

Distributed Room Controller (DRC) Smart Pack

Cat. No. DRD07



WARNINGS

- READ AND FOLLOW ALL SAFETY INSTRUCTIONS.
- **TO AVOID FIRE, SHOCK, OR DEATH; TURN OFF POWER AT CIRCUIT BREAKER OR FUSE AND TURN OFF POWER AT THE 24 HOUR NIGHT LIGHT/EMERGENCY CIRCUIT AND TEST THAT POWER IN BOTH CIRCUITS IS OFF BEFORE WIRING, SERVICING, OR REMOVING FIXTURE.** This fixture is powered by two (2) circuits: the regular power branch circuit and the 24 hour night light/emergency circuit.
- Do not use outdoors.
- Do not mount near gas or electric heaters.
- The use of accessory equipment not recommended by the manufacturer may cause an unsafe condition.

WARNINGS

- "EMERGENCY CIRCUITS" enclosed label should be placed in a highly visible location if any DRC is part of the emergency system so as to be readily identifiable as a component of the emergency system (for all models except for DRD07-EDN).
- To avoid electrical overload, total connected lamp load shall not exceed output rating.
- Do not use this equipment for other than intended use.
- Equipment should be mounted in locations and at heights where it will not be subjected to tampering by unauthorized personnel.

CAUTIONS

- Test all LumaCAN cables for compliance to TIA-568B prior to interconnecting devices and systems.
- To be installed and/or used in accordance with electrical codes and regulations.
- If you are not sure about any part of these instructions, consult an electrician.
- For indoor applications only.
- Use this device with **copper or copper-clad wire only**.
- Providing this additional ground does not apply when connect to the GreenMAX™ control panel.
- **SAVE THESE INSTRUCTIONS.**

PK-A3148-10-00-2E

INSTALLATION AND QUICK START GUIDE

ENGLISH

DESCRIPTION

The GreenMAX™ DRC Smart Pack contains 0-10V Dimming Control, LumaCAN™ RJ45 input/output and a load switching latching relay. The GreenMAX DRC Smart Pack requires connection to a LumaCAN network for control, no local control is provided. The Smart Pack includes zero cross switching circuitry to minimize inrush current associated with incandescent lights, LED and electronic ballasts, increasing its life expectancy. When using with a DRC Controller, system will attempt to automatically configure itself. See additional information on page 2.

SPECIFICATIONS		
Catalog #s	DRD07-EDx	DRD07-E3x
Input Voltage/Frequency	120-277VAC, 50/60Hz	347VAC, 60Hz
Input Power		
Max	2.0W @ 120V, 3.0W @ 277V	2.5W @ 347V
Standby	1.5W @ 120V, 2.5W @ 277V	2.0W @ 347V
Load Ratings	20A Tungsten 20A General Purpose Plug Load 20A Standard Ballast 16A Electronic Ballast, LED	12A Electronic Ballast, LED
Motor Ratings	1/2Hp (9.8 FLA) @ 120VAC 2 Hp (12 FLA) @ 240-277VAC	N/A
0-10V Control	0.8 - 10+VDC, 100mA Sinking	
LumaCAN Data	LumaCAN 3 Only Daisy-Chain Topology 1600 feet max per segment Repeaters can be used for networks up to 10,000 feet and to support home-run topology Max 110 nodes per segment Max 250 nodes Termination required at end of line, termination jumper provided	
Connections	18 AWG (Power, 0-10V) 12 AWG (Load IN/OUT) RJ45, CAT6A or better (LumaCAN)	
LED Indicator	Yes	
Dimensions	4.84" x 4.52" x 1.81"	
Weight	0.6 lb (9 oz)	
Mounting	Standard 4" square junction box with minimum volume of 30.3 cu. inches or greater (4" x 4" x 2.125") using the two (2) provided 8-32 x 2.5" screws. Or, mounted to junction box via 1/2" nipple.	
LumaCAN Connections	CAT6A (or better) cable	
Operational Temperature	32° to 122° F (0° to 50° C)	
IP Rating	IP30	

* Input voltage tolerance 10%, Frequency tolerance 5%.

INSTALLATION

WARNING: TO AVOID FIRE, SHOCK, OR DEATH; TURN OFF POWER AT CIRCUIT BREAKER OR FUSE AND TEST THAT POWER IS OFF BEFORE WIRING!

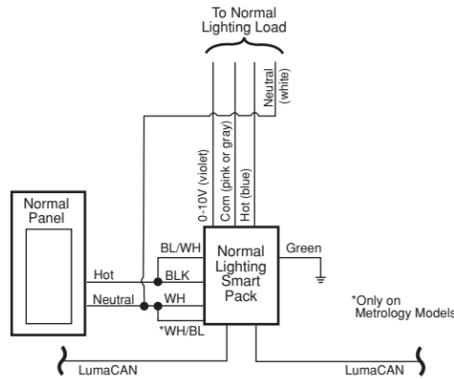
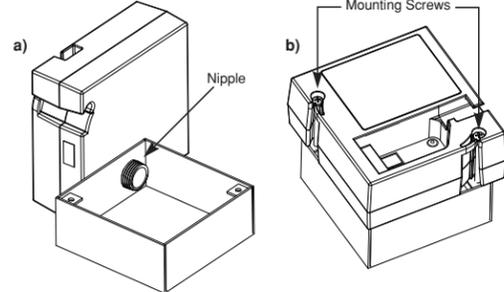
NOTE: This is an ESD Sensitive Device. Use safe ESD handling procedures when installing.

- Mount the GreenMAX DRC Smart Pack per desired application (see Mounting figure):
 - Mount to junction box using nipple and mounting nut provided.
 - Mount to face of 4" sq. junction box with minimum volume 30.3 cu. inches or greater (4" x 4" x 2.125") using the two (2) provided 8-32 x 2.5" screws.
 - Ensure that conduit/cable entry clamp is located in a corner of junction box opposite the GreenMAX DRC nipple as conflicts may occur.
 - Dress wires to provide enough clearance when device is installed.
- INSTALLATION NOTE:** 0-10V Control Wiring - Connect the Violet wire to the + 0-10V line and the Pink or Gray wire to the 0-10V common using Class 1 or Class 2 wiring methods. Refer to local electrical codes for instructions.
 - When power is used with 120VAC power source and the 0-10V control wires are connected to CL3, CL3R or CL3P rated control cables (or permitted substitute), then silicone tubing or other non-conducting sleeve is required over the control wires for the entire wire length from the device to the location where the wires exit the box. Tubing is **not** required on the CL3, CL3R or CL3P between the wire connector and extending out of the electrical box.
 - When used with 277VAC or 347VAC, power source and the 0-10V control wires are connected to CL3, CL3R or CL3P rated control cables (or permitted substitute), then silicone tubing or other non-conducting sleeve is required over the control wires for the entire wire length from the device to the location where the wires exit the box. Tubing is **also** required on the CL3, CL3R or CL3P between the wire connector and extending out of the electrical box.

NOTE:

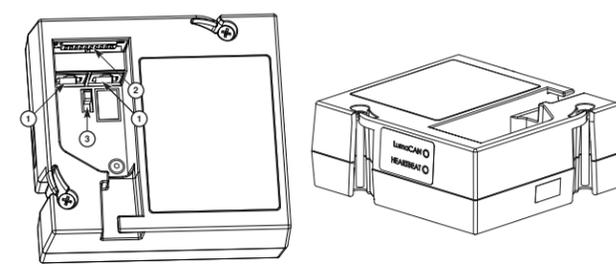
- Silicone tubing should be NRTL (UL/CSA/ETL) recognized or equivalent to provide mechanical separation equal to .25" in air.
- Connectors joining 0-10V control wires should be approved LISTED CONNECTORS.
- Wire connectors and wire tubing should be provided by the installation contractor.

MOUNTING OPTIONS



- Line Voltage Wiring:** Connect per wiring diagram.
- LumaCAN:** Two LumaCAN ports are provided to maintain the required Daisy-Chain topology of the LumaCAN network. Plug in CAT6A (or better) cable with standard RJ45 connector. If two connections are required, remove the terminator from one of the RJ45's and make both connections. If only one connection is required, leave the supplied terminator connected.
 - Wire per the TIA-568B standard.
 - All LumaCAN cable segments must be network cable tested and validated prior to power-up of the system.
 - The last device in each LumaCAN run must be terminated using an RJ45 terminator plug. Each Smart Pack is supplied with one terminator plug pre-installed in the Smart Pack. Additional terminators are available upon request. If the end of run is not a Smart Pack, the product may use a switch instead of a termination plug. Please refer to it's product documentation for details.
 - LumaCAN connections must be wired as Class 2 and as such should be installed according to the requirements of your authorities having jurisdiction. If it is required that the Class 2 wiring be in conduit, use a 4 in square extension ring and blank plate on the LumaCAN side of the Smart Pack, and, terminate conduit to the extension ring.
- Restore power at circuit breaker or fuse. **INSTALLATION IS COMPLETE.** When power is applied, GreenMAX DRC Smart Pack will power up in the ON state and then default to the last powered down state. The default from the factory is ON after power up.

OPERATION



- LumaCAN Port.**
- DIP Switches.**
- Emergency Sense Selector Switch** - At bottom of tub. (LINE MODE = AWAY from RJ45 CONNECTORS, CAN MODE = CLOSE to RJ45 CONNECTORS). **NOTE:** This switch does not apply to model DRD07-EDN which is not rated for use with Emergency Circuits.

LED INDICATORS (For Normal Operating Conditions Only)

The LumaCAN LED: Flashes Green whenever there is LumaCAN traffic detected.

Heartbeat LED: See following chart:

Indicator	Feature	Blink Rate (# blinks per second)	Duration	Possible Causes
Red	Duplicate LumaCAN address	2	Until conflict is resolved	Another LumaCAN device is using the same address
	UI error didn't get value set in time	8	Until 60 seconds or UI setting restarted	Took too long to enter manual information
	External watchdog fail safe circuit tripped	Solid	Until watchdog circuit is no longer tripped	Application update failure, hardware failure
White	LumaCAN address on switch matches current address	8	Until set or timed out after 10 seconds	
	Setting LumaCAN address and verifying address uniqueness	Solid	Until timed out after 10 seconds	
	Device didn't start, I/O not initialized	Solid	Until problem resolved	Hardware failure
Blue	Low byte of LumaCAN channel number is locked in	8		
	Waiting for low byte to be locked in	Solid	Until set or timed out after 60 seconds	
Green	Normal operating condition	2		
	In boot loader	4	Until entering actual application	Application update failure if alternating with RED LED
	High byte of LumaCAN channel number is locked in	8	Single blink	
	Waiting for high byte to be locked in	Solid	Until set or timed out after 60 seconds	
Off	LumaCAN overcurrent or failure			
CYAN	Auto-Addressing mode Awaiting to be assigned an address	Flash once every 2 seconds	Auto-configuration process	

Heartbeat LED status "failure" states are as follows:

- **Processor fails or failed application - RED**
 - **Resolution:** Cycle Power. If a power cycle does not restore proper operation, remove LumaCAN cables and cycle power again. Do not reconnect LumaCAN until after normal operation is restored.
- **Processor in reset or startup failure - WHITE**
 - **Resolution:** Cycle Power. If a power cycle does not restore proper operation, remove LumaCAN cables and cycle power again. Do not reconnect LumaCAN cables until after normal operation is restored.
- **Off - failure**
 - **Resolution:** Remove LumaCAN cables. If devices starts up, then there is either an Overcurrent or Short on the LumaCAN cables. Resolve the problem and reconnect.
 - **Resolution:** Check Control Power Input. If Control Power Input is not valid, the device will not start. Set CAN address to 255 and cycle power to erase application, then reprogram.

EMERGENCY

NOTE: The "EMERGENCY" section does not apply to DRD07-EDN as it can not be used for emergency circuits.

The "Emergency Circuits" label shall be placed on the GreenMAX DRC Smart Pack so the user is aware this device is used for emergency lighting.

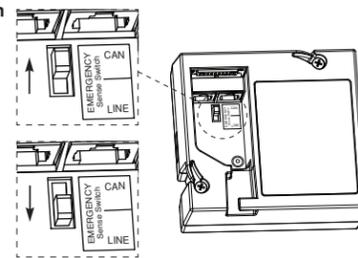
The GreenMAX DRC Smart Pack can be used as a UL 924/CSA C22.2 No. 141 emergency bypass device ensuring that the relay is closed during a power failure condition. Availability of input power to power the load is the responsibility of others. Two options for sensing power to determine whether you are in "emergency" are available and your Construction Documents will dictate which you are to use. The options and features of normal sense are as follows:

- **Sense is line power through the black wire:** Upon loss of supplying power to the device, relay will close.
- **Sense is power over LumaCAN:** Upon loss of +24V power on LumaCAN cable, relay will close.

Emergency Sense Switch

CAN MODE
(switch in UP position)

LINE MODE
(switch in DOWN position)

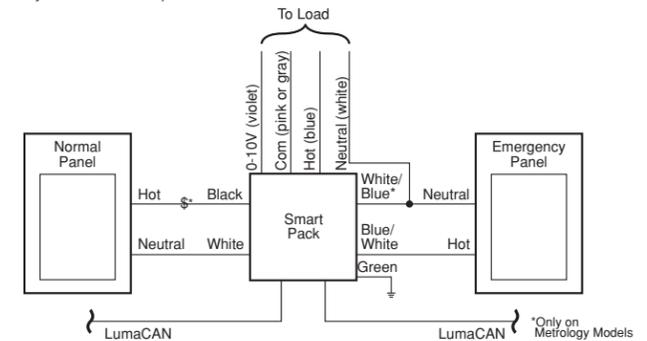


- **CAN MODE**
 - On loss of +24VDC LumaCAN power Smart Pack will close relay and force 0-10V to max brightness.
 - On loss of line power the Smart Pack will close relay and force 0-10V to max brightness.
- **LINE MODE**
 - On loss of line power the Smart Pack will close relay and force 0-10V to max brightness.

Sense: Line mode details

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In this scenario, the supply input wires are connected to normal power, and, the Load In for the relay is connected to emergency power. Upon loss of normal power, the relay closes, and the 0-10V lines go to high impedance allowing the load to go to full output powered from the emergency source. The Emergency Mode switch must be in the LINE position. Upon restoration of normal power, GreenMAX DRC Smart Pack will automatically resume normal operation.



Sense: CAN mode details

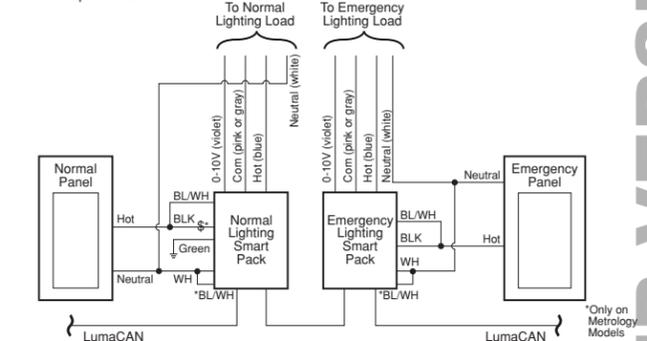
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In this scenario, both the power input wires AND the Load-In are connected to the emergency source. The Smart Pack monitors the LumaCAN cable and upon loss of power, the relay closes and force the 0-10V control wires to MAX brightness. There are two advantages of this scenario:

- LumaCAN remains operational during the emergency event.
- Only EM power is run to the GreenMAX DRC Smart Pack so separation of normal and emergency at this location is not required.

Notes Specific to this scenario:

- The Emergency Switch must be in the CAN position.
- **CAUTION: The systems designer and installer must verify that any and all power supplies which could supply power to either LumaCAN cable segment are fed from normal power and are not connected to a UPS or other power source which could be powered in an emergency mode condition.**
- GreenMAX DRC Smart Pack will go to full output within 1 second.
- Upon restoration of Normal Power, the GreenMAX DRC Smart Pack will automatically resume normal operation.



*** Emergency Self-Test:** NEC (NFPA 70) and CEC (C22.2) require regular testing of all emergency equipment. To perform a test of these products, use the EM control breaker to interrupt normal power to the device, or the device providing power to the LumaCAN network which will put the Smart Pack into the Emergency behavior. Alternatively, if desired or if your jurisdiction requires it, you can use a standard toggle switch on the normal power line to trigger the emergency systems test. Some jurisdictions may disallow multiple Smart Packs on a test switch or use of breaker in a panel as a test switch. Clarify with all local authorities.

WEB VERSION

AUTOMATIC SYSTEM CONFIGURATION (DRC CONTROLLER REQUIRED)

GreenMAX DRC Systems will both automatically address and automatically configure themselves. When configured automatically, the system will have the following functionality:

- All switches have functionality as per their labeling.
- Occupancy Sensors turn the lights on to 50% when occupancy is detected, and turn the lights off when vacancy is detected. Vacancy timeout is set to 30 minutes to occur in two stages, light output reduction to 30% after 15 minutes, then lights off after another 15 minutes.
- All lights daylight harvesting to a pre-determined set-point, and, minimum output set at 35%.
- Customization of automatic configuration can be made at any time using the GreenMAX DRC App.
- Auto-Configuration will be complete within 15 minutes of all devices being powered up and connected to the network.

In order for automatic configuration to be successful, the following system requirements must be met:

- DRC Room Controller must be on the network. On systems without a DRC Room Controller, addresses and configuration must be set manually.
- All devices in the room must be LumaCAN digital devices, and connected via LumaCAN Category-6 cabling methods.
- All cables must be tested via a Category 6 cable tester, and confirmed sound prior to connection to any Leviton Equipment.
- All devices with address switches must have all of them in the off position.
- Each end of the LumaCAN network must be "terminated", with the termination switch/jumper/plug installed (see Installation section for details).
- If multiple rooms are to work together, they must be interconnected via the WiFi network only.
- If there is more than one room controller on the network, the switches will control all devices on the network, however, Occupancy and Daylighting will not operate until the system can be commissioned using the GreenMAX DRC App.

AUTOMATIC CONFIGURATION TROUBLESHOOTING

BEHAVIOR	RESOLUTION
Press switch buttons, LED's do not light up, light does not change No Power to switch.	Check all LumaCAN cabling as there is likely a problem.
Switch station LED's do not change lighting, all LED's blink once every two seconds Automatic configuration was not successful.	Ensure you have a room controller as part of the network, all devices are powered up, and LumaCAN cabling is sound.
Not all Smart Packs are controlled by the switch, sensor, etc.	<ol style="list-style-type: none"> Check wiring on the specific devices that are not functioning, it is likely that they are not powered up or are not connected to the network. Check network termination. Observe LED's: <ul style="list-style-type: none"> LumaCAN LED should be periodically blinking when traffic is on the line. If it does not blink, LumaCAN connectivity is problematic. Heartbeat LED should be blinking green, 2x per second, indicating that Auto-Configuration has been completed. If not, checked power and network wiring. Also ensure a room controller is installed correctly and connected to the network. See LED behavior chart for more information.
All Smart Packs are controlled by switch/sensors and I need to split them up.	Congratulations, auto configuration has been successful! Your system can be split into different control zones using the GreenMAX DRC app. Please download it, connect to your room controller, and customize the system as is appropriate to your application.

Universe #	Channel Range	Actual Channel Range		Universe Dip Switch Setting	Channel Dip Switching Setting								
		Start	End		00000000	00000001	00000010	00000011	00000100	...	11111101	11111110	11111111
					Actual Channel Number								
0	1-255	1	255	00000000	1	1	2	3	4	...	253	254	255
1	256-511	256	511	00000001	256	257	258	259	260	...	509	510	511
2	512-767	512	767	00000010	512	513	514	515	516	...	765	766	767
3	768-1023	768	1023	00000011	768	769	770	771	772	...	1021	1022	1023
4	1024-1279	1024	1279	00000100	1024	1025	1026	1027	1028	...	1277	1278	1279
5	1280-1535	1280	1535	00000101	1280	1281	1282	1283	1284	...	1533	1534	1535
6	1536-1791	1536	1791	00000110	1536	1537	1538	1539	1540	...	1789	1790	1791
7	1792-2047	1792	2047	00000111	1792	1793	1794	1795	1796	...	2045	2046	2047
8	2048-2303	2048	2303	00001000	2048	2049	2050	2051	2052	...	2301	2302	2303
9	2304-2559	2304	2559	00001001	2304	2305	2306	2307	2308	...	2557	2558	2559
10	2560-2815	2560	2815	00001010	2560	2561	2562	2563	2564	...	2813	2814	2815
11	2816-3071	2816	3071	00001011	2816	2817	2818	2819	2820	...	3069	3070	3071
12	3072-3327	3072	3327	00001100	3072	3073	3074	3075	3076	...	3325	3326	3327
13	3328-3583	3328	3583	00001101	3328	3329	3330	3331	3332	...	3581	3582	3583
14	3584-3839	3584	3839	00001110	3584	3585	3586	3587	3588	...	3837	3838	3839
15	3840-4095	3840	4095	00001111	3840	3841	3842	3843	3844	...	4093	4094	4095
16	4096-4351	4096	4351	00010000	4096	4097	4098	4099	4100	...	4349	4350	4351
17	4352-4607	4352	4607	00010001	4352	4353	4354	4355	4356	...	4605	4606	4607
18	4608-4863	4608	4863	00010010	4608	4609	4610	4611	4612	...	4861	4862	4863
19	4864-5119	4864	5119	00010011	4864	4865	4866	4867	4868	...	5117	5118	5119
20	5120-5375	5120	5375	00010100	5120	5121	5122	5123	5124	...	5373	5374	5375
21	5376-5631	5376	5631	00010101	5376	5377	5378	5379	5380	...	5629	5630	5631
22	5632-5887	5632	5887	00010110	5632	5633	5634	5635	5636	...	5885	5886	5887
23	5888-6143	5888	6143	00010111	5888	5889	5890	5891	5892	...	6141	6142	6143
24	6144-6399	6144	6399	00011000	6144	6145	6146	6147	6148	...	6397	6398	6399
25	6400-6655	6400	6655	00011001	6400	6401	6402	6403	6404	...	6653	6654	6655
26	6656-6911	6656	6911	00011010	6656	6657	6658	6659	6660	...	6909	6910	6911
27	6912-7167	6912	7167	00011011	6912	6913	6914	6915	6916	...	7165	7166	7167
28	7168-7423	7168	7423	00011100	7168	7169	7170	7171	7172	...	7421	7422	7423
29	7424-7679	7424	7679	00011101	7424	7425	7426	7427	7428	...	7677	7678	7679
30	7680-7935	7680	7935	00011110	7680	7681	7682	7683	7684	...	7933	7934	7935
31	7936-8191	7936	8191	00011111	7936	7937	7938	7939	7940	...	8189	8190	8191
32	8192-8447	8192	8447	00100000	8192	8193	8194	8195	8196	...	8445	8446	8447
33	8448-8703	8448	8703	00100001	8448	8449	8450	8451	8452	...	8701	8702	8703
34	8704-8959	8704	8959	00100010	8704	8705	8706	8707	8708	...	8957	8958	8959
35	8960-9215	8960	9215	00100011	8960	8961	8962	8963	8964	...	9213	9214	9215
36	9216-9471	9216	9471	00100100	9216	9217	9218	9219	9220	...	9469	9470	9471
37	9472-9727	9472	9727	00100101	9472	9473	9474	9475	9476	...	9725	9726	9727
38	9728-9983	9728	9983	00100110	9728	9729	9730	9731	9732	...	9981	9982	9983
39	9984-10239	9984	10239	00100111	9984	9985	9986	9987	9988	...	10237	10238	10239
40	10240-10495	10240	10495	00101000	10240	10241	10242	10243	10244	...	10493	10494	10495
41	10496-10751	10496	10751	00101001	10496	10497	10498	10499	10500	...	10749	10750	10751

Universe #	Channel Range	Actual Channel Range		Universe Dip Switch Setting	Channel Dip Switching Setting								
		Start	End		00000000	00000001	00000010	00000011	00000100	...	11111101	11111110	11111111
					Actual Channel Number								
42	10752-11007	10752	11007	00101010	10752	10753	10754	10755	10756	...	11005	11006	11007
43	11008-11263	11008	11263	00101011	11008	11009	11010	11011	11012	...	11261	11262	11263
44	11264-11519	11264	11519	00101100	11264	11265	11266	11267	11268	...	11517	11518	11519
45	11520-11775	11520	11775	00101101	11520	11521	11522	11523	11524	...	11773	11774	11775
46	11776-12031	11776	12031	00101110	11776	11777	11778	11779	11780	...	12029	12030	12031
47	12032-12287	12032	12287	00101111	12032	12033	12034	12035	12036	...	12285	12286	12287
48	12288-12543	12288	12543	00110000	12288	12289	12290	12291	12292	...	12541	12542	12543
49	12544-12799	12544	12799	00110001	12544	12545	12546	12547	12548	...	12797	12798	12799
50	12800-13055	12800	13055	00110010	12800	12801	12802	12803	12804	...	13053	13054	13055
51	13056-13311	13056	13311	00110011	13056	13057	13058	13059	13060	...	13309	13310	13311
52	13312-13567	13312	13567	00110100	13312	13313	13314	13315	13316	...	13565	13566	13567
53	13568-13823	13568	13823	00110101	13568	13569	13570	13571	13572	...	13821	13822	13823
54	13824-14079	13824	14079	00110110	13824	13825	13826	13827	13828	...	14077	14078	14079
55	14080-14335	14080	14335	00110111	14080	14081	14082	14083	14084	...	14333	14334	14335
56	14336-14591	14336	14591	00111000	14336	14337	14338	14339	14340	...	14589	14590	14591
57	14592-14847	14592	14847	00111001	14592	14593	14594	14595	14596	...	14845	14846	14847
58	14848-15103	14848	15103	00111010	14848	14849	14850	14851	14852	...	15101	15102	15103
59	15104-15359	15104	15359	00111011	15104	15105	15106	15107	15108	...	15357	15358	15359
60	15360-15615	15360	15615	00111100	15360	15361	15362	15363	15364	...	15613	15614	15615
61	15616-15871	15616	15871	00111101	15616	15617	15618	15619	15620	...	15869	15870	15871
62	15872-16127	15872	16127	00111110	15872	15873	15874	15875	15876	...	16125	16126	16127
63	16128-16383	16128	16383	00111111	16128	16129	16130	16131	16132	...	16381	16382	16383
64	16384-16639	16384	16639	01000000	16384	16385	16386	16387	16388	...	16637	16638	16639
65	16640-16895	16640	16895	01000001	16640	16641	16642	16643	16644	...	16893	16894	16895
66	16896-17151	16896	17151	01000010	16896	16897	16898	16899	16900	...	17149	17150	17151
67	17152-17407	17152	17407	01000011	17152	17153	17154	17155	17156	...	17405	17406	17407
68	17408-17663	17408	17663	01000100	17408	17409	17410	17411	17412	...	17661	17662	17663
69	17664-17919	17664	17919	01000101	17664	17665	17666	17667	17668	...	17917	17918	17919
70	17920-18175	17920	18175	01000110	17920	17921	17922	17923	17924	...	18173	18174	18175
71	18176-18431	18176	18431	01000111	18176	18177	18178	18179	18180	...	18429	18430	18431
72	18432-18687	18432	18687	01001000	18432	18433	18434	18435	18436	...	18685	18686	18687
73	18688-18943	18688	18943	01001001	18688	18689	18690	18691	18692	...	18941	18942	18943
74	18944-19199	18944	19199	01001010	18944	18945	18946	18947	18948	...	19197	19198	19199
75	19200-19455	19200	19455	01001011	19200	19201	19202	19203	19204	...	19453	19454	19455
76	19456-19711	19456	19711	01001100	19456	19457	19458	19459	19460	...	19709		