

DALI 协议简介

DALI (Digital Addressable Lighting Interface) 是国际公开规格的照明控制通信协议, 通信速度为1200 BPS ± 10%。主要用于多个荧光灯以及LED照明的调光控制, DALI可以通过最大64个短地址和16个的组地址构成网络, 一个主机可以控制一个或者多个从机, 以半双工方式进行通信。

- DALI总线上电压时16V, 高电平范围是: 9.5~22.5V, 低电平范围是: -6.5~6.5V。
- DALI的命令

由于DALI 协议是为要求专业的室内照明管理而设计它定义了4类命令, 如表2-2所示:

命令	代码 ^①	说明
开关		可以开关系统中独立的 DALI 电子镇流器镇流器组或所有镇流器
调光		在技术上可以简易地安装可调光的 DALI 电子镇流器它可以在 125 个调节档中按对数将灯的电流从100%调节到0.1% 实际上最低的调光级别被设置在3% 以保证不会降低灯的使用寿命
灯光场景		在一个 DALI 系统中可以设定和实现16 个灯光场景
状态显示		DALI 协议也可以用于显示和或取得电子镇流器或灯的状态

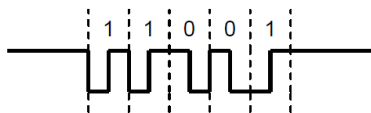
注: ① 命令代码见附录一

表2-2

- DALI的数据构成

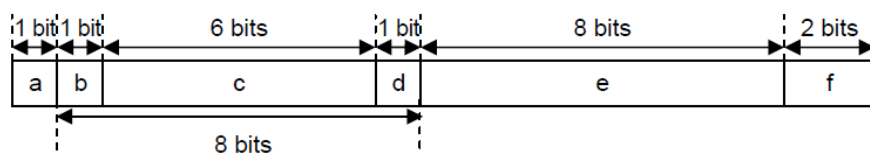
① 位定义

DALI通信使用曼彻斯特编码。位定义为上升沿的时候是“1”, 下降沿的时候是“0”。另外无通信的时候, 固定为“1”。



② Forward帧

从主机向从机发送的帧, 总共为19位。



a: 起始位 在帧的前端, 固定为“1”。

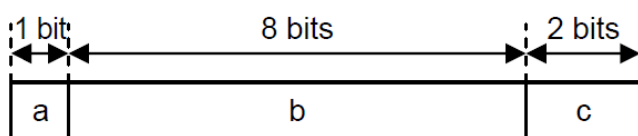
b-d: 地址字节 指定帧的接收地址。如表2-3所示地址类型:

Type of Addresses	Byte Description
Short address	0AAAAAAS (AAAAAA = 0 to 63, S = 0/1)
Group address	100AAAAAS (AAAA = 0 to 15, S = 0/1)
Broadcast address	1111111S (S = 0/1)
Special command	101CCCC1 (CCCC = command number)

表2-3

- e: 数据字节 指定命令。
- f: 结束位 在帧的最后，固定为“1”。

③Backward帧 从从机向主机发送的帧，共11位。



- a: 起始位 在帧的前端，固定为“1”。
- b: 数据字节 执行向主机的回信。
- c: 结束位 在帧的最后，固定为“1”。

DALI 协议是专用的照明控制协议，仅用于照明系统，DALI 系统很容易与楼宇自控系统 BAS 相连接，是 BAS 系统的补充。DALI 协议是开放的国际标准，我国的技术人员也可以据此开发具有自身知识产权的照明控制产品，因此 DALI 的前景是十分美好的。

DALI Instruction Set

DALI 命令设定

命令值

Table A-1. Standard Commands 标准命令

应答

Command Value	Description 描述	Answer
00	Extinguish the lamp without fading	—
01	Dim up 200 ms using the selected fade rate	—
02	Dim down 200 ms using the selected fade rate	—
03	Set the actual arc power level one step higher without fading	—
04	Set the actual arc power level one step lower without fading	—
05	Set the actual arc power level to the maximum value	—
06	Set the actual arc power level to the minimum value	—
07	Set the actual arc power level one step lower without fading	—
08	Set the actual arc power level one step higher without fading	—
10+Scene	Set the light level to the value stored for the selected scene	—
20	Reset the parameters to default settings	—
21	Store the current light level in the DTR	—
2A	Store the value in the DTR as the maximum level	—
2B	Store the value in the DTR as the minimum level	—
2C	Store the value in the DTR as the system failure level	—
2D	Store the value in the DTR as the power on level	—
2E	Store the value in the DTR as the fade time	—
2F	Store the value in the DTR as the fade rate	—
40+Scene	Store the value in the DTR as the selected scene	—
50+Scene	Remove the selected scene from the slave unit	—
60+Group	Add the slave unit to the selected group	—
70+Group	Remove the slave unit from the selected group	—
80	Store the value in the DTR as a short address	—
90	Returns the status of the slave as XX	XX
91	Check if the slave is working	YES/NO
92	Check if there is a lamp failure	YES/NO
93	Check if the lamp is operating	YES/NO
94	Check if the slave has received a level out of limit	YES/NO

Digitally Addressable Lighting Interface (DALI) Unit

Table A-1. Standard Commands (Continued)

Command Value	Description	Answer
95	Check if the slave is in reset state	YES / NO
96	Check if the slave is missing a short address	YES / NO
97	Returns the version number as XX	XX
98	Returns the content of the DTR as XX	XX
99	Returns the device type as XX	XX
9A	Returns the physical minimum level as XX	XX
9B	Check if the slave is in power failure mode	YES / NO
A0	Returns the current light level as XX	XX
A1	Returns the maximum allowed light level as XX	XX
A2	Returns the minimum allowed light level as XX	XX
A3	Return the power up level as XX	XX
A4	Returns the system failure level as XX	XX
A5	Returns the fade time as X and the fade rate as Y	XY
B0+Scene	Returns the light level XX for the selected scene	XX
C0	Returns a bit pattern XX indicating which group (0-7) the slave belongs to	XX
C1	Returns a bit pattern XX indicating which group (8-15) the slave belongs to	XX
C2	Returns the high bits of the random address as HH	HH
C3	Return the middle bit of the random address as MM	MM
C4	Returns the lower bits of the random address as LL	LL

Table A-2. Special Commands

Special Command Value	Description	Answer
A1 00	All special mode processes shall be terminated	–
A3 XX	Store value XX in the DTR	–
A5 XX	Initialize addressing commands for slaves with address XX	–
A7 00	Generate a new random address	–
A9 00	Compare the random address with the search address	–
AB 00	Withdraw from the compare process	–
B1 HH	Store value HH as the high bits of the search address	–
B3 MM	Store value MM as the middle bits of the search address	–
B5 LL	Store value LL as the lower bits of the search address	–
B7 XX	Program the selected slave with short address XX	–
B9 XX	Check if the selected slave has short address XX	YES/NO
BB 00	The selected slave returns its short address XX	XX
BD 00	Go into physical selection mode	–

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