

# LT-SYSTEM-8020 DMX512 Data Decoder

## User's Manual 1



**(Kindly read through this manual carefully before use)**

## Forward

Thanks for choosing our LT-SYSTEM-8020 DMX512 Decoder. Before installation and use, we strongly recommend you to read through this manual carefully to avoid unnecessary damage or extra cost.

## After-sales Service

From the day you purchase our products within a year, if being used properly in accordance with the instruction, and quality problems occur, we provide free repair or replacement services except the following cases:

1. Any defects caused by wrong operations..
2. Any damages caused by unauthorized removal, maintenance, modifying circuit, incorrect connections and replacing chips.
3. Any damages due to transportation, vibration etc after the purchase.
4. Any damages caused by earthquake, fire, lightning strike, pollution and abnormal voltage.
5. Any damages caused by negligence, inappropriate storing at high temperature and humidity environment or near harmful chemicals.
6. Product has been updated.

## Safety Warnings



To ensure a perfect product and safe using, pls do follow the instructions and tips.

1. Please don't install this decoder in lightening, intense magnetic and high-voltage fields.
2. To reduce the risk of component damage and fire caused by short circuit, make sure correct connection
3. Always be sure to mount this unit in an area that will allow proper ventilation to ensure a fitting temperature.
4. Check if the voltage and power adapter suit the decoder & if anode or cathode definition is the same as the controller's.
5. Don't connect cables with power on, make sure a correct connection and no short circuit checked with instrument before power on.
6. Please don't repair without permission if problems occur.

For update information, kindly please consult with your supplier.

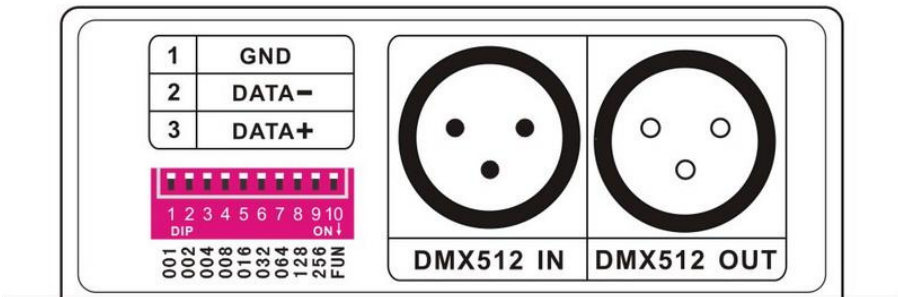
## Product Brief

Thanks for choosing LT-SYSTEM-8020 DMX Decoder, this DMX512 Data Decoder is designed via superior decoding technology to convert the universal DMX512/1990 signal into standard SPI(TTL) signal, to control led lights based on 74HC595, DM134 or similar chips, each decoder has 128 DMX output channels, 256 grey scales for each channel which can be expanded to max 512 channels, therefore makes it possible to control non-international standard LED lights such as widely used pixel light, digital tube light, project light, floodlight, pixel dancing floor light etc, through universal DMX512 signal.

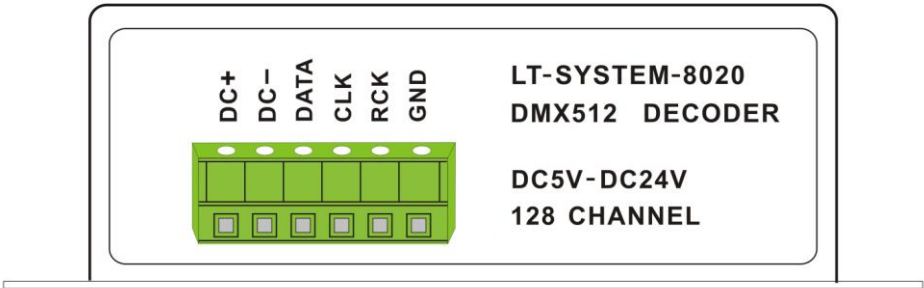
### I . Specifications:

- 1.) Working Voltage: DC5V--DC24V.
- 2.) Input signal: DMX512/1990
- 3.) Output signal: SPI(TTL)
- 4.) DMX Channels: 128 channels
- 5.) DMX512 connector: standard 3-pin connector
- 6.) Product Dimension: 125x52x40 (mm)
- 7.) Casing Size: 135x70x50 (mm)
- 8.) Weight: 0.3KG

### II . Configuration Diagram:



DMX Input Port



### SPI(TTL) Output Port

Port definition:

| Port    | Function            |
|---------|---------------------|
| DC+ DC- | DC5-24V Power Input |
| DATA    | Data                |
| CLK     | Clock               |
| RCK     | Register Clock      |
| GND     | Ground              |



Warning: the power cable can't connect the data port, otherwise it will damage the decoder!

### III. Address Setting

This decoder can decode 128 DMX addresses, adopted Dip switch to set the address, the Dip switches from 1 to 9 are a kind of binary value coding switches, the 1<sup>st</sup> bit is LSC, the 9<sup>th</sup> bit MSC, can set 511 addresses totally.

DMX512 initial address code is equal to the total amount of the Dip switches' numbers from 1 to 9, press Dip switch downward (ON: at position "1"), you can get the number of its position, if press upward (at position "0"), the value of its position is 0.



Accept DMX512 signal only when the DIP switch FUN(10)=OFF(at position "0")

### Example 1: Set to 37

Set the 6<sup>th</sup>, 3<sup>rd</sup>, 1<sup>st</sup> bit of the DIP switch downward to “1”, others to “0” (Figure 1), the total sum from 1 to 9 is 32+4+1, so the DMX512 initial address code is 37.

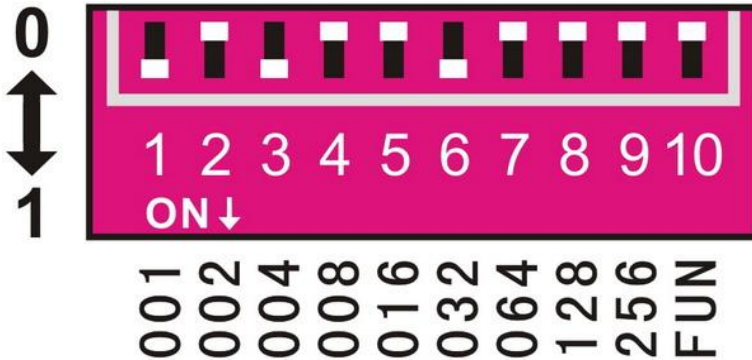


Figure 1

### Example 2:

Set DMX512 original address code as 385: Set the 9<sup>th</sup>, 8<sup>th</sup>, 1<sup>st</sup> bit of the DIP switch downward to “1”, the rest to “0” (as Figure 2), the total sum from 1 to 9 is 256+128+1, so the DMX512 original address code is 385.

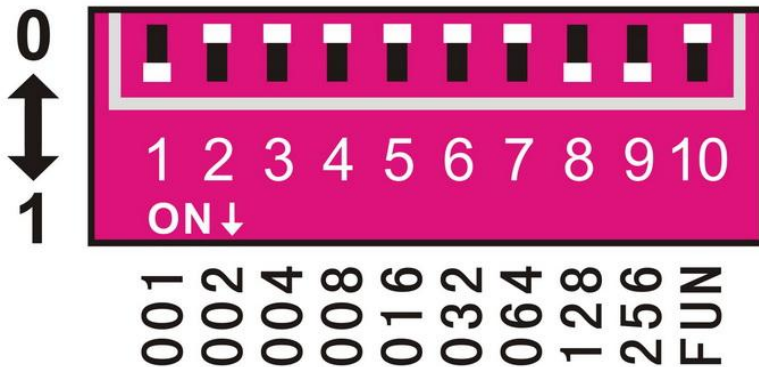


Figure 2

### IV. Instructions on the testing function

The 10<sup>th</sup> DIP switch is FUN, acting as the function key.  
DMX512 Decoder works when FUN is at OFF, receiving DMX512 signals.

Decoder testing mode works when FUN is at position” ON” as Figure 3:

SWITCH1—9 OFF: BLACK

SWITCH1 IS ON: lighten 6 channels

SWITCH2 IS ON: lighten 12 channels

SWITCH3 IS ON: lighten 18 channels

SWITCH4 IS ON: lighten 24 channels

SWITCH5 IS ON: lighten 30 channels

SWITCH6 IS ON: lighten 36 channels

SWITCH7 IS ON: lighten 42 channels

SWITCH8 IS ON: lighten 48 channels

SWITCH9 IS ON: the ground color is dark, then light from the 1<sup>st</sup> channel individually to all until lighten all channels.

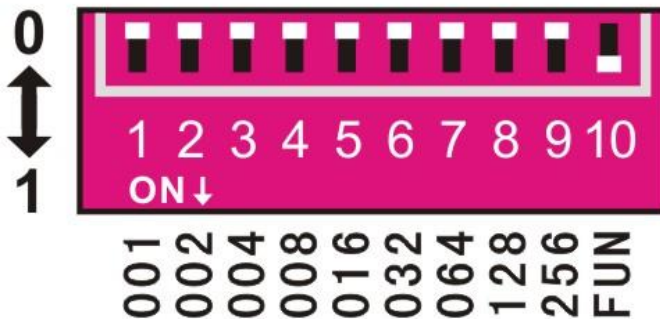


Figure 3

See Figure 4, if multi dip switches are on, the function is subject to the last switch.

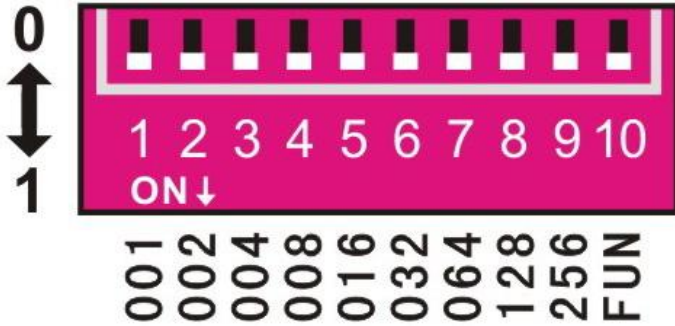
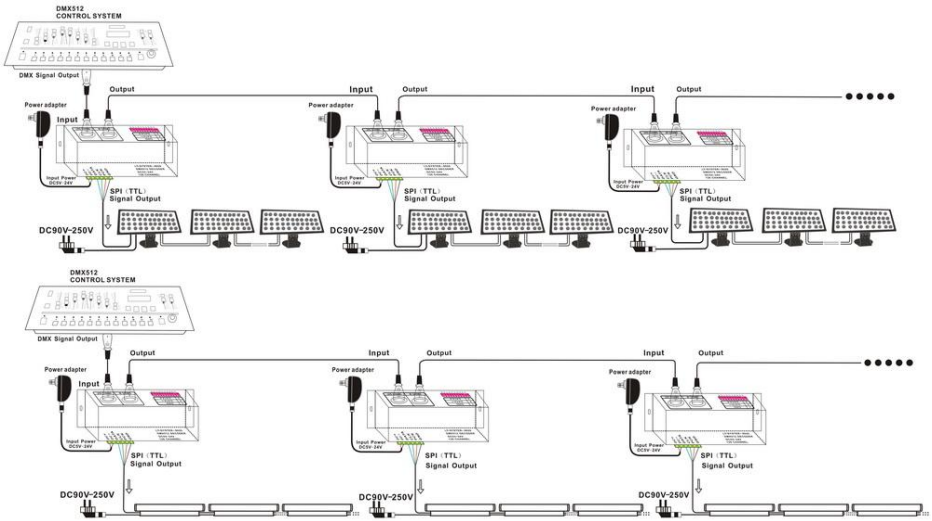


Figure 4

### V. Conjunction Diagram



### Appendix: DMX Address Setting Table

| DIP SWITCH | DMX ADDR | DIP SWITCH | DMX ADDR | DIP SWITCH | DMX ADDR |
|------------|----------|------------|----------|------------|----------|
| 123456789  | NUMBER   | 123456789  | NUMBER   | 123456789  | NUMBER   |
| 100000000  | 001      | 001110000  | 028      | 111011000  | 055      |
| 010000000  | 002      | 101110000  | 029      | 000111000  | 056      |
| 110000000  | 003      | 011110000  | 030      | 100111000  | 057      |
| 001000000  | 004      | 111110000  | 031      | 010111000  | 058      |
| 101000000  | 005      | 000001000  | 032      | 110111000  | 059      |
| 011000000  | 006      | 100001000  | 033      | 001111000  | 060      |
| 111000000  | 007      | 010001000  | 034      | 101111000  | 061      |
| 000100000  | 008      | 110001000  | 035      | 011111000  | 062      |
| 100100000  | 009      | 001001000  | 036      | 111111000  | 063      |
| 010100000  | 010      | 101001000  | 037      | 000000100  | 064      |
| 110100000  | 011      | 011001000  | 038      | 100000100  | 065      |
| 001100000  | 012      | 111001000  | 039      | 010000100  | 066      |
| 101100000  | 013      | 000101000  | 040      | 110000100  | 067      |
| 011100000  | 014      | 100101000  | 041      | 001000100  | 068      |
| 111100000  | 015      | 010101000  | 042      | 101000100  | 069      |
| 000010000  | 016      | 110101000  | 043      | 011000100  | 070      |
| 100010000  | 017      | 001101000  | 044      | 111000100  | 071      |
| 010010000  | 018      | 101101000  | 045      | 000100100  | 072      |
| 110010000  | 019      | 011101000  | 046      | 100100100  | 073      |
| 001010000  | 020      | 111101000  | 047      | 010100100  | 074      |
| 101010000  | 021      | 000011000  | 048      | 110100100  | 075      |
| 011010000  | 022      | 100011000  | 049      | 001100100  | 076      |
| 111010000  | 023      | 010011000  | 050      | 101100100  | 077      |
| 000110000  | 024      | 110011000  | 051      | 011100100  | 078      |
| 100110000  | 025      | 001011000  | 052      | 111100100  | 079      |
| 010110000  | 026      | 101011000  | 053      | 000010100  | 080      |
| 110110000  | 027      | 011011000  | 054      | 100010100  | 081      |

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| 123456789  | NUMBER   | 123456789  | NUMBER   | 123456789  | NUMBER   |
| 010010100  | 082      | 101101100  | 109      | 000100010  | 136      |
| 110010100  | 083      | 011101100  | 110      | 100100010  | 137      |
| 001010100  | 084      | 111101100  | 111      | 010100010  | 138      |
| 101010100  | 085      | 000011100  | 112      | 110100010  | 139      |
| 011010100  | 086      | 100011100  | 113      | 001100010  | 140      |
| 111010100  | 087      | 010011100  | 114      | 101100010  | 141      |
| 000110100  | 088      | 110011100  | 115      | 011100010  | 142      |
| 100110100  | 089      | 001011100  | 116      | 111100010  | 143      |
| 010110100  | 090      | 101011100  | 117      | 000010010  | 144      |
| 110110100  | 091      | 011011100  | 118      | 100010010  | 145      |
| 001110100  | 092      | 111011100  | 119      | 010010010  | 146      |
| 101110100  | 093      | 000111100  | 120      | 110010010  | 147      |
| 011110100  | 094      | 100111100  | 121      | 001010010  | 148      |
| 111110100  | 095      | 010111100  | 122      | 101010010  | 149      |
| 000001100  | 096      | 110111100  | 123      | 011010010  | 150      |
| 100001100  | 097      | 001111100  | 124      | 111010010  | 151      |
| 010001100  | 098      | 101111100  | 125      | 000110010  | 152      |
| 110001100  | 099      | 011111100  | 126      | 100110010  | 153      |
| 001001100  | 100      | 111111100  | 127      | 010110010  | 154      |
| 101001100  | 101      | 000000010  | 128      | 110110010  | 155      |
| 011001100  | 102      | 100000010  | 129      | 001110010  | 156      |
| 111001100  | 103      | 010000010  | 130      | 101110010  | 157      |
| 000101100  | 104      | 110000010  | 131      | 011110010  | 158      |
| 100101100  | 105      | 001000010  | 132      | 111110010  | 159      |
| 010101100  | 106      | 101000010  | 133      | 000001010  | 160      |
| 110101100  | 107      | 011000010  | 134      | 100001010  | 161      |
| 001101100  | 108      | 111000010  | 135      | 010001010  | 162      |

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| 110001010  | 163      | 011111010  | 190      | 100110110  | 217      |
| 001001010  | 164      | 111111010  | 191      | 010110110  | 218      |
| 101001010  | 165      | 000001110  | 192      | 110110110  | 219      |
| 011001010  | 166      | 100001110  | 193      | 001110110  | 220      |
| 111001010  | 167      | 010001110  | 194      | 101110110  | 221      |
| 000101010  | 168      | 110001110  | 195      | 011110110  | 222      |
| 100101010  | 169      | 001001110  | 196      | 111110110  | 223      |
| 010101010  | 170      | 101001110  | 197      | 000011110  | 224      |
| 110101010  | 171      | 011001110  | 198      | 100011110  | 225      |
| 001101010  | 172      | 111001110  | 199      | 010011110  | 226      |
| 101101010  | 173      | 000100110  | 200      | 110011110  | 227      |
| 011101010  | 174      | 100100110  | 201      | 001001110  | 228      |
| 111101010  | 175      | 010100110  | 202      | 101001110  | 229      |
| 000011010  | 176      | 110100110  | 203      | 011001110  | 230      |
| 100011010  | 177      | 001100110  | 204      | 111001110  | 231      |
| 010011010  | 178      | 101100110  | 205      | 000101110  | 232      |
| 110011010  | 179      | 011100110  | 206      | 100101110  | 233      |
| 001011010  | 180      | 111100110  | 207      | 010101110  | 234      |
| 101011010  | 181      | 000010110  | 208      | 110101110  | 235      |
| 011011010  | 182      | 100010110  | 209      | 001101110  | 236      |
| 111011010  | 183      | 010010110  | 210      | 101101110  | 237      |
| 000111010  | 184      | 110010110  | 211      | 011101110  | 238      |
| 100111010  | 185      | 001010110  | 212      | 111101110  | 239      |
| 010111010  | 186      | 101010110  | 213      | 000011110  | 240      |
| 110111010  | 187      | 011010110  | 214      | 100011110  | 241      |
| 001111010  | 188      | 111010110  | 215      | 010011110  | 242      |
| 101111010  | 189      | 000110110  | 216      | 110011110  | 243      |

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| 123456789  | NUMBER   | 123456789  | NUMBER   | 123456789  | NUMBER   |
| 001011110  | 244      | 111100001  | 271      | 010101001  | 298      |
| 101011110  | 245      | 000010001  | 272      | 110101001  | 299      |
| 011011110  | 246      | 100010001  | 273      | 001101001  | 300      |
| 111011110  | 247      | 010010001  | 274      | 101101001  | 301      |
| 000111110  | 248      | 110010001  | 275      | 011101001  | 302      |
| 100111110  | 249      | 001010001  | 276      | 111101001  | 303      |
| 010111110  | 250      | 101010001  | 277      | 000011001  | 304      |
| 110111110  | 251      | 011010001  | 278      | 100011001  | 305      |
| 001111110  | 252      | 111010001  | 279      | 010011001  | 306      |
| 101111110  | 253      | 000110001  | 280      | 110011001  | 307      |
| 011111110  | 254      | 100110001  | 281      | 001011001  | 308      |
| 111111110  | 255      | 010110001  | 282      | 101011001  | 309      |
| 000000001  | 256      | 110110001  | 283      | 011011001  | 310      |
| 100000001  | 257      | 001110001  | 284      | 111011001  | 311      |
| 010000001  | 258      | 101110001  | 285      | 000111001  | 312      |
| 110000001  | 259      | 011110001  | 286      | 100111001  | 313      |
| 001000001  | 260      | 111110001  | 287      | 010111001  | 314      |
| 101000001  | 261      | 000001001  | 288      | 110111001  | 315      |
| 011000001  | 262      | 100001001  | 289      | 001111001  | 316      |
| 111000001  | 263      | 010001001  | 290      | 101111001  | 317      |
| 000100001  | 264      | 110001001  | 291      | 011111001  | 318      |
| 100100001  | 265      | 001001001  | 292      | 111111001  | 319      |
| 010100001  | 266      | 101001001  | 293      | 000000101  | 320      |
| 110100001  | 267      | 011001001  | 294      | 100000101  | 321      |
| 001100001  | 268      | 111001001  | 295      | 010000101  | 322      |
| 101100001  | 269      | 000101001  | 296      | 110000101  | 323      |
| 011100001  | 270      | 100101001  | 297      | 001000101  | 324      |

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| 123456789  | NUMBER   | 123456789  | NUMBER   | 123456789  | NUMBER   |
| 101000101  | 325      | 000001101  | 352      | 110111101  | 379      |
| 011000101  | 326      | 100001101  | 353      | 001111101  | 380      |
| 111000101  | 327      | 010001101  | 354      | 101111101  | 381      |
| 000100101  | 328      | 110001101  | 355      | 011111101  | 382      |
| 100100101  | 329      | 001001101  | 356      | 111111101  | 383      |
| 010100101  | 330      | 101001101  | 357      | 000000011  | 384      |
| 110100101  | 331      | 011001101  | 358      | 100000011  | 385      |
| 001100101  | 332      | 111001101  | 359      | 010000011  | 386      |
| 101100101  | 333      | 000101101  | 360      | 110000011  | 387      |
| 011100101  | 334      | 100101101  | 361      | 001000011  | 388      |
| 111100101  | 335      | 010101101  | 362      | 101000011  | 389      |
| 000010101  | 336      | 110101101  | 363      | 011000011  | 390      |
| 100010101  | 337      | 001101101  | 364      | 111000011  | 391      |
| 010010101  | 338      | 101101101  | 365      | 000100011  | 392      |
| 110010101  | 339      | 011101101  | 366      | 100100011  | 393      |
| 001010101  | 340      | 111101101  | 367      | 010100011  | 394      |
| 101010101  | 341      | 000011101  | 368      | 110100011  | 395      |
| 011010101  | 342      | 100011101  | 369      | 001100011  | 396      |
| 111010101  | 343      | 010011101  | 370      | 101100011  | 397      |
| 000110101  | 344      | 110011101  | 371      | 011100011  | 398      |
| 100110101  | 345      | 001011101  | 372      | 111100011  | 399      |
| 010110101  | 346      | 101011101  | 373      | 000010011  | 400      |
| 110110101  | 347      | 011011101  | 374      | 100010011  | 401      |
| 001110101  | 348      | 111011101  | 375      | 010010011  | 402      |
| 101110101  | 349      | 000111101  | 376      | 110010011  | 403      |
| 011110101  | 350      | 100111101  | 377      | 001010011  | 404      |
| 111110101  | 351      | 010111101  | 378      | 101010011  | 405      |

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| 123456789  | NUMBER   | 123456789  | NUMBER   | 123456789  | NUMBER   |
| 011010011  | 406      | 100011011  | 433      | 001100111  | 460      |
| 111010011  | 407      | 010011011  | 434      | 101100111  | 461      |
| 000110011  | 408      | 110011011  | 435      | 011100111  | 462      |
| 100110011  | 409      | 001011011  | 436      | 111100111  | 463      |
| 010110011  | 410      | 101011011  | 437      | 000010111  | 464      |
| 110110011  | 411      | 011011011  | 438      | 100010111  | 465      |
| 001110011  | 412      | 111011011  | 439      | 010010111  | 466      |
| 101110011  | 413      | 000111011  | 440      | 110010111  | 467      |
| 011110011  | 414      | 100111011  | 441      | 001010111  | 468      |
| 111110011  | 415      | 010111011  | 442      | 101010111  | 469      |
| 000001011  | 416      | 110111011  | 443      | 011010111  | 470      |
| 100001011  | 417      | 001111011  | 444      | 111010111  | 471      |
| 010001011  | 418      | 101111011  | 445      | 000110111  | 472      |
| 110001011  | 419      | 011111011  | 446      | 100110111  | 473      |
| 001001011  | 420      | 111111011  | 447      | 010110111  | 474      |
| 101001011  | 421      | 000001111  | 448      | 110110111  | 475      |
| 011001011  | 422      | 100001111  | 449      | 001110111  | 476      |
| 111001011  | 423      | 010001111  | 450      | 101110111  | 477      |
| 000101011  | 424      | 110001111  | 451      | 011110111  | 478      |
| 100101011  | 425      | 001000111  | 452      | 111110111  | 479      |
| 010101011  | 426      | 101000111  | 453      | 000001111  | 480      |
| 110101011  | 427      | 011000111  | 454      | 100001111  | 481      |
| 001101011  | 428      | 111000111  | 455      | 010001111  | 482      |
| 101101011  | 429      | 000100111  | 456      | 110001111  | 483      |
| 011101011  | 430      | 100100111  | 457      | 001001111  | 484      |
| 111101011  | 431      | 010100111  | 458      | 101001111  | 485      |
| 000011011  | 432      | 110100111  | 459      | 011001111  | 486      |

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| 123456789  | NUMBER   | 123456789  | NUMBER   | 123456789  | NUMBER   |
| 111001111  | 487      | 000011111  | 496      | 100111111  | 505      |
| 000101111  | 488      | 100011111  | 497      | 010111111  | 506      |
| 100101111  | 489      | 010011111  | 498      | 110111111  | 507      |
| 010101111  | 490      | 110011111  | 499      | 001111111  | 508      |
| 110101111  | 491      | 001011111  | 500      | 101111111  | 509      |
| 001101111  | 492      | 101011111  | 501      | 011111111  | 510      |
| 101101111  | 493      | 011011111  | 502      | 111111111  | 511      |
| 011101111  | 494      | 111011111  | 503      |            |          |
| 111101111  | 495      | 000111111  | 504      |            |          |