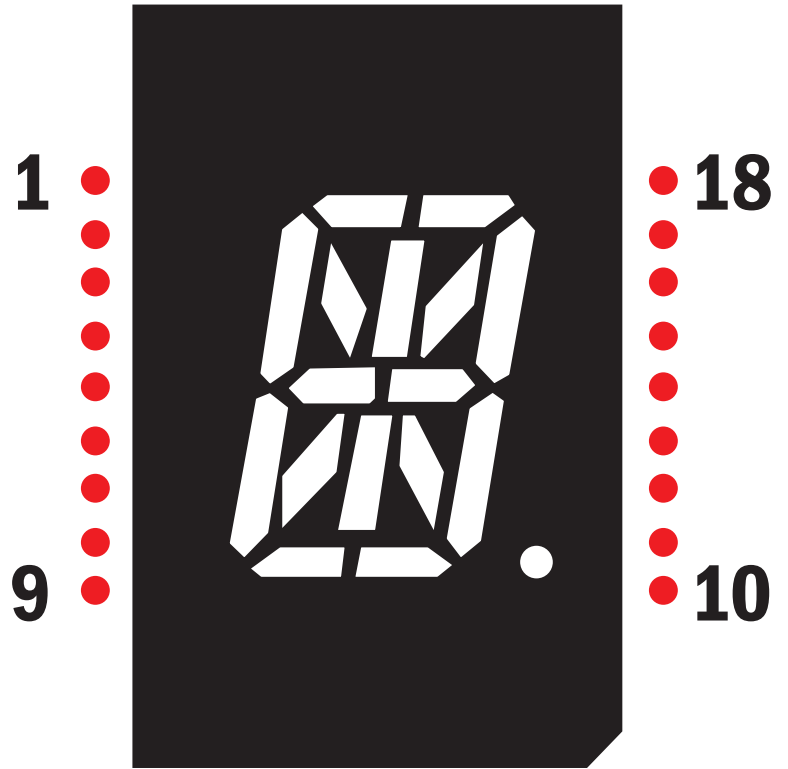
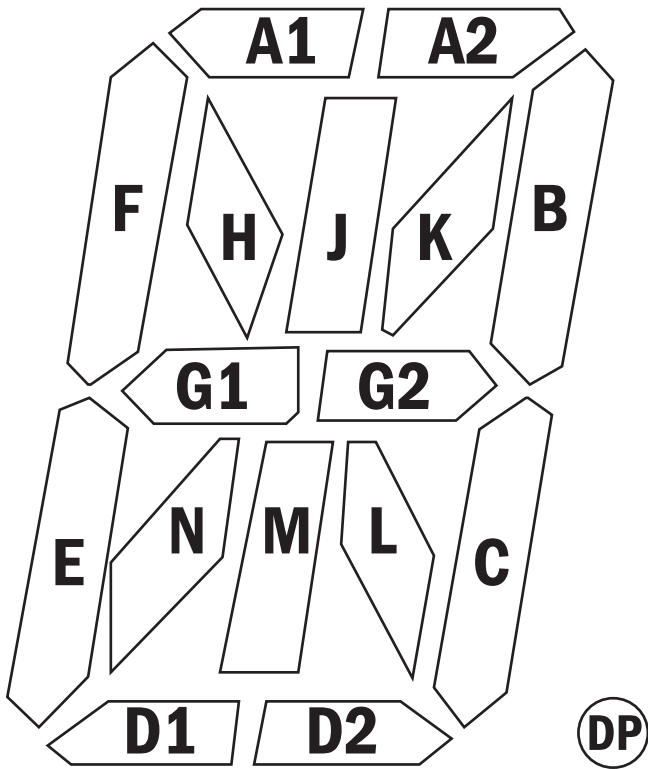
TO DISCONNECT SOLDER FROM PADS (IN ORDER TO TURN OFF A SEGMENT), YOU MUST SEPARATE THE SOLDER. YOU CAN DO THIS BY EITHER USING YOUR SOLDERING IRON BY ITSELF OR WITH SOLDER WICK. SEE VIDEO FOR AN EXAMPLE



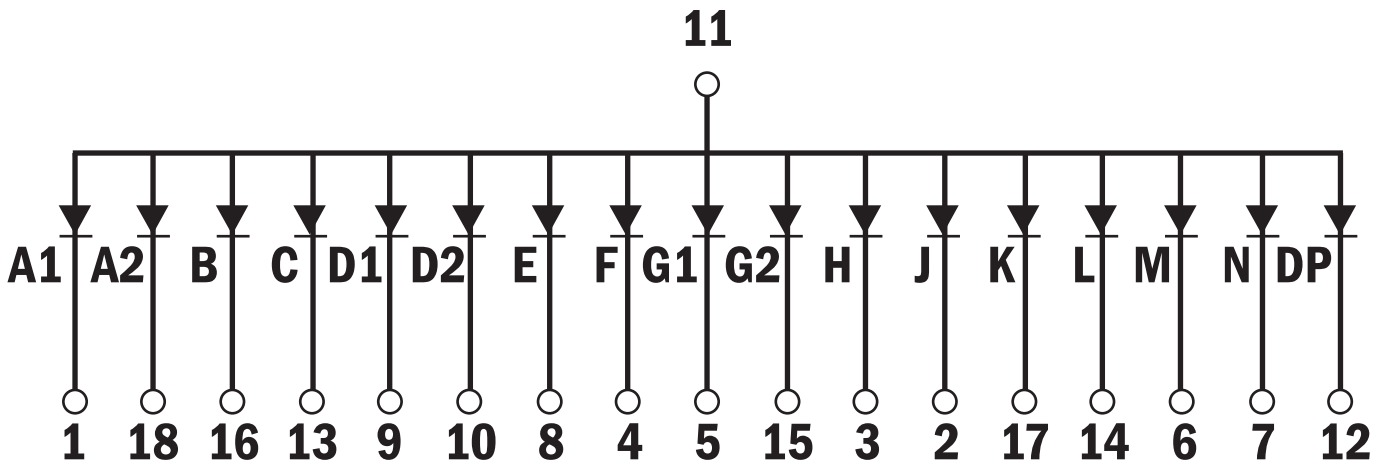
EXAMPLE OF CREATING THE LETTER "A" BY SOLDERING EIGHT OF THE PADS ON THE BACK

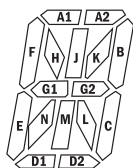
KYX-5107BS

16 SEGMENT DISPLAY







COMMON ANNODE

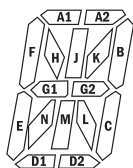




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UPPERCASE A-M

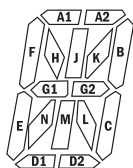
| | A1 | A2 | B | C | D1 | D2 | E | F | G1 | G2 | H | J | K | L | M | N |
|--|----|----|---|---|----|----|---|---|----|----|---|---|---|---|---|---|
| A  | X | X | X | X | | | X | X | X | X | | | | | | |
| B  | X | X | X | X | X | X | | | | X | | X | | | X | |
| C  | X | X | | | X | X | X | X | | | | | | | | |
| D  | X | X | X | X | X | X | | | | | | X | | | X | |
| E  | X | X | | | X | X | X | X | X | X | | | | | | |
| F  | X | X | | | | | X | X | X | X | | | | | | |
| G  | X | X | | X | X | X | X | X | | X | | | | | | |
| H  | | | X | X | | | X | X | X | X | | | | | | |
| I  | X | X | | | X | X | | | | | | X | | | X | |
| J  | X | X | | | X | | X | | | | | X | | | X | |
| K  | | | | | | | X | X | X | | | | X | X | | |
| L  | | | | | X | X | X | X | | | | | | | | |
| M  | | | X | X | | | X | X | | | X | | X | | | |



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UPPERCASE N-Z

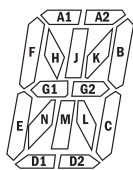
| | A1 | A2 | B | C | D1 | D2 | E | F | G1 | G2 | H | J | K | L | M | N |
|---|----|----|---|---|----|----|---|---|----|----|---|---|---|---|---|---|
| N | | | X | X | | | X | X | | | X | | | X | | |
| O | X | X | X | X | X | X | X | X | | | | | | | | |
| P | X | X | X | | | | X | X | X | X | | | | | | |
| Q | X | X | X | X | X | X | X | X | | | | | | X | | |
| R | X | X | X | | | | X | X | X | X | | | | X | | |
| S | X | X | | X | X | X | | X | X | X | | | | | | |
| T | X | X | | | | | | | | | | X | | | X | |
| U | | | X | X | X | X | X | X | | | | | | | | |
| V | | | | | | | X | X | | | | | X | | | X |
| W | | | X | X | | | X | X | | | | | | X | | X |
| X | | | | | | | | | | | X | | X | X | | X |
| Y | | | X | | | | | X | X | X | | | | | X | |
| Z | X | X | | | X | X | | | | | | | X | | | X |



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LOWERCASE A-M

| | A1 | A2 | B | C | D1 | D2 | E | F | G1 | G2 | H | J | K | L | M | N |
|----------|----|----|---|---|----|----|---|---|----|----|---|---|---|---|---|---|
| a | | | | | X | X | X | | X | | | | | | X | |
| b | | | | | X | | X | X | X | | | | | | X | |
| c | | | | | X | | X | | X | | | | | | | |
| d | | | X | X | | X | | | | X | | | | | X | |
| e | | | | | X | | X | | X | | | | | | | X |
| f | | X | | | | | | | X | X | | X | | | X | |
| g | X | | | | X | | | X | X | | | X | | | X | |
| h | | | | | | | X | X | X | | | | | | X | |
| i | X | | | | X | X | | | X | | | | | | X | |
| j | | | | | X | | X | | | | | X | | | X | |
| k | | | | | | | | | | | | X | X | X | X | |
| l | | | | | | | X | X | | | | | | | | |
| m | | | | X | | | X | | X | X | | | | | X | |

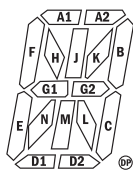


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LOWERCASE N-Z

| | A1 | A2 | B | C | D1 | D2 | E | F | G1 | G2 | H | J | K | L | M | N |
|---|----|----|---|---|----|----|---|---|----|----|---|---|---|---|---|---|
| n  | | | | | | | X | | X | | | | | | X | |
| o  | | | | | X | | X | | X | | | | | | X | |
| p  | X | | | | | | X | X | X | | | X | | | | |
| q  | X | | | | | | | X | X | | | X | | | X | |
| r  | | | | | | | X | | X | | | | | | | |
| s  | X | | | | X | | | X | X | | | | | | X | |
| t  | | | | | | X | | | X | X | | X | | | X | |
| u  | | | | | X | | X | | | | | | | | X | |
| v  | | | | | | | X | | | | | | | | | X |
| w  | | | | X | | | X | | | | | | | X | | X |
| x  | | | | | | | | | | | X | | X | X | | X |
| y  | | | X | X | | X | | | | X | | X | | | | |
| z  | | | | | X | | | | X | | | | | | | X |

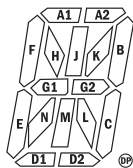
SPACE



KYX-5107BS TRUTH TABLE

CHARACTERS

| | A1 | A2 | B | C | D1 | D2 | E | F | G1 | G2 | H | J | K | L | M | N |
|----|----|----|---|---|-----|----|---|---|----|----|---|---|---|---|---|---|
| ! | | | X | X | DP* | | | | | | | | | | | |
| @ | X | X | X | | X | X | X | X | | X | | X | | | | |
| # | | | X | X | X | X | | | X | X | | X | | | X | |
| \$ | X | X | | X | X | X | | X | X | X | | X | | | X | |
| % | X | | | X | | X | | X | X | X | | X | X | | X | X |
| ^ | | | | | | | | | | | | | | X | | X |
| & | X | | | | X | X | X | | X | | X | X | | X | | |
| * | | | | | | | | | X | X | X | X | X | X | X | X |
| (| | X | | | | X | | | | | | X | | | X | |
|) | X | | | | X | | | | | | | X | | | X | |
| - | | | | | | | | | X | X | | | | | | |
| — | | | | | X | X | | | | | | | | | | |
| = | | | | | X | X | | | X | X | | | | | | |



KYX-5107BS TRUTH TABLE

CHARACTERS

| | A1 | A2 | B | C | D1 | D2 | E | F | G1 | G2 | H | J | K | L | M | N |
|---|----|----|---|---|-----|----|---|---|----|----|---|---|---|---|---|---|
| ? | X | X | X | | DP* | | | | | X | | | | | X | |
| + | | | | | | | | | X | X | | X | | | X | |
| ' | | | | | | | | | | | | X | | | | |
| < | | | | | | | | | | | | | X | X | | |
| > | | | | | | | | | | | X | | | | | X |
| ' | | | | | | | | | | | | | | | | X |
| / | | | | | | | | | | | | | X | | | X |
| “ | | | X | | | | | | | | | X | | | | |
| ` | | | | | | | | | | | X | | | | | |
| { | | X | | | | X | | | X | | | X | | | X | |
| } | X | | | | X | | | | | X | | X | | | X | |
| \ | | | | | | | | | | | X | | | X | | |
| ; | | | | | | | | | | | | X | | | | X |